CFN DIAGNOSTIC

MANUAL

C01759

For Site Controller I, II, III
Islander and Islander II
and Components

GASBOY INTERNATIONAL LLC

GASBOY

CFN SERIES

DIAGNOSTIC MANUAL

C01759

Rev. 03/19/04

GASBOY INTERNATIONAL LLC
LANSDALE, PA

PAGE STATUS SUMMARY

CFN DIAGNOSTIC MANUAL   C01759

Rev. 03/19/04

Page	Revision	Page	Revision
Contents-1 to -8	03/24/03	8-1 to 8-19	0021
1-1 to 1-9	0161	9-1 to 9-8	0021
2-1 to 2-38	0021	10-1 to 10-4	0021
3-1 to 3-52	03/19/04	11-1 to 11-7	0021
4-1 to 4-54	03/19/04	12-1 to 12-31	1116
5-1 to 5-19	03/19/04	12-32 to 12-34	2210
6-1 to 6-45	12/26/02	13-1 to 13-60	12/26/02
7-1 to 7-55	1310		

RELATED PUBLICATIONS

SITE CONTROLLER I

Part No.	*Title*
C09149	SC I Site Manager's Manual
C01917	SC I Installation Manual
C01900	SC I Start-Up Manual
C09148	P-P Console Operator's Manual
C09198	SC I Configuration Manual
C09199	SC I Personality PROM Manual
	SC I Order Form
C09200	SC I Pocket Reference

SITE CONTROLLER II V2.3 AND LATER

C09212	SC II Manager's Manual
C01918	SC II Installation Manual
C09132	SC II Configuration Manual
C09159	SC II Pocket Reference
C09204	Check Point Reference Manual
C35745	Profit Point Clerk's Manual
C35746	Profit Point Reference Manual
C35923	Point of Sale and Shift Change

CREDIT AND DEBIT CARD NETWORKS

C35931	Amoco/DataCard
C35901	Buypass
C35914	ADS-Chicago (SPS/Phillips)
C35902	ADS-Citgo
C35906	ADS-Fina
C35919	ADS-Zion
C35904	EDS-CCIS
C35903	Comdata
C35905	FDR
C35930	Gasboy Dial
C35907	Gascard
C35909	Generic Dial
C35908	PaymenTech (Gensar)
C35910	NaBANCO
C35911	NDC
C35913	Sinclair
C35915	T-Chek
C35916	UFDA
C35917	VDOT
C35918	VisaNet

PUMP INTERFACE

C09146	Pump Interface Manual
C01745	Gilbarco Interface Unit Manual
C35849	SDI/Wayne CAT Interface
C35924	SDI/Unitec Interface
C35933	Insight Interface

CARD ENCODING

C01687	CFN Card Encoding Manual

REMOTE COMMUNICATIONS

C09137	Site Controller Host Communications
C09138	Site Controller Raw Mode Communications
C09140	Applications Guide for Host-SC Communications
C09141	PC/SiteControl User's Manual

TECHNICAL PUBLICATIONS

C09151	SC I Technical Manual
internal	SC II Technical Manual
C01759	CFN Diagnostic Manual

CONTENTS

Section 3: **SITE CONTROLLER II**

Section 1

CFN SYSTEM

SYSTEM OVERVIEW

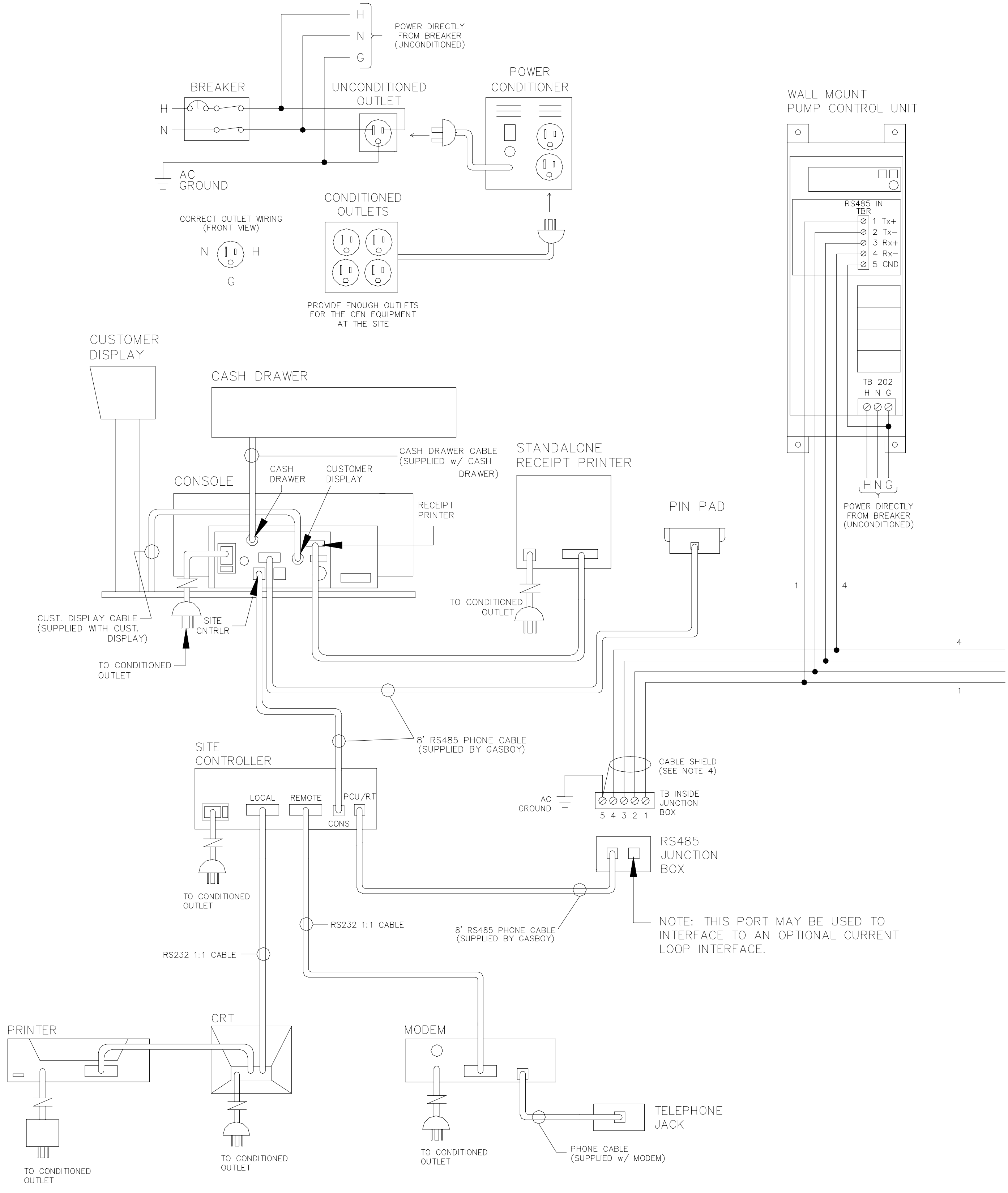
The GASBOY CFN Systems are microprocessor-based automated fueling systems. They consist of modular components and configurable software and can be custom-tailored to meet the needs of retail petroleum marketers and fleet owners. They can function unattended or as self-service and can be configured to accept debit, credit, club and fleet cards as well as cash.

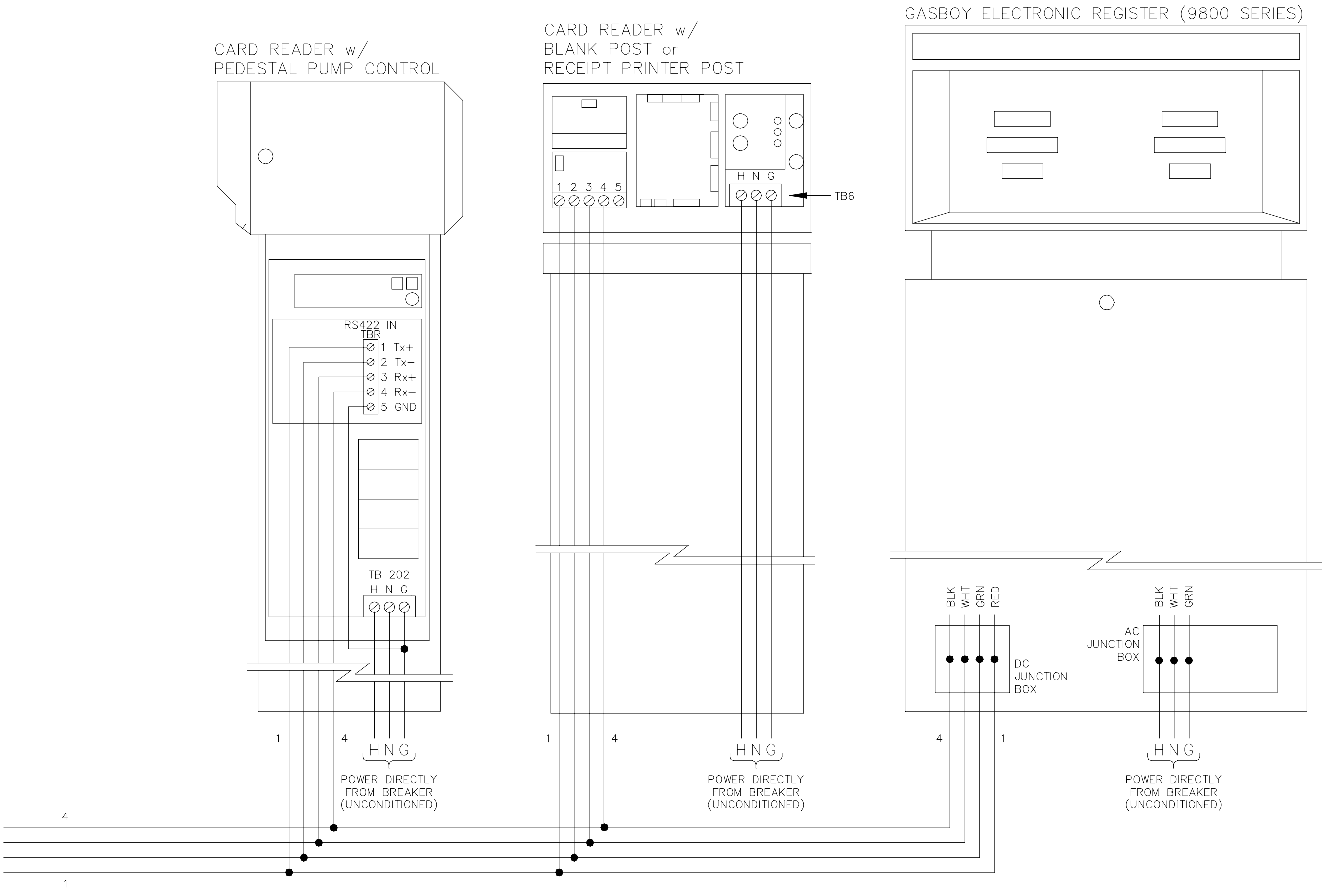
There are two system types available: Site Controller I and Site Controller II. In addition to the site controller, your system may have some or all of the following components:

- Island Card Reader
- Island Receipt Printer
- Pump Control Unit
- Postpay-Prepay Console or CheckPoint or Profit Point
- Standalone Receipt Printer (Epson or Star)
- PIN Pad (GASBOY or Verifone)
- Cash Drawer
- Customer Display
- Data Terminal or CRT
- Modem
- RS-485 Junction Boxes
- Power Conditioner
- Electronic Dispenser
- RS-485/RS-232 Converter (Tank Monitor or Profit Point)

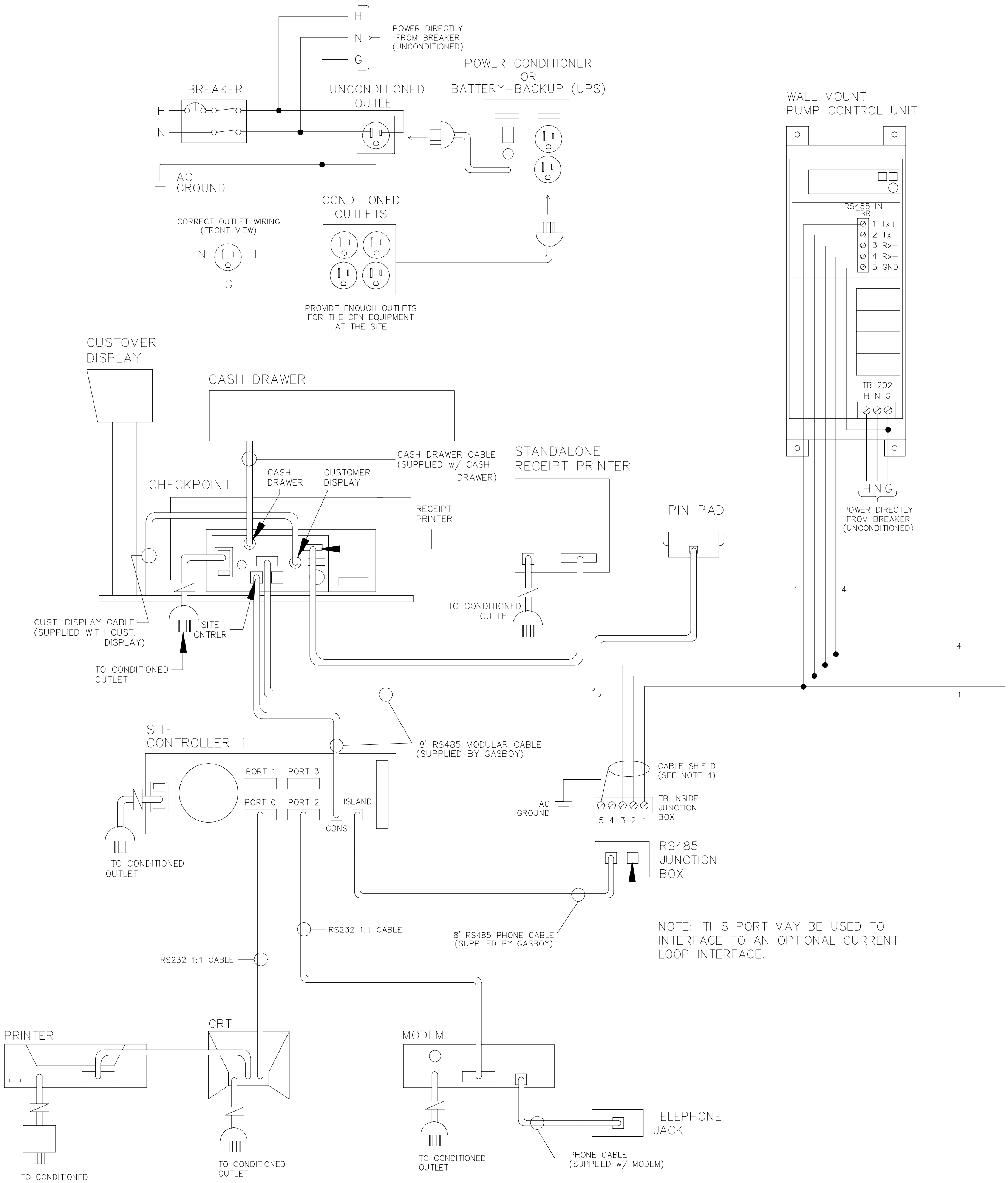
The following pages show system layouts for both the Site Controller I and Site Controller II and an RS-485 wiring diagram. These layouts show every component to indicate how they are interconnected. Components that are not part of your system should be ignored. See the *Installation Manual* for your system type for specific wiring and connection guidelines and precautions.

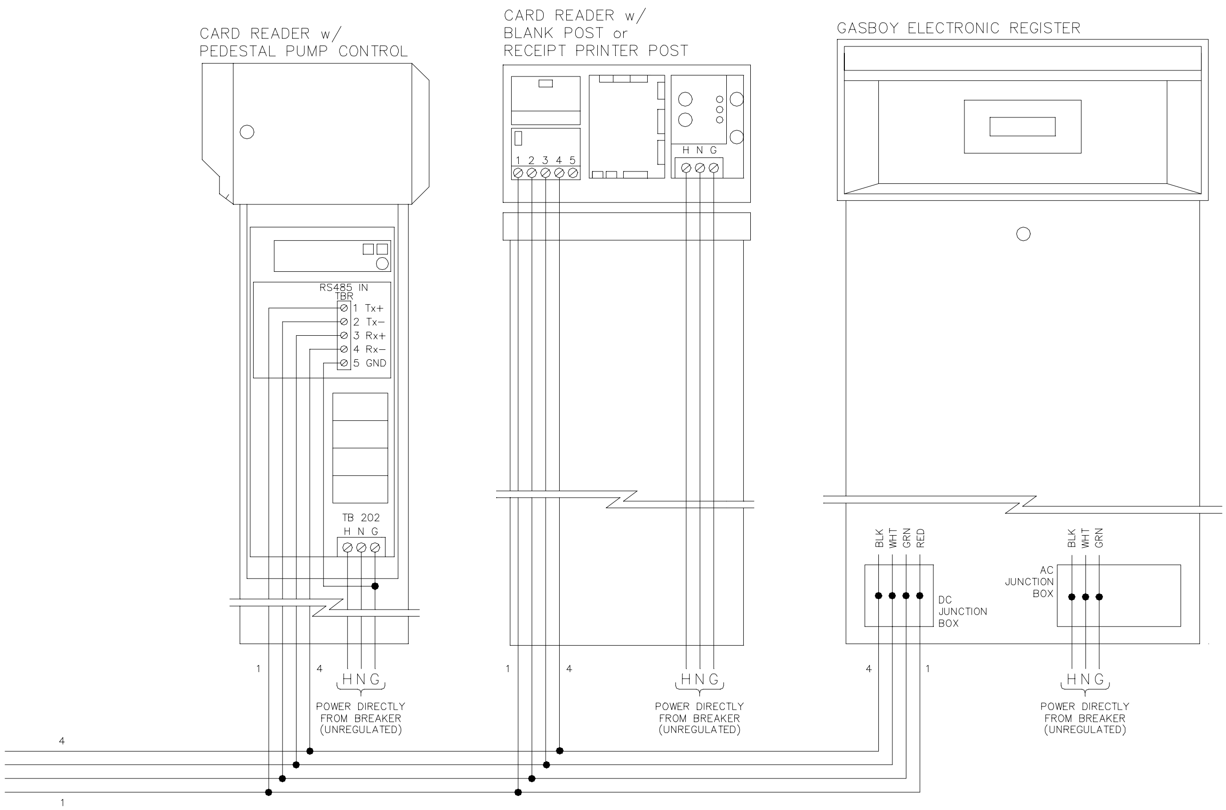
SITE CONTROLLER I SYSTEM LAYOUT



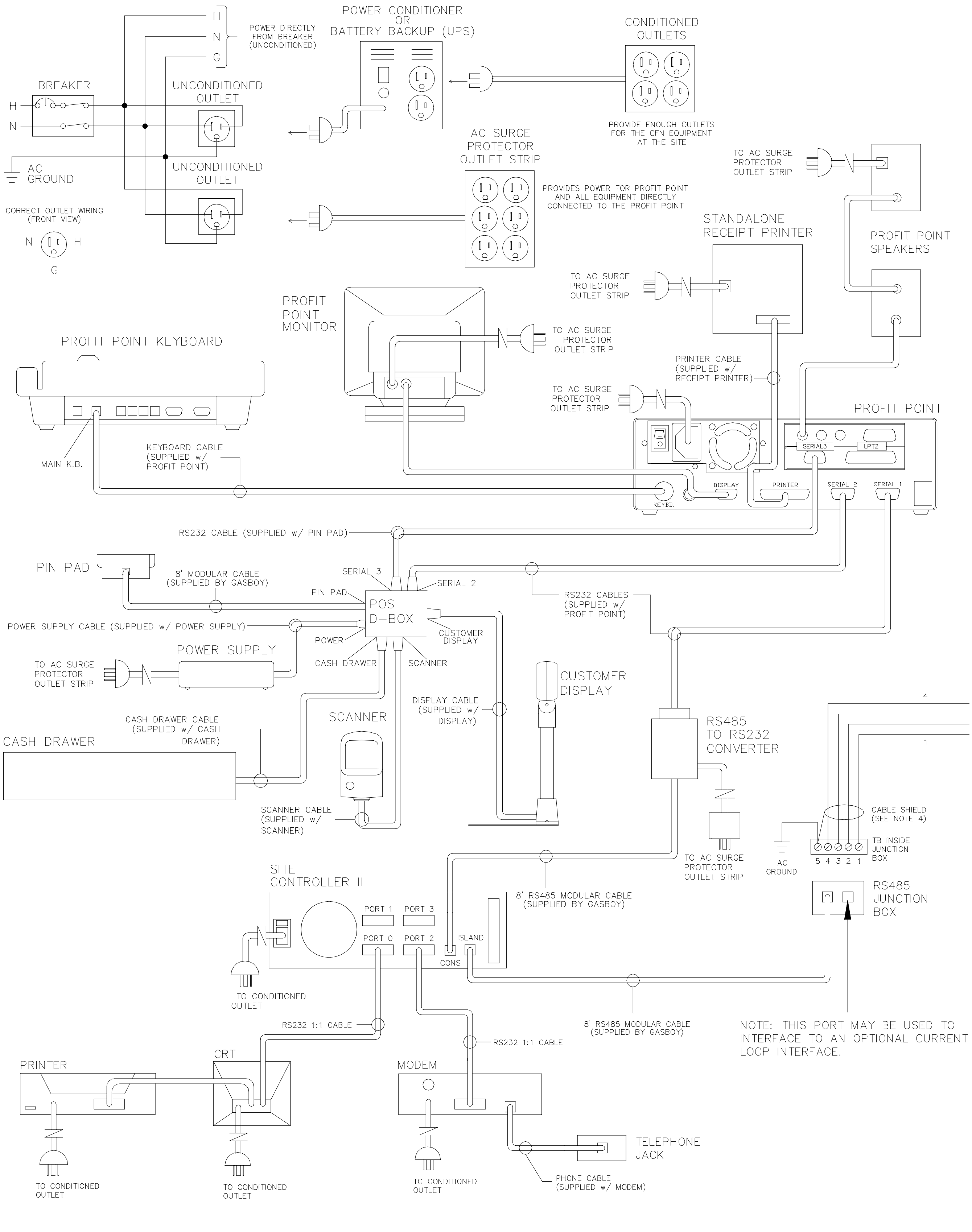

CARD READER w/
PEDESTAL PUMP CONTROL
RS422 IN
TBR
1 Tx+
2 Tx−
3 Rx+
4 Rx−
5 GND
TB 202
H N G
CARD READER w/
BLANK POST or
RECEIPT PRINTER POST
1 2 3 4 5
H N G
TB6
GASBOY ELECTRONIC REGISTER (9800 SERIES)
BLK WHT GRN RED
DC JUNCTION BOX
AC JUNCTION BOX
BLK WHT GRN
H N G
POWER DIRECTLY FROM BREAKER (UNCONDITIONED)
H N G
POWER DIRECTLY FROM BREAKER (UNCONDITIONED)
H N G
POWER DIRECTLY FROM BREAKER (UNCONDITIONED)
1
4
1
4
4
1
4
1

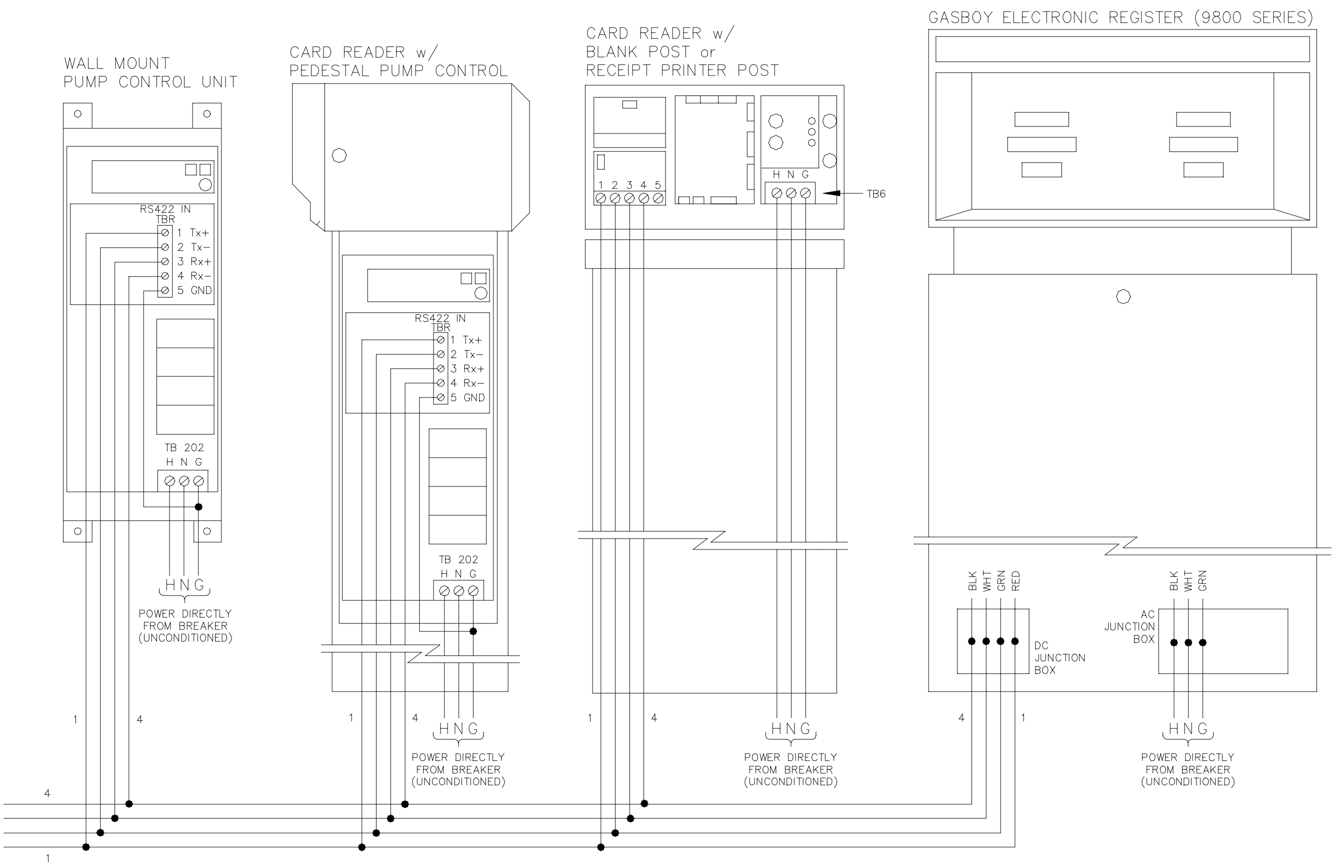
SITE CONTROLLER II SYSTEM LAYOUT WITH CHECKPOINT



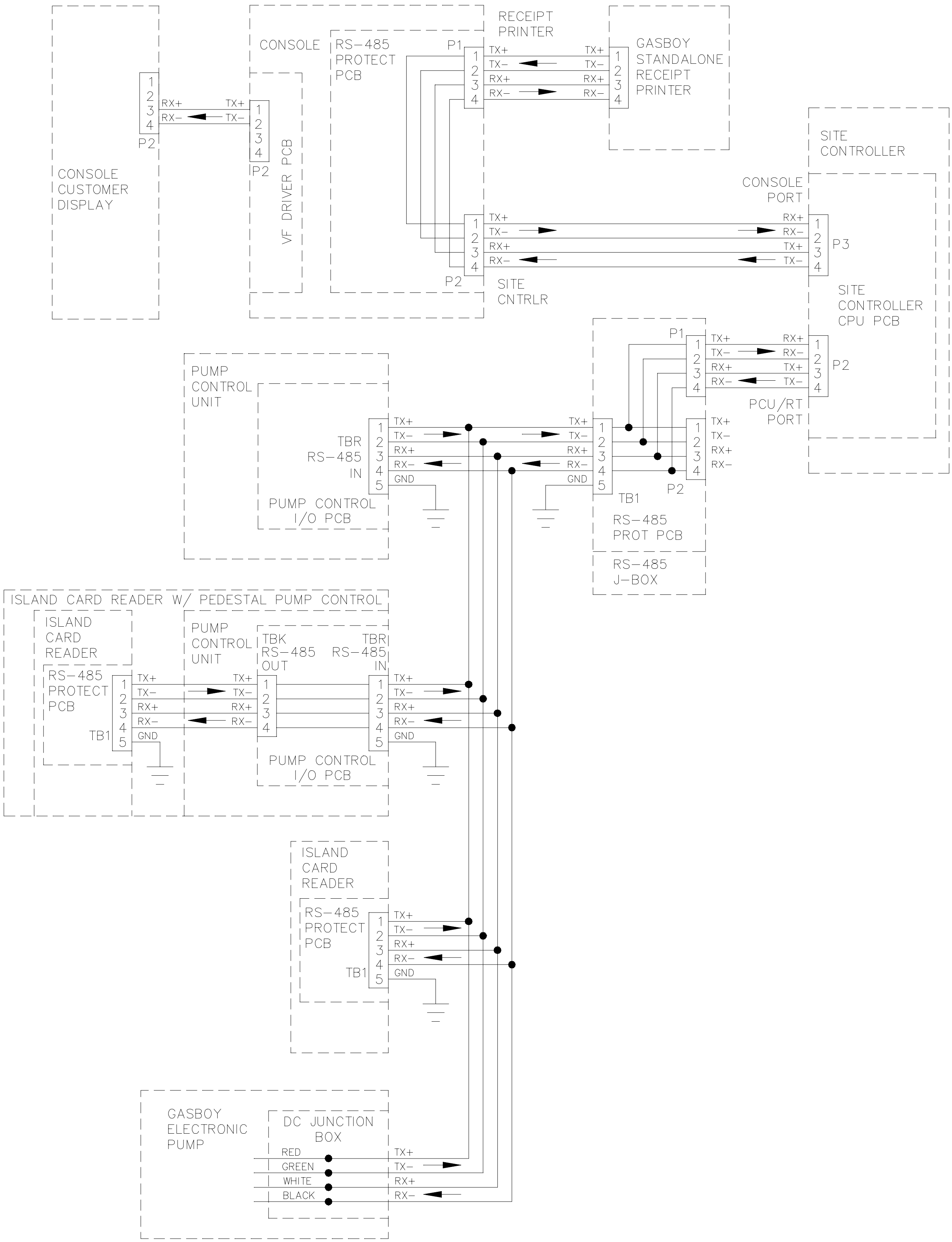

CARD READER w/
PEDESTAL PUMP CONTROL
CARD READER w/
BLANK POST or
RECEIPT PRINTER POST
GASBOY ELECTRONIC REGISTER
RS485 IN
TBR
1 Tx+
2 Tx-
3 Rx+
4 Rx-
5 GND
TB 202
H N G
1 2 3 4 5
H N G
BLK WHT GRN RED
BLK WHT GRN
AC JUNCTION BOX
DC JUNCTION BOX
HNG
POWER DIRECTLY FROM BREAKER (UNREGULATED)
HNG
POWER DIRECTLY FROM BREAKER (UNREGULATED)
HNG
POWER DIRECTLY FROM BREAKER (UNREGULATED)
1
4
1
4
4
1
4
1

SITE CONTROLLER II SYSTEM LAYOUT WITH PROFIT POINT




WALL MOUNT
PUMP CONTROL UNIT
RS422 IN
TBR
1 Tx+
2 Tx−
3 Rx+
4 Rx−
5 GND
TB 202
H N G
POWER DIRECTLY
FROM BREAKER
(UNCONDITIONED)
CARD READER w/
PEDESTAL PUMP CONTROL
CARD READER w/
BLANK POST or
RECEIPT PRINTER POST
TB6
GASBOY ELECTRONIC REGISTER (9800 SERIES)
BLK
WHT
GRN
RED
DC
JUNCTION
BOX
AC
JUNCTION
BOX

RS-485 WIRING FOR SC I AND SC II



ABOUT THIS BOOK

This book was written to assist the authorized service representative (ASR) or technician in troubleshooting the CFN systems and their components. The book is broken into sections, one for each component. Each section consists of:

- a description of the component
- a visual layout
- wiring connections
- illustrations of the programmed circuit boards and their indicators, connectors, jumpers, and switches
- diagnostic test procedures
- a troubleshooting (Problems) section.

USING THE PROBLEMS SECTION

The Problems section for each component lists common system problems, probable causes, and corrective action to be taken. The probable causes and checks for each problem are presented in logical sequence, allowing you to rule out one set of symptoms before going on to the next. Thus, following the procedures as listed should help isolate your problem.

A double line at the end of a problem sequence indicates the last of the checks for that problem. If your system still is not working, recheck your symptoms and follow another problem sequence if necessary. If you encounter problems you cannot solve by using this manual, call GASBOY Technical Service 1-800-444-5529.

Checks and corrective actions requiring voltage measurements assume familiarity with and are done with a voltmeter unless noted that an oscilloscope or ohmmeter should be used.

TERMS USED IN THIS BOOK

The following symbols and terms are used in the diagrams and tables in this book:

COM	Common
NC	Normally closed
NO	Normally open
Rx+, Rx-	RS-485 receive signals
Sig	signal
TB	terminal block
TBK, TBR, TBP, TBS	RS-485 terminal blocks. Respectively, output, input, pulser, and switch detect.
Tx+, Tx-	RS-485 transmit signals
VAC, VDC	Volts AC and Volts DC.

A horizontal line appearing above functions indicates that the function is active when 0 VDC is measured. Any other measurement indicates the function is not active.

$\overline{\text{POWER FAIL}}$ indicates that when voltage is measured at 0 VDC, a power fail condition is active.

The following symbols indicate wave patterns you may see when measuring voltages with an oscilloscope:

SITE CONTROLLER I

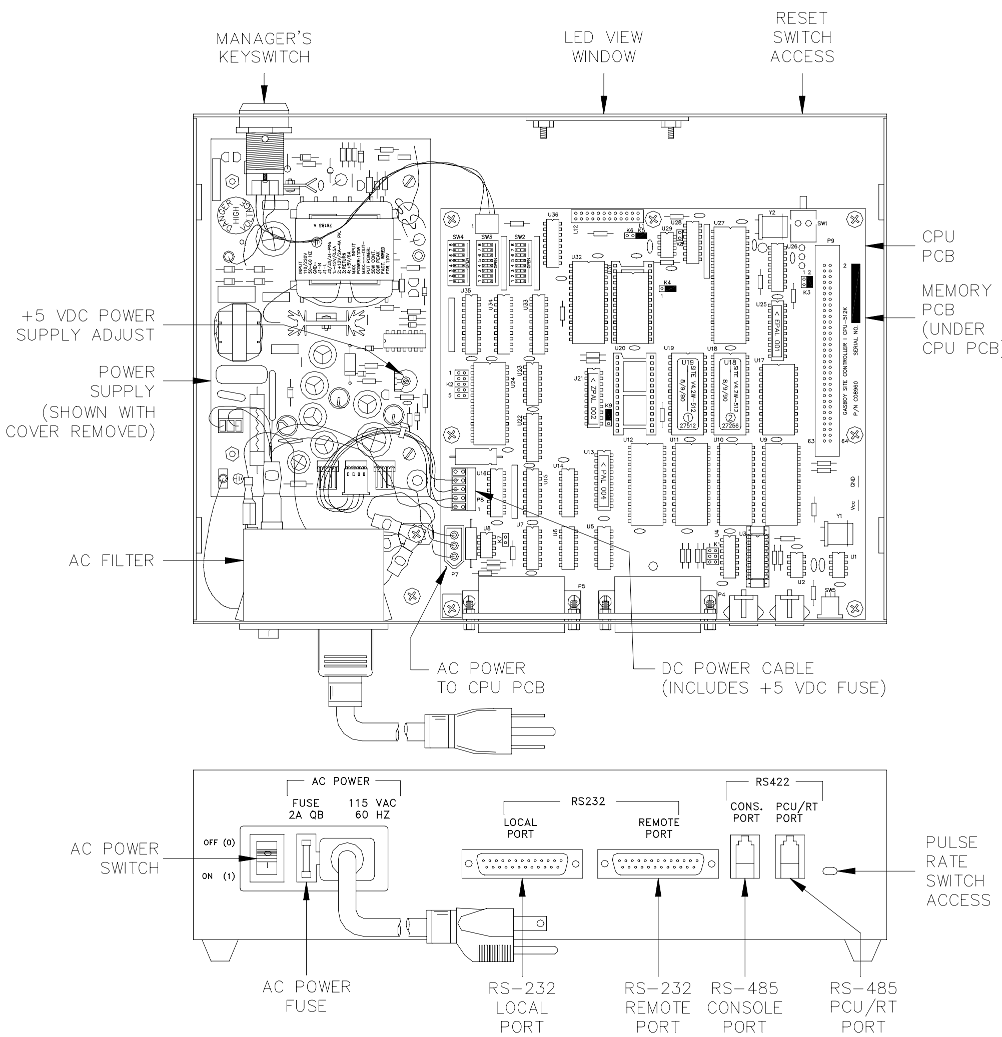
DESCRIPTION

The site controller is the heart of the CFN system at the fueling site. It controls and allows interaction between all your automated fueling equipment, including electronic pumps, pump control devices, and terminals that are activated by a customer. All transaction and system data is stored in the battery-backed RAM of this unit. It uses advanced microprocessor technology and incorporates multiple hardware and software safeguards. A built-in keyswitch can be used to limit access to specified commands.

The Site Controller I contains two RS-232 ports. The local port is used for communication to a data terminal (logger). The remote port is used for communication through a modem or can be directly connected to a Site Controller II, or a computer.

Two RS-485 ports are provided for communication with other CFN devices at the fueling site. One of these ports connects to the CFN RS-485 junction box. The second port connects to the postpay-prepay console.

Layout

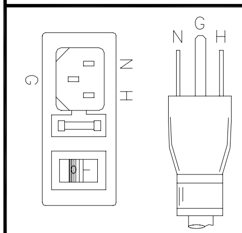


WIRING

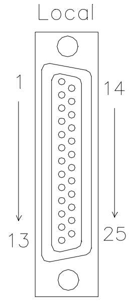
All field wiring is made to the unit by plug-in connectors. The AC power for the unit comes from the AC power plug. The RS-485 communication comes through the 1:1 modular cable that is connected to the RS-485 junction box. Communication to the postpay-prepay console goes through the RS-485 connector designated for the console. See the *CFN SCI Installation Manual* for detailed wiring instructions.

Connectors

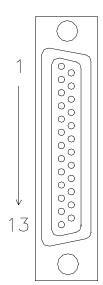
AC Power

Pinout	Pin	Function	Voltage
	H	AC hot input	115 VAC
	N	AC neutral input	AC neutral
	G	AC ground input	AC ground

RS-232 - Local Communications Port

Pinout	Pin	Function	Input/Output
Local 	1	Protective ground	Ground
	2	TxD – Transmit data	Input
	3	RxD – Receive data	Output
	5	CTS – Clear to send	Output
	6	DSR – Data set ready (Connected to 8)	Output
	7	Signal ground	Ground
	8	DCD – Carrier detect (Connected to 6)	Output
	20	DTR – Data terminal ready	Input

RS-232 - Remote Communications Port

Pinout	Pin	Function	Input/Output
Remote 	1	Protective ground	Ground
	2	TxD – Transmit data	Output
	3	RxD – Receive data	Input
	4	RTS – Request to send	Output
	5	CTS – Clear to send	Input
	6	DSR – Data set ready	Input
	7	Signal ground	Ground
	8	DCD – Carrier detect	Input
	15	RxC – Receive clock, synchronous	Not used
	17	TxC – Transmit clock, synchronous	Not used
	20	DTR – Data terminal ready	Output
	23	ExC – Data rate selector	Output
	24	EX – External serial clock, synchronous	Not used

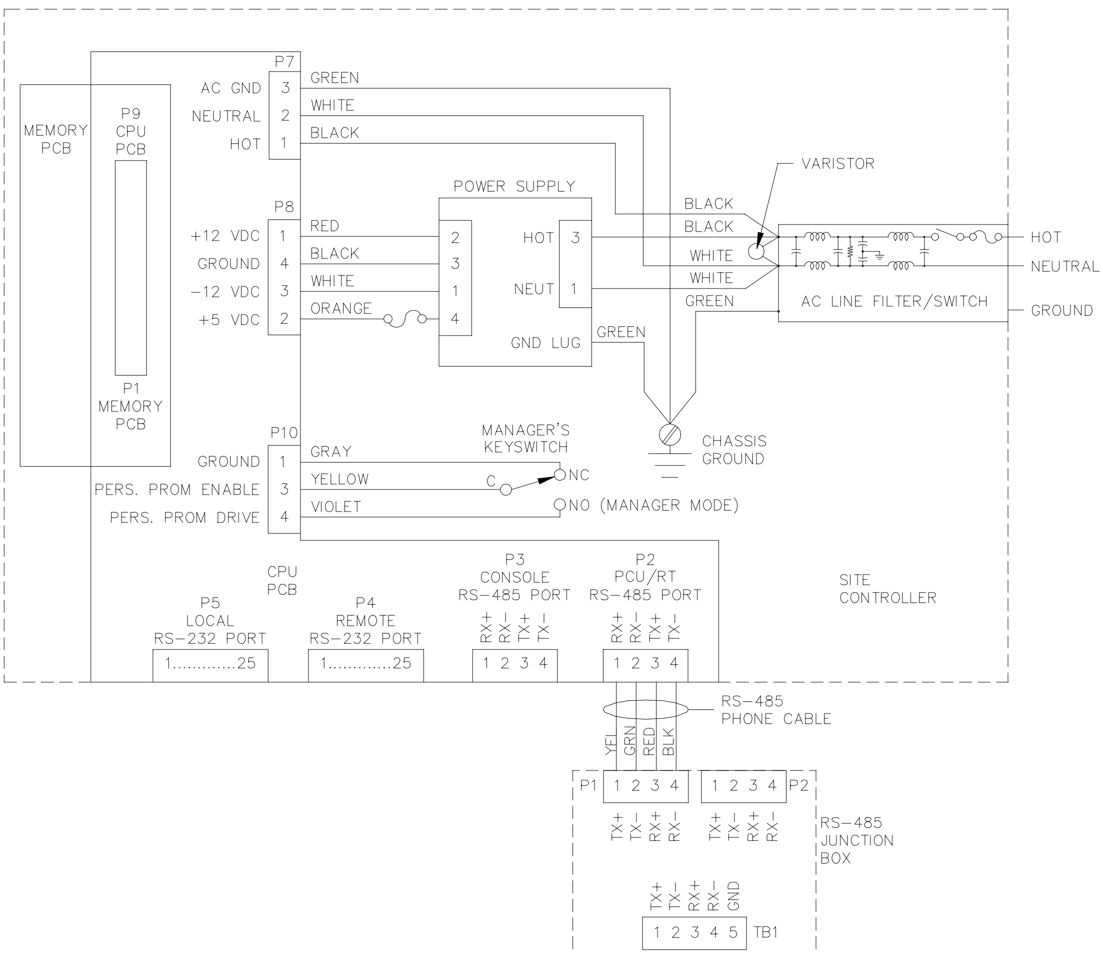
RS-485 - PCU/RT Communications Port

Pinout	Pin	Function		Voltage
4 3 2 1	1	RS−485 Rx+	From	⎍⎍ +5 VDC signal
	2	RS−485 Rx−	Island Loop	between pins 1 & 2
	3	RS−485 Tx+	To	⎍⎍ +5 VDC signal
	4	RS−485 Tx−	Island Loop	between pins 3 & 4

RS-485 - Console Communications Port

Pinout	Pin	Function		Voltage
4 3 2 1	1	RS−485 Rx+	From	⎍⎍ +5 VDC signal
	2	RS−485 Rx−	Console Loop	between pins 1 & 2
	3	RS−485 Tx+	To	⎍⎍ +5 VDC signal
	4	RS−485 Tx−	Console Loop	between pins 3 & 4

Chassis Wiring



SITE CONTROLLER CPU PCB

The site controller CPU PCB controls all activity in the site controller. There are three versions of this PCB:

Site Controller CPU (C04835)

This is the original CPU PCB and is in very few site controllers. It controlled up to 128K of RAM. This PCB is not documented in this manual.

Site Controller Memory Plus CPU (C04940)

This version provided additional space for on-board RAM and ROM. It controls up to 128K of RAM.

Site Controller I CPU - 512K (C05820)

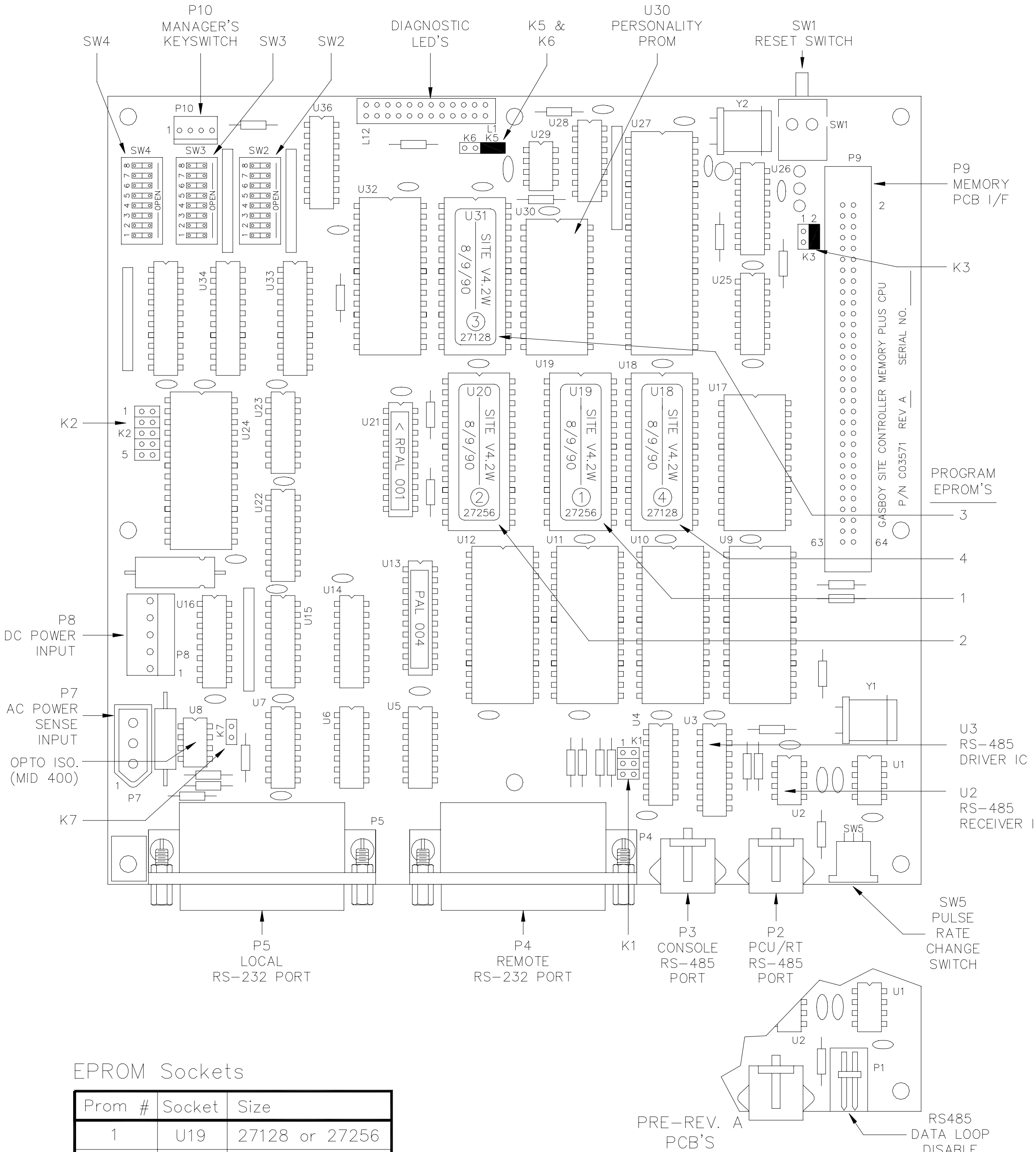
This version allows the use of 128K or 512K of RAM.

NOTE: EPROM's are not interchangeable between CPU PCB's.

The CPU PCB:

- processes all site controller data
- communicates to all CFN equipment via the RS-485 lines
- communicates to the RS-232 equipment
- controls the memory PCB
- contains the system program (EPROM & EEROM)
- contains on-board scratchpad RAM
- provides diagnostic LED's
- provides a manual reset switch

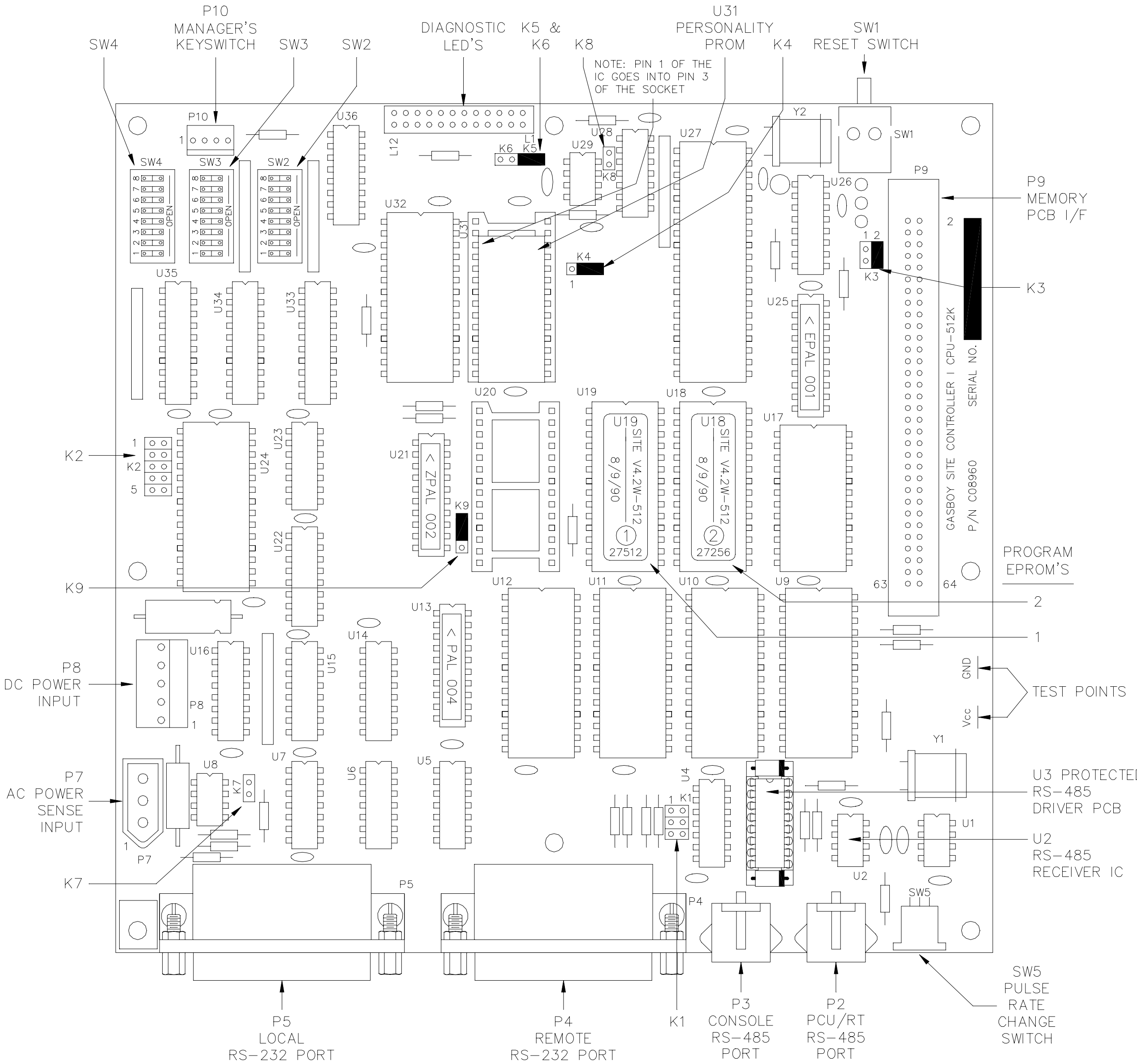
Layout - Site Controller Memory Plus CPU PCB (C04940)



EPROM Sockets

Prom #	Socket	Size
1	U19	27128 or 27256
2	U20	27128 or 27256
3	U31	27128
4	U18	27128

Layout - Site Controller I CPU - 512K PCB (C05820)

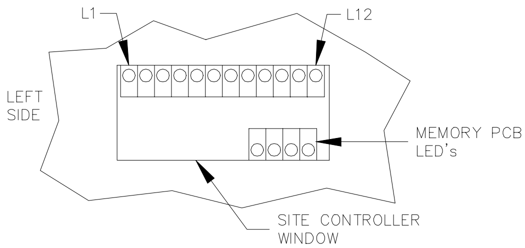


EPROM Sockets

Prom #	Socket	Size
1	U19	27512
2	U18	27256

LED Indicators

LED indicators are provided to allow you to monitor the CPU's operation.



LED	Function		Status
L1	RS-485 transmit	Console port	Flash when console is communicating
L2	RS-485 receive		
L3	RS-485 transmit	PCU/RT port	Flash when island devices communicating
L4	RS-485 receive		
L5	Deadman timer refresh		
L6	Memory bank enable		Always on
L7	Not used		Off
L8	Not used		Off
L9	Not used		Off
L10	Not used		Off
L11	Not used		Off
L12	Not used		Off

Connectors

P1 - RS-485 Disable

Pinout	Pin	Function
P1 (1, 2, 3, 4; EDGE OF PCB)	1	RS-485 disable – Never used
	2	
	3	
	4	

NOTE: P1 is found only on the original Site Controller CPU board and pre-Rev. A Memory Plus CPU boards. It is not present on Rev A Memory Plus or 512 CPU boards.

P2 - RS-485 PCU/RT Communications Port
P3 - RS-485 Console Communications Port
P4 - RS-232 Remote Communications Port
P5 - RS-232 Local Communications Port
See the charts shown earlier in this section for the exact pinouts of these connectors.

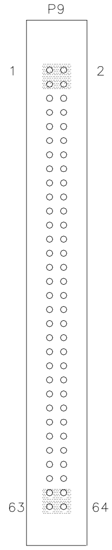
P7 - AC Power Sense Input
This is used to monitor the AC voltage so the microprocessor can be warned of an impending power failure.

Pinout	Pin	Wire	Function	Voltage
P7	1	Green	AC ground	AC ground
	2	White	AC neutral input	AC neutral
	3	Black	AC hot input	115 VAC

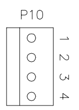
P8 - DC Power Input

Pinout	Pin	Wire	Function	Voltage
P8	1	Red	+12 VDC in	+12 VDC –.5/+1.5
	2	Orange	+5 VDC in	+5 VDC ±.1
	3	White	–12 VDC in	–12 VDC –.5/+1.0
	4	Black	DC ground	DC ground
	5		N/C	

P9 - Memory PCB Interface

Pinout	Pin	Function	Voltage
Connector View From Component Side of PCB P9  Shaded pins indicate test points	1–4	DC ground	DC ground
	5	BA13 – Address line 13 (512 CPU only)	+5 VDC – On
	6	BA14 – Address line 14 (512 CPU only)	+5 VDC – On
	7–8	N/C	
	9–10	VBB – Battery voltage from memory PCB	0 VDC
	11	$\overline{\text{POWER FAIL}}$ – DC power fail	+5 VDC – Normal
	12	N/C	
	13	R/$\overline{\text{W}}$	0 VDC – Write
	14	E – 6809 system clock	+5 VDC Signal
	15	BATT STATUS – Battery status from memory PCB	0 VDC – Normal
	16	A12 – Address 12	+5 VDC – On
	17	MEM STATUS – Not used, grounded on memory PCB	0 VDC – Normal
	18	A11 – Address 11	+5 VDC – On
	19	$\overline{\text{MRDY}}$ – extends access time for slower memory devices	0 VDC – On
	20	A10 – Address 10	+5 VDC – On
	21	$\overline{\text{RESET}}$ – Power–on reset to memory PCB	+5 VDC – Normal
	22	A9 – Address 9	+5 VDC – On
	23	$\overline{\text{R}}$/W	+5 VDC – Write
	24	A8 – Address 8	+5 VDC – On
	25	$\overline{\text{S15}}$ – Paged memory bank 15 select	0 VDC – On
	26	A7 – Address 7	+5 VDC – On
	27	$\overline{\text{S14}}$ – Paged memory bank 14 select	0 VDC – On
	28	A6 – Address 6	+5 VDC – On
	29	$\overline{\text{S13}}$ – Paged memory bank 13 select	0 VDC – On
	30	A5 – Address 5	+5 VDC – On
	31	$\overline{\text{S12}}$ – Paged memory bank 12 select	0 VDC – On
	32	A4 – Address 4	+5 VDC – On
	33	$\overline{\text{S11}}$ – Paged memory bank 11 select	0 VDC – On
	34	A3 – Address 3	+5 VDC – On
	35	$\overline{\text{S10}}$ – Paged memory bank 10 select	0 VDC – On
	36	A2 – Address 2	+5 VDC – On
	37	$\overline{\text{S9}}$ – Paged memory bank 9 select	0 VDC – On
	38	A1 – Address 1	+5 VDC – On
	39	$\overline{\text{S8}}$ – Paged memory bank 8 select	0 VDC – On
	40	A0 – Address 0	+5 VDC – On
	41	$\overline{\text{S7}}$ – Paged memory bank 7 select	0 VDC – On
	42	D7 – Data 7	+5 VDC – On
	43	$\overline{\text{S6}}$ – Paged memory bank 6 select	0 VDC – On
	44	D6 – Data 6	+5 VDC – On
	45	$\overline{\text{S5}}$ – Paged memory bank 5 select	0 VDC – On
	46	D5 – Data 5	+5 VDC – On
	47	$\overline{\text{S4}}$ – Paged memory bank 4 select	0 VDC – On
	48	D4 – Data 4	+5 VDC – On
	49	$\overline{\text{S3}}$ – Paged memory bank 3 select	0 VDC – On
	50	D3 – Data 3	+5 VDC – On
	51	$\overline{\text{S2}}$ – Paged memory bank 2 select	0 VDC – On
	52	D2 – Data 2	+5 VDC – On
	53	$\overline{\text{S1}}$ – Paged memory bank 1 select	0 VDC – On
	54	D1 – Data 1	+5 VDC – On
	55	$\overline{\text{S0}}$ – Paged memory bank 0 select	0 VDC – On
	56	D0 – Data 0	+5 VDC – On
	57	$\overline{\text{CLOCK SEL}}$	0 VDC – On
	58	$\overline{\text{CLOCK IRQ}}$ – Clock interrupt to micro, not used	
	59	BS0 – Board select 0	+5 VDC – On
	60	BS1 – Board select 1	+5 VDC – On
	61–64	+5 VDC	+5 VDC

P10 - Manager's Keyswitch

Pinout	Pin	Wire	Switch	Function	Voltage
	1	Gray	NC	DC ground	DC ground
	2			Same as pin 3	0 VDC – Off (key removed)
	3	Yellow	C	Personality prom enable	+5 VDC – On (manager mode)
	4	Violet	NO	Personality prom drive	+5 VDC signal (SW4–8 closed)

Jumpers

Site Controller Memory Plus CPU PCB

Jumper	Function	Setting
K1–1,2,3	Synchronous communication signals disabled	OPEN
K2–1,2,3,4,5	Timer signals disabled	OPEN
K3–1	Single step software debug disabled	OPEN
K3–2	Deadman timer enabled	JUMPERED
K5	U32 +5 VDC supply voltage enabled	JUMPERED
K6	U32 battery backup disabled	OPEN
K7	AC power fail signal enabled	JUMPERED–PCB's w/ P1 connector
		OPEN–PCB's w/ SW5 switch
K8	Generate hardware reset signal disabled	OPEN

Site Controller I CPU - 512K PCB

Jumper	Function	Setting
K1–1,2,3	Synchronous communication signals disabled	OPEN
K2–1,2,3,4,5	Timer signals disabled	OPEN
K3–1	Single step software debug disabled	OPEN
K3–2	Deadman timer enabled	JUMPERED
K4–1&2 or	U31 is a 2864 EEPROM	OPEN
K4–2&3	U31 is a 2816 EEPROM	JUMPERED
K5	U32 +5 VDC supply voltage enabled	JUMPERED
K6	U32 battery backup disabled	OPEN
K7	AC power fail signal enabled	OPEN
K8	Generate hardware reset signal disabled	OPEN
K9–1&2 or	U19 & U20 are 27512 EPROM's	JUMPERED
K9–2&3	U19 & U20 are not 27128 or 27256 EPROM's	OPEN

Switches

SW1 - Reset Switch

The reset switch starts a hardware and software reset of the CPU PCB. The SW2, SW3, and SW4 switches are read when reset occurs (and at power up). This switch should be pressed whenever switch settings are changed while the power is on.

Switch	Function
SW1	Push to reset

SW2 - Address Switches

An address must be set up to identify the site controller. For most applications, the address of the unit should be set to 1. This is applicable for all situations except when the unit is used along with other site controllers in an on-line loop. If the unit is used in an on-line loop, the address acts as a unique identifier for the site controller. Addressing should start at 1 and continue sequentially. The physical wiring order does not have to correspond with the address order, that is the first unit does not have to be address 1. The chart below gives the switch settings for the available addresses. *Once again, if the unit is not used in an on-line mode, the address should be set to 1.*

	SW2−3	SW2−4	SW2−5	SW2−6	SW2−7	SW2−8		SW2−3	SW2−4	SW2−5	SW2−6	SW2−7	SW2−8
Address	ADDR32	ADDR16	ADDR8	ADDR4	ADDR2	ADDR1	Address	ADDR32	ADDR16	ADDR8	ADDR4	ADDR2	ADDR1
1	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	33	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
2	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	34	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
3	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	CLOSED	35	OPEN	CLOSED	CLOSED	CLOSED	OPEN	CLOSED
4	CLOSED	CLOSED	CLOSED	CLOSED	OPEN	OPEN	36	OPEN	CLOSED	CLOSED	CLOSED	OPEN	OPEN
5	CLOSED	CLOSED	CLOSED	OPEN	CLOSED	CLOSED	37	OPEN	CLOSED	CLOSED	OPEN	CLOSED	CLOSED
6	CLOSED	CLOSED	CLOSED	OPEN	CLOSED	OPEN	38	OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN
7	CLOSED	CLOSED	CLOSED	OPEN	OPEN	CLOSED	39	OPEN	CLOSED	CLOSED	OPEN	OPEN	CLOSED
8	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN	40	OPEN	CLOSED	CLOSED	OPEN	OPEN	OPEN
9	CLOSED	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	41	OPEN	CLOSED	OPEN	CLOSED	CLOSED	CLOSED
10	CLOSED	CLOSED	OPEN	CLOSED	CLOSED	OPEN	42	OPEN	CLOSED	OPEN	CLOSED	CLOSED	OPEN
11	CLOSED	CLOSED	OPEN	CLOSED	OPEN	CLOSED	43	OPEN	CLOSED	OPEN	CLOSED	OPEN	CLOSED
12	CLOSED	CLOSED	OPEN	CLOSED	OPEN	OPEN	44	OPEN	CLOSED	OPEN	CLOSED	OPEN	OPEN
13	CLOSED	CLOSED	OPEN	OPEN	CLOSED	CLOSED	45	OPEN	CLOSED	OPEN	OPEN	CLOSED	CLOSED
14	CLOSED	CLOSED	OPEN	OPEN	CLOSED	OPEN	46	OPEN	CLOSED	OPEN	OPEN	CLOSED	OPEN
15	CLOSED	CLOSED	OPEN	OPEN	OPEN	CLOSED	47	OPEN	CLOSED	OPEN	OPEN	OPEN	CLOSED
16	CLOSED	CLOSED	OPEN	OPEN	OPEN	OPEN	48	OPEN	CLOSED	OPEN	OPEN	OPEN	OPEN
17	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	49	OPEN	OPEN	CLOSED	CLOSED	CLOSED	CLOSED
18	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	OPEN	50	OPEN	OPEN	CLOSED	CLOSED	CLOSED	OPEN
19	CLOSED	OPEN	CLOSED	CLOSED	OPEN	CLOSED	51	OPEN	OPEN	CLOSED	CLOSED	OPEN	CLOSED
20	CLOSED	OPEN	CLOSED	CLOSED	OPEN	OPEN	52	OPEN	OPEN	CLOSED	CLOSED	OPEN	OPEN
21	CLOSED	OPEN	CLOSED	OPEN	CLOSED	CLOSED	53	OPEN	OPEN	CLOSED	OPEN	CLOSED	CLOSED
22	CLOSED	OPEN	CLOSED	OPEN	CLOSED	OPEN	54	OPEN	OPEN	CLOSED	OPEN	CLOSED	OPEN
23	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED	55	OPEN	OPEN	CLOSED	OPEN	OPEN	CLOSED
24	CLOSED	OPEN	CLOSED	OPEN	OPEN	OPEN	56	OPEN	OPEN	CLOSED	OPEN	OPEN	OPEN
25	CLOSED	OPEN	OPEN	CLOSED	CLOSED	CLOSED	57	OPEN	OPEN	OPEN	CLOSED	CLOSED	CLOSED
26	CLOSED	OPEN	OPEN	CLOSED	CLOSED	OPEN	58	OPEN	OPEN	OPEN	CLOSED	CLOSED	OPEN
27	CLOSED	OPEN	OPEN	CLOSED	OPEN	CLOSED	59	OPEN	OPEN	OPEN	CLOSED	OPEN	CLOSED
28	CLOSED	OPEN	OPEN	CLOSED	OPEN	OPEN	60	OPEN	OPEN	OPEN	CLOSED	OPEN	OPEN
29	CLOSED	OPEN	OPEN	OPEN	CLOSED	CLOSED	61	OPEN	OPEN	OPEN	OPEN	CLOSED	CLOSED
30	CLOSED	OPEN	OPEN	OPEN	CLOSED	OPEN	62	OPEN	OPEN	OPEN	OPEN	CLOSED	OPEN
31	CLOSED	OPEN	OPEN	OPEN	OPEN	CLOSED	63	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSED
32	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN	64	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN

SW3 - Baud Rate Switches

Baud Rate	RS-232 LOCAL PORT		RS-232 REMOTE PORT	
	SW3-1	SW3-2	SW3-3	SW3-4
300	CLOSED	CLOSED	CLOSED	CLOSED
1200	CLOSED	OPEN	CLOSED	OPEN
2400	OPEN	CLOSED	OPEN	CLOSED
9600	OPEN	OPEN	OPEN	OPEN

Baud Rate	RS-485 CONSOLE PORT		RS-485 ISLAND PORT	
	SW3-5	SW3-6	SW3-7	SW3-8
9600	OPEN	OPEN	OPEN	OPEN

Miscellaneous Switches

Switch	Function		Setting
SW2-1	DEBUG	Debug mode disabled	Open
SW2-2		Not used	Don't care
SW4-1	PULSE	Enable SW5 (pulse rate change switch)	Open
SW4-2	SIGN-ON	Sign-on is loadable	Open
SW4-3		Not used	Don't care
SW4-4		Not used	Don't care
SW4-5		Not used	Don't care
SW4-6		Not used	Don't care
SW4-7		Not used	Don't care
SW4-8	CONFIG	Enable personality prom changes	Closed

Some of these switches work in conjunction with the position of the Manager's keyswitch. See **Manager's Keyswitch** on the next page.

DEBUG This switch is used to put the unit in debug mode. When closed the unit will run in debug. The switch should normally be set in the open position for normal run mode.

PULSE This switch (used in conjunction with SW5) is used to disable the system's ability to change the pump type and pulser divisor. When this switch is open and SW5 is to the right (when looking at the rear of the unit), you can change the pump type and pulser divisor.

SIGN-ON This switch controls the type of sign-on needed to log-on to the system. When open, the sign-on loaded with the LOAD SIGNON command is used. When closed, the sign-on configured in the personality EEROM (default sign-on) is used.

CONFIG This switch controls the system's ability to write to (configure) the personality EEROM. When closed, personality EEROM changes can be made. When open, they cannot. Attempting to write changes to the personality EEROM while this switch is open, will result in WRITE ERROR messages displayed on the terminal.

SW5 - Pulser/Pump Changes Switch

This switch is used for enabling and disabling the ability to change the pulse rates and pump types of the system. This switch can be sealed by Weights and Measures to prevent tampering at the site.

Switch	Position	Function
SW5 (Left shown)	Left	Pulser change disabled
	Right	Pulser change enabled

Manager's Keyswitch

The manager's keyswitch is used to provide security in the system. The notes below indicate the relationship of the switch with other switches and functions.

- To run protected commands and command options or to read the personality EEPROM configurations, the manager's keyswitch must be on.
- To change personality EEPROM configurations (except PCU type and pulser divisor), the manager's keyswitch must be on and SW4-8 must be closed.
- To change PCU type and pulser divisors, the manager's keyswitch must be on, SW4-1 must be open, SW4-8 must be closed, and SW5 must be to the right.

NOTE: If SW5 is not present on the CPU PCB, SW4-1 and SW4-8 are don't cares. You can change all personality EEPROM configurations by simply turning the manager's keyswitch on.

Test Points - CPU PCB

CPU PCB	Test Points		Voltage
	+	–	
C05820 512K	Vcc	Gnd	+4.90 – +5.10
C04940 Memory Plus	Pins 63–64	Pins 1–2	+4.90 – +5.10

SITE CONTROLLER MEMORY PCB

The site controller Memory PCB comes in four different versions:

Site Controller Memory PCB (C04837)

This version is used only on older models of Site Controller I. It can contain up to 128K of RAM and is usually stuffed with RAM's in all sockets to reach that maximum capacity.

Site Controller II 128K (C02117)

This is the newer version of the 128K memory PCB. It is used for Site Controller I only. It always comes with 128K and can serve as a drop-in replacement for the previous 128K memory PCB.

Site Controller II 512K (C08331)

This version of memory PCB is the same as used in the Site Controller II. It contains 32K RAM's and provides 512K of memory.

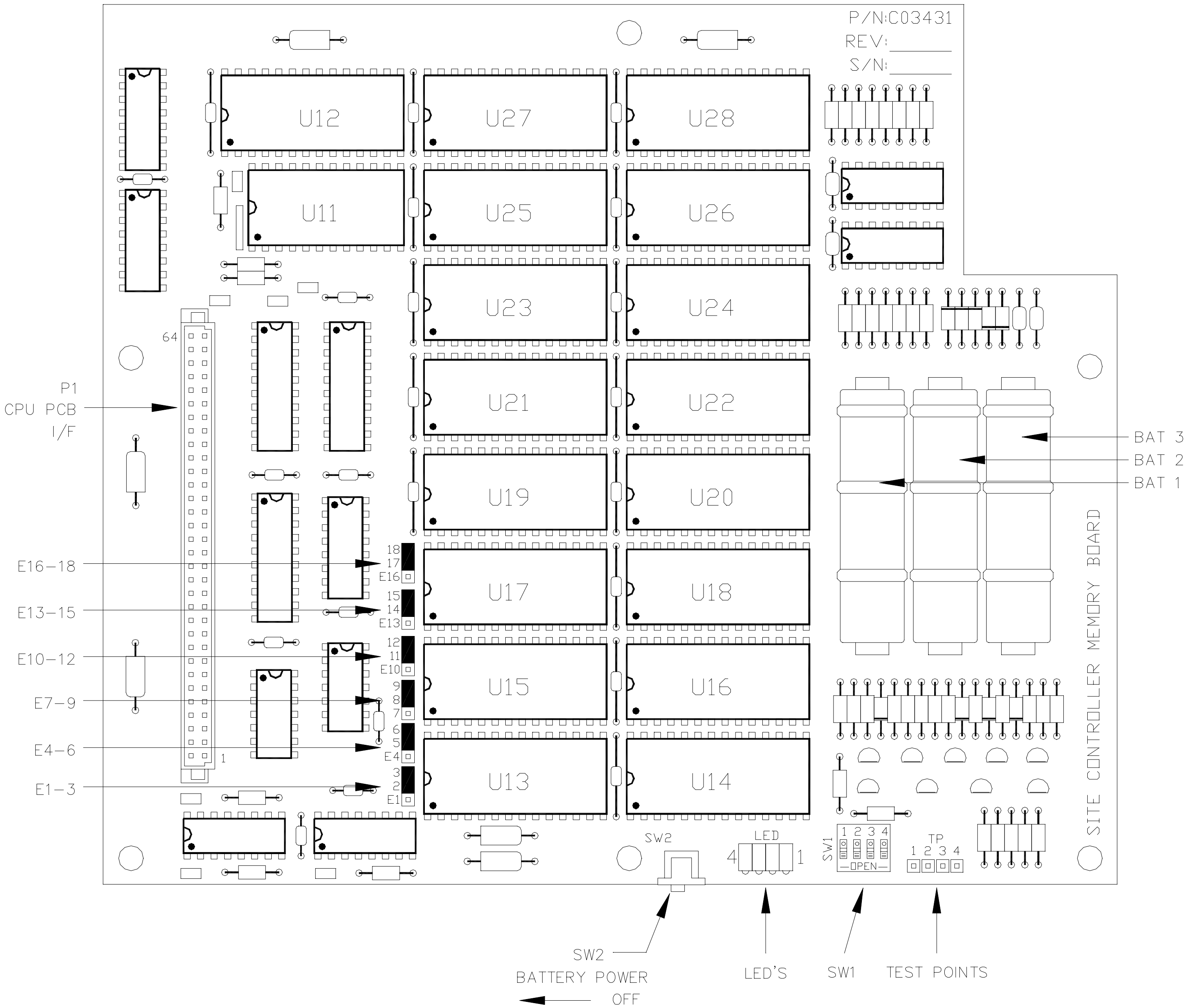
Site Controller II PCMCIA 760K (C06731)

This PCB (PCMCIA) is the latest version of the memory PCB. It always comes with 760K and can serve as a drop-in replacement for memory PCB's C02117 and C08331.

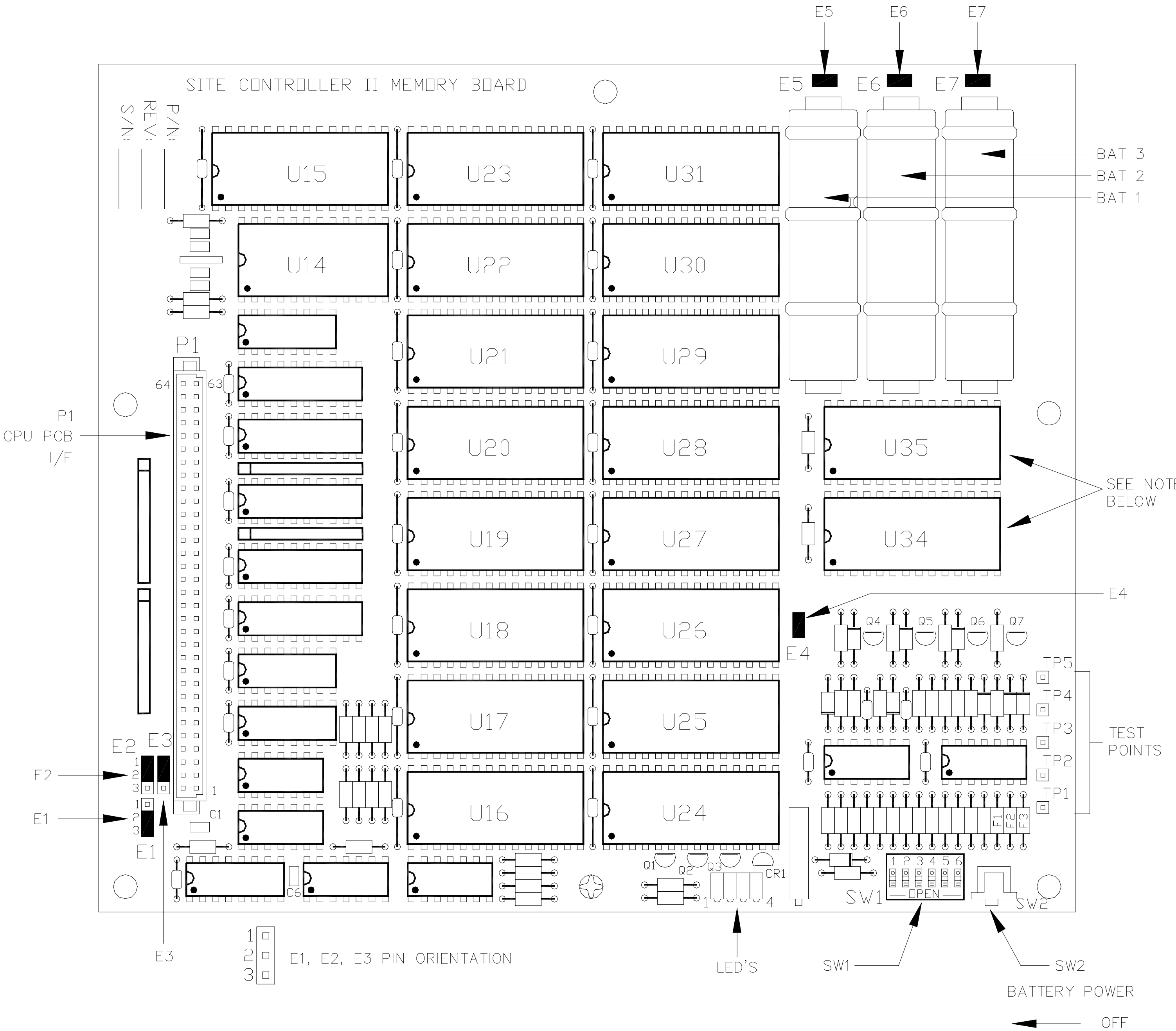
These memory PCB's:

- provide the battery-backed RAM for the storage of all transaction and system data
- provide Ni-Cad batteries (lithium batteries for C06731) for data retention during power failures
- can provide battery power to specified devices on the CPU PCB
- alerts site CPU PCB of impending DC power failure

Site Controller Memory PCB Layout (C04837)

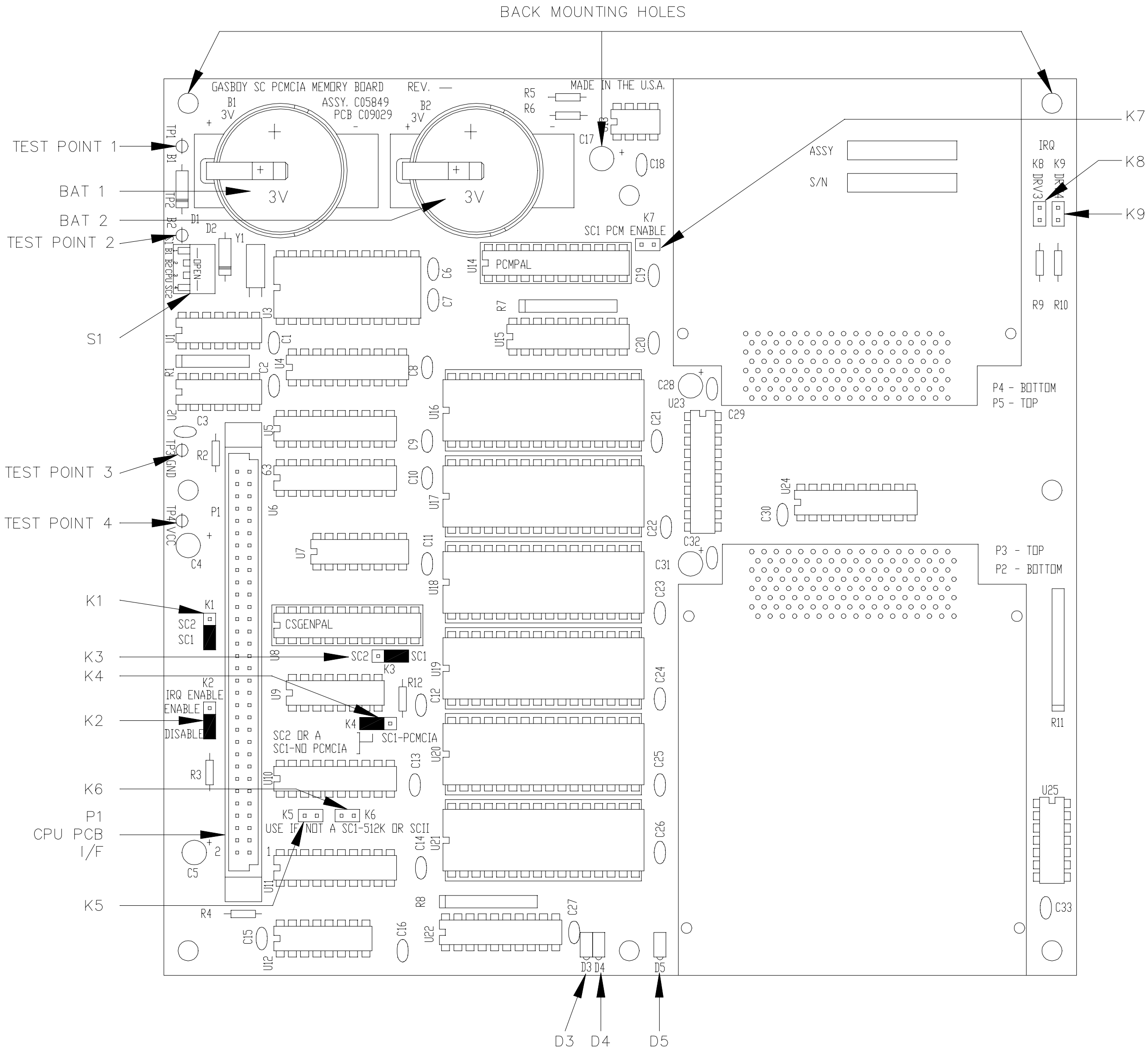


Site Controller II Memory PCB Layout (C02117: U14 - 31 contains 8K chips)
(C08331: U14 - 31 contains 32K chips)



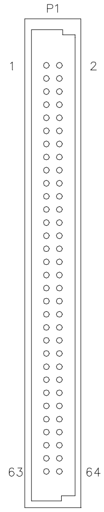
NOTE: U34 AND U35 ARE NOT USED BY SITE CONTROLLER I.
THESE SOCKETS MAY BE EMPTY ON SOME C02117 PCB'S.

Site Controller PCMCIA Memory PCB Layout (C06731)



Connector

P1 - CPU PCB Interface

Pinout	Pin	Function	Voltage
	1–4	DC ground	DC ground
	5	BA13 – Address line 13 (512 CPU only)	⊓⊔⊓ +5 VDC – On
	6	BA14 – Address line 14 (512 CPU only)	⊓⊔⊓ +5 VDC – On
	7	$\overline{\text{BAT ST1}}$ – Battery #1 status (NC on C04837)	Not used by CPU PCB
	8	$\overline{\text{BAT ST2}}$ – Battery #2 status (NC on C04837)	Not used by CPU PCB
	9–10	VBB – Battery voltage from memory PCB	NC – Not used
	11	$\overline{\text{POWER FAIL}}$ – DC power fail	+5 VDC – Normal, 0 VDC – Fail
	12	$\overline{\text{BAT ST3}}$ – Battery #3 status (NC on C04837)	Not used by CPU PCB
	13	R/$\overline{\text{W}}$	⊓⊔⊓ 0 VDC – Write
	14	E – 6809 system clock	⊓⊔⊓ +5 VDC Signal
Connector View From Component Side of PCB	15	BATT STATUS – from memory PCB	0 VDC – Normal
	16	A12 – Address 12	⊓⊔⊓ +5 VDC – On
P1	17	MEM STATUS – Not used, grounded on memory PCB	0 VDC – Normal
	18	A11 – Address 11	⊓⊔⊓ +5 VDC – On
	19	$\overline{\text{MRDY}}$ – extends access time for slower memory devices	⊓⊔⊓ 0 VDC – On
	20	A10 – Address 10	⊓⊔⊓ +5 VDC – On
	21	$\overline{\text{RESET}}$ – Power–on reset from CPU PCB	+5 VDC – Normal
	22	A9 – Address 9	⊓⊔⊓ +5 VDC – On
	23	$\overline{\text{R}}$/W	⊓⊔⊓ +5 VDC – Write
	24	A8 – Address 8	⊓⊔⊓ +5 VDC – On
	25	$\overline{\text{S15}}$ – Paged memory bank 15 select	⊓⊔⊓ 0 VDC – On
	26	A7 – Address 7	⊓⊔⊓ +5 VDC – On
	27	$\overline{\text{S14}}$ – Paged memory bank 14 select	⊓⊔⊓ 0 VDC – On
	28	A6 – Address 6	⊓⊔⊓ +5 VDC – On
	29	$\overline{\text{S13}}$ – Paged memory bank 13 select	⊓⊔⊓ 0 VDC – On
	30	A5 – Address 5	⊓⊔⊓ +5 VDC – On
	31	$\overline{\text{S12}}$ – Paged memory bank 12 select	⊓⊔⊓ 0 VDC – On
	32	A4 – Address 4	⊓⊔⊓ +5 VDC – On
	33	$\overline{\text{S11}}$ – Paged memory bank 11 select	⊓⊔⊓ 0 VDC – On
	34	A3 – Address 3	⊓⊔⊓ +5 VDC – On
	35	$\overline{\text{S10}}$ – Paged memory bank 10 select	⊓⊔⊓ 0 VDC – On
	36	A2 – Address 2	⊓⊔⊓ +5 VDC – On
	37	$\overline{\text{S9}}$ – Paged memory bank 9 select	⊓⊔⊓ 0 VDC – On
	38	A1 – Address 1	⊓⊔⊓ +5 VDC – On
	39	$\overline{\text{S8}}$ – Paged memory bank 8 select	⊓⊔⊓ 0 VDC – On
	40	A0 – Address 0	⊓⊔⊓ +5 VDC – On
	41	$\overline{\text{S7}}$ – Paged memory bank 7 select	⊓⊔⊓ 0 VDC – On
	42	D7 – Data 7	⊓⊔⊓ +5 VDC – On
	43	$\overline{\text{S6}}$ – Paged memory bank 6 select	⊓⊔⊓ 0 VDC – On
	44	D6 – Data 6	⊓⊔⊓ +5 VDC – On
	45	$\overline{\text{S5}}$ – Paged memory bank 5 select	⊓⊔⊓ 0 VDC – On
	46	D5 – Data 5	⊓⊔⊓ +5 VDC – On
	47	$\overline{\text{S4}}$ – Paged memory bank 4 select	⊓⊔⊓ 0 VDC – On
	48	D4 – Data 4	⊓⊔⊓ +5 VDC – On
	49	$\overline{\text{S3}}$ – Paged memory bank 3 select	⊓⊔⊓ 0 VDC – On
	50	D3 – Data 3	⊓⊔⊓ +5 VDC – On
	51	$\overline{\text{S2}}$ – Paged memory bank 2 select	⊓⊔⊓ 0 VDC – On
	52	D2 – Data 2	⊓⊔⊓ +5 VDC – On
	53	$\overline{\text{S1}}$ – Paged memory bank 1 select	⊓⊔⊓ 0 VDC – On
	54	D1 – Data 1	⊓⊔⊓ +5 VDC – On
	55	$\overline{\text{S0}}$ – Paged memory bank 0 select	⊓⊔⊓ 0 VDC – On
	56	D0 – Data 0	⊓⊔⊓ +5 VDC – On
	57	$\overline{\text{CLOCK SEL}}$	⊓⊔⊓ 0 VDC – On
	58	$\overline{\text{CLOCK IRQ}}$ – Clock interrupt to micro	Not used by CPU PCB
	59	BS0 – Board select 0	⊓⊔⊓ +5 VDC – On
	60	BS1 – Board select 1	⊓⊔⊓ +5 VDC – On
	61–64	+5 VDC	+5 VDC

LED Indicators (C04837, C02117, C08331)
LED indicators are provided to allow you to monitor the battery voltage. The LED's shown apply to all PCB's except the new C06731 PCMCIA PCB.

LED	Function
1	Battery 1 failure
2	Battery 2 failure
3	Battery 3 failure
4	Battery voltage (VBB) greater than 3.5 VDC

The LED indicators in the chart on the right are for the C06731 PCMCIA PCB.

LED	FUNCTION
D3	Battery Voltage OK
D4	Battery Voltage Low
D5	PCMCIA Port in Use

Jumpers - Site Controller Memory PCB (C04837)
The following jumpers apply to the site controller Memory PCB.

Battery Power - RAM Selection

Jumper	Function	Setting
E2–3	Connect battery power to RAM U13	Jumpered
E5–6	Connect battery power to RAM U14	Jumpered
E8–9	Connect battery power to RAM U15	Jumpered
E11–12	Connect battery power to RAM U16	Jumpered
E14–15	Connect battery power to RAM U17	Jumpered
E17–18	Connect battery power to RAM U18	Jumpered

Jumpers - Site Controller II Memory PCB (C02117 & C08331)
The following jumpers apply to the Site Controller II Memory PCB.

CPU PCB Type

P/N	Function	Memory	E1	E2	E3
C02117	SCI with non–512K CPU PCB	128K	2–3	2–3	2–3
C02117	SCI with 512K CPU PCB	128K	2–3	2–3	1–2
C08331	SCI with 512K CPU	512K	2–3	1–2	1–2

Battery Power Enable

Jumper	Function	Setting
E4	Connect battery power to RAM IC's	Jumpered
E5	Connect battery 1 to PCB	Jumpered
E6	Connect battery 2 to PCB	Jumpered
E7	Connect battery 3 to PCB	Jumpered

Jumpers - Site Controller PCMCIA Memory PCB (C06731)
The following jumpers apply to the site controller PCMCIA Memory PCB.

Memory Settings

Jumper	Function	Settings for SC 1
K1	SC1 / SC2 Selection	SC1
K2	PCMCIA IRQ Enable	Disable
K3	SC1 / SC2 Selection	SC1
K4	SC2 or SC1 – NO PCMCIA / SC1 – PCMCIA	SC1 – NO PCMCIA
K5	Memory Address line 14 Disable	Jumpered for SC1s without 512K CPU
K6	Memory Address line 13 Disable	Jumpered for SC1s without 512K CPU
K7	SC1 PCMCIA ENable	Open
K8	PCMCIA Drive 3 IRQ Enable	Open
K9	PCMCIA Drive 4 IRQ Enable	Open

Switches - Site Controller Memory PCB (C04837)
The following switches apply to the site controller memory PCB.

SW1 - Battery Power Enable Switches

Switch	Function	Setting
SW1–1	Enable battery 1 failure alert	Closed
SW1–2	Enable battery 2 failure alert	Closed
SW1–3	Enable battery 3 failure alert	Closed
SW1–4	Enable battery 1 charge circuit	Closed
SW1–5	Enable battery 2 charge circuit	Closed
SW1–6	Enable battery 3 charge circuit	Closed

SW2 - Battery Power to CPU PCB Switch

Switch	Function	Setting
SW2	Disable battery backup to CPU PCB	Open (to the left)

Switches - Site Controller II Memory PCB (C02117 & C08331)
The following switches apply to the Site Controller II Memory PCB.

SW1 - Battery Enable Switches

Switch	Function	Setting
SW1–1	Enable battery 1 failure alert	Closed
SW1–2	Enable battery 2 failure alert	Closed
SW1–3	Enable battery 3 failure alert	Closed
SW1–4	Enable battery 1 charge circuit	Closed
SW1–5	Enable battery 2 charge circuit	Closed
SW1–6	Enable battery 3 charge circuit	Closed

SW2 - Battery Power to CPU PCB Switch

Switch	Function	Setting
SW2	Disable battery backup to CPU PCB	Open (to the left)

Switches - Site Controller PCMCIA Memory PCB (C06731)

The following switches apply to the PCMCIA site controller memory PCB.

SW1 - Battery Enable Switches

Switch	Function	Settings for SC 1
SW1-1	Enable battery 1	Closed
SW1-2	Enable battery 2	Open
SW1-3	Enable battery backup to CPU PCB	Open
SW1-4	SC1 / SC2 Selection	Closed for SC1

RAM Considerations - Site Controller II Memory PCB (C02117 & C08331)

The Site Controller II Memory PCB can be loaded with RAM's for use as a 128K or 512K application. The following charts show the two applications along with identification numbers for the RAM's used on the PCB.

Applications

P/N	Function	Total Memory	IC's	IC Size
C02117	128K Memory PCB	128K	U15	32K
			U16-31, U34-35*	8K
C08331	512K Memory PCB	512K	U15-31, U34-35	32K

* U34 AND U35 MAY NOT BE INSTALLED ON ALL C02117 PCB'S.

RAM ID

8K RAM IC's (Gasboy P/N C03602)	
Manufacturer	Manuf. P/N
Hitachi	HM6264LP-12
	HM6264LP-15
Hyundai	HY6264LP-15
	HY6264LP-12
NEC	D4364C-15L
SMOS	SRM2064-15
	SRM2264LC90

32K RAM IC's (Gasboy P/N C08977)	
Manufacturer	Manuf. P/N
Fujitsu	MB84256-10L
	MB84256-15L
Hitachi	HM62556LP-15
Mitsubishi	M5M5256-15L
NEC	D43256AC-10L
	D43256C-15L
SMOS	SRM20256-12

Test Points - All Memory PCB's

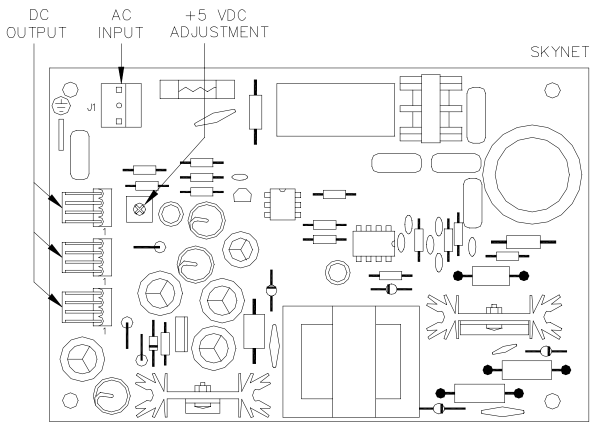
CPU PCB	TEST POINT	FUNCTION	VOLTAGE
C04837	TP1	Battery-3	Power on, 4-4.1 VDC; power off, 3.9-3.2 VDC
	TP2	Battery-2	Power on, 4-4.1 VDC; power off, 3.9-3.2 VDC
	TP3	Battery-1	Power on, 4-4.1 VDC; power off, 3.9-3.2 VDC
	TP4	Ground	0 VDC
C08331 & C02117	TP1	Ground	0 VDC
	TP2	DC power fail reference voltage	1.1-1.2 VDC
	TP3	Battery-3	Power on, 4-4.1 VDC; power off, 3.9-3.2 VDC
	TP4	Battery-2	Power on, 4-4.1 VDC; power off, 3.9-3.2 VDC
	TP5	Battery-1	Power on, 4-4.1 VDC; power off, 3.9-3.2 VDC
C06731	TP1	Battery-1	3.0 - 3.5 VDC
	TP2	Battery-2	3.0 - 3.5 VDC
	TP3	Ground	0 VDC
	TP4	Vcc	4.90 - 5.10 VDC

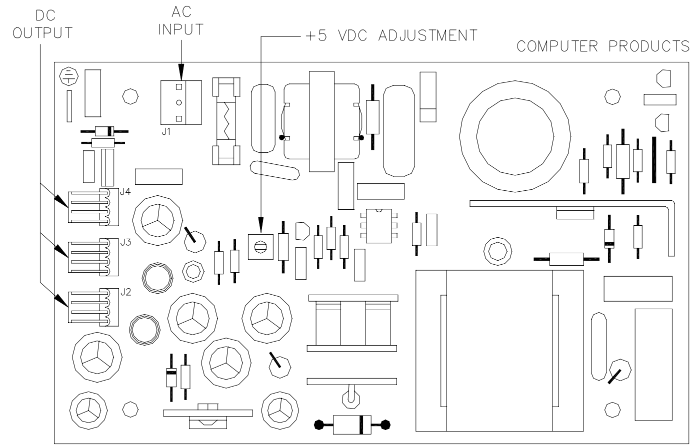
POWER SUPPLY

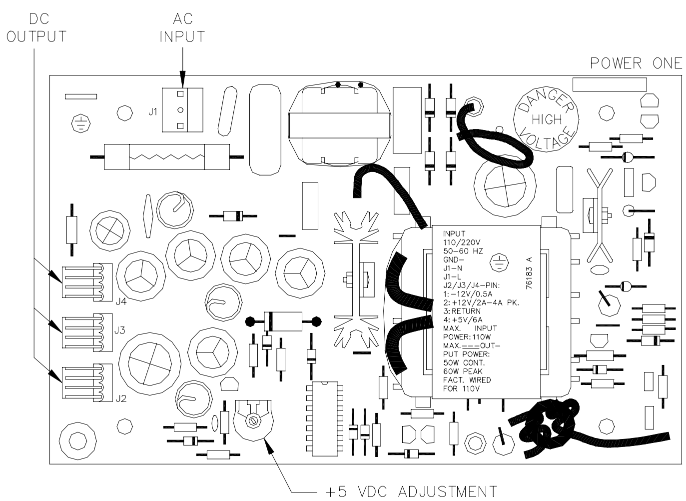
The power supply provides the internal power used by the site controller. This unit:

- provides regulated +5 VDC to the CPU PCB and memory PCB
- provides regulated +12 and -12 VDC to the CPU PCB
- will resemble one of the three variations shown depending on the date of manufacture

Layout







Connectors

AC Input

Pinout	Pin	Wire	Function	Voltage
1	1	White	AC neutral input	AC neutral
	2		N/C	
3	3	Black	AC hot input	115 VAC

DC Output

Pinout	Pin	Wire	Function	Voltage
1	1	White	−12 VDC from supply	−12 VDC
	2	Red	+12 VDC from supply	+12 VDC
4	3	Black	DC ground	Ground
	4	Orange	+5 VDC from supply	+5 VDC

DC Power Measurements and Adjustment

+5 VDC Measurement

1. Remove the four Phillips screws from the sides of the unit and remove the cover.

2. On the CPU 512K PCB, measure at the Vcc and Gnd test points. On the Memory Plus CPU PCB, locate the 64-pin P9 connector. Using a DC voltmeter, place the positive probe (+) on pin 63 or 64 and place the negative (-) probe on pin 1 or 2. Be careful not to let the probe tips touch any other pins. The voltage should be +5.00 to +5.10 VDC. If the voltage does not fall within this range, adjustment is necessary. Follow the steps below to adjust the supply. If the voltage is within tolerance, skip to step 11.

+5 VDC Adjustment

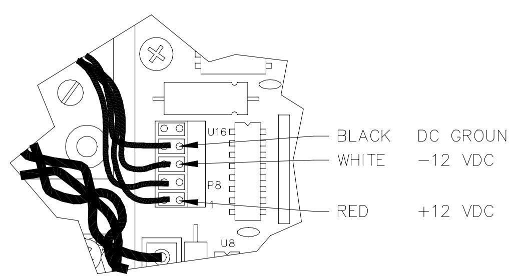
3. Turn off the power to the site controller.
4. Remove the two screws that hold the power supply cover onto the supply. Remove the cover.
5. Attach the meter probes to Pin 1 or 2 (black), or pin 63 or 64 (red) on the P9 connector on the CPU PCB.
6. Turn the AC POWER switch back on.

CAUTION
Be careful not to touch anything but the adjustment screw. High voltage exists at various points on the supply.

7. Using a 1/8 inch or smaller plastic, flat-blade screwdriver, adjust the power supply to +5 VDC by turning the +5 VDC adjuster clockwise to increase voltage, counterclockwise to decrease voltage. Turn the adjuster slightly to judge how sensitive the adjustment is.
8. Disconnect the meter probes.
9. Turn the AC POWER switch off and return the power supply cover to its normal location.
10. Turn the AC POWER switch back on.

+12 VDC Measurement

11. Locate the DC power input connector (P8) on the CPU PCB. Measure the +12 VDC between the red (+) and black (gnd) wires on the DC input power connector of the CPU PCB. The voltage should be +11.00 to +14.00 VDC.
NOTE: This voltage is not adjustable.



-12 VDC Measurement

12. On the P8 connector, measure the -12 VDC between the white (-) and black (gnd) wires on the DC input power connector of the CPU PCB. Voltage should be -11.00 to -14.00 VDC.
NOTE: This voltage is not adjustable.

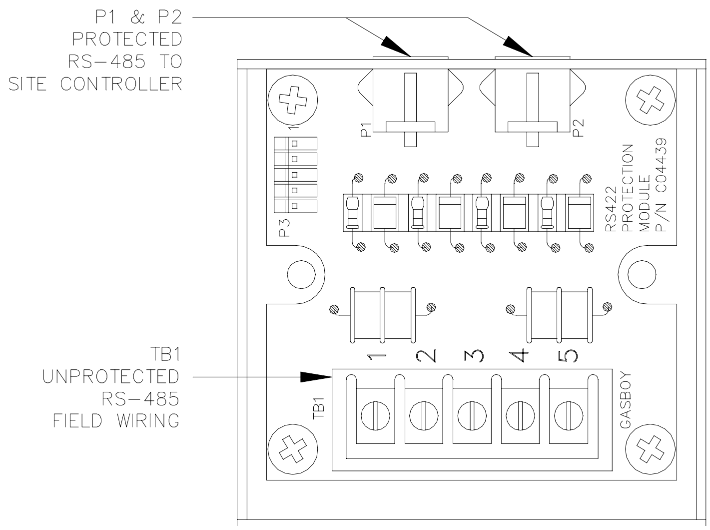
13. Replace the cover and screws of the unit.

RS-485 JUNCTION BOX

The RS-485 junction box provides the interface for the RS-485 section of the site controller. This unit:

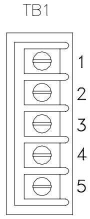
- provides the terminal block for field wiring of the RS-485 lines
- provides surge protection and protection against noise on the RS-485 lines

Layout

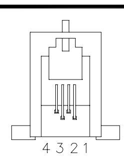


Connectors

TB1 - RS-485 Field Wiring (Unprotected)

Pinout	Pin	Function		Voltage
TB1 	1	RS-485 Tx+	To Site	⊓⊓L +5 VDC signal
	2	RS-485 Tx−	Controller	between 1 & 2
	3	RS-485 Rx+	From Site	⊓⊓L +5 VDC signal
	4	RS-485 Rx−	Controller	between 3 & 4
	5	Ground		Ground

P1 & P2 - Protected RS-485 Signals to Site Controller

Pinout	Pin	Function		Voltage
	1	RS-485 Tx+	To Site	⊓⊓L +5 VDC signal
	2	RS-485 Tx−	Controller	between pins 1 & 2
	3	RS-485 Rx+	From Site	⊓⊓L +5 VDC signal
	4	RS-485 Rx−	Controller	between pins 3 & 4

SITE CONTROLLER I PROBLEMS

Site controller is dead. No LED's are lit.

Possible Cause	Checks	Corrective Action
No 115VAC power to site controller.	Check if circuit breaker is off or tripped.	Turn breaker on, if off.
	Check if 115VAC is being switched through circuit breaker.	Replace breaker if 115VAC is not being switched.
	If the power conditioner has a power switch, make sure the switch is on.	Turn power conditioner power switch on, if off.
	Check the power conditioner's fuse or circuit breaker.	If the power conditioner has a fuse or built-in circuit breaker, replace or reset as necessary.
	Check the output voltage of the power conditioner.	If 115VAC is measured at the power conditioner input, but not at the output, replace the power conditioner.
	Check the site controller power cord.	Make sure both ends of the site controller power cord are installed properly.
Site controller power switch is off.	Check the site controller power switch.	Turn site controller power switch on, if off.
Blown fuse in AC power inlet on rear of site controller.	Check the fuse with an ohmmeter.	Replace fuse if blown.
Defective AC filter/power inlet.	Measure the voltage on the AC connector of the Power Supply PC board.	Replace the RF filter module if 115VAC is not measured.

(Continued)

Possible Cause	Checks	Corrective Action
Defective site controller power supply or power supply cable.	Measure the voltages between the black (DC ground) and orange (+5VDC), black and red (+12VDC), and black and white (-12VDC), wires at connector P8 on the site controller CPU Board	If the +12 VDC or -12VDC voltages are not present, replace the power supply. If +5VDC is not present, measure the continuity of the orange wire using an ohmmeter. If an open circuit is measured between both ends of the orange wire, replace the DC power cable and recheck the voltages. If +5VDC is still not present at P8, replace the power supply.
Defective site controller CPU PCB.	None.	If the proper voltages are measured at the P8 connector but the site controller doesn't power up, replace the CPU board.
Defective Memory PCB.		Replace the Memory board if replacing the CPU board didn't correct the problem.

Terminal communications are down. The system is working.

Possible Cause	Checks	Corrective Action
Terminal turned off.	Check terminal power indicator.	Turn on, if off.
Terminal offline.	Check ON LINE indicator	Put online if offline.
Cable disconnected.	Check connections.	Re-connect cable if not connected or loose
Incorrect terminal set-up.	Check the terminal set-up parameters. If a CRT, the terminal should be set for VT52 emulation, 8 data bits, no parity, 1 stop bit. The baud rate should match the site controller's baud rate.	Configure the proper set-up parameters according to the terminal manufacturer's instructions.
Defective power supply.	Measure the voltages between the black (DC ground) and red (+12VDC), and black and white (-12VDC) wires at connector P8 on the site controller CPU board.	Replace the power supply if the proper voltages are not measured at P8
Incorrect baud rate switch settings on the site controller CPU board.	Check that the baud rate settings on SW3 are correct.	If baud rate switches are wrong, correct the settings and press reset switch SW1.
Incorrect jumper settings on the site controller CPU board. (Remote port)	Check the K1 jumper patch on the site controller CPU board.	Remove all jumpers from K1, if any.
Incorrect configuration of remote port.	Check the configuration at Table 17, offset 23.	If you are using a terminal to communicate to the site controller's remote port, the configuration at Table 17, offset 23, should be 80. If it is not, you can only change the configuration through the local port.

(Continued)

Possible Cause	Checks	Corrective Action
Short haul modem off, offline, disconnected, or bad	Check both modems at site and terminal.	If off, turn on; if offline, put online; if disconnected, reconnect. If possible perform a loopback test on the modem. Refer to manufacturer's instructions for loopback test. Replace if none of these actions correct the problem.
Defective terminal.	Try using a different site controller communications port. This requires changing the communications cable. Use a C04549 cable if the terminal is in the LOCAL port. Use a C05039 cable if the terminal is in the REMOTE port. Make sure the terminal's baud rate matches the baud rate of the new communications port	If the terminal doesn't work in either port, replace the terminal.
Site unable to log messages (Remote port)	Check logger or logger eliminator.	Correct logger problem or try again.
Defective RS-232 driver or receiver IC's or defective site controller CPU PCB.	None.	Replace the driver IC's in sockets U5 and U6 and/or the receiver IC's in sockets U4 and U7. Replace the site controller CPU PCB if replacing the IC's didn't fix the problem.

Site controller doesn't accept entered sign-on code.

Possible Cause	Checks	Corrective Action
Sign-on code was changed.	Ask site manager if sign-on code was changed.	Enter new sign-on. If a software polling package is used, make sure the new password is loaded into the PC.
Wrong case is being used.	Make sure the proper case letters are used.	Change terminal keyboard to upper/lowercase as necessary. Make sure the password loaded into the PC uses the correct case.
Defective terminal keyboard.	Check if the terminal keyboard works in the LOCAL or offline mode.	Replace the terminal keyboard if the keys don't work in LOCAL or offline mode.
Sign-on became scrambled.	Check local printout for file error 00 message.	Close switch SW4-2 on the site controller CPU board. On the terminal keyboard, try to sign-on using the backup (default) sign-on configured in the personality prom. The default sign-on code can be found on the customer's personality prom configuration sheet that was shipped with the system. Call GASBOY Technical Service if you can't find the default sign-on. If you are able to sign-on using the default code, open SW4-2 and re-load the correct sign-on using the LOAD SIGNON command

MODULE ERROR 14 is printed on local port terminal whenever the site controller is reset.

Possible Cause	Checks	Corrective Action
Personality prom is not installed or is improperly installed.	Check U30 (C04940) or U31 (C05820) of the CPU board.	Properly install personality prom.
Personality prom checksum is not correct.	None	Call GASBOY Technical Service
Personality prom is defective	None	Replace and reload.

Site stopped due to a battery failure reported from the memory board. One or more red battery failure LED's is lit on memory board.

Possible Cause	Checks	Corrective Action
Batteries need to be charged.	If you are changing the memory board or starting up a new site controller, the batteries may require up to 18 hours of charge time.	Keep the site controller power on for 18 hours. If the battery failure message doesn't go away, try a new memory board.
Jumpers not installed (C08331 only).	Check E5 through E7	Install needed jumpers.
Switches open.	Check switches.	Close all switches
Dead or shorted battery, blown battery fuse, defective battery charge circuit.	Check which red LED on the Memory PCB is lit. Measure the voltage at the test points on the PCB. If voltage is within range specified, battery is okay; if not, perform corrective actions listed.	If possible, always poll all system data before replacing the Memory PCB. For C08331 and C02117 Memory boards, open the **BATTERY CHARGE** and **BATTERY FAILURE ALERT** switches that correspond to the battery indicated by the lit LED. Do a **RUN;I** command. Replace Memory board as soon as possible. For a C04837 Memory board, open the **ENABLE BATTERY** switch that corresponds to the battery indicated by the lit LED. Do a **RUN;I** command. Replace Memory board as soon as possible. For a C06731 Memory board, close switch SW1-2 and open SW1-1. Do a **RUN;I** command. Replace battery 1 as soon as possible OR if switch SW1-2 is closed, close SW1-1 and open SW1-2. Do a **RUN;I** command. Replace battery 2 as soon as possible

Printout shows one or more files reconstructed - General

Possible Cause	Checks	Corrective Action
CPU jumper K5 off and/or K6 on.	Check if jumper is on K5.	Install K5 jumper or move jumper from K6 to K5. C04940 and C05820 require K5 on, K6 off.
Power surge.	None.	Reload data.
File sizes were changed.	Check if the maximum number of records in one or more files was changed, either by the CONFIG command or by a new personality prom download	Re-load data.

Printout shows one or more files reconstructed - C04837 Memory Board

Possible Cause	Checks	Corrective Action
Power was off and SW1-4 on Memory board was open.	Check if SW1-4 is open.	Close SW1-4, if open.
Battery failure while power was off.	Check if the red battery failure LED's are on.	Go the **Battery Failure** problem
Battery backup jumpers are not installed for the upper memory banks.	Check that the battery backup jumpers E1 through E18 are installed properly	Install battery backup jumpers for upper memory bank sockets that contain RAM IC's.
Defective memory board.	None.	Replace the memory board if the files continue to get reconstructed.

(Continued)

Printout shows one or more files reconstructed - C02117 or C08331 Memory Board

Possible Cause	Checks	Corrective Action
Power was off and jumpers E5, E6, and E7 were removed.	Check jumpers E5, E6, and E7.	Install jumpers E5, E6, and E7, if they are off.
Incorrect memory board jumper configurations.	Check the E1, E2, and E3 configuration jumpers	Install the jumpers correctly if they are wrong.
Battery failure while power was off.	Check if the red battery failure LED's are on.	Go to **Battery Failure** problem.
Defective memory board.	None.	Replace the Memory board if the files continue to get reconstructed.

Printout shows one or more files reconstructed - C06731 Memory Board

Possible Cause	Checks	Corrective Action
Switch SW1 positions 1 & 2 are open and power was off.	Check switch position.	Close position 1. If LED 4 is on, open position 1 and close 2.
Batteries not installed.	Check to see if B1 and B2 are in sockets.	Defective battery may have been removed and not replaced. Install new batteries if needed.
Incorrect memory board jumper settings.	Check K1-K6 for proper settings.	Install the jumpers correctly if they are wrong.
K5 and K6 are not installed for a C04835 or C04940 CPU PCB.	Check K5 and K6.	K5 and K6 must be installed for these CPU PCB's. Install jumpers if needed.
Batter failure while power was off.	Check if the red battery failure LED is on.	Go to battery failure problem.
Defective memory board.	None.	Replace the memory board if the files continue to be reconstructed.

No Island Loop communications. All devices on Island Loop are down.

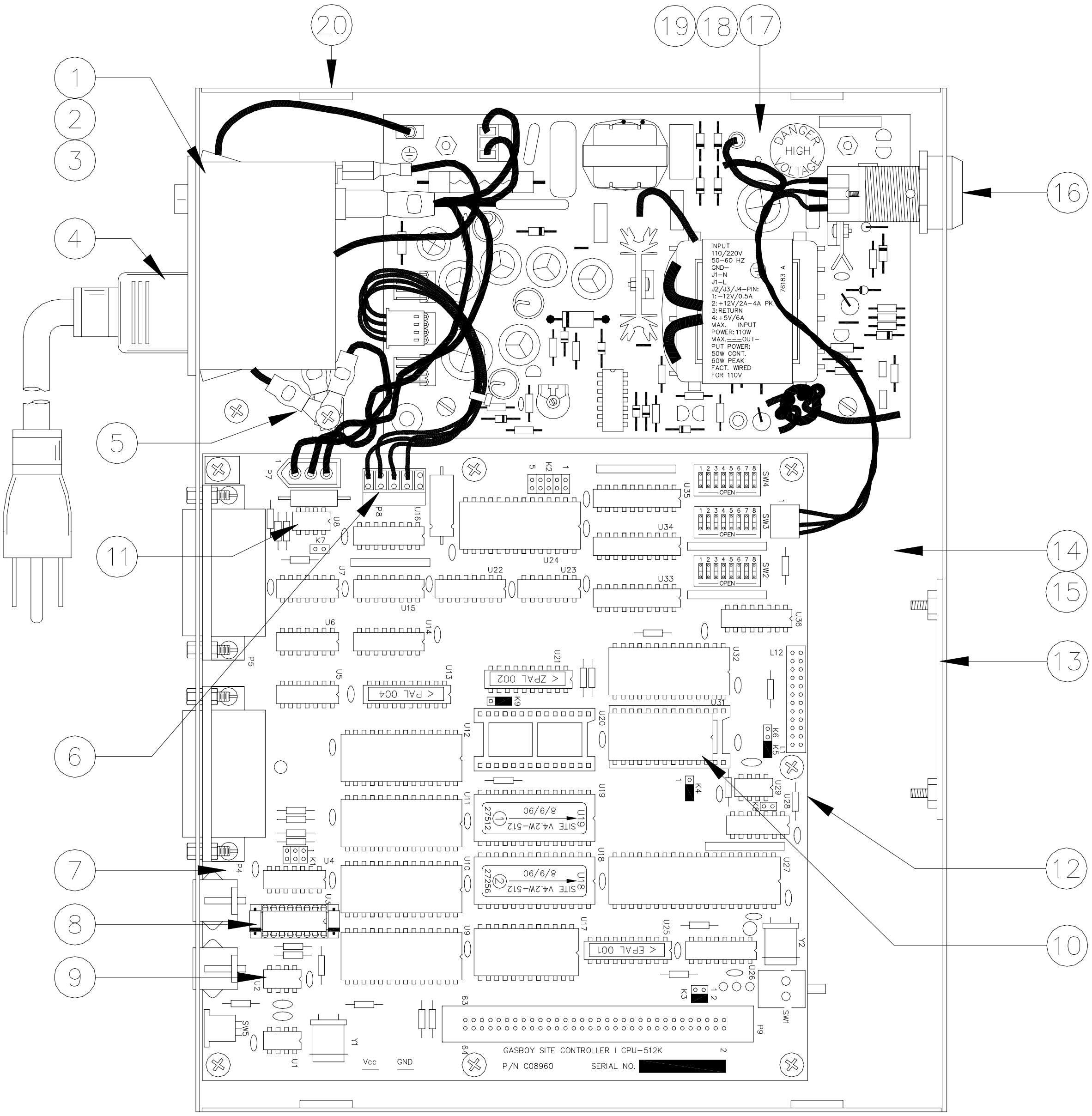
Possible Cause	Checks	Corrective Action
Site controller is down.	Check logger or do a **PRint DIagnostics** command for indication that the site is not running.	Do a **RUN** command if site is down.
RS-485 phone cable is loose or not installed correctly.	Check that one end of the cable is installed in the junction box and the other end is installed in the PCU/RT connector on the rear of the Site Controller I.	Install cable properly if it is incorrect
Incorrect wiring of junction box or island loop devices.	Verify all field wiring with the SC I Installation Manual (C01917).	Make wiring connections if needed.
Defective RS-485 receiver IC and Protected Driver Board.	None.	Replace U2 and U3 on the SC I CPU Board. When replacing U3, replace the entire Protected Driver Board (C05848), not just the driver IC. Verify that the junction box is properly grounded as shown in the *SC I Installation Manual*.
Defective CPU Board.	None	Replace the SC I CPU Board
Defective RS-485 junction board.	None.	Replace the RS-485 junction box

No console loop communications. All devices on console loop are down.

Possible Cause	Checks	Corrective Action
Site Controller is down.	Check logger or do a **PRint DIagnostics** command for indication that the site is not running.	Do a **RUN** command if site is down
RS-485 phone cable is loose or not installed correctly.	Check that one end of the cable is installed in the CONSOLE LOOP connector on the rear of the site controller and the other end is installed in the SITE CONTROLLER connector on the rear of the console, or into the console junction box (if used).	Install cable properly, if it is incorrect
Incorrect wiring between junction boxes (used only when console is located more than eight feet from site controller).	Move console within eight feet of site controller and connect directly using modular cable. Verify all field wiring with the SC I Installation Manual (C01917)	If console works, proceed to next check. Make wiring connections, if needed
Defective RS-485 receiver IC and Protected Driver Board.	None.	Replace U2 and U3 on the SC I CPU Board. When replacing U3, replace the entire Protected Driver Board (C05848), not just the driver IC. If a junction box is used for remote console communication wiring, verify that it is properly grounded as shown in the *SC I Installation Manual*.
Defective RS-485 junction board (if used).	None.	Replace the RS-485 junction board.
Defective CPU board.	None.	Replace the SC I CPU board.

This page intentionally left blank.

SITE CONTROLLER I ASSEMBLY PARTS



VIEW SHOWN WITHOUT COVER

C05458 Site Controller I with 512K CPU and 128K Memory
C05754 Site Controller I with 512K CPU and 512K Memory

Item	Part No.	Description
1	C05686	Filter Assy., RF Module
2	*C08330	Filter, RF Module #06AR2
3	*C08723	Fuse, 2 Amp - Quick Blow
4	C04245	Power Supply Cord - 3 Conductor - 6' 10 "
5	C05664	Wire/Terminal Assy., Ground - 8" Long
6	C05400	Cable Assy., Site Controller DC Power
7	C07186	Upgrade/Replacement Kit for C04940 CPU PCB OR
	C05820	PCB Assy., Site Controller I CPU 512K
8	*C05848	PCB Assy., Protected RS-485 Driver
9	*C03391	IC, RS-485 Receiver
10	*C01961	IC, Programmed C03604 2K x 8 EEROM
11	C03608	IC, Mid 400, AC Line Monitor
12	C06759	Site Controller Memory PCB Replacement Kit
13	C32721	Window, Site Controller LED Viewing
14	C32720	Housing, Cover Site Controller CFN
15	C35076	Silkscreened Site Controller I Base
16	C04930	Site Controller Keyswitch Assy.
	*099400	Key (Not shown; must supply WMX # from lock)
17	C09053	Power Supply
18	C34838	Cover, Perforated Site Controller Power Supply (Not Shown)
19	C08756	Label, "DANGER HIGH VOLTAGE"
20	C01696	Mounting Feet, 5/8" x 13/32"

* Denotes this is a sub-part used in the preceding assembly

CPK008 Programmed EPROM's (Please specify name on IC when ordering replacements.)

NOTE: *EPROM's are not interchangeable between CPU PCB's. When ordering a replacement PCB assembly, be sure to order CPK008 with the appropriate software below.*

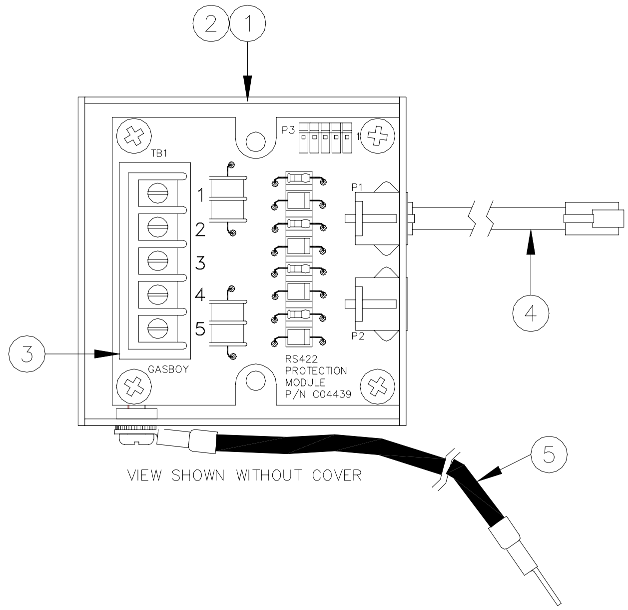
<u>Memory Plus CPU Software</u>

V3.0, V3.1 and V4.0	U18, U19, U20, U31 are all C08175 (programmed 27128)
V4.1	U18, U20, U31 are C08175 (programmed 27128)
	U19 is C08721 (programmed 27256)
V4.2	U18, U31 are C08175 (programmed 27128)
	U19, U20 are C08721 (programmed 27256)

<u>512 CPU Software</u>

V4.2/512	U18 is C08721 (programmed 27256)
	U19 is C05860 (programmed 27512)

RS-485 JUNCTION BOX PARTS



C05020 RS-485 Junction Box Assy.

Item	Part No.	Description
1	C35362	Base, RS-485 Junction Box Housing
2	C32707	Cover, RS-485 Junction Box Housing
3	C05379	PCB Assy., RS-485 Protection
4	C05670	Cable Assy., 4 Conductor Handset 8', 1:1
5	C06399	Wire Assy., 14 Ga, Green, 36" long

Section 3

SITE CONTROLLER II

DESCRIPTION

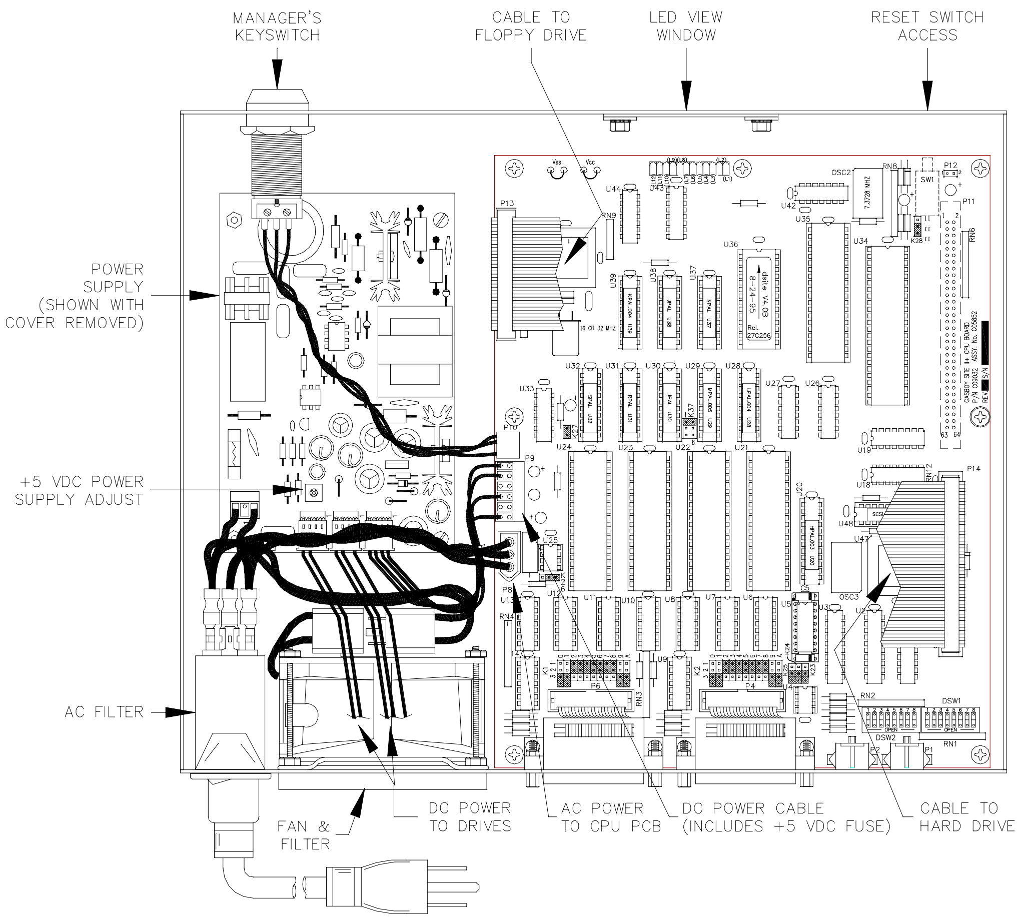
The Site Controller II is the heart of the CFN system at the fueling site. It controls and allows interaction between all your automated fueling equipment, including electronic pumps, pump control devices, and terminals that are activated by a customer. The unit uses advanced microprocessor technology and incorporates multiple hardware and software safeguards. The Site Controller II comes standard with a 3-1/2" disk drive and a hard drive for mass storage of data and loading in operating system programs. A second 3-1/2" disk drive can be ordered in place of the hard drive. A built-in keyswitch can be used to limit access to specified commands.

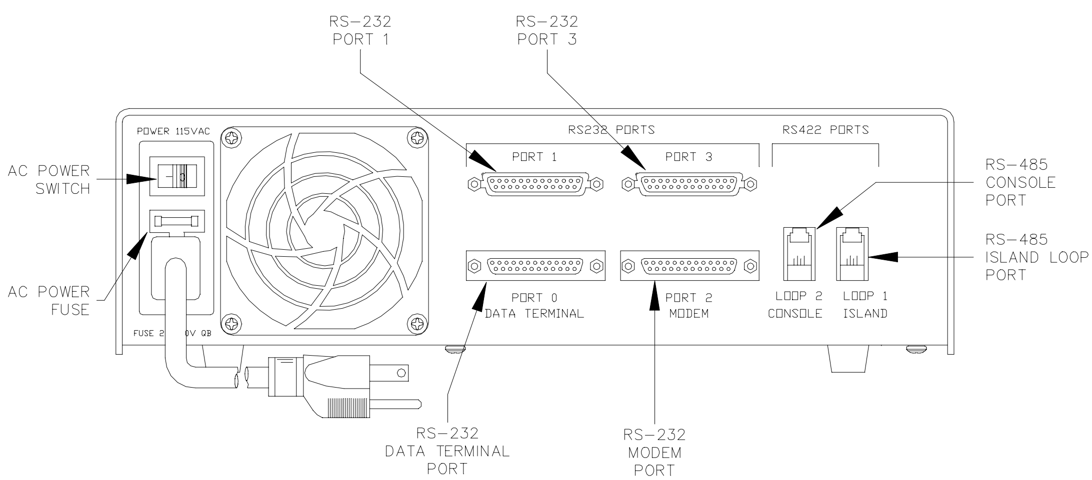
The Site Controller II contains four asynchronous RS-232 ports. Port 0 is used for communication to a data terminal (logger). Port 2 is used for communications through a modem or to a computer. Ports 1 and 3 are additional RS-232 ports which can be programmed according to the application. A logger eliminator must be connected to port 0 when a logger is not used.

Two RS-485 ports are provided for communication with the other CFN devices at the fueling site. One of these ports connects the CFN RS-485 junction box. The RS-485 junction box provides a means for hard-wire connections while incorporating protection circuitry to prevent noise (which may occur on the field wiring) from reaching the site controller. The other RS-485 port connects to the CheckPoint or Profit Point console (when used).

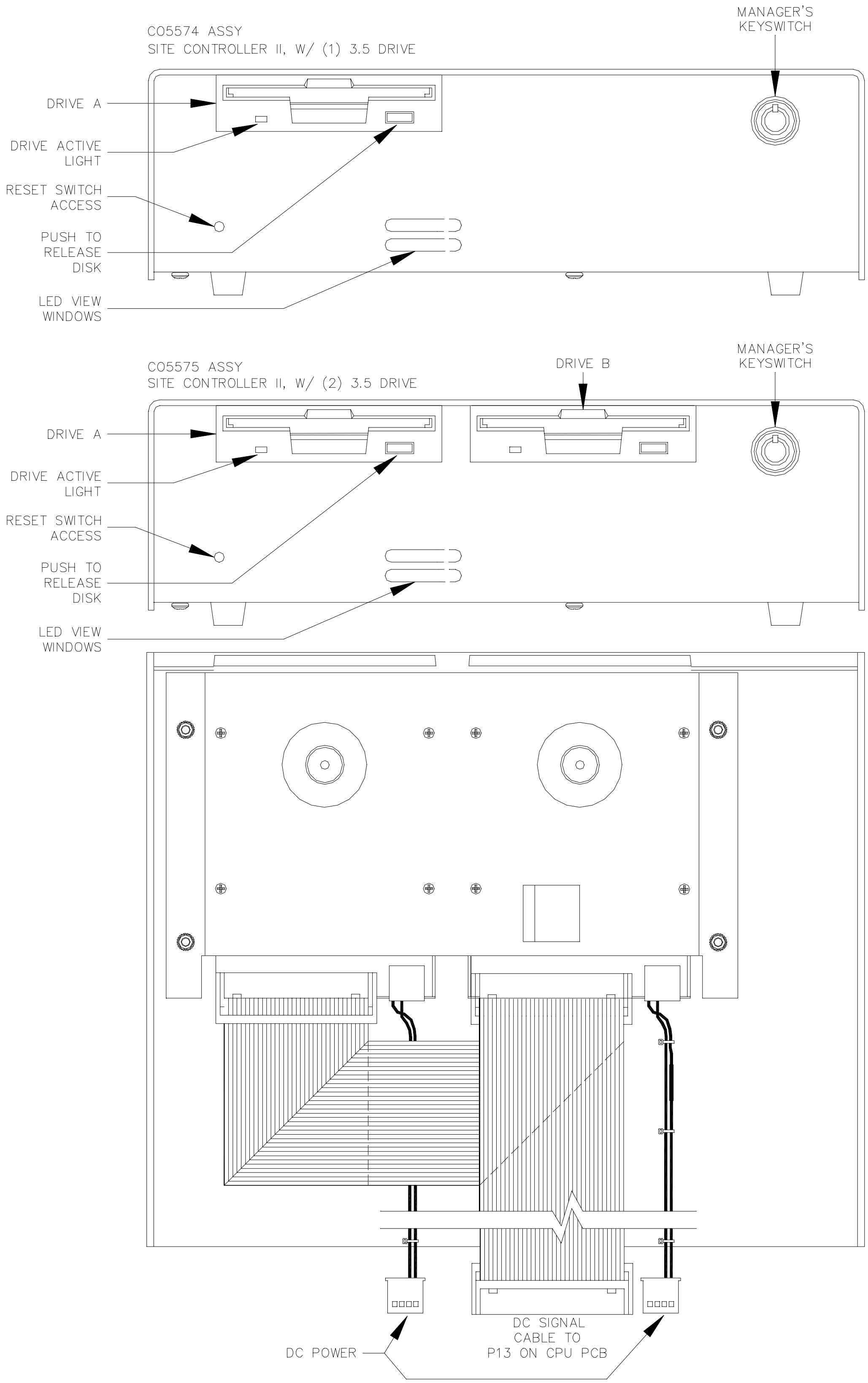
The pages that follow show the Site Controller II layouts.

Layout - Top and Rear View (Shown with CPU II+ Board)

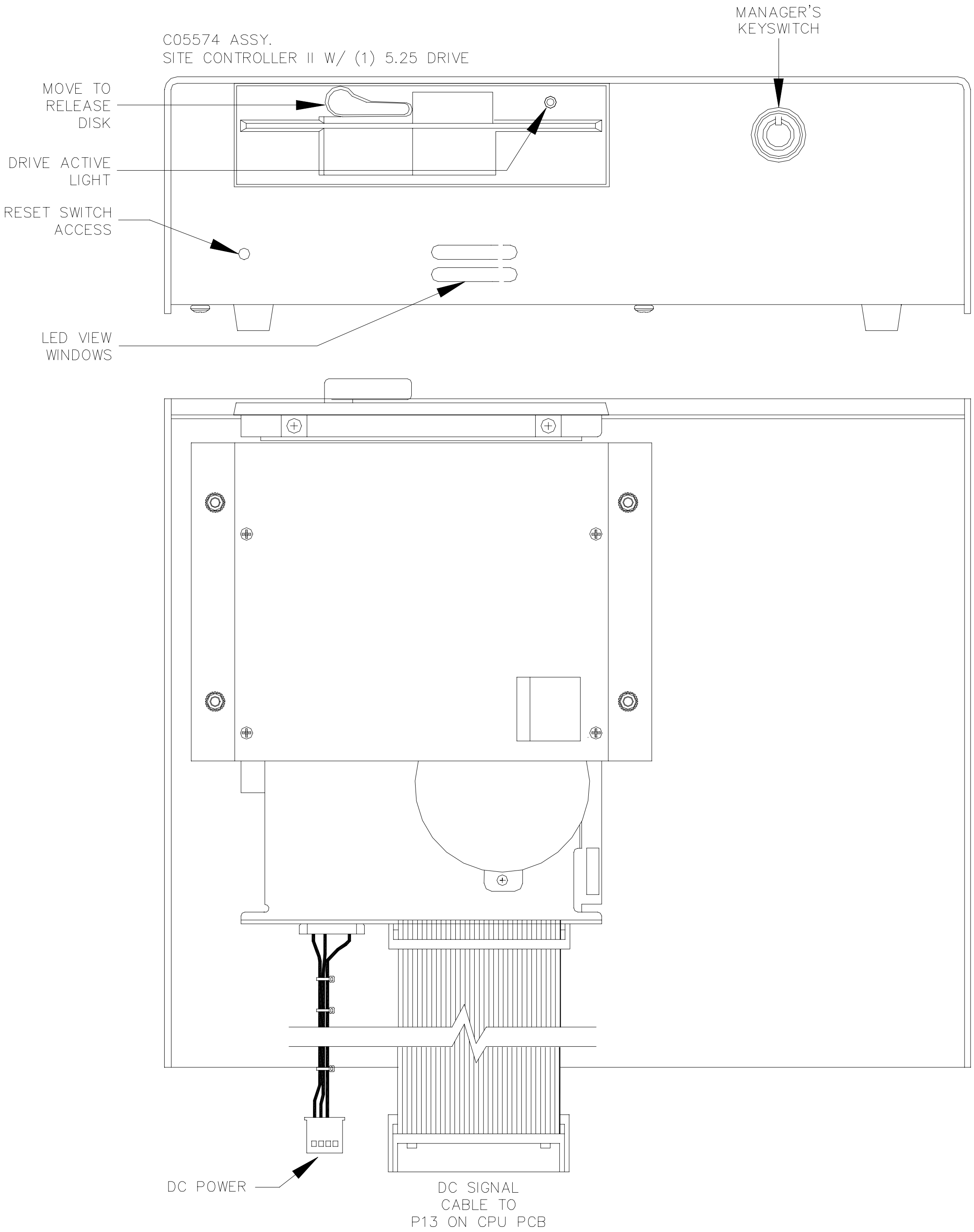




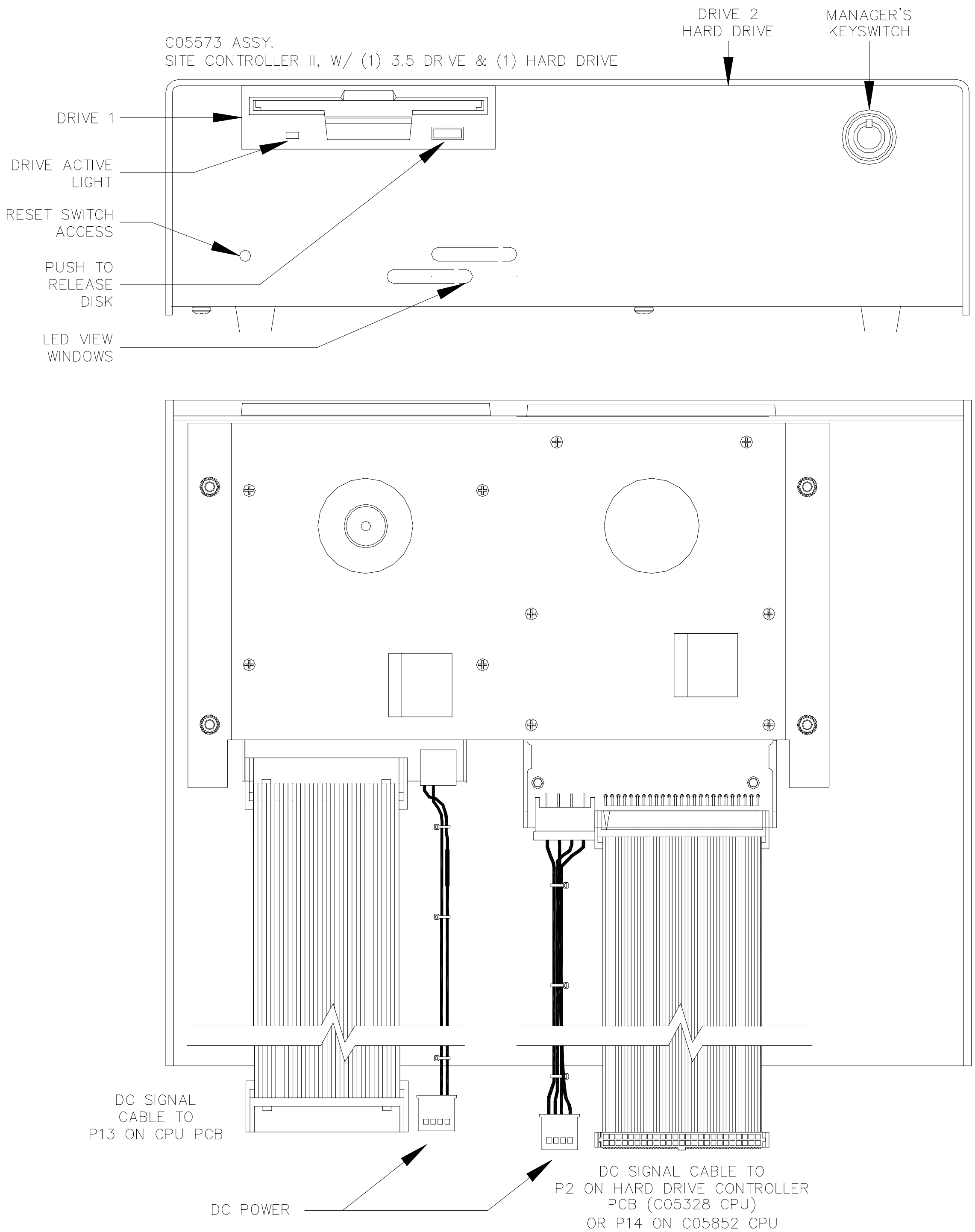
3-1/2" Disk Drive Model (Single Drive, C05574; Dual Drive, C05575)



5-1/4" Disk Drive Model (C05574) (No longer available)



Standard Fixed-Disk Hard Drive Model (C05573)



ENVIRONMENTAL AND OPERATING SPECIFICATIONS

Temperature: Operating: 4ºC to 46ºC
Transportation: -40ºC to 65ºC
Storage: -22ºC to 60ºC

Relative Humidity: Operating: 20% to 80% (noncondensing).
Max. wet bulb temperature: 26ºC
Transportation: 20% to 80% (noncondensing).
Max. wet bulb temperature: 26ºC

Power Requirements
Voltage: 90 to 132VAC.
Frequency: 47 to 63 Hz.

Average current (in Amps) with drives operating:

	1 Floppy	2 Floppies	1 Floppy, 1 Hard
Typical unit:	0.32A	0.34A	0.35A
Maximum:	0.32A	0.46A	0.47A

Power consumption (maximum):

	1 Floppy	2 Floppies	1 Floppy, 1 Hard
Floppies not operating:	38 watts	41 watts	42 watts
Floppies Operating:	52 watts	55 watts	56 watts

Dimensions (WxHxD): 12-1/2" x 3-1/2" x 9-1/2"

Weight:	1 floppy drive	8.5 pounds
	2 floppy drives	9.5 pounds
	1 floppy, 1 hard	9.7 pounds

Component Life: 5 years

Safety Standard: UL

FILTER MAINTENANCE

The Site Controller II comes equipped with an air filter on the fan intake. A properly functioning filter should help reduce problems with the floppy disk drives; a clogged filter may cause harm to the site controller due to restricted air flow. It is strongly recommended that the filter element be cleaned at least once a month in dusty environments. DO NOT install this filter element unless you plan to adhere to the recommended cleaning schedule.

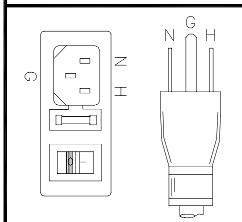
To remove the filter for cleaning: Make sure no transaction is in progress. Turn off the site controller and wait until the fan comes to a stop. Snap off the black plastic filter cover by pulling it straight back. Remove the foam filter and clean in warm soapy water. Rinse thoroughly and pat dry. Re-install filter and replace filter cover. Re-start the site.

WIRING

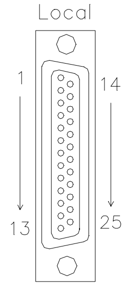
All field wiring is made to the unit by plug-in connectors. The AC power for the unit comes from the AC power plug. The RS-485 communication comes through the modular cable that is connected to the RS-485 junction box. Communication to the console goes through the RS-485 connector designated for the console. See the *CFN SC II Installation Manual* for detailed wiring instructions.

Connectors

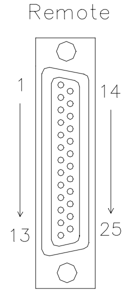
AC Power

Pinout	Pin	Function	Voltage
	H	AC hot input	115 VAC
	N	AC neutral input	AC neutral
	G	AC ground input	AC ground

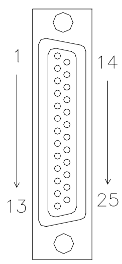
RS-232 - Data Terminal Communications Port 0

Pinout	Pin	Function	Input/Output
Local 	1	Protective ground	Ground
	2	TxD – Transmit data	Input
	3	RxD – Receive data	Output
	5	CTS – Clear to send	Output
	6	DSR – Data set ready	Output
	7	Signal ground	Ground
	8	DCD – Carrier detect	Output
	20	DTR – Data terminal ready	Input

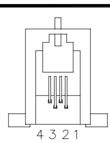
RS-232 - Modem Communications Port 2

Pinout	Pin	Function	Input/Output
Remote 	1	Protective ground	Ground
	2	TxD – Transmit data	Output
	3	RxD – Receive data	Input
	4	RTS – Request to send	Output
	5	CTS – Clear to send	Input
	6	DSR – Data set ready	Input
	7	Signal ground	Ground
	8	DCD – Carrier detect	Input
	9	+Sg – Positive signal +12 VDC	Output
	15	TxC – Transmit clock, synchronous	Not used
	17	RxC – Receive clock, synchronous	Not used
	20	DTR – Data terminal ready	Output
	23	ExC – Data rate selector	Output
	24	EX – External serial clock, synchronous	Not used

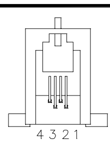
RS-232 - General Purpose Communications Ports 1 and 3

Pinout	Pin	Function	Input/Output or Determining jumper	
			Port 1	Port 3
Remote 	1	Protective ground	Protective ground	Protective ground
	2	TxD – Transmit data	K1–8	K2–8
	3	RxD – Receive data	K1–7	K2–7
	4	RTS – Request to send	K1–6	K2–6
	5	CTS – Clear to send	K1–5	K2–5
	6	DSR – Data set ready	K1–4	K2–4
	7	Signal ground	Signal ground	Signal ground
	8	DCD – Carrier detect	K1–2	K2–2
	9	+Sg – Positive signal +12 VDC	Output	Output
	10	–Sg – Negative signal –12 VDC	Output	Output
	15	TxC – Transmit clock, synchronous	K1–1, K1–9	K2–1, K2–9
	17	RxC – Receive clock, synchronous	K1–0, K1–A	K2–0, K2–A
	20	DTR – Data terminal ready	K1–3	K2–3

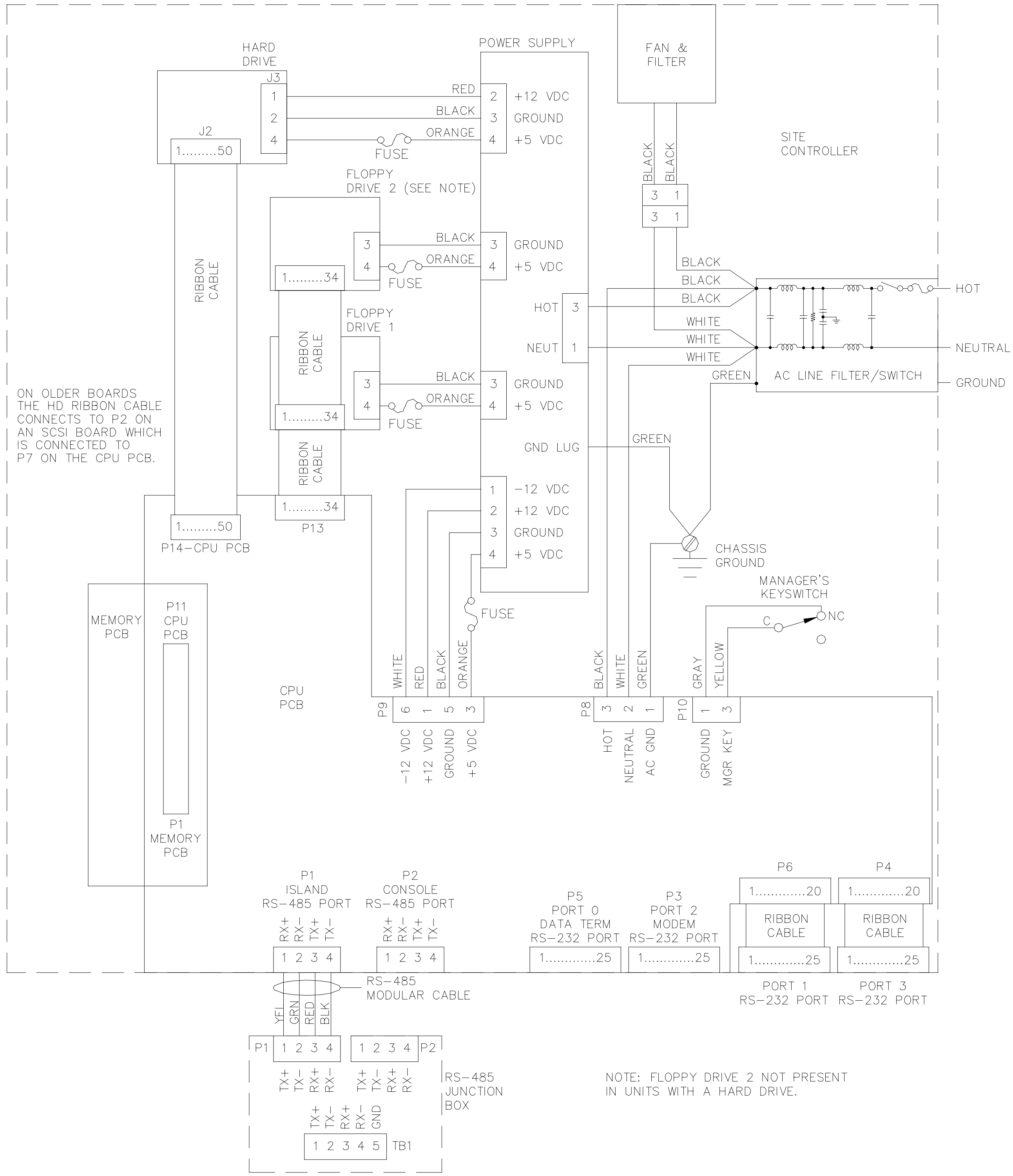
RS-485 - Loop 1 Island Communications Port

Pinout	Pin	Function		Voltage
	1	RS–485 Rx+	From	⊓⊔⊓ +5 VDC signal
	2	RS–485 Rx–	Island Loop	between pins 1 & 2
	3	RS–485 Tx+	To	⊓⊔⊓ +5 VDC signal
	4	RS–485 Tx–	Island Loop	between pins 3 & 4

RS-485 - Loop 2 Console Communications Port

Pinout	Pin	Function		Voltage
	1	RS–485 Rx+	From	⊓⊔⊓ +5 VDC signal
	2	RS–485 Rx–	Console Loop	between pins 1 & 2
	3	RS–485 Tx+	To	⊓⊔⊓ +5 VDC signal
	4	RS–485 Tx–	Console Loop	between pins 3 & 4

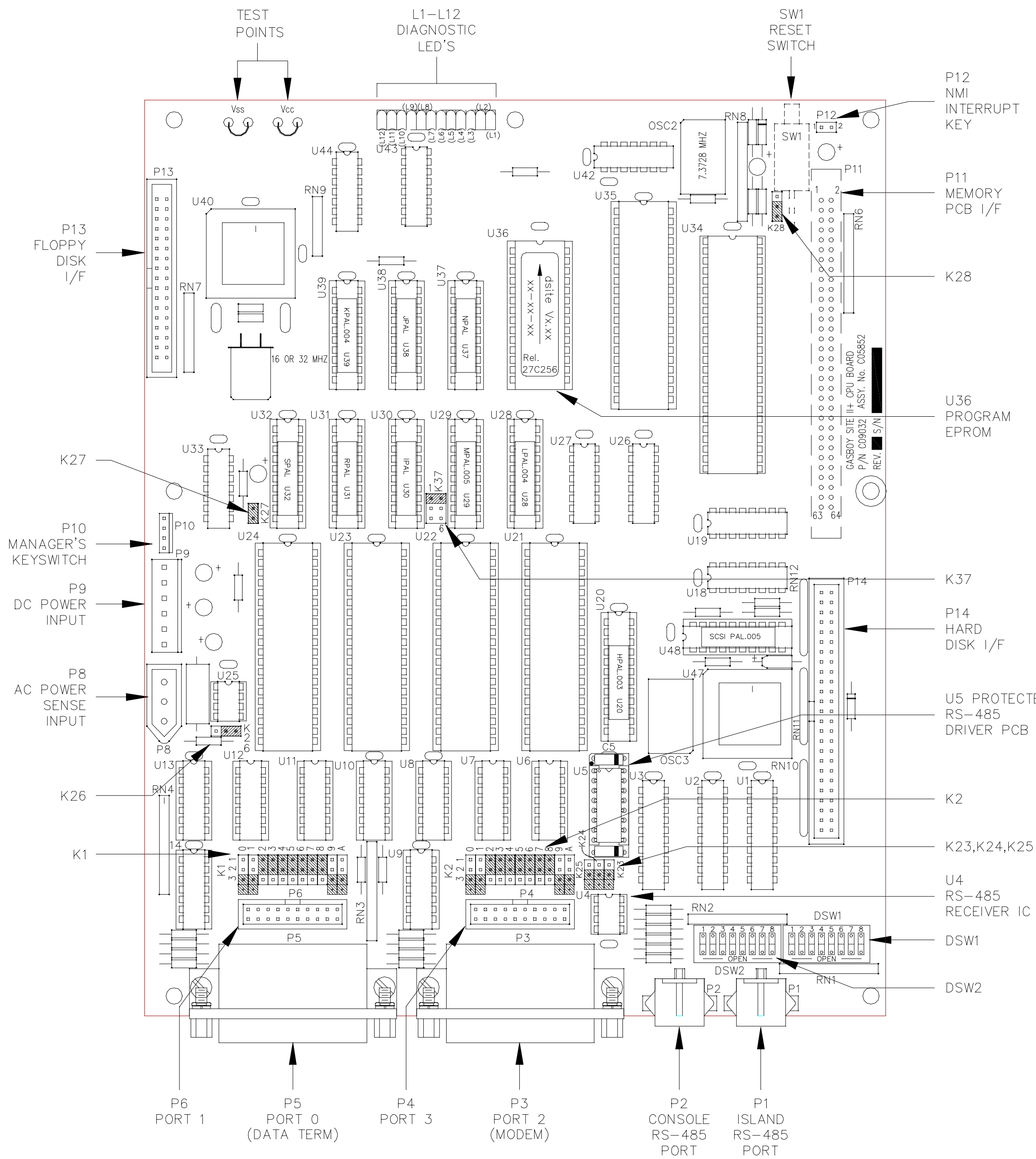
Chassis Wiring



SITE CONTROLLER II+ CPU PCB (C05852)

The CPU+ PCB for the Site Controller II (C05852) controls all activity in the site controller. The CPU PCB:

- processes all site controller data
- communicates to all CFN equipment via the RS-485 lines
- communicates on four RS-232 ports
- provides diagnostic LED's
- provides a manual reset switch
- built-in hard disk controller
- new floppy disk controller allows 1.44MB floppies
- requires OS version 2.0C or greater
- requires Memory PCB C07041 or C06731
- requires DSite 4.0 or higher
- will NOT interface with 5-1/4" disk drives

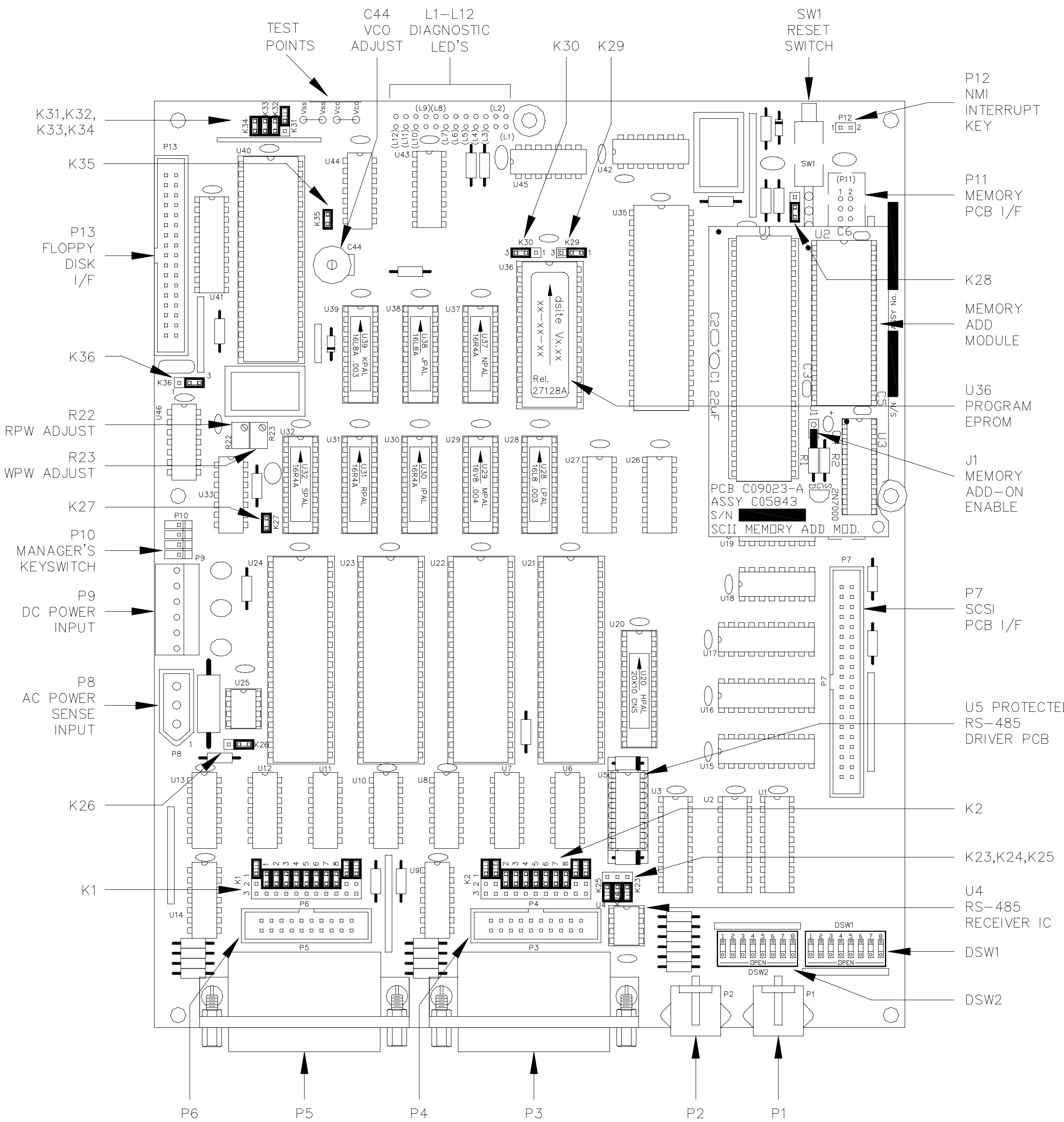


SITE CONTROLLER II CPU PCB (C05328)

The CPU PCB for the Site Controller II (C05328) controls all activity in the site controller. The CPU PCB:

- processes all site controller data
- communicates to all CFN equipment via the RS-485 lines
- communicates on four RS-232 ports
- controls the memory PCB
- interfaces with the 3-1/2, 5-1/4, or hard disk drives
- provides diagnostic LED's
- provides a manual reset switch
- requires DSite 3.3E or below

Layout



LED Indicators

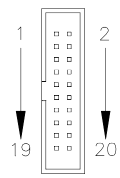
LED indicators are provided to allow you to monitor the CPU's operation.

LED	Function		Status
L1	RS−485 transmit	Console port	Flashes during console communication
L2	RS−485 receive		
L3	RS−485 transmit	Island port	Flashes during island communication
L4	RS−485 receive		
L5	AC power fail/Host poll		On − power fail, Flashes − polled by host
L6	CFN poll		Flashes − polled by CFN host
L7	Subsite poll − V2.0 & below		Flashes − polling sub−site
	FPR poll − V2.1 & above		Flashes − polling FPR
L8	ICR poll		Flashes − polling ICR
L9	PCU poll		Flahses − polling PCU
L10	Console poll		Flashes − polling console
L11	Foreground task		Flashes once per second
L12	Checksum complete		Flashes

Connectors

P4 and P6 - RS-232 General Purpose Communications Ports

CPU PCB connectors P4 and P6 are directly connected to the panel mounted RS-232 connectors for ports 1 and 3 respectively.

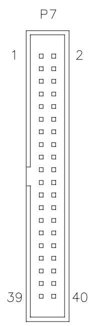
Pinout	Pin	Function	P4	P6
P4 OR P6  	1	Protective ground	Protective gnd	Protective gnd
	2	N/C		
	3	TxD − Transmit data	K2−8	K1−8
	4	TxC − Transmit clock, synchronous	K2−1, 9	K1−1, 9
	5	RxD − Receive data	K2−7	K1−7
	6	N/C		
	7	RTS − Request to send	K2−6	K1−6
	8	RxC − Receive clock, synchronous	K2−0, A	K1−0, A
	9	CTS − Clear to send	K2−5	K1−5
	10	N/C		
	11	DSR − Data set ready	K2−4	K1−4
	12	N/C		
	13	Signal ground	Signal gnd	Signal gnd
	14	DTR − Data terminal ready	K2−3	K1−3
	15	DCD − Data carrier detect	K2−2	K1−2
	16	N/C		
	17	+Sg − Positive signal +12 VDC	+12 VDC	+12 VDC
	18	N/C		
	19	−Sg − Negative signal −12 VDC	−12 VDC	−12 VDC
	20	N/C		

See the charts shown earlier in this section for the exact pinouts of these connectors.

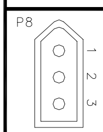
P1 - RS-485 Island Communications Port, P2 - RS-485 Console Communications Port

P3 - RS-232 Modem Communications Port 2, P5 - RS-232 Data Terminal Communications Port 0

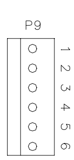
P7 - SCSI PCB Interface - C05328 Only

Pinout	Pin	Function	Voltage
	1,2	+5 VDC	+5 VDC
	3	XD0 – Data 0	+5 VDC Signal
	4	XD1 – Data 1	+5 VDC Signal
	5	XD2 – Data 2	+5 VDC Signal
	6	XD3 – Data 3	+5 VDC Signal
	7	XD4 – Data 4	+5 VDC Signal
	8	XD5 – Data 5	+5 VDC Signal
	9	XD6 – Data 6	+5 VDC Signal
	10	XD7 – Data 7	+5 VDC Signal
	11	XDIR – Data direction	+5 VDC Signal
	12	XA0 – Address 0	+5 VDC Signal
	18	XA6 – Address 6	+5 VDC Signal
	19	XA7 – Address 7	+5 VDC Signal
	20	TXRQ1 – Transmit request	+5 VDC – Write
	21	XIOSEL – Address on XIO selected	+5 VDC – On
	22	TXAKA – Transmit acknowledge	0 VDC – On
	23	XR/W – XIO read/write	+5 VDC Signal
	24	$\overline{\text{TXSTB}}$ – Transmit strobe	0 VDC – On
	26	DGRNT – Bus granted to DMA	0 VDC – On
	27	XPCO – Interrupt request	+5 VDC – On
	32	XE – 68008 – System clock	+5 VDC Signal
	34	$\overline{\text{XVPA}}$ – Use auto-vectored interrupts	0 VDC – On
	36	XRESET – System reset	0 VDC–normal, +5 VDC reset
	39,40	Ground	DC ground
	13,14,15,16,17,25,28,29,30,31,33,35,37,38 – Not used		

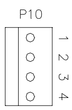
P8 - AC Power Input

Pinout	Pin	Wire	Function	Voltage
	1	Green	AC ground	AC ground
	2	White	AC neutral input	AC neutral
	3	Black	AC hot input	115 VAC

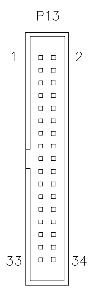
P9 - DC Power Input

Pinout	Pin	Wire	Function	Voltage
	1	Red	+12 VDC in	+12 VDC
	2		DC ground	DC ground
	3	Orange	+5 VDC in	+5 VDC
	4		+5 VDC	+5 VDC
	5	Black	DC ground	DC ground
	6	White	–12 VDC in	–12 VDC

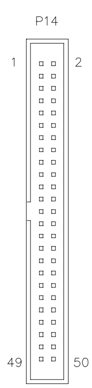
P10 - Manager's Keyswitch

Pinout	Pin	Wire	Switch	Function	Voltage
	1	Gray	NC	DC ground	DC ground
	2			Same as pin 3	0 VDC – Off (key removed)
	3	Yellow	C	Manager mode	+5 VDC – On (manager mode)
	4	Violet	NO	No function	

P13 - Floppy Disk Interface and Disk Drive Connector

Pinout	Pin	Function	Voltage
	1–33 odd pins	DC ground	DC ground
	2	RPM – C05852 only	+5 VDC – On
	4	N/C	
	6	N/C	
	8	INDEX	0 VDC
	10	FDSEL0	+5 VDC – Normal
	12	FDSEL1	0 VDC – Write
	14	N/C	
	16	MOTOR ON	
	18	DIRECTION	0 VDC – Normal
	20	STEP	+5 VDC – On
	22	WRDATA	0 VDC – Normal
	24	WRGATE	+5 VDC – On
	26	TRK0	0 VDC – On
	28	WRPROT	+5 VDC – On
	30	RDDATA	+5 VDC – Normal
	32	SIDESEL	+5 VDC signal
	34	RDY	+5 VDC – Write

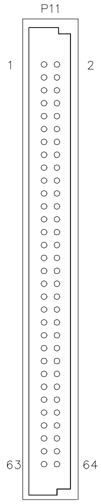
P14 - CPU SCSI Interface Hard Drive Disk Connector (C05852 Only)

Pinout	Pin	Function	Voltage
	2	$\overline{\text{DB0}}$ – Data 0, SCSI bus	0 VDC – On
	4	$\overline{\text{DB1}}$ – Data 1, SCSI bus	0 VDC – On
	6	$\overline{\text{DB2}}$ – Data 2, SCSI bus	0 VDC – On
	8	$\overline{\text{DB3}}$ – Data 3, SCSI bus	0 VDC – On
	10	$\overline{\text{DB4}}$ – Data 4, SCSI bus	0 VDC – On
	12	$\overline{\text{DB5}}$ – Data 5, SCSI bus	0 VDC – On
	14	$\overline{\text{DB6}}$ – Data 6, SCSI bus	0 VDC – On
	16	$\overline{\text{DB7}}$ – Data 7, SCSI bus	0 VDC – On
	18	$\overline{\text{DBP}}$ – Parity bit (odd) SCSI bus	0 VDC – On
	26	+5 VDC – +5 VDC	+5 VDC
	32	$\overline{\text{ATN}}$ – SCSI Attention condition	0 VDC – On
	36	$\overline{\text{BSY}}$ – active	0 VDC – On
	38	$\overline{\text{ACK}}$ – Acknowledge data transfer	0 VDC – On
	40	$\overline{\text{RST}}$ – reset	+5 VDC normal, 0 VDC – reset
	42	$\overline{\text{MSG}}$ – Active during message phase	0 VDC – On
	44	$\overline{\text{SEL}}$ – Active during SCSI device selection	0 VDC – On
	46	$\overline{\text{C}}$/D – Control or data information on $\overline{\text{SCSI}}$ bus	0 VDC–Control, +5 VDC–Data
	48	$\overline{\text{REQ}}$ – Request data transfer	0 VDC – On
	50	$\overline{\text{I}}$/O – Direction of SCSI bus	0 VDC – On
	1,3,5,7,9,11,13,15,17,19,20,21,22,23,24,27,28,29,30,31,33,34,35,37,39,41,43,45,47,49 = DC ground		
	25 = N/C		

P11 - Memory PCB Interface

Connector View From Solder Side of PCB

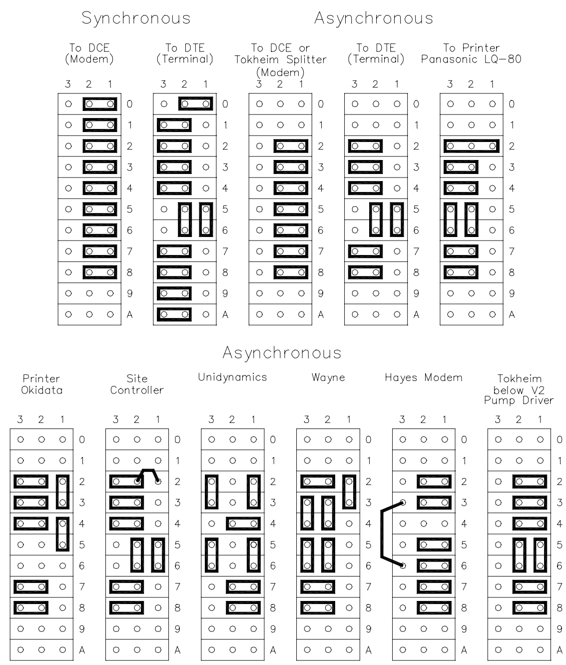
P11



Pinout	Pin	Function	Voltage
	1–4	DC ground	DC ground
	5	A13 – Address line 13	+5 VDC – On
	6	A14 – Address line 14	+5 VDC – On
	7	$\overline{BSTAT1}$ – Battery 1 status	+5 VDC – Normal, 0VDC – Fail
	8	$\overline{BSTAT2}$ – Battery 2 status	+5 VDC – Normal, 0VDC – Fail
	9–10	VBB – Battery voltage from memory PCB	0 VDC
	11	$\overline{DCFL}$ – DC power fail	+5 VDC – Normal, 0VDC – Fail
	12	$\overline{BSTAT3}$ – Battery 3 status (C08331 only)	+5 VDC – Normal, 0VDC – Fail
		$\overline{S18}$ – Paged memory bank 18 select (C06731/C07041)	0 VDC – On
	13	R/$\overline{W}$	0 VDC – Write
	14	CLKE – Memory clock	+5 VDC signal
	15	$\overline{S17}$ – Paged memory bank 17 select	0 VDC – On
	16	A12 – Address 12	+5 VDC – On
	17	$\overline{MEMIN}$ – Not used, grounded on memory PCB	0 VDC – Normal
	18	A11 – Address 11	+5 VDC – On
	19	$\overline{MRDY}$ – extends access time for slower memory devices	0 VDC – On
	20	A10 – Address 10	+5 VDC – On
	21	N/C	+5 VDC – Normal
	22	A9 – Address 9	+5 VDC signal
	23	$\overline{R}$/W	+5 VDC – Write
	24	A8 – Address 8	+5 VDC – On
	25	$\overline{S15}$ – Paged memory bank 15 select	0 VDC – On
	26	A7 – Address 7	+5 VDC – On
	27	$\overline{S14}$ – Paged memory bank 14 select	0 VDC – On
	28	A6 – Address 6	+5 VDC – On
	29	$\overline{S13}$ – Paged memory bank 13 select	0 VDC – On
	30	A5 – Address 5	+5 VDC – On
	31	$\overline{S12}$ – Paged memory bank 12 select	0 VDC – On
	32	A4 – Address 4	+5 VDC – On
	33	$\overline{S11}$ – Paged memory bank 11 select	0 VDC – On
	34	A3 – Address 3	+5 VDC – On
	35	$\overline{S10}$ – Paged memory bank 10 select	0 VDC – On
	36	A2 – Address 2	+5 VDC – On
	37	$\overline{S9}$ – Paged memory bank 9 select	0 VDC – On
	38	A1 – Address 1	+5 VDC – On
	39	$\overline{S8}$ – Paged memory bank 8 select	0 VDC – On
	40	A0 – Address 0	+5 VDC – On
	41	$\overline{S7}$ – Paged memory bank 7 select	0 VDC – On
	42	D7 – Data 7	+5 VDC – On
	43	$\overline{S6}$ – Paged memory bank 6 select	0 VDC – On
	44	D6 – Data 6	+5 VDC – On
	45	$\overline{S5}$ – Paged memory bank 5 select	0 VDC – On
	46	D5 – Data 5	+5 VDC – On
	47	$\overline{S4}$ – Paged memory bank 4 select	0 VDC – On
	48	D4 – Data 4	+5 VDC – On
	49	$\overline{S3}$ – Paged memory bank 3 select	0 VDC – On
	50	D3 – Data 3	+5 VDC – On
	51	$\overline{S2}$ – Paged memory bank 2 select	0 VDC – On
	52	D2 – Data 2	+5 VDC – On
	53	$\overline{S1}$ – Paged memory bank 1 select	0 VDC – On
	54	D1 – Data 1	+5 VDC – On
	55	$\overline{S0}$ – Paged memory bank 0 select	0 VDC – On
	56	D0 – Data 0	+5 VDC – On
	57	$\overline{SELCLK}$	0 VDC – On
	58	$\overline{S16}$ – Paged memory bank 16 select	0 VDC – On
	59	$\overline{BS0}$ – Board select 0	+5 VDC – On
	60	$\overline{BS1}$ – RAM U15 chip select	+5 VDC – On
	61–64	+5 VDC	+5 VDC

Jumpers

K1 and K2, Port 1 and Port 3 Configuration Jumpers



NOTE: Kludge plug C06375 must be installed for Tokheim electronic pump interface unless using a Tokheim Splitter.

K23-K36 CPU Board Jumpers (C05328 CPU PCB)

Jumper	Function	Status
K23	Synchronous comm signals disabled at modem port	Open
K24	Synchronous comm signals disabled at modem port	Open
K25	Synchronous comm signals disabled at modem port	Open
K26	AC power fail signal enabled	1–2 Open
		2–3 Jumpered
K27	Deadman timer enabled	Jumpered
K28	Soft reset enabled	1–2 Jumpered
		2–3 Open
K29	U36 is a 27128 EPROM for DSITE V2.4 and below U36 is a 27256 EPROM for DSITE V3.1A and above	1–2 Open for 27128 EPROM
		1–2 Jumpered for 27256 EPROM
		2–3 Jumpered for 27128 EPROM
		2–3 Open for 27256 EPROM
K30	U36 is a 27128 EPROM for DSITE V2.4 and below	1–2 Open
	U36 is a 27256 EPROM for DSITE V3.1A and above	2–3 Jumpered
K31	Floppy drive normal operating mode enabled	Open
K32	Floppy drive MFM recording enabled	Jumpered
K33	Floppy drive pre–compression enabled	Jumpered
K34	Floppy drive is 3–1/2" or 5–1/4"	Jumpered
K35	POR signal to U28	Jumpered
K36	FDC READY signal from disk drive	1–2 Open
		2–3 Jumpered

J1, Memory Add Module Jumper (C05328 CPU PCB)

Jumper	Function	Status
J1	Memory Add-on Enable	Jumpered-Memory disabled (OS V1.0 and below)
		Open-Memory enabled (OS V2.0 and above)

K23-K37 CPU Board Jumpers (C05852 CPU PCB)

Jumper	Function	Status
K23	Synchronous comm signals disabled at modem port	Open
K24	Synchronous comm signals disabled at modem port	Open
K25	Synchronous comm signals disabled at modem port	Open
K26	AC power fail signal enabled	1-2 Open
		2-3 Jumpered
K27	Deadman timer enabled	Jumpered
K28	Soft reset enabled	1-2 Jumpered
		2-3 Open
K37	Number of wait states for PCMCIA RAM accesses	1-2 Jumpered
		3-4 Open
		5-6 Open

Switches

DSW1 - Backup Sign-on, Hard Disk Access, Boot Modes

Switch	Function	Setting
DSW1-1	Backup sign-on disabled	Open
DSW1-2	Hard disk	Open-Disabled
		Closed-Enabled
DSW3-3	Not used	Don't care
DSW1-4	Not used	Don't care
DSW1-5	Diagnostic program disabled	Open
DSW1-6	Not used	Don't care
DSW1-7	See below	
DSW1-8	See below	

Switches DSW1-7 and DSW1-8 control three things:

- the site controller mode (BOOT or MONITOR) when it is reset or powered up.
- the status of the LED's (NORMAL or SCAN)
- the site controller mode (BOOT or MONITOR) when it crashes

NOTE: See the Site Manager's Manual, Appendix A for explanations of the different modes.

DSW1-7 and DSW1-8 Mode Set Switches

Switches		Modes		
DSW1-7	DSW1-8	Reset	LED's	Crash
OPEN	OPEN	BOOT	NORMAL	BOOT
OPEN	CLOSED	BOOT	NORMAL	MONITOR
CLOSED	OPEN	BOOT	SCAN	BOOT
CLOSED	CLOSED	MONITOR	SCAN	MONITOR

DSW2 - Baud Rates

PORT	SWITCH	BAUD RATES 300	1200	2400	9600
LOCAL (Always 0)	DSW2-1	OPEN	CLOSED	OPEN	CLOSED
	DSW2-2	OPEN	OPEN	CLOSED	CLOSED
REMOTE (Usually 2)	DSW2-3	OPEN	CLOSED	OPEN	CLOSED
	DSW2-4	OPEN	OPEN	CLOSED	CLOSED
SUBSITES (1, 2, or 3)	DSW2-5	OPEN	CLOSED	OPEN	CLOSED
	DSW2-6	OPEN	OPEN	CLOSED	CLOSED
LOG PRINTER (1, 2, or 3)	DSW2-7	OPEN	CLOSED	OPEN	CLOSED
	DSW2-8	OPEN	OPEN	CLOSED	CLOSED

Manager's Keyswitch

The Manager's keyswitch provides security against unauthorized access to particular site controller commands, especially configure commands. The switch should always be left in the off position when it is not needed.

The Manager's keyswitch works as follows:

- If the user's permission level is greater than the permission level of the command, the key is not needed.
- If the user's permission level is less than the command's but the key setting is greater than the command, access to the command is allowed.
- If the user's permission level and the key setting are less than the command, access is denied.

Test Points - CPU PCB

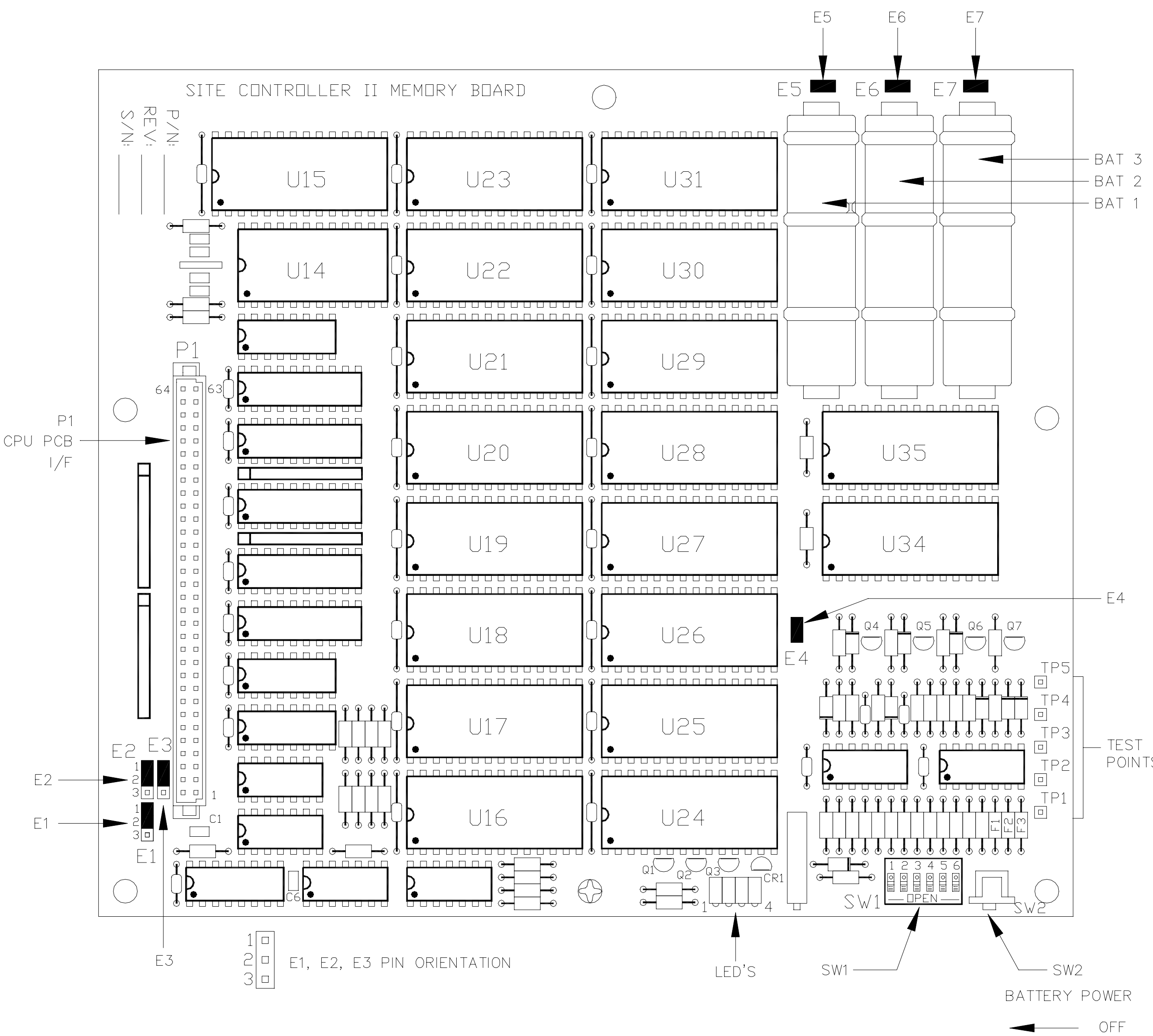
CPU PCB	Test Points +	−	Voltage
C05328 SC II CPU	Vcc	Vss	+4.90 – +5.10
C05852 SC II + CPU	Vcc	Vss	+4.90 – +5.10

SITE CONTROLLER II MEMORY PCB

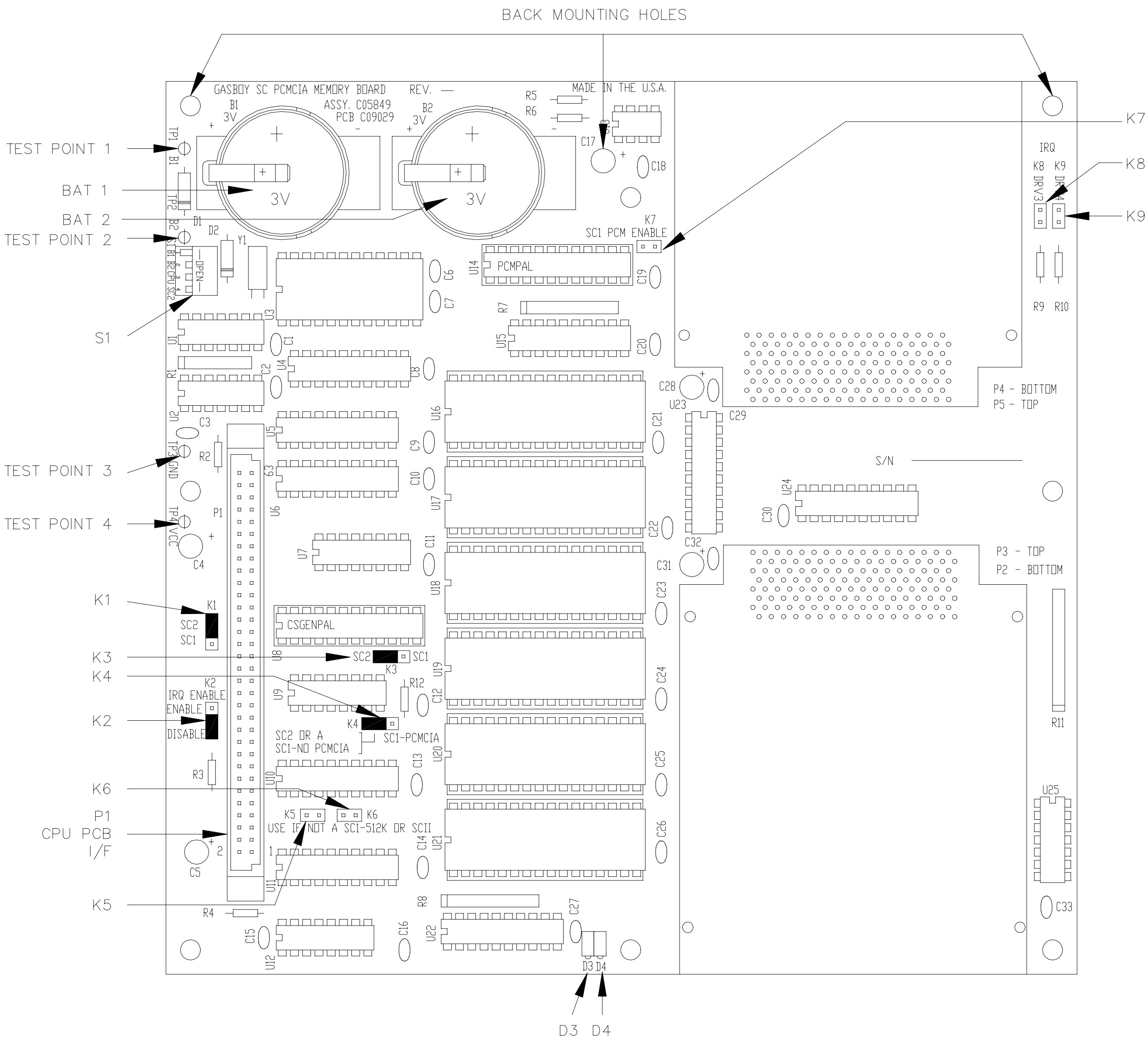
The Site Controller II Memory PCB:

- may be one of three versions: C08331 contains 32K RAM's and provides 512K of memory; C06731 and C07041 provide 760K RAM and C06731 can serve as a drop-in replacement for memory PCB C08331.
- provides the battery-backed RAM for the storage of all transaction and system data
- provides Ni-Cad batteries (lithium batteries for C06731 and C07041) for data retention during power failures
- can provid e battery power to specified devices on the CPU PCB
- alerts site CPU PCB of impending DC power failure

Layout - Site Controller II Memory PCB (C08331; No longer available)

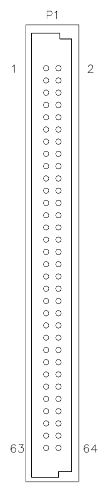


Layout - Site Controller II PCMCIA 760K (C06731 and C07041)



Connector

P1 CPU PCB Interface

Pinout	Pin	Function	Voltage
Connector View From Component Side of PCB 	1–4	DC ground	DC ground
	5	A13 – Address line 13	+5 VDC – On
	6	A14 – Address line 14	+5 VDC – On
	7	$\overline{\text{BSTAT1}}$ – Battery 1 status	+5 VDC – Normal, 0VDC – Fail
	8	$\overline{\text{BSTAT2}}$ – Battery 2 status	+5 VDC – Normal, 0VDC – Fail
	9–10	VBB – Battery voltage from memory PCB	0 VDC
	11	$\overline{\text{DCFL}}$ – DC power fail	+5 VDC – Normal, 0VDC – Fail
	12	$\overline{\text{BSTAT3}}$ – Battery 3 status (C08331 only)	+5 VDC – Normal, 0VDC – Fail
		$\overline{\text{S18}}$ – Paged memory bank 18 select (C06731/C07041)	0 VDC – On
	13	R/$\overline{\text{W}}$	0 VDC – Write
	14	CLKE – Memory clock	+5 VDC signal
	15	$\overline{\text{S17}}$ – Paged memory bank 17 select	0 VDC – On
	16	A12 – Address 12	+5 VDC – On
	17	$\overline{\text{MEMIN}}$ – Not used, grounded on memory PCB	0 VDC – Normal
	18	A11 – Address 11	+5 VDC – On
	19	$\overline{\text{MRDY}}$ – extends access time for slower memory devices	0 VDC – On
	20	A10 – Address 10	+5 VDC – On
	21	N/C	+5 VDC – Normal
	22	A9 – Address 9	+5 VDC signal
	23	$\overline{\text{R}}$/W	+5 VDC – Write
	24	A8 – Address 8	+5 VDC – On
	25	$\overline{\text{S15}}$ – Paged memory bank 15 select	0 VDC – On
	26	A7 – Address 7	+5 VDC – On
	27	$\overline{\text{S14}}$ – Paged memory bank 14 select	0 VDC – On
	28	A6 – Address 6	+5 VDC – On
	29	$\overline{\text{S13}}$ – Paged memory bank 13 select	0 VDC – On
	30	A5 – Address 5	+5 VDC – On
	31	$\overline{\text{S12}}$ – Paged memory bank 12 select	0 VDC – On
	32	A4 – Address 4	+5 VDC – On
	33	$\overline{\text{S11}}$ – Paged memory bank 11 select	0 VDC – On
	34	A3 – Address 3	+5 VDC – On
	35	$\overline{\text{S10}}$ – Paged memory bank 10 select	0 VDC – On
	36	A2 – Address 2	+5 VDC – On
	37	$\overline{\text{S9}}$ – Paged memory bank 9 select	0 VDC – On
	38	A1 – Address 1	+5 VDC – On
	39	$\overline{\text{S8}}$ – Paged memory bank 8 select	0 VDC – On
	40	A0 – Address 0	+5 VDC – On
	41	$\overline{\text{S7}}$ – Paged memory bank 7 select	0 VDC – On
	42	D7 – Data 7	+5 VDC – On
	43	$\overline{\text{S6}}$ – Paged memory bank 6 select	0 VDC – On
	44	D6 – Data 6	+5 VDC – On
	45	$\overline{\text{S5}}$ – Paged memory bank 5 select	0 VDC – On
	46	D5 – Data 5	+5 VDC – On
	47	$\overline{\text{S4}}$ – Paged memory bank 4 select	0 VDC – On
	48	D4 – Data 4	+5 VDC – On
	49	$\overline{\text{S3}}$ – Paged memory bank 3 select	0 VDC – On
	50	D3 – Data 3	+5 VDC – On
	51	$\overline{\text{S2}}$ – Paged memory bank 2 select	0 VDC – On
	52	D2 – Data 2	+5 VDC – On
	53	$\overline{\text{S1}}$ – Paged memory bank 1 select	0 VDC – On
	54	D1 – Data 1	+5 VDC – On
	55	$\overline{\text{S0}}$ – Paged memory bank 0 select	0 VDC – On
	56	D0 – Data 0	+5 VDC – On
	57	$\overline{\text{SELCLK}}$	0 VDC – On
	58	$\overline{\text{S16}}$ – Paged memory bank 16 select	0 VDC – On
	59	$\overline{\text{BS0}}$ – Board select 0	+5 VDC – On
	60	$\overline{\text{BS1}}$ – RAM U15 chip select	+5 VDC – On
	61–64	+5 VDC	+5 VDC

LED Indicators (C08331, C06731, C07041)

LED indicators are provided to allow you to monitor the battery voltage. The chart at right is for the C08331 Board

LED	Function
1	Battery 1 failure
2	Battery 2 failure
3	Battery 3 failure
4	Battery voltage (VBB) greater than 3.5 VDC

The LED indicators in the chart on the right are for the C06731 and C07041 PCMCIA PCBs.

LED	FUNCTION
D3	Battery Voltage OK
D4	Battery Voltage Low

Jumpers - Site Controller II Memory PCB (C08331)

Jumper	Function	Setting
E1	RAM IC U34 enabled	1–2 Jumpered
		2–3 Open
E2	Address line 13 enabled	1–2 Jumpered
		2–3 Open
E3	Address line 14 enabled	1–2 Jumpered
		2–3 Open
E4	Connect battery power to RAM IC's	Jumpered
E5	Connect battery 1 to PCB	Jumpered
E6	Connect battery 2 to PCB	Jumpered
E7	Connect battery 3 to PCB	Jumpered

Jumpers - Site Controller PCMCIA Memory PCB (C06731 and C07041)

The following jumpers apply to the site controller PCMCIA Memory PCB.

Memory Settings

Jumper	Function	Settings for SC 1
K1	SC1 / SC2 Selection	SC1
K2	PCMCIA IRQ Enable	Disable
K3	SC1 / SC2 Selection	SC1
K4	SC2 or SC1 – NO PCMCIA / SC1 – PCMCIA	SC1 – NO PCMCIA
K5	Memory Address line 14 Disable	Jumpered for SC1s without 512K CPU
K6	Memory Address line 13 Disable	Jumpered for SC1s without 512K CPU
K7	SC1 PCMCIA ENable	Open
K8	PCMCIA Drive 3 IRQ Enable	Open
K9	PCMCIA Drive 4 IRQ Enable	Open

Switches - Site Controller II Memory PCB (C08331)

SW1 - Battery Enable Switches

Switch	Function	Setting
SW1–1	Enable battery 1 failure alert	Closed
SW1–2	Enable battery 2 failure alert	Closed
SW1–3	Enable battery 3 failure alert	Closed
SW1–4	Enable battery 1 charge circuit	Closed
SW1–5	Enable battery 2 charge circuit	Closed
SW1–6	Enable battery 3 charge circuit	Closed

SW2 - Battery Power to CPU PCB Switch

Switch	Function	Setting
SW2	Disable battery backup to CPU PCB	Open (to the left)

Switches - Site Controller PCMCIA Memory PCB (C06731 and C07041)

The following switches apply to the PCMCIA site controller memory PCB.

SW1 - Battery Enable Switches

Switch	Function	Settings for SC 2
SW1–1	Enable battery 1	Closed
SW1–2	Enable battery 2	Open
SW1–3	Enable battery backup to CPU PCB	Open
SW1–4	SC1 / SC2 Selection	Open for SC2

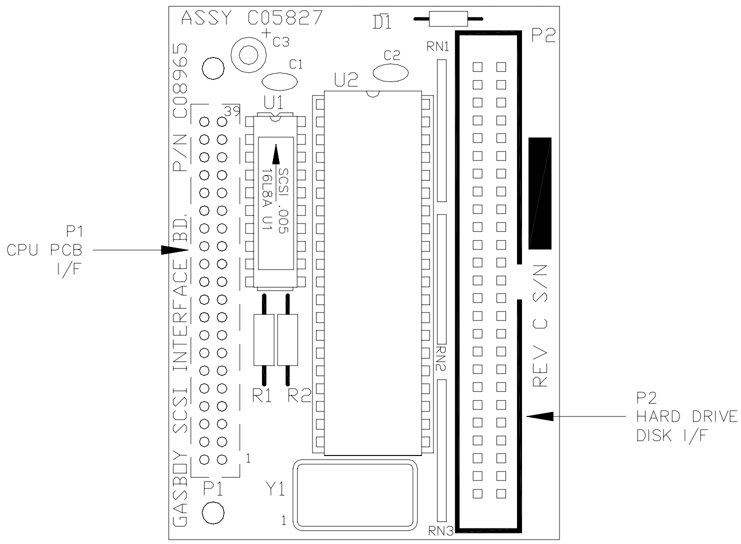
Test Points - Memory PCB

CPU PCB	TEST POINT	FUNCTION	VOLTAGE
C08331	TP1	Ground	0 VDC
	TP2	DC power fail reference voltage	1.1–1.2 VDC
	TP3	Battery–3	Power on, 4–4.1 VDC; power off, 3.9–3.2 VDC
	TP4	Battery–2	Power on, 4–4.1 VDC; power off, 3.9–3.2 VDC
	TP5	Battery–1	Power on, 4–4.1 VDC; power off, 3.9–3.2 VDC
C06731 & C07041	TP1	Battery–1	3.0 – 3.5 VDC
	TP2	Battery–2	3.0 – 3.5 VDC
	TP3	Ground	0 VDC
	TP4	Vcc	4.90 – 5.10 VDC

SCSI INTERFACE PCB (C05827; USED WITH C05328 CPU PCB ONLY)

The SCSI Interface PCB provides an interface between the hard disk drive and the Site Controller II CPU board (C05328 CPU only).

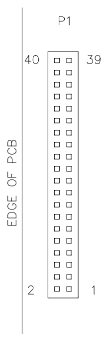
Layout



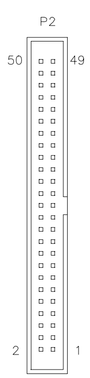
Rev. D or greater SCSI interface board requires version 1.0K or above. DSITE V3.2C or above is required to work with updated SCSI interface board (C05827); newer hard drives will require DSite V3.3B or above.

Connectors

P1 SCSI Interface Connector

Pinout	Pin	Function	Voltage
	1,2	+5 VDC	+5 VDC
	3	XD0 – Data 0	⎍⎍ +5 VDC Signal
	4	XD1 – Data 1	⎍⎍ +5 VDC Signal
	5	XD2 – Data 2	⎍⎍ +5 VDC Signal
	6	XD3 – Data 3	⎍⎍ +5 VDC Signal
	7	XD4 – Data 4	⎍⎍ +5 VDC Signal
	8	XD5 – Data 5	⎍⎍ +5 VDC Signal
	9	XD6 – Data 6	⎍⎍ +5 VDC Signal
	10	XD7 – Data 7	⎍⎍ +5 VDC Signal
	11	XDIR – Data direction	⎍⎍ +5 VDC Signal
	12	XA0 – Address 0	⎍⎍ +5 VDC Signal
	18	XA6 – Address 6	⎍⎍ +5 VDC Signal
	19	XA7 – Address 7	⎍⎍ +5 VDC Signal
	20	TXRQ1 – Transmit request	⎍⎍ +5 VDC – Write
	21	XIOSEL – Address on XIO selected	⎍⎍ +5 VDC – On
	22	TXAKA – Transmit acknowledge	⎍⎍ 0 VDC – On
	23	XR/W – XIO read/write	⎍⎍ +5 VDC Signal
	24	$\overline{\text{TXSTB}}$ – Transmit strobe	⎍⎍ 0 VDC – On
	26	DGRNT – Bus granted to DMA	⎍⎍ 0 VDC – On
	27	XPCO – Interrupt request	⎍⎍ +5 VDC – On
	32	XE – 68008 – System clock	⎍⎍ +5 VDC Signal
	34	$\overline{\text{XVPA}}$ – Use auto–vectored interrupts	⎍⎍ 0 VDC – On
	36	XRESET – System reset	N/C
	39,40	DC ground	DC ground
	13,14,15,16,17,25,28,29,30,31,33,35,37,38 – Not used		

P2 CPU SCSI Interface Connector and Hard Drive Disk Connector

Pinout	Pin	Function	Voltage
	2	$\overline{\text{DB0}}$ – Data 0, SCSI bus	⎍⎍ 0 VDC – On
	4	$\overline{\text{DB1}}$ – Data 1, SCSI bus	⎍⎍ 0 VDC – On
	6	$\overline{\text{DB2}}$ – Data 2, SCSI bus	⎍⎍ 0 VDC – On
	8	$\overline{\text{DB3}}$ – Data 3, SCSI bus	⎍⎍ 0 VDC – On
	10	$\overline{\text{DB4}}$ – Data 4, SCSI bus	⎍⎍ 0 VDC – On
	12	$\overline{\text{DB5}}$ – Data 5, SCSI bus	⎍⎍ 0 VDC – On
	14	$\overline{\text{DB6}}$ – Data 6, SCSI bus	⎍⎍ 0 VDC – On
	16	$\overline{\text{DB7}}$ – Data 7, SCSI bus	⎍⎍ 0 VDC – On
	18	$\overline{\text{DBP}}$ – Parity bit (odd) SCSI bus	⎍⎍ 0 VDC – On
	26	+5 VDC – +5 VDC	+5 VDC
	32	$\overline{\text{ATN}}$ – SCSI Attention condition	⎍⎍ 0 VDC – On
	36	$\overline{\text{BSY}}$ – active	⎍⎍ 0 VDC – On
	38	$\overline{\text{ACK}}$ – Acknowledge data transfer	⎍⎍ 0 VDC – On
	40	$\overline{\text{RST}}$ – reset	+5 VDC normal, 0 VDC – reset
	42	$\overline{\text{MSG}}$ – Active during message phase	⎍⎍ 0 VDC – On
	44	$\overline{\text{SEL}}$ – Active during SCSI device selection	⎍⎍ 0 VDC – On
	46	$\overline{\text{C/D}}$ – Control or data information on $\overline{\text{SCSI}}$ bus	⎍⎍ 0 VDC–Control, +5 VDC–Data
	48	$\overline{\text{REQ}}$ – Request data transfer	⎍⎍ 0 VDC – On
	50	$\overline{\text{I/O}}$ – Direction of SCSI bus	⎍⎍ 0 VDC – On
	1,3,5,7,9,11,13,15,17,19,20,21,22,23,24,27,28,29,30,31,33,34,35,37,39,41,43,45,47,49 = DC ground 25 = N/C		

DISK DRIVES

The Site Controller II can contain any of the following:

- one 5.25" drive (Teac or Fujitsu)
- one 3.5" drive (Sony or Panasonic)
- two 3.5" drives (Sony or Panasonic)
- one 3.5" drive and one hard drive (Sony or Panasonic, floppy; Conner, Quantum, or Seagate, hard drive)

Each disk drive has jumpers or switches to be set. The applicable settings vary by manufacturer. The following table lists manufacturers, models, drive types, and switch settings.

Jumpers and Switches

Disk Drive Jumper/Switch Settings

Manufacturer	Disk	Drive	Jumpers/Switches
TEAC	5.25"	A	D0,FG—installed; all others removed
FUJITSU	5.25"	A	DS0,RDY—installed; all others removed
PANASONIC	3.5"	A	SW1=RY, SW3=D0
		B	SW1=RY, SW3=D1
SONY	3.5"	A	Switch at position 0
		B	Switch at position 1
CONNER	Hard	C	All jumpers removed. Requires: SC2 V1.0K or greater, SCSI Rev. B or greater, Dsite V3.2C or greater. If model #1080, requires Dsite V3.3B or greater.
QUANTUM	Hard	C	All address jumpers removed (A0 – A2). Requires: SC2 V1.0K or greater. SCSI Rev. B or greater, DSite V3.2C or greater. If jumper TE exist, it must be installed.
SEAGATE	Hard	C	All address jumpers removed. Jumper pins 3 & 4 (TB) and pins 15 & 16 (TE). Requires C05852 CPU PCB running V2.0 or greater and DSite V4.0F or greater. OR Requires C05328 CPU PCB Revision E or greater running V1.0K or greater and DSite V3.3E or greater.
FUJITSU	Hard	C	Jumper pins 1 & 2 (IDC); 11 &12 (start cmd); 13 & 14 (narrow/wide) and pins 23 & 24 (terminator power). Requires C05852 CPU PCB running V2.0 or greater and DSite V4.0F or greater. Not compatible with C05328 CPU PCB.

Setting Floppy Disk Drives For Use With The Site Controller II

To prepare the disk drive, you must ensure that the select switches SW3 and SW1 are set properly. These are located on the floppy drive's PC board and may be accessed through two small entry holes in the sheet metal shroud. *NOTE: The switches are labeled, although they are rather difficult to identify as they are printed on the PC board next to each switch.* The switches should be set as follows;

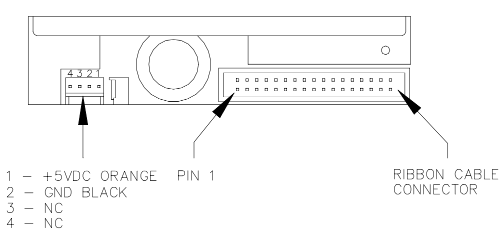
SW1
Set switch to position **RY**

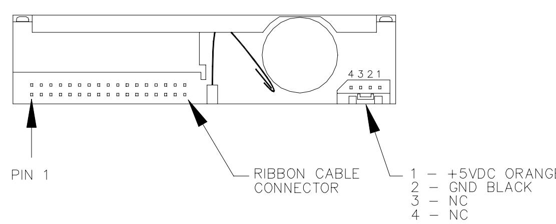
SW3 (Drive select switch)
For the **A** drive, set switch to position **D0**
For the **B** drive, set switch to position **D1**

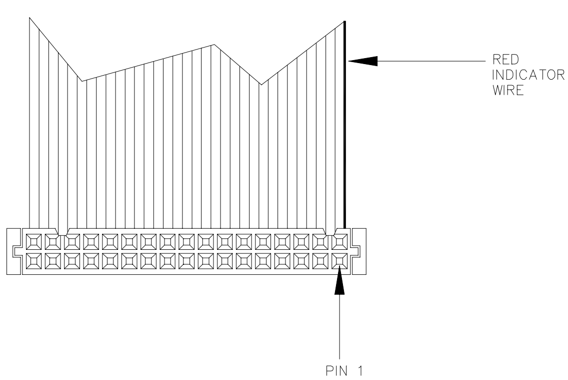
Installation

After setting the switches, you are ready to install your drive. The power supply cable connects to a four-pin connector on the back end of the drive. The ribbon cable connects to the 34-pin connector on the back end of the drive. Be sure to align Pin 1 of the cable with Pin 1 of the disk drive connector. Due to the frequently changing nature of electronic components, the drive you have may differ slightly from the one pictured below. However, Pin 1 is always the lower left-hand pin on the connector, and Pin 1 on the connector is aligned with the wire of a different color (usually red).

Be sure to connect your cable in the correct orientation. Failure to do so will cause the loss of data.





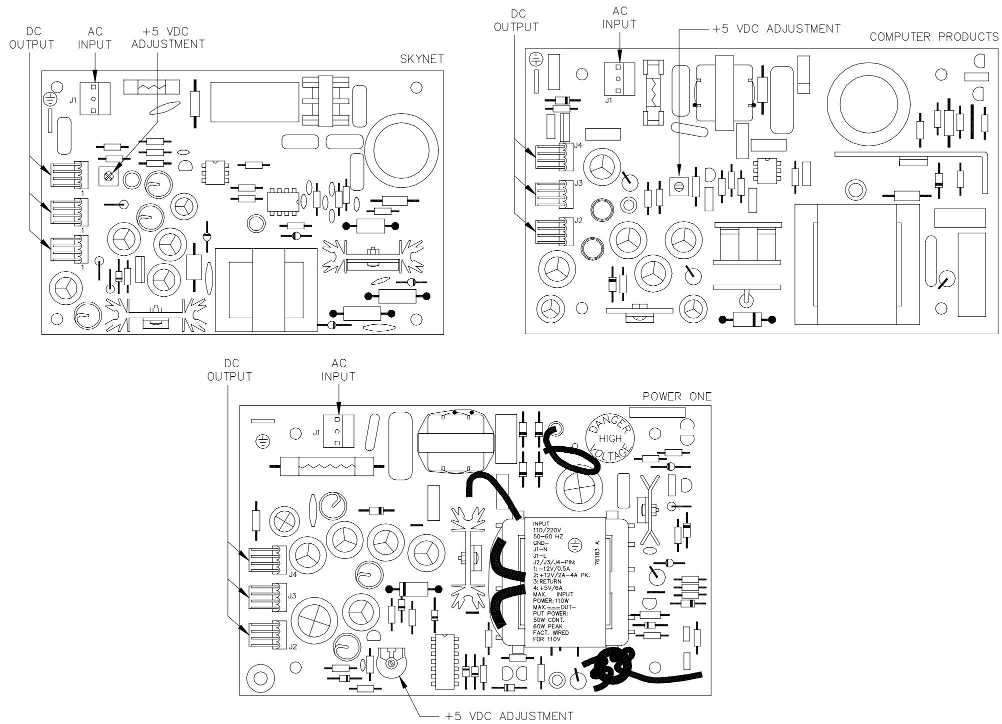


POWER SUPPLY

The power supply provides the internal power used by the site controller. This unit:

- provides regulated +5 VDC to the CPU PCB and memory PCB
- provides regulated +12 and -12 VDC to the CPU PCB
- will resemble one of the three variations shown depending on the date of manufacture

Layout



Connectors

AC Input

Pinout	Pin	Wire	Function	Voltage
1	1	White	AC neutral input	AC neutral
	2		N/C	
3	3	Black	AC hot input	115 VAC

DC Output

Pinout	Pin	Wire	Function	Voltage
	1	White	−12 VDC from supply	−12 VDC
1	2	Red	+12 VDC from supply	+12 VDC
4	3	Black	DC ground	Ground
	4	Orange	+5 VDC from supply	+5 VDC

DC Power Measurements and Adjustment

+5 VDC Measurement

1. Remove the four Phillips screws from the sides of the unit and remove the cover.

2. On the CPU PCB, measure at the Vcc and Vss test points, with the positive (+) probe on Vcc and the negative (-) probe on Vss. The voltage should be +5.00 to +5.10 VDC. If the voltage does not fall within this range, adjustment is necessary. Follow the steps below to adjust the supply. If the voltage is within tolerance, skip to step 11.

+5 VDC Adjustment

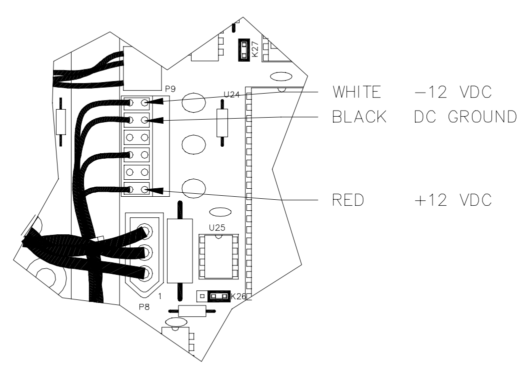
3. Turn off the power to the site controller II.
4. Remove the two screws that hold the power supply cover onto the supply. Remove the cover.
5. Attach the meter probes to Vcc and Vss on the CPU PCB.
6. Turn the AC POWER switch back on.

CAUTION
Be careful not to touch anything but the adjustment screw. High voltage exists at various points on the supply.

7. Using a 1/8 inch or smaller plastic, flat-blade screwdriver, adjust the power supply to +5 VDC by turning the screw clockwise to increase voltage, counterclockwise to decrease voltage. Turn the screw slightly to judge how sensitive the adjustment is.
8. Disconnect the meter probes.
9. Turn the AC POWER switch off and return the power supply cover to its normal location.
10. Turn the AC POWER switch back on.

+12 VDC Measurement

11. Locate the DC power input connector (P9) on the CPU PCB. Measure the +12 VDC between the red (+) and black (gnd) wires on the DC input power connector of the CPU PCB. The voltage should be +11.00 to +14.00 VDC.
    NOTE: This voltage is not adjustable.



-12 VDC Measurement

12. On the P9 connector, measure the -12 VDC between the white (-) and black (gnd) wires on the DC input power connector of the CPU PCB. Voltage should be -11.00 to -14.00 VDC.
    NOTE: This voltage is not adjustable.

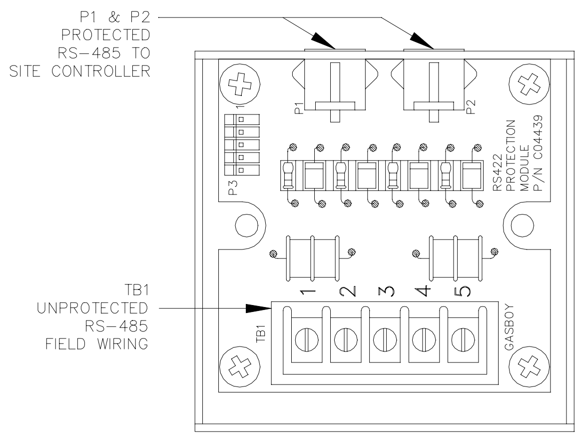
13. Replace the cover and screws of the unit.

RS-485 JUNCTION BOX

The RS-485 junction box provides the interface for the RS-485 section of the site controller. This unit:

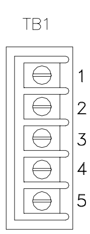
- provides the terminal block for field wiring of the RS-485 lines
- provides protection against noise on the RS-485 lines
- must be properly grounded

Layout

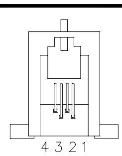


Connectors

TB1 - RS-485 Field Wiring (Unprotected)

Pinout	Pin	Function		Voltage
	1	RS-485 Tx+	To Site Controller	+5 VDC signal between 1 & 2
	2	RS-485 Tx-		
	3	RS-485 Rx+	From Site Controller	+5 VDC signal between 3 & 4
	4	RS-485 Rx-		
	5	Ground		Ground

P1 & P2 - Protected RS-485 Signals to Site Controller

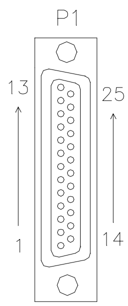
Pinout	Pin	Function		Voltage
	1	RS-485 Tx+	To Site	+5 VDC signal
	2	RS-485 Tx-	Controller	between pins 1 & 2
	3	RS-485 Rx+	From Site	+5 VDC signal
	4	RS-485 Rx-	Controller	between pins 3 & 4

RS-232 LOG SPLITTER (C05850)

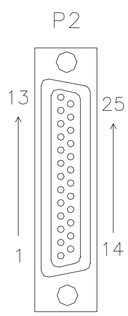
The log splitter allows log output to be mixed with terminal output on port 0 only. This requires a C05872 cable and allows the printer and the modem to be connected to port 0.

Connectors

P1 - Site Controller Connection

Pinout	Pin	Function	Input/Output
	2	TxD – Transmit data	Output
	3	RxD – Receive data	Input
	5	+12 VDC In	Input
	6	DSR – Data set ready	Input
	7	Signal ground	Ground
	20	DTR – Data terminal ready	Output

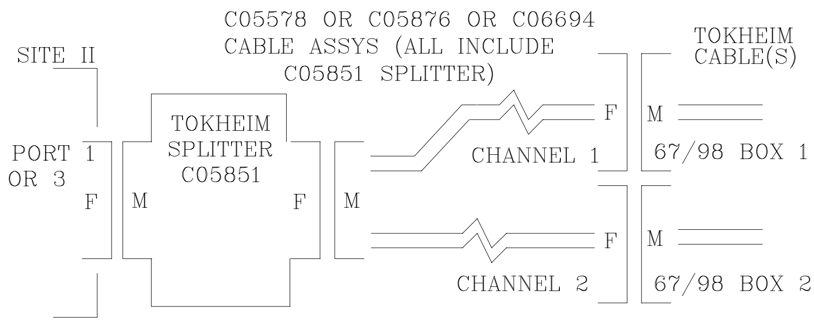
P2 - Modem/Printer Connection

Pinout	Pin	Function	Input/Output
	2	TxD – Transmit data (when DSR high)	Output
	3	RxD – Receive data	Input
	4	Connected to 6 and 20	
	6	Connected to 4 and 20	
	7	Signal ground	Ground
	19	TxD – Transmit data (when DSR low)	Output
	20	Connected to 4 and 6	
	21	DTR – Data Terminal Ready	Input
	23	Connected to 21, 24 and 25	
	24	Connected to 21, 23 and 25	
	25	Connected to 21, 23 and 24	

TOKHEIM SPLITTER (C05851)

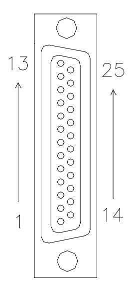
The Tokheim splitter allows the Site Controller II to communicate with Tokheim pumps using only one RS-232 port (ports 1 or 3). The splitter requires a C05876 or C05878 cable assembly and version 2.0B or above software for dual channel operation. This unit splits communication to Tokheim pumps by using the RTS signal from the port. C06994 is used when connecting to 3 or more 98 boxes and includes C05878.

Layout

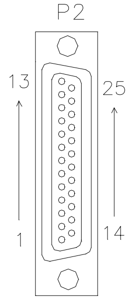


Connectors

P1 - Site Controller Connection

Pinout	Pin	Function	Input/Output
P1 	2	TxD – Transmit data (when DSR high)	Input
	3	RxD – Receive data	Output
	4	RTS – Request to Send	Input
	5	CTS – Clear to Send	Output
	6	DSR – Data Set Ready	Output
	7	Signal Ground	Ground
	8	DCD – Carrier Detect	Output
	9	+12VDC In	Input
	20	DTR – Data Terminal Ready	Input

P2 - Tokheim Pump Communications Connection

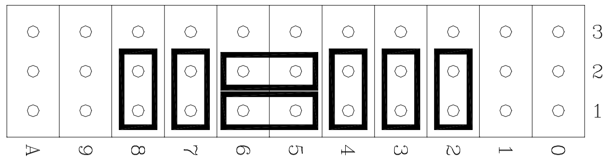
Pinout	Pin	Function	Input/Output
P2 	1	Signal Ground – Channel 2	Ground
	2	TxD – Transmit data – Channel 1	Output
	3	RxD – Receive data – Channel 1	Input
	4	ESTOP Control	Not Used
	7	Signal Ground – Channel 1	Ground
	14	TxD – Transmit Data – Channel 2	Output
	16	RxD – Receive Data – Channel 2	Input
	19	ESTOP Control	Not Used

Jumpers

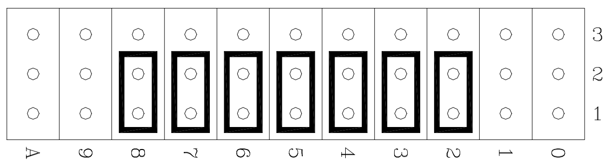
Jumper K1 (Port 1) or K2 (port 3) on the Site Controller CPU following the jumper configurations shown below. Jumper as indicated for either port 1 or port 3.

NOTE: Tokheim kludge plug should not be installed when a splitter is used.

Settings if Site Controller Software is < V2.0



Settings if Site Controller Software is V2.0 and above



SITE CONTROLLER II PROBLEMS

Site Controller is dead. No LED's are lit. The fan is not working.

Possible Cause	Checks	Corrective Action
No 115VAC power to site controller.	Check if circuit breaker is off or tripped.	Turn breaker on, if off.
	Check if 115VAC is being switched through circuit breaker.	Replace breaker if 115VAC is not being switched.
	If the power conditioner has a power switch, make sure the switch is on.	Turn power conditioner switch on, if off.
	Check the power conditioner's fuse or circuit breaker.	If the power conditioner has a fuse or built-in circuit breaker, replace or reset as necessary.
	Check the output voltage of the power conditioner.	If 115VAC is measured at the power conditioner input but not at the output, replace the power conditioner.
	Check the site controller power cord	Make sure both ends of the site controller power cord are installed properly
Site controller power switch is off.	Check the site controller power switch	Turn site controller power switch on, if off.
Blown fuse in AC power inlet on rear of Site controller.	Check the fuse with an ohmmeter.	Replace fuse, if blown. If fuse blows again, replace power supply.
Defective AC filter/power inlet.	Measure the voltage on the AC connector of the power supply PC board	Replace the RF filter module if 115VAC is not measured

(Continued)

Possible Cause	**Checks**	**Corrective Action**
Defective site controller power supply or blown picofuse in DC power cable.	Measure the voltages between the black (DC ground) and orange (+5VDC), black and red (+12VDC), and black and white (-12VDC) wires at connector P9 on the Site Controller II CPU board	If +5VDC is not measured at P9, remove the DC power cable and measure across the orange wire between both ends of the cable. Replace the DC power cable if an open circuit is measured. Replace the power supply if the orange wire is not "open". Replace the power supply if +12VDC and -12VDC are not measured on P9.
Defective SC II CPU Board.	None.	Replace the SC II CPU Board.
Defective SC II Memory Board.	None.	Replace the SC II Memory Board.

Changing the Fuse

1. Turn off the power and disconnect the AC power cord to allow access the fuse.
2. Reach under the lip where the fuse holder adjoins the power cable socket and use a small blade screwdriver to pry the fuse holder out. The fuse is behind the fuse holder in an exposed clip. There is a space for a spare fuse in the front of the fuse holder in an enclosed holder.
3. Remove the bad fuse from the exposed clip and replace it with a new 2A 250 volt quick-blow fuse (GASBOY P/N C08723). Use the spare fuse if available.
4. Slide the fuse holder back until it is flush with the back panel.
5. Reconnect power plug and turn on the power switch. After replacing a fuse, if the second fuse also blows, then something is wrong. Contact GASBOY Technical Service for assistance.
6. Reorder a new fuse to replace the spare, if necessary.

Site won't boot (SC II without hard drive).

Possible Cause	Checks	Corrective Action
Release disk not installed in drive A.	Check if release disk is inserted in drive A	Insert release disk into drive A and try to reboot
Release disk is defective.	Take the disk to another SC II or an IBM or compatible PC and do a CHKDSK command.	Replace the release disk if it fails the CHKDSK command
Disk drive ribbon cable or power cable is loose.	Check if both ends of the ribbon and power cables are installed properly.	Install the cables properly if they are loose
Fuse blown in disk drive power cable.	Check if drive lamp turns on when the system tries to boot. If the lamp never turns on, measure for +5VDC between pins 3 (black - DC ground) and 4 (orange - +5VDC) on the drive power input connector.	If +5VDC is not measured, replace the drive DC power cable
SCII CPU Board jumpers are not installed correctly. (C05328 board only)	Check jumpers K31 through K34 on the SCII CPU Board	K31 should be removed and K32 through 34 should be installed.
Release software is not compatible with DSITE program IC.	If the release software or the DSITE program IC (U36) was just changed, verify their compatibility with GASBOY Technical Service	Call GASBOY Technical Service. Upgrade the necessary software to achieve compatibility
Incorrect jumper/switch settings in floppy drive A.	If disk drive A was just changed, verify the jumper/switch settings as shown in the **Disk Drives** section	Correct the jumper/switch settings if wrong.
Defective +12VDC power supply.	Measure the +12VDC between pins 1(red - +12VDC and 5 (black-ground) of P9 on the SCII CPU Board	Replace the power supply if +12VDC is not measured.

(Continued)

Possible Cause	Checks	Corrective Action
Defective A drive.	None	Replace A drive
Defective SCII CPU Board.	None.	Replace the SCII CPU Board.
Defective SC II Memory Board.	None.	Replace the SC II Memory Board.

Site won't boot (SC II with hard drive)

Possible Cause	Checks	Corrective Action
Operating system became corrupted on drive C.	Install the backup copy of the operating system into drive A and try to re-boot.	If the system boots from drive A, check all the files on drive C. Copy the operating system onto drive C.
Disk drive ribbon cable or power cable is loose.	Check if both ends of the ribbon and power cables are installed properly.	Install the cables properly, if they are loose.
Fuse blown in disk drive power cable.	Measure for +5VDC on the disk drive DC power connector between pin 2 (black-ground) and pin 4 (orange- +5VDC).	If +5VDC is not measured at the disk drive, but it is measured at the power supply, replace the drive DC power cable.
Hard drive is disabled by SC II CPU Board switch.	Check the position of DSW1-2 on the SC II CPU board.	Close DSW1-2, if it is open.
Release software is not compatible with DSITE program IC.	If the release software or the DSITE program IC (U36) was just changed, verify their compatibility with GASBOY Technical Service	Upgrade the necessary software to achieve compatibility.
Incorrect jumper settings on hard drive C.	Check jumpers on the hard drive	All address jumpers must be removed. If TE jumper is present, it must be installed.
Defective C drive.	None.	Replace C drive.
Defective SCSI Interface Board (C05328 only)	None.	Replace SCSI Interface Board
Defective SC II CPU Board.	None.	Replace SC II CPU Board
Defective SC II Memory Board.	None.	Replace SC II Memory Board.

Terminal communications are down. The system is working.

Possible Cause	Checks	Corrective Action
Terminal turned off.	Check terminal power indicator	Turn on, if off
Terminal offline.	Check ON LINE indicator	Put online if offline.
Cable disconnected.	Check connections.	Re-connect cable if not connected or loose.
Incorrect terminal set-up.	Check the terminal set-up parameters. If a CRT, the terminal should be set for VT52 emulation, 8 data bits, no parity, 1 stop bit. The baud rate should match the site controller's baud rate. For Link terminal, follow instructions in Start-Up Manual.	Configure the proper set-up parameters according to the terminal manufacturer's instructions
Defective power supply.	Measure the voltages between the black (DC ground) and red (+12VDC), and black and white (-12VDC) wires at connector P8 on the site controller CPU board.	Replace the power supply if the proper voltages are not measured at P9.
Incorrect baud rate switch settings on the site controller CPU board.	Check that the baud rate settings on DSW2 are correct	If baud rate switches are wrong, correct the settings and press reset switch SW1
Short haul modem off, offline, disconnected, or bad	Check both modems at site and terminal.	If off, turn on; if offline, put online; if disconnected, reconnect; if bad, replace
Defective terminal.	Try using a different site controller communications port. This requires changing the communications cable. Use a C04549 cable if the terminal is in Port 0. Use a C05039 cable if the terminal is in Port 2. Make sure the terminal's baud rate matches the baud rate of the new communications port. The cable for Port 1 and 3 will depend on the K1 and K2 jumper settings.	If the terminal doesn't work in either port, replace the terminal. Site may not be configured for terminal communications at all ports.

(Continued)

Possible Cause	Checks	Corrective Action
Site unable to log messages (Port 2)	Check logger or logger eliminator	Correct logger problem or try again
Defective site controller CPU PCB.	None	Replace the site controller CPU PCB.
Printer is or has been offline.	Check printer, paper, etc.	Power down printer and terminal. Power up printer, then terminal. Reset on site controller may need to be pressed.

No Island Loop communications. All devices on Island Loop are down.

Possible Cause	Checks	Corrective Action
Site controller is down.	Check logger or do a **PRint DIagnostics** command for indication that the site is not running.	Do a **RUN** command if site is down.
RS-485 phone cable is loose or not installed correctly.	Check that one end of the cable is installed in the junction box and the other end is installed in the ISLAND LOOP connector on the rear of the Site Controller II.	Install cable properly if it is incorrect
Incorrect wiring of junction box or island loop devices.	Verify all field wiring with the SC II Installation Manual (C01918).	Make wiring connections if needed
Defective RS-485 receiver IC and Protected Driver Board.	To isolate driver problem, try swapping cables: move loop 2 cable to loop 1 and vice versa	Replace U5 on the SCII CPU Board. When replacing U5, replace the entire Protected Driver Board (C05848), not just the driver IC.
Defective CPU Board.	None.	Replace the SC II CPU Board.
Defective RS-485 junction board.	None	Replace the RS-485 junction box.
Defective RS-485 cable.	None.	Replace defective cable.

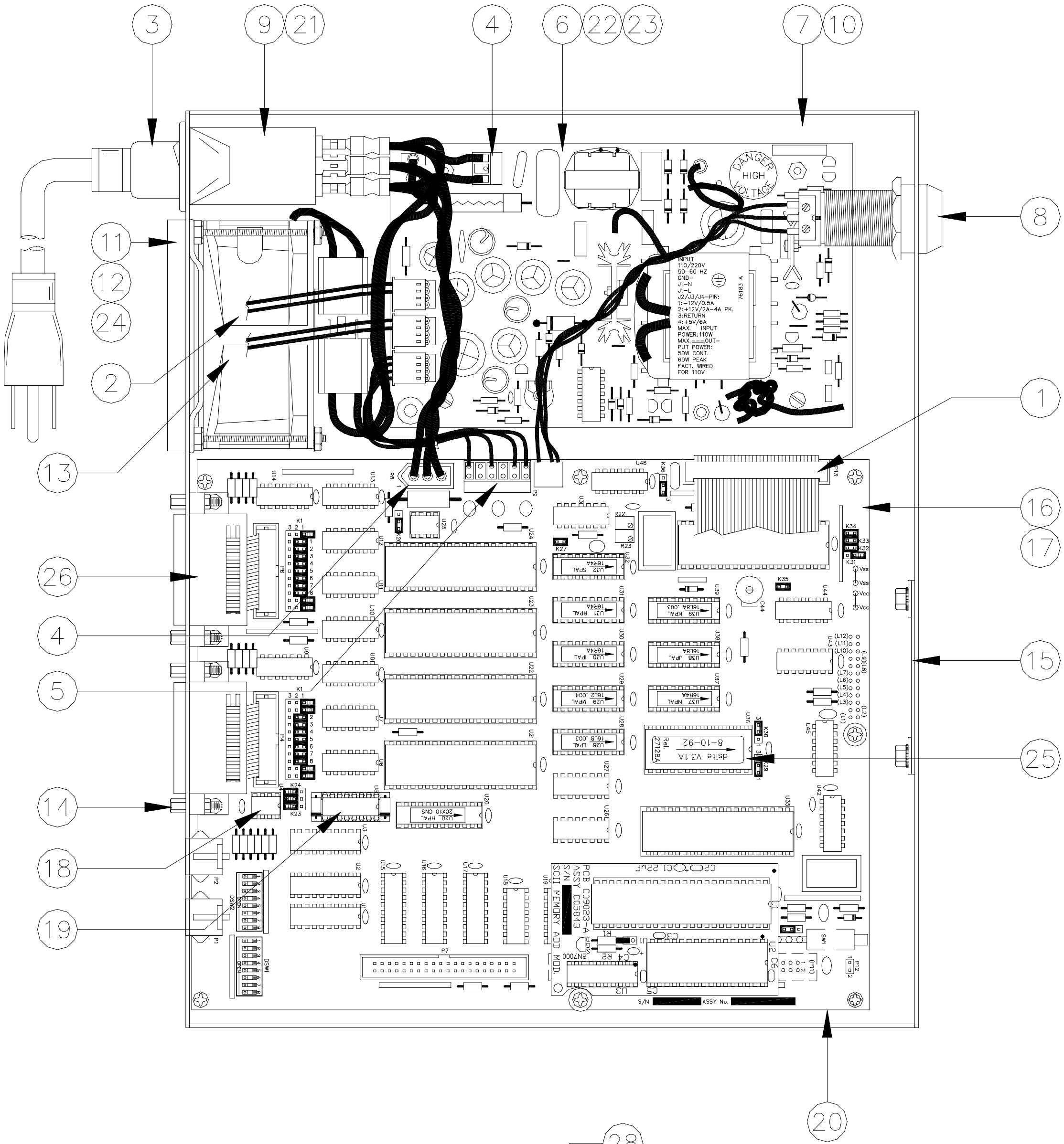
No console loop communications. All devices on console loop are down.

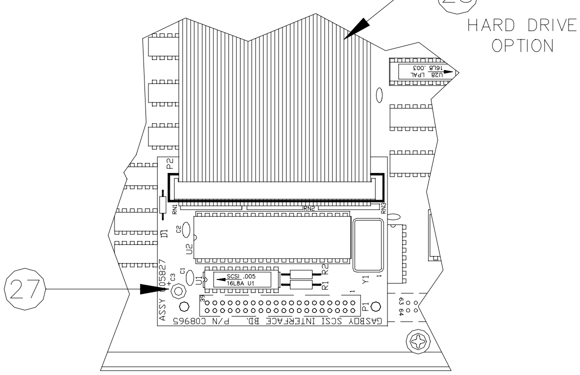
Possible Cause	Checks	Corrective Action
Site Controller is down.	Check logger or do a **PRint DIagnostics** command for indication that the site is not running.	Do a **RUN** command if site is down.
RS-485 phone cable is loose or not installed correctly.	Check that one end of the cable is installed in the CONSOLE LOOP connector on the rear of the site controller and the other end is installed in the SITE CONTROLLER connector on the rear of the console, or into the console junction box or RS232-RS485 converter (if used).	Install cable properly, if it is incorrect
Incorrect wiring between junction boxes (used only when console is located more than eight feet from site controller).	Verify all field wiring with the SC II Installation Manual (C01918).	Make wiring connections, if needed.
Defective RS-485 receiver IC and Protected Driver Board.	To isolate driver problem, try swapping cables: move loop 2 cable to loop 1 and vice versa.	Replace U5 on the SC II CPU Board. When replacing U5, replace the entire Protected Driver Board (C05848), not just the driver IC.
Defective CPU board or console CPU board.	None.	Replace the SC II CPU board or console CPU board.
Defective RS-485 junction board (if used).	None.	Replace the RS-485 junction board
Console CPU not configured correctly.	Check console #7 set up.	Correct, if necessary.
Bad RS-485 cable.	None.	Replace bad cable.

One or more red battery failure LED's is lit on memory board.

Possible Cause	**Checks**	**Corrective Action**
Batteries need to be charged.	If you are changing the memory board or starting up a new site controller, the batteries may require up to 18 hours of charge time.	Keep the site controller power on for 18 hours. If the battery failure message doesn't go away, try a new memory board.
Jumpers not installed.	Check E5 through E7 on C08331.	Install needed jumpers.
Switches open.	Check switches.	Close all switches on C08331.
Dead or shorted battery, blown battery fuse, defective battery charge circuit.	Check which red LED on the Memory PCB is lit. Measure the voltage at the test points on the PCB. If voltage is within range specified, battery is okay; if not, perform corrective actions listed	If possible, always bak up and poll all system data before replacing the Memory PCB. For C08331: Open the **BATTERY CHARGE** and **BATTERY FAILURE ALERT** switches that correspond to the battery indicated by the lit LED. Replace Memory board as soon as possible. For C06731 and C07041, close switch SW1-2 on Memory PCB and open SW1-1. Replace battery 1 as soon as possible (C09310) or, if switch SW1-2 is closed, close SW1-1 and open SW1-2. Replace battery 2 as soon as possible.

SITE CONTROLLER II PARTS



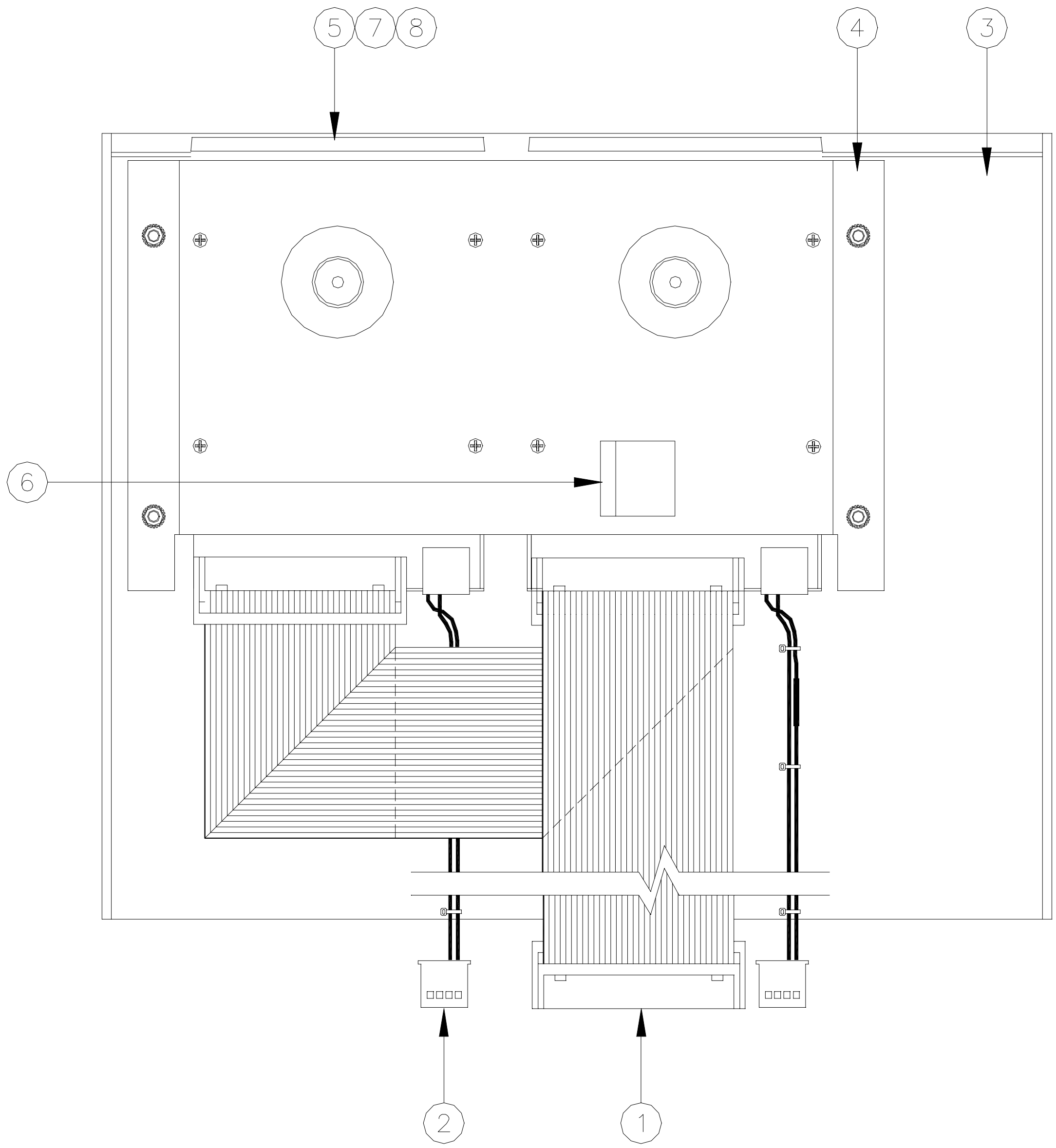


C05575 Site Controller II Assy. w/2 3.5" Drives (Base Assy.)
C05574 Site Controller II Assy. w/1 3.5" Drive (Base Assy.)
C05573 Site Controller II Assy. w/3.5" Drive and Hard Drive (Base Assy.)
C05547 Site Controller II Assy. w/1 5.25" Drive (Base Assy.)

Item	Part No.	Description
1	C05571	Cable Assy., Rib 3.5" - 2 Drive
	C05570	Cable Assy., Rib 3.5" - 1 Drive
	C05555	Cable Assy., Rib 5.25" - 1 Drive
2	C05572	Cable Assy., 3.5 Drive Power
	C05552	Cable Assy., HD or 5.25" Drive Power
3	C04245	Power Supply Cord - 3 Cond, 6'10"
4	C05553	Cable Assy., AC Power
5	C05551	Cable Assy., DC Power
6	C09053	Power Supply
7	C35176	Silkscreened, Base SC II, 3.5" Drives
8	C04930	Site Controller Keyswitch Assy.
	*099400	Key (Not shown; must supply WMX # from lock)
9	C08330	Filter, RF module
10	C01696	Mounting Feet
11	C09108	Filter Package, Fil/Guard/Ret
12	C09109	Filter, Replacement
13	C05564	Fan Wiring Assy.
14	C03481	Jackscrew Assy.
15	C32721	Window, Site Cont. LED Viewing
16	C07047	Site Controller CPU Plus Replacement Kit
		(NOTE: Does not include program chip. Order item 25, if needed.)
17	*C03315	2-Position Jumper, 1/4"H
18	*C03391	IC, RS-485 Receiver
19	*C05848	PCB Assy., Protected RS-485 Driver
20	C06759	Site Controller Memory PCB Replacement Kit
21	C08723	Fuse, 2 Amp Quick Blow
22	C34838	Cover, Perf. Site Controller Power Supply (Not Shown)
23	C08756	Label, DANGER HIGH VOLTAGE
24	C08328	Fan Grille
25	C08721	IC, Programmed C01367, 32K EPROM, OTP
		(Specify software name and version)
26	C05554	Cable Assy., RS-232
27	C05827	PCB Assy., SCSI Hard Drive I/F
28	C05984	Cable Assy., Rib 50 pos.

*Denotes this is a sub-part used in the preceding assembly

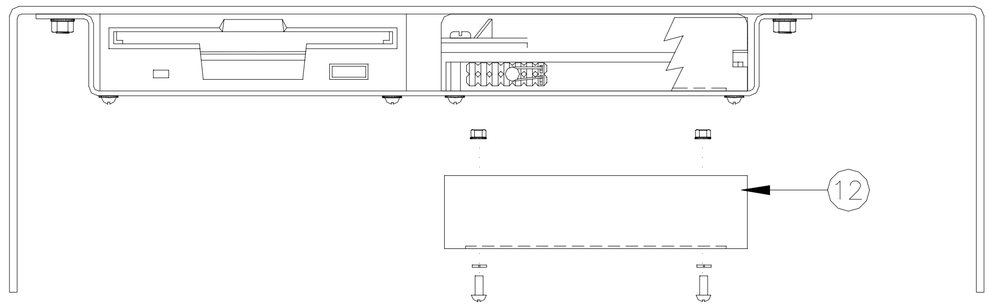
SITE CONTROLLER II ASSEMBLY W/ONE OR TWO 3.5" DRIVES

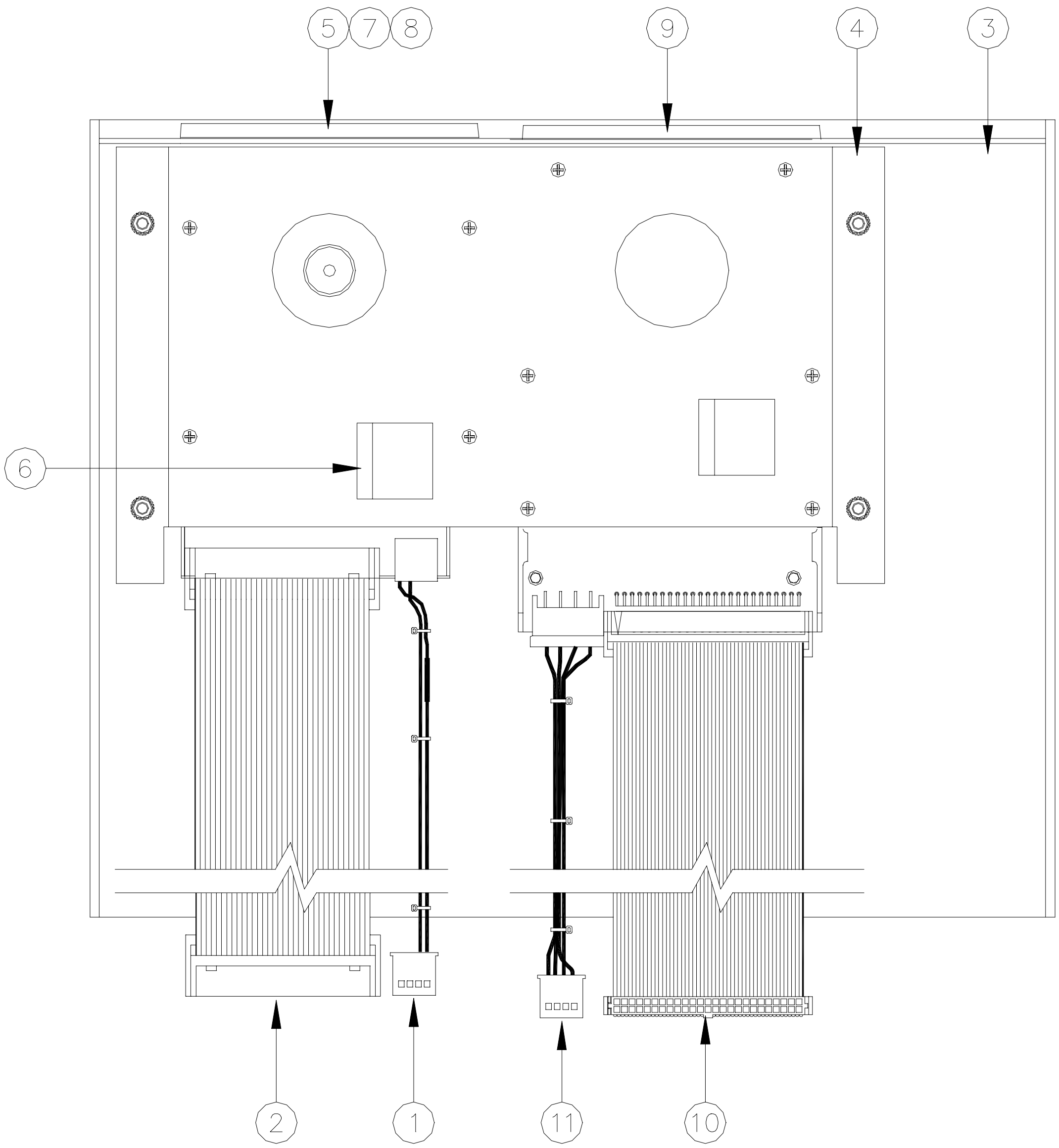


C05574 Site Controller II Assy., w/1 3.5" Drive (Cover Assy.)
C05575 Site Controller II Assy., w/2 3.5" Drives (Cover Assy.)

Item	Part No.	Description
1	C05571	Cable Assy., Rib 3.5" - 2 Drive
	C05570	Cable Assy., Rib 3.5" - 1 Drive
2	C05572	Cable Assy., 3.5 Drive Power
3	C05568	Cover, Weld Assy., SC II 3.5
4	C34412	Bracket, 3.5 - 2 drive support
5	C08553	Disk Drive, 3.5, 720 KB
6	C02207	Clamp, Ribbon Assy
7	C08970	Diskette, 3.5" DS/DD 720KB (Not Shown)
8	C08949	Diskette, Programmed 3.5" DS/DD (Not Shown)

SITE CONTROLLER II ASSEMBLY W/ONE 3.5" DRIVE AND HARD DRIVE

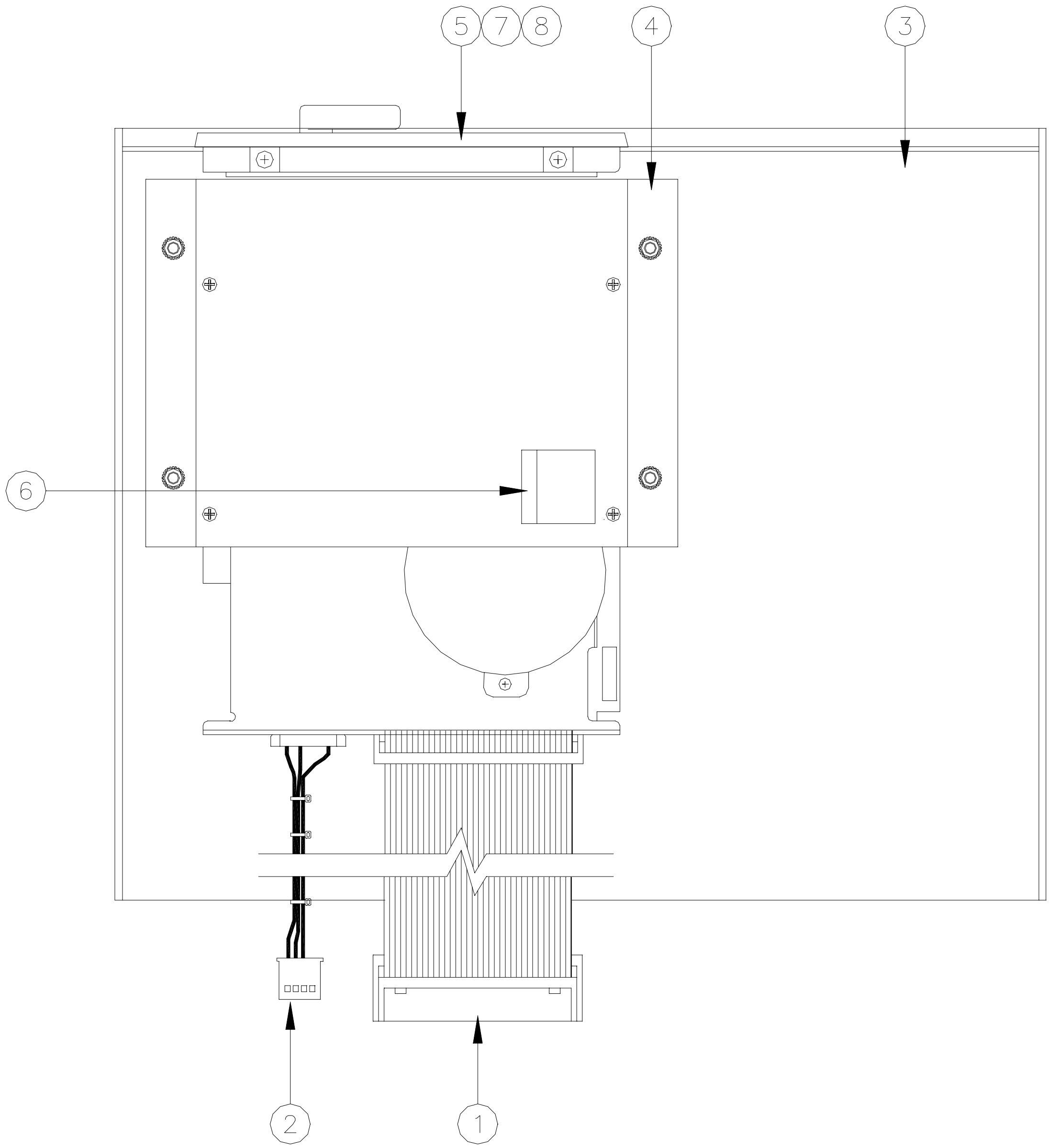




C05573 Site Controller II Assy., w/3.5" Drive and Hard Drive

Item	Part No.	Description
1	C05572	Cable Assy., 3.5 Drive Power
2	C05570	Cable Assy., Rib 3.5" - 1 Drive
3	C05568	Cover Weld Assy., SC II 3.5"
4	C34412	Bracket, Dual Disk (H&S) Drive Mount
5	C08553	Disk Drive, 3.5" External 720KB
6	C02207	Clamp, Ribbon Cable
7	C08970	Diskette, 3.5" DS/DD 720KB (Not Shown)
8	C08949	Diskette, Programmed 3.5" DS/DD (Not Shown)
9	C09162	Disk drive, 3.5" Hard SCSI
10	C05984	Cable Assy., Rib. 50 pos 1:1, 12" long
11	C05552	Cable Assy., 5.25 drive power
12	C34410	Bracket, hard drive bezel mount
13	C09122	Bezel, hard drive snap on

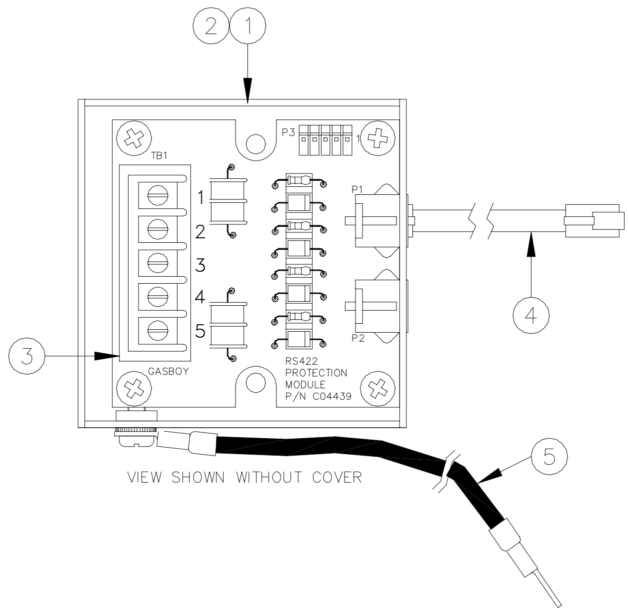
SITE CONTROLLER II ASSEMBLY W/ONE 5.25" DRIVE



C05547 Site Controller II Assy., w/1 5.25" Drive (Cover Assy.)

Item	Part No.	Description
1	C05555	Cable Assy., Rib 5.25" Drive
2	C05552	Cable Assy., 5.25" drive power
3	C05549	Cover Assy., 5.25" drive
4	C34381	Bracket, 5.25 drive support
5		Disk drive, 5.25" floppy (No longer available)
6	C02207	Clamp, ribbon cable
7	C08934	Diskette, 5.25" floppy DS/DD (Not Shown)
8	C08935	Diskette, programmed, 5.25" DS/DD (Not Shown)

RS-485 JUNCTION BOX PARTS



C05020 RS-485 Junction Box Assy.

Item	Part No.	Description
1	C35362	Base, RS-485 Junction Box Housing
2	C32707	Cover, RS-485 Junction Box Housing
3	C05379	PCB Assy., RS-485 Protection
4	C05670	Cable Assy., 4 Conductor Handset 8', 1:1
5	C06399	Wire Assy., 14 Ga, Green, 36" long

ISLAND CARD READER

DESCRIPTION

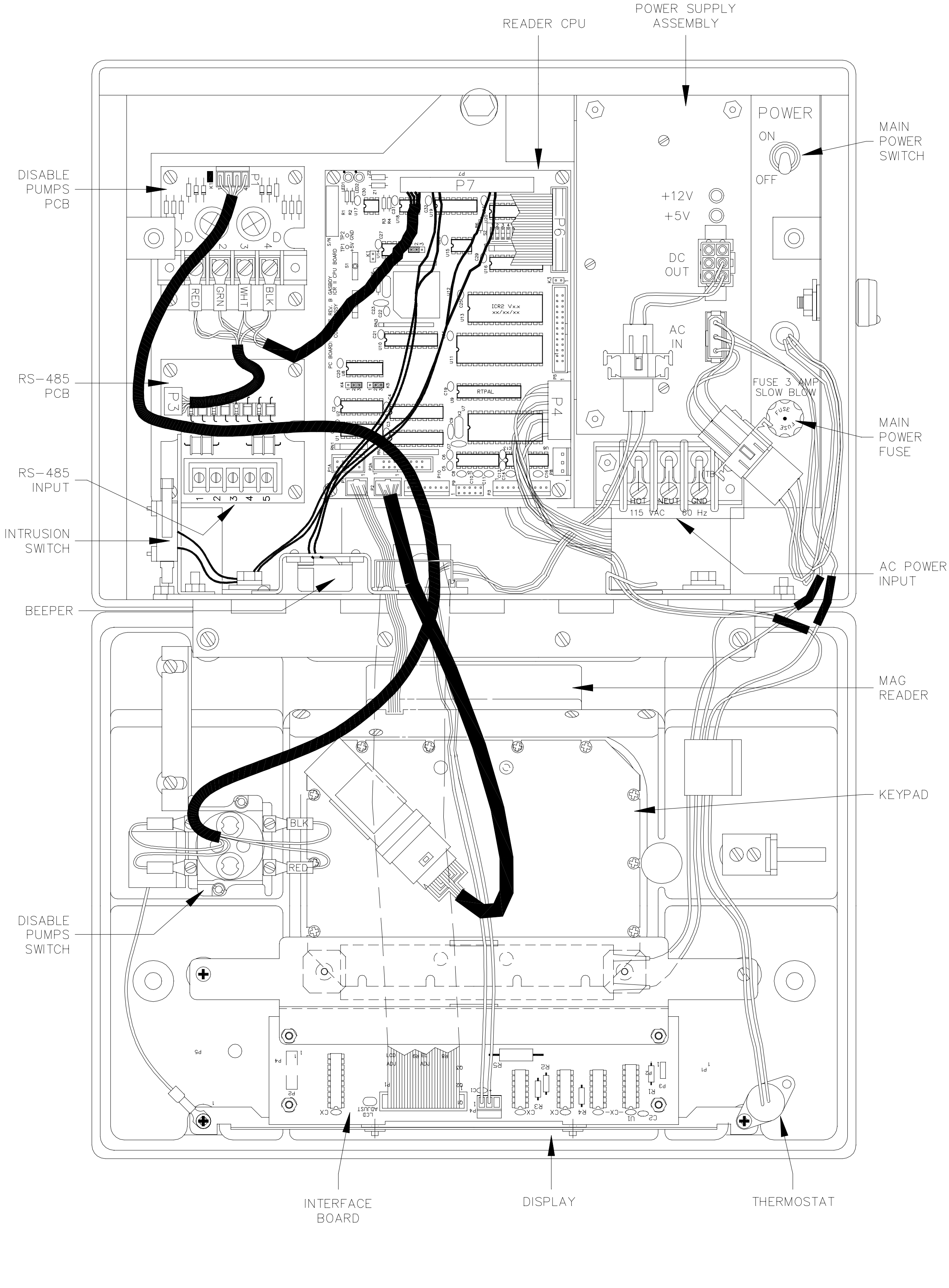
The GASBOY Island Card Reader (ICR) is a rugged, well-designed data entry terminal that gives users access to self-service gas pumps. It can also be used as a gate controller, allowing users to access other station equipment such as an oil vending machine, car wash, gate opener, etc. The unit is controlled by a microprocessor and communicates to the GASBOY site controller via the RS-485 loop.

The unit is available with either an ABA Track 1 and 2 magnetic stripe card reader or an optical reader. A 20 character liquid crystal display is used to guide the user through the transaction. The display is backlit so that it can be read at night. A membrane keypad incorporates easy-to-read legends and provides the user with the means to input data to the system. An optional disable pumps switch can be added to the unit to stop fueling at the site in case of an emergency.

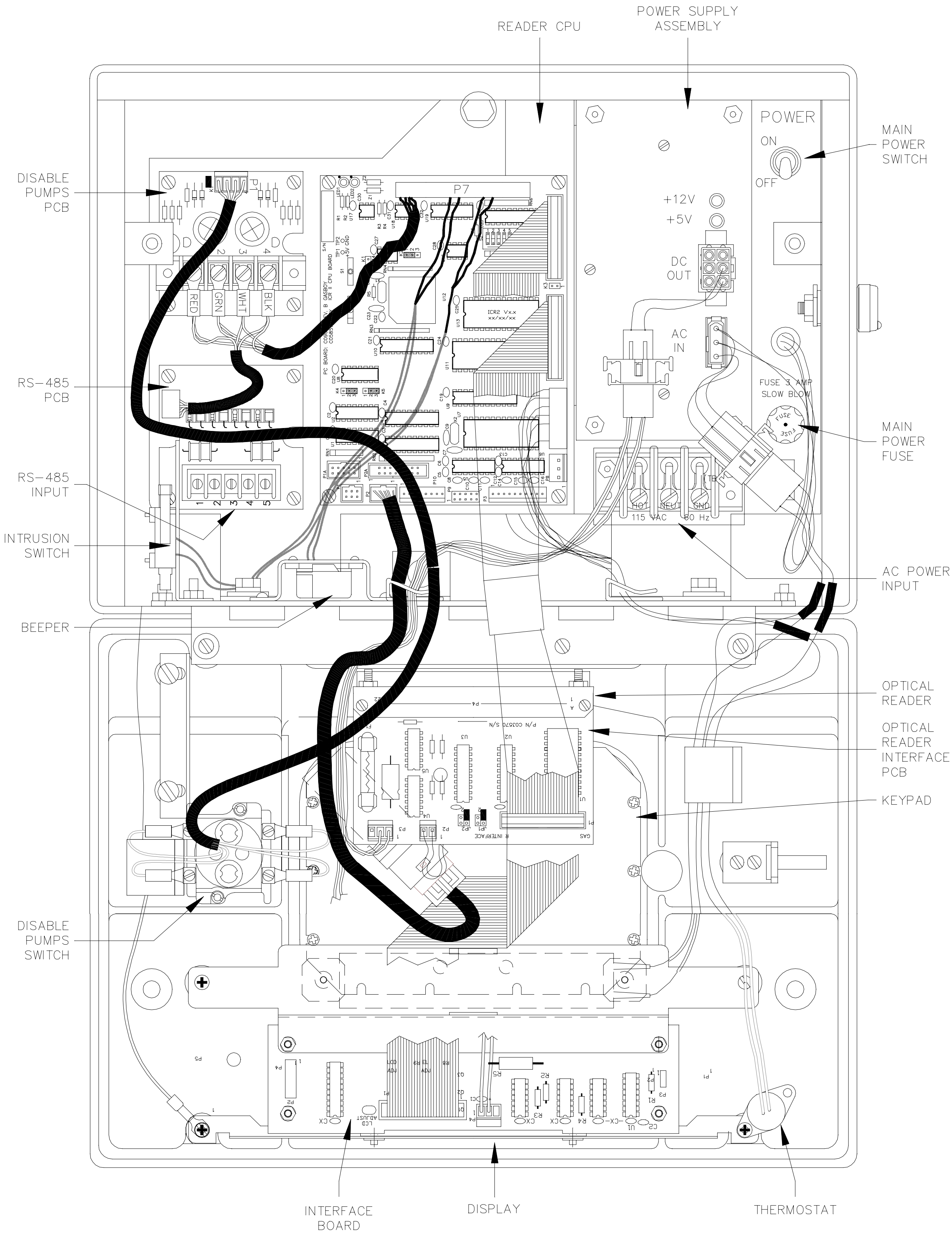
The post is used for mounting the island card reader to the island. Three different types of posts are available with the island card reader:

- Blank post (standard)
- Receipt printer post
- Pump control post

Mag Island Card Reader Layout



Optical Island Card Reader Layout

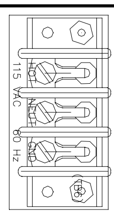


WIRING

All field wiring connections to the island card reader are made in the head of the unit. The island card reader wiring is split into two classifications, AC and DC. Separate conduits must be provided for each. AC and DC wiring must never be mixed in any common junction box, conduit, or trough (see *CFN SCI or SCII Installation Manual* for detailed instructions). The following tables list the connections that can be found in the *Installation Manual*.

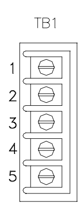
Connectors

AC Power Input

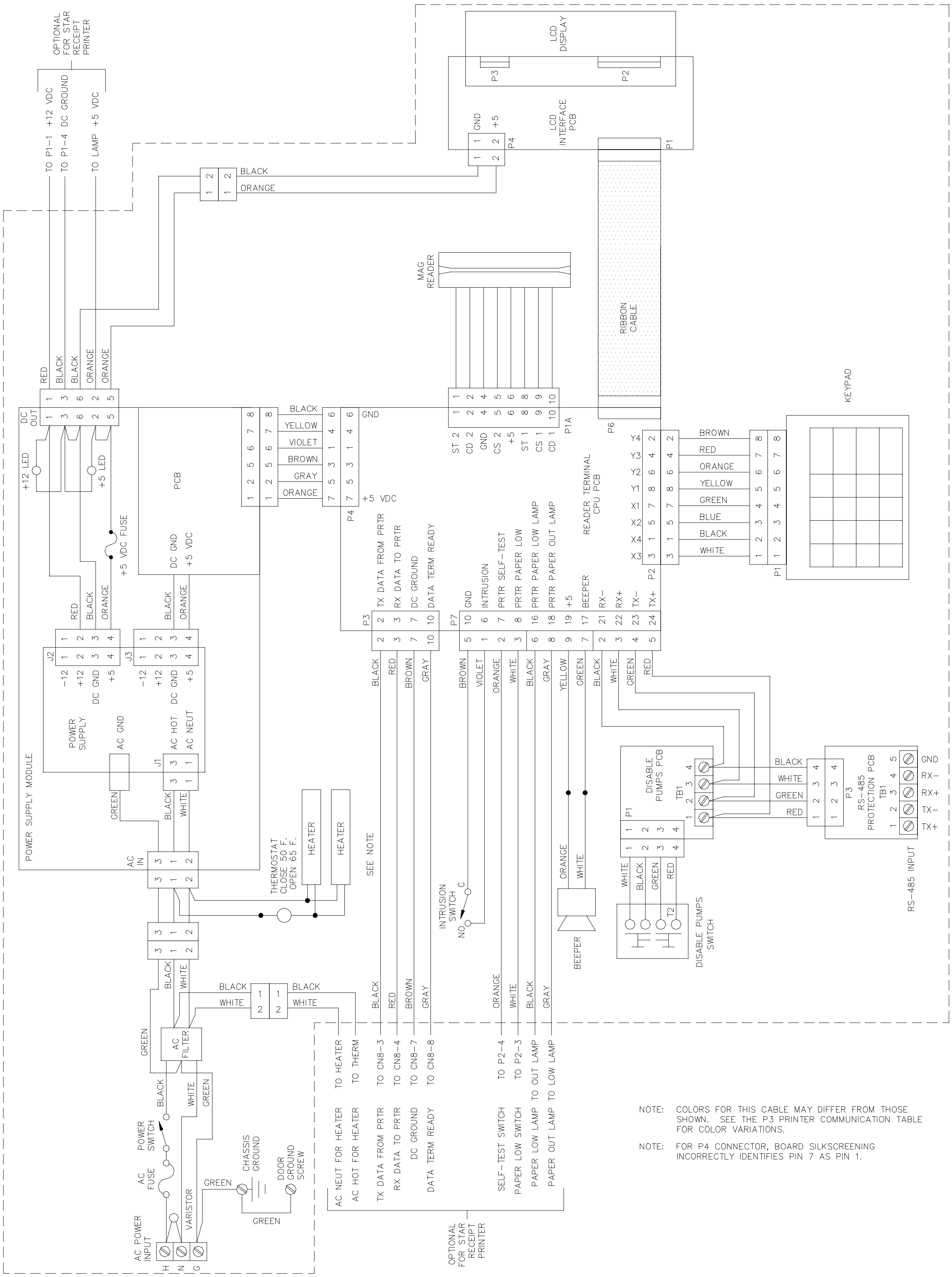
Pinout	Screw	Wire	Function	Voltage
	HOT	Black	AC hot input	115 VAC
	NEUT	White	AC neutral input	AC neutral
	GND	Green	AC ground input	AC ground

NOTE: Colors shown are for ICR mounted on pedestal PCU post. If ICR is mounted on non-pedestal PCU post, the field wiring colors are unknown.

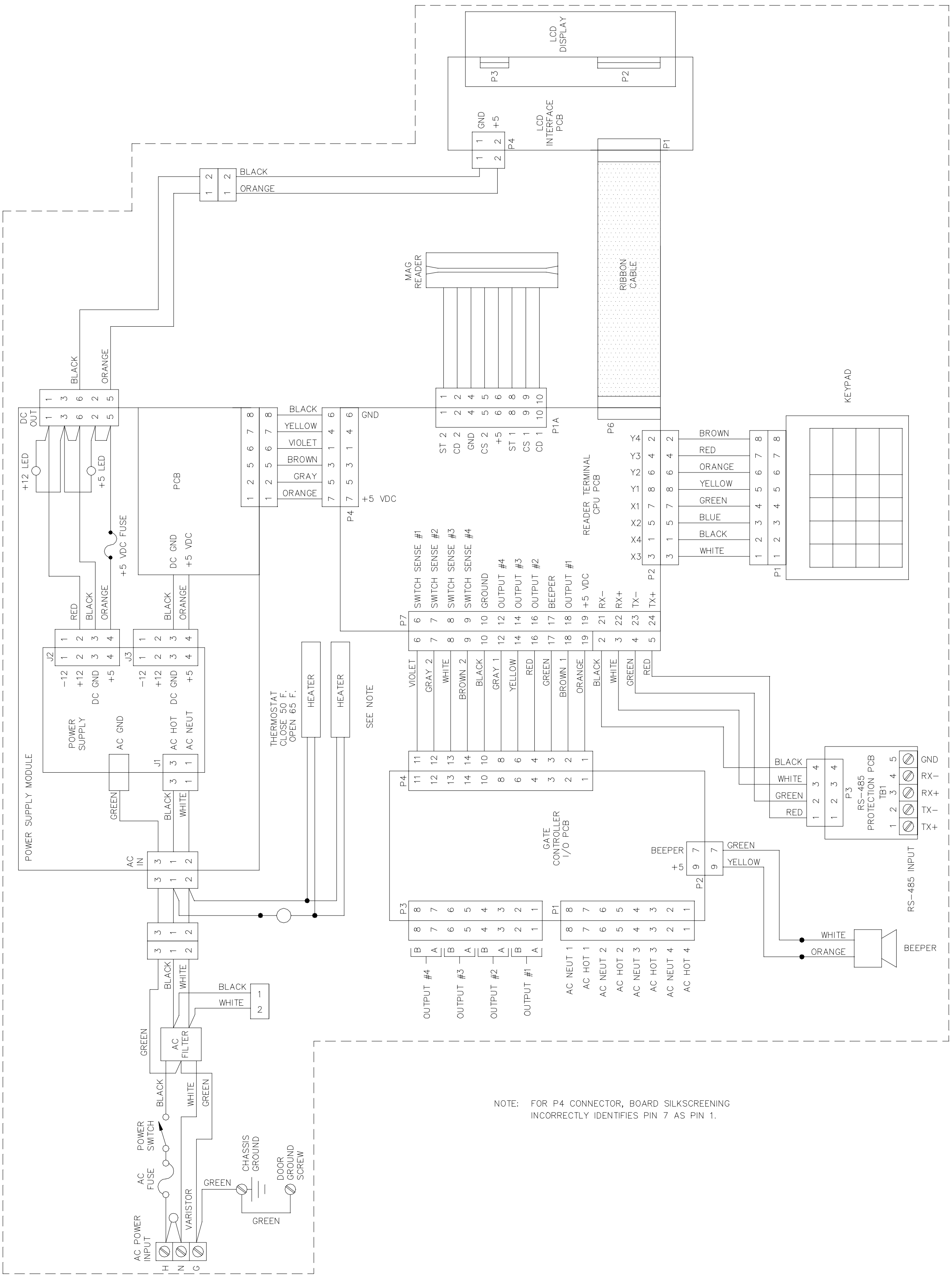
DC RS-485 Input

Pinout	Pin	Wire	Function		Voltage
	1	Red	RS–485 Tx+	To Site	+5 VDC signal
	2	Green	RS–485 Tx–	Controller	between 1 & 2
	3	White	RS–485 Rx+	From Site	+5 VDC signal
	4	Black	RS–485 Rx–	Controller	between 3 & 4
	5	Not used.			

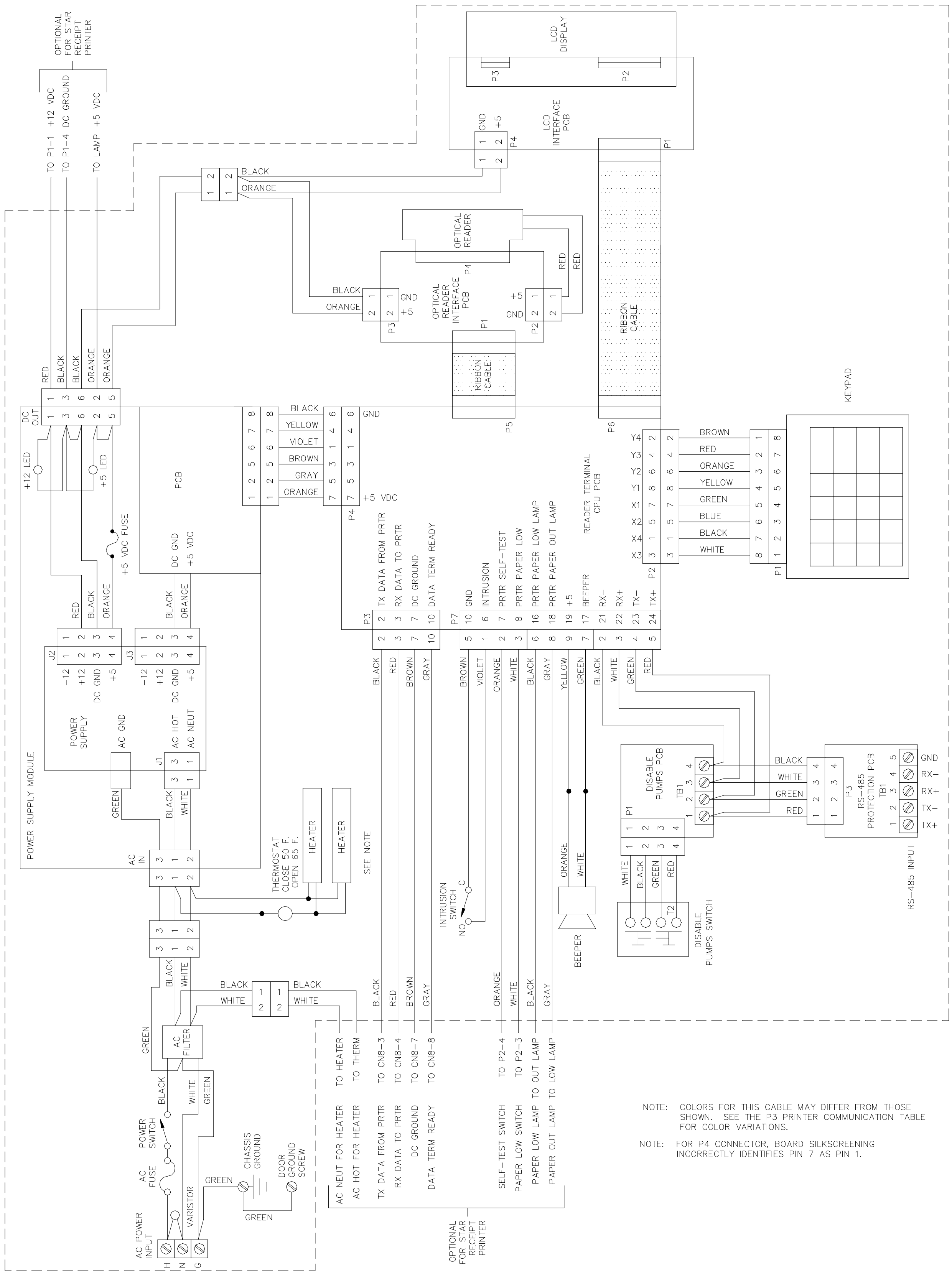
Mag Island Card Reader Wiring



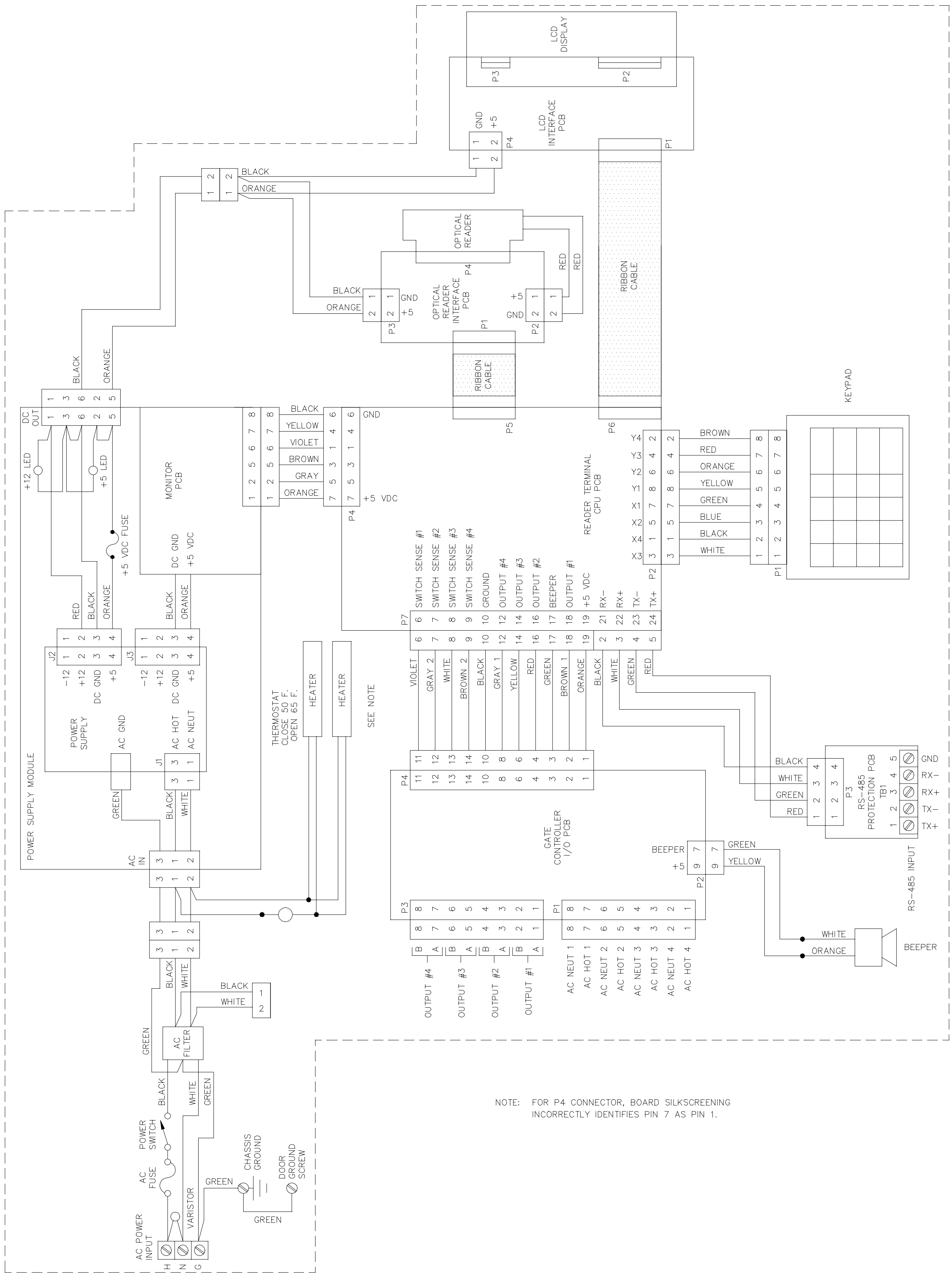
Mag Island Card Reader/Gate Controller Wiring



Optical Island Card Reader Wiring

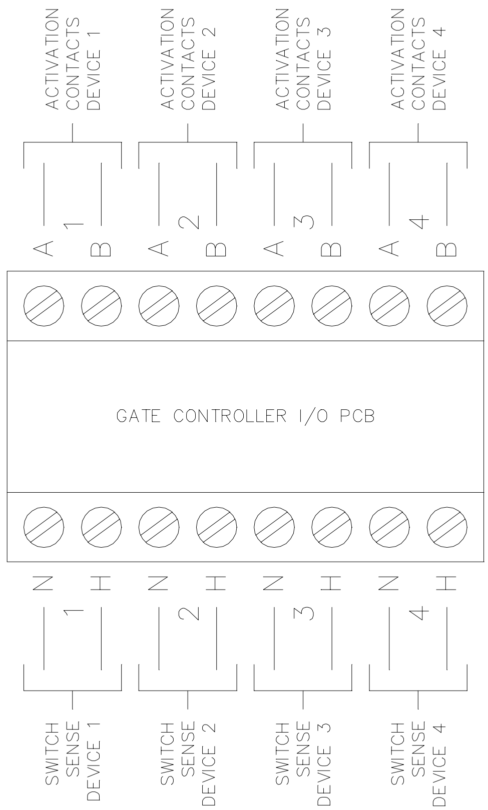


Optical Island Card Reader/Gate Controller Wiring



Gate Controller Wiring

Field wiring for devices connnected to the gate controller is accomplished via connectors on the Gate Controller I/O PCB mounted in the ICR. Each gate controller can operate up to four devices through one of four relays on the PCB. Each relay can handle up to 5 Amps at 30 VDC or 115 VAC. A 115 VAC switch sense signal can be used to turn the relay off, or it can turn off based on the timeout period configured in the site controller. As with all CFN equipment , AC and DC wiring must not run in the same conduit or wire trough.

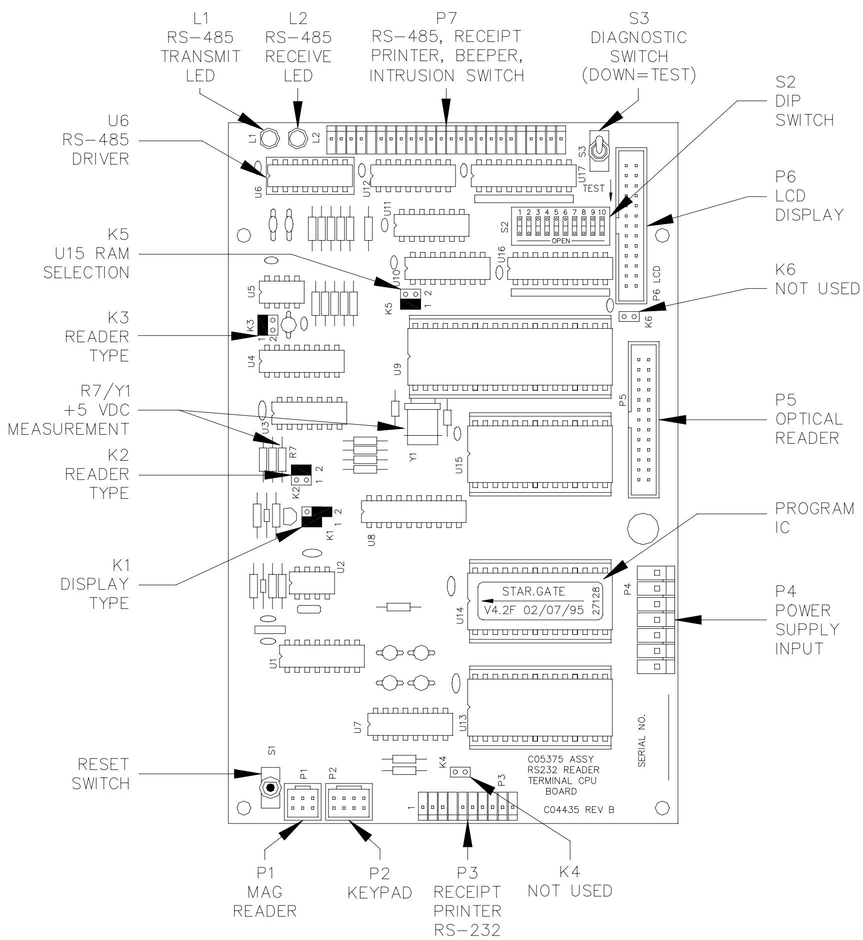


ISLAND CARD READER CPU PCB (C05375)

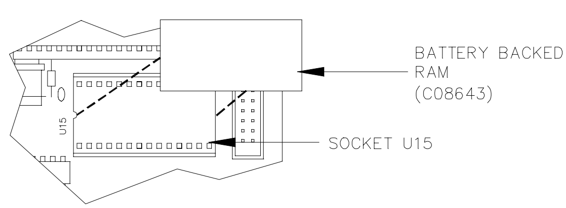
The island card reader CPU PCB is the heart of the GASBOY ICR. This CPU PCB:

- processes all ICR data
- controls data sent to the LCD display
- controls the beeper
- monitors data from the keypad
- monitors the intrusion switch
- monitors the mag or optical reader
- sends and receives the RS-485 data to and from the site controller
- provides diagnostic LEDs to monitor operation of the RS-485 lines
- provides a diagnostic switch for testing of various unit functions
- allows for DES encryption of data with optional hardware

Layout



DES Encryption Option - ICR

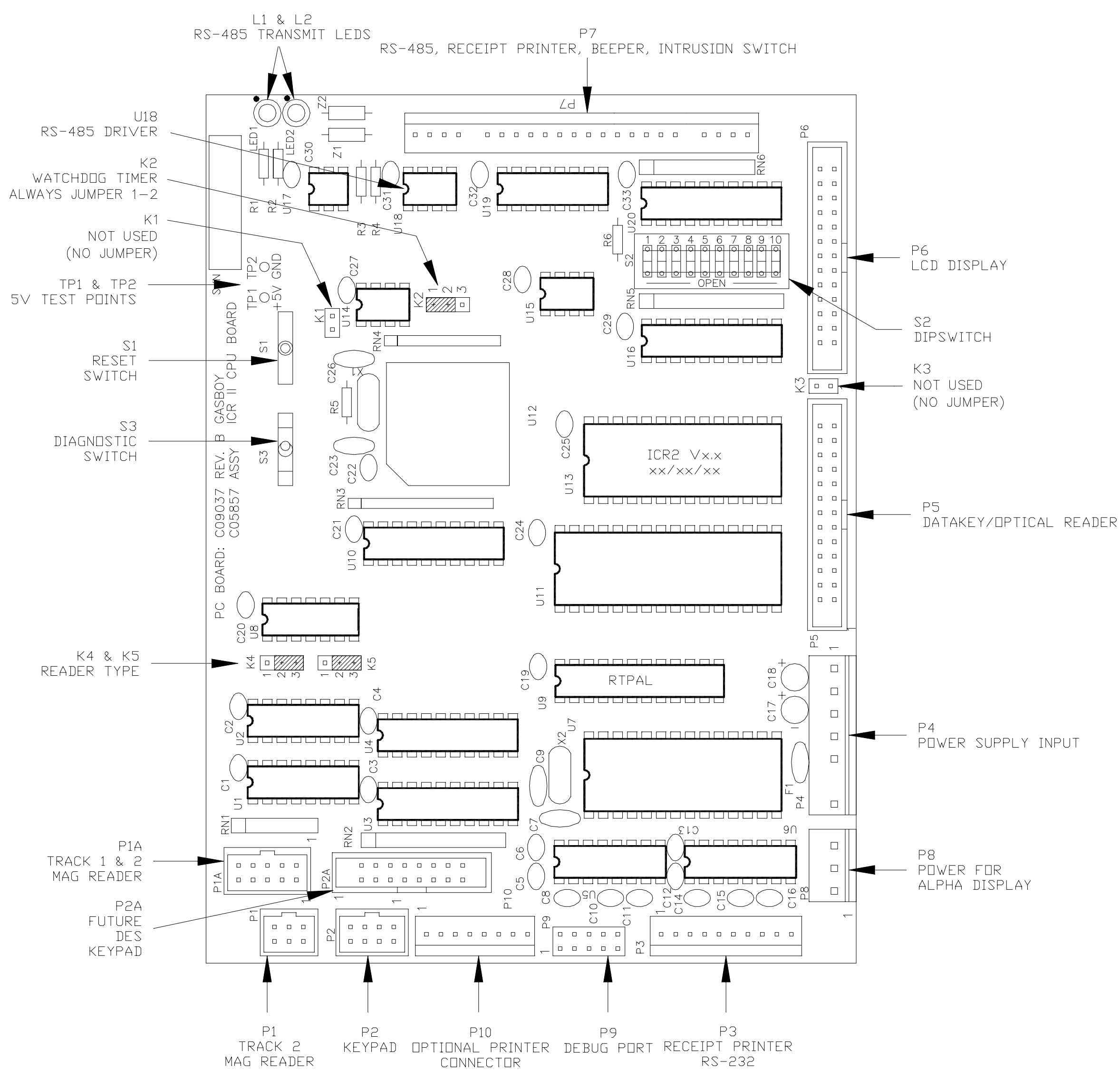


ISLAND CARD READER 2 CPU PCB (C05857)

The Island Card Reader 2 CPU PCB is the heart of the GASBOY ICR. This CPU PCB:

- processes all ICR data
- controls data sent to the LCD display
- controls the beeper
- monitors data from the keypad
- monitors the intrusion switch
- monitors the reader: mag, optical, or datakey (Islander or Islander gate only)
- sends and receives the RS-485 data to and from the site controller
- provides diagnostic LEDs to monitor operation of the RS-485 lines
- provides a diagnostic switch for testing of various unit functions
- allows for DES encryption of data (always enabled)
- reads Track 1 and Track 2 mag data
- has dual line display

Layout



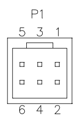
LED Indicators

LED indicators are provided to allow you to monitor the RS-485 communication.

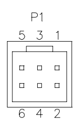
LED	Function
L1	RS–485 transmit to Site Controller
L2	RS–485 receive from Site Controller

Connectors

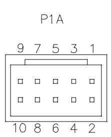
P1 – Insertion Mag Reader (American Magnetics) – Track 2 Only

Pinout	Pin	Wire (Am. Mag.)	Function	Voltage
	1	Red	Strobe	+5 VDC signal – pos. edge samples data
	2	White	Card data	+5 VDC signal – high data=1, low data=0
	3	White/Black	DC ground	DC ground
	4	Black w/shield	DC ground	DC ground
	5	Blue	Card sense	0 VDC when reading card
	6	Orange	+5 VDC	+5 VDC

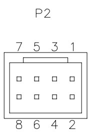
P1 – Swipe Mag Reader (Omron/Magtek) – Track 2 Only

Pinout	Pin	Wire	Function	Voltage
	1	Red	Strobe	+5 VDC signal – neg. edge samples data
	2	Brown	Card data	+5 VDC signal – high data=0, low data=1
	3	Green	DC ground	DC ground
	4	N/C	DC ground	DC ground
	5	Orange	Card sense	0 VDC when reading card
	6	Yellow	+5 VDC	+5 VDC

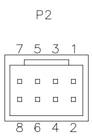
P1A – Swipe Reader (Omron/Magtek Track 1 & 2)

Pinout	Pin	Wire (Omron)	Wire (Magtek)	Function	Voltage
	1	Green	Green	Strobe 2	+5 VDC signal – neg. edge samples data
	2	Yellow	Yellow	Card data 2	+5 VDC signal – high data=0, low data=1
	3	N/C	N/C	N/C	N/C
	4	White	Black	DC ground	DC ground
	5	Blue	White	Card sense 2	0 VDC when reading card
	6	Grey	Red	+5 VDC	+5 VDC
	7	N/C	N/C	N/C	N/C
	8	Red	Blue	Strobe 1	+5 VDC signal – neg. edge samples data
	9	Orange	White	Card sense 1	0 VDC when reading card
	10	Brown	Brown	Card data 1	+5 VDC signal – high data=0, low data=1

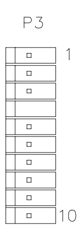
P2 – Keypad (C05375)

Pinout	Pin	Wire	Function	Voltage
	1	Black	X4 – Output to YES, NO, START OVER, CLEAR, CHECKING, SAVINGS	0 VDC–Key pressed, Off–Not pressed
	2	Brown	Y4 – Input from ENTER, 0, ., CLEAR, CREDIT, FILL	0 VDC–Key pressed, +5 VDC–Not pressed
	3	White	X3 – Output to 3, 6, 9, .	0 VDC–Key pressed, Off–Not pressed
	4	Red	Y3 – Input from 7, 8, 9, START OVER	0 VDC–Key pressed, +5 VDC–Not pressed
	5	Blue	X2 – Output to 2, 5, 8, 0	0 VDC–Key pressed, Off–Not pressed
	6	Orange	Y2 – Input from 4, 5, 6, NO, SAVINGS	0 VDC–Key pressed, +5 VDC–Not pressed
	7	Green	X1 – Output to 1, 4, 7, ENTER, CREDIT, FILL	0 VDC–Key pressed, Off–Not pressed
	8	Yellow	Y1 – Input from 1, 2, 3, YES, CHECKING	0 VDC–Key pressed, +5 VDC–Not pressed

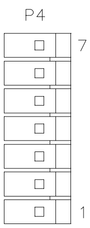
P2 –Keypad (C05857)

Pinout	Pin	Wire	Function	Voltage
	1	Black	X4 – Output to YES, NO, START OVER, CLEAR, CHECKING, SAVINGS	0 VDC–Key pressed, Off–Not pressed
	2	Brown	Y4 – Input from ENTER, 0, ., CLEAR, CREDIT, FILL	0 VDC–Key pressed, +5 VDC–Not pressed
	3	White	X3 – Output to 3, 6, 9, .	0 VDC–Key pressed, Off–Not pressed
	4	Red	Y3 – Input from 7, 8, 9, START OVER	0 VDC–Key pressed, +5 VDC–Not pressed
	5	Blue	X2 – Output to 2, 5, 8, 0	0 VDC–Key pressed, Off–Not pressed
	6	Orange	Y2 – Input from 4, 5, 6, NO, SAVINGS	0 VDC–Key pressed, +5 VDC–Not pressed
	7	Green	X1 – Output to 1, 4, 7, ENTER, CREDIT, FILL	0 VDC–Key pressed, Off–Not pressed
	8	Yellow	Y1 – Input from 1, 2, 3, YES, CHECKING	0 VDC–Key pressed, +5 VDC–Not pressed

P3 - Printer Communication

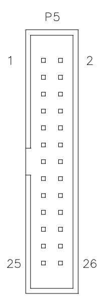
Pinout	Pin	Wire		Function	Voltage
		Novatronics	Star		
	1			N/C	
	2	Red	Black/Yellow	Transmit data – from printer	±10 VDC
	3	Black	Red/Green	Receive data – to printer	±10 VDC
	4			N/C	
	5			Clear to send	
	6			Data set ready	
	7	White	Brown/Orange	DC ground	DC ground
	8			Data carrier detect	
	9			N/C	
	10	Green	Gray/White	Data terminal ready	+10 VDC–On

P4 - Power Supply Input

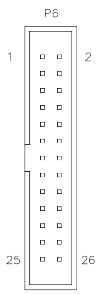
Pinout	Pin	Wire	Function	Voltage
 Note: PCB silkscreen for C05375 shows pin 1 at the wrong end of the connector.	1	Violet	+24 VDC from Power General supply–not used	+24 VDC
	2		N/C	
	3	Brown	24 VDC return from Power General supply–not used	DC ground
	4	Yellow	Not used *	+5 VDC
	5	Gray	Not used *	+5 VDC
	6	Black	DC ground	DC ground
	7	Orange	+5 VDC	+5 VDC

* If either of these pins reads 0 VDC, the yellow and gray wires should be cut and capped (separately) with wire nuts.

P5 - Datakey/Optical Reader

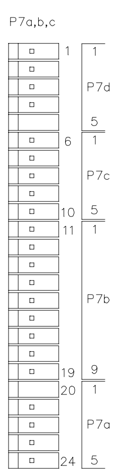
Pinout	Pin	Function	Voltage
	1	DC ground	DC ground
	2	D0–Data 0	⊓⊓ +5 VDC–On
	3	DC ground	DC ground
	4	D1–Data 1	⊓⊓ +5 VDC–On
	5	DC ground	DC ground
	6	D2–Data 2	⊓⊓ +5 VDC–On
	7	DC ground	DC ground
	8	D3–Data 3	⊓⊓ +5 VDC–On
	9	DC ground	DC ground
	10	D4–Data 4	⊓⊓ +5 VDC–On
	11	DC ground	DC ground
	12	D5–Data 5	⊓⊓ +5 VDC–On
	13	DC ground	DC ground
	14	D6–Data 6	⊓⊓ +5 VDC–On
	15	DC ground	DC ground
	16	D7–Data 7	⊓⊓ +5 VDC–On
	17	DC ground	DC ground
	18	A0 – Address 0	Not used
	19	DC ground	DC ground
	20	C05375 $\overline{\text{RESET}}$–Beckman display	+5 VDC–Normal, 0 VDC–Reset
		C05857 A2 – Address 2	Not used
	21	C05375 DC ground	DC ground
		C05857 A1 – Address 1	Not used
	22	$\overline{\text{CS}}$–Chip select	⊓⊓ 0 VDC–On
	23	C05375 DC ground	DC ground
		C05857 +5 VDC	with K3 on
	24	$\overline{\text{RD}}$–Read data	⊓⊓ 0 VDC–On
	25	C05375 DC ground	DC ground
		C05857 +5 VDC	with K3 on
	26	$\overline{\text{WD}}$–Write data	⊓⊓ 0 VDC–On

P6 - LCD Display



Pinout	Pin	Function	Voltage
	1	N/C	
	2	DC ground	DC ground
	3	$\overline{CS}$–Chip select	0 VDC–On (LCD), +5 VDC–On (Optical reader)
	4	DC ground	DC ground
	5	$\overline{RD}$–Read data	0 VDC–On
	6	DC ground	DC ground
	7	A0–Address 0 for LCD	+5 VDC–On
	8	DC ground	DC ground
	9	$\overline{WD}$–Write data	0 VDC–On
	10	DC ground	DC ground
	11	D0–Data 0	+5 VDC–On
	12	DC ground	DC ground
	13	D1–Data 1	+5 VDC–On
	14	DC ground	DC ground
	15	D2–Data 2	+5 VDC–On
	16	DC ground	DC ground
	17	D3–Data 3	+5 VDC–On
	18	DC ground	DC ground
	19	D4–Data 4	+5 VDC–On
	20	DC ground	DC ground
	21	D5–Data 5	+5 VDC–On
	22	DC ground	DC ground
	23	D6–Data 6	+5 VDC–On
	24	DC ground	DC ground
	25	D7–Data 7	+5 VDC–On
	26	DC ground	DC ground

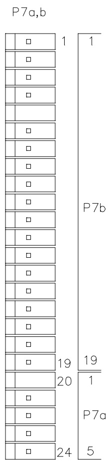
P7 (ICR) - RS-485 Communication, Printer Lamps & Switches, Beeper, Intrusion Switch



Note: PCB silkscreen for C05375 shows pin 1 at the wrong end of the connector.

Pinout	Pin	Connector	Wire	Function	Voltage
	1	d–1		N/C	
	2	d–2		N/C	
	3	d–3	Black	DC ground	DC ground
	4	d–4	Orange	+5 VDC	+5 VDC
	5	d–5		N/C	
	6	c–1	Violet	Intrusion switch input	0 VDC–Case closed
	7	c–2	Orange	Printer self–test input – Star	0 VDC–Printer test
	8	c–3	White	Paper low input – Star	0 VDC–Paper low
	9	c–4		N/C	
	10	c–5	Brown	DC ground	DC ground
	11	b–1		N/C	
	12	b–2		N/C	
	13	b–3		N/C	
	14	b–4		N/C	
	15	b–5		N/C	
	16	b–6	Black	Paper low lamp drive – Star	0 VDC–Lamp on
	17	b–7	Green	Beeper drive	0 VDC–Beeper on
	18	b–8	Gray	Paper out lamp drive – Star	0 VDC–Lamp on
	19	b–9	Yellow	+5 VDC beeper power	+5 VDC
	20	a–1		N/C	
	21	a–2	Black	RS–485 Rx– From Site	+5 VDC signal
	22	a–3	White	RS–485 Rx+ Controller	between pins 21 & 22
	23	a–4	Green	RS–485 Tx– To Site	+5 VDC signal
	24	a–5	Red	RS–485 Tx+ Controller	between pins 23 & 24

P7 (Gate) - RS-485 Communication, Gate Relay Drives, Gate Switch Sense, Beeper

Pinout	Pin	Connector	Wire	Function		Voltage
	1	b-1		N/C		
	2	b-2		N/C		
	3	b-3		N/C		
	4	b-4		N/C		
	5	b-5		N/C		
	6	b-6	Violet	Switch sense #1		0 VDC=sw sense present +5 VDC=no sw sense
	7	b-7	Gray2	Switch sense #2		
	8	b-8	White	Switch sense #3		
	9	b-9	Brown2	Switch sense #4		
	10	b-10	Black	DC ground		DC ground
	11	b-11		N/C		
	12	b-12	Gray1	Output #4 drive		0 VDC-on, +5 VDC-off
	13	b-13		N/C		
	14	b-14	Yellow	Output #3 drive		0 VDC-on, +5 VDC-off
	15	b-15		N/C		
	16	b-16	Red	Output #2 drive		0 VDC-on, +5 VDC-off
	17	b-17	Green	Beeper drive		0 VDC-on, +5 VDC-off
	18	b-18	Brown1	Output #1 drive		0 VDC-on, +5 VDC-off
	19	b-19	Orange	+5 VDC		+5 VDC
	20	a-1		N/C		
Note: PCB silkscreen for C05375 shows pin 1 at the wrong end of the connector.	21	a-2	Black	RS-485 Rx-	From Site Controller	+5 VDC signal between pins 21 & 22
	22	a-3	White	RS-485 Rx+		
	23	a-4	Green	RS-485 Tx-	To Site Controller	+5 VDC signal between pins 23 & 24
	24	a-5	Red	RS-485 Tx+		

Jumpers

Jumpers on the CPU PCB are used for very basic configurations of the PCB and usually do not need to be set in the field.

Display Type (C05375 only)

Display	K1–1	K1–2
Beckman	Jumpered	Jumpered
Densitron LCD	Jumpered	Open

Reader Type – C05375

Magnetic card reader	K2–1	K2–2	K3–1	K3–2
American Magnetics	Jumpered	Open	Open	Jumpered
Omron	Open	Jumpered	Jumpered	Open

NOTE: When used with an optical reader, these jumpers can be removed or left at the factory settings.

Reader Type – C05857

Reader Type	K4 1 & 2	K4 2 & 3	K5 1 & 2	K5 2 & 3
Amer. Magnetics Insert Key Optical	Jumpered	Open	Jumpered	Open
Panasonic Insert Omron/Magtek Swipe	Open	Jumpered	Open	Jumpered

RAM/Program Type (C05375 only)

RAM U15	K5–1	K5–2
2K x 8 NOVA.HEX, NOVA.GATE	Open	Jumpered
8K x 8 STAR.GATE	Jumpered	Open
8K x 8 Non–volatile *	Jumpered	Open

NOTE: K4 and K6 are never used and should always be open.

* An 8K non–volatile RAM must be used whenever DES encryption is enabled, regardless of the software revision.

Switches

S1 - Reset Switch

The Reset switch starts a hardware and software reset of the CPU PCB. The S2 switch settings are read when a reset occurs (and at power up). This switch should be pressed whenever switch settings are changed while power is on.

Switch	Function
S1	Push to reset CPU PCB

S2 - Miscellaneous Switches

These switches are used to set the basic configuration of the ICR. They are software dependent (the version of software may change the nature of the switch).

NOVA.HEX Software (C05375 only)

Switch	Function – NOVA.HEX software	
S2–1	DEAD	Open–watchdog timer enabled
S2–2	DPT	Open–decimal point key, Closed–clear key
S2–3	DES	Open–DES encryption enabled
S2–4	INSRT	Open–insertion mag reader, Closed–swipe mag reader or optical reader
S2–5	CRC	Open–CRC check enabled
S2–6	OPT	Open–optical reader, Closed–mag reader

NOVA.GATE or STAR.GATE Software (C05375 only)

Switch	Function – NOVA.GATE or STAR.GATE software	
S2–1		No function
S2–2	DPT	Open–decimal point key, Closed–clear key
S2–3	DES	Open–DES encryption enabled
S2–4	INSRT	Open–insertion mag reader, Closed–swipe mag reader or optical reader
S2–5	GATE	Open–island card reader, Closed–gate controller
S2–6	OPT	Open–optical reader, Closed–mag reader

DEAD This switch enables the deadman timer. It should always be open.

DPT This switch enables the decimal point on the keypad. Closing the switch causes the decimal point to act as a CLEAR key.

DES When open, the PIN number entered with a bank card transaction is encrypted before it is sent to the site controller.

INSRT This switch should be closed when a swipe mag card reader or optical reader is used and open for a insertion type mag card reader.

CRC (NOVA.HEX only) This switch should always be open to allow data integrity checks to be performed on the data going between the ICR and the site controller.

GATE (NOVA.GATE or STAR.GATE only) This switch should always be open when used as an island card reader and closed when used as a gate controller.

OPT This switch should be closed for a mag card reader and open for an optical reader.

ICR 2 Software (C05857 only)

Switch	Function	
S2–1		No function
S2–2	DPT	Open–decimal point key, Closed–clear key
S2–3	DIS	Open–2 line display; Closed–1 line display
S2–4	INSRT	Open–insertion reader/key and mag reader combination Closed–swipe mag reader/key reader only
S2–5	GATE	Open–island card/key reader, Closed–gate controller
S2–6	OPT	Open–optical reader, Closed–mag reader/key reader

DPT Open, enables decimal point on the keypad. Closed, the decimal point acts as a CLEAR key.

DIS Open, 2 lines of the display are displayed; Closed, only 1 line is displayed.

INSRT Open for an insertion mag card reader or card/key combination; closed for a swipe mag card reader/key reader.

GATE Always open for an island card/key reader; always closed for a gate controller.

OPT Open for an optical reader; closed for a mag card/key reader.

S2 - Address Switches

An address must be set up to identify the island card reader. This address is a unique identifier for when multiple ICR's are connected on the same RS-485 line. Up to 8 units can be used on the same line (there are 8 addresses). Addressing should start at 1 and continue sequentially through 8. The physical wiring order does not have to correspond with the address order, that is the first unit on the RS-485 line does not have to be address 1. The chart on the right gives the switch setting for the address selections. *NOTE: The standalone receipt printer (when used), is addressed as an island card reader; be sure to use an address different from any ICR.*

	S2−7	S2−8	S2−9	S2−10
Address	ADDR4	ADDR3	ADDR2	ADDR1
1	Closed	Closed	Closed	Closed
2	Closed	Closed	Closed	Open
3	Closed	Closed	Open	Closed
4	Closed	Closed	Open	Open
5	Closed	Open	Closed	Closed
6	Closed	Open	Closed	Open
7	Closed	Open	Open	Closed
8	Closed	Open	Open	Open

S3 - Diagnostic Switch

This switch is used to enable the diagnostic mode of the ICR. When in the down position, the diagnostic tests can be started by keeping the face of the ICR open and pressing the START OVER key on the keypad.

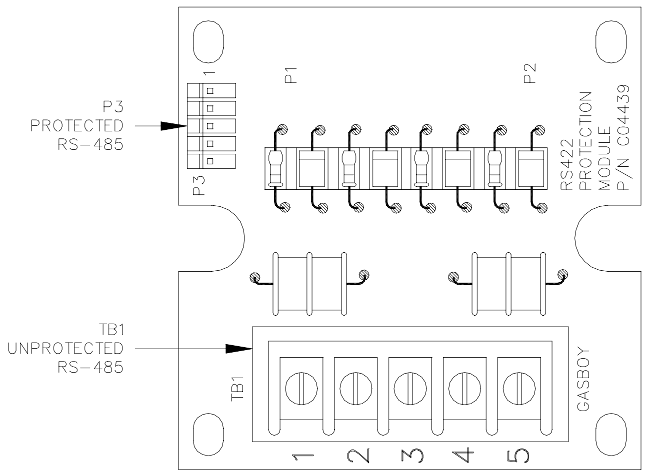
Switch	Function
S3	Up−normal, Down−test mode

RS-485 PCB (C05683)

The RS-485 PCB provides the interface for the RS-485 section of the CPU PCB. This PCB:

- provides the terminal block for field wiring of the RS-485 lines or wiring from the pedestal pump control unit
- provides protection against noise on the RS-485 lines

Layout



NOTE: Colors shown below are for ICR mounted on pedestal PCU post. If ICR is mounted on non-pedestal PCU post, the field wiring colors are unknown.

Connectors

TB1 - RS-485 Wiring: Protected Pedestal PCU, Unprotected Non-Pedestal PCU

Pinout	Pin	Wire	Function		Voltage
TB1 (1–5)	1	Red	RS−485 Tx+	To Site	+5 VDC signal
	2	Green	RS−485 Tx−	Controller	between 1 & 2
	3	White	RS−485 Rx+	From Site	+5 VDC signal
	4	Black	RS−485 Rx−	Controller	between 3 & 4
	5	N/C			

P3 - RS-485 Signals to CPU PCB (Protected)

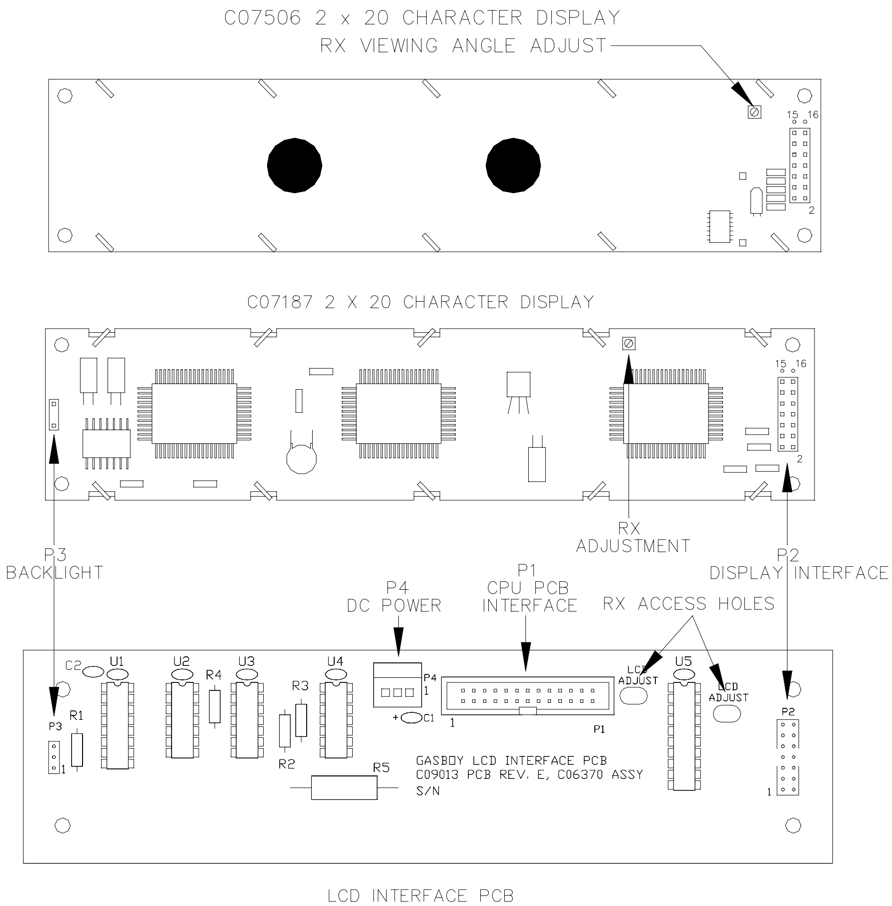
Pinout	Pin	Wire	Function		Voltage
P3 (1–5)	1	Red	RS−485 Tx+	To Site	+5 VDC signal
	2	Green	RS−485 Tx−	Controller	between 1 & 2
	3	White	RS−485 Rx+	From Site	+5 VDC signal
	4	Black	RS−485 Rx−	Controller	between 3 & 4
	5	N/C			

LCD DISPLAY & INTERFACE PCB - NEW (C07506 & C06370)

C07506 is the current production model. Formerly, it was C07187. Both boards are shown below because they differ in appearance. See Parts Lists at the end of this chapter for ordering information.

The LCD Display and LCD Interface PCB provide the visual interface for the customer. They:

- provide a 2 x 20 character display
- provide backlighting for viewing the display at night
- provide a viewing angle adjustment
- contain temperature compensation circuitry to assure uniform character contrast as temperature varies

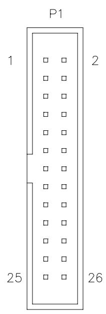


Layouts

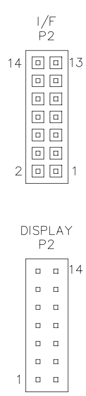
RX - Viewing Angle Adjustment
Use the RX adjustment to set the character intensity. The adjustment potentiometer is accessible through one of the access holes in the Interface PCB.

Connectors

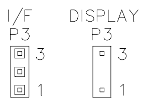
P1 - CPU PCB Interface

Pinout	Pin	Function	Voltage
	1	N/C	
	2	N/C	
	3	N/C	
	4	N/C	
	5	R/$\overline{W}$–Read/$\overline{\text{Write}}$ select	+5 VDC–Read, 0 VDC–Write
	6	DC ground	DC ground
	7	RS–Register select	0 VDC–Bus contains instruction +5 VDC–Bus contains character to display
	8	DC ground	DC ground
	9	E–Enable	Neg. transition latches data into LCD
	10	DC ground	DC ground
	11	D0–Data 0	+5 VDC–On
	12	DC ground	DC ground
	13	D1–Data 1	+5 VDC–On
	14	DC ground	DC ground
	15	D2–Data 2	+5 VDC–On
	16	DC ground	DC ground
	17	D3–Data 3	+5 VDC–On
	18	DC ground	DC ground
	19	D4–Data 4	+5 VDC–On
	20	DC ground	DC ground
	21	D5–Data 5	+5 VDC–On
	22	+5 VDC	+5 VDC
	23	D6–Data 6	+5 VDC–On
	24	+5 VDC	+5 VDC
	25	D7–Data 7	+5 VDC–On
	26	N/C	N/C

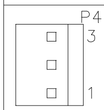
P2 - Display Interface

Pinout	Pin	Function	Voltage
	1	DC ground	DC ground
	2	+5 VDC	+5 VDC
	3	V0–Viewing angle voltage	0 VDC–Dark, +5 VDC–Light (Densitron)
	4	RS–Register select	0 VDC–Bus contains instruction +5 VDC–Bus contains character to display
	5	R/$\overline{W}$–Read/$\overline{\text{Write}}$ select	+5 VDC–Read, 0 VDC–Write
	6	E–Enable	Neg. transition latches data into LCD
	7	D0–Data 0	+5 VDC–On
	8	D1–Data 2	+5 VDC–On
	9	D2–Data 2	+5 VDC–On
	10	D3–Data 3	+5 VDC–On
	11	D4–Data 4	+5 VDC–On
	12	D5–Data 5	+5 VDC–On
	13	D6–Data 6	+5 VDC–On
	14	D7–Data 7	+5 VDC–On

P3 - Backlight Power

Pinout	Pin	Function	Voltage
	1	DC ground	DC ground
	2	N/C	
	3	LED Power	+4 VDC

P4 - DC Power

Pinout	Pin	Wire	Function	Voltage
	1	Black	DC ground	DC ground
	2	Orange	+5 VDC	+5 VDC
	3	N/C		

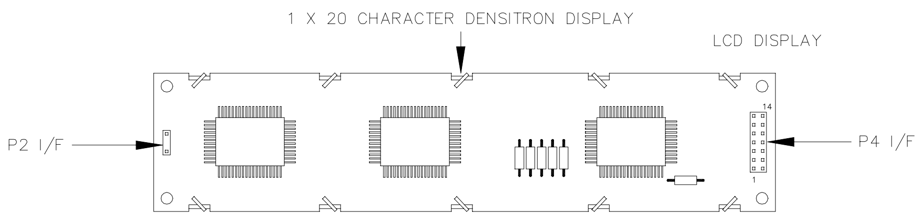
LCD DISPLAY & I/F PCB's - OLD (C05442 & C05455)

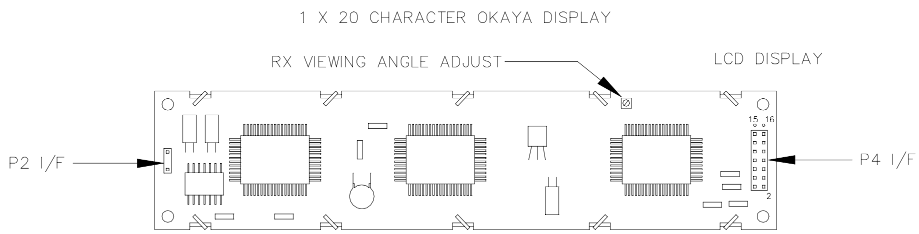
These parts were shipped with ICR's with serial numbers prior to DPR12413, DET11398 and DPC10220.

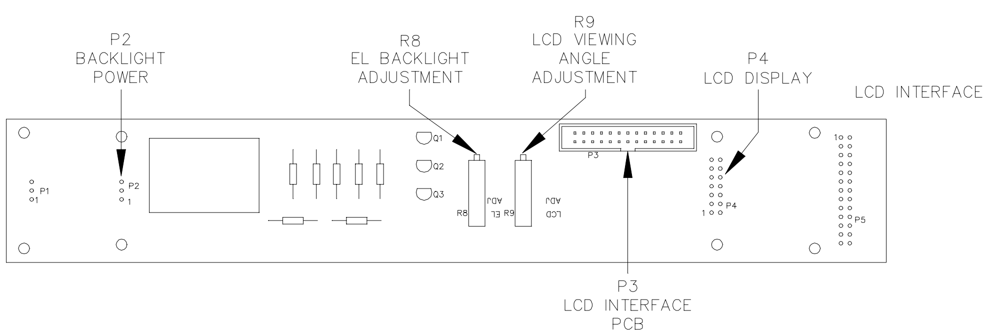
The LCD Display and I/F PCB's provide the visual interface for the customer. They:

- provide a 1 x 20 character display
- provide backlighting for viewing the display at night
- provide viewing angle and backlighting adjustments
- contains temperature compensation circuitry to assure uniform character contrast as temperature varies (Okaya only)

Layouts







Adjustments

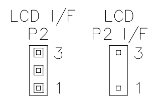
R8 - EL Backlight
Clockwise - Backlight will turn on later (with less light available)
Counter-clockwise - Backlight will turn on sooner (with more light available)

R9 - Viewing Angle - Densitron Display
Clockwise - characters become darker
Counter-clockwise - characters become lighter

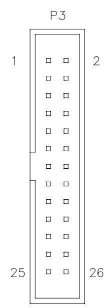
RX - Viewing Angle - Okaya Display
Clockwise - characters become lighter
Counter-clockwise - characters become darker

Connectors

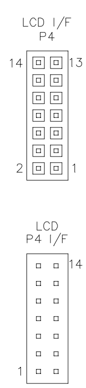
P2 - Backlight Power

Pinout	Pin	Function	Voltage
	1	80 VAC	200 V P/P
	2	N/C	
	3	DC ground	DC ground

P3 - LCD I/F PCB

Pinout	Pin	Function	Voltage
	1	N/C	
	2	N/C	
	3	N/C	
	4	N/C	
	5	R/$\overline{W}$–Read/$\overline{Write}$ select	+5 VDC–Read, 0 VDC–Write
	6	DC ground	DC ground
	7	RS–Register select	0 VDC–Bus contains instruction +5 VDC–Bus contains character to display
	8	DC ground	DC ground
	9	E–Enable	Neg. transition latches data into LCD
	10	DC ground	DC ground
	11	D0–Data 0	+5 VDC–On
	12	DC ground	DC ground
	13	D1–Data 1	+5 VDC–On
	14	DC ground	DC ground
	15	D2–Data 2	+5 VDC–On
	16	DC ground	DC ground
	17	D3–Data 3	+5 VDC–On
	18	DC ground	DC ground
	19	D4–Data 4	+5 VDC–On
	20	DC ground	DC ground
	21	D5–Data 5	+5 VDC–On
	22	+5 VDC	+5 VDC
	23	D6–Data 6	+5 VDC–On
	24	+5 VDC	+5 VDC
	25	D7–Data 7	+5 VDC–On
	26	N/C	N/C

P4 - LCD Interface

Pinout	Pin	Function	Voltage
	1	DC ground	DC ground
	2	+5 VDC	+5 VDC
	3	V0–Viewing angle voltage	0 VDC–Dark, +5 VDC–Light (Densitron)
	4	RS–Register select	0 VDC–Bus contains instruction +5 VDC–Bus contains character to display
	5	R/$\overline{W}$–Read/$\overline{Write}$ select	+5 VDC–Read, 0 VDC–Write
	6	E–Enable	Neg. transition latches data into LCD
	7	D0–Data 0	+5 VDC–On
	8	D1–Data 2	+5 VDC–On
	9	D2–Data 2	+5 VDC–On
	10	D3–Data 3	+5 VDC–On
	11	D4–Data 4	+5 VDC–On
	12	D5–Data 5	+5 VDC–On
	13	D6–Data 6	+5 VDC–On
	14	D7–Data 7	+5 VDC–On

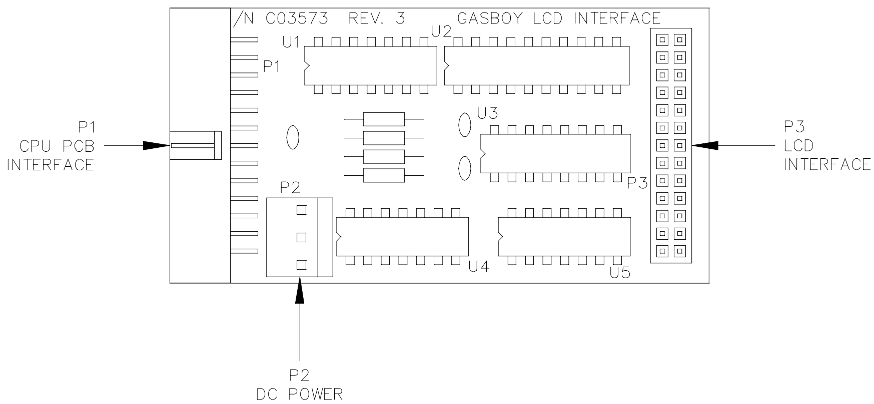
LCD INTERFACE PCB (C04942)

This was shipped in ICR's with serial numbers prior to DPR12413, DET11398 and DPC10220.

The LCD Interface PCB acts as a buffer between the CPU PCB and the LCD display. This PCB:

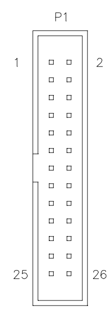
- controls the communication between the CPU PCB and the LCD Display PCB
- connects the LCD Interface PCB to the CPU PCB
- connects the DC power to the LCD and I/F PCB's

Layout

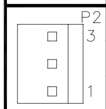


Connectors

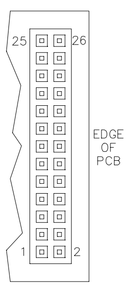
P1 - CPU PCB Interface

Pinout	Pin	Function	Voltage
	1	N/C	
	2	DC ground	DC ground
	3	$\overline{CS}$–Chip select derived from address 1	0 VDC–On
	4	DC ground	DC ground
	5	$\overline{RD}$–Generates Enable, R/W, RS for display	0 VDC–On
	6	DC ground	DC ground
	7	A0–Address 0	+5 VDC–On
	8	DC ground	DC ground
	9	$\overline{WR}$–Generates Enable, R/W, RS for display	0 VDC–On
	10	DC ground	DC ground
	11	D0–Data 0	+5 VDC–On
	12	DC ground	DC ground
	13	D1–Data 1	+5 VDC–On
	14	DC ground	DC ground
	15	D2–Data 2	+5 VDC–On
	16	DC ground	DC ground
	17	D3–Data 3	+5 VDC–On
	18	DC ground	DC ground
	19	D4–Data 4	+5 VDC–On
	20	DC ground	DC ground
	21	D5–Data 5	+5 VDC–On
	22	DC ground	DC ground
	23	D6–Data 6	+5 VDC–On
	24	DC ground	DC ground
	25	D7–Data 7	+5 VDC–On
	26	DC ground	DC ground

P2 - DC Power Input

Pinout	Pin	Wire	Function	Voltage
	1	Black	DC ground	DC ground
	2	Orange	+5 VDC	+5 VDC
	3	N/C		

P3 - LCD Interface

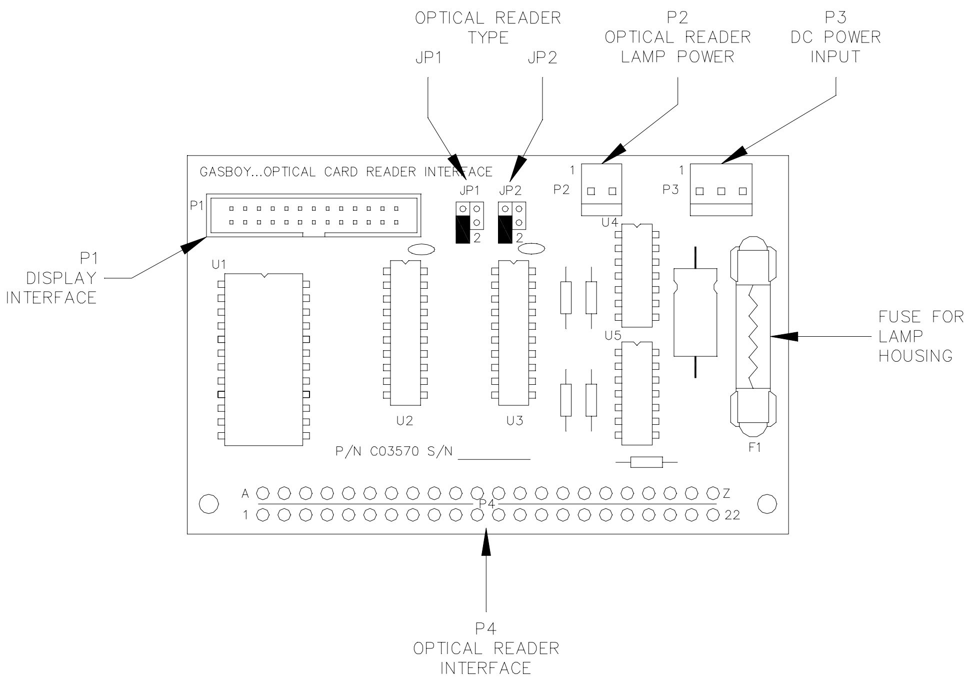
Pinout	Pin	Function	Voltage
	1	N/C	
	2	N/C	
	3	N/C	
	4	N/C	
	5	$R/\overline{W}$–Read/$\overline{\text{Write}}$ select	+5 VDC–Read, 0 VDC–Write
	6	DC ground	DC ground
	7	RS–Register select	0 VDC–Bus contains instruction
			+5 VDC–Bus contains character to display
	8	DC ground	DC ground
	9	E–Enable	Neg. transition latches data into LCD
	10	DC ground	DC ground
	11	D0–Data 0	+5 VDC–On
	12	DC ground	DC ground
	13	D1–Data 1	+5 VDC–On
	14	DC ground	DC ground
	15	D2–Data 2	+5 VDC–On
	16	DC ground	DC ground
	17	D3–Data 3	+5 VDC–On
	18	DC ground	DC ground
	19	D4–Data 4	+5 VDC–On
	20	DC ground	DC ground
	21	D5–Data 5	+5 VDC–On
	22	DC ground	DC ground
	23	D6–Data 6	+5 VDC–On
	24	DC ground	DC ground
	25	D7–Data 7	+5 VDC–On
	26	N/C	N/C

OPTICAL INTERFACE PCB (C05504)

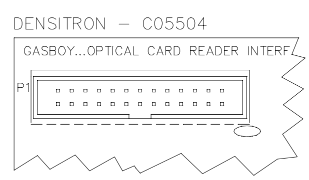
The Optical Interface PCB acts as a buffer between the optical reader and the CPU PCB. This PCB:

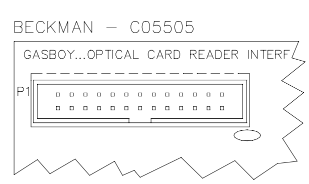
- connects the DC power to the reader and hood assemblies
- fuses the power to the hood

Layout



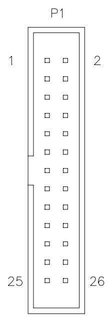
There are two versions of this board: Densitron and Beckman. While they look identical, they are not interchangeable. On the Densitron board, the dashed line is below the P1 connector; on the Beckman, the dashed line is above the P1 connector.



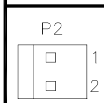


Connectors

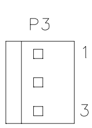
P1 - Display Interface

Pinout	Pin	Beckman Display (C05505)		Densitron LCD Display (C05504)	
		Function	Voltage	Function	Voltage
 Connector is offset when soldered in according to the type of display.	1	DC ground	DC ground	N/C	
	2	D0–Data 0	+5 VDC–On	DC ground	DC ground
	3	DC ground	DC ground	CS–I/F board select	5 VDC–On
	4	D1–Data 1	+5 VDC–On	DC ground	DC ground
	5	DC ground	DC ground	$\overline{RD}$–row read pulse	0 VDC–On
	6	D2–Data 2	+5 VDC–On	DC ground	DC ground
	7	DC ground	DC ground	N/C	
	8	D3–Data 3	+5 VDC–On	DC ground	DC ground
	9	DC ground	DC ground	$\overline{WD}$–column scan pulse	0 VDC–On
	10	D4–Data 4	+5 VDC–On	DC ground	DC ground
	11	DC ground	DC ground	D0–Data 0	+5 VDC–On
	12	D5–Data 5	+5 VDC–On	DC ground	DC ground
	13	DC ground	DC ground	D1–Data 1	+5 VDC–On
	14	D6–Data 6	+5 VDC–On	DC ground	DC ground
	15	DC ground	DC ground	D2–Data 2	+5 VDC–On
	16	D7–Data 7	+5 VDC–On	DC ground	DC ground
	17	DC ground	DC ground	D3–Data 3	+5 VDC–On
	18	N/C		DC ground	DC ground
	19	DC ground	DC ground	D4–Data 4	+5 VDC–On
	20	N/C		DC ground	DC ground
	21	DC ground	DC ground	D5–Data 5	+5 VDC–On
	22	CS–I/F board select	5 VDC–On	DC ground	DC ground
	23	DC ground	DC ground	D6–Data 6	+5 VDC–On
	24	$\overline{RD}$–row read pulse	0 VDC–On	DC ground	DC ground
	25	DC ground	DC ground	D7–Data 7	+5 VDC–On
	26	$\overline{WD}$–column scan pulse	0 VDC–On	DC ground	DC ground

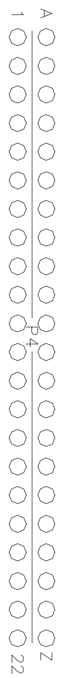
P2 - DC Power to Reader

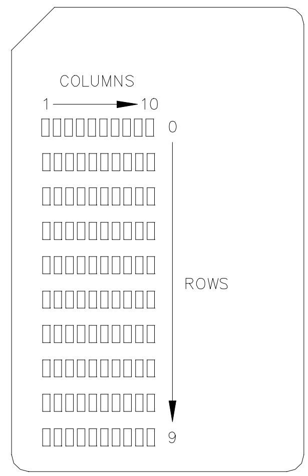
Pinout	Pin	Old Style Wire	New Style Wire	Function	Voltage
	1	Red	Red	+5 VDC	+5 VDC
	2	Red	Black	DC ground	DC ground

P3 - DC Power Input

Pinout	Pin	Wire	Function	Voltage
	1	Black	DC ground	DC ground
	2	Orange	+5 VDC	+5 VDC
	3	N/C		

P4 - Optical Reader Interface

Pinout	Pin	Function	Voltage
View from solder side of PCB. 	1	+5 VDC	+5 VDC
	2	C16–column 16 output (model 240 reader)	0 VDC–On
	3	C14–column 14 output (model 240 reader)	0 VDC–On
	4	DC ground	DC ground
	5	N/C	
	6	R9–row 9 input	0 VDC–hole punched
	7	R8–row 8 input	0 VDC–hole punched
	8	R7–row 7 input	0 VDC–hole punched
	9	R6–row 6 input	0 VDC–hole punched
	10	R5–row 5 input	0 VDC–hole punched
	11	R4–row 4 input	0 VDC–hole punched
	12	R3–row 3 input	0 VDC–hole punched
	13	R2–row 2 input	0 VDC–hole punched
	14	R1–row 1 input	0 VDC–hole punched
	15	R0–row 0 input	0 VDC–hole punched
	16	N/C	
	17	N/C	DC ground
	18	N/C	DC ground
	19	N/C	
	20	+5 VDC	+5 VDC
	21	+5 VDC	+5 VDC
	22	N/C	
	A	DC ground	DC ground
	B	C15–column 15 output (model 240 reader)	0 VDC–On
	C	C13–column 13 output (model 240 reader)	0 VDC–On
	D	N/C	
	E	S0–card inserted input	+5 VDC–card inserted
	F	C1–column 1 output	0 VDC–On
	H	C2–column 2 output	0 VDC–On
	J	C3–column 3 output	0 VDC–On
	K	C4–column 4 output	0 VDC–On
	L	C5–column 5 output	0 VDC–On
	M	C6–column 6 output	0 VDC–On
	N	C7–column 7 output	0 VDC–On
	P	C8–column 8 output	0 VDC–On
	R	C9–column 9 output	0 VDC–On
	S	C10–column 10 output	0 VDC–On
	T	C11–column 11 output (model 240 reader)	0 VDC–On
	U	C12–column 12 output (model 240 reader)	0 VDC–On
	V	N/C	
	W	N/C	
	X	+5 VDC	+5 VDC
	Y	+5 VDC	+5 VDC
	Z	N/C	



Jumpers
Reader Type

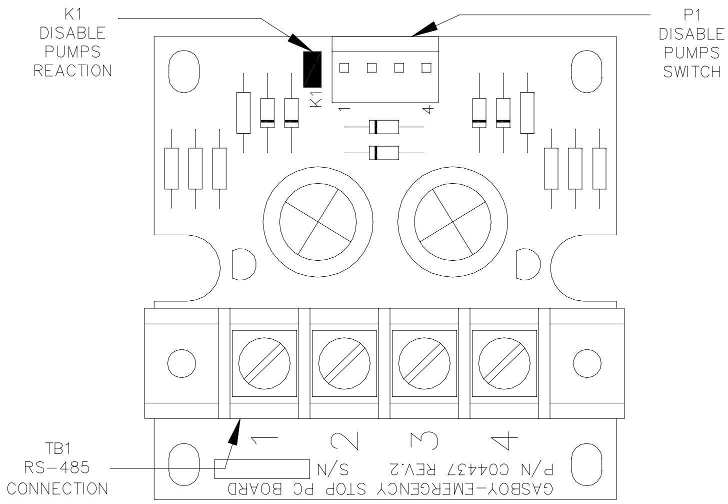
Number of numeric digits	JP1–1	JP1–2	JP2–1	JP2–2
Up to 20 (model 100)	Open	Jumpered	Jumpered	Open
21 to 32 (model 240)	Jumpered	Open	Open	Jumpered

DISABLE PUMPS (EMERGENCY STOP) PCB (C05377)

The Disable Pumps PCB (formerly known as the Emergency Stop PCB) used with a disable pumps/emergency stop switch, provides the ability to shut down the site from the front of the island card reader. This PCB:

- monitors the disable pumps/emergency stop switch
- interrupts the RS-485 lines if the switch is activated

Layout



Connectors

TB1 - RS-485 Input

Pinout	Pin	Wire	Function		Voltage
TB1 1	1	Red	RS-485 Rx+	To Site	⎍⎍ +5 VDC signal
2	2	Green	RS-485 Rx−	Controller	between 1 & 2
3	3	White	RS-485 Tx+	To data	⎍⎍ +5 VDC signal
4	4	Black	RS-485 Tx−	loop devices	between 3 & 4

P1 - Disable Pumps/Emergency Stop Switch

Pinout	Pin	Wire	Function	Voltage
P1 1	1	White	Generate break character	0 VDC when
	2	Black	to Site when button pressed	pressed
	3	Green	Generate break character	0 VDC when
4	4	Red	to devices when button pressed	pressed

Jumpers

Disable Mode

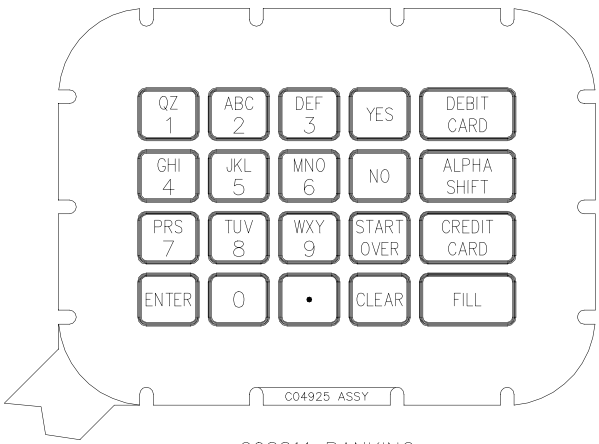
Jumper	Site configured to stop on break	Site not configured to stop on break
K1−Jumpered	Pumps turn off and site stops	Pumps turn off
K1−Open	Pumps turn off	Pumps turn off

KEYPAD

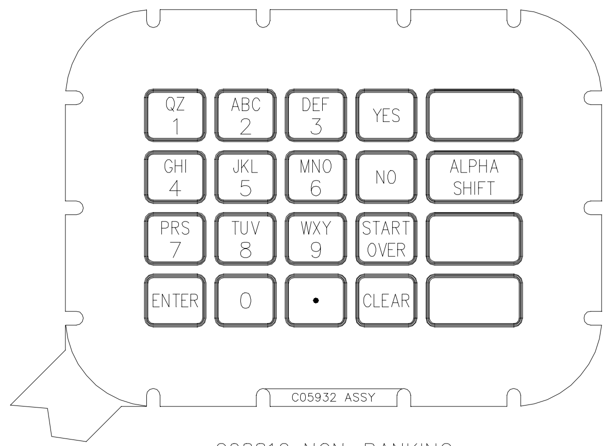
The keypad is located on the face of the island card reader. The keypad:

- allows the user to enter data into the ICR
- runs various diagnostic tests

Layout - New Style

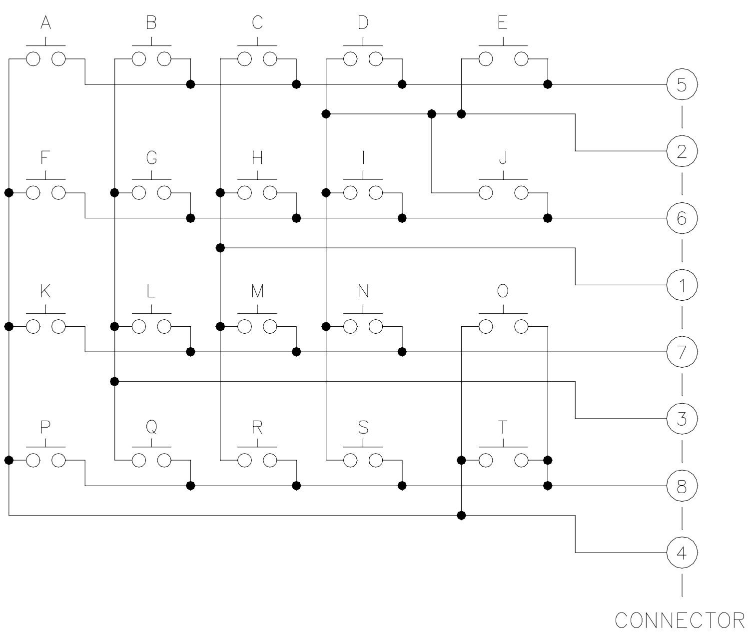


C08811 BANKING

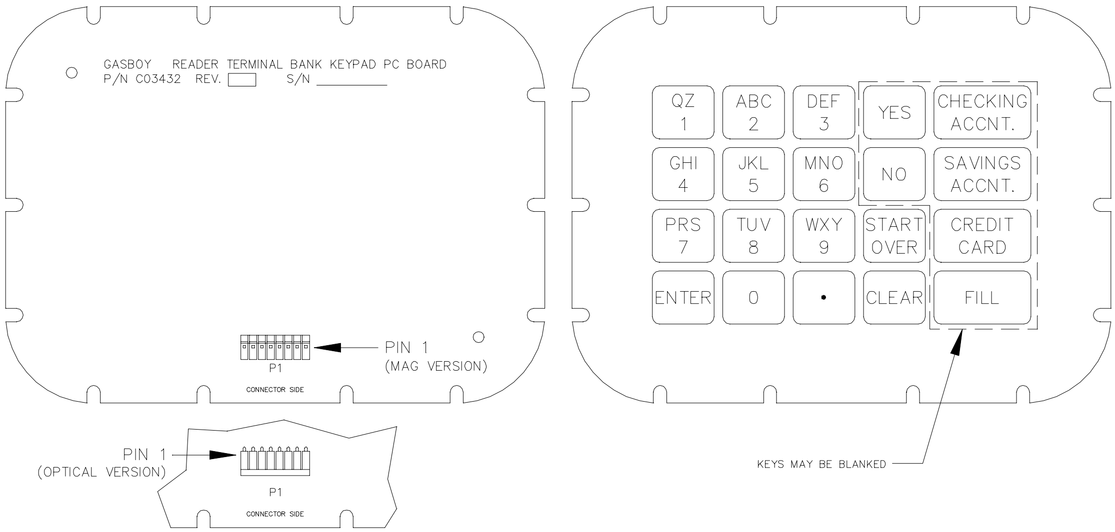


C08812 NON-BANKING

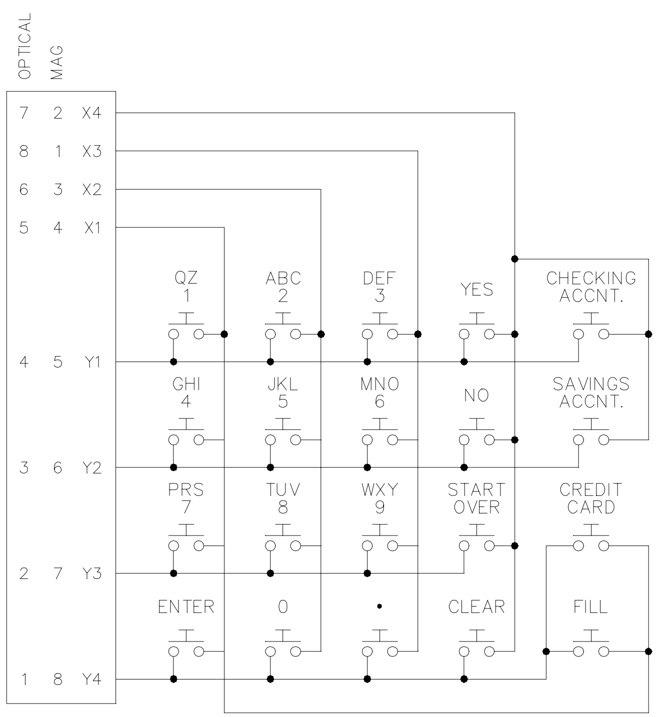
Schematic - New Style



Layout - Old Style

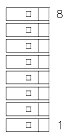


Schematic - Old Style

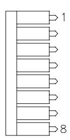


Connectors

P1 - Mag Card Reader Version

Pinout	Pin	Wire	Function	Voltage
P1 MAG 	1	White	X3 – Output to 3, 6, 9, .	0 VDC–Key pressed, Off–Not pressed
	2	Black	X4 – Output to YES, NO, START OVER, CLEAR, CHECKING, SAVINGS	0 VDC–Key pressed, Off–Not pressed
	3	Blue	X2 – Output to 2, 5, 8, 0	0 VDC–Key pressed, Off–Not pressed
	4	Green	X1 – Output to 1, 4, 7, ENTER, CREDIT, FILL	0 VDC–Key pressed, Off–Not pressed
Note: The pin 1 shown on the PCB is incorrect for the mag version	5	Yellow	Y1 – Input from 1, 2, 3, YES, CHECKING	0 VDC–Key pressed, +5 VDC–Not pressed
	6	Orange	Y2 – Input from 4, 5, 6, NO, SAVINGS	0 VDC–Key pressed, +5 VDC–Not pressed
	7	Red	Y3 – Input from 7, 8, 9, START OVER	0 VDC–Key pressed, +5 VDC–Not pressed
	8	Brown	Y4 – Input from ENTER, 0, ., CLEAR, CREDIT, FILL	0 VDC–Key pressed, +5 VDC–Not pressed

P1 - Optical Card Reader Version

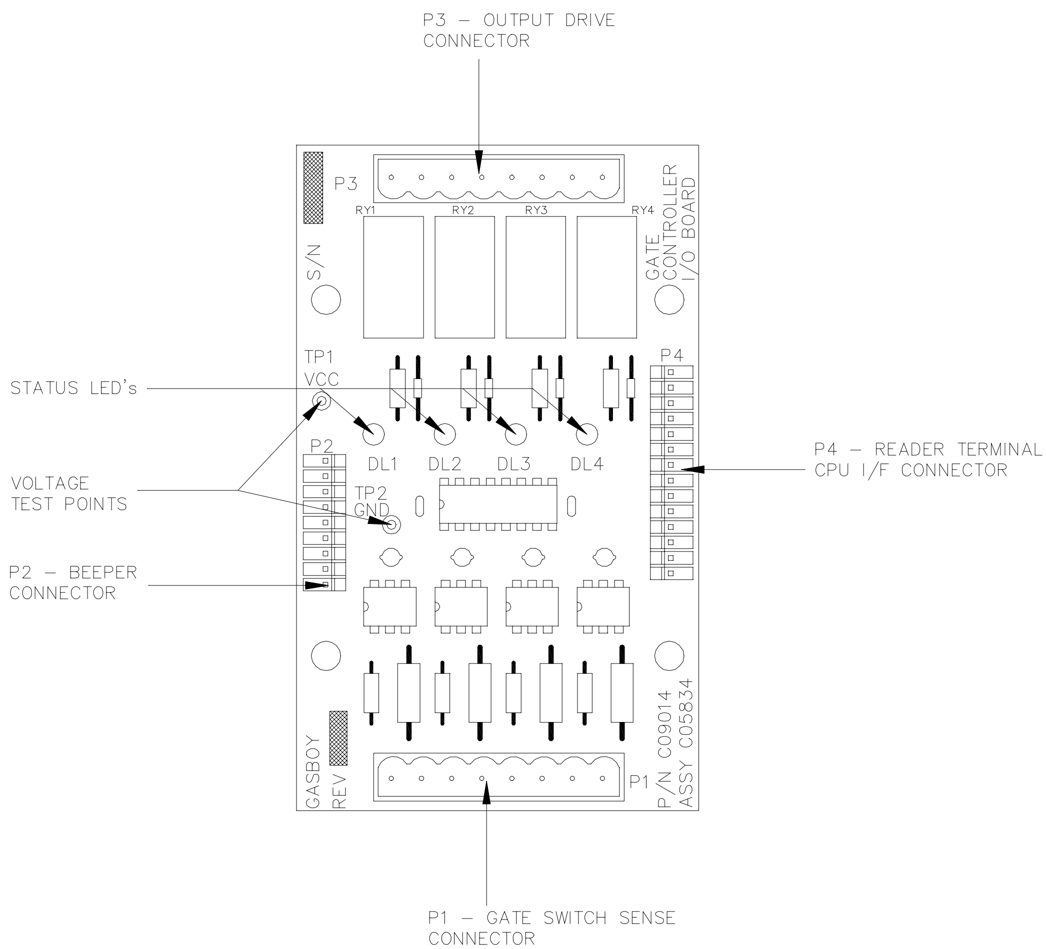
Pinout	Pin	Wire	Function	Voltage
P1 OPTICAL 	1	Brown	Y4 – Input from ENTER, 0, ., CLEAR, CREDIT, FILL	0 VDC–Key pressed, +5 VDC–Not pressed
	2	Red	Y3 – Input from 7, 8, 9, START OVER	0 VDC–Key pressed, +5 VDC–Not pressed
	3	Orange	Y2 – Input from 4, 5, 6, NO, SAVINGS	0 VDC–Key pressed, +5 VDC–Not pressed
	4	Yellow	Y1 – Input from 1, 2, 3, YES, CHECKING	0 VDC–Key pressed, +5 VDC–Not pressed
	5	Green	X1 – Output to 1, 4, 7, ENTER, CREDIT, FILL	0 VDC–Key pressed, Off–Not pressed
	6	Blue	X2 – Output to 2, 5, 8, 0	0 VDC–Key pressed, Off–Not pressed
	7	Black	X4 – Output to YES, NO, START OVER, CLEAR, CHECKING, SAVINGS	0 VDC–Key pressed, Off–Not pressed
	8	White	X3 – Output to 3, 6, 9, .	0 VDC–Key pressed, Off–Not pressed

GATE CONTROLLER I/O PCB (C05834)

The Gate Controller I/O Board:

- controls up to four AC or DC devices such as gate openers, car washes, or vending machines.
- allows devices to remain on for a specified time-out period or be turned off based on the signal at the switch sense input.
- provides LED's for monitoring the status of each relay output.

Layout



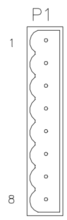
LED Indicators

LED indicators are provided to allow you to monitor the four relay outputs.

LED	Function
DL1	Output 1
DL2	Output 2
DL3	Output 3
DL4	Output 4

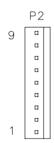
Connectors

P1 - Switch Detect



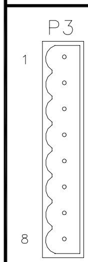
Pinout	Pin	Wire	Function	Voltage
P1	1	Field	Switch detect Gate #4	115 VAC
	2	Field	AC neutral	AC neutral
	3	Field	Switch detect Gate #3	115 VAC
	4	Field	AC neutral	AC neutral
	5	Field	Switch detect Gate #2	115 VAC
	6	Field	AC neutral	AC neutral
	7	Field	Switch detect Gate #1	115 VAC
	8	Field	AC neutral	AC neutral

P2 - Beeper



Pinout	Pin	Wire	Function	Voltage
	1	–	Not used	
	2	–	Not used	
	3	–	Not used	
	4	–	Not used	
	5	–	Not used	
	6	–	Not used	
	7	Green	Buzzer drive	0 VDC–on, +5 VDC–off
	8	–	Not used	
	9	Yellow	+5 VDC buzzer power	+5 VDC

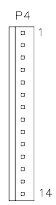
P3 - Relay Output



Pinout	Pin	Wire	Function	Voltage
P3	1	Field	Output 1 voltage in	Gate operating voltage*
	2	Field	Output 1 voltage out	Same as pin 1 when relay 1 is active
	3	Field	Output 2 voltage in	Gate operating voltage*
	4	Field	Output 2 voltage out	Same as pin 3 when relay 2 is active
	5	Field	Output 3 voltage in	Gate operating voltage*
	6	Field	Output 3 voltage out	Same as pin 5 when relay 3 is active
	7	Field	Output 4 voltage in	Gate operating voltage*
	8	Field	Output 4 voltage out	Same as pin 7 when relay 4 is active

* Up to 30 VDC or 250 VAC.

P4 - CPU PCB Interface

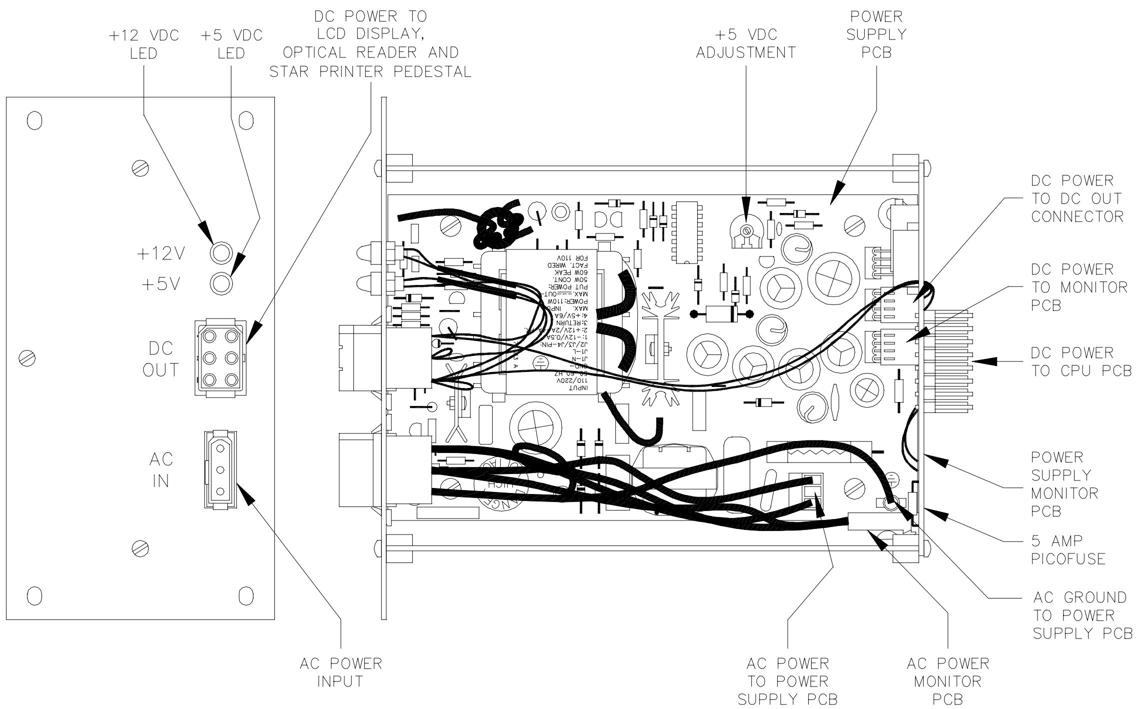
Pinout	Pin	Wire	Function	Voltage
	1	Orange	+5 VDC	+5 VDC
	2	Brown1	Output #1 drive	0 VDC–on, +5 VDC–off
	3	Green	Beeper drive	0 VDC–on, +5 VDC–off
	4	Red	Output #2 drive	0 VDC–on, +5 VDC–off
	5	–		
	6	Yellow	Output #3 drive	0 VDC–on, +5 VDC–off
	7	–		
	8	Gray1	Output #4 drive	0 VDC–on, +5 VDC–off
	9	–		
	10	Black	DC Ground	DC Ground
	11	Violet	Switch sense #1	0 VDC=sw sense present +5 VDC=no sw sense
	12	Gray2	Switch sense #2	
	13	White	Switch sense #3	
	14	Brown2	Switch sense #4	

POWER SUPPLY ASSEMBLY

The power supply assembly provides the internal power used by the island card reader. This assembly:

- provides regulated +5 VDC to all PCB's
- provides regulated +12 VDC to the optional Star printer post
- provides LED indicators for the +5 & +12 VDC

Layout



NOTE: Power One supply is shown. Location of +5VDC adjuster may vary depending on supply. See Section 2 or 3 for illustration of power supply types and adjuster locations.

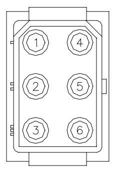
LED Indicators

LED indicators are provided to allow you to monitor the status of the two DC supply voltages.

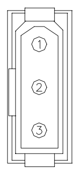
LED	Function
+12V	+12 VDC
+5V	+5 VDC

Connectors

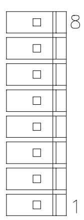
DC Out

Pinout	Pin	Wire	Function	Voltage
	1	Red	+12 VDC for Star printer pedestal	+12 VDC −.95 +.5
	2	Red/Ora	+5 VDC for Star printer pedestal	+5 VDC
	3	Black	DC ground for Star printer pedestal	Ground
	4		N/C	
	5	Orange	+5 VDC for optical reader & LCD	+5 VDC
	6	Black	DC ground for optical reader & LCD	Ground

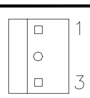
AC In

Pinout	Pin	Wire	Function	Voltage
	1	Black	AC hot input	115 VAC
	2	White	AC neutral input	AC neutral
	3	Green	AC ground input	AC ground

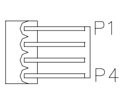
DC Power to CPU PCB

Pinout	Pin	Wire	Function	Voltage
	1	Orange	+5 VDC to CPU PCB	+5 VDC
	2	Gray	External reset	
	3		N/C	
	4		60 Hz clock (not used)	
	5	Brown	−12 VDC to CPU PCB	−12 VDC −.95 +.5
	6	Violet	+12 VDC to CPU PCB	+12 VDC −.95 +.5
	7	Yellow	Power fail	
	8	Black	DC ground to CPU PCB	Ground

AC Power to Supply PCB

Pinout	Pin	Wire	Function	Voltage
	1	Black	AC hot input	115 VAC
	2		N/C	
	3	White	AC neutral input	AC neutral

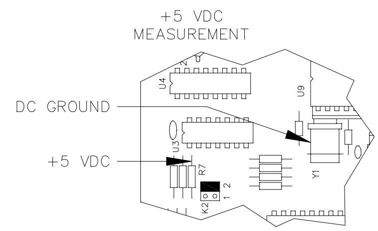
DC Power from Supply PCB

Pinout	Pin	Wire	Function	Voltage
	P1		−12 VDC from supply (not used)	
	P2	Red	+12 VDC from supply	+12 VDC −.95 +.5
	P3	Black	DC ground	Ground
	P4	Orange	+5 VDC from supply	+5 VDC

DC Power Measurements and Adjustment

+5 VDC Measurement

1. Unlock, unscrew, and lower the face of the island card reader.
2. For C05375 board: Measure the +5 VDC between the top of the resistor R7 (+) and the case of crystal Y1 (-). The voltage should be +5.00 to +5.10 VDC. If the voltage does not fall within this range, adjustment is necessary. Follow the steps below to adjust the supply. If the voltage is within tolerance, skip to Step 14.



   For C05857 board: Measure the +5VDC between test points TP1 (5V) and TP2 (Gnd). The voltage should be +5.00 to +5.10 VDC. If the voltage does not fall within this range, adjustment is necessary. Follow the steps below to adjust the supply. If the voltage is within tolerance, skip to Step 14.

+5 VDC Adjustment

3. Turn off the AC POWER switch in the island card reader.
4. Remove the two white connectors on the power supply labeled DC OUT and AC IN.
5. Remove the four 5/32 nuts on each corner of the power supply, and remove the supply.
6. Being careful that it does not touch any of the circuits on the front door, lay the power supply on a non-conductive surface (such as heavy plastic or cardboard).
7. Reconnect the two connectors on the power supply labeled DC OUT and AC IN.
8. For board C05375: Attach the meter probes to R7 and Y1 on the CPU PCB.
   For board C05857: Attach the meter probes to TP1 and TP2 on the CPU PCB.
9. Turn the AC POWER switch back on.

CAUTION

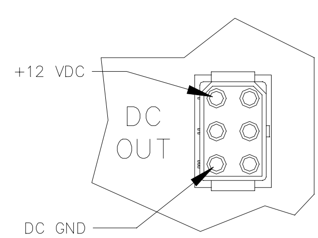
Be careful not to touch anything but the adjustment screw. High voltage exists at various points on the supply and the circuit mounted on the rear of the supply.

10. Using a 1/8 inch or smaller plastic, flat blade screwdriver, adjust the power supply to +5 VDC by turning the adjuster clockwise to increase voltage, counterclockwise to decrease voltage. Turn the screw slightly to judge how sensitive the adjustment is.
11. Disconnect the meter probes.
12. Turn the AC POWER switch off and return the power supply to its normal location. Fasten the nuts holding the supply.
13. Turn the AC POWER switch back on.

+12 VDC Measurement

14. Measure the +12 VDC between the red (+) and black (-) wires on the DC OUTPUT connector of the power supply. The voltage should be +11.00 to +14.00 VDC.

    NOTE: This voltage is used only for receipt printers and is not adjustable.



15. Close and lock the unit, and replace the screws on the face.

DIAGNOSTIC TESTS

The island card reader can perform a number of diagnostic tests to check the operation of various components within the unit. Tests can be performed totally independent of the site controller.

Start Diagnostic Mode

1. Unlock, unscrew, and lower the face of the island card reader.
2. Move the diagnostic switch (located in the upper right corner of C05375 CPU PCB; middle left on C05857 CPU PCB) to the down position.
3. While keeping the door open, push the START OVER key on the keypad. TEST will be displayed on the LCD display.
4. Select the desired test through the keypad. The test selected will continue until either the START OVER key is pressed or the diagnostic mode is ended.

End Diagnostic Mode

1. Move the diagnostic switch (located in the upper right corner of C05375 CPU PCB; middle left on C05857 CPU PCB) to the up position.
2. Close, lock, and replace the screws on the face of the unit.

Diagnostic Tests

1 - Test Printer Lamps: Press the 1 key. The Paper Low and Paper Out lamps are turned on and off one by one at one second intervals. End this test by pressing START OVER.

2 - Test Table Messages: Press the 2 key. The table messages in the unit are displayed sequentially with a 1/2 second delay between messages. End this test by pressing START OVER.

3 - Test Receipt Printer: Press the 3 key. The receipt printer prints the barber-pole pattern. End this test by pressing START OVER.

4 - DES Encryption: Press the 4 key. The DES encryption algorithm is checked. The message PASS is displayed upon successful completion. End this test by pressing START OVER.

5 - Test Alphanumeric: Press the 5 key. All displayable characters are scrolled across the alphanumeric display. The test pauses if any key other than START OVER is pressed. End this test by pressing START OVER.

6 - Test Keypad: Press the 6 key. Keypad entries appear on the alphanumeric display as they are entered. End this test by pressing ENTER or START OVER.

7 - Read A Card: Press the 7 key. The ENTER CARD prompt appears. After the card is read, the card data appears on the alphanumeric display four characters at a time. Pressing a key on the keypad displays the next four digits. This can continue until the entire card has been displayed. If the key is held down, four digits are displayed per 1/2 second until the entire card is complete. All error messages that normally apply to card reads apply here. End this test by pressing START OVER.

8 - Display Baud Rate and Address: Press the 8 key. The current baud rate and ICR address are displayed. End this test by pressing START OVER.

9 - Receipt Printer Cutter: Press the 9 key. This test makes the receipt printer feed 5 inches of paper and activate the cutter. This test terminates automatically.

Read Datakey - Press the decimal point key (.). The INSERT KEY prompt appears. After the key is read, the key data appears on the alphanumeric display, filling the display. Pressing a key on the keypad displays more of the key data. This can continue until all key data has been displayed. All error messages that normally apply to datakey read apply here. This test terminates once all key data is displayed.

ISLAND CARD READER (ICR) PROBLEMS

ICR is dead. Display is blank. No response to reader or keypad.

Possible Cause	Checks	Corrective Action
No 115 VAC feed to ICR.	Is breaker off or tripped? Is 115VAC being switched through breaker? Is 115VAC measured at the TB6 terminal block?	Turn breaker on, if off. Replace breaker if 115VAC is not being switched. Correct wiring problems if 115 VAC is not measured.
ICR power switch is off.	Check position of ICR power switch.	Turn ICR power switch on, if off.
No 115 VAC at power supply AC input connecter.	Check if 3 Amp fuse on power supply bracket assy. is blown.	Replace 3 Amp fuse if blown. If not, replace power supply bracket assy.
No DC voltage at DC Out connector of power supply assy.	Check the LEDs on power supply. If LED's are not lit, measure the voltages on the DC Out connector of the power supply assy. between black (DC ground) and orange (+5VDC) and black and red (+12VDC).	If +5VDC and +12VDC are not measured, replace the power supply. If only +12VDC is measured, check the 5 Amp picofuse on the power monitor PCB mounted on the rear of the Power Supply Assy. Replace the 5 Amp picofuse, if blown.
Defective reader terminal CPU board.	None.	Replace reader terminal CPU board.
Defective LCD display or LCD I/F PCB.	None.	Replace the LCD display if replacing the reader terminal CPU board didn't fix the problem.

OUT OF SERVICE Displayed on ICR.

Possible Cause	Checks	Corrective Action
Site controller not running.	Check that the site controller is functioning properly.	If not, go to the problems section of Section 2 or 3 depending on your site controller.
ICR not configured at the site controller.	Do a **PRint DIagnostics** command at the site controller.	If the ICR doesn't show up in the **PRint DIagnostics** command you must add the reader terminal. For SC II, use the TABLE program to add the ICR. For SC I, the CONFIG locations are Table 18-Offset 12 for initial number of readers and Table 18, offsets 14 and 15 for maximum number of readers.
Incompatible software between the site controller and ICR.	If the site controller software was just changed, call GASBOY Technical Service to verify software compatibility.	Make sure the prom is installed properly. Replace software if instructed to do so.
ICR not enabled from site controller.	Do a **PRint DIagnostics** command at the site controller.	If the printout says Reader Terminal Went Down, Never Came Up, or was Disabled By Command, do an **ENable REader X** (where x is the ICR address.
Defective RS-485 protection PCB in junction box.	Using an oscilloscope, measure between screw terminals 3 and 4 on TB1 of the junction box RS-485 protection PCB.	Replace the RS-485 protection PCB if a 5VDC square wave is not measured between pins 3 and 4.
Incorrect wiring between the RS-485 junction box and the ICR.	Using an oscilloscope, measure between screw terminals 3 and 4 on TB1 of the ICR RS-485 protection PCB.	Repair any shorts, opens, or crossed wires if a 5VDC square wave is not measured between pins 3 and 4.
Defective RS-485 Protection PCB in ICR	Using an oscilloscope, measure between pins 21 and 22 on P7a of the Reader Terminal CPU board.	Replace the RS-485 Protection PCB if a 5VDC square wave is not measured between pins 21 and 22.
Defective Reader Terminal CPU Board	Check if L2 is flashing.	If L2 is not flashing, replace the Reader Terminal CPU Board.

(Continued)

Possible Cause	Checks	Corrective Action
Incorrect ICR address setting.	Do a self-test # 8 at the ICR.	If self-test # 8 doesn't show the correct address, set the S2 switches to the proper address setting and press reset switch S1. If self-test # 8 still shows an incorrect address, replace the Reader Terminal CPU board.
Defective RS-485 driver IC in ICR.	Check if L1 is flashing.	If L1 is not flashing, replace IC (U6). Replace the Reader Terminal CPU board if replacing U6 didn't fix the problem.
Defective RS-485 driver IC in ICR.	Check if L2 is flashing.	If L1 is not flashing, replace IC.
Defective RS-485 protection PCB in ICR.	Using an oscilloscope, measure between screw terminals 1 and 2 on TB1 of the ICR RS-485 protection PCB.	Replace the RS-485 protection PCB if a 5VDC square wave is not measured between pins 1 and 2 when L1 is flashing.
Incorrect wiring between the ICR and the RS-485 junction box.	Using an oscilloscope, measure between screw terminals 1 and 2 on TB1 of the junction box RS-485 protection PCB.	Repair any shorts, opens, or crossed wires if a 5VDC square wave is not measured between pins 1 and 2 when L1 is flashing.
Defective RS-485 Protection PCB in junction box.	Using an oscilloscope, measure between pins 1 and 2 of P3 of the junction box RS-485 protection PCB.	Replace the RS-485 protection PCB if a 5VDC square wave is not measured between pins 1 and 2 on P3.
Defective RS-485 receiver IC or site controller CPU board.	Check if any devices are up. Check if L4 (SC I CPU board) or L3 (SC II CPU board) is flashing.	If all devices on island loop are down, then check LED's and proceed as directed. If L4 (SC I) or L3 (SC II) is not flashing, replace U2 (SC I) or U4 (SC II). Replace the site controller CPU Board if replacing the RS-485 receiver IC didn't fix the problem.

(Continued)

Possible Cause	Checks	Corrective Action
Display stuck on a message and system buzzing.	Check for shorted keypad position or moisture.	Dry off keypad or replace keypad. If moisture, repair seal in door.
Reader goes down and up, especially at night.	None.	Replace power supply module if it is the older power general.

ICR Responds incorrectly to cards. BAD CARD, READ ERROR, or no response at all occurs.

Possible Cause	Checks	Corrective Action
K Jumpers and dipswitches are set incorrectly.	Check K jumpers and dipswitch settings on the reader terminal CPU board for proper settings.	Correct settings of K jumpers and dipswitches if they are wrong.
Card reader is dirty.	None.	Use a GASBOY head cleaning card to clean the magnetic head or optical reader glass.
Phone cable not connected to correct communications port.	Check that the phone cable is connected to LOOP 1 ISLAND on the SC II or PCU/RT Port on the SC I.	Install phone cable in correct port.

For Magnetic Reader Only

Possible Cause	Checks	Corrective Action
Card is defective.	Run self-test # 7.	Try cards that you know are good. If the new cards work, the original card is bad and should be discarded.
Defective magnetic reader.	Run self-test # 7.	If problem still occurs when card is entered, replace magnetic card reader.
Defective Reader Terminal CPU board.	Run self-test # 7.	If problem still occurs when card is entered, replace Reader Terminal CPU board if replacing magnetic card reader did not correct problem.

For Optical Reader Only

Possible Cause	Checks	Corrective Action
Card is not punched correctly, or one card of a two-card system is being used.	Verify the card against the card layout. If a two-card optical system is used, both cards must be inserted simultaneously.	Punch new card, if defective.
No 5VDC to reader lamp housing.	Measure for +5VDC on both sides of F1 on the optical card reader I/F PCB.	Replace F1 if +5VDC is not measured on both sides.
One or more bulbs burned out in lamp housing.	Open lamp housing to check lamps.	Replace lamp housing if one or more bulbs is burned out.
Scratched, cracked, dirty, or broken glass in optical reader.	Open lamp housing to check glass.	Replace glass if it is scratched, cracked, or broken. Clean glass if it is still dirty.
Defective optical reader.	Measure between DC ground and pin E on P4 of the optical card reader I/F PCB while inserting a card.	Replace the optical reader if the voltage at pin E doesn't go to +5VDC when a card is inserted.
Defective optical reader I/F PCB.	None.	Replace optical reader I/F PCB if replacing the optical reader didn't fix problem.
Defective Reader Terminal CPU board.	None.	Replace reader terminal CPU board, if replacing the optical reader and optical reader I/F PCB didn't fix problem.

Constant beeping at ICR.

Possible Cause	Checks	Corrective Action
Reader terminal program problem.	None	Power ICR down and up.
Defective keypad.	None	Pull keypad cable off of keypad connector P1. Temporarily attach a new keypad and run self-test 6.
Defective reader CPU board.	None	Replace CPU board if replacing keypad did not fix problem.
Defective power supply.	None	Replace power supply.

Does not respond correctly to keypad entries. When keypad is pressed, wrong digit or no digit is displayed.

Possible Cause	Checks	Corrective Action
Defective keypad.	Pull keypad cable off of keypad connector P1. Temporarily attach a new keypad and run self-test #6.	If new keypad fixes problem, remove old keypad and permanently install new keypad.
Defective Reader Terminal CPU board.	Run self-test # 6.	Replace Reader Terminal CPU board if self-test 6 still fails.

Characters on ICR LC display appear too light or too dark.

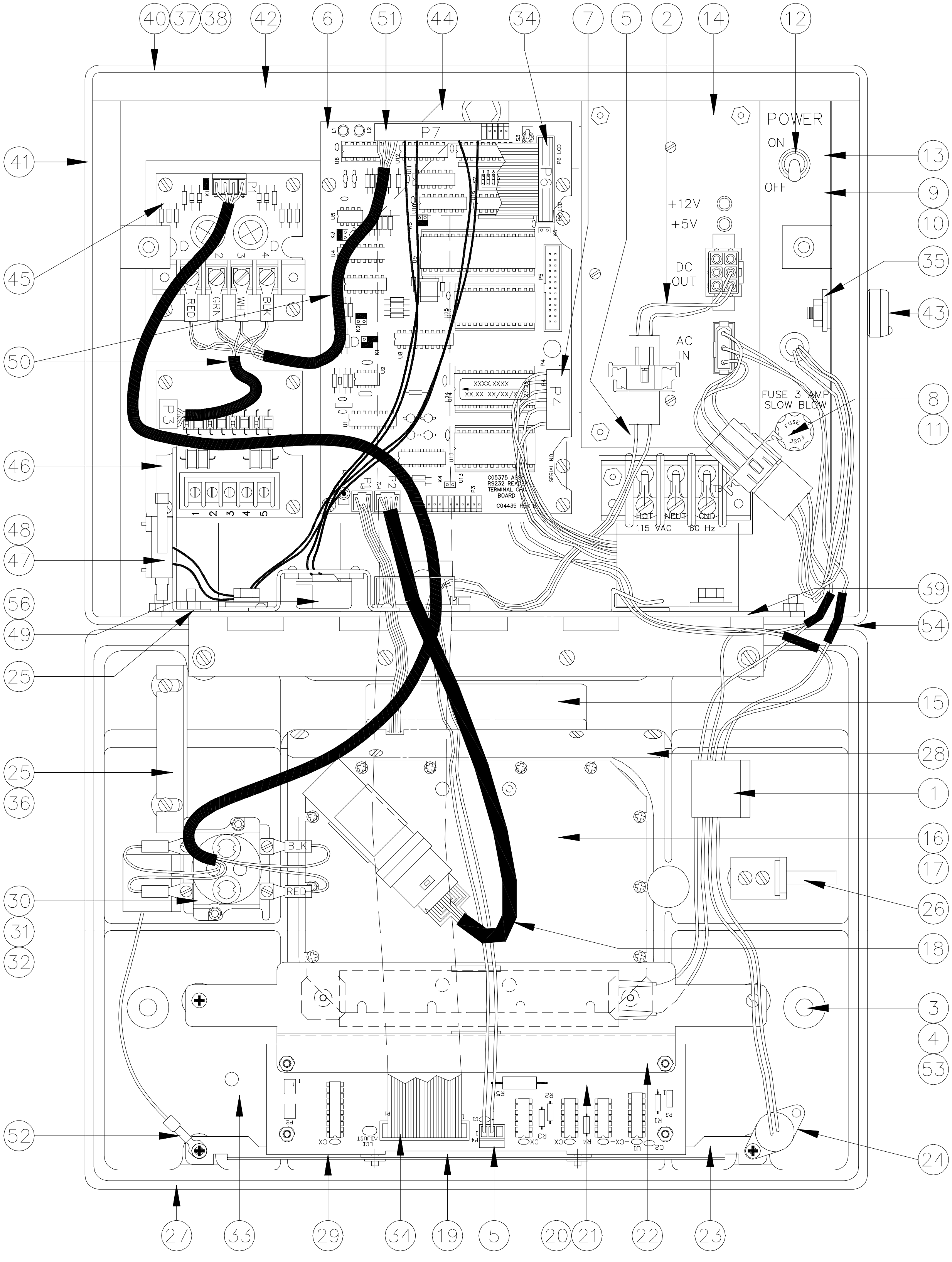
Possible Cause	Checks	Corrective Action
Improper viewing angle adjustment.	None.	Adjust R9 on the I/F board for a Densitron display or RX on the Okaya display.
Defective LC display and ICR LCD I/F board.	None.	Replace the LC display and ICR LCD I/F board if the desired results were not obtained by adjusting the viewing angle.

LC display backlight turns on or off at improper light levels.

Possible Cause	Checks	Corrective Action
Improper backlight sensitivity adjustment.	None.	On the ICR LCD I/F board, turn R8 clockwise to make the backlight turn on at lower light levels or counter-clockwise to make the backlight turn on at higher light levels.
Defective LC display and ICR LCD I/F board.	None.	Replace the LC display and ICR LCD I/F board if the desired results were not obtained by adjusting R8.

This page intentionally left blank.

MAG ISLAND CARD READER PARTS



C05662 ICR, Mag, LCD w/o Disable Pump
C05663 ICR, Mag, LCD w/Disable Pump
C05648 ICR, Mag, LCD w/o Disable Pump (For use in ICR/Star Pedestal Assy.)
C05168 ICR, Mag, LCD w/Disable Pump (For use with Star printer)
C05951 ICR, Mag, LCD w/o Disable Pump (For use with pedestal PCU)
C05950 ICR, Mag, w/Disable Pump (For use with pedestal PCU)

1	C02207	Clamp, Ribbon cable
2	C05936	Cable Assy., ICR DC PWR I/F (Not used with Star Printer)
3	C04479	Socket bit #2 for tamper-resistant screw
4	C03472	Screw 1/4-20 tamper-resistant
5	C04751	Cable Assy., R/T display power
6	C05857	PCB Assy., ICR2 CPU
	*C06426	IC Prgrammed 32K x 8 OTP
	(Specify software name and version)	
7	C05026	Cable Assy., R/T DC Power
8	C02065	Fuse holder, solder
		OR
	C09546	Fuse holder, quick conn.
9	C02436	Varistor, - 130 VAC
10	C02446	Line interference filter
11	C02634	Fuse, 3A Slow blow
12	C02704	Switch, toggle
13	C34605	Bracket Assy., Pwr Sply & AC
14	C05801	Pwr Supply Assy, Printer ICR-Star
		OR
	C06327	Pwr Supply Repl. Kit for C05403
15	C05024	Mag Rdr/conn assy., Track 2
	C08086	Mag Rdr/conn assy. (Used only with C05857 ICR2 CPU)
16	C05932	Keypad Kit, Mag non-bank 5x4
		OR
	C04925	Keypad Kit, Mag banking 4x5
17	*C03557	Gasket, R/T Bank 4x5 keypad
18	*C06663	Cable Assy., Keypad, Mtg Plate
19	C02518	PCB Guide
20	C07506	LCD Header Assy. *(See **DISPLAY NOTE**)*
21	C06370	LCD I/F PCB Assy *(See **DISPLAY NOTE**)*
22	C34006	LCD Mounting Bracket, Lower
23	C35976	LCD I/F Edge Mounting bracket
24	C05480	Cable Assy. Heater-LCD & PC board
25	C32101	Bracket door guide, ICRs
26	C32104	Bracket weld assy., - Lock catch
		OR
	C35020	Silkscreened bezel mag 4x5 no Disable Pump
28	C34378	Card reader mounting bracket
29	C34007	Window display, clear
30	C05557	Switch/cable assy., Disable Pumps
31	*C08500	Switch, PB Operator w/mushroom head
32	*C08501	Switch, contact block 2P NO
33	C34823	Window, Sensor 1" Sq. Clear
34	C05486	Cable Assy., R/T disp. comm. LCD
35	C30677	Lock cam
36	C32105	Tab-door guide bracket
37	026980	Gasket 1/16 x 1/8 x 3 ft. long (rear cover)
38	026886	Gasket 1/8 x 3/4 bulk (inside rear)
39	C32121	Base plate weld assy.
40	C03020	Rear panel cover mach casting
41	C35060	Cover weld assy., ICR hsg.
42	C01989	Gasket, bulk 1/4t x 1/2w
43	035009	Lock
44	C34606	Bracket Assy., ICR PCB Mntg
45	C05377	PCB Assy., Disable Pumps
46	C05379	PCB Assy., RS-485 Protect
47	C05671	Cable Assy., ICR Intrpt switch
		OR
	C05734	Cable Assy., ICR Intrpt switch (Novatronics)
48	*C03334	Switch, SPDT Snap Action
49	C05402	Buzzer/connector assy.
50	C05755	Cable Assy., ICR Comm. Disable Pumps OR
	C05681	Cable Assy., ICR w/o Disable
51	C04248	Conn. cover (E) 24-pos
52	C05778	Gnd wire assy. - 17"
53	048895	O-Ring 5/16 x 7/16
54	C08696	Gasket, bulk 3/8T x 1/2W (under base)
56	C35970	Beeper Mnt. Bracket

Optional Gate Controller Parts
Separate door assemblies:

C05731	Door Assy., Mag, LCD w/Disable Pump
C05682	Door Assy., Mag LCD w/o Disable

NOTE: Keypad assys C05932 (non-banking) or C04925 (banking) must be ordered separately.

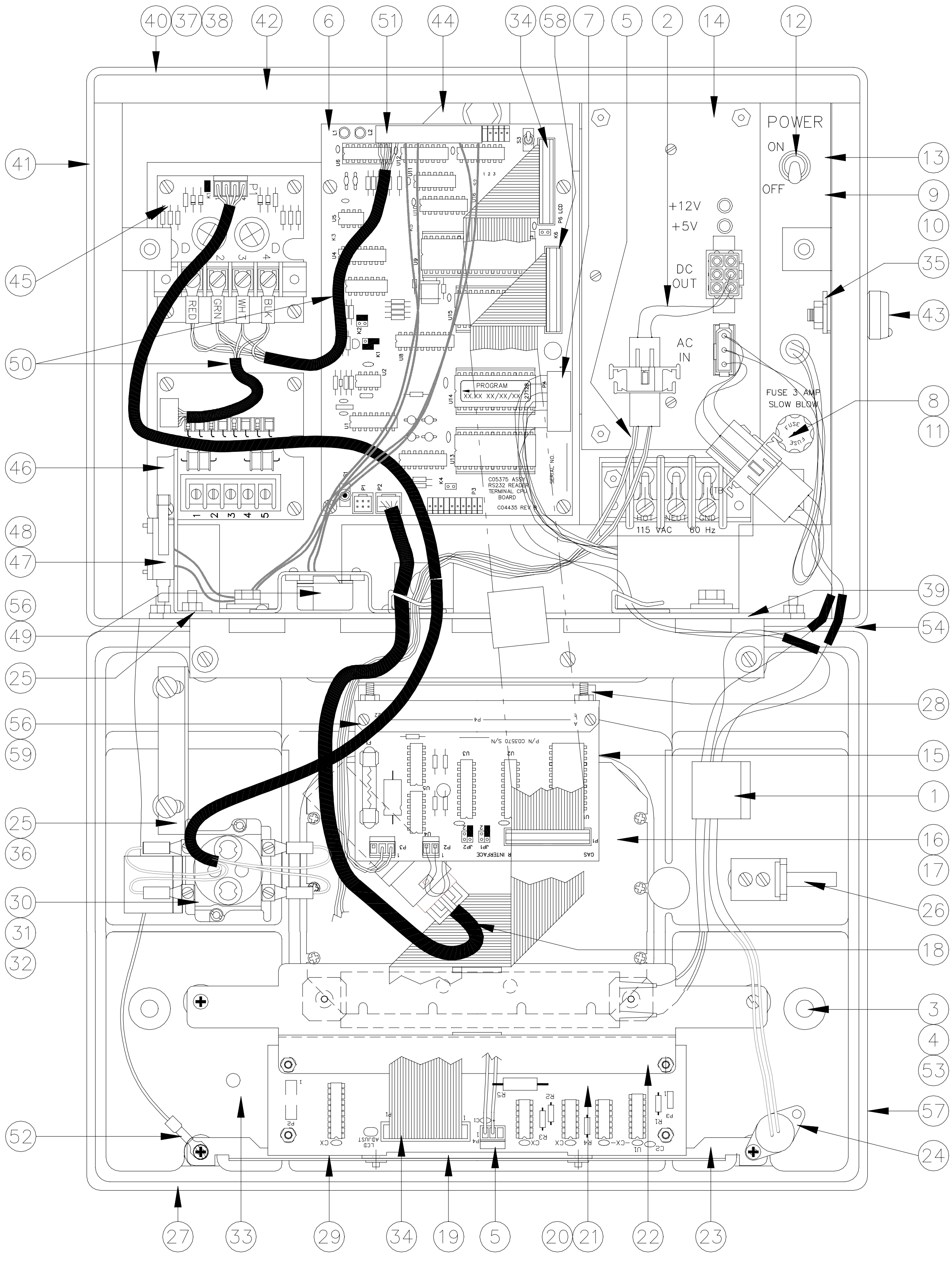
*Denotes part is a sub-part of the preceding number.

C06270	Gate Controller Kit (connects C05662 and C05296 ICR's to gate controller)
*C05834	PCB Assy., Gate Controller I/O PCB
*C05985	Cable Assy., Gate I/O to CPU PCB

DISPLAY NOTE: *For ICR serial numbers before DET11398, DPC10220 and DPR12413, order kit C07229. instead of individual components.*

For ICR units manufactured between 5/98 and 4/01 with serial numbers between the following ranges, order kit C07520: DPR12413 through DPR13287, DPC10220 through DPC10266, and DET11398 through DET12113.

OPTICAL ISLAND CARD READER PARTS



C05296 ICR, Opt, LCD w/o Disable Pumps
C05295 ICR, Opt, LCD w/Disable Pumps
C05649 ICR, Opt, LCD w/o Disable Pumps (ICR/Star Pedestal)

1	C02207	Clamp, Ribbon cable
2	C05936	Cable Assy., ICR DC PWR I/F (Not used with Star Printer)
3	C04479	Socket bit #2 for tamper-resistant screw
4	C03472	Screw 1/4-20 tamper-resistant
5	C05510	Cable Assy., Opt. rdr & display pwr
6	C05857	PCB Assy., ICR2 CPU
	*C06426	IC Programmed, 32K x 8 OTP
	(Specify software name and version)	
7	C05026	Cable Assy., R/T DC Power
8	C02065	Fuse holder, solder
		OR
	C09546	Fuse holder, quick conn
9	C02436	Varistor, - 130 VAC
10	C02446	Line interference filter
11	C02634	Fuse, 3A Slow blow
12	C02704	Switch, toggle
13	C34605	Bracket Assy., Pwr Sply & AC
14	C05801	Pwr Supply Assy, Printer ICR-Star
		OR
	C06327	Pwr Supply Repl. Kit for C05403
15	C05630	Reader (100 HR Opt) w/conn
	*C05628	Lamp Housing CFN
	*C04406	Glass, w/Metal Edge
16	C05932	Keypad Kit, non-bank 5x4
		OR
	C04925	Keypad Kit, banking 4x5
17	*C03557	Gasket, R/T Bank 4x5 keypad
18	*C06663	Cable Assy., Keypad, Mtg Plate
19	C02518	PCB Guide
20	C07506	LCD Header Assy. *(See **DISPLAY NOTE**)*
21	C06370	LCD I/F PCB Assy *(See **DISPLAY NOTE**)*
22	C34006	LCD Mounting Bracket, Lower
23	C35976	LCD I/F Edge Mounting bracket
24	C05480	Cable Assy. Heater-LCD & PC board
25	C32101	Bracket door guide, ICRs
26	C32104	Bracket weld assy., - Lock catch
27	C35236	Silkscreened bezel opt 4x5 w/Dis Pmps
		OR
	C35019	Silkscreened bezel opt 4x5 no Disable
28	C33979	Optical Card Rdr Mtg Bracket
29	C34007	Window display, clear
30	C05557	Switch/cable assy., Disable Pumps
31	*C08500	Switch, PB Operator w/mushroom head

C05167 ICR, Opt, LCD w/Disable Pumps (ICR/Star Pedestal)
C05953 ICR, Opt, LCD w/o Disable Pumps (Ped. PCU)
C05952 ICR, Opt, LCD w/Disable Pumps (Ped. PCU)

32	*C08501	Switch, contact block 2P NO
33	C34823	Window, Sensor 1" Sq. Clear
34	C05486	Cable Assy., R/T disp. comm. LCD
35	C30677	Lock cam
36	C32105	Tab-door guide bracket
37	026980	Gasket 1/16 x 1/8 x 3 ft. long (rear cover)
38	026886	Gasket 1/8 x 3/4 bulk (inside rear)
39	C32121	Base plate weld assy.
40	C03020	Rear panel cover mach casting
41	C35060	Cover weld assy., ICR hsg.
42	C01989	Gasket, bulk 1/4t x 1/2w
43	035009	Lock
44	C34606	Bracket Assy., ICR PCB Mntg
45	C05377	PCB Assy., Disable Pumps
46	C05379	PCB Assy., RS-485 Protect
47	C05671	Cable Assy., ICR Intrpt switch
		OR
	C05734	Cable Assy., ICR Intrpt switch (Novatronics)
48	*C03334	Switch, SPDT Snap Action
49	C05402	Buzzer/connector assy.
50	C05755	Cable Assy., ICR Comm. Disable Pumps OR
	C05681	Cable Assy., ICR w/o Disable
51	C04248	Conn. cover (E) 19-pos
52	C05778	Gnd wire assy. - 17"
53	048895	O-Ring 5/16 x 7/16
54	C08696	Gasket, bulk 3/8T x 1/2W (under base)
56	C05504	PCB Assy., Opt Card Reader LCD
57	C02590	Decal, Insert Opt. Card Instructions
58	C05506	Cable Assy., Ribbon 14.5"
59	C02066	Fuse 2.5A Quick blow (subpart of 56)
60	C35970	Beeper Mnt. Assy.

Optional Gate Controller Parts

C06270	Gate Controller Kit (connects C05662 and C05296 ICR's to gate controller)
*C05834	PCB Assy., Gate Controller I/O PCB
*C05985	Cable Assy., Gate I/O to CPU PCB

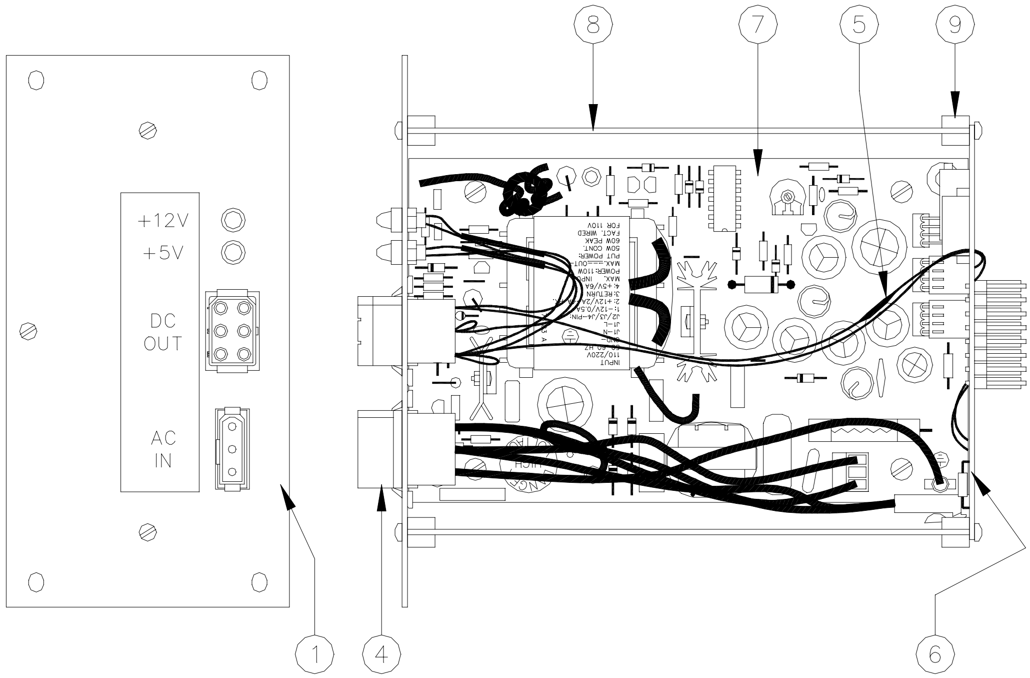
Separate door assemblies:
C05514 Door Assy., Opt, LCD w/o Disable Pmp
C05298 Door Assy., Opt, LCD w/Disable Pump

NOTE: Keypad assys C05932 (non-banking) or C04925 (banking) must be ordered separately.

*Denotes part is a sub-part of the preceding number.
**Denotes part is a sub-part of the preceding sub-part number.

DISPLAY NOTE: *For ICR serial numbers before DET11398, DPC10220 and DPR12413, order kit C07229. instead of individual components.*
For ICR units manufactured between 5/98 and 4/01 with serial numbers between the following ranges, order kit C07520: DPR12413 through DPR13287, DPC10220 through DPC10266, and DET11398 through DET12113.

POWER SUPPLY PARTS - ICR WITH STAR PRINTER



C05801 Power Supply Assy., Island Card Reader w/Star Receipt Printer

Item	Part No.	Description
1	C34584	Panel, Power Supply - Star
4	C05802	Cable Assy., AC for ICR Power Supply
5	C08799	Fuse, 5 Amp Pico Axial
6	C04666	PCB Assy., Line Monitor - CFN
7	C09053	Power Supply
8	C34968	Bracket Assy., ICR Power Supply - Star
9	C01986	Nut, #6-32 Edge Inserts Plastic

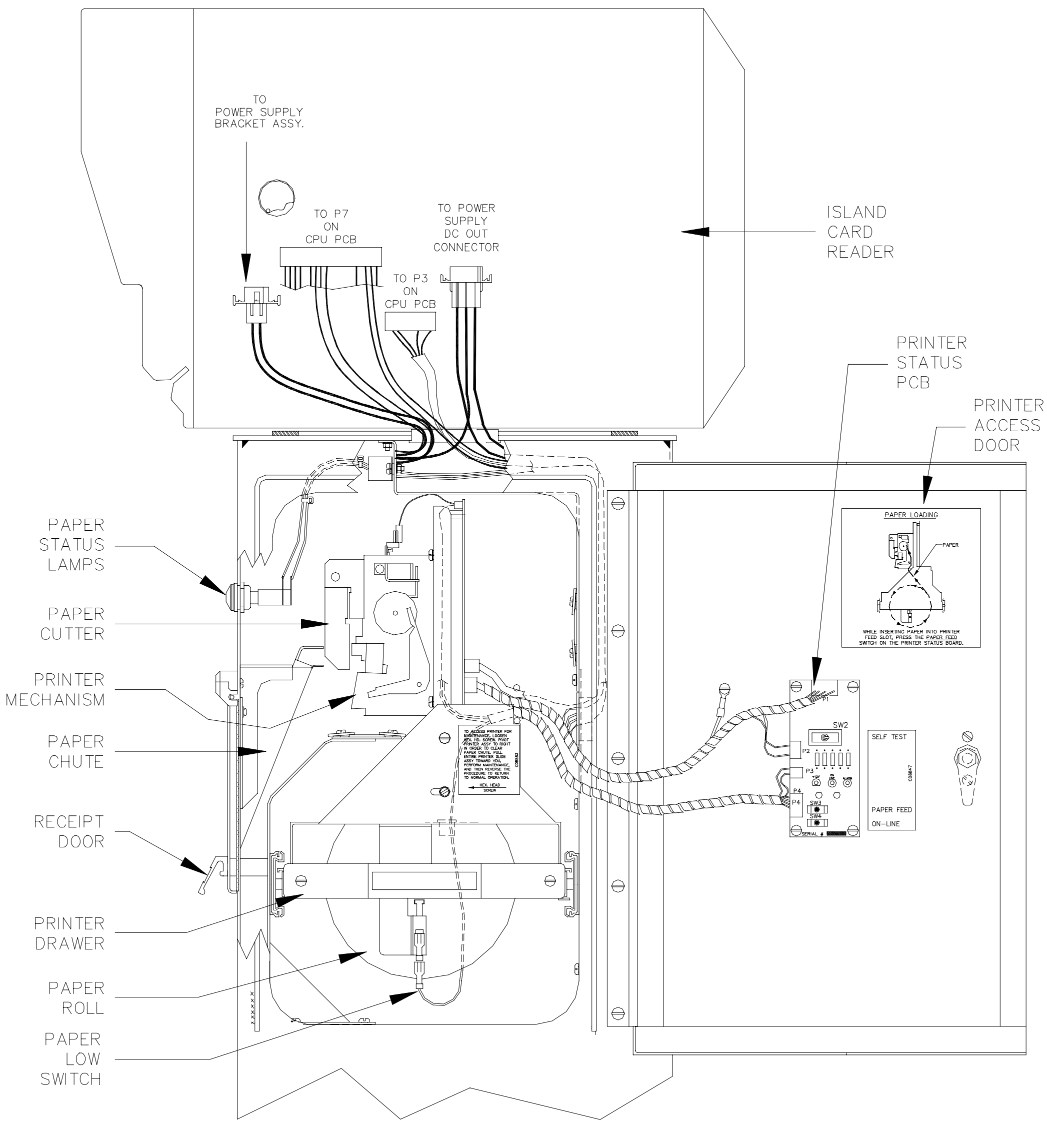
ISLAND RECEIPT PRINTER

DESCRIPTION

The GASBOY Island Receipt Printer is a compact multi-purpose dot-matrix printer that enables you to print receipts for fueling transactions at the island.

The printer is housed within the pedestal of your island card reader. A printer access door is located on the side of the pedestal. Inside, the printer is mounted on a sliding drawer that enables you to easily slide it out for servicing or maintenance and then replace it. A receipt door on the front of the pedestal provides customer access to receipts. Indicator lamps, on the pedestal above the receipt door, indicate PAPER LOW and PAPER OUT conditions.

Layout



Lamps

The two lamps on the front of the post indicate the status of the paper roll.

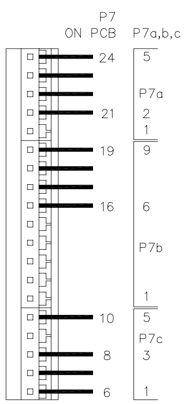
Lamp	Function
PAPER LOW	Paper almost depleted
PAPER OUT	Paper depleted

WIRING

There are no field connections made directly to the receipt printer. All field wiring is made to the island card reader. The power and data lines necessary to control the printer are fed from the electronics of the island card reader and are pre-wired at the factory.

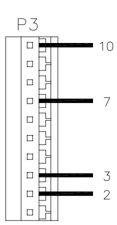
Connectors

Island Card Reader CPU PCB (P7)



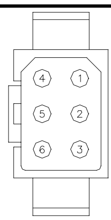
Pinout	P7 Pin	Connector	Wire	Function		Voltage
	6	c-1	Violet	Intrusion switch input		+5 VDC, 0 VDC-Case open
	7	c-2	Orange	Printer self-test input - Star		+5 VDC, 0 VDC-Printer test
	8	c-3	White	Paper low input - Star		+5 VDC, 0 VDC-Paper low
	9	c-4		N/C		
	10	c-5	Brown	DC ground		DC ground
	11	b-1		N/C		
	12	b-2		N/C		
	13	b-3		N/C		
	14	b-4		N/C		
	15	b-5		N/C		
	16	b-6	Black	Paper low lamp drive - Star		+5 VDC, 0 VDC-Lamp on
	17	b-7	Green	Beeper drive		+5 VDC, 0 VDC-Beeper on
	18	b-8	Gray	Paper out lamp drive - Star		+5 VDC, 0 VDC-Lamp on
	19	b-9	Yellow	+5 VDC beeper power		+5 VDC
	20	a-1		N/C		
	21	a-2	Black	RS-485 Rx-	From Site	⊓⊔⊓ +5 VDC signal
	22	a-3	White	RS-485 Rx+	Controller	between pins 21 & 22
	23	a-4	Green	RS-485 Tx-	To Site	⊓⊔⊓ +5 VDC signal
	24	a-5	Red	RS-485 Tx+	Controller	between pins 23 & 24

Island Card Reader CPU PCB (P3)

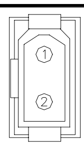


Pinout	Pin	Wire	Function	Voltage
	1		N/C	
	2	Black	Transmit data-from printer	⊓⊔⊓ ±10 VDC
	3	Red	Receive data-to printer	⊓⊔⊓ ±10 VDC
	4		N/C	
	5		Clear to send	
	6		Data set ready	
	7	Brown	DC ground	DC ground
	8		Data carrier detect	
	9		N/C	
	10	Gray	Data terminal ready	+10 VDC-On

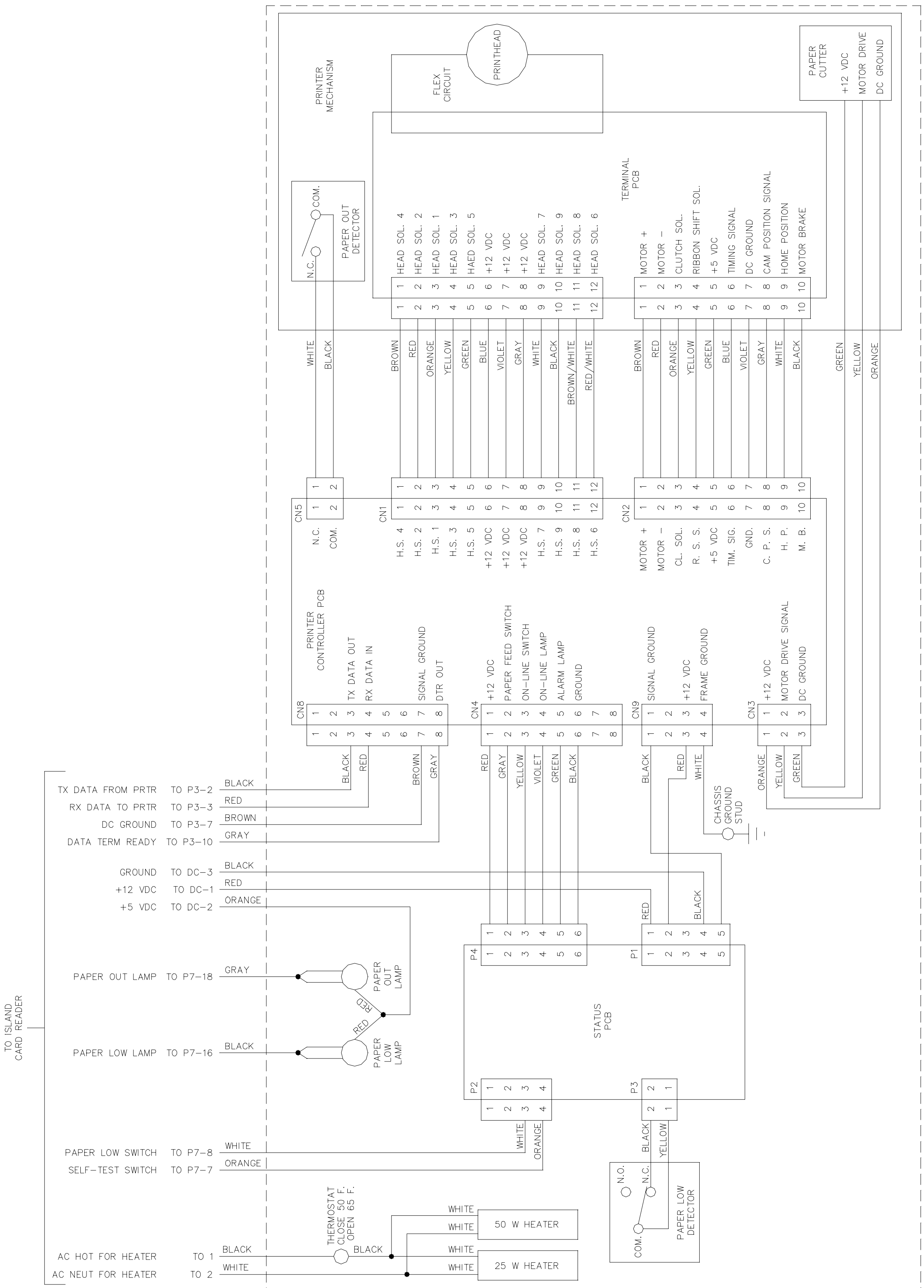
To Island Card Reader Power Supply

Pinout	Pin	Wire	Function	Voltage
	1	Red	+12 VDC for receipt printer	+12 VDC −.95 +.5
	2	Orange	+5 VDC for receipt printer	+5 VDC ±.05
	3	Black	DC ground for receipt printer	Ground
	4		N/C	
	5	Orange	+5 VDC for reader & LCD	+5 VDC ±.05
	6	Black	DC ground for reader & LCD	Ground

To Island Card Reader Chassis

Pinout	Pin	Wire	Function	Voltage
	1	Black	AC hot for heaters	115 VAC
	2	White	AC neutral for heaters	AC neutral

Chassis Wiring

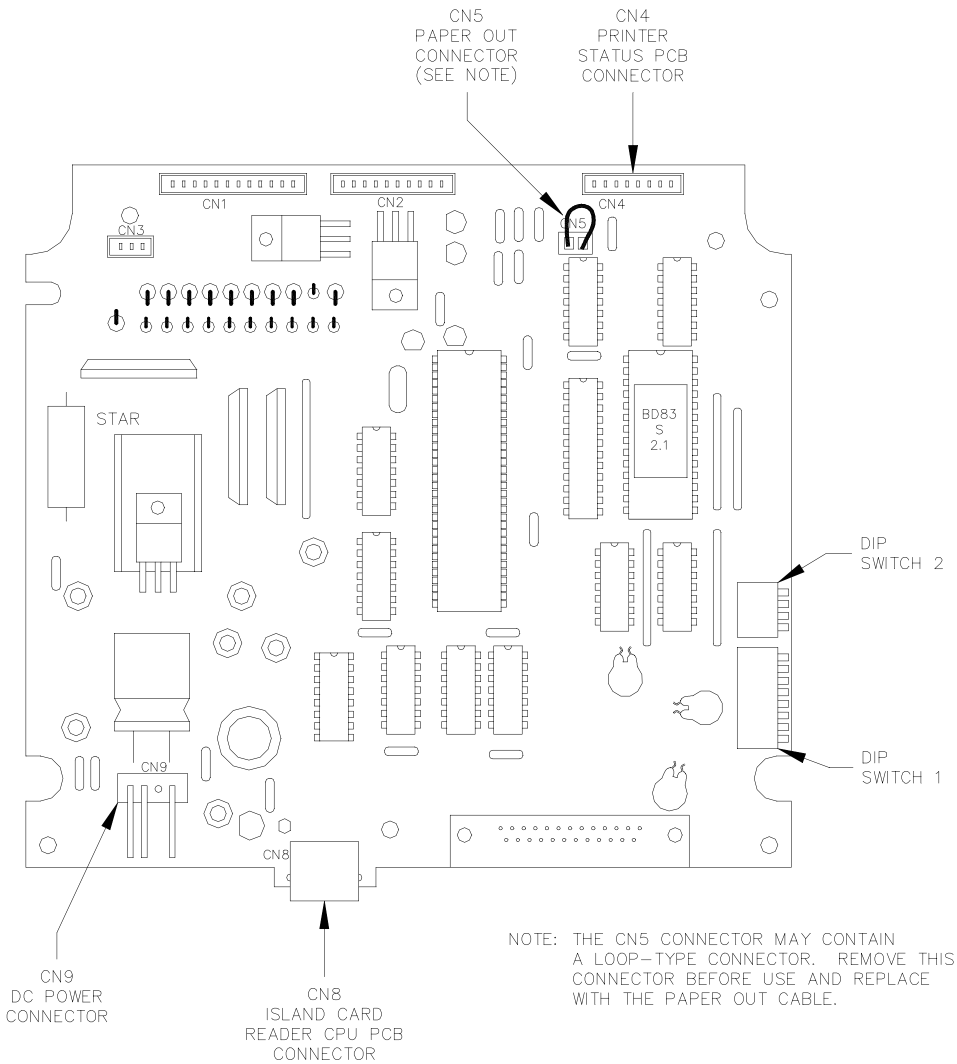


STAR PRINTER CONTROLLER PCB (C08933)

The Star Printer Controller PCB is purchased from Star. This PCB:

- processes the data to and from the island card reader CPU PCB
- contains all the hardware necessary to control the printer mechanism and cutter
- monitors the out of paper sensor

Layout



Connectors (Not Related to Printer Mechanism)

CN4 - Status PCB

Pinout	Pin	Wire	Function	Voltage
CN4	1	Red	+12 VDC	+12 VDC
	2	Gray	Paper feed input signal	0 VDC – paper feed
	3	Yellow	On–Line input signal	0 VDC – toggles mode
	4	Violet	On–Line lamp drive	0 VDC – On–Line mode
	5	Green	Alarm lamp drive	0 VDC – paper out/mach. error
	6	Black	DC Ground	DC Ground
	7		N/C	
	8		N/C	

CN8 - RS-232 From Island Card Reader CPU PCB

Pinout	Pin	Wire	Function	Voltage
CN8	1	Blue	N/C	
	2	Tan	N/C	
	3	Black	TX Data output	⊓⊓ +10VDC
	4	Red	RX Data input	⊓⊓ +10VDC
	5	Green	N/C	
	6	Yellow	N/C	
	7	Brown	Signal ground	DC ground
	8	Gray	DTR output	+10VDC – On

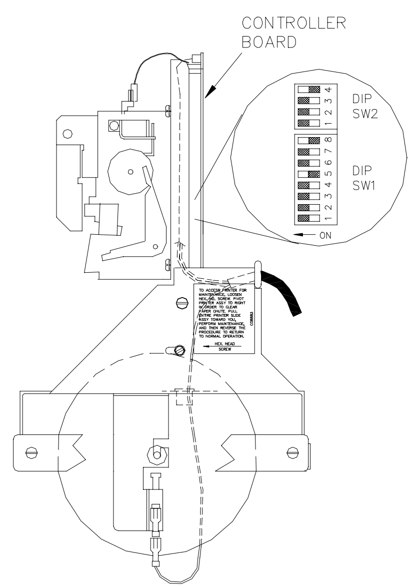
CN9 - DC Power

Pinout	Pin	Wire	Function	Voltage
CN9	1	Black	DC Ground	DC Ground
	2			
	3	Red	+12VDC	+12VDC
	4	White	Chassis Ground	Chassis Ground

Switches

The controller PCB dip switches are set at the factory prior to shipment. For proper operation of the printer, the controller PCB switch settings should be as shown. The location of these switches is also shown.

Switch	DSW1	DSW2
1	On	On
2	On	On
3	On	On
4	On	Off
5	Off	–
6	On	–
7	On	–
8	Off	–

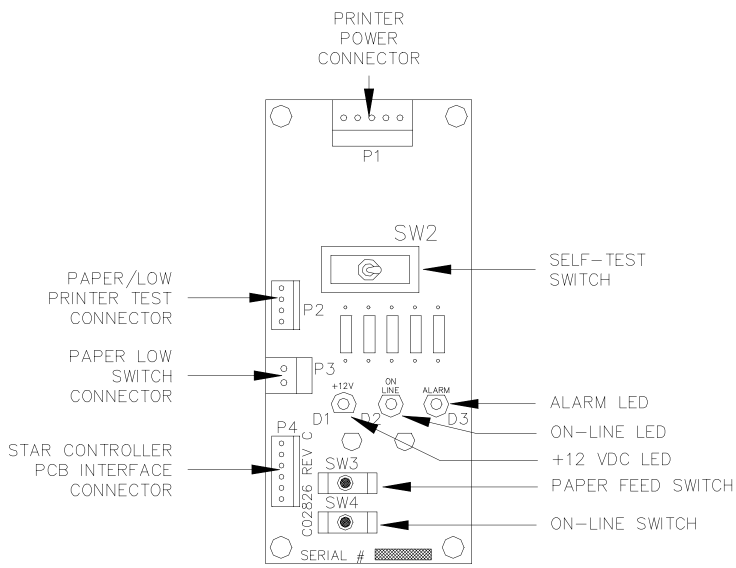


PRINTER STATUS PCB (C04665)

The printer status PCB is mounted on the printer access door. This PCB:

- contains the switches for self-test, paper feed, and on-line mode
- contains diagnostic LED's to monitor DC power, on-line/off-line mode, and errors occurring in the printer mechanism
- provides an interface between the paper low sensor and the island card reader CPU PCB

Layout



LED Indicators

LED indicators are provided to allow you to view the status of the receipt printer.

LED	Function
D1	+12 VDC
D2	On-Line
D3	Alarm

+12 VDC Gives a rough indication of the +12 VDC supply to the printer. It should be lit whenever SW1 (Power) is on.

On-line Shows if the printer is in the on-line mode. This lamp must be on to print receipts or run self-test.

Alarm Will light if a mechanical failure occurs or when the printer runs out of paper.

Connectors

P1 - DC Power

Pinout	Pin	Wire	Function	Voltage
P1	1	Red	+12 VDC in from power supply	+12 VDC
	2	Red	+12 VDC out to Star Controller Board	+12 VDC
	3		N/C	
	4	Black	DC Ground from Power Supply	DC Ground
	5	Black	DC Ground to Star Controller Board	DC Ground

P2 - Paper Low & Printer Test Outputs

Pinout	Pin	Wire	Function	Voltage
P2	1		N/C	
	2		N/C	
	3	White	Paper Low – output to CPU	+5VDC–Full, 0VDC–Low
	4	Orange	Printer Test – output to CPU	0VDC–Switch closed

P3 - Paper Low Switch

Pinout	Pin	Wire	Function	Voltage
P3	1	Yellow	Common from paper low switch	+5VDC–Full, 0VDC–Low
	2	Black	DC ground to NC on switch	DC Ground

P4 - Status PCB

Pinout	Pin	Wire	Function	Voltage
P4	1	Red	+12 VDC from Star Controller PCB	+12 VDC
	2	Gray	Paper feed output to Star PCB	0 VDC – SW3 depressed
	3	Yellow	On–Line output to Star PCB	0 VDC – SW4 depressed
	4	Violet	On–Line LED input from Star PCB	.2 VDC–Off, 1.0 VDC–On
	5	Green	Alarm LED input from Star PCB	.2 VDC–Off, 1.0 VDC–On
	6	Black	DC Ground	DC Ground

Switches

Switch		Function
SW1	POWER	On=Power on This switch on Pre–Rev C. boards only.
SW2	SELF–TEST	On=Self–test activated
SW3	PAPER FEED	Push to feed paper
SW4	ON–LINE	Push to change on–line status

POWER The power switch is rpesent only on Pre-Rev. C PCB's and turns on DC power to the status and controller PCB's.

SELF-TEST The self-test switch starts a self-test on the printer. It will print a barber-pole pattern of all characters that may be printed on a receipt. Switching back to the right stops the printing and cuts the paper.

PAPER FEED This switch causes a continuous feed of paper. This is used when loading a new roll of paper.

ON-LINE This switch alternately puts the printer in the on-line or off-line mode. The printer must always be on-line (green lamp on) to print receipts or perform a self-test.

MAINTENANCE

Accessing the Printer

Before beginning any of the following maintenance procedures, you must pull the printer out to a serviceable position. Follow these steps:

1. Open the printer access door and loosen the hex head screw.

2. Pivot the printer assembly to the right in order to clear the paper chute.

3. Pull the entire printer slide assembly toward you.

4. Perform any required maintenance or service. Reverse this procedure to return the printer to normal operation.

Changing the Paper

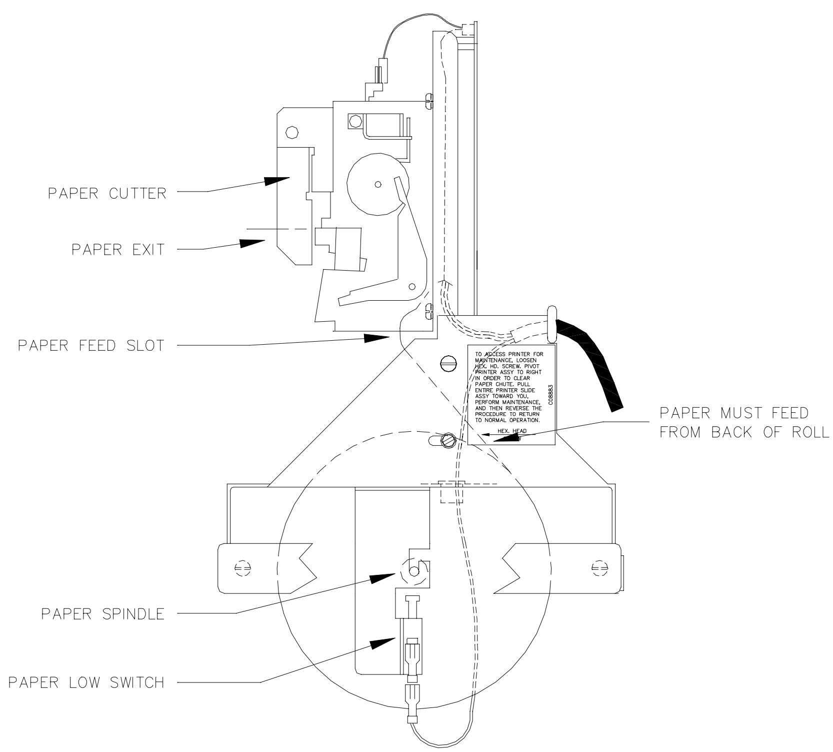
Removing the Paper

1. Follow the procedure for accessing the printer.
2. Cut the paper where it comes off of the roll.
3. Press the PAPER FEED switch on the printer status board until all of the paper is removed from the printer mechanism.
4. Remove the paper roll, being careful not to bend the PAPER LOW switch.

Installing the Paper

1. Insert spindle into paper roll.
2. Insert roll into holder, being careful not to bend the PAPER LOW switch.
3. Make sure the paper feeds from the back of the roll.
4. Insert the paper into the paper feed slot while pressing the PAPER FEED switch on the printer status board.
5. Make sure the paper feeds easily out of the paper cutter.
6. Perform a short self-test.
7. Return the printer slide assembly to its normal position and lock it in place with the hex head screw.
8. Close and lock the printer access door.

   NOTE: Make sure the printer access door is drawn tight in order to insure a watertight seal.



PRINTER SIDE VIEW

Changing the Ribbon

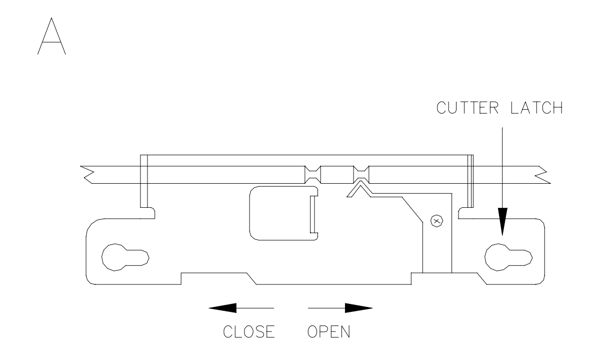
Removing Old Ribbon Spools

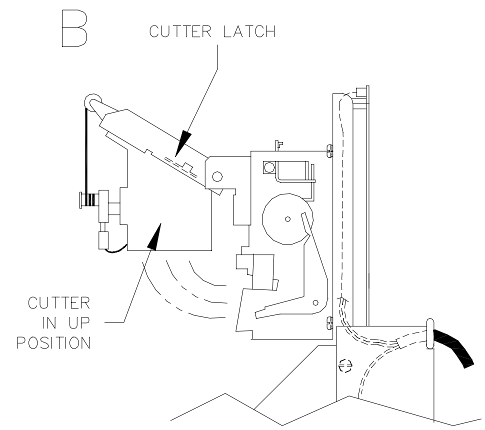
1. Follow the procedure for accessing the printer.
2. Slide the cutter latch on the paper cutter unit to the right and swing the paper cutter up (Figure A and B).
3. Rotate both spools to create some slack in the ribbon.
4. Pull one spool off of the shaft while pushing the ribbon detecting lever out of the way (Figure C). Repeat for the other spool.

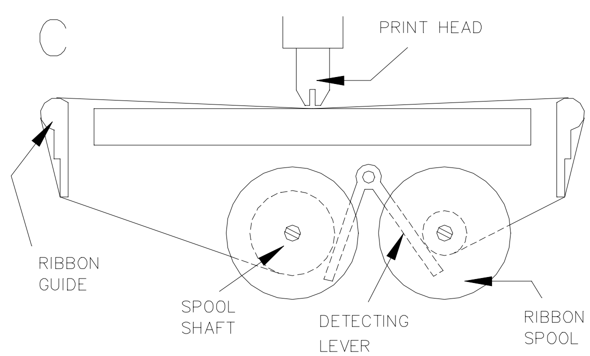
Installing New Ribbon Spools

1. Place the ribbon spool onto the left shaft with the spool-driving pins pointing toward the printer (Figure C).
2. Feed the ribbon over the left ribbon guide, under the print head, and over the right ribbon guide.
3. Repeat Step 1 for the right spool.
4. Rotate both spools to remove the slack from the ribbon.
5. Return the paper cutter unit to the normal position and slide the cutter latch to the left to lock (Figure A).
6. Perform a short self-test
7. Return the printer slide assembly to its normal position and lock it in place with the hex head screw.
8. Close and lock the printer access door.

   NOTE: Make sure the printer door lock is drawn tight in order to insure a watertight seal.







Adjusting Cutter Blades

Adjustment of the cutter blades may become necessary if the cutter fails to operate properly. This may be indicated by receipts not being completely cut or paper becoming jammed inside the printer. Cutter blades are sharp! Keep fingers away from sharp edge of blade when making adjustments.

Adjust After Incomplete Cuts

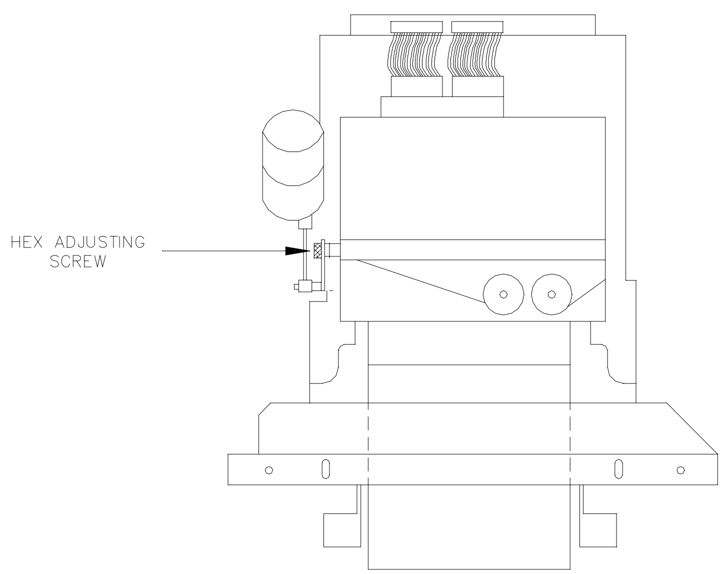
1. Follow the procedure for accessing the printer.
2. Loosen the hex adjusting screw (located on the lower left side of the cutter) using a 2.5 mm hex key. Do not use pliers; damage to the screw head may result. Pivot the bottom cutter blade upward. Tighten the hex screw to lock the blade in place.
3. Perform a few self-tests to make sure the cutter operates properly.
4. Return the printer slide assembly to its normal position and lock it in place with the hex head screw.
5. Close and lock the printer access door.

   NOTE: Make sure the printer door lock is drawn tight in order to insure a watertight seal.

Adjust After Paper Jams

1. Follow the procedure for accessing the printer.
2. Carefully remove any paper that may be stuck inside the printer.
3. Loosen the hex adjusting screw (located on the lower left side of the cutter) using a 2.5 mm hex key. Do not use pliers as damage to the screw head may result. Pivot the bottom cutter blade down. Tighten the hex screw to lock the blade in place.
4. Perform a few self-tests to make sure the cutter operates properly.
5. Return the printer slide assembly to its normal position and lock it in place with the hex head screw.
6. Close and lock the printer access door.

   NOTE: Make sure the printer door lock is drawn tight in order to insure a watertight seal.



RECEIPT PRINTER PROBLEMS

Paper doesn't advance when printing receipts, printing in self-test, or when paper feed switch is pressed.

Possible Cause	Checks	Corrective Action
No +12VDC from ICR power supply.	Check fuse. Be sure ICR power is on and LED's are lit. Using a voltmeter, measure between pin 4 (ground) and pin 1 (+12VDC) on Star Status PCB P1 connector.	Replace fuse or turn on power. Replace the ICR power supply if +12VDC is not measured at P1
SW-1 on Star Status PCB is off (Switch on pre-Rev C PCB's only).	Check SW-1 on Star Status PCB.	Turn on, if off.
Defective Star Controller PCB.	Using an oscilloscope, measure the signal at CN2 pin 3 while pressing the paper feed switch.	Replace the Star Controller PCB if a 12 VDC square wave is not seen at CN2 pin 3.
Defective clutch mechanism or clutch solenoid.	Using an oscilloscope, measure the signal at CN2 pin 3 while pressing the paper feed switch.	Replace the receipt printer if a 12VDC square wave is seen at CN2 pin 3 and paper still doesn't advance.

Printing appears light.

Possible Cause	Checks	Corrective Action
Worn out inked ribbon	Check if ribbon looks worn.	Replace ribbon.
Improper head clearance.	None.	Replace receipt printer
Insufficient solenoid drive current.	None.	Replace Star Controller PCB only if replacing printer didn't fix problem

Portion of printed characters is missing.

Possible Cause	Checks	Corrective Action
Ribbon not installed properly or ribbon is worn out.	Check that the ribbon is installed properly. The ribbon must not have any holes or tears	Re-install the ribbon and replace if necessary.
Defective print head, improper head clearance, improper print speed.	None.	Replace receipt printer.
Defective head solenoid drivers.	None.	Replace Star Controller PCB if replacing the receipt printer didn't fix problem.

Paper low lamp is lit.

Possible Cause	Checks	Corrective Action
Paper low signal was falsely triggered due to improper paper roll positioning.	None.	Cut the paper where it comes off the roll. Press the PAPER FEED switch until the paper empties from the printer/cutter mechanism, causing the PAPER OUT lamp to light. Reload the paper as shown in **Maintenance** earlier in this section.
Receipt printer is low on paper.	Check how much paper is remaining.	Replace, if low on paper.
Broken paper low sense switch.	Check if switch roller arm is bent or broken.	Replace if bent or broken.
Defective paper low sense switch.	Using a DC voltmeter, place the positive probe on pin 2 and the negative probe on pin 1 of P3 on the Star Status PCB. +5VDC should be measured when the paper low sense switch is closed (paper roll installed) and 0VDC when the switch is open (paper roll removed).	If the proper voltages are not measured, pull off the P3 connector on the Star Status PCB. Measure between pins 1 and 2 of P3. If +5VDC is measured, replace the paper low switch. If +5VDC is not measured, replace the RS-232 Reader Terminal CPU PCB.
Defective lamp driver IC on RS-232 reader terminal CPU board.	Momentarily press reset switch S1 on the RS-232 reader terminal CPU board	Replace RS-232 reader terminal CPU board if lamp stays lit.

Paper out lamp is lit. Status PCB On-line LED is off and Alarm LED is on. Site controller printout reports Paper Out.

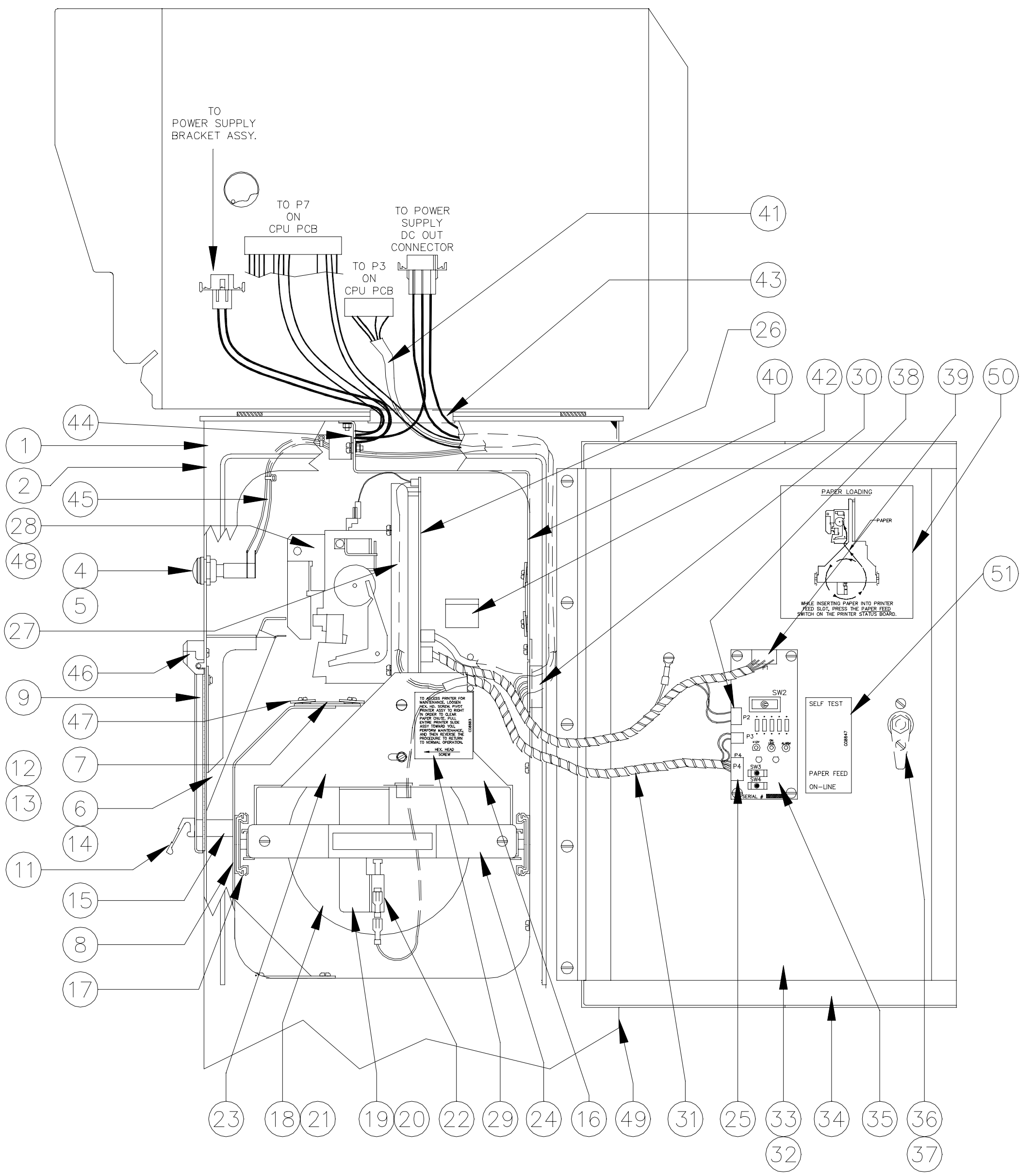
Possible Cause	Checks	Corrective Action
Receipt printer is out of paper	Check if paper is empty.	Install new roll of paper. On status PCB, Alarm LED should turn off. Press the on-line switch. The On-line LED should turn on. Press reset switch S1 on RS-232 reader terminal CPU board. Paper out lamp should turn off and site controller should report paper refilled.
Defective Star Controller PCB.	Short out the black and white wires on connector CN5 of the Star Controller PCB. The Alarm LED on the status PCB should turn off.	Replace the Star controller PCB if shorting CN5 does not turn off the Alarm LED.
Defective paper out sense switch.	Short out the black and white wires on connector CN5 of the Star Controller PCB. The Alarm LED on the status PCB should turn off	Replace the receipt printer if shorting CN5 turns off the Alarm LED.

Receipts don't cut completely across the paper.

Possible Cause	Checks	Corrective Action
Loose cutter bar adjustment screw or improperly adjusted cutter blades.	Run self-test # 9	Adjust cutter blades and tighten cutter bar adjustment screw. See **Adjusting Cutter Blades** earlier in this section.
Defective cutter bar assembly.	Run self-test # 9.	Replace receipt printer assembly.

This page intentionally left blank.

ISLAND RECEIPT PRINTER PARTS



C05673 Pedestal Assy., Printer CFN-Star

Item	Part No.	Description
1	C35000	Pedestal Assy., Printer
2	C01706	Decal "Paper Low/Out" CLK - TRSR
4	C08945	Lamp, 44 Miniature Bayonet, T3-1/4, 6.3V (old style)
5	C09682	LED Indicator
6	C34993	Paper Chute Weld Assy. - Star
7	C05286	Heater Assy. - Star Printer
8	C34981	Bracket Weld Assy., Front Slide- Star
9	C07058	Door Assy., Receipt Access - Star (new) OR
	C05674	Door Assy., Receipt Access - Star (old)
11	*C08108	Handle Pull
12	*C01989	Gasket, 1/2 W x 1/4T
13	*C34975	Catch Plate
14	C35015	Bracket, Receipt Paper Catch - Star
15	C01988	Magnet, Snap-In .36 x 1.88 Black (Old) OR
	C01741	Magnet, Snap-In .43 x 2.56 White (New)
16	C05672	Printer, Slide Assy. - Star Pedestal
17	*C01962	Slide Assy., 12" PR, Modified
18	*C08946	Paper, #RF - 4.5-5 Low Bulk - Star
19	*C34994	Bracket, Paper Support (RH) - Star
20	*C34986	Bracket, Paper Support (LH) - Star
21	*C34970	Roller, Printer Paper Support - Star
22	*C03334	Switch, SPDT Snap Action
23	*C34985	Bracket, Slide Mount Weld Assy.
24	*C34984	Bracket, Slide Assy. Shield
25	*C05285	Cable Assy., Paper Low + Printer Control
26	*C08933	PCB, Controller #BD83SNM-12
27	*C34987	Bracket, Printer Mounting Weld Assy.
28	*C08932	Printer w/ Paper Cut #DP834CP-12
29	*C08883	Label, Star Printer Maintenance
30	C02827	Bushing, Snap-In 1" ID - Nylon
31	C01985	Cable Spirol Wrap 1/4 O.D.
32	C05789	Door Assy., Printer Access - Star
33	*C35012	Door Assy., Printer - Silkscreened (Metal Only)
34	*C01990	Gasket, Bulk 5/8 T x 3/4 W Self-Adhesive
35	*C04665	PCB Assy., Printer Power/Test - Star
36	*035004	Lock - Southco Draw #E3-65-715-50
37	*035003	Key - Southco #E3-26-715-19
38	C05129	Cable Assy., Intrusion/Printer Test
39	C05297	Cable Assy., Printer DC Power - Star
40	C34979	Bracket, Printer Heat Shield - Star
41	C05075	Cable Assy., Printer Communication - Star
42	C02207	Clamp, Ribbon Cable
43	C08307	Bushing, Snap-In 1.969 ID - Nylon
44	0M0068	Bushing, Snap-In 1/4 ID Nylon
45	C05128	Cable Assy., Buzzer/Paper Lights
46	C35128	Frame, receipt door hinge
47	067165	Washer, fiber
48	C08941	Ribbon, Star Receipt Printer
49	C34761	Rear Access Cover, Non-Printer Pedestal
50	*C01452	Decal, Paper Feed
51	*C08847	Decal, Status PCB –Star

*Denotes this is a sub-part used in the preceding assembly

PUMP CONTROL UNIT

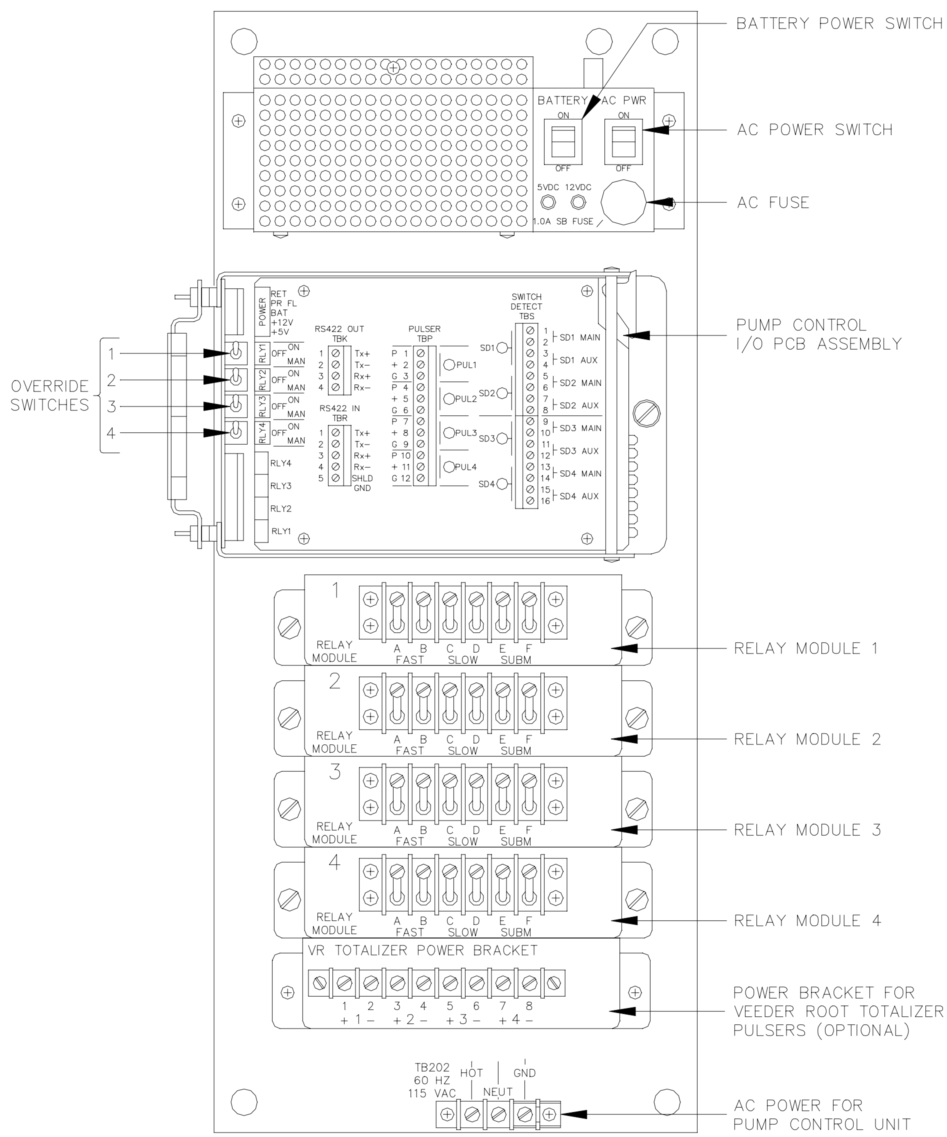
DESCRIPTION

The GASBOY Pump Control Unit (PCU) controls most mechanical pumps and some electronic pumps. The unit is controlled by a microprocessor and communicates to the GASBOY site controller via the RS-485 loop.

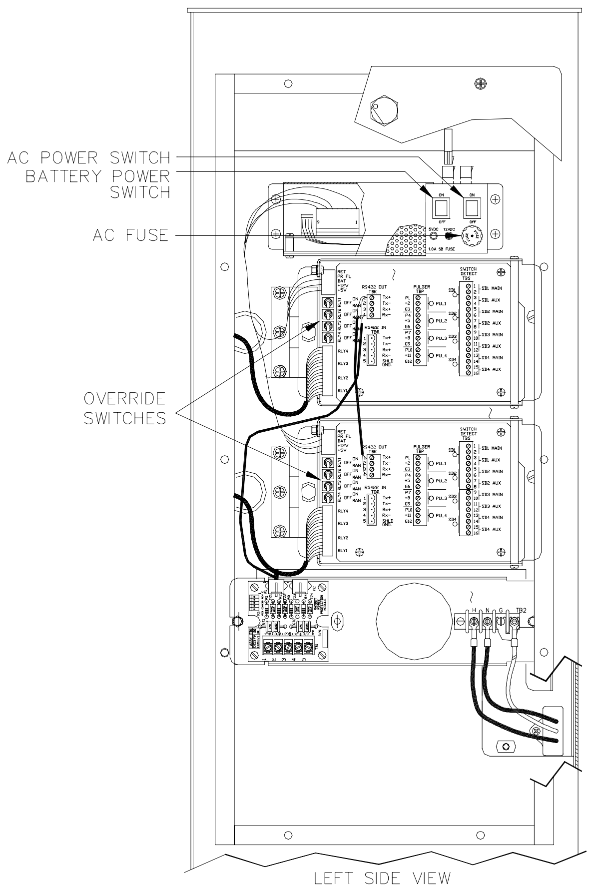
Each pump control unit can control up to four pumps or dispensers. There are two different versions of the pump control unit: the retail version (Weights & Measures) and the fleet version. Hardware features on the retail version include a battery backup, three solid state relays for each pump or remote dispenser (slow flow, fast flow and submersible pump), manual override switches, and diagnostic capabilities. The fleet version does not have a battery backup, and has only two solid state relays for each pump and remote dispenser. The PCU can handle a maximum of 30,000 pulses per minute per hose (assuming a 50% duty cycle pulse).

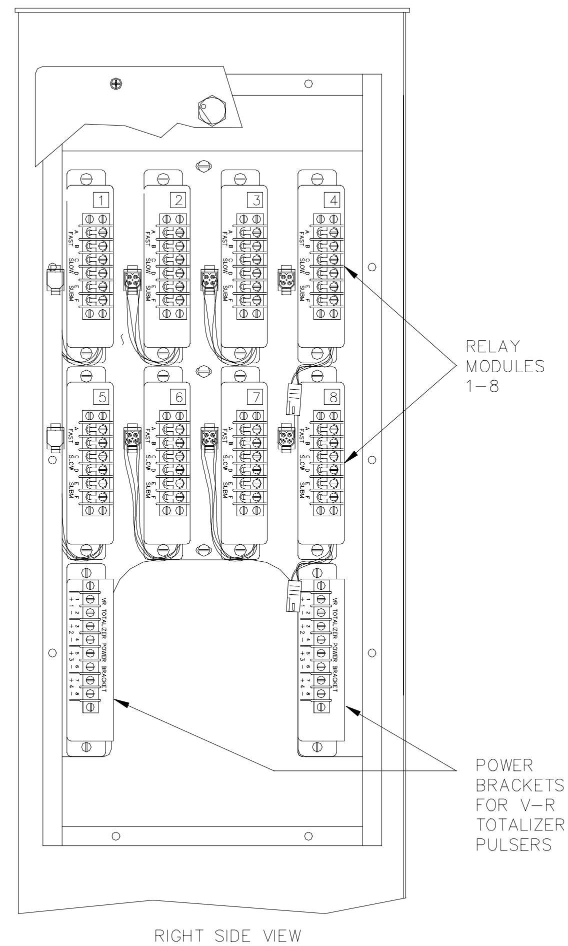
The unit can be ordered mounted in a wall-mount box (standard), in the island card reader's post, or as a standalone unit to be mounted on the island.

Chassis Layout, Wall-Mount or Post Mount



Chassis Layout, Standalone





WIRING

All field wiring connections are made to the unit via terminal blocks. The pump control wiring is split into two classifications, AC and DC. Separate conduits must be provided for each. AC and DC wiring must never be mixed in any common junction box, conduit, or trough (see *CFN SCI or SCII Installation Manual* for detailed instructions). The following lists the connections that can be found in the *Installation Manual*. Signals that apply to the pump are shown for only one hose outlet. Refer to the appropriate component for the exact pinout of each connector.

AC Connectors

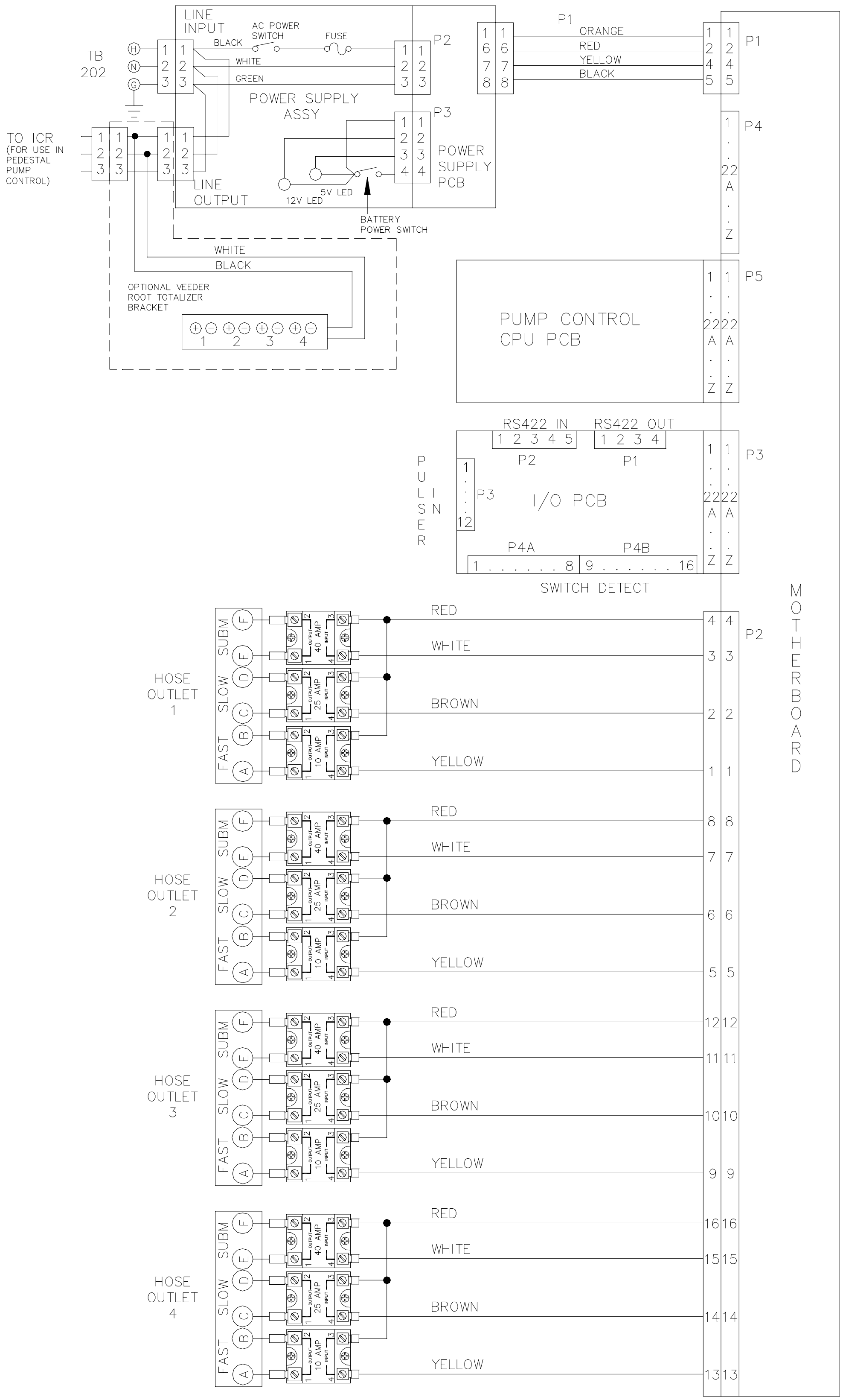
TB202	*HOT* - AC hot power for the pump control unit's power (120 VAC) *NEUT* - AC neutral power for the pump control unit's power *GND* - AC grounding for the pump control unit
Relay Module	*FAST A* - AC power from breaker for fast flow valve *FAST B* - Switched AC power to fast flow valve *SLOW C* - AC power from breaker (application varies according to pump) *SLOW D* - Switched AC power to pump (application varies according to pump) *SUBM E* - AC power from breaker (application varies according to pump) *SUBM F* - Switched AC power to pump (application varies according to pump)
Switch Detect	*1 SD1 MAIN* - AC hot from pump to indicate pump is ready *2 SD1 MAIN* - AC neutral for 1 SD1 MAIN *3 SD1 AUX* - AC hot from breaker for pump handle activation indication *4 SD1 AUX* - AC neutral from pump for pump handle activation indication

DC Connectors

Pulser	*P 1* - Pulser input *+ 2* - Positive voltage (usually +12 VDC) for the pulser *G 3* - DC ground for the pulser
RS-422 IN	*Tx+* - RS-422 Tx+ communications to the site controller *Tx-* - RS-422 Tx- communications to the site controller *Rx+* - RS-422 Rx+ communications from the site controller *Rx-* - RS-422 communications from the site controller *SHLD GND* - RS-422 ground
RS-422 OUT	*Tx+* - Protected RS-422 Tx+ communications (from ICR if PCU is in post) *Tx-* - Protected RS-422 Tx- communications (from ICR if PCU is in post) *Rx+* - Protected RS-422 Rx+ communications (to ICR if PCU is in post) *Rx-* - Protected RS-422 Rx- communications (to ICR if PCU is in post)
VR Bracket (Optional)	*1 +* - Positive power for Veeder Root totalizer pulser *2 -* - Ground for Veeder Root totalizer pulser

Chassis Wiring

NOTE: Yellow fast flow wire for hose outlets will not be present on C05054 and C07558 Fleet versions.

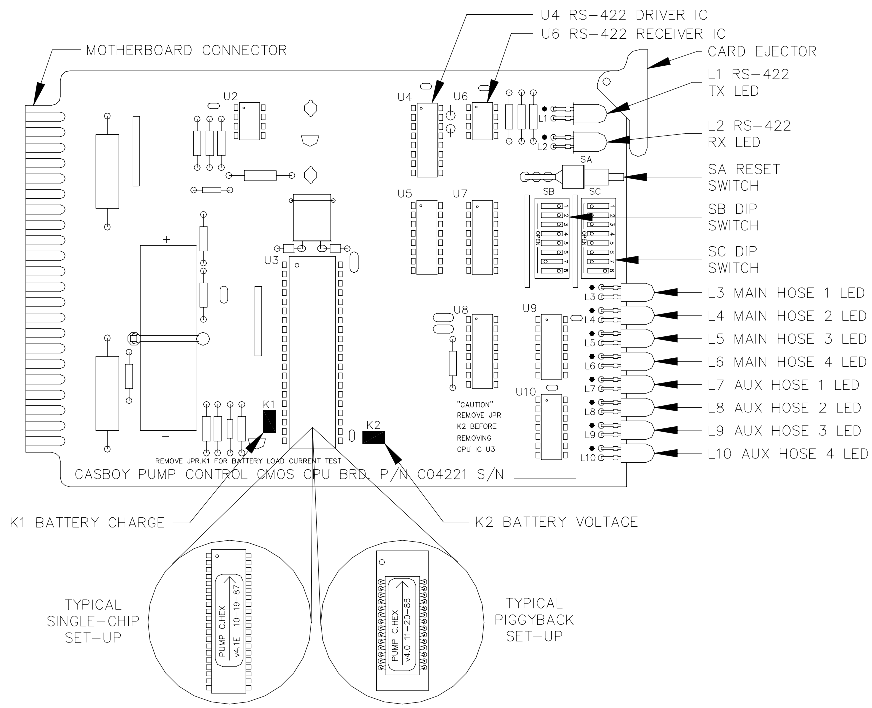


PUMP CONTROL CMOS CPU PCB (C05321)

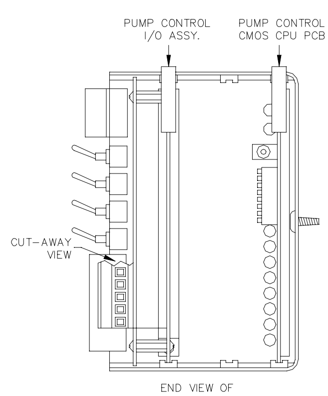
The Pump Control CMOS CPU PCB is the heart of the GASBOY CFN pump control unit. It provides the following features:

- processes and stores all pump control unit data (contains a rechargeable battery for data retention during power failures)
- communicates to the CFN site controller via the RS-422 line
- controls slow flow, fast flow, and pump relays for each hose outlet
- monitors the pulser inputs for four pumps
- monitors the switch detects for four pumps
- provides diagnostic LED's to monitor operation of the unit
- provides self-test capabilities without the use of the CFN site controller

Layout



This drawing shows the CMOS CPU PCB orientation in the pump control unit.



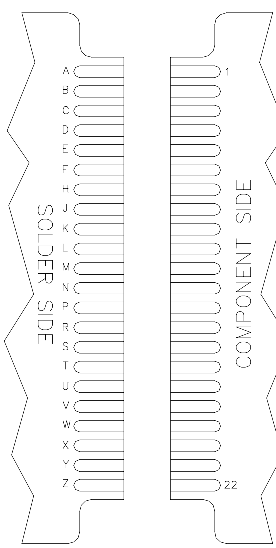
LED Indicators

LED indicators are provided to allow you to monitor the pump control unit's operation. These LED's indicate the signal levels at the CPU PCB.

LED'S	Function
L1	RS-422 Tx to Site Controller
L2	RS-422 Rx from Site Controller
L3	Main relay drive hose 1
L4	Main relay drive hose 2
L5	Main relay drive hose 3
L6	Main relay drive hose 4
L7	Aux relay drive hose 1
L8	Aux relay drive hose 2
L9	Aux relay drive hose 3
L10	Aux relay drive hose 4

Connector

P1 - Motherboard Interface Connector



Pinout	Pin	Function		Voltage
	1,A	+5 VDC		+5 VDC
	2	Switch/detect reset complete hose 1		+5 VDC sig-on
	3	Switch/detect reset complete hose 2		+5 VDC sig-on
	4	Switch/detect reset complete hose 3		+5 VDC sig-on
	5	Switch/detect reset complete hose 4		+5 VDC sig-on
	12,N	+12 VDC		+12 VDC
	14	AC power fail		+5 VDC normal
	18	RS-422 Rx-	From Site Controller	+5 VDC signal between pins 18-19
	19	RS-422 Rx+		
	20	RS-422 Tx-	To Site Controller	+5 VDC signal between pins 20-21
	21	RS-422 Tx+		
	22,Z	DC ground		DC ground
	B	Main pulser hose 1		+5 VDC signal
	C	Main pulser hose 2		+5 VDC signal
	D	Main pulser hose 3		+5 VDC signal
	E	Main pulser hose 4		+5 VDC signal
	F	Aux pulser hose 1		0 VDC - not used
	H	Aux pulser hose 2		0 VDC - not used
	J	Aux pulser hose 3		0 VDC - not used
	K	Aux pulser hose 4		0 VDC - not used
	P	Battery voltage from CPU board		3.6 VDC
	R	Main relay drive hose 1		0VDC-on, 12VDC-off
	S	Main relay drive hose 2		0VDC-on, 12VDC-off
	T	Main relay drive hose 3		0VDC-on, 12VDC-off
	U	Main relay drive hose 4		0VDC-on, 12VDC-off
	V	Aux relay drive hose 1		0VDC-on, 12VDC-off
	W	Aux relay drive hose 2		0VDC-on, 12VDC-off
	X	Aux relay drive hose 3		0VDC-on, 12VDC-off
	Y	Aux relay drive hose 4		0VDC-on, 12VDC-off
	L,M,6,7,8,9,10,11,13,15,16,17 - No connection			

Jumpers

Jumper **K1** supplies the charge voltage to the battery. It is shipped installed. It should only be removed if you are making a charge current measurement. Jumper **K2**, when installed, allows battery backup power to the CPU IC at U3. The jumper should be installed during normal operation and removed for storage. The CPU board is shipped with K2 removed.

Jumper	Function
K1	This jumper provides the charge voltage to the NiCad battery. It should be kept on at all times.
K2	This jumper allows battery voltage to the CPU. It should be removed before replacing U3 or during storage to prevent battery discharge. It should be on during normal operation.

Switches

SA - Reset Switch
The Reset switch starts a hardware and software reset of the CPU PCB. The SB and SC switch settings are read when a reset occurs (and at power up). This switch should be pressed whenever switch settings are changed.

Switch	Function
SA	Push to reset CPU PCB

SB - Address Switches
An address must be set to identify the pump control unit when it is connected to the GASBOY CFN Series Fuel Management System. This address is a unique identifier for when multiple PCU's are connected on the same RS-422 line. Addressing should start at 1 and continue sequentially through 16. The physical wiring order does not have to correspond with the address order, that is, the first unit on the RS-422 line does not have to be address 1. The chart on the right gives the switch settings for the address selections.

Address	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6
	ADDR1	ADDR2	ADDR3	ADDR4	ADDR5	ADDR6
1	Closed	Closed	Closed	Closed	Closed	Closed
2	Open	Closed	Closed	Closed	Closed	Closed
3	Closed	Open	Closed	Closed	Closed	Closed
4	Open	Open	Closed	Closed	Closed	Closed
5	Closed	Closed	Open	Closed	Closed	Closed
6	Open	Closed	Open	Closed	Closed	Closed
7	Closed	Open	Open	Closed	Closed	Closed
8	Open	Open	Open	Closed	Closed	Closed
9	Closed	Closed	Closed	Open	Closed	Closed
10	Open	Closed	Closed	Open	Closed	Closed
11	Closed	Open	Closed	Open	Closed	Closed
12	Open	Open	Closed	Open	Closed	Closed
13	Closed	Closed	Open	Open	Closed	Closed
14	Open	Closed	Open	Open	Closed	Closed
15	Closed	Open	Open	Open	Closed	Closed
16	Open	Open	Open	Open	Closed	Closed

SB - Baud Rate Switches

The baud rate switches select the baud rate for the serial communications on the RS-422 line. They should always be set for 9600 baud.

Baud Rate	SB-7	SB-8
	BR1	BR2
Not Used	Closed	Closed
9600	Open	Closed
1200	Closed	Open
300	Open	Open

SC - Switch Detect Mode Switches

These switches determine when the pump control unit begins counting pulses for a particular pump. When a switch is open, the PCU begins counting pulses when the corresponding pump is activated. When a switch is closed, the PCU doesn't count pulses for the corresponding pump until the mechanical reset has completed. The switch should be closed when the pump is wired for postpay-prepay console operations.

Switch	Function	
SC-1	Mode pump 1	Open = Normal, Closed = Reset Complete
SC-2	Mode pump 2	Open = Normal, Closed = Reset Complete
SC-3	Mode pump 3	Open = Normal, Closed = Reset Complete
SC-4	Mode pump 4	Open = Normal, Closed = Reset Complete

SC - Miscellaneous Switches

These switches are used to set the basic configuration of the PCU.

Switch	Function	
SC-5	CRC	Open-CRC check enabled
SC-6	DEAD	Open-deadman timer enabled
SC-7		No function in on-line mode
SC-8	TEST	Open-Test mode, Closed-On-line mode

CRC This switch should always be open to allow data integrity checks to be performed on the data going between the PCU and the site controller.

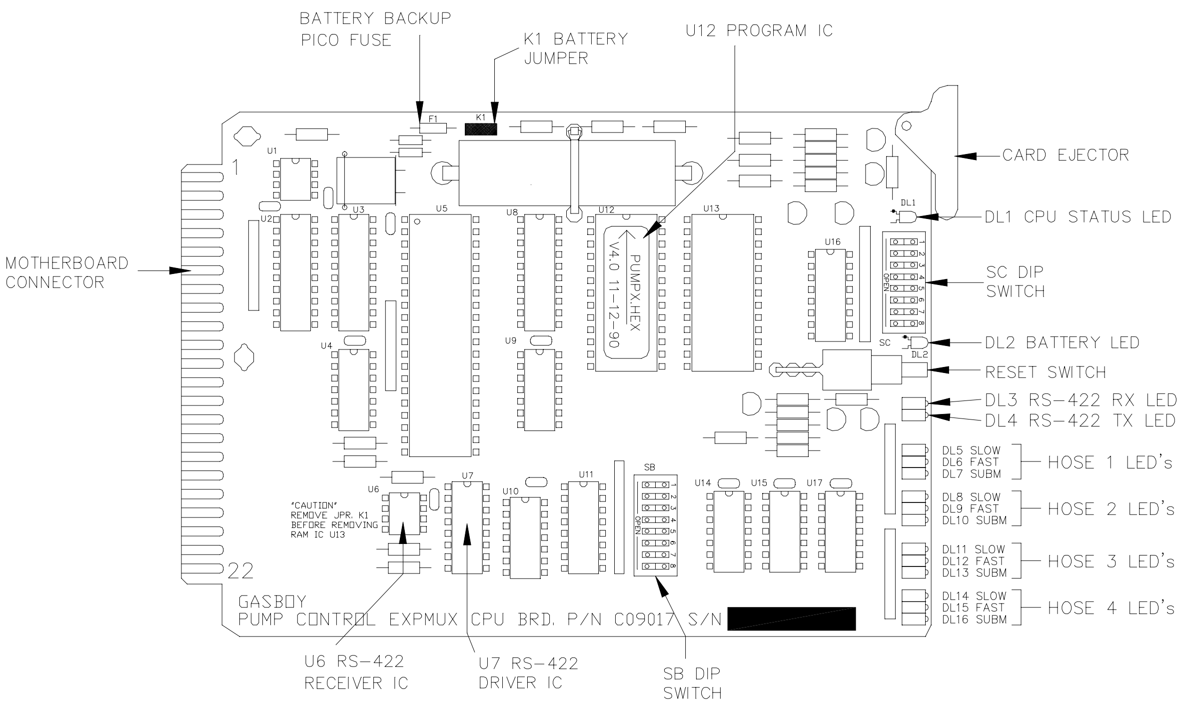
DEAD This switch enables the deadman timer. It should always be open.

TEST When open, this switch enables the test mode, allowing the basic PCU functions to be tested without the use of a site controller. See **Diagnostic Tests** later in this section for instructions.

PUMP CONTROL EXPANDED MULTIPLEXED (EXPMUX) CPU PCB (C05837)

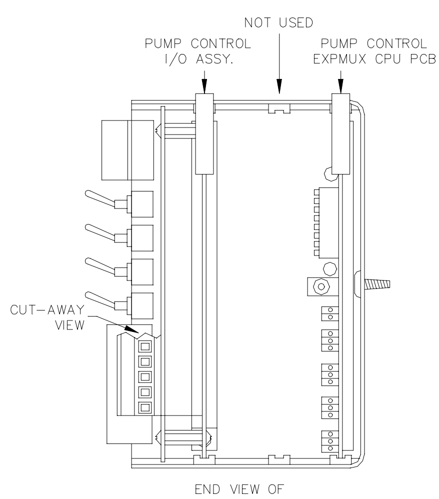
The Expanded Multiplexed CPU PCB is the latest version of the CPU PCB used in the GASBOY pump control unit. It replaces the CMOS CPU PCB. This board provides the following features:

- monitors the pulser inputs for four pumps
- processes and stores all pump control unit data (contains a rechargeable battery for data retention during power failures)
- communicates to the CFN site controller via the RS-422 line
- provides diagnostic LED's to monitor operation of the unit
- provides self-test capabilities without the use of the CFN site controller
- individual control of fast, slow, and submersible relays (not yet supported)
- leak detect delay for submersible pumps (not yet supported)
- monitors the battery status from the power supply (not yet supported)



This drawing shows the EXPMUX CPU PCB orientation in the pump control unit.

When the EXPMUX CPU PCB is used with a Pedestal Pump Control I/O Board, the EXPMUX PCB must be in slot 3 (P5). Do not try to force it into slot 2 (P4).



LED Indicators

LED indicators are provided to allow you to monitor the pump control unit's operation. These LED's indicate the signal levels at the CPU PCB.

LED	Color	Function	
DL1	Green	CPU status — normally ON, OFF during reset	
DL2	Green	Battery and battery (K1) jumper	
DL3	Red	RS−422	Receive
DL4	Red		Transmit
DL5	Red	Hose 1	Slow flow
DL6	Red		Fast flow
DL7	Red		Submersible
DL8	Red	Hose 2	Slow flow
DL9	Red		Fast flow
DL10	Red		Submersible
DL11	Red	Hose 3	Slow flow
DL12	Red		Fast flow
DL13	Red		Submersible
DL14	Red	Hose 4	Slow flow
DL15	Red		Fast flow
DL16	Red		Submersible

Connector

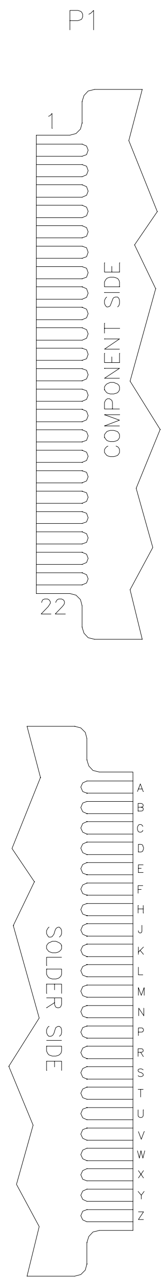
These notes apply to the chart *P1 - Motherboard Interface Connector* on the following page.

Note 1:
When using this board in a pump control unit with a pedestal pump control (PPC) I/O board, the switch detect and reset complete signals are tied together on the I/O board. These signals will be present on pins 2, 3, 4, and 5. Pins 6, 7, 8, and 9 will read +5VDC due to on-board pull-up resistors.

Note 2:
When using this board in a pump control unit with a pedestal pump control (PPC) I/O board, the AUX PULSER pins are grounded. When using this board with a PPC I/O Board II, the AUX PULSER pins will be +5VDC with single pulsers and a +5VDC square wave signal during pumping with dual pulsers.

Note 3:
The power supply battery monitor input warns the site controller of a battery-fail condition in the pump control unit's power supply. The present pump control unit hardware does not support this feature, therefore, +5VDC will be measured due to an on-board pull-up resistor.

P1 - Motherboard Interface



Pinout	Pin	Function	Voltage
	1,A	+5 VDC	+5 VDC
	2	Switch detect hose 1	+5 VDC sig–on
	3	Switch detect hose 2	+5 VDC sig–on
	4	Switch detect hose 3	+5 VDC sig–on
	5	Switch detect hose 4	+5 VDC sig–on
	6	Reset complete hose 1 * See note 1	+5 VDC sig–on
	7	Reset complete hose 2 * See note 1	+5 VDC sig–on
	8	Reset complete hose 3 * See note 1	+5 VDC sig–on
	9	Reset complete hose 4 * See note 1	+5 VDC sig–on
	12,N	+12 VDC	+12 VDC
	13	Submersible relay drive hose 1	0VDC–on, +12VDC–off
	14	AC power fail	+5 VDC normal
	15	Submersible relay drive hose 2	0VDC–on, +12VDC–off
	16	Submersible relay drive hose 3	0VDC–on, +12VDC–off
	17	Submersible relay drive hose 4	0VDC–on, +12VDC–off
	18	RS–422 Rx– From Site Controller	+5 VDC signal between pins 18&19
	19	RS–422 Rx+	
	20	RS–422 Tx– To Site Controller	+5 VDC signal between pins 20&21
	21	RS–422 Tx+	
	22,Z	DC ground	DC ground
	B	Main pulser hose 1	+5 VDC signal
	C	Main pulser hose 2	+5 VDC signal
	D	Main pulser hose 3	+5 VDC signal
	E	Main pulser hose 4	+5 VDC signal
	F	Aux pulser hose 1 * See note 2	+5 VDC signal
	H	Aux pulser hose 2 * See note 2	+5 VDC signal
	J	Aux pulser hose 3 * See note 2	+5 VDC signal
	K	Aux pulser hose 4 * See note 2	+5 VDC signal
	P	Power supply battery monitor * See note 3	+5 VDC
	R	Slow relay drive hose 1	0VDC–on, +12VDC–off
	S	Slow relay drive hose 2	0VDC–on, +12VDC–off
	T	Slow relay drive hose 3	0VDC–on, +12VDC–off
	U	Slow relay drive hose 4	0VDC–on, +12VDC–off
	V	Fast relay drive hose 1	0VDC–on, +12VDC–off
	W	Fast relay drive hose 2	0VDC–on, +12VDC–off
	X	Fast relay drive hose 3	0VDC–on, +12VDC–off
	Y	Fast relay drive hose 4	0VDC–on, +12VDC–off
	10,11,L,M – No connection		

Jumper

Jumper **K1**, when installed, allows battery backup power to the RAM IC at U13. The jumper should be installed during normal operation and removed for storage. The CPU board is shipped with K1 removed.

Jumper	Function
K1	This jumper allows battery voltage to the RAM. It should be removed before replacing U13 or during storage to prevent battery discharge. It should be on during normal operation.

Switches

SA - Reset Switch

The Reset switch starts a hardware and software reset of the CPU PCB. The SB and SC switch settings are read when a reset occurs (and at power up). This switch should be pressed whenever switch settings are changed.

Switch	Function
SA	Push to reset CPU PCB

SB - Address Switches

An address must be set to identify the pump control unit when it is connected to the GASBOY CFN Series Fuel Management System. This address is a unique identifier for when multiple PCU's are connected on the same RS-422 line. Addressing should start at 1 and continue sequentially through 16. The physical wiring order does not have to correspond with the address order, that is, the first unit on the RS-422 line does not have to be address 1. The chart on the right gives the switch settings for the address selections.

Address	SB-1	SB-2	SB-3	SB-4
	ADDR1	ADDR2	ADDR3	ADDR4
1	Closed	Closed	Closed	Closed
2	Open	Closed	Closed	Closed
3	Closed	Open	Closed	Closed
4	Open	Open	Closed	Closed
5	Closed	Closed	Open	Closed
6	Open	Closed	Open	Closed
7	Closed	Open	Open	Closed
8	Open	Open	Open	Closed
9	Closed	Closed	Closed	Open
10	Open	Closed	Closed	Open
11	Closed	Open	Closed	Open
12	Open	Open	Closed	Open
13	Closed	Closed	Open	Open
14	Open	Closed	Open	Open
15	Closed	Open	Open	Open
16	Open	Open	Open	Open

SB - Pulser Select Switch

The pulser select switch is set for either single or dual pulsers. If dual pulsers are selected, all pumps on the pump control unit must have dual pulsers.

Pulser Type	SB-5
	DUAL
Single	Closed
Dual	Open

*NOTE: The dual pulser type feature requires a PPC Motherboard II and a PPC I/O PCB II. Both are not yet available; therefore, this switch should be **closed**.*

SB - Delay Time Switches

The delay time is the period between activation of the submersible pump and the activation of the slow flow and fast flow valves. The delay time switches are set to accommodate a variety of leak detectors used in submersible pump applications. The time should be set according to the type of leak detector installed on the submersible pump to allow a normal leak test for each transaction. If different leak detectors are used on each pump, set the switches to the longest delay time required. Set the delay time to zero seconds for suction pumps.

Delay Time	SB-6 RLY1	SB-7 RLY2	SB-8 RLY3
0	Closed	Closed	Closed
1	Open	Closed	Closed
2	Closed	Open	Closed
3	Open	Open	Closed
4	Closed	Closed	Open
5	Open	Closed	Open
6	Closed	Open	Open
7	Open	Open	Open

*NOTE: The leak detect delay time feature requires a PPC Motherboard II. The PPC Motherboard II is not yet available; therefore, these switches should be **closed**.*

SC - Switch Detect Mode Switches

These switches determine when the pump control unit begins counting pulses for a particular pump. When a switch is open, the PCU begins counting pulses when the corresponding pump is activated. When a switch is closed, the PCU doesn't count pulses for the corresponding pump until the mechanical reset has completed. The switch should be closed when the pump is wired for postpay-prepay console operations.

Switch	Function	
SC-1	Mode pump 1	Open=Normal, Closed=Reset Complete
SC-2	Mode pump 2	Open=Normal, Closed=Reset Complete
SC-3	Mode pump 3	Open=Normal, Closed=Reset Complete
SC-4	Mode pump 4	Open=Normal, Closed=Reset Complete

SC - Miscellaneous Switches

Switch	Function	
SC-5		No function in on-line mode
SC-6	DEAD	Open-deadman timer enabled
SC-7		No function in on-line mode
SC-8	TEST	Open-Test mode, Closed-On-line mode

DEAD This switch enables the deadman timer. It should always be open.

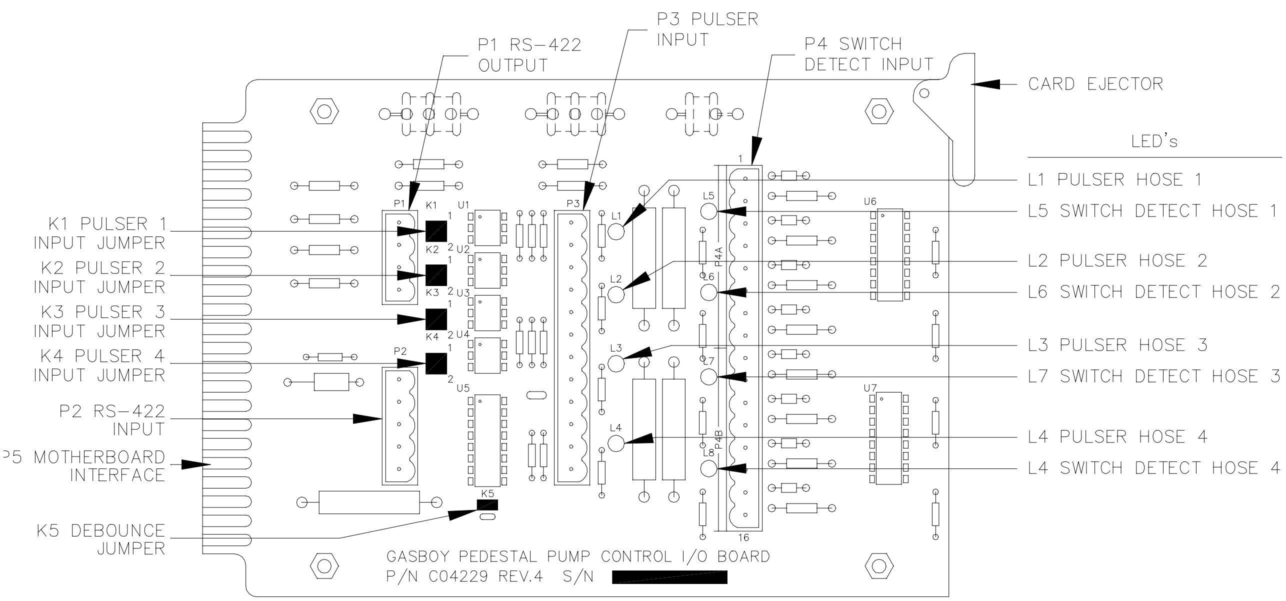
TEST When open, this switch enables the test mode, allowing the basic PCU functions to be tested without the use of a site controller. See **Diagnostic Tests** later in this section for instructions.

PUMP CONTROL I/O PCB ASSEMBLY (C05668)

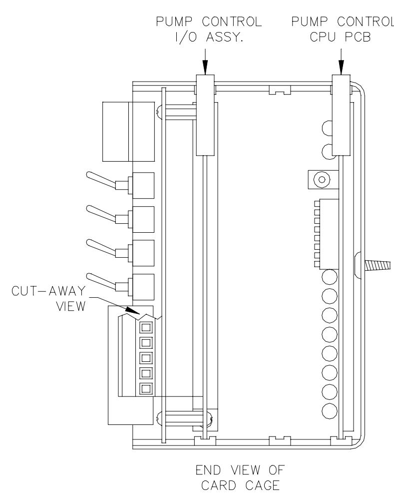
The Pump Control I/O PCB assembly acts as the interface between the pump control unit and the outside world. This assembly:

- provides terminal block wiring and optical isolation for the pulser inputs
- provides terminal block wiring and optical isolation for the switch detect inputs
- provides terminal block wiring and protection for the RS-422 circuits
- provides a protected output for the RS-422 circuit (used when the pump control is in an ICR post)

Layout
(shown without plate)



This drawing shows the Pump Control I/O PCB orientation in the pump control unit.



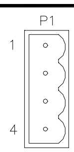
LED Indicators

LED indicators are provided to allow you to monitor the inputs to the I/O PCB.

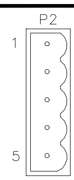
Plate	PCB	Function
PUL1	L1	Pulser hose 1
PUL2	L2	Pulser hose 2
PUL3	L3	Pulser hose 3
PUL4	L4	Pulser hose 4
SD1	L5	Switch detect/Reset complete hose 1
SD2	L6	Switch detect/Reset complete hose 2
SD3	L7	Switch detect/Reset complete hose 3
SD4	L8	Switch detect/Reset complete hose 4

Connectors

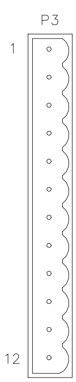
P1 - RS-422 Out (Protected)

Pinout	Pin	Wire	Function		Voltage
	1	Red	RS−422 Tx+	From ICR	+5 VDC signal between pins 1 and 2
	2	Green	RS−422 Tx−		
	3	White	RS−422 Rx+	To ICR	+5 VDC signal between pins 3 and 4
	4	Black	RS−422 Rx−		

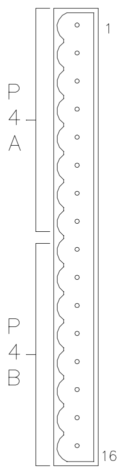
P2 - RS-422 In (Unprotected)

Pinout	Pin	Function		Voltage
	1	RS−422 Tx+	To Site Controller	+5 VDC signal between pins 1 and 2
	2	RS−422 Tx−		
	3	RS−422 Rx+	From Site Controller	+5 VDC signal between pins 3 and 4
	4	RS−422 Rx−		
	5	Chassis ground − wired to TB202 GND. Pins 10, L of P5.		

P3 - Pulser Input

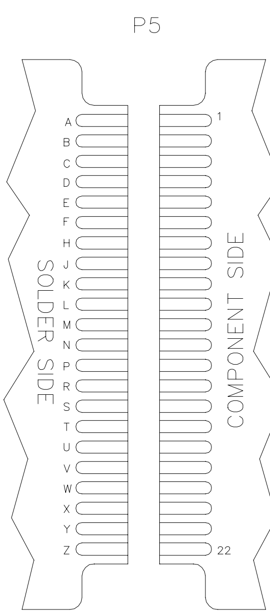
Pinout	Pin	Function	Voltage
	1	Pulser input 1	+12VDC signal
	2	Pulser supply voltage 1	+12 VDC if K1−1 jumpered
	3	DC ground	DC ground
	4	Pulser input 2	+12VDC signal
	5	Pulser supply voltage 2	+12 VDC if K2−1 jumpered
	6	DC ground	DC ground
	7	Pulser input 3	+12VDC signal
	8	Pulser supply voltage 3	+12 VDC if K3−1 jumpered
	9	DC ground	DC ground
	10	Pulser input 4	+12VDC signal
	11	Pulser supply voltage 4	+12 VDC if K4−1 jumpered
	12	DC ground	DC ground

P4 - Switch Detect/Reset Complete Inputs



Pinout	Pin	Function	Voltage
	P4A – Switch detect/Reset complete for hoses 1 & 2		
	1	Reset complete hose 1	115 VAC – On
	2	AC Neutral	AC Neutral
	3	Switch detect hose 1	115 VAC – On
	4	AC Neutral	AC Neutral
	5	Reset complete hose 2	115 VAC – On
	6	AC Neutral	AC Neutral
	7	Switch detect hose 2	115 VAC – On
	8	AC Neutral	AC Neutral
	P4B – Switch detect/Reset complete for hoses 3 & 4		
	9	Reset complete hose 3	115 VAC – On
	10	AC Neutral	AC Neutral
	11	Switch detect hose 3	115 VAC – On
	12	AC Neutral	AC Neutral
	13	Reset complete hose 4	115 VAC – On
	14	AC Neutral	AC Neutral
	15	Switch detect hose 4	115 VAC – On
	16	AC Neutral	AC Neutral

P5 - Motherboard Interface



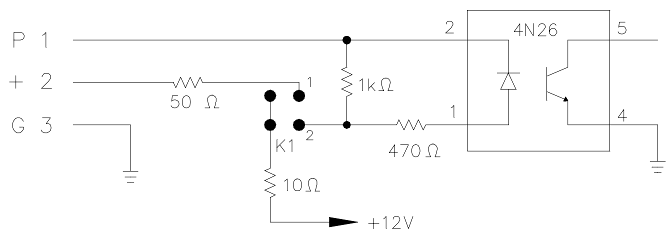
Pinout	Pin	Function		Voltage
	1,A	+5 VDC		+5 VDC
	2	Switch/detect reset complete hose 1		+5 VDC signal – On
	3	Switch/detect reset complete hose 2		+5 VDC signal – On
	4	Switch/detect reset complete hose 3		+5 VDC signal – On
	5	Switch/detect reset complete hose 4		+5 VDC signal – On
	10,L	Chassis ground		Chassis ground
	12,N	+12 VDC		+12 VDC
	18	RS–422 Rx–	From Site Controller	+5 VDC signal between pins 18–19
	19	RS–422 Rx+		
	20	RS–422 Tx–	To Site Controller	+5 VDC signal between pins 20–21
	21	RS–422 Tx+		
	22,Z	DC ground		DC ground
	B	Main pulser hose 1		+5 VDC signal – Pulsing
	C	Main pulser hose 2		+5 VDC signal – Pulsing
	D	Main pulser hose 3		+5 VDC signal – Pulsing
	E	Main pulser hose 4		+5 VDC signal – Pulsing
	F	Aux pulser hose 1		0 VDC – not used
	H	Aux pulser hose 2		0 VDC – not used
	J	Aux pulser hose 3		0 VDC – not used
	K	Aux pulser hose 4		0 VDC – not used
	6,7,8,9,11,13,14,15,16,17,M,P,R,S,T,U,V,W,X,Y			Not used

Jumpers

K1 - K4 Pulser Supply & Input

Jumpers K1 through K4 set the pulser supply and input voltage for hoses 1 through 4 respectively. The schematic below represents the pulser input circuit and shows how the jumper fits into that circuit.

Schematic



K1 - K4 Pulser Input Jumpers

Jumper	Pin	Function	Voltage
K1	P	Pulser signal input (sink)	12 VDC signal when pulsing
	+	No connection	
	G	DC ground for pulser	DC ground
K1	P	Pulser signal input (sink)	12 VDC signal when pulsing
	+	+12 VDC supply voltage for pulser	+12 VDC
	G	DC ground for pulser	DC ground
K1	P	Pulser signal input (sink)	Signal when pulsing
	+	Voltage for opto-isolator from pulser	Voltage level of pulser
	G	DC ground for pulser	DC ground

K5 - Pulser Debounce

Jumper K5 sets the pulser debounce rate.

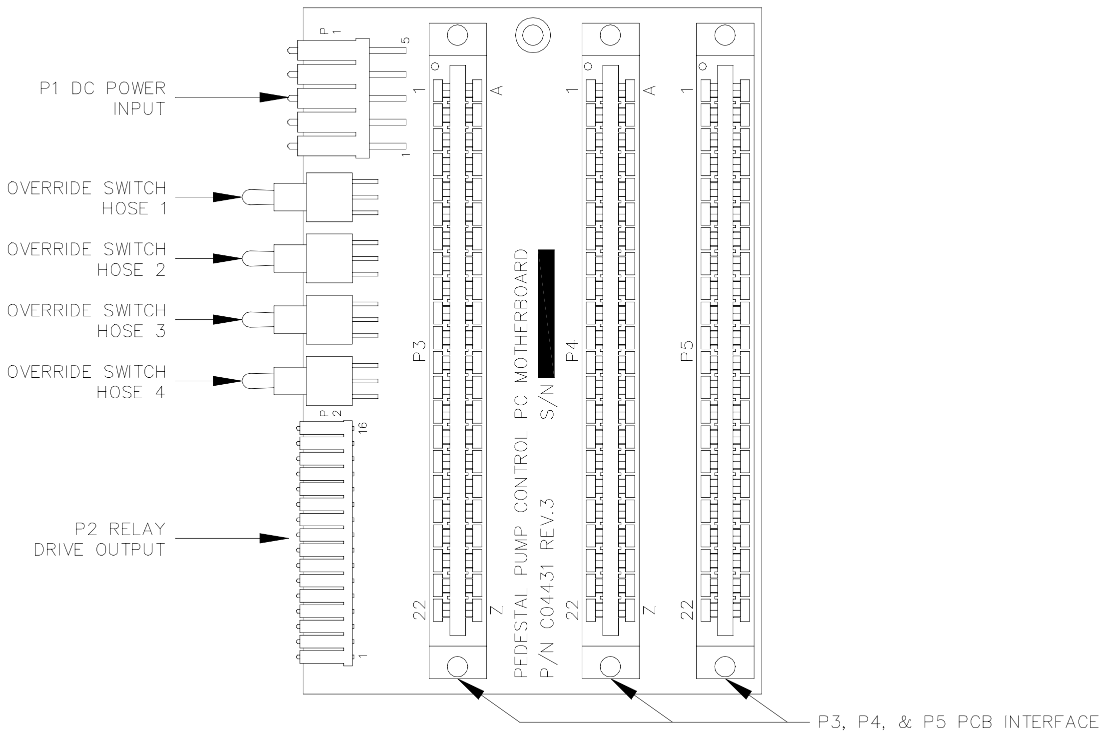
Jumper	Speed	Function
K5 Jumpered	Slow	10:1 quantity pulsers
K5 Open	Fast	10:1 money pulsers All 100:1 (electronic) pulsers

PUMP CONTROL MOTHERBOARD PCB (C05371)

The Pump Control Motherboard:

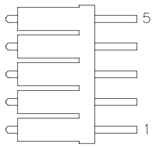
- provides the interface between the Pump Control CPU PCB and the I/O PCB
- contains the manual override switches for the pumps
- provides the interface between the CPU PCB and the relays

Layout

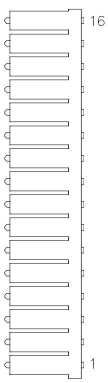


Connectors

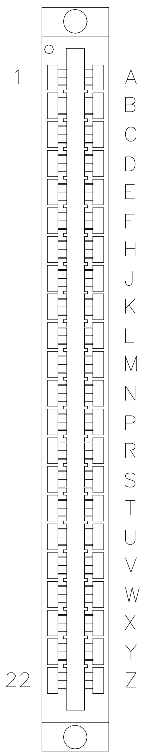
P1 - Power Supply

Pinout	Pin	Wire	Function	Voltage
P1 	1	Orange	+5 VDC	+5 VDC
	2	Red	+12 VDC	+12 VDC
	3		Battery voltage from CMOS CPU board	+3.6 VDC
	4	Yellow	AC power fail	+5 VDC – Normal
	5	Black	DC ground	DC ground

P2 - Relay Drives

Pinout	Pin	Wire	Function	Voltage
P2 	1	Yellow	Relay drive fast flow 1	0 VDC – On, 12 VDC – Off
	2	Brown	Relay drive slow flow 1	0 VDC – On, 12 VDC – Off
	3	White	Relay drive submersible 1	0 VDC – On, 12 VDC – Off
	4	Red	+12 VDC	+12 VDC
	5	Yellow	Relay drive fast flow 2	0 VDC – On, 12 VDC – Off
	6	Brown	Relay drive slow flow 2	0 VDC – On, 12 VDC – Off
	7	White	Relay drive submersible 2	0 VDC – On, 12 VDC – Off
	8	Red	+12 VDC	+12 VDC
	9	Yellow	Relay drive fast flow 3	0 VDC – On, 12 VDC – Off
	10	Brown	Relay drive slow flow 3	0 VDC – On, 12 VDC – Off
	11	White	Relay drive submersible 3	0 VDC – On, 12 VDC – Off
	12	Red	+12 VDC	+12 VDC
	13	Yellow	Relay drive fast flow 4	0 VDC – On, 12 VDC – Off
	14	Brown	Relay drive slow flow 4	0 VDC – On, 12 VDC – Off
	15	White	Relay drive submersible 4	0 VDC – On, 12 VDC – Off
	16	Red	+12 VDC	+12 VDC

P3, P4, P5 - PCB Interface

Pinout	Pin	Function		Voltage
P3, P4, P5 	1,A	+5 VDC		+5 VDC
	2	Switch/detect reset complete hose 1		⊓⊔⊓⊔ +5 VDC signal – On
	3	Switch/detect reset complete hose 2		⊓⊔⊓⊔ +5 VDC signal – On
	4	Switch/detect reset complete hose 3		⊓⊔⊓⊔ +5 VDC signal – On
	5	Switch/detect reset complete hose 4		⊓⊔⊓⊔ +5 VDC signal – On
	10,L	Chassis ground		Chassis ground
	12,N	+12 VDC		+12 VDC
	14	AC power fail		+5 VDC normal
	18	RS–422 Rx–	From Site Controller	⊓⊔⊓⊔ +5 VDC signal between pins 18–19
	19	RS–422 Rx+		
	20	RS–422 Tx–	To Site Controller	⊓⊔⊓⊔ +5 VDC signal between pins 20–21
	21	RS–422 Tx+		
	22,Z	DC ground		DC ground
	B	Main pulser hose 1		⊓⊔⊓⊔ +5 VDC signal – Pulsing
	C	Main pulser hose 2		⊓⊔⊓⊔ +5 VDC signal – Pulsing
	D	Main pulser hose 3		⊓⊔⊓⊔ +5 VDC signal – Pulsing
	E	Main pulser hose 4		⊓⊔⊓⊔ +5 VDC signal – Pulsing
	F	Aux pulser hose 1		0 VDC – not used
	H	Aux pulser hose 2		0 VDC – not used
	J	Aux pulser hose 3		0 VDC – not used
	K	Aux pulser hose 4		0 VDC – not used
	P	Battery voltage from CPU board		3.6 VDC – CMOS PCB only
	R	Main relay drive hose 1		0VDC – On, 12VDC – Off
	S	Main relay drive hose 2		0VDC – On, 12VDC – Off
	T	Main relay drive hose 3		0VDC – On, 12VDC – Off
	U	Main relay drive hose 4		0VDC – On, 12VDC – Off
	V	Aux relay drive hose 1		0VDC – On, 12VDC – Off
	W	Aux relay drive hose 2		0VDC – On, 12VDC – Off
	X	Aux relay drive hose 3		0VDC – On, 12VDC – Off
	Y	Aux relay drive hose 4		0VDC – On, 12VDC – Off

Switches

S1, S2, S3, S4 - Override Switches

The override switches allow you to override the authorization control of the card system. These switches directly control the relays by switching a ground signal to the relay input contact. Power to the pump control unit must be turned on so that +12 VDC is supplied to the relays.

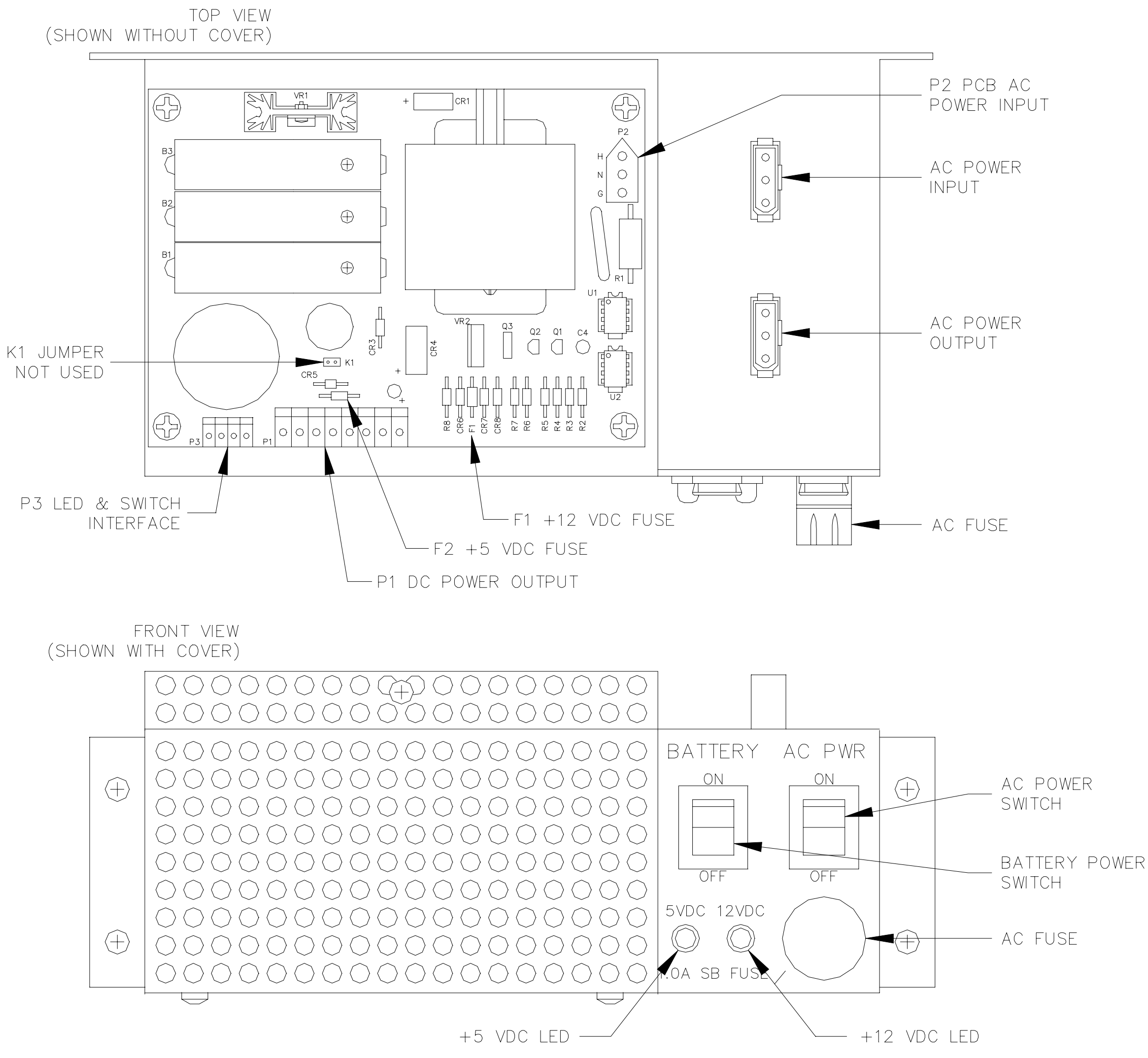
Switch	UP POSITION	CENTER POSITION	DOWN POSITION
S1 – S4	AUTO – pump controlled by Card system.	OFF – pump is disabled.	DOWN – Card system is bypassed.

PUMP CONTROL POWER SUPPLY ASSEMBLY (C05040 W&M; C05059 FLEET)

The power supply assembly:

- converts the AC line voltage to +5 and +12 VDC for the pump control circuitry
- contains the AC power on/off switch
- contains the AC power fuse
- provides battery backup voltage to allow the PCU to operate for 10 seconds after a power failure (C05040 only)
- provides LED's for visual inspection of the DC voltages
- provides an AC voltage power fail signal to warn the microprocessor of an impending power failure

Layout (C05040 only)



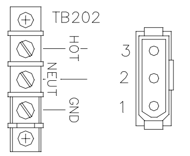
LED Indicators

LED indicators are provided to give a quick visual inspection of the DC voltages.

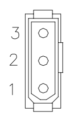
LED	Function
5VDC	+5 VDC supply indicator
12VDC	+12 VDC supply indicator

Connectors

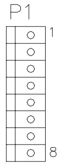
TB202 & AC Input for Power Supply Assembly

Pinout	Pin	Wire	Function	Voltage
	H 1	Black	AC hot input	115 VAC
	N 2	White	AC neutral input	AC neutral
	G 3	Green	AC ground input	AC ground

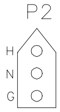
AC Output to ICR

Pinout	Pin	Wire	Function	Voltage
	1	Black	AC hot input	115 VAC
	2	White	AC neutral input	AC neutral
	3	Green	AC ground input	AC ground

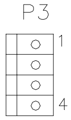
P1 - DC Output from Power Supply PCB

Pinout	Pin	Wire	Function	Voltage
P1 	1	Orange	+5 VDC	+5 VDC
	6	Red	+12 VDC	+12 VDC
	7	Yellow	AC power fail	+5 VDC – normal
	8	Black	DC ground	DC ground
	2,3,4,5, – Not used			

P2 - AC Input to Power Supply PCB

Pinout	Pin	Wire	Function	Voltage
P2 	H	Black	AC hot input	115 VAC
	N	White	AC neutral input	AC neutral
	G	Green	AC ground input	AC ground

P3 - LED & Battery Switch Interface

Pinout	Pin	Wire	Function	Voltage
P3 	1	Black	DC ground	DC ground
	2	Red	+12 VDC to LED	+12 VDC
	3	Red	+5 VDC to LED	+5 VDC
	4	Orange	Battery return–battery switch	0 VDC – On

Switches

AC Power Switch
This switch turns on/off the AC power to the power supply. DC voltage will continue to be present in the PCU for about 10 seconds after this switch is turned off because of the battery backup feature.

Battery Switch
This switch enables the battery backup power in case of a power failure and also enables the battery charge. The battery power will keep the PCU running for approximately 10 seconds (long enough for all pumps to shut down). This switch should be ON for normal operation and OFF whenever parts are replaced in the PCU.

Fuses

AC Power Fuse
An AC power fuse protects the input to the power supply. This fuse is rated at 1 Amp, slow blow.

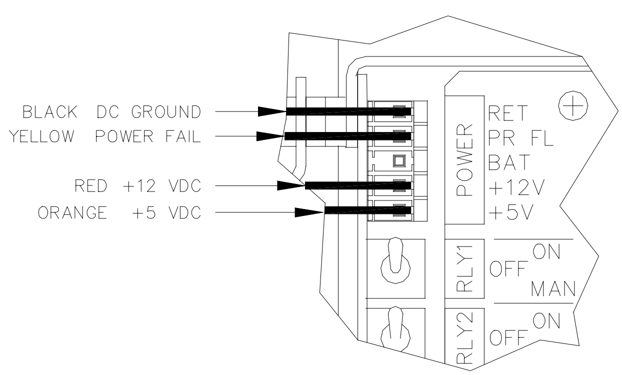
F1 - +12 VDC Fuse
A pico fuse is located at position F1 on the power supply PCB. This fuse protects the power supply from surges on the +12 VDC line. The fuse is rated at 1.5 Amps.

F2 - +5 VDC Fuse
A pico fuse is located at position F2 on the power supply PCB. This fuse protects the power supply from surges on the +5 VDC line. The fuse is rated at 3 Amps.

+5 VDC

Measurement
1. Turn off the AC and DC power switches on the supply assembly.
2. Locate the connector labeled POWER in the upper left-hand corner of the motherboard. Remove the black plastic cover.
3. Turn on the AC and DC power switches.
4. Measure the **+5 VDC** between the orange (+) and black (-) wires. The voltage should be +4.95 to +5.05 VDC.
5. Measure the **+12 VDC** between the red (+) and black (-) wires. The voltage should be +11.50 to +15.50 VDC depending on the type and number of pulsers and the number of relays energized.
6. Measure the **POWER FAIL** between the yellow (+) and black (-) wires. The voltage should be +4.75 to +5.05 VDC.

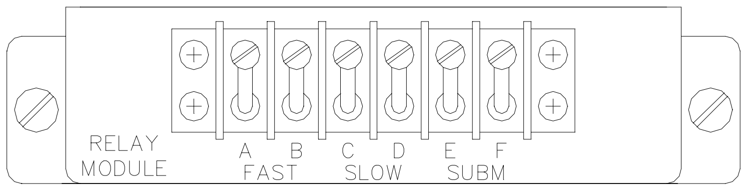
   NOTE: There are no adjustments for these voltages.
7. Turn off the AC and DC power switches.
8. Replace the black plastic cover on the connector and turn the AC and DC power switches back on.

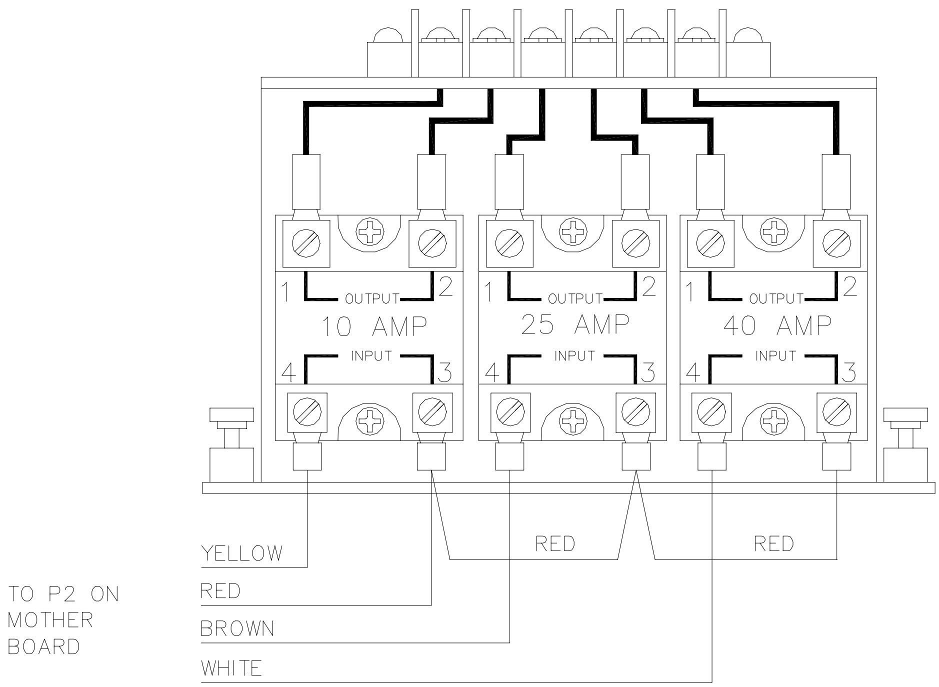


PUMP CONTROL RELAY BRACKET (C05035 W&M; C05029 FLEET)

There are four relay brackets on every pump control chassis. The relay bracket contains the relays to control the fast and slow flow solenoid valves, the reset motor, the suction pump, the starter relay, and the submersible pump. *NOTE: Fast flow (10 Amp) relays are available on C05666 and C07559 Weights and Measures units only)*

Layout

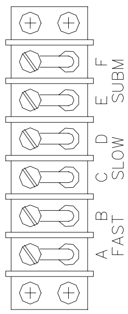




Connectors

Terminal Block

NOTE: Fast flow relays are available on C05666 and C07559 Weights and Measures units only.



Pinout	Position	Function	Voltage
	A FAST	AC power from breaker for fast flow valve	115 VAC
	B FAST	Switched AC power to fast flow valve	115 VAC – On
	C SLOW	AC power from breaker (application varies)	115 VAC
	D SLOW	Switched AC power to pump (application varies)	115 VAC – On
	E SUBM	AC power from breaker (application varies)	115 VAC
	F SUBM	Switched AC power to pump (application varies)	115 VAC – On

Relay Connections

NOTE: Fast flow relays are available on C05666 and C07559 Weights and Measures units only.

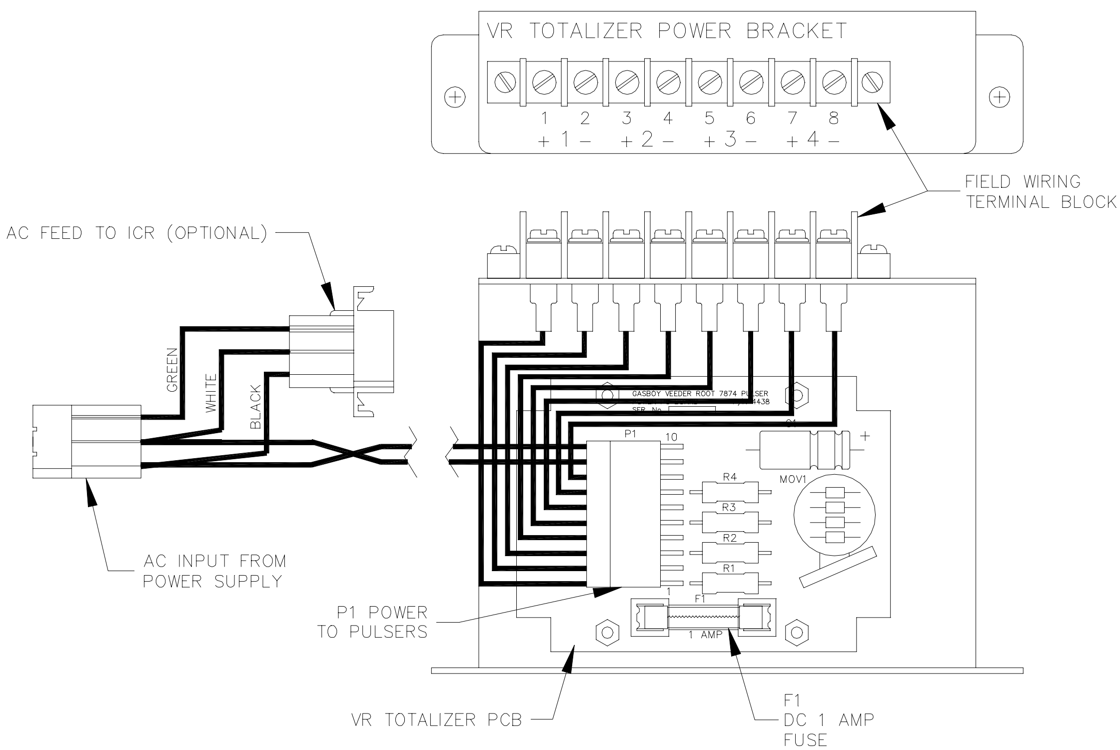
Relay	Size	Pin	Wire	Function	Voltage
Fast	10 Amp	4	Yellow	Fast relay drive	0 VDC – On
		3	Red	+12 VDC	+12 VDC
Slow	25 Amp	4	Brown	Slow relay drive	0 VDC – On
		3	Red	+12 VDC	+12 VDC
Subm	40 Amp	4	White	Subm relay drive	0 VDC – On
		3	Red	+12 VDC	+12 VDC

VEEDER ROOT PULSER/TOTALIZER BRACKET (C05667)

The VR pulser/totalizer bracket:

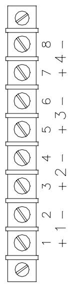
- allows the PCU to interface to the Veeder Root pulser/totalizer (models 7874 retrofit kits)
- contains the VR 7874 pulser power PCB

Layout

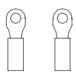


Connectors

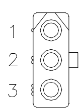
Terminal Block (Field Wiring)

Pinout	Pin	Color	Function	Voltage
	1	Violet	Pulser 1 power output	+70 to +125 VDC
	2	Yellow	Pulser 1 power return	0 VDC
	3	Violet	Pulser 2 power output	+70 to +125 VDC
	4	Yellow	Pulser 2 power return	0 VDC
	5	Violet	Pulser 3 power output	+70 to +125 VDC
	6	Yellow	Pulser 3 power return	0 VDC
	7	Violet	Pulser 4 power output	+70 to +125 VDC
	8	Yellow	Pulser 4 power return	0 VDC

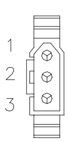
AC Input Connections (units shipped prior to March 1988)

Pinout	Wire	Function	Voltage
	Black	AC hot input from TB202 Hot	115 VAC
	White	AC neutral input from TB202 Neut	AC neutral

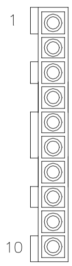
AC Input Connector (units shipped March 1988 and after)

Pinout	Pin	Wire	Function	Voltage
	1	Black	AC hot input from power supply assy. line output	115 VAC
	2	White	AC neutral input from power supply assy. line output	AC neutral
	3	Green	AC ground from power supply assy. line output	AC ground

AC Output Connector (units shipped March 1988 and after)

Pinout	Pin	Wire	Function	Voltage
	1	Black	AC hot feed to ICR	115 VAC
	2	White	AC neutral feed to ICR	AC neutral
	3	Green	AC ground to ICR	AC ground

P1 - AC Input/DC Output for VR Totalizer PCB

Pinout	Pin	Color	Function	Voltage
	1	Violet	Pulser 1 power output	+70 to +125 VDC
	2	Yellow	Pulser 1 power return	0 VDC
	3	Violet	Pulser 2 power output	+70 to +125 VDC
	4	Yellow	Pulser 2 power return	0 VDC
	5	Violet	Pulser 3 power output	+70 to +125 VDC
	6	Yellow	Pulser 3 power return	0 VDC
	7	Violet	Pulser 4 power output	+70 to +125 VDC
	8	Yellow	Pulser 4 power return	0 VDC
	9	White	AC neutral input	AC neutral
	10	Black	AC hot input	115 VAC

Fuses

AC Fuse
Units shipped prior to March 1988 come with an on-board 1 Amp quick blow fuse to protect the AC input. The AC power for units shipped in March 1988 and after is protected by the power supply assembly's fuse.

DC Fuse
A DC fuse on the PCB protects the DC power circuit from surges. This fuse is rated at 1 Amp, quick blow.

DIAGNOSTIC TESTS

The pump control unit can perform a number of diagnostic tests on each pump connected to the unit. These tests will check the operation of the pump and pump control unit. Tests can be performed totally independent of the site controller.

CAUTION
AC power is present on some of the terminal blocks in this unit. Electrical shock may occur if the operator comes in contact with these connections.

Start Diagnostic Mode

1. Unlock, unscrew, and open the door of the pump control unit.
2. Unscrew the large screw on the right hand side of the card cage. Pivot the cage away from the chassis so that you can gain access to the CPU PCB.
3. Open switch SC-8 (test mode switch). Set switches SC-5 (pump limit) and SC-6 and SC-7 (pump to test) to the desired settings.

SC-8 Test Mode

SC–8	Function
Open	Test mode
Closed	On–line mode

SC-6 & 7 Pump to Test

Pump	SC–6	SC–7
1	Closed	Closed
2	Open	Closed
3	Closed	Open
4	Open	Open

SC-5 Pump Limit

SC–5	Function
Open	Pump slows down at 500 pulses, Shuts off at 510 pulses
Closed	Pump slows down at 50 pulses, Shuts off at 60 pulses

Diagnostic Tests

4. Press and release the SA reset switch. The appropriate pump LED(s) should turn on and the selected pump should be ready for activation.
5. Turn on the pump handle. The pump should reset and the appropriate switch detect LED on the I/O PCB should turn on.
6. Begin to dispense product, the appropriate LED on the I/O PCB should pulse. The fast flow LED will turn off at the preset slow down limit.
7. Turn off the pump. The switch detect LED and all pump LED's should turn off. The pump should not be able to be turned on again without pushing the reset switch.

End Diagnostic Mode

8. Set the SC-6 to the open position (deadman timer enabled). Set the SC-8 switch to the closed position (on-line mode).
9. Press and release the SA reset switch. The PCU should be back in the on-line mode.
10. Swing the card cage back to the chassis and tighten the card cage screw.
11. Close and lock the PCU door. Tighten the two screws.

PUMP CONTROL UNIT PROBLEMS

*NOTE: **PPC CPU board** is a generic term used in the following section to describe the CPU board found in the pedestal pump control unit. The more specific names of CMOS Pump Control CPU board and EXPMUX CPU board will be used when required.*

Pump Control Unit is Dead. No LED's lit.

Possible Cause	Checks	Corrective Action
No AC power to Pump Control Unit.	Check if the PPC breaker is off or tripped.	Turn the breaker on, if off.
	Check if 115VAC is being switched through PPC breaker.	Replace breaker if 115VAC is not being switched.
	Check if 115VAC is measured at the PPC TB202 terminal block.	Repair wiring problem between electric panel and PPC is no voltage is measured.
PPC power switch is off.	Check if the PPC power switch is off.	Turn the PPC power switch on, if off.
Blown fuse.	Check if the 1 amp fuse on the PPC power supply assembly is blown	Replace fuse, if blown.
Defective power supply.	Check the LED's. If not lit, measure the power supply voltages at the P1 connector on the PPC Motherboard between pin 5 (DC ground) and pins 1 (+5VDC), 2 (+12VDC), and 4 (+5VDC).	Replace the PPC Power Supply PCB if the proper voltages are not measured.

Pump/Dispenser Will Not Reset When Authorized

MANUAL TEST: Place the pump override switch in the **MAN** position. Power to the pedestal pump control unit must be on. Turn on the pump handle. If the pump resets, go to AUTOMATIC TEST at the end of this section.

Possible Cause	Checks	Corrective Action
No AC feed to the pump/dispenser.	Check if the pump breaker is off or tripped.	Turn breaker on, if off.
	Check if 115 (230) VAC is being switched through pump breaker.	Replace breaker if 115 (230) VAC is not being switched.
	Check if 115VAC is measured at the input side of the pump relay power terminal block in the PPC.	Repair wiring problem between electric panel and PPC if no input voltage is measured.
No +12VDC relay drive power.	Check if +12VDC is measured between pin 5 (black wire) and pin 2 (red wire) of PPC Motherboard connector P1. If +12VDC is not measured, remove the power supply enclosure cage and check if +12VDC is measured on both ends of pico fuse F1.	If +12VDC is not measured on either end of F1, replace the PPC Power Supply PCB. If +12VDC is measured on only one end of F1, replace it with a 1.5 Amp pico fuse.
	Place the + meter probe on pin 2 (red wire) of PPC Motherboard connector P1. Place the - meter probe on the appropriate SUB, SLOW, FAST relay drives on PPC Motherboard connector P2.	If +12VDC is not measured between P1, pin 2 and all three relay drives, replace the PPC Motherboard.
Defective relay.	Measure between AC neutral and the relay inputs (A, C, E) and the relay outputs (B, D, F) on the PPC relay bracket.	If 115VAC is measured at a relay input but not at its corresponding output, replace the relay.
Defective electric reset.	Open AC junction box in pump/dispenser. Measure between FEED NEUTRAL and RESET MOTOR FEED.	If 115VAC is measured, adjust, repair, or replace electric reset. If 115VAC is not measured, repair wiring problem.

AUTOMATIC TEST: This test assumes that the pump/dispenser resets in manual as described above. Place the pump override switch in the **ON** position for the duration of the problem.

Possible Cause	Checks	Corrective Action
PPU CPU board switches are set wrong.	Make sure the MODE switches (SC-1 through SC-4) on the PPC CPU board are set properly.	If a pump is wired for use with a postpay-prepay console, the MODE switches should be set for Reset Complete Mode.
Site controller configured to not wait for switch detect on console transactions.	Check that all mechanical pumps are configured to wait for switch detect on console transactions.	For SC I, clear bit 3 at Table 24 offset 18+((pump number - 1) x 4). This is automatic for SC II.

Normal Mode

No relay drive from PPC CPU board.	Activate the pump from the card reader or terminal. Check if the MAIN and AUX relay drive LED's on the CMOS Pump Control CPU board, or if the SUB, SLOW, and FAST relay drive LED's on the EXPMUX CPU board turn on.	Replace the PPC CPU board if all of the appropriate relay drive LED's do not turn on.

Reset Complete Mode

No switch detect.	Turn the pump handle on and measure for 115VAC at the AUX switch detect contacts at TBS on the PPC I/O board. Check that the switch detect LED on the PPC I/O board turns on.	If 115VAC is not measured, repair the wiring between the pump and PPC. If the switch detect LED does not turn on, replace the PPC I/O board.
No relay drive from PPC CPU board.	Activate the pump from the console. Check if the relay LED's on the PPC CPU board turn on.	Replace the PPC CPU board if the relay drive LED's do not turn on.

Pump/Dispenser Resets But Does Not Dispense Fuel

MANUAL TEST: Place the pump override switch in the **MAN** position. Power to the pedestal pump control unit must be on. Turn on the pump handle. If the pump resets, go to AUTOMATIC TEST at the end of this section.

Possible Cause	Checks	Corrective Action
No +12VDC relay drive power.	Place the + meter probe on pin 2 (red wire) of PPC Motherboard connector P1. Place the - meter probe on the appropriate SUB, SLOW, FAST relay drives on PPC Motherboard connector P2.	If +12VDC is not measured between P1, pin 2 and all three relay drives, replace the PPC Motherboard.
Defective relay.	Measure between AC neutral and the relay inputs (A, C, E) and the relay outputs (B, D, F) on the PPC relay bracket.	If 115VAC is measured at a relay input but not at its corresponding output, replace the relay.
Defective electric reset, defective pump motor, or defective solenoid(s).	Turn the pump handle on. After reset has completed, check if 115 (230) VAC is measured at the pump motor and the solenoid(s).	If 115 (230) VAC is not measured at the pump motor and the solenoid(s), repair or replace the electric reset. If 115 (230) VAC is measured at the pump motor but it doesn't turn, replace the pump motor. If 115 VAC is measured at the solenoid valve(s) but it doesn't click open, replace the valve(s).
Out of fuel.	Stick the tank to check fuel level.	Order fuel if tank is empty.
Pump lost prime, poor siphon action, defective pumping unit.	None.	Call a qualified pump service technician.

Dispenser

Possible Cause	Checks	Corrective Action
Defective electric reset or defective solenoid valve(s).	Turn the pump handle on. After reset has completed, check if 115 (230) VAC is measured at the SUBM DRIVE and the solenoid(s) in the dispenser junction box.	If 115 (230) VAC is not measured on the SUBM DRIVE and the solenoid(s), repair or replace the electric reset. If 115 (230) VAC is measured on the SUBM DRIVE, go to "No AC power at submersible starter relay coil" if starter relay is used; or "No AC power at submersible pump motor", if no starter relay is used. If 115VAC is measured at the solenoid valve(s) but it doesn't click open, replace the valve(s).
No AC power at submersible starter relay coil (if used).	Measure across the submersible starter relay coil contacts.	Repair the wiring between the dispenser junction box and the submersible starter relay if 115VAC is not measured.
Defective submersible starter relay (if used).	Check if the submersible starter relay closes when 115VAC is across the coil contacts.	Replace the submersible starter relay if it does not close when 115VAC is measured across the coil contacts.

(Continued)

Possible Cause	Checks	Corrective Action
No AC power switched through submersible starter relay (if used).	Check if the breaker that supplies power to the submersible pump motor through the starter relay is tripped or off.	Turn breaker on, if off.
	Check if 115 (230) VAC is being switched through submersible pump breaker.	Replace breaker if 115 (230) VAC is not being switched.
	Check if 115 (230) VAC is measured at the input contacts of the submersible starter relay.	Repair wiring problem between electric panel and submersible starter relay if 115 (230) VAC is not measured on the input contacts.
	Check if 115 (230) VAC is measured at the output contacts of the submersible starter relay, when closed.	Replace the submersible starter relay if 115 (230) VAC is not measured at the output contacts.
Out of fuel.	Stick the tank to check the fuel level.	Order fuel if the tank is empty.
Leak detector did not open.	Check for a leak in the supply line or piping.	Replace defective leak detector if it does not open. Call qualified service personnel.
Shear valve tripped.	Check if shear valve tripped.	Reset or replace shear valve if it is tripped or defective. Correct the cause of tripping.
Defective submersible pump motor.	None.	Call a qualified pump service technician.

AUTOMATIC TEST: This test assumes that the pump/dispenser resets in manual as described above. Place the pump override switch in the **ON** position for the duration of the problem.

Possible Cause	**Checks**	**Corrective Action**
PPC CPU board MODE switches are set wrong.	Make sure the MODE switches (SC-1 through SC-4) on the PPC CPU board are set properly.	If pump is wired for use with a postpay-prepay console, the MODE switches (SC-1 through SC-4) should be set for Reset Complete Mode.
Site controller configured to not wait for switch detect on console transactions.	Check that all mechanical pumps are configured to wait for switch detect on console transactions.	For SC I, clear bit 3 at Table 24 offset 18+((pump number - 1) x 4). This is automatic for SC II.
No relay drive from PPC CPU board.	Check if the MAIN and AUX relay drive LED's on the CMOS Pump Control CPU board; or if the SUB, SLOW, and FAST relay drive LED's on the EXPMUX CPU board turn on when the pump is activated from the card reader or terminal.	Replace the PPC CPU board if all of the appropriate relay drive LED's do not turn on.

Pump Dispenses Fuel But Records Zero or Incorrect Quantity

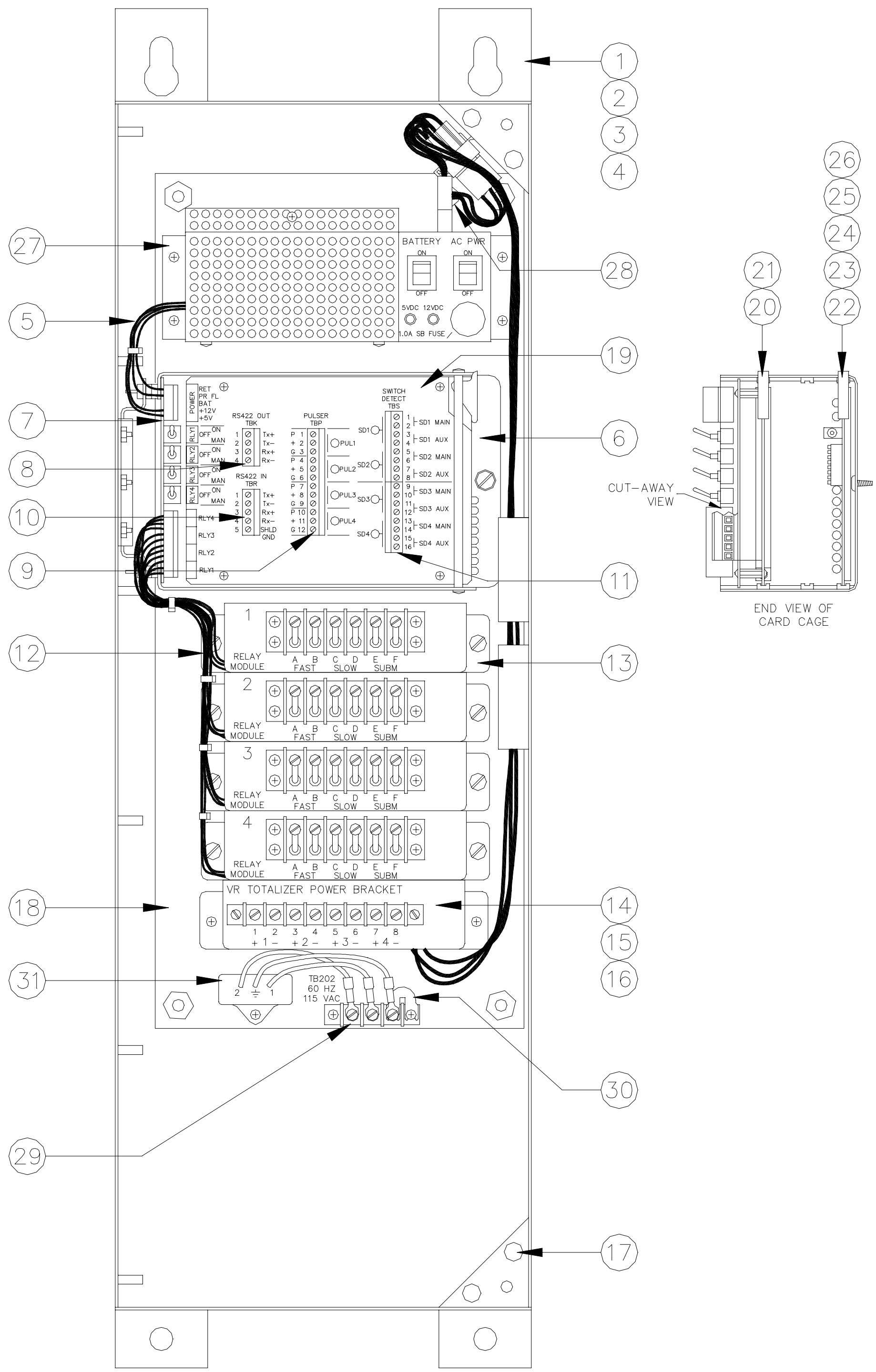
Possible Cause	Checks	Corrective Action
Price on pump doesn't match level 0 price (or fallback price) in system.	If the pulser is mounted on the computer's money wheel, check if the price per gallon/liter matches the fallback price shown with the **PRint PUmp** command.	If the price at the pump doesn't match the fallback price, correct the price where necessary.
Pump is configured with the wrong pulser units.	If the pulser is on the money wheel, the pulser units should be configured for **$**. If the pulser is on the quantity wheel, the pulser units should be configured for **G**. This can be checked under the **RATE** column of the **PRint PUmp** command.	The configuration location for SC I is Table 24 offset 18+((pump number -1) x 4). Set bit 6 for **$**, clear bit 6 for **G**. For SC II, use pump menu #1.
Pump is configured with wrong pulser divisor.	The pulser divisor should be twice the number of pulses per unit of the pulser. This can be checked under the **RATE** column of the **PRint PUmp** command.	For SC I, the two bytes beginning at Table 24 offset 19+((pump# -1) x 4) determine the pulser divisor. This is a decimal number. For SC II, call GASBOY Technical Service.
Too many pulses per minute.	The PPC cannot process more than 30,000 pulses per minute.	Make sure the maximum pump flow rate multiplied by the pulses per unit does not exceed 30,000 pulses per minute.
Incorrect jumper settings on PPC I/O board.	Check the PPC I/O board jumpers K1 through K5 against the *Installation Manual*.	Correct the jumper settings.

(Continued)

Possible Cause	Checks	Corrective Action
No pulser power to Veeder Root Model 7874 Pulser/Totalizer (if used).	Measure between the + and - terminals on the VR Totalizer Power bracket in the PPC. Measure between the - terminal and both sides of F1 on the VR Pulser Power PCB.	If +70 and 125VDC is measured between the + and - terminals, go to "Defective PPC I/O Board." Replace F1 if +70 and 125VDC is only measured on one side. Replace the VR Pulser Power PCB if +70 and 125VDC is not measured on either side of F1.
Defective PPC I/O board.	Remove the pulser wires from the TBP (P3) pulser connector on the PPC I/O board. Strip about 1/4" of insulation from both ends of a 6" piece of wire. Install one end into terminal G. Turn the P screw all the way down. Slowly tap the free end of the wire onto the P terminal. The pulser LED should flash on and off.	If the pulser LED doesn't flash on and off during this tap test, replace the PPC I/O board.
Defective PPC CPU board.	Activate the pump and turn the pump handle on. After the pump resets, do the tap test again. Turn the pump handle off.	If the transaction didn't record quantity, replace the PPC CPU board.
Wiring problem between PCU and pump.	Install the pulser wiring that was removed in the steps above. Check the pulser signal and power wires between the PCU and pump	Repair any opens, shorts, or crossed wires.
No pulses from pump.	Check if the pulser shaft turns.	If the computer turns but the pulser shaft doesn't, check and repair the linkage. In the pump DC junction box, disconnect the pump pulser and connect a new pulser. Activate the pump and spin the new pulser by hand. If the system now records pulses, install the new pulser permanently.

Page intentionally left blank.

PUMP CONTROL UNIT PARTS

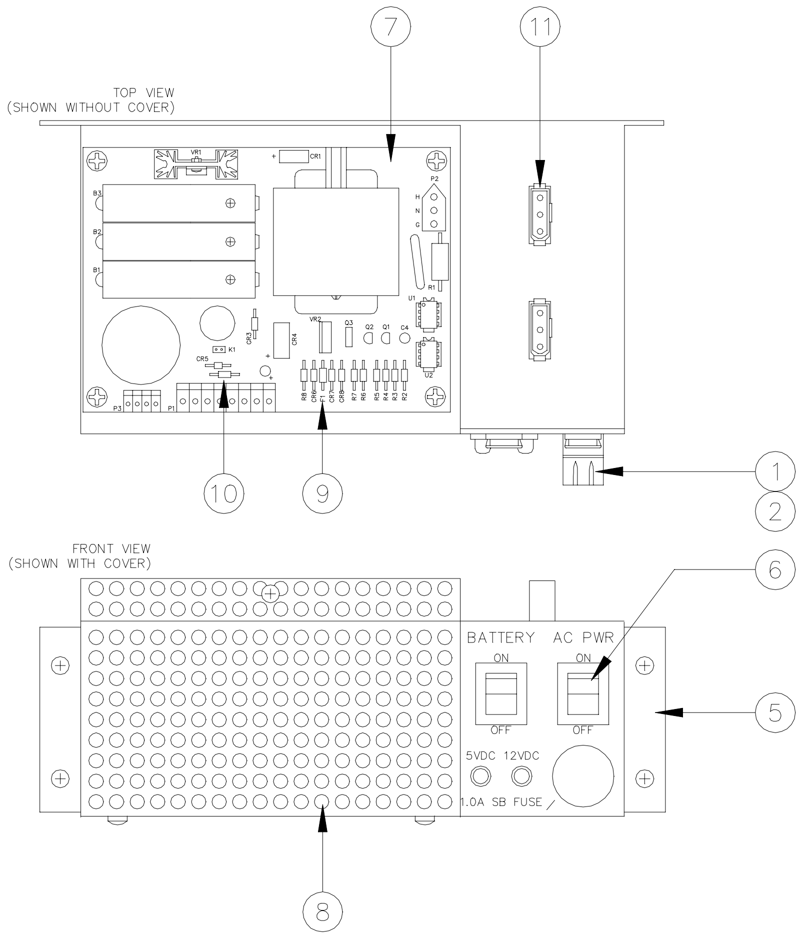


C05666 Pump Control Assembly, 4 Hose, Weights and Measures
C05054 Pump Control Assembly, 4 Hose, Fleet

Item	Part No.	Description
1	C34604	Cabinet, PCU Weld Assy. - CFN
2	C34595	Cover, Cabinet Weld Assy. - CFN (Not Shown)
3	035009	Lock, 90^{o} turn w/dust cover
4	0M0049	Cam Lock, Bezel, Finished, EK
5	C05546	Cable Assy., PCU Mother Board Power
6	C05542	Card Cage Assy., 3 Slot, Cons
7	*C05371	PCB Assy., PPC Mother Board - CFN
8	C08233	Connector, 4 Position Terminal Block/Plug, .197 Centers, #1792032
9	C08237	Connector, 12 Position Terminal Block/Plug, .197 Centers, #1792045
10	C08235	Connector, 5 Position Terminal Block/Plug, .197 Centers, #1792042
11	C08528	Connector, 8 Position Terminal Block/Plug, .197 Centers, #1792074
12	C05044	Cable Assy., Relay Module Drive - CFN, W&M
	C05045	Cable Assy., Relay Module Drive - CFN, Fleet
13	C05035	Assy., Relay Module PPC - CFN, W&M
	C05029	Assy., Relay Module PPC - CFN, Fleet
14	C05667	Veeder Root Power and Bracket Assy.
15	*C05378	PCB Assy., Veeder Root Power - CFN
16	*C02331	Fuse, 1 Amp Quick Blow
17	017090	Bumper
18	C05543	Chassis Weld Assy., Solid State Pump Control Unit
19	C32731	Plate, Silkscreened Escutcheon
20	C05668	PCB Assy., Pedestal Pump Control Interface
21	*C03315	Connector, Jumper 2 Position Female
22	C05837	PCB Assy., Pump Control EXPMUX CPU
23	*C08574	IC, Programmed C03673 8K x 8 CMOS
24	*C08014	Fuse, Picofuse, 1/16 Amp PC Mount
25	*C02978	IC, RS-485 line driver
26	*C03391	IC, RS-485 line receiver
27	C05040	Power Supply Assy., PPC - CFN, W&M (See next page for power supply)
	C05059	Power Supply Assy., PPC - CFN, Fleet (See next page for power supply)
28	C02936	Bushing, snap-in
29	C05685	Cable Assy., AC power – CFN
30	*C08938	TB Jumper, 2 position
31	C06757	Surge Protector, 115V

*Denotes this is a sub-part used in the preceding assembly

PUMP CONTROL POWER SUPPLY

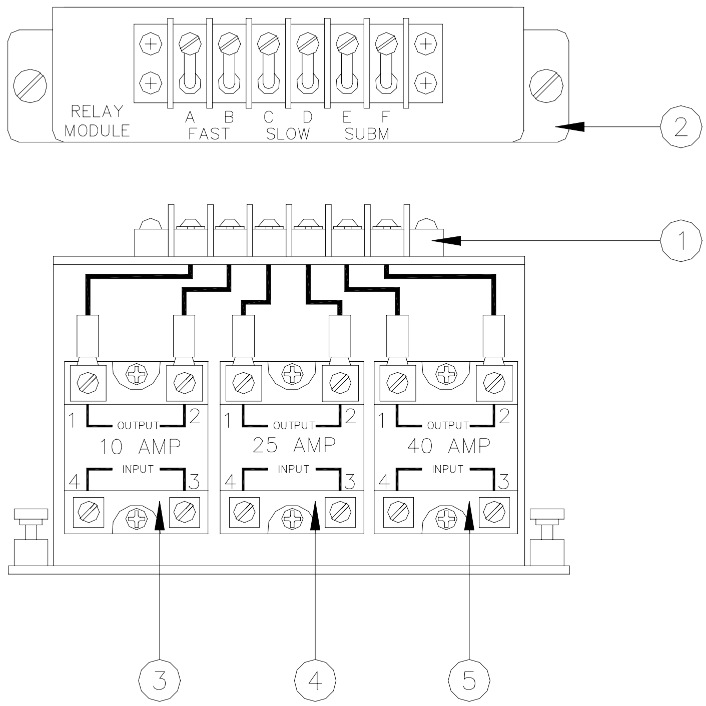


C05040 PCU Power Supply, W&M (Shown)
C05059 PCU Power Supply, Fleet

Item	Part No.	Description
1	C02065	Fuse Holder, Solder Terminal Panel Mount
		OR
	C09546	Fuse Holder, Quick Conn.
2	C04044	Fuse, 1 Amp Slow Blow
5	C32727	Power Supply Enclosure PPC Assy.
6	C08209	Switch, SPDT Rocker Snap In Mount
7	C05320	PCB Assy., PC Power Supply, W&M
	C05049	PCB Assy., PC Power Supply, Fleet
8	C32728	Enclosure Cage, PPC Power Supply
9	C08016	Fuse, Picofuse 1.5 Amp PC Mount
10	C02824	Fuse, 3 Amp Picofuse PC Mount
11	C05041	Cable Assy., power supply line, PPC

*Denotes this is a sub-part used in the preceding assembly

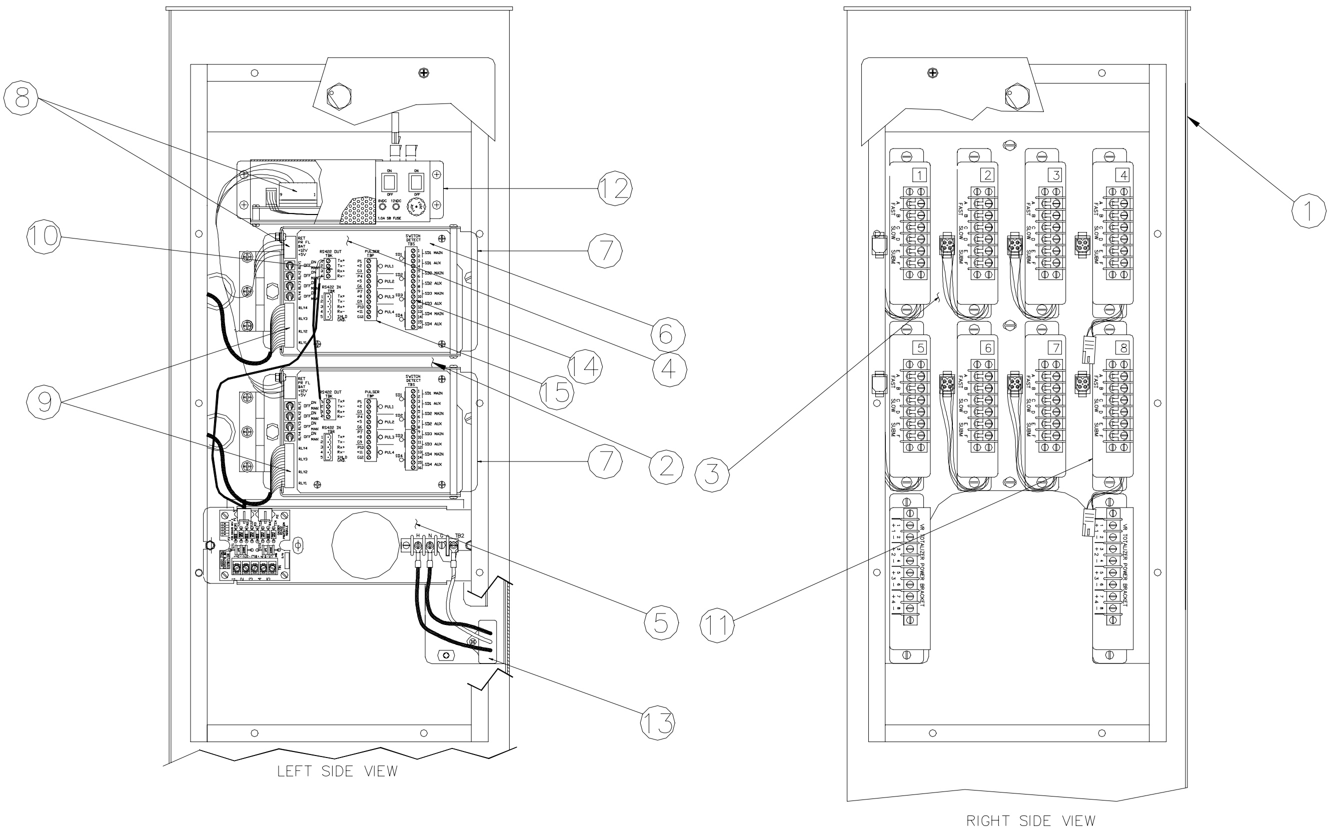
PEDESTAL PUMP CONTROL RELAY MODULE ASSEMBLY



C05035 Pedestal Pump Control Relay Module Assembly

Item	Part No.	Description
1	C05043	PPC Relay Module Power Cable Assy.
2	C05034	PPC Relay Module PEM Hardware Assy.
3	C08530	Relay, Solid State SPST 240VAC 10 Amp, 3-32VDC Control
4	C04477	Relay, Solid State SPST 240VAC 25 Amp, 3-32VDC Control
5	C08746	Relay, Solid State SPST 240VAC 40 Amp, 3-32VDC Control

STANDALONE PUMP CONTROL UNIT PARTS



C07558 Standalone Pump Control Unit, 8 Hose Fleet Mechanical (Fleet)
C07559 Standalone Pump Control Unit, 8 Hose Mechanical (W&M)

Item	Part No.	Description
1	C35499	Pedestal Weld Assembly, Standalone PCU
2	C35491	Bracket Assembly, Power Supply and Cage
3	C35492	Bracket Assembly, Relay
4	C06605	Pump Control Unit, 8 Hose, Weights and Measures
	C07570	Pump Control Unit, 8 Hose, Fleet
5	C06610	TB Bracket Assembly
6	C32731	Plate, Silkscreened
7	C06600	Cage Assembly
8	C06590	Cable Assembly, DC Power
9	C06593	Cable Assembly, Relay Control
10	C06608	Cable Assembly, PCU Comm.
11	C06594	Relay and Cable Assembly, Weights and Measures
	C05052	Relay and Cable Assembly, Fleet
12	C05040	Power Supply Assembly, Weights and Measures
	C05059	Power Supply Assembly, Fleet
13	C06757	Surge Protector, 115V
14	C08237	Connector, 8-position
15	C08528	Connector, 12-position

Section 7

POSTPAY - PREPAY CONSOLE

DESCRIPTION

The GASBOY Postpay-Prepay Console is used to initiate and monitor fuel and non-fuel retail (convenience) sales at the fuel island. The unit is controlled by a microprocessor and communicates to the GASBOY site controller via a direct RS-422 connection.

There are several models of the postpay-prepay console: Postpay-Prepay I, Postpay-Prepay IA, Postpay-Prepay II, Postpay-Prepay IA+, and Postpay-Prepay II+. All consoles have the following standard features:

- Ability to control up to 16 pumps or dispensers.
- A 20-character alphanumeric display
- Pump status LED's which provide the operator with current information regarding the site.
- Full-travel keys are used in the operation of the unit.
- An ABA track 2 magnetic stripe reader for use in reading magnetic stripe cards for credit or debit purchases.

In addition, individual console types have the following features:

Postpay-Prepay I
2-position Manager's Keyswitch, Version 1.4 or below program, power supply C05423. Works with Site Controller I.

Postpay-Prepay IA
2-position Manager's Keyswitch, Version 1.4, 5.0, 5.1, or 5.2 program, power supply C05423, cash drawer connector, cash drawer interface PCB, customer display connector. Works with Site Controller I or II.

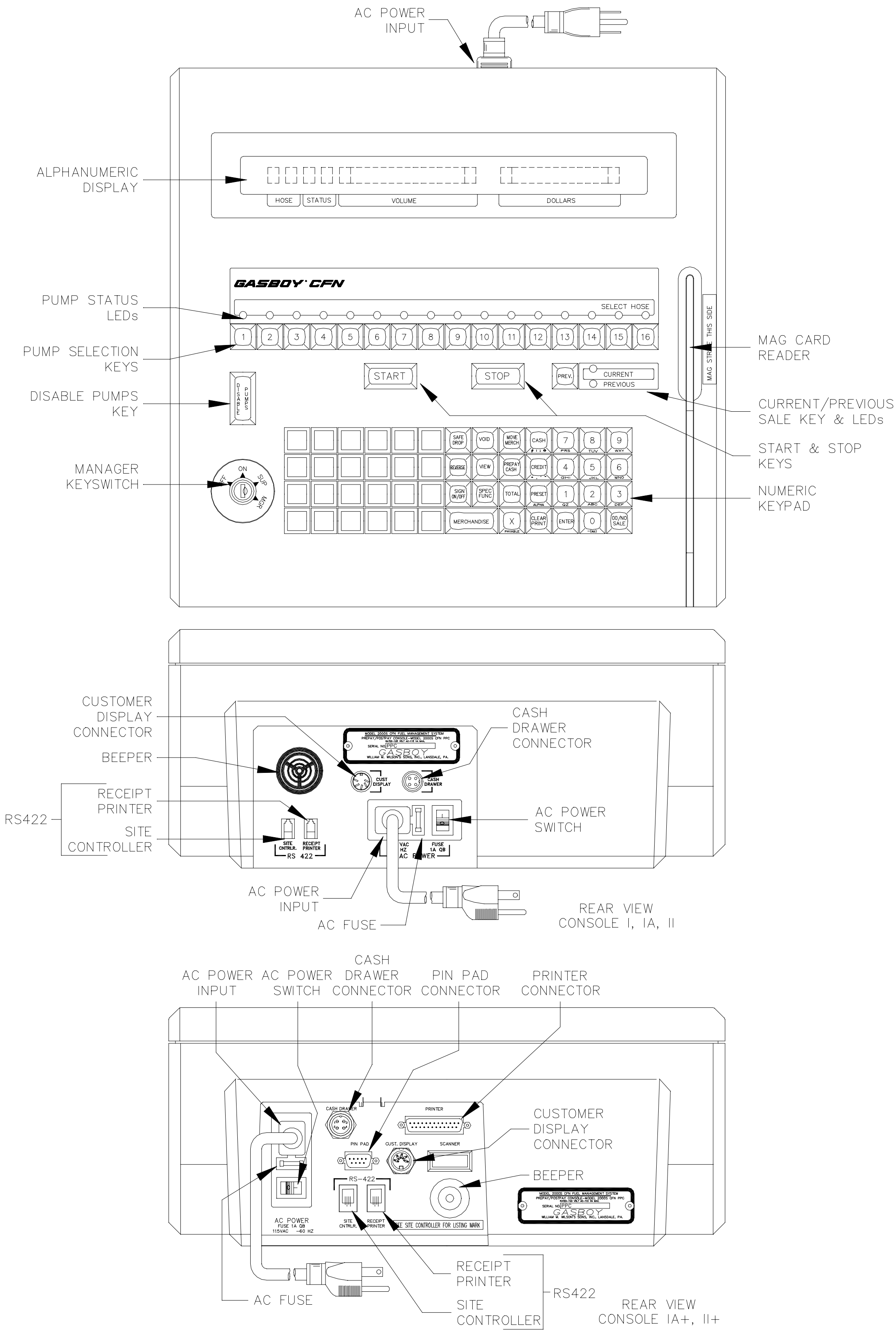
Postpay-Prepay II
4-position Manager's Keyswitch, Version 5.0, 5.1, or 5.2 program, power supply C05423, cash drawer connector, cash drawer interface PCB, customer display connector, extra keys for non-fuel transactions. Works only with Site Controller II.

Postpay-Prepay IA+
Upgraded CPU board C05836, Version 5.3 or above program for SCII or V1.5 or above program for SC I, cash drawer connector (cash drawer interface PCB is not required for this console type; it is incorporated onto the console CPU board), customer display connector, PIN pad connector, printer connector for parallel or serial, upgraded power supply C09053, and a 2-position Manager's keyswitch.

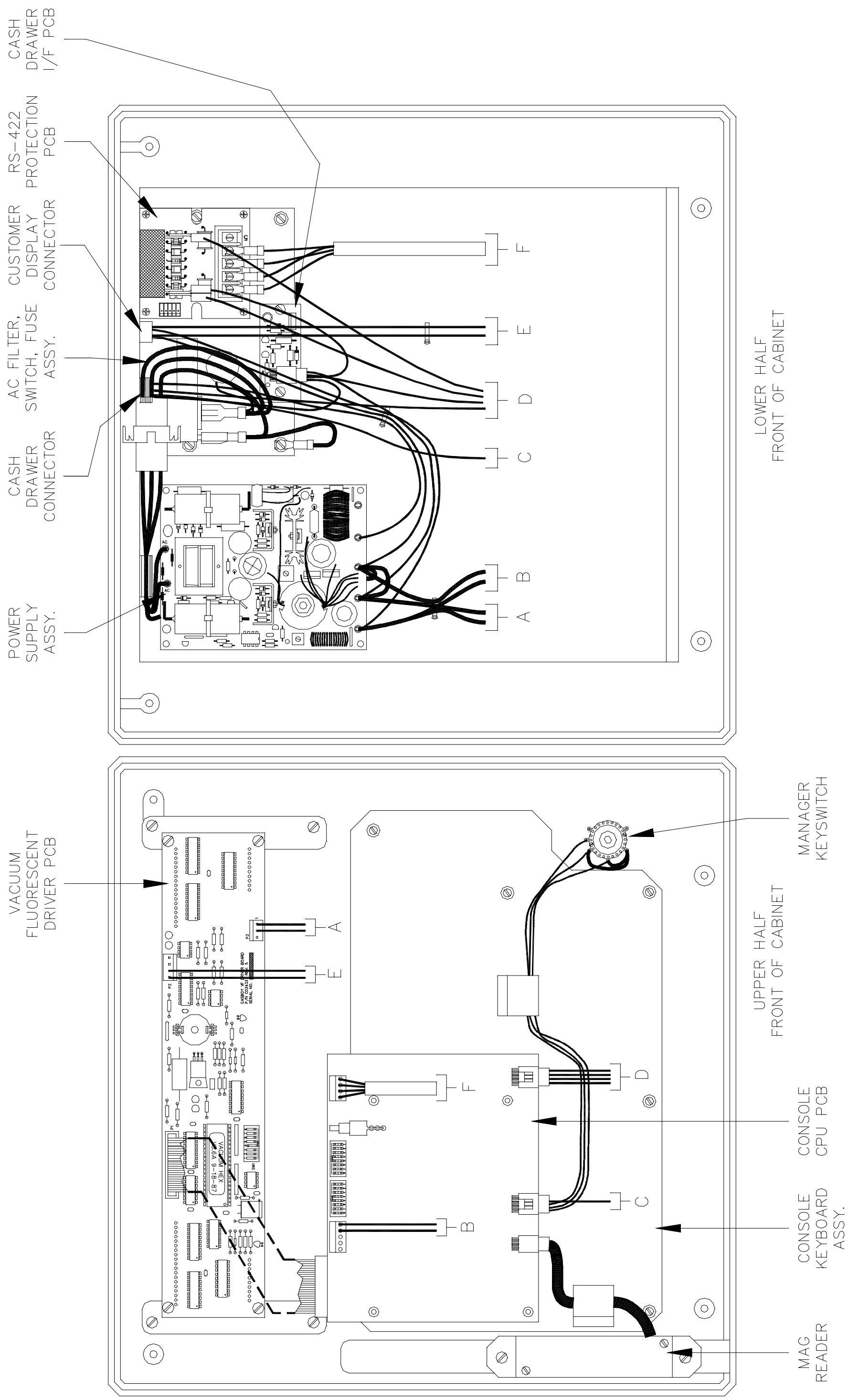
Postpay-Prepay II+ or CheckPoint
Upgraded CPU board C05836, Version 5.3 or above program, cash drawer connector (cash drawer interface PCB is not required for this console type; it is incorporated onto the console CPU board), customer display connector, PIN pad connector, printer connector for parallel or serial, upgraded power supply C09053, extra keys for non-fuel transactions (II+ only), a fully expanded keyboard for merchandise (Checkpoint only) and a 4-position Manager's keyswitch. Works only with Site Controller II.

This section contains information for all console types. If you are not sure of your console type, check the drawings on the next page. If you are still not sure, use self-test 0 to display the software version. Accessing self-test mode is described later in this section. All + version consoles will have software version 5.3 (SC II) or 1.5 (SC I).

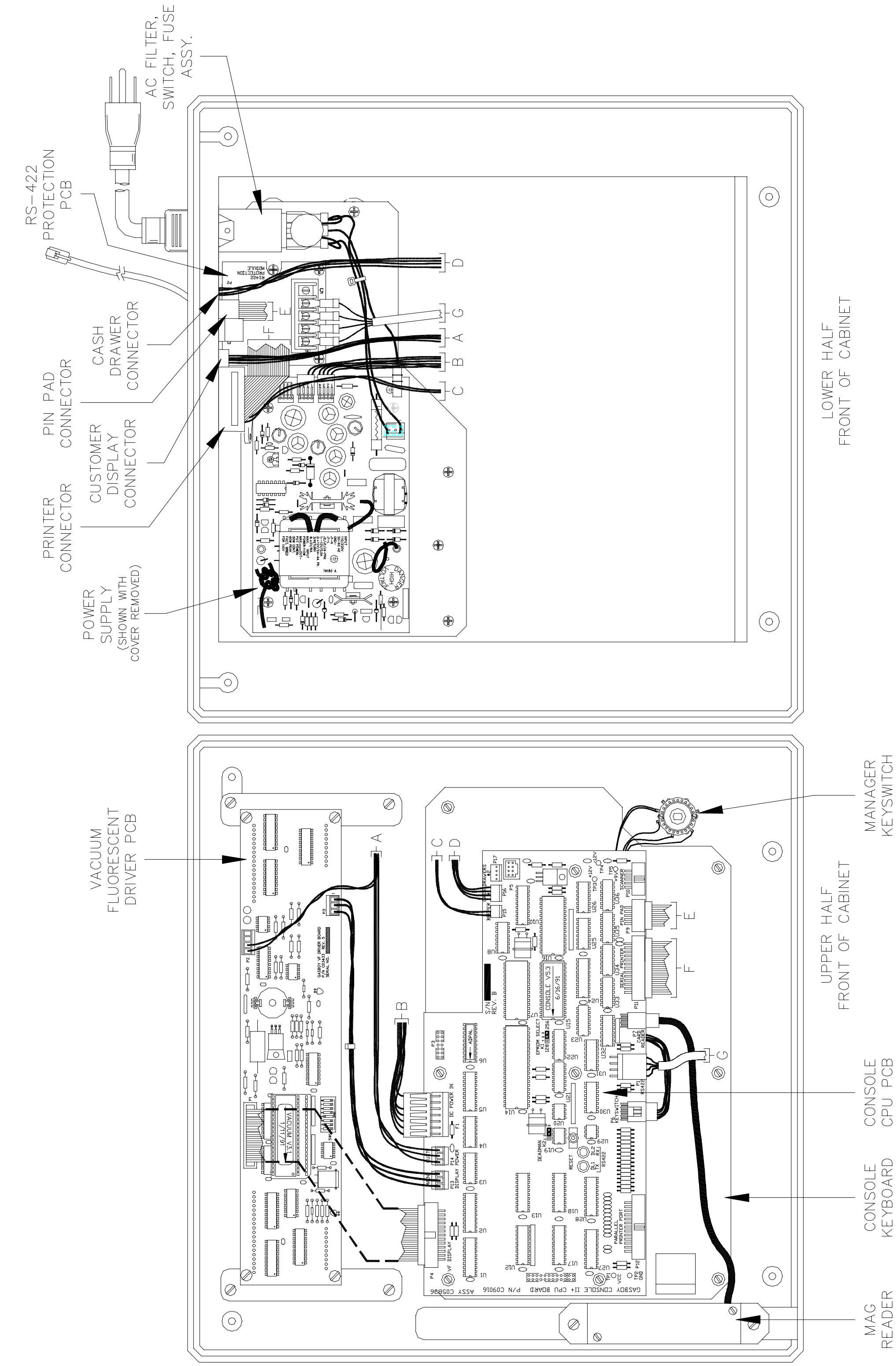
Layout (Outside View)



Layout (Inside View) - Consoles I, IA, and II



Layout (Inside View) - Consoles IA+ and II+

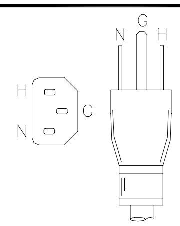


WIRING

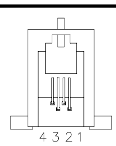
All field wiring is made to the unit by plug-in connectors. The AC power for the unit comes from the AC power plug. The RS-422 communication comes through the phone cable that is connected to the RS-422 junction box. Communication for the postpay-prepay optional devices goes through connectors designated for those devices. See the *CFN SCI or SCII Installation Manual* for detailed wiring instructions.

Connectors For All Consoles

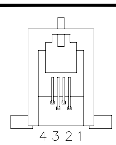
AC Power

Pinout	Pin	Function	Voltage
	H	AC hot input	115 VAC
	N	AC neutral input	AC neutral
	G	AC ground input	AC ground

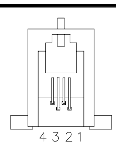
RS-422 Communication - Site Controller

Pinout	Pin	Function		Voltage
	1	RS–422 Tx+	To Site	+5 VDC signal
	2	RS–422 Tx–	Controller	between pins 1 & 2
	3	RS–422 Rx+	From Site	+5 VDC signal
	4	RS–422 Rx–	Controller	between pins 3 & 4

RS-422 Communication - Star Receipt Printer

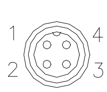
Pinout	Pin	Function		Voltage
	1	Not Used		
	2	Not Used		
	3	RS–422 Rx+	To	+5 VDC signal
	4	RS–422 Rx–	Star Printer	between pins 3 & 4

RS-422 Communication - Epson Receipt Printer

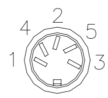
Pinout	Pin	Function		Voltage
	1	RS–422 Tx+	From	+5 VDC signal
	2	RS–422 Tx–	Aux Devices	between pins 1 & 2
	3	RS–422 Rx+	To	+5 VDC signal
	4	RS–422 Rx–	Aux Devices	between pins 3 & 4

Connectors for Consoles I, IA, and II

Cash Drawer (Optional)

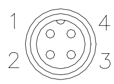
Pinout	Pin	Color	Function	Voltage
	1	Red	+12 VDC to solenoid cash drawer latch	+12 VDC unregulated
	2	Green	Cash drawer status to CPU	0 VDC – Closed
	3	Gray	DC ground	DC ground
	4	Violet	Solenoid drive	0 VDC – Energized

Customer Display (Optional)

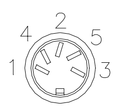
Pinout	Pin	Color	Function		Voltage
	1	Black	DC ground		DC ground
	2	Orange	+5 VDC		+5 VDC
	3	White	RS–422 Rx+	To Customer Display	+5 VDC signal between pins 3 & 4
	4	Green	RS–422 Rx–		
	5	–	N/C		

Connectors for Consoles IA+ and II+

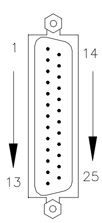
Cash Drawer

Pinout	Pin	Color	Function	Voltage
	1	Red	+12 VDC to solenoid cash drawer latch	+12 VDC unregulated
	2	Yellow	Cash drawer status to CPU	0 VDC – Closed
	3	Green	DC ground	DC ground
	4	Black	Solenoid drive	0 VDC – Energized

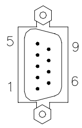
Customer Display

Pinout	Pin	Color	Function		Voltage
	1	Black	DC ground		DC ground
	2	Orange	+5 VDC		+5 VDC
	3	White	RS–422 Rx+	From Console Loop	+5 VDC signal between pins 3 & 4
	4	Green	RS–422 Rx–		
	5	Gray	External reset		0 VDC – active

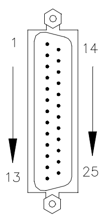
RS-232 Serial Printer

Pinout	Pin	Function	Voltage
	2	Transmit data	±12 VDC signal output
	3	Receive data	±12 VDC signal input
	4	RTS – Request to send	+12 VDC – On output
	5	CTS – Clear to send	+12 VDC – On input
	7	DC ground	DC ground
	8	FAULT – Printer error condition	+12 VDC – On input
	20	DTR – Data terminal ready	+12 VDC – On output
	Pins 1, 6, 9–19, 21–25 not used		

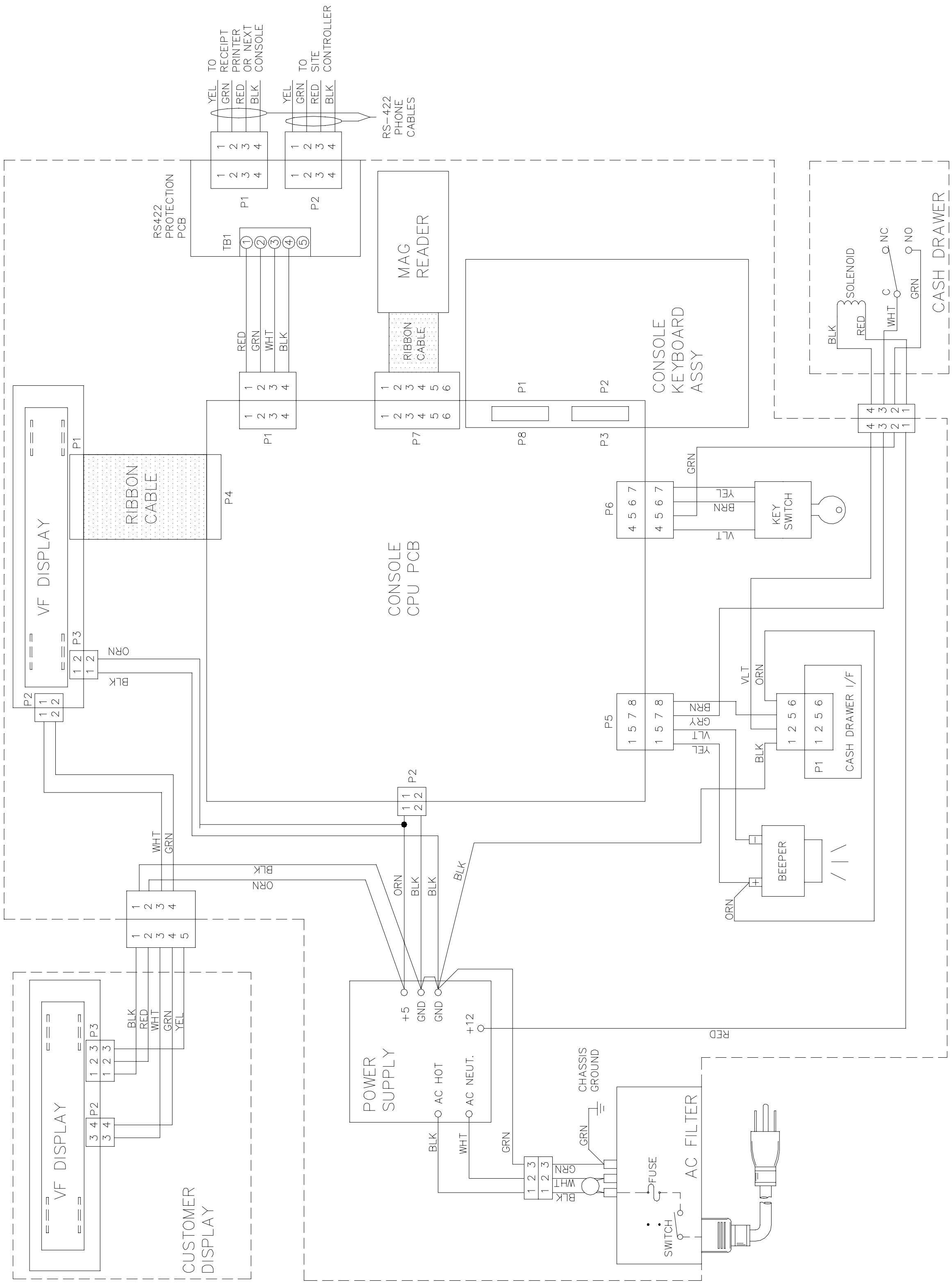
Pin Pad

Pinout	Pin	Color	Function	Voltage
	2	Orange	Receive data	⊓⊔⊓ ±12 VDC signal input
	3	Green	Transmit data	⊓⊔⊓ ±12 VDC signal output
	5	White	DC ground	DC ground
	7	Yellow	RTS – Request to send	+12 VDC – On output
	8	Blue	CTS – Clear to send	+12 VDC – On input
	9	Gray	+9 VDC out	+9 VDC output
	1,4,6		N/C	

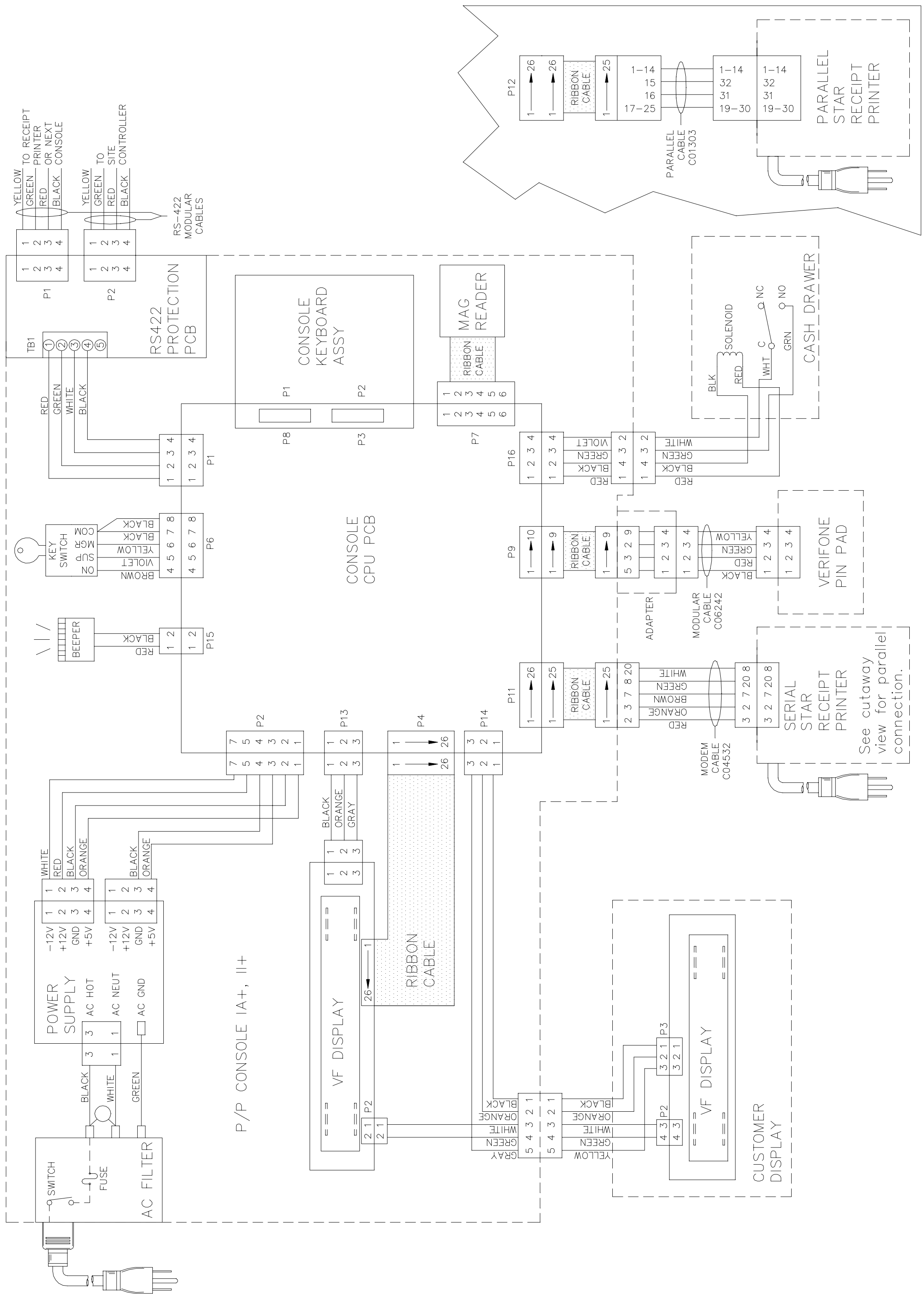
Centronics Parallel Printer Port

Pinout	Pin	Function	Voltage
	1	$\overline{\text{STROBE}}$ – Write data to printer	0 VDC signal – on
	2	PD0 – Printer data 0	⊓⊔⊓ +5 VDC signal – on
	3	PD1 – Printer data 1	⊓⊔⊓ +5 VDC signal – on
	4	PD2 – Printer data 2	⊓⊔⊓ +5 VDC signal – on
	5	PD3 – Printer data 3	⊓⊔⊓ +5 VDC signal – on
	6	PD4 – Printer data 4	⊓⊔⊓ +5 VDC signal – on
	7	PD5 – Printer data 5	⊓⊔⊓ +5 VDC signal – on
	8	PD6 – Printer data 6	⊓⊔⊓ +5 VDC signal – on
	9	PD7 – Printer data 7	⊓⊔⊓ +5 VDC signal – on
	10	$\overline{\text{ACK}}$ – Not used	
	11	BUSY – Printer busy	+5 VDC signal – on
	12	PAPER OUT – Printer out of paper	+5 VDC signal – on
	13	SLCT – Printer on–line	+5 VDC signal – on
	14	DC ground	DC ground
	15	$\overline{\text{FAULT}}$ – Printer error condition	0 VDC signal – on
	16	$\overline{\text{INIT}}$ – Initialize	0 VDC signal – on
	17–25	DC ground	DC ground

Chassis Wiring for Consoles I, IA, and II



Chassis Wiring for Consoles IA+ and II+

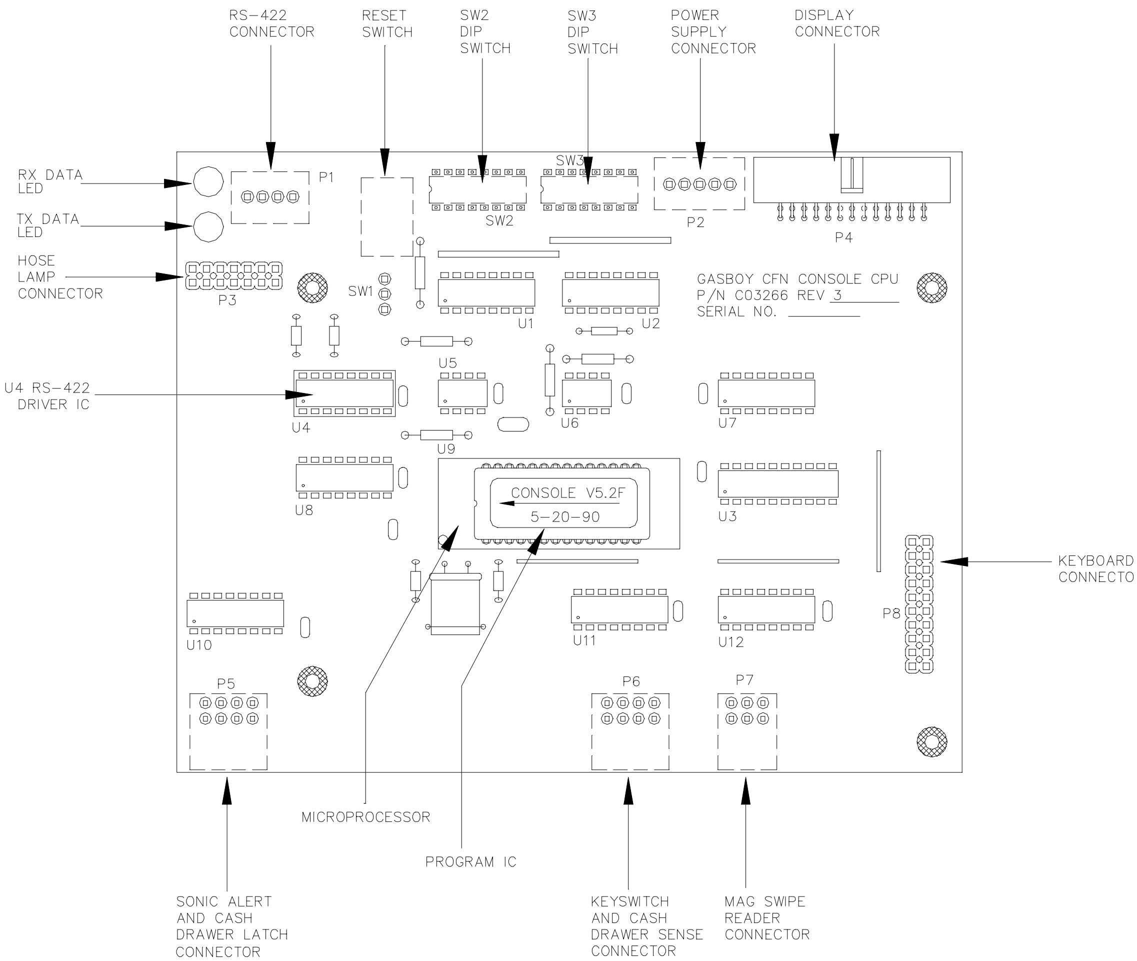


CONSOLE CPU PCB (C04832) FOR CONSOLES I, IA AND II

The console CPU PCB is the heart of the postpay-prepay console. This PCB:

- processes all console data
- communicates to the site controller via the RS-422 line
- controls the pump status LED's
- controls the data sent to the VF display
- controls the beeper
- controls the cash drawer PCB
- monitors data from the keyboard
- monitors data from the mag reader
- monitors the manager keyswitch
- monitors the status of the cash drawer
- provides diagnostic LED's

Layout



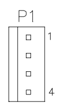
LED Indicators

LED indicators are provided to allow you to monitor the console's operation.

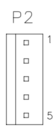
LED	Function
L1	RS−422 Rx from SC
L2	RS−422 Tx to SC

Connectors

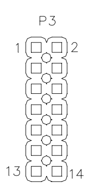
P1 - RS-422 Communication

Pinout	Pin	Wire	Function		Voltage
	1	Red	RS−422 Tx+	To Site Controller	+5 VDC signal between pins 1 & 2
	2	Green	RS−422 Tx−		
	3	White	RS−422 Rx+	From Site Controller	+5 VDC signal between pins 3 & 4
	4	Black	RS−422 Rx−		

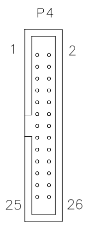
P2 - Power Supply Input

Pinout	Pin	Wire	Function	Voltage
	1	Orange	+5 VDC in	+5 VDC
	2	Black	DC ground	DC ground
	3		N/C	
	4		$\overline{\text{EXRESET}}$ − not used	0 VDC − on
	5		$\overline{\text{PWR FAIL}}$ − not used	0 VDC − on

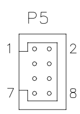
P3 - Hose LED Interface Lines

Pinout	Pin	Function	Voltage
	1,2	DC ground	DC ground
	3	$\overline{\text{CLR}}$ − used to turn off all LED indicators	0 VDC
	4	N/C	
	5	D1 − Data Input determines if LED is On or Off	+5 VDC sig−on
	6	$\overline{\text{CS1}}$ − Chip Select for pump 5−8 LEDs	0 VDC
	7	A2 − Address 2	+5 VDC sig−on
	8	$\overline{\text{CS0}}$ − Chip Select for pump 1−4 LEDs	0 VDC
	9	A1 − Address 1	+5 VDC sig−on
	10	$\overline{\text{CS3}}$ − Chip Select for pump 13−16 LEDs	0 VDC
	11	A0 − Address 0	+5 VDC sig−on
	12	$\overline{\text{CS2}}$ − Chip Select for pump 9−12 LEDs	0 VDC
	13,14	+5 VDC	+5 VDC

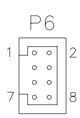
P4 - VF Display

Pinout	Pin	Function	Voltage
	1	$\overline{\text{TO}}$ – N/C	
	2–26	DC ground (even pins only)	DC ground
	3	$\overline{\text{CS}}$ – Chip Select – controls R\W to display	0 VDC sig–on
	5	$\overline{\text{RD}}$ – Read enable from the display	0 VDC sig–on
	7	A0 – Read request to the display	+5 VDC sig–on
	9	$\overline{\text{WD}}$ – Write enable to the display	0 VDC sig–on
	11	D0 – Data 0	+5 VDC sig–on
	13	D1 – Data 1	+5 VDC sig–on
	15	D2 – Data 2	+5 VDC sig–on
	17	D3 – Data 3	+5 VDC sig–on
	19	D4 – Data 4	+5 VDC sig–on
	21	D5 – Data 5	+5 VDC sig–on
	23	D6 – Data 6	+5 VDC sig–on
	25	D7 – Data 7	DC ground

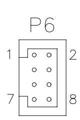
P5 - Beeper, Cash Drawer Latch

Pinout	Pin	Wire	Function	Voltage
	1	Yellow	+5VDC out to Sonalert Beeper	+5 VDC
	4		N/C	
	5	Violet	$\overline{\text{Sonic Alert drive}}$	0 VDC – on
	7	Gray	DC ground to cash drawer	DC ground
	8	Brown	Cash Drawer latch drive	0 VDC – on
	2,3,6		N/C	

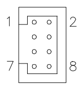
P6 - Keyswitch, Cash Drawer Sense P-P I

Pinout	Pin	Wire	Function	Voltage
	1	Gray	Normally Closed position of keyswitch	0 VDC in run mode
	4	Violet	Normally Open position of keyswitch	0 VDC on in cmd mode
	5	Green	Cash Drawer Sense – opened or closed	0 VDC – drawer closed
	7	Yellow	DC ground to common of keyswitch	DC ground
	2,3,6,8		N/C	

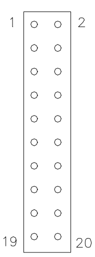
P6 - Keyswitch, Cash Drawer Sense P-P II

Pinout	Pin	Wire	Function	Voltage
	4	Violet	ON position of keyswitch	0 VDC – Active
	5	Green	Cash drawer sense – opened or closed	0 VDC – Closed
	6	Brown	SUPERVISOR position of keyswitch	0 VDC – Active
	7	Yellow	DC ground to common of keyswitch	DC ground
	1,2,3,8		N/C	

P7 - Mag Reader

Pinout	Pin	Wire	Function	Voltage
P7 	1	Red	Strobe	+5 VDC sig–on
	2	Brown	Data from mag reader	+5 VDC sig–on
	3	Green	DC ground	DC ground
	4		DC ground	DC ground
	5	Orange	Card Sense	0 VDC – on
	6	Yellow	+5 VDC	+5 VDC

P8 - Keyboard

Pinout	Pin	Function	Voltage
P8 	1	D3 – Keyboard Data 3	0 VDC on
	2	D4 – Keyboard Data 4	0 VDC on
	3	D2 – Keyboard Data 2	0 VDC on
	4	D5 – Keyboard Data 5	0 VDC on
	5	D1 – Keyboard Data 1	0 VDC on
	6	D6 – Keyboard Data 6	0 VDC on
	7	D0 – Keyboard Data 0	0 VDC on
	8	D7 – Keyboard Data 7	0 VDC on
	9	L17 – Current LED drive	0 VDC on
	10	R7 – Keyboard Strobe 7	0 VDC on
	11	L18 – Previous LED drive	0 VDC on
	12	R6 – Keyboard Strobe 6	0 VDC on
	13	R0 – Keyboard Strobe 0	0 VDC on
	14	R5 – Keyboard Strobe 5	0 VDC on
	15	R1 – Keyboard Strobe 1	0 VDC on
	16	R4 – Keyboard Strobe 4	0 VDC on
	17	R2 – Keyboard Strobe 2	0 VDC on
	18	R3 – Keyboard Strobe 3	0 VDC on
	19,20	+5 VDC	+5 VDC

Switches Postpay-Prepay Console I

The following switches apply only to the postpay-prepay console I. The version of software on the CPU PCB determines if the console is a P-P I or a P-P II. See the following section for postpay-prepay II switches and settings.

SW1 - Reset Switch P-P I

The Reset switch starts a hardware and software reset of the CPU PCB. The SW2 and SW3 switch settings are read when a reset occurs (and at power up). This switch should be pressed whenever switch settings are changed.

Switch	Function
SW1	Push to reset CPU PCB

SW2 - Baud Rate Switches P-P I

These switches select the baud rate for communication on the RS-422 loop. They must always be set for 9600 baud.

Baud Rate	SW2-1 BR1	SW2-2 BR2
Not Used	Open	Open
9600	Open	Closed
1200	Closed	Open
300	Closed	Closed

SW2 - Address Switches P-P I

An address must be set to identify the console when it is connected to the GASBOY CFN Series Fuel Management System. This address is a unique identifier if two postpay-prepay consoles are connected on the same RS-422 line. The physical wiring order does not have to correspond with the address order, that is the first console on the RS-422 line does not have to be address 1.

Address	SW2-7 ADDR1	SW2-8 ADDR2
1	Open	Open
2	Open	Closed

SW2 & SW3 - Miscellaneous Switches   P-P I

Switch	Function	
SW2–3	CRC	Closed=CRC enabled
SW2–4	BEEP	Closed=Beeper enabled
SW2–5	CASH	Closed=Cash drawer, Open=No cash drawer
SW2–6	UNITS	Closed=Volume units in gallons, Open=Volume units in liters
SW3–1	DECP	Open=3 decimal places displayed for quantity
SW3–2	DEAD	Open=Deadman timer enabled
SW3–3		Not used
SW3–4	SELF	Open=Normal run mode, Closed=Test mode
SW3–5	P4.0	Open=Pre V4.0 SC I software, Close=V4.0 & after SC I software
SW3–6	QUIET	Open=Standard alert beeps
SW3–7	COLR	Open=Standard LED colors
SW3–8	ALRT	Open=Off–hook beeper enabled

CRC This switch should always be closed to allow data integrity checks to be performed on the data going between the Console and the site controller.

BEEP In the closed position, the console beeper is enabled to signal various status and error conditions. In the open position, the beeper is disabled.

CASH This switch must be closed if a cash drawer is present. It should open if a cash drawer is not present.

UNITS This switch must be closed if volume is measured in gallons. It should be open if volume is measured in liters. This affects the volume amount attached to the amount pumped display.

DECP In the open position, 3 decimal places are displayed for pump quantity. In the closed position, 2 decimal places are displayed for pump quantity and rounding occurs (5 and over rounds up, 4 and lower rounds down).

DEAD This switch enables the deadman timer. It should always be open.

SELF In the open position, the console is in the normal mode of operation. In the closed position, the console enters the self-test (diagnostic) mode.

P4.0 In the open position, the console will run with site controller software versions prior to V4.0. In the closed position, the console will run with site controller software version V4.0 and higher. This compensates for changes in the communication protocol which occurred in V4.0.

QUIET In the open position, the off-hook alert beeps will occur at their standard intensity and duration. In the closed position, the off-hook alert beeps will be quieter and shorter in duration.

COLR In the open position, the pump status LED's will be red to signal the nozzle is off-hook but the transaction is not yet approved and green for all other indications. In the closed position, the colors are reversed.

ALRT In the open position, the off-hook alert beep is enabled. In the closed position, the off-hook beep is disabled.

Switches Postpay-Prepay Console II

The following switches apply only to the postpay-prepay console II. The version of software on the CPU PCB determines if the console is a P-P I or a P-P II.

SW1 - Reset Switch P-P II

The Reset switch starts a hardware and software reset of the CPU PCB. The SW2 and SW3 switch settings are read when a reset occurs (and at power up). This switch should be pressed whenever switch settings are changed.

Switch	Function
SW1	Push to reset CPU PCB

SW2 - Address Switches P-P II

An address must be set to identify the console when it is connected to the GASBOY CFN Series Fuel Management System. This address is a unique identifier if two postpay-prepay consoles are connected on the same RS-422 line. The physical wiring order does not have to correspond with the address order, that is, the first console on the RS-422 line does not have to be address 1.

Address	SW2–7	SW2–8
	ADDR1	ADDR2
1	Open	Open
2	Open	Closed
3	Closed	Open
4	Closed	Closed

SW2 & SW3 - Miscellaneous Switches   P-P II

Switch	Function	
SW2-1	DECP	Open=No decimal point in $, Closed=decimal point
SW2-2		Not used
SW2-3		Not used
SW2-4	BEEP	Closed=Beeper enabled
SW2-5	CASH	Closed=Cash drawer, Open=No cash drawer
SW2-6	DRWR	Close=Cash drawer active low Open=Active high
SW3-1	DECP	Open=period for dec. pt., Closed=comma for dec. pt.
SW3-2	DEAD	Open=Deadman timer enabled
SW3-3		Not used
SW3-4	SELF	Open=Normal run mode, Closed=Test mode
SW3-5	OLD	Open=Console accepts 4-position keyswitch
SW3-6	QUIET	Open=Standard alert beeps
SW3-7	COLR	Open=Standard LED colors
SW3-8	ALRT	Open=Off-hook beeper enabled

DECP For switch 2-1. In the open position, the display omits the decimal point in the dollars display and up to 8 digits can be entered. This is to accommodate the Mexican peso. In the closed position, the decimal point is used, and up to 7 digits can be entered.

BEEP In the closed position, the console beeper is enabled to signal various status and error conditions. In the open position, the beeper is disabled.

CASH This switch must be closed if a cash drawer is present. It should open if a cash drawer is not present.

DRWR In the open position, the cash drawer is active low. In the closed position, the cash drawer is active high. Each cash drawer contains a sense switch to determine whether the drawer is open or closed. If the sense switch is closed when the cash drawer is closed, it is active low. If the sense switch is open when the cash drawer is closed, it is active high.

DECP For switch 3-1. Indicates the character to be used for the decimal point. In the open position, a period is used, in the closed position, a comma is used.

DEAD This switch enables the deadman timer. It should always be open.

SELF In the open position, the console is in the normal mode of operation. In the closed position, the console enters the self-test (diagnostic) mode.

OLD In the closed position, the console accepts the old 2-position manager keyswitch. In the open position, the console accepts the 4-position keyswitch.

QUIET In the open position, the off-hook alert beeps will occur at their standard intensity and duration. In the closed position, the off-hook alert beeps will be quieter and shorter in duration.

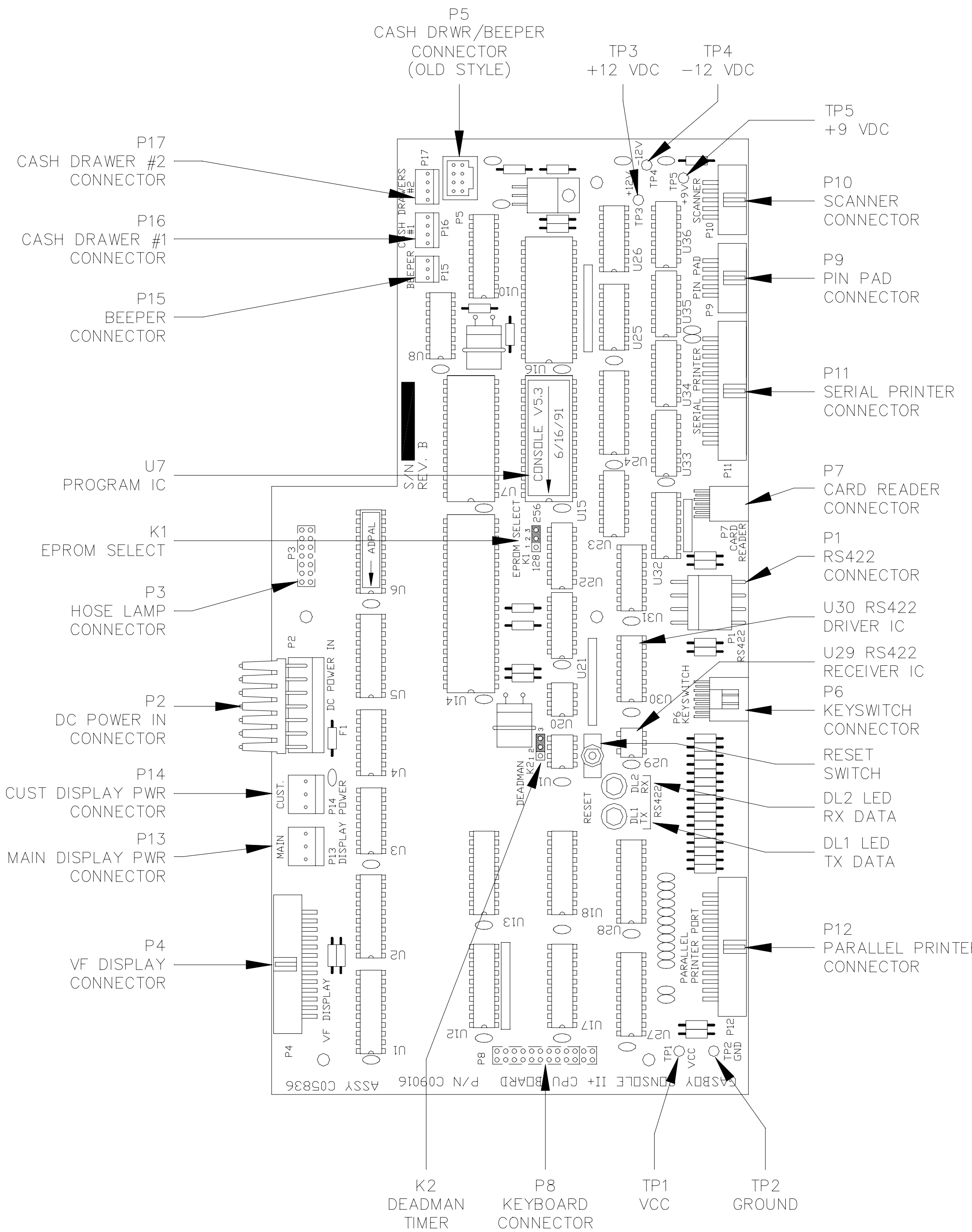
COLR In the open position, the pump status LED's will be red to signal the nozzle is off-hook but the transaction is not yet approved and green for all other indications. In the closed position, the colors are reversed.

ALRT In the open position, the off-hook alert beep is enabled. In the closed position, the off-hook beep is disabled.

CONSOLE CPU PCB (C05836) FOR CONSOLES IA+ AND II+

The console CPU PCB is the heart of the Postpay-prepay console. This PCB:

- processes all the console data
- communicates to the site controller via the RS-422 line
- communicates directly to either a parallel or serial printer
- communicates directly to the PIN pad via an RS-232 line
- controls the pump status LED's
- controls the data sent to the VF display
- controls the beeper
- controls the cash drawer PCB
- monitors data from the keyboard
- monitors data from the mag reader
- monitors the manager keyswitch
- monitors the status of the cash drawer
- provides diagnostic LED's



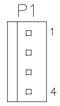
LED Indicators

LED indicators are provided to allow you to monitor the console's operation.

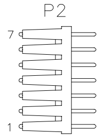
LED	Function
DL1	RS−422 Tx to SC
DL2	RS−422 Rx from SC

Connectors

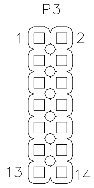
P1 - RS-422 Communication

Pinout	Pin	Wire	Function		Voltage
P1 	1	Red	RS−422 Tx+	To Site Controller	+5 VDC signal between pins 1 & 2
	2	Green	RS−422 Tx−		
	3	White	RS−422 Rx+	From Site Controller	+5 VDC signal between pins 3 & 4
	4	Black	RS−422 Rx−		

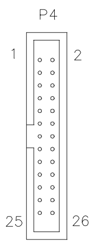
P2 - Power Supply Input

Pinout	Pin	Wire	Function	Voltage
P2 	1	Orange	+5 VDC in	+5 VDC
	2	Black	DC ground	DC ground
	3	Orange	+5 VDC in	+5 VDC
	4	Black	DC ground	DC ground
	5	Red	+12 VDC in	+12 VDC
	6	N/C		
	7	White	−12 VDC in	−12 VDC

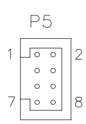
P3 - Hose LED Interface Lines

Pinout	Pin	Function	Voltage
P3 	1,2	DC ground	DC ground
	3	$\overline{CLR}$ − used to turn off all LED indicators	0 VDC
	4	N/C	
	5	D1 − Data Input determines if LED is On or Off	+5 VDC sig−on
	6	$\overline{CS1}$ − Chip Select for pump 5−8 LEDs	0 VDC
	7	A2 − Address 2	+5 VDC sig−on
	8	$\overline{CS0}$ − Chip Select for pump 1−4 LEDs	0 VDC
	9	A1 − Address 1	+5 VDC sig−on
	10	$\overline{CS3}$ − Chip Select for pump 13−16 LEDs	0 VDC
	11	A0 − Address 0	+5 VDC sig−on
	12	$\overline{CS2}$ − Chip Select for pump 9−12 LEDs	0 VDC
	13,14	+5 VDC	+5 VDC

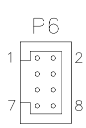
P4 - VF Display

Pinout	Pin	Function	Voltage
	1	N/C	
	2–26	DC ground (even pins only)	DC ground
	3	$\overline{CS}$ – Selects the display	0 VDC sig–on
	5	$\overline{RD}$ – Read enable from the display	0 VDC sig–on
	7	A0 – Read request to the display	+5 VDC sig–on
	9	$\overline{WD}$ – Write enable to the display	0 VDC sig–on
	11	D0 – Data 0	+5 VDC sig–on
	13	D1 – Data 1	+5 VDC sig–on
	15	D2 – Data 2	+5 VDC sig–on
	17	D3 – Data 3	+5 VDC sig–on
	19	D4 – Data 4	+5 VDC sig–on
	21	D5 – Data 5	+5 VDC sig–on
	23	D6 – Data 6	+5 VDC sig–on
	25	D7 – Data 7	DC ground

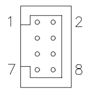
P5 - Beeper, Cash Drawer Latch

Pinout	Pin	Function	Voltage
	1	+5VDC out to Sonalert Beeper	+5 VDC
	4	Cash drawer sense	0 VDC – closed
	5	$\overline{\text{Sonic Alert drive}}$	0 VDC – on
	7	DC ground to cash drawer	DC ground
	8	Cash Drawer latch drive	0 VDC – on
	2,3,6	N/C	

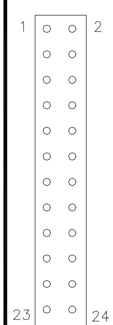
P6 - Keyswitch, Cash Drawer Sense

Pinout	Pin	Wire	Function	Voltage
	4	Brown	ON position of keyswitch	0 VDC – Active
	5	Violet	SUPERVISOR position of keyswitch	0 VDC – Active
	6	Yellow	MANAGER position of keyswitch	0 VDC – Active
	7	Black	DC ground to common of keyswitch	DC ground
	8	Black	Type of keyswitch	DC ground
	1,2,3		N/C	

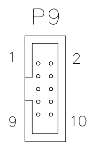
P7 - Mag Reader

Pinout	Pin	Wire	Function	Voltage
P7 	1	Red	Strobe	+5 VDC sig–on
	2	Brown	Data from mag reader	+5 VDC sig–on
	3	Green	DC ground	DC ground
	4		DC ground	DC ground
	5	Orange	N/C	
	6	Yellow	+5 VDC	+5 VDC

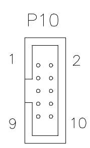
P8 - Keyboard

Pinout	Pin	Function	Voltage
P8 	1	D3 – Keyboard Data 3	0 VDC on
	2	D4 – Keyboard Data 4	0 VDC on
	3	D2 – Keyboard Data 2	0 VDC on
	4	D5 – Keyboard Data 5	0 VDC on
	5	D1 – Keyboard Data 1	0 VDC on
	6	D6 – Keyboard Data 6	0 VDC on
	7	D0 – Keyboard Data 0	0 VDC on
	8	D7 – Keyboard Data 7	0 VDC on
	9	L17 – Current LED drive	0 VDC on
	10	R7 – Keyboard Strobe 7	0 VDC on
	11	L18 – Previous LED drive	0 VDC on
	12	R6 – Keyboard Strobe 6	0 VDC on
	13	R0 – Keyboard Strobe 0	0 VDC on
	14	R5 – Keyboard Strobe 5	0 VDC on
	15	R1 – Keyboard Strobe 1	0 VDC on
	16	R4 – Keyboard Strobe 4	0 VDC on
	17	R2 – Keyboard Strobe 2	0 VDC on
	18	R3 – Keyboard Strobe 3	0 VDC on
	19,20	+5 VDC	+5 VDC
	21	R8 – Keyboard Strobe 8	0 VDC on
	22	R9 – Keyboard Strobe 9	0 VDC on
	23	R10 – Keyboard Strobe 10	0 VDC on
	24	R11 – Keyboard Strobe 11	0 VDC on

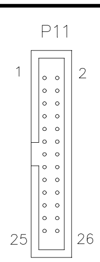
P9 - PIN Pad Port

Pinout	Pin	Color	Function	Voltage
	3	Orange	Receive data	⊓⊔⊓ ±12 VDC signal input
	4	Yellow	RTS – Request to send	+12 VDC – On output
	5	Green	Transmit data	⊓⊔⊓ ±12 VDC signal output
	6	Blue	CTS – Clear to send	+12 VDC – On input
	8	Gray	+9 VDC out	+9 VDC output
	9	White	DC ground	DC ground
	1,2,7,10		N/C	

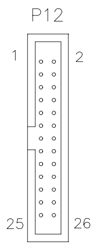
P10 - UPC Scanner Port

Pinout	Pin	Color	Function	Voltage
	3	Orange	Receive data	⊓⊔⊓ ±12 VDC signal input
	4	Yellow	RTS – Request to send	+12 VDC – On output
	5	Green	Transmit data	⊓⊔⊓ ±12 VDC signal output
	6	Blue	CTS – Clear to send	+12 VDC – On input
	8	Gray	+12 VDC out	+12 VDC output
	9	White	DC ground	DC ground
	1,2,7,10		N/C	

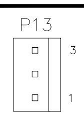
P11- Serial Printer Port

Pinout	Pin	Function	Voltage
	3	Transmit data	⊓⊔⊓ ±12 VDC signal output
	5	Receive data	⊓⊔⊓ ±12 VDC signal input
	7	RTS – Request to send	+12 VDC – On output
	9	CTS – Clear to send	+12 VDC – On input
	13	DC ground	DC ground
	14	DTR – Data terminal ready	+12 VDC – On output
	15	FAULT – Printer error condition	+12 VDC – On input
	Pins 1,2,4,6,8,10–12,16–26 not used		

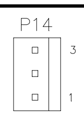
P12 - Centronics Parallel Printer Port

Pinout	Pin	Function	Voltage
	1	$\overline{\text{STROBE}}$ – Write data to printer	0 VDC signal – on
	2	DC ground	DC ground
	3	PD0 – Printer data 0	+5 VDC signal – on
	4	$\overline{\text{FAULT}}$ – Printer error condition	0 VDC signal – on
	5	PD1 – Printer data 1	+5 VDC signal – on
	6	$\overline{\text{INIT}}$ – Initialize	0 VDC signal – on
	7	PD2 – Printer data 2	+5 VDC signal – on
	8–24	DC ground (even pins only)	DC ground
	9	PD3 – Printer data 3	+5 VDC signal – on
	11	PD4 – Printer data 4	+5 VDC signal – on
	13	PD5 – Printer data 5	+5 VDC signal – on
	15	PD6 – Printer data 6	+5 VDC signal – on
	17	PD7 – Printer data 7	+5 VDC signal – on
	19	$\overline{\text{ACK}}$ – Not used	
	21	BUSY – Printer busy	+5 VDC signal – on
	23	PAPER OUT – Printer out of paper	+5 VDC signal – on
	25	SLCT – Printer on–line	+5 VDC signal – on
	26	N/C	

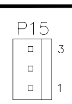
P13 - VF Display Power

Pinout	Pin	Color	Function	Voltage
	1	Black	DC ground	DC ground
	2	Orange	+5 VDC out	+5 VDC
	3	Gray	EX RESET – not used	0 VDC – on

P14 - Customer Display Power

Pinout	Pin	Color	Function	Voltage
	1	Black	DC ground	DC ground
	2	Orange	+5 VDC out	+5 VDC
	3	Gray	EX RESET – not used	0 VDC – on

P15 - Beeper

Pinout	Pin	Color	Function	Voltage
	1	Red	+12 VDC out	+12 VDC
	2	Black	Beeper drive	0 VDC – on
	3	N/C		

P16 & P17 - Cash Drawer 1 and 2

Pinout	Pin	Color	Function	Voltage
P16 & P17	1	Red	+12 VDC to solenoid cash drawer latch	+12 VDC unregulated
	2	Black	Solenoid drive	0 VDC – Energized
	3	Green	DC ground	DC ground
	4	Yellow	Cash drawer status to CPU	0 VDC – Closed

Switch Postpay-Prepay Console IA+ and II+

SW1 - Reset Switch

The Reset switch starts a hardware and software reset of the CPU PCB.

Switch	Function
SW1	Push to reset CPU PCB

Test Points

The following table lists test points which can be found on the CPU PCB.

Test Points	Function	Voltage
TP1	+5 VDC	+4.9 to +5.1 VDC
TP2	DC ground	DC ground
TP3	+12 VDC	+11.5 to +13.5 VDC
TP4	–12 VDC	–11.0 to –12.5 VDC
TP5	+9 VDC	+6.0 to +10.0 VDC

Configuration - Console IA+ and II+

If the console has never been configured or if its configuration has been erased, it will go into configuration mode at power up. Otherwise, you can access configuration mode by using self-test 7. Accessing self-test mode is described later in this section. The procedure for accessing configuration mode for the console is the same for both Site Controller I and Site Controller II; however, the menu choices are different. The following procedure describes accessing configuration mode. The tables that follow indicate the configuration options for consoles used with Site Controller I and Site Controller II. The shaded column shows the default values.

To configure the console:

1. Access diagnostic mode, self-test 7, if necessary. The message ****Configuration*** appears and the display scrolls through the keystrokes needed to change the values. Then the first option appears. If the value selected for the option is the default value, the option is enclosed in asterisks (*). If the value is not the default, the option is enclosed in minus signs (-).

2. Accept the defaults or change the values for any of the configuration options using the following keys:

   ENTER accepts the displayed value and displays the next configuration option.

   PREV selects the currently displayed option value and displays the previous option. For example, if you're on keyswitch type and press this key, console address is displayed.

1 displays the next value for that option. To accept that option and go on to the next option, press ENTER.

2 displays the default value for the option. To accept that option and go on to the next option, press ENTER.

0 exits the configuration mode and saves your changes.

7 returns you to the initial configuration display.

CAUTION: Do not press the CLEAR/PRINT key at any time during self-test mode. Doing so will erase your configuration. (V5.3 only)

3. Exit from diagnostic self-test mode by pressing 9.

Configuration Options - Console Version 1.5

Options	Values			
Console poll address	1	2	3	4
Cash drawer	Cash drawer	No cash drawer		
Drawer switch type	Dr clo=sw closed	Dr clo=sw open		
Volume display	3 digits	2 digits		
Volume units	Gallons (G)	Liters (L)		
SC version	> 4.0	< 4.0		
Beeper	Enabled	Disabled		
Alert beep type	Short	Long	No	No
Key click type	Short	Medium Short	Long	No
LED color	Normal	Reverse		
Deadman timer	On	Off		
Console printer/pad	No cons prnt/pad	Console prnt/pad		
Printer address	01	01–64		
DES	Disabled	Enabled		
Receipt line feed, top	00	00–10		
Receipt line feed, end	10	00–18		
Receipt left margin	04	00–10		
Printer	Star SP300	Ithaca Turbo	Undefined	Undefined
Printer port	Serial	Parallel		

Configuration Options - Console Version 5.3 and above

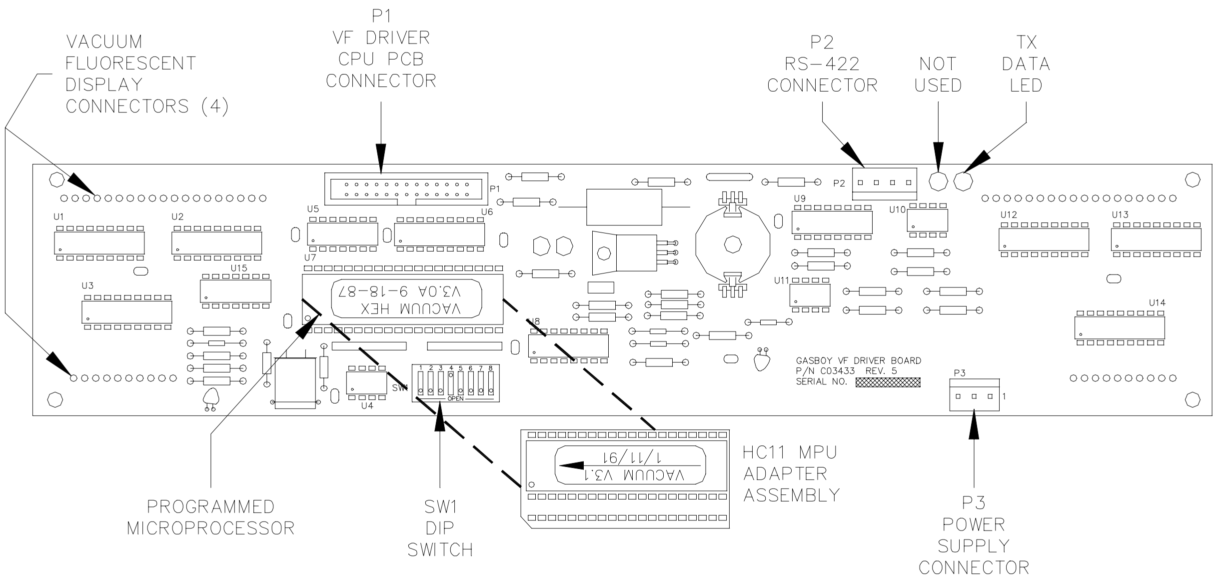
Options	Values			
Console poll address	1	2	3	4
Keyswitch type	4 posn	2 posn		
Cash drawer	Cash drawer	No cash drawer		
Drawer switch type	Dr clo=sw closed	Dr clo=sw open		
Beeper	Enabled	Disabled		
Alert beep type	15 seconds	8 seconds	4 seconds	2 seconds
Key click type	Short	Medium	Long	No
LED color	Normal	Reverse		
Deadman timer	On	Off		
Console printer/pad	No cons prnt/pad	Console prnt/pad		
Printer address	01	01-64		
DES	Disabled	Enabled		
Receipt line feed, top	00	00-10		
Receipt line feed, end	10	00-18		
Receipt left margin	04	00-10		
Printer	Star SP300	Undefined		
Printer port	Serial	Parallel		
Decimal position	2 (.00)	3 (.000)	0	1 (.0)
Decimal point type	. (period)	, (comma)		
Ignore scan nn	57	31-59 62-77 99		
	99	31-59 62-77 99		
	99	31-59 62-77 99		
	99	31-59 62-77 99		
	99	31-59 62-77 99		

VACUUM FLUORESCENT DRIVER PCB (C04839)

The VF driver PCB:

- decodes and drives the VF display with the data received from the console CPU PCB
- transmits data to an optional customer display via an RS-422 line
- provides diagnostic LED's to monitor communication to an optional customer display

Layout



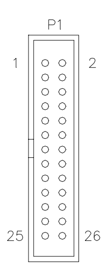
LED Indicators

LED indicators are provided to allow you to monitor the RS-422 communication between the VF Driver PCB and an auxiliary VF Driver PCB mounted in an optional customer display.

LED	Function
L1	Not used
L2	RS-422 Transmit

Connectors

P1 - CPU PCB

Pinout	Pin	Function	Voltage
	2-26	DC ground (even pins only)	DC ground
	3	$\overline{CS}$ - Chip Select - controls R/W to display	0 VDC - On
	5	$\overline{RS}$ - Read enable from the display	0 VDC - On
	7	A0 - Read request to the display	+5 VDC - On
	9	$\overline{WS}$ - Write enable to the display	0 VDC - On
	11	D0 - Data 0	+5 VDC - On
	13	D1 - Data 1	+5 VDC - On
	15	D2 - Data 2	+5 VDC - On
	17	D3 - Data 3	+5 VDC - On
	19	D4 - Data 4	+5 VDC - On
	21	D5 - Data 5	+5 VDC - On
	23	D6 - Data 6	+5 VDC - On

P2 - RS-422 Communication to Customer Display

Pinout	Pin	Wire	Function		Voltage
P2 (1–4)	1	White	RS−422 Tx+	To optional Customer Display	+5 VDC signal between pins 1 & 2
	2	Green	RS−422 Tx−		
	3		N/C		
	4		N/C		

P3 - Power Supply Input

Pinout	Pin	Wire	Function	Voltage
P3 (1–3)	1	Black	DC ground	DC ground
	2	Orange	+5 VDC	+5 VDC
	3		N/C	

Switches

SW1 - Miscellaneous Switches

Switch	Function	
SW1−1		Not used
SW1−2		Not used
SW1−3	TEST*	Open=Normal mode, Closed=Test mode
SW1−4	MSTR	Open=Display only, Closed=Display & transmit (to Cust Display)
SW1−5	SLAV	Open=VF driver used in console
SW1−6	TEST	Open=Normal mode, Closed=Test mode
SW1−7		Not used
SW1−8		Not used

*V3.0 − 3.0A only; all other versions use SW1−6.

TEST In the closed position and with the CPU interface ribbon cable disconnected, the VF driver will begin displaying a rotating barber-pole pattern self-test. In the open position, the VF driver will function normally.

MSTR In the closed position, The VF driver will transmit characters through its serial interface while simultaneously displaying them. In the open position, the characters are only displayed. *NOTE: This switch must be closed when a customer display is connected to the console.*

SLAV In the closed position, the VF driver will display all characters received through its RS-422 interface. In the open position, the VF driver will display characters received through its parallel interface. *NOTE: This switch must be open when the VF driver is used in the console.*

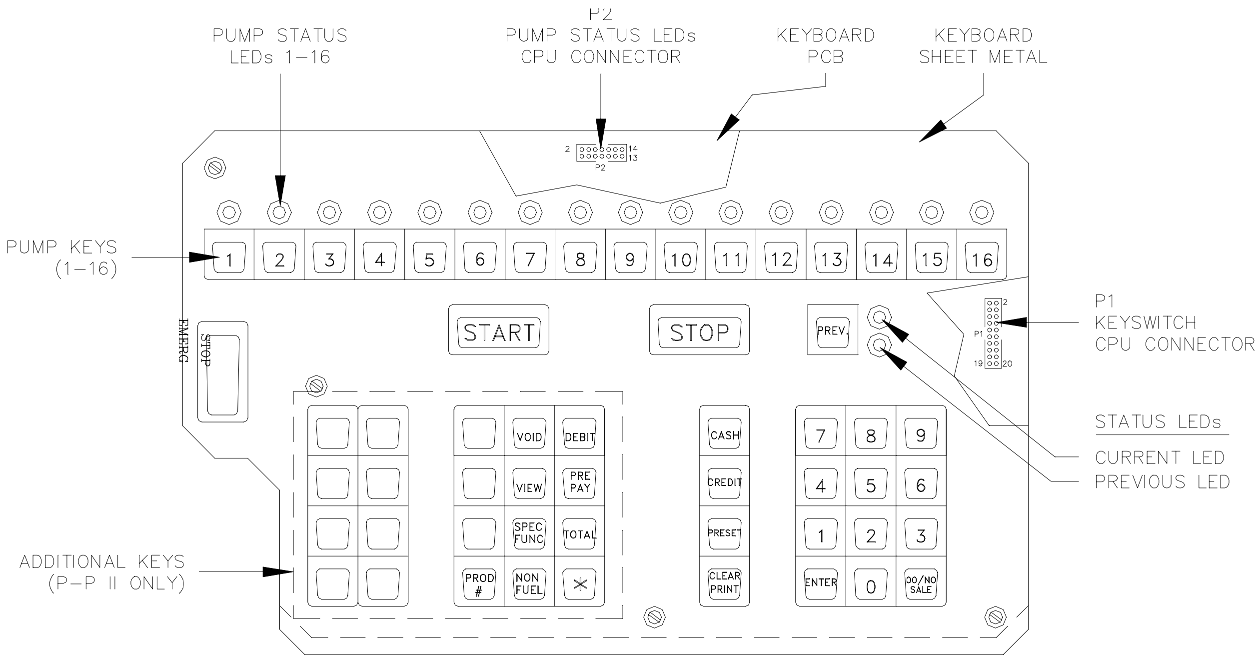
CONSOLE KEYBOARD ASSEMBLY (C04724, C05583, & C05990)

The console keyboard assembly is the primary user interface for the console. It can come configured with the standard amount of keys used on a P-P I or with the extra keys used on a Checkpoint. This assembly:

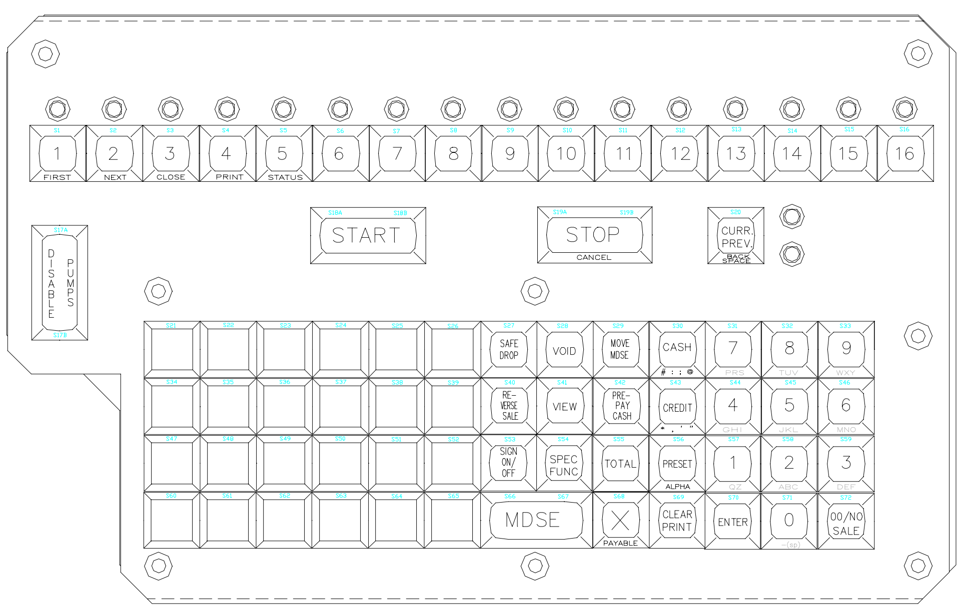
- provides a keyboard matrix to input user commands
- decodes and drives the pump status LED's
- drives the transaction status LED's

Layouts

C04724 and C05583



C05990



LED Indicators

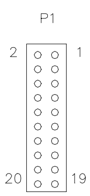
LED indicators provide the operator with an up-to-date status of the console and the pumps.

LED	Color	Function
L1–L16 PUMP STATUS 1–16	Flashing Red	Pump is offhook but not approved
	Green	Pump is approved and pumping
	Flashing Green	Pumping is complete but unpaid
	Note – Colors may be reversed according to CPU SW3–7 position	
L17– CURRENT	Red	Current transaction displayed for selected pump
L18– PREVIOUS	Red	Previous transaction displayed for selected pump

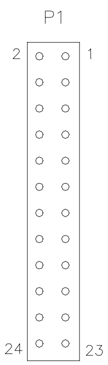
Connectors

P1 - CPU PCB (Keyswitches & Current/Previous LED's) - C04724 & C05583

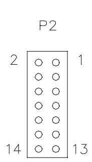
NOTE: See next page for P1 connector pinouts for C05990 assembly.

Pinout	Pin	Function	Voltage
	1	D3 – Keyboard Data 3	0 VDC – On
	2	D4 – Keyboard Data 4	0 VDC – On
	3	D2 – Keyboard Data 2	0 VDC – On
	4	D5 – Keyboard Data 5	0 VDC – On
	5	D1 – Keyboard Data 1	0 VDC – On
	6	D6 – Keyboard Data 6	0 VDC – On
	7	D0 – Keyboard Data 0	0 VDC – On
	8	D7 – Keyboard Data 7	0 VDC – On
	9	L17 – Input drive for Current LED	0 VDC – On
	10	R7 – CPU Keyboard Strobe 7	0 VDC – On
	11	L18 – Input drive for Previous LED	0 VDC – On
	12	R6 – CPU Keyboard Strobe 6	0 VDC – On
	13	R0 – CPU Keyboard Strobe 0	0 VDC – On
	14	R5 – CPU Keyboard Strobe 5	0 VDC – On
	15	R1 – CPU Keyboard Strobe 1	0 VDC – On
	16	R4 – CPU Keyboard Strobe 4	0 VDC – On
	17	R2 – CPU Keyboard Strobe 2	0 VDC – On
	18	R3 – CPU Keyboard Strobe 3	0 VDC – On
	19,20	+5VDC for LEDs L17 & L18	+5VDC

P1 - CPU PCB (Keyswitches & Current/Previous LED's) - C05990

Pinout	Pin	Function	Voltage
	1	D3 – Keyboard Data 3	0 VDC on
	2	D4 – Keyboard Data 4	0 VDC on
	3	D2 – Keyboard Data 2	0 VDC on
	4	D5 – Keyboard Data 5	0 VDC on
	5	D1 – Keyboard Data 1	0 VDC on
	6	D6 – Keyboard Data 6	0 VDC on
	7	D0 – Keyboard Data 0	0 VDC on
	8	D7 – Keyboard Data 7	0 VDC on
	9	L17 – Current LED drive	0 VDC on
	10	R7 – Keyboard Strobe 7	0 VDC on
	11	L18 – Previous LED drive	0 VDC on
	12	R6 – Keyboard Strobe 6	0 VDC on
	13	R0 – Keyboard Strobe 0	0 VDC on
	14	R5 – Keyboard Strobe 5	0 VDC on
	15	R1 – Keyboard Strobe 1	0 VDC on
	16	R4 – Keyboard Strobe 4	0 VDC on
	17	R2 – Keyboard Strobe 2	0 VDC on
	18	R3 – Keyboard Strobe 3	0 VDC on
	19,20	+5 VDC	+5 VDC
	21	R8 – Keyboard Strobe 8	0 VDC on
	22	R9 – Keyboard Strobe 9	0 VDC on
	23	R10 – Keyboard Strobe 10	0 VDC on
	24	R11 – Keyboard Strobe 11	0 VDC on

P2 - CPU PCB (Hose LED's)

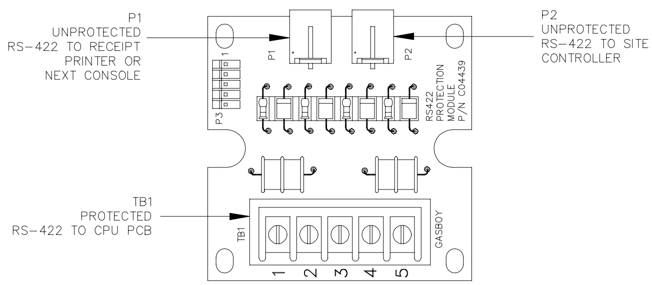
Pinout	Pin	Function	Voltage
	1,2	DC ground	DC ground
	3	$\overline{CLR}$ – used to turn off all LED indicators	0 VDC – On
	5	D1 – Data input determines if LED is on or off	+5 VDC – On
	6	$\overline{CS1}$ – Chip Select for pump 5–8 LEDs	0 VDC – On
	7	A2 – Address 2	+5 VDC – on
	8	$\overline{CS0}$ – Chip Select for pump 1–4 LEDs	0 VDC – On
	9	A1 – Address 1	+5 VDC – on
	10	$\overline{CS3}$ – Chip Select for pump 13–16 LEDs	0 VDC – On
	11	A0 – Address 0	+5 VDC – on
	12	$\overline{CS2}$ – Chip Select for pump 9–12 LEDs	0 VDC – On
	13,14	+5VDC	+5VDC

RS-422 PCB (C05379)

The RS-422 PCB provides the interface for the RS-422 section of the CPU PCB. This PCB:

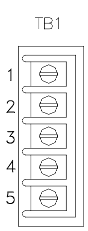
- provides protection against noise on the RS-422 lines
- provides connectors for field wiring to site controller and receipt printer

Layout

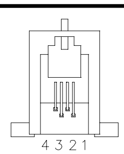


Connectors

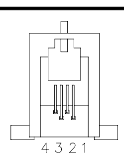
TB1 - RS-422 Field Wiring (Unprotected)

Pinout	Pin	Function		Voltage
	1	RS-422 Tx+	From	+5 VDC signal
	2	RS-422 Tx-	CPU PCB	between 1 & 2
	3	RS-422 Rx+	To	+5 VDC signal
	4	RS-422 Rx-	CPU PCB	between 3 & 4
	5	Ground		Ground

P1 - RS-422 Communication - Site Controller

Pinout	Pin	Function		Voltage
	1	RS-422 Tx+	To Site	+5 VDC signal
	2	RS-422 Tx-	Controller	between pins 1 & 2
	3	RS-422 Rx+	From Site	+5 VDC signal
	4	RS-422 Rx-	Controller	between pins 3 & 4

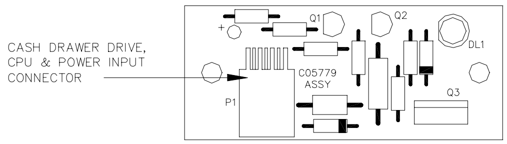
P2 - RS-422 Communication - Receipt Printer

Pinout	Pin	Function		Voltage
	1	RS-422 Tx+	From	+5 VDC signal
	2	RS-422 Tx-	Aux Devices	between pins 1 & 2
	3	RS-422 Rx+	To	+5 VDC signal
	4	RS-422 Rx-	Aux Devices	between pins 3 & 4

CASH DRAWER INTERFACE PCB (C05779)

The cash drawer interface PCB comes standard on P-P II consoles and is optional on P-P I consoles. This PCB provides a relay drive for the cash drawer solenoid

Layout



Connector

P1 - Cash Drawer Drive, CPU & Power Input

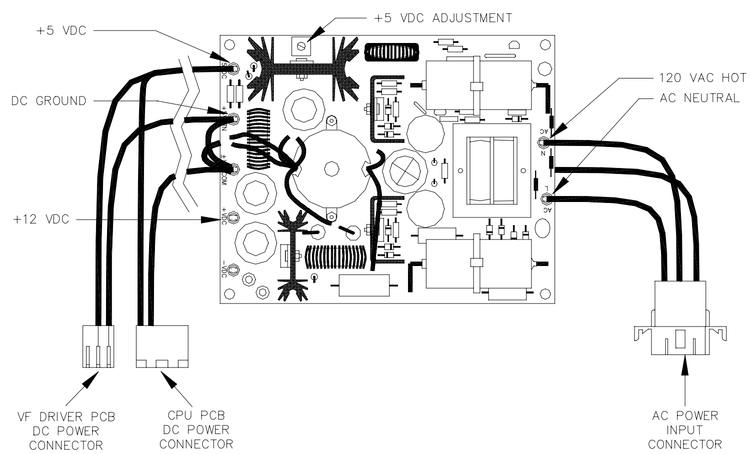
Pinout	Pin	Color	Function	Voltage
P1	1	Black	DC ground	DC ground
	2	Violet	Cash Drawer Solenoid Drive	0 VDC – Solenoid on
	3		N/C	
	4		N/C	
	5	Brown	Relay Drive	0 VDC – Relay on
	6	Orange	+5 VDC	+5 VDC

POWER SUPPLY ASSEMBLY (C05423) FOR CONSOLES I, IA, AND II

The power supply assembly provides the internal power used by the console. This assembly:

- provides regulated +5 VDC to all PCB's
- provides regulated +5 VDC to the optional customer display
- provides unregulated +12 VDC to the optional cash drawer

Layout



Connectors

AC Power Input

Pinout	Pin	Wire	Function	Voltage
	1	Black	AC Hot input	115 VAC
	2	White	AC Neutral input	AC Neutral
	3	Green	AC Ground input	AC Ground

CPU DC Power

Pinout	Pin	Wire	Function	Voltage
	1	Orange	+5 VDC to CPU	+5 VDC
	2	Black	DC ground to CPU	DC ground
	3		N/C	
	4		N/C	
	5		N/C	

VF Driver PCB DC Power

Pinout	Pin	Wire	Function	Voltage
	1	Black	DC Ground to VF Driver	DC Ground
	2	Orange	+5 VDC input to VF Driver	+5 VDC
	3		N/C	

DC Power Measurements and Adjustment for C05423 Power Supply

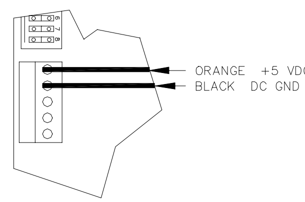
+5 VDC Measurement

1. Turn off power to the console. Remove the four screws from the bottom of the console and carefully separate the upper housing from the lower housing.

2. Turn on the power to the console.

CAUTION
AC voltage will be present in the power supply area. Be careful not to touch the supply or AC input components.

3. On the rear of the CPU PCB, measure the +5 VDC between the orange (+) and black (-) wires on P2. The voltage should be between +5.00 and +5.10. If the voltage does not fall within this range, adjustment will be necessary. Follow the steps below to adjust the supply. If the voltage is in tolerance, skip to Step 7.



+5 VDC Adjustment

4. Attach the meter probes to P2 on the CPU PCB.

5. Using a 1/8 inch or smaller plastic, flat-blade screwdriver, adjust the power supply to +5 VDC by turning the screw clockwise to increases voltage, counterclockwise to decrease voltage. Turn the screw slightly to judge how sensitive the adjustment is.

6. Disconnect the meter probes.

+12 VDC Measurement

7. On the power supply, measure the +12 VDC between the red (+VDC post) and the black (+VDC COM post) wires. The voltage should be 11.00 to +14.00.

   NOTE: This voltage is used only for the cash drawer and is not adjustable.

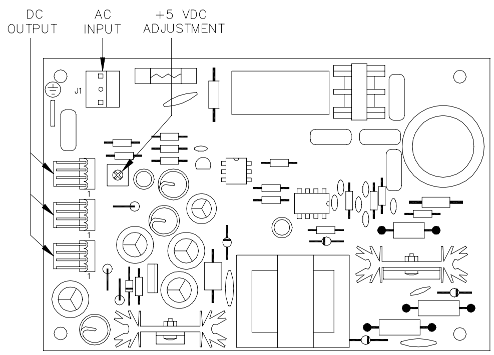
8. Turn off power to the console and carefully set the upper half of the console on the lower half. Replace the four screws in the bottom of the unit. Turn on the power.

POWER SUPPLY (C09053) FOR CONSOLES IA+ AND II+

The power supply provides the internal power used by the console. This assembly:

- provides regulated +5 VDC to all PCB's
- provides regulated +5 VDC to the optional customer display
- provides unregulated +12 VDC to the optional cash drawer and RS-232 communications to printer and PIN pad
- provides -12 VDC for RS-232 communications to printer and PIN pad
- provides +12 VDC to 9V regulator for +9 VDC to the PIN pad

Layout



Connectors

AC Input

Pinout	Pin	Wire	Function	Voltage
1	1	White	AC neutral input	AC neutral
	2		N/C	
3	3	Black	AC hot input	115 VAC

DC Output

Pinout	Pin	Wire	Function	Voltage
	1	White	−12 VDC from supply	−12 VDC
1	2	Red	+12 VDC from supply	+12 VDC
4	3	Black	DC ground	Ground
	4	Orange	+5 VDC from supply	+5 VDC

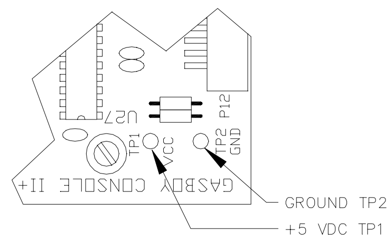
DC Power Measurements and Adjustment for C09053 Power Supply

+5 VDC Measurement

1. Turn off power to the console. Remove the four screws from the bottom of the console and carefully separate the upper housing from the lower housing.

2. Turn on the power to the console.

3. On the CPU PCB, measure at the TP1 and TP2 test points, with the positive (+) probe on TP1 and the negative (-) probe on TP2. The voltage should be +5.00 to +5.10 VDC. If the voltage does not fall within this range, adjustment is necessary. Follow the steps below to adjust the supply. If the voltage is within tolerance, skip to step 12.



+5 VDC Adjustment

4. Turn off the power to the console.
5. Remove the three screws that hold the power supply cover onto the supply. Remove the cover.
6. Attach the meter probes to TP1 and TP2 on the CPU PCB.
7. Turn the AC POWER switch back on.

CAUTION
Be careful not to touch anything but the adjustment screw. High voltage exists at various points on the supply.

8. Using a 1/8 inch or smaller plastic, flat-blade screwdriver, adjust the power supply to +5 VDC by turning the screw (R21) clockwise to increase voltage, counterclockwise to decrease voltage. Turn the screw slightly to judge how sensitive the adjustment is.
9. Disconnect the meter probes.
10. Turn the AC POWER switch off and return the power supply cover to its normal location.
11. Turn the AC POWER switch back on.

+12 VDC Measurement

12. Locate TP3 (+12VDC) on the CPU PCB. Measure the +12 VDC between TP3 (+) and TP2 (gnd) on CPU PCB. The voltage should be +11.00 to +14.00 VDC.

    NOTE: This voltage is not adjustable.

-12 VDC Measurement

13. Locate TP4 on the CPU PCB. Measure the -12 VDC between TP4 and TP2 on the CPU PCB. Voltage should be -11.00 to -14.00 VDC.

    NOTE: This voltage is not adjustable.

+9 VDC Measurement

14. Locate TP5 on the CPU PCB. Measure the +9VDC between TP5 and TP2 on the CPU PCB. Voltage should be +6.00 to +10.00 VDC.

    NOTE: This voltage is not adjustable.

15. Turn off power to the console and carefully set the upper half of the console on the lower half. Replace the four screws in the bottom of the unit. Turn on the power.

CONSOLE I DIAGNOSTIC TESTS

The Postpay-Prepay Console I can perform a number of diagnostic tests to check the operation of various components within the unit. Tests can be performed while connected to the site controller or totally independent of it.

Start Diagnostic Mode (With Site Controller)

1. Insert the Supervisor key and turn it on.
2. At the COMMAND prompt, type 9 and press ENTER.
3. Select the desired test through the numeric keypad. The test selected will continue until it completes or the 0 key is pressed.

End Diagnostic Mode (With Site Controller)

1. Press ENTER while the self-test menu is displayed.
2. Turn off and remove the Supervisor key.

Start Diagnostic Mode (Without Site Controller)

NOTE: If your Console I has a Console II program (V5.2 or above) use the diagnostic tests for Console II.

1. Turn off power to the console. Remove the four screws from the bottom of the console and carefully separate the upper housing from the lower housing.
2. Change switch SW3-4 on the CPU PCB to the closed position and turn on power to the console. The console performs its own stand-alone self-test. The display shows the current version level of the console and the self-test menu appears.
3. Select the desired test through the numeric keypad. The test selected will continue until it automatically ends or until the 0 key is pressed.

End Diagnostic Mode (Without Site Controller)

1. Turn off power to the console and change switch SW3-4 on the CPU PCB to the open position.
2. Carefully set the upper half of the console on the lower half and replace the four screws in the bottom of the unit. Turn on the power.

Diagnostic Tests

0 - Display Version Number: Press the 0 key. The console redisplays the software version number.

1 - RAM Test: Press the 1 key. The RAM test checks the RAM on the CPU PCB and reports the results immediately. This test will exit to the self-test menu after a short wait. If this test fails, the CPU PCB must be replaced and no other tests are valid.

2 - ROM Test: Press the 2 key. The ROM test checks the ROM (program) on the CPU PCB and reports the results immediately. This test will exit to the self-test menu after a short wait. If this test fails, the CPU PCB must be replaced and no other tests are valid.

3 - Card Reader Test: Press the 3 key. The card reader test will allow a card to be read through the reader. At the **ENTER CARD** prompt, swipe the card through the reader. The card number is shown on the display in four groups of four digits. If the card number has more than sixteen digits, the next four groups of four are shown after several seconds or after you press ENTER. When all digits have been presented, the console again gives you the prompt, **ENTER CARD**. Enter another card, or press 0 to take the console back to the self-test menu.

4 - Display Test: Press the 4 key. All characters on the display should change at the same time, all hose LED's should change together, and the current and previous sale LED's should turn on and off at the same time. Press 0 to take the console back to the self-test menu.

5 - Keyboard Test: Press the 5 key. This test will allow you to test each key (except 0) on the keyboard. Press the key you want to test and the name of the key should appear on the display. Press 0 to take the console back to the self-test menu.

VF Driver Test (Independent test)

The VF driver PCB assembly can be tested totally independent of the rest of the console. To perform this test follow the steps below:

1. Turn off power to the console. Remove the four screws from the bottom of the console and carefully separate the upper housing from the lower housing.
2. Change test switch (SW1-3, for versions 3.0 to 3.0A, SW1-6 for all other software versions) on the VF driver PCB to the closed position.
3. Remove the ribbon cable connected to P1 of the VF driver PCB.
4. Turn on power to the console.
5. The VF driver should begin displaying a rotating barber-pole pattern self-test.
6. Turn off power to the console.
7. Reconnect the ribbon cable to P1.
8. Change the test switch (SW1-3, for versions 3.0 to 3.0A, SW1-6 for all other software versions) to the open position.
9. Carefully set the upper half of the console on the lower half and replace the four screws in the bottom of the unit.
10. Turn on the power.

CONSOLE IA AND II DIAGNOSTIC TESTS

The Postpay-Prepay Consoles IA and II can perform a number of diagnostic tests to check the operation of various components within the unit. Tests can be performed while connected to the site controller or totally independent of it.

Start Diagnostic Mode (With Site Controller)

1. Insert the key into the keyswitch and turn it to MANAGER.
2. Press 00/NO SALE. The console performs its own stand-alone self-test. The display shows the current version level of the console and the self-test menu appears.
3. Select the desired test through the numeric keypad. The test selected will continue until it automatically ends or until the 0 key is pressed.

End Diagnostic Mode (With Site Controller)

1. Press 9 while the self-test menu is displayed.
2. Turn off and remove the Manager key.

NOTE: If you have a V5.1 or earlier console, use the Console I procedure to start and end diagnostic mode.

Start Diagnostic Mode (Without Site Controller) - V5.2

1. Turn off power. Disconnect RS-422 loop.
2. Turn on power. Press 00/NO SALE.

End Diagnostic Mode (Without Site Controller) - V5.2

1. Turn off power. Reconnect RS-422 loop.
2. Turn on power.

Diagnostic Tests (Software Versions 5.1 and Earlier)

0 - Display Version Number: Press the 0 key. The console redisplays the software version number.

1 - RAM Test: Press the 1 key. The RAM test checks the RAM on the CPU PCB and reports the results immediately. This test will exit to the self-test menu after a short wait. If this test fails, the CPU PCB must be replaced and no other tests are valid.

2 - ROM Test: Press the 2 key. The ROM test checks the ROM (program) on the CPU PCB and reports the results immediately. This test will exit to the self-test menu after a short wait. If this test fails, the CPU PCB must be replaced and no other tests are valid.

3 - Card Reader Test: Press the 3 key. The card reader test will allow a card to be read through the reader. At the **ENTER CARD** prompt, swipe the card through the reader. The card number is shown on the display in four groups of four digits. If the card number has more than sixteen digits, the next four groups of four are shown after several seconds or after you press ENTER. When all digits have been presented, the console again gives you the prompt, **ENTER CARD**. Enter another card, or press 0 to take the console back to the self-test menu.

4 - Display Test: Press the 4 key. All characters on the display should change at the same time, all hose LED's should change together, and the current and previous sale LED's should turn on and off at the same time. Press 0 to take the console back to the self-test menu.

5 - Keyboard Test: Press the 5 key. This test will allow you to test each key on the keyboard. Press the key you want to test and the number code of the key should appear on the display. Press 0 to take the console back to the self-test menu.

Diagnostic Tests (Software Version 5.2)

0 - Display Version Number: Press the 0 key. The console redisplays the software version number.

1 - Memory (RAM & ROM) Test: Press the 1 key. The test checks the RAM and ROM on the CPU PCB and reports the results immediately. This test will exit to the self-test menu after a short wait. If this test fails, the CPU PCB must be replaced and no other tests are valid.

2 - Beeper Test: Press the 2 key. The console should display **Beeper test** and beep repeatedly. Press 0 to take the console back to the self-test menu.

3 - Card Reader Test: Press the 3 key. The card reader test will allow a card to be read through the reader. At the **ENTER CARD** prompt, swipe the card through the reader. The card number is shown on the display in four groups of four digits. If the card number has more than sixteen digits, the next four groups of four are shown after you press ENTER. When all digits have been presented, the console again gives you the prompt, **ENTER CARD**. Enter another card, or press 0 to take the console back to the self-test menu.

4 - Display Test: Press the 4 key. All characters on the display should change at the same time, all hose LED's should change together, and the current and previous sale LED's should turn on and off at the same time. Press 0 to take the console back to the self-test menu.

5 - Keyboard Test: Press the 5 key. This test will allow you to test each key (except 0) on the keyboard. Press the key you want to test and the number code of the key should appear on the display. Press 0 to take the console back to the self-test menu.

6 - Cash Drawer Test: Press the 6 key. The cash drawer should open and the console should display **Drawer open**. When you close the drawer, the console should display **Drawer closed**. Press 0 to take the console back to the self-test menu.

7 - Switch Settings: Press the 7 key. The first display shows the setting of the switches on SW-2, for example SW2 1 to 8 OCCC COOO. The last eight characters indicate the settings in order from left to right. **O** means the switch is open; **C** means the switch is closed. Press ENTER to display the setting of SW-3. Press ENTER again to show the position of the keyswitch: OFF, ON, SUP, or MGR. Turning key changes display. Press 0 to take the console back to the self-test menu.

8 - Loopback Test: A special connector is required to run this test. If the console is still connected to the site controller, the RS-422 phone line cable will have to be temporarily removed from the console. This will allow you to plug special connector into the that jack for the test. Press the 8 key. The display will indicate the results of the test. Press 0 to take the console back to the self-test menu.

VF Driver Test (Independent test)

The VF driver PCB assembly can be tested totally independent of the rest of the console. To perform this test follow the steps listed at the end of the **Console I Diagnostic Tests**.

CONSOLE IA+ AND II+ DIAGNOSTIC TESTS

The Postpay-Prepay Consoles IA+ and II+ (V1.5 for Site Controller I or V5.3 or above for Site Controller II) can perform a number of diagnostic tests to check the operation of various components within the unit. Tests can be performed while connected to the site controller or totally independent of it.

Start Diagnostic Mode (With Site Controller)

1. Insert the key into the keyswitch and turn it to MANAGER.
2. Press 00/NO SALE. The console performs its own stand-alone self-test. The display shows the current version level of the console and the self-test menu appears.
3. Select the desired test through the numeric keypad. The test selected will continue until it automatically ends or until the 0 key is pressed.

End Diagnostic Mode (With Site Controller)

1. Press 9 while the self-test menu is displayed.
2. Turn off and remove the Manager key.

Start Diagnostic Mode (Without Site Controller) - V5.3 and above

1. Turn off power. Disconnect RS-422 loop.
2. Turn on power. Press 00/NO SALE.

End Diagnostic Mode (Without Site Controller) - V5.3 and above

1. Turn off power. Reconnect RS-422 loop.
2. Turn on power.

Diagnostic Tests

CAUTION: Do not press CLEAR/PRINT during self-test mode. This will erase the console configuration. (V5.3 only)

0 - Display Version Number: Press the 0 key. The console redisplays the software version number.

00 - Manager Keyswitch Test: Press the 00/NO SALE key. The console will display the position of the manager's keyswitch (OFF, ON, SUP, or MGR). Turning the key changes the display. Press 0 to take the console back to the self-test menu.

1 - Memory (RAM & ROM) Test: Press the 1 key. The test checks the RAM and ROM on the CPU PCB and reports the results immediately. This test will exit to the self-test menu after a short wait. If this test fails, the CPU PCB must be replaced and no other tests are valid.

2 - Beeper Test: Press the 2 key. The console should display **Beeper test** and beep repeatedly. Press 0 to take the console back to the self-test menu.

3 - Card Reader Test: Press the 3 key. The card reader test will allow a card to be read through the reader. At the **ENTER CARD** prompt, swipe the card through the reader. The card number is shown on the display in four groups of four digits. If the card number has more than sixteen digits, the next four groups of four are shown after you press ENTER. When all digits have been presented, the console again gives you the prompt, **ENTER CARD**. Enter another card, or press 0 to take the console back to the self-test menu.

4 - Display Test: Press the 4 key. All characters on the display should change at the same time, all hose LED's should change together, and the current and previous sale LED's should turn on and off at the same time. Press 0 to take the console back to the self-test menu.

5 - Keyboard Test: Press the 5 key. This test will allow you to test each key (except 0) on the keyboard. Press the key you want to test and the number code of the key should appear on the display. Press 0 to take the console back to the self-test menu.

6 - Cash Drawer Test: Press the 6 key. The cash drawer should open and the console should display **Drawer open**. When you close the drawer, the console should display **Drawer closed**. Press 0 to take the console back to the self-test menu.

7 - Console Configuration: Console configuration is explained earlier in this section.

8 - I/O Ports Test: A special connector is required to run this test. If the console is still connected to the site controller, the RS-422 phone line cable will have to be temporarily removed from the console. This will allow you to plug special connector into the that jack for the test. Press the 8 key. The display will indicate the results of the test. Press 0 to take the console back to the self-test menu.

9 - Printer Test: Press the CLEAR/PRINT key. When this occurs, the console displays ***Printer test***. If the printer is unavailable, the test displays ***Can't find prntr***. If the printer is available, it prints ***Printer test***. The test drops back into the main test menu after a few seconds.

VF Driver Test (Independent test)

The VF driver PCB assembly can be tested totally independent of the rest of the console. To perform this test follow the steps listed at the end of the **Console I Diagnostic Tests**.

CONSOLE CPU BOARD REPLACEMENT

It is possible to replace the console CPU board in a console IA or II (C04832) with the console II+ CPU board (C05836). To change the CPU PCB:

1. Turn off power to the console. Disconnect all external cables from the console. Remove the four screws from the bottom of the console and carefully separate the upper housing from the lower housing.
2. Remove all external cables from the console CPU board. Remove the three screws (1-5/8" long) that hold the old CPU board. Remove the CPU board being careful not to bend the pins on the keyboard connectors. Do NOT change any of the DIP switch settings on the CPU board as this information will be needed later.
3. Remove the screw (1" long) from the keyboard that is in the middle of the keyboard near the Manager's keyswitch.
4. Install new console II+ CPU board onto the keyboard. *(NOTE: Be sure you have the correct version of the program. If you have a SC I, you need a program version of 1.5. If you have a SC II, you need a program version of 5.3 or above.)* Carefully align pin 1 one of each connector to pin 1 of the keyboard connector. Notice that this will leave the last four pins (pins 21-24) of the P8 connector of the console II+ CPU unconnected.
5. Remove the flat washers from the three 1-5/8" long screws leaving the lock washers. Do NOT install the flat washers on the new CPU board as it is possible to short some traces on the board. Install the three 1-5/8" long screws and lock washers. Looking at the upper half of the console with the VF display at the top and the Manager's keyswitch to the right, install one screw in the upper lefthand corner, one in the lower lefthand corner, and one near the center of the CPU. Do NOT overtighten these screws, as damage may occur.
6. Connect the RS-422 cable to P1. Connect the VF display cable to P4. Connect the beeper/cash drawer cable to P5. Connect the Manager's keyswitch cable to P6. Connect the mag reader cable to P7. Make sure all connectors are properly aligned; do NOT force.
7. Connect the power supply cable to P2, aligning pin 1 of the P2 connector with the orange wire of the power supply cable. Looking at the upper half of the console with the VF display at the top and the Manager's keyswitch to the right, pin 1 of P2 is the leftmost pin. If properly installed, the two rightmost pins (6 & 7) of P2 will not be connected. Be sure that this cable is installed properly before turning on the power, as damage may occur.
8. Carefully set the upper half of the console on the lower half. Replace the four screws in the bottom of the unit. Connect all the external cables to the console.
9. Turn on the power. Put console into self-test mode and press 7. Using the console configuration description earlier in this section, configure the console to match the DIP switch settings on the removed console CPU board. Do NOT configure the console prnt/pad option or any that follow it, as operational problems may occur. Once console is configured correctly, press 0.
10. Console should be in the self-test mode. Using the self-test description for a console 1A+ or II+, use the self-tests to verify the console is functioning properly. Do NOT use test 7, this could corrupt your configuration. Once self-tests are complete, press 9. Console is now ready for normal operations.

    NOTE: If your console contains the cash drawer interface board, do not remove it. It must be reconnected for the console to operate properly.

CONSOLE PROBLEMS

Console is dead. Display is blank.

Possible Cause	Checks	Corrective Action
No 115VAC power to console.	Check if circuit breaker is off or tripped.	Turn breaker on, if off.
	Check if 115VAC is being switched through circuit breaker.I	Replace breaker if 115VAC is not being switched.
	f the power conditioner has a power switch, make sure the switch is on.	Turn power conditioner power switch on, if off.
	Check the power conditioner's fuse or circuit breaker.	If the power conditioner has a fuse or built-in circuit breaker, replace or reset as necessary.
	Check the output voltage of the power conditioner.	If 115VAC is measured at the power conditioner input but not at the output, replace the power conditioner.
	Check the console power cord	Make sure both ends of the console power cord are installed properly.
Console power switch is off.	Check the console power switch.	Turn console power switch on, if off.
Blown fuse in AC power inlet on rear of console.	Check the fuse with an ohmmeter.	Replace the fuse if blown.
Defective AC filter/power inlet.	Measure the voltage at the AC inlet of the console power supply	Replace the RF filter module.
Defective console power supply.	Measure the voltage between the black (DC ground) and orange (+5VDC) wires on the power supply.	Replace the console power supply if the proper voltages are not measured.

(Continued)

Possible Cause	Checks	Corrective Action
Blown picofuse.	Measure the voltage between the black (DC ground) and orange (+5 VDC) wires on P2 of the console CPU PCB (consoles I, IA and II) or between TP1 (+5 VDC) or TP2 (gnd) (consoles IA+ and II+).	If +5 VDC is measured at power supply but not at PCB, replace power supply assembly (consoles I, IA, and II). For consoles IA+ and II+, replace fuse on CPU PCB.
Defective VF display board or defective console CPU board.	Try VF display self-test.	Replace the VF display board if test fails. Replace the Console CPU board if VF display works in self-test.

OUT OF SERVICE is displayed on console.

Possible Cause	Checks	Corrective Action
Site controller not running.	Check that site controller is functioning properly.	If not, go to the **Problems** section of Section 2 or 3 depending on your site controller
Console not configured at the site controller.	Do a PRint DIagnostics command at the site controller.	If the console doesn't show up in the PRint DIagnostics command, you must add it to the configuration. For SC II, use the Table program to add the console. For SC I, the CONFIG locations are Table 18, offset 96 for initial number of consoles and Table 18, offsets 98 and 99 for maximum number of consoles.
Incompatible software between the site controller and console.	If any software was just changed, call GASBOY Technical Service to verify software compatibility.	Replace software if instructed to do so.
Console not enabled from site controller.	Do a PRint DIagnostics command at the site controller.	If the printout reports Console Went Down, Never Came Up, or was Disabled by Command, do an ENable CONsole x command, where x is the console address
RS-422 phone cable not connected to correct communications port.	Check that the phone cable is connected to CONSOLE on the SC I.	Install phone cable in correct port.
Incorrect switch settings on Console CPU board. (Console I, IA, and II).	Check the SW2 and SW3 switches on the Console CPU board.	Correct the switch settings, if necessary.

(Continued)

Possible Cause	Checks	Corrective Action
Console not configured correctly (consoles IA+ and II+).	Check console configuration.	If configuration is incorrect, correct as needed.
Defective Console CPU board, or Site Controller CPU board, or RS-422 junction board or modular cable.	None.	Replace the Console CPU board. If that doesn't fix the problem, replace the Site Controller CPU board. If it still doesn't work, replace the RS-422 junction board and cable.

Console responds incorrectly to cards. READ ERROR or no response at all occurs.

Possible Cause	Checks	Corrective Action
Card reader is dirty.	None.	Use a GASBOY head cleaning card to clean the magnetic reader head.
Card is defective.	Run self-test #3.	Try cards that you know are good. If the new cards work, the original card is bad and should be discarded.
Defective magnetic reader.	Run self-test #3.	If problem still occurs when card is entered, replace magnetic card reader.If problem still occurs when card is entered, replace Console CPU board

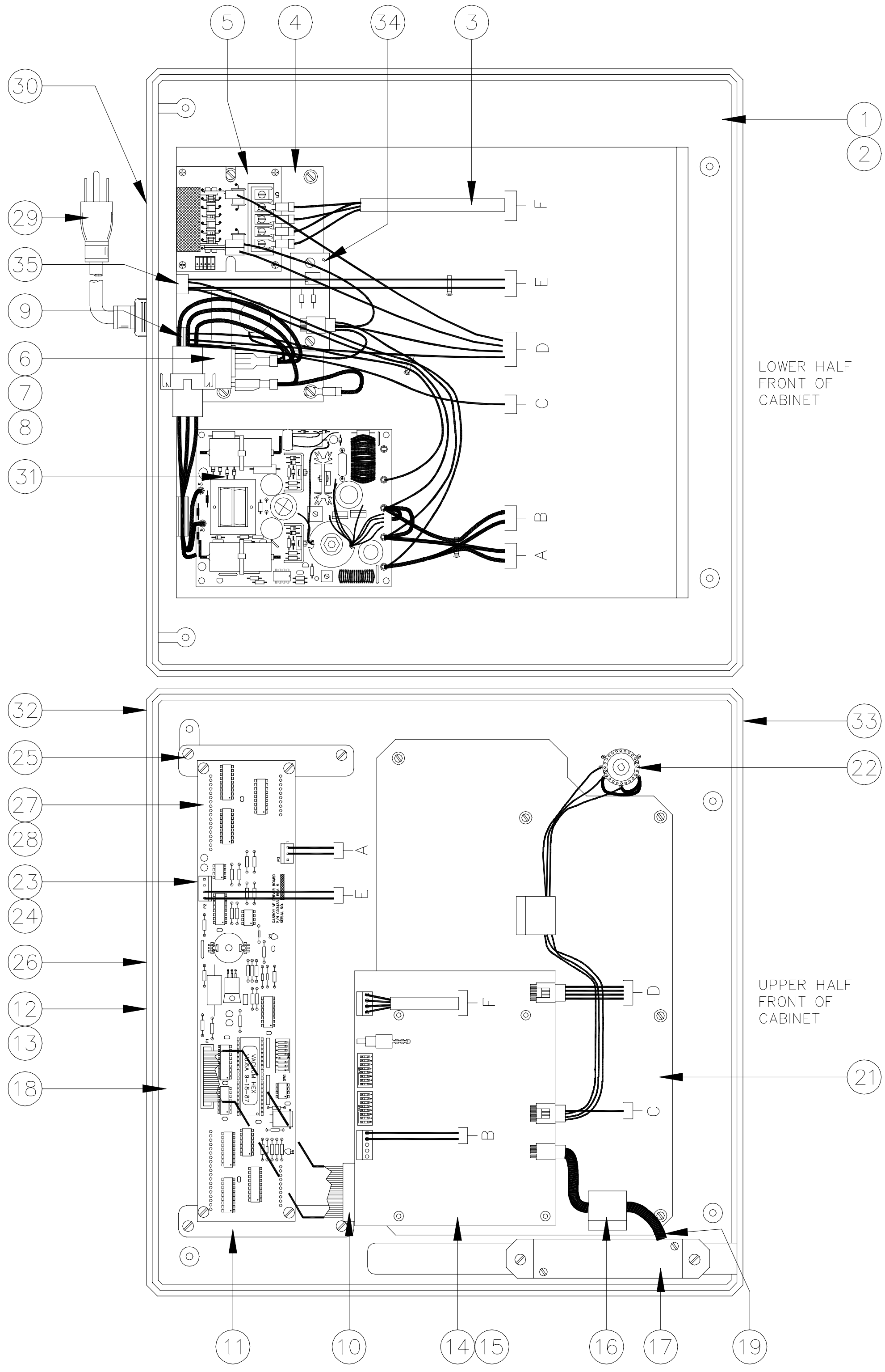
Console does not respond correctly to keyboard entries. When key is pressed, wrong function or no function is performed.

Possible Cause	Checks	Corrective Action
CPU PCB/Keyboard PCB interconnection may be loose.	Check connection between CPU and keyboard.	Tighten screws securing PCB's.
Defective console CPU board.	Run self-test #5.	Replace the Console CPU board if self-test fails.
Defective keyboard.	Run self-test #5.	Replace the Console Keyboard if self-test fails. *NOTE: Keyboard failure may be due to excessive dust and dirt. Use protective keyboard cover to prevent future problems. Console I (C01898); Console II (C01899).*
Incorrect key function configuration.	Print the key configurations in the Site Controller II Console program.	Change the key configurations if incorrect

(Continued)

Possible Cause	Checks	Corrective Action
Incorrect keyswitch set up at console (consoles IA, II, IA+ and II+).	Check SW3-5 on consoles IA and II). If 2-position keyswitch, SW3-5 should be closed; if a 4-position keyswitch, SW3-5 should be open. For consoles IA+ and II+, check console configuration.	If not correct, change switch settings or console configuration as needed.

CONSOLE I, IA, AND II PARTS



C04933, Console Assembly I; C05939 Console Assembly IA; C05784, Console Assembly II

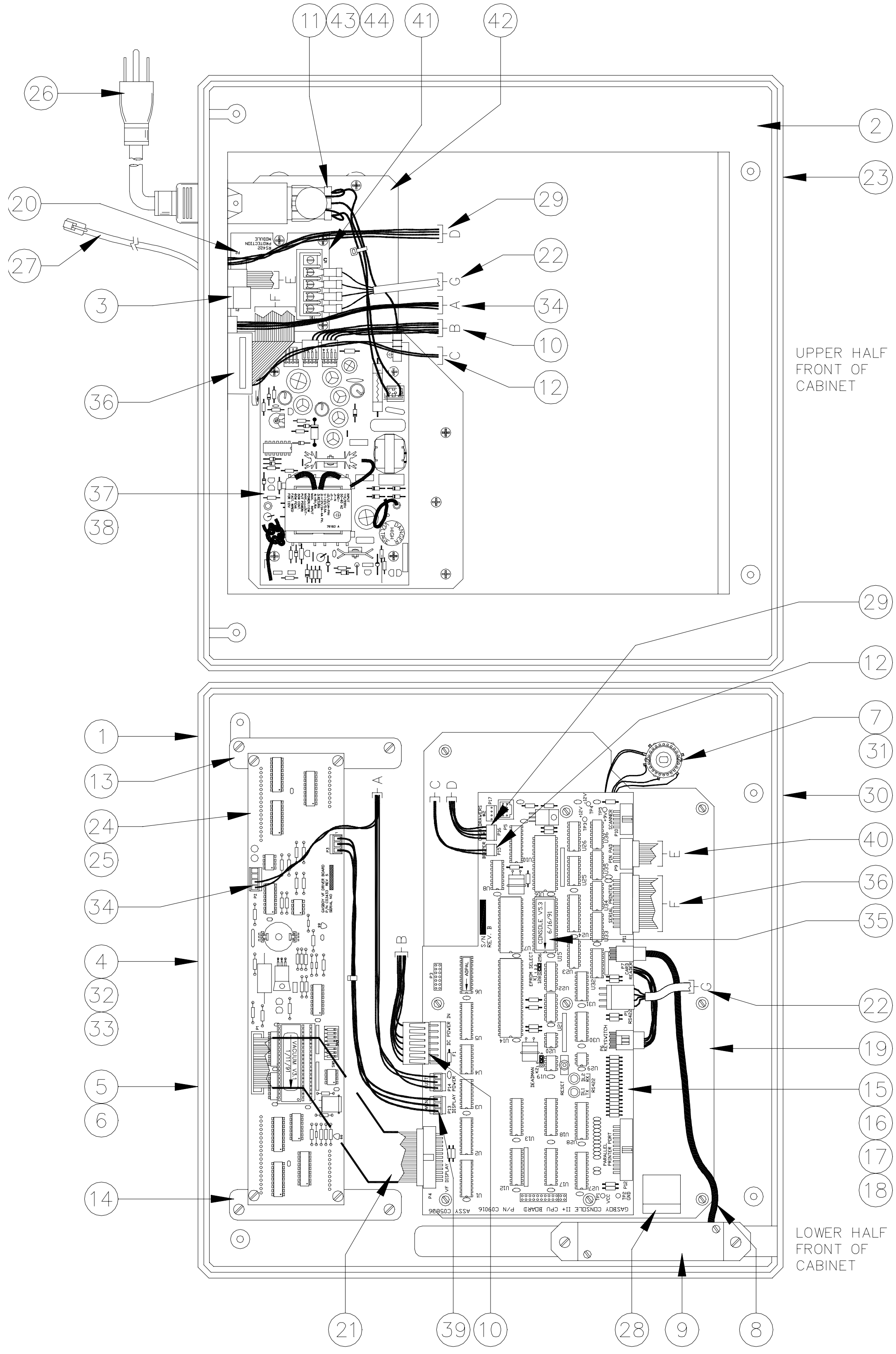
1	C04461	Housing, Lower Postpay/Prepay Console - CFN
2	C03824	Mounting Feet, 1/2" x 7/32" DP Poly.
3	C05434	Cable Assy., 4-Position Connector/Spade - CFN
4	C33986	Postpay/Prepay Console Rear Panel Assy., Weld - CFN
5	C05379	PCB Assy., RS-485 Protect Postpay/Prepay
6	C05425	Filter/Power Line/Connector Assy.
7	*C08330	Filter, RF Module #06AR2
8	*C08461	Fuse, 1 Amp Quick Blow
9	C02828	Cons I Plug button, 5/8" black nylon #2662
	C05785	Cons IA or II Cable Assy., Postpay-Prepay Cash Drawer
10	C05435	Cable Assy., 26 Position Ribbon 7.5"
11	C33896	Bracket/Nut Assy., Righthand Display Mount
12	C04467	Label, Postpay/Prepay Console Select Hose - CFN
13	C04469	Label, Postpay/Prepay Console Current/Previous - CFN
14	C04832	PCB Assy., Postpay/Prepay Console CPU-CFN
15	*C08574	IC, Programmed C01365 8K OTP EPROM
16	C02207	Clamp, Ribbon Cable
17	C33897	Bracket, Mag Reader Mounting - Postpay/Prepay Console
18	C08931	Cons I Housing, Upper Postpay/Prepay Console - Modification
	C08750	Cons IA or II Housing, Upper Postpay/Prepay Console - Modification
21	C04724	Cons I or IA Keyboard Assy., original postpay-prepay console.
	C05583	Cons II Keyboard Assy., Full Console II
22	C05428	Cons I or IA Keyswitch-Connector Cable Assy. (barrel-type key)
	C05783	Cons II Keyswitch-Connector Cable Assy. (standard key)
23	C34842	Window, Postpay/Prepay Console Clear 1/8 Thick
24	C08940	Window, Display Gray Filter - CFN
25	C33895	Bracket/Nut Assy., Lefthand Display Mount
26	C08930	Window, Display Silkscreen - CFN
27	C04839	PCB Assy., VF Driver - Postpay/Prepay Console
28	C05482	MC68HC711 CPU adaptor PCB Assy.
29	C04245	Power Supply Cord - 3 Conductor - 6' 10"
30	C05670	Cable Assy., 4 Conductor Handset 1:1, 8 Ft (Not Shown)
31	C05423	Power Supply/Cable Assy., 5 Volt/6 Amp
32	C08795	Cons II Keytops 5-Color Legend Sheets (Not Shown)
33	C08751	Cons II Label, Keyswitch Prepay/Postpay Console
34	C05779	Cons II PCB Assy., Cash Drawer Interface
35	C05087	Cable Assy., Cust. Display
36	C06579	Kit, Console Cable Cover (Not Shown)
	*C35467	Cover

*Denotes a sub-part used in the preceding assembly

Keytops for C04724 and C05583 Keyboard Assembly

C01493	LP, Charcoal (1/First)	C04111	1 x 2 Red (Disable Pumps)	C01504	HP Dark Gray (9/WXY)
C01494	LP, Charcoal (2/Next)	C04113	1 x 2 Green (Start)	C01503	HP Dark Gray (0/-SP)
C01495	LP, Charcoal (3/Close)	C01454	1 x 2 Red (Stop/Cancel)	C04109	1 x 1 Light Gray (Enter)
C01496	LP, Charcoal (4/Print)	C01502	HP Dark Gray (Curr-Prev/Backspace)	C08785	1 x 1 Lt Gray (00/No Sale)
C01497	LP, Charcoal (5/Status)	C01499	HP Green (Cash/#:;@)		
C08766	LP, Gray (6)	C01498	HP Green (Credit/*,`")		Keytops:C05583 Keyboard
C08767	LP, Gray (7)	C01501	HP Lt Gray (Preset/Alpha)	C08547	1 x 1 Relegible Clear Cover
C08768	LP, Gray (8)	C04108	1 x 1 Lt Gray (Clear/Print)	C08548	1 x 1 Relegible White Base
C08769	LP, Gray (9)	C01512	HP Dark Gray (1/QZ)	C08791	1 x 1 Green (Debit)
C08770	LP, Gray (10)	C01511	HP Dark Gray (2/ABC)	C08792	1 x 1 Green (Non Fuel)
C08771	LP, Gray (11)	C01510	HP Dark Gray (3/DEF)	C08793	1 x 1 Light Gray (Prepay)
C08772	LP, Gray (12)	C01509	HP Dark Gray (4/GHI)	C08794	1 x 1 Light Gray (Total)
C08773	LP, Gray (13)	C01508	HP Dark Gray (5/JKL)		
C08774	LP, Gray (14)	C01507	HP Dark Gray (6/MNO)		
C08775	LP, Gray (15)	C01506	HP Dark Gray (7/PRS)		
C08776	LP, Gray (16)	C01505	HP Dark Gray (8/TUV)		

CONSOLE IA+ AND II+ PARTS



C05939 Console Assembly IA+
C05784 Console Assembly II+
C06332 Checkpoint Console Assembly

1	C08750	Housing, Top Cons2 Modif.- Tan
2	C35284	Housing, base modif-tan Cons II+
3	C35277	Silk'd rear panel Cons II+
4	C08930	Window, display silkscreen-CFN
5	C04467	Label Console Sel/Hose
6	C04469	Label Console Cur/Prev
7	C06262	Cable assy, Keyswitch Cons II+ (standard key)
	C06290	Keyswitch Connector Cable Assy, Cons IA+ (barrel-type key)
8	C05436	Mag Rdr/Conn assy., Cons-CFN
9	C33897	Bracket, Mag Rdr. Mounting, Cons
10	C06259	Cable assy., Pwr Cons II+
11	C06263	Cable assy., Fil/Pwr Cons II+
12	C06257	Cable assy., Beeper, Cons II+
13	C33895	Brkt/Nut assy.,LH display mount
14	C33896	Brkt/Nut assy.,RH display mount
15	C05836	PCB assy., Cons II+ CPU
16	C02978	IC, RS-485 driver
17	C03220	IC, RS-485 receiver
18	C08799	Fuse, 5 Amp Pico
19	C05583	Keyboard Assy. Kit, Cons. II, CFN, 56SW
	C04724	Keyboard Assy. Kit, Cons. IA+, 36SW
	C05990	Keyboard Assy. Kit, Pr Pt, Chkpt, 72SW
20	C05379	PCB assy., RS-485 junction box
21	C05435	Cable assy., ribbon 26 pos 7.5" long
22	C05434	Cable assy., 4-pos conn/spade-CFN
23	C03824	Bumper, 1/2"sq x 7/32"H selfadh-blk
24	C04839	PCB assy., VF driver, console
25	C05482	MC68HC711 CPU adaptor PCB Assy.
26	C04245	Power supply cord-3 cond 6'10"
27	C05670	Cable assy., phone-1:1 - (4P/4W) 8'
28	C02207	Clamp, ribbon cable
29	C06258	Cable assy., Cash drawer, cons II+
30	C08795	Keytops, 5-color legend sheets (Not Shown)
31	C08751	Label, key sw, console-CFN
32	C34842	Window Cons. clear 1/8" thick
33	C08940	Window, display gray filter - CFN
34	C06255	Cable assy., cust disp/conn II+
35	C08721	IC, programmmed C08720 32K
36	C06261	Cable assy., cons/prn comm II+
37	C09053	Pwr supply, 50W, #SPL50-3200
38	C35283	P/S Cover, perf cons II+ (Not Shown)
39	C06256	Cable assy., VF disp DC/PWR II+
40	C06260	Cable assy., PIN pad/scan II+
41	C35286	Support bar, PCB mnt- Cons II+
42	C35281	Brkt assy., P/S Mntg Cons II+
43	C08330	Filter, RF Module #06AR2
44	C08461	Fuse, 1 Amp, Quick blow
45	C06579	Kit, Console Cable Cover (Not Shown)
	*C35467	Cover

- Denotes this is a sub-part used in the preceding assembly

Additional Keytops for C05990 Checkpoint Keyboard Assembly

C01491	HP, Lt. Gray (SAFE DROP)	C01485	HP, Lt. Gray (SIGN ON/OFF)
C01490	HP, Lt. Gray (VOID)	C01484	HP, Lt. Gray (SPEC FUNC)
C01489	HP, Lt. Gray (MOVE MDSE)	C08794	HP, Lt. Gray (TOTAL)
C01488	HP, Lt. Gray (REVERSE SALE)	C01492	1x2 Charcoal (MDSE)
C01487	HP, Lt. Gray (VIEW)	C01500	HP, Lt. Gray (X/PAYABLE)
C01486	HP, Lt. Gray (PREPAY CASH)		HP=High Profile

Section 8
STANDALONE RECEIPT PRINTER

GENERAL INFORMATION

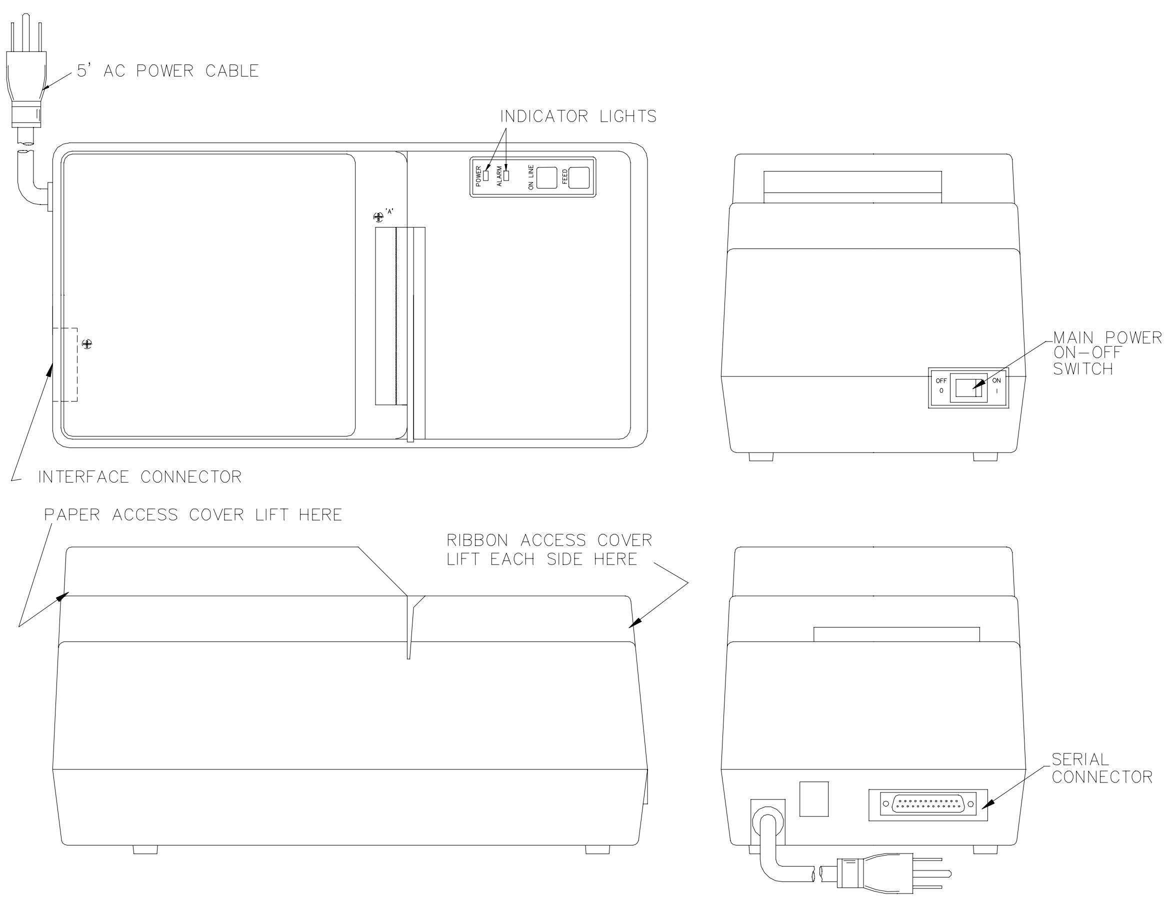
The Standalone Receipt Printer is used for generating receipts in the building where the GASBOY Console is located. The printer can only be used in conjunction with a Console. There are two models of standalone receipt printer currently supported: a Star Receipt Printer and an Epson Receipt Printer. Since the Star printer is the one currently being shipped with new orders, it is presented first in this section. The Epson exists with older systems and that information is presented later in this section.

STAR PRINTER

The Star printer is supplied in one of three configurations: RS-422 Serial, RS-232 Serial, or Parallel. The exterior of the printer is identical in all three configurations except for the connector.

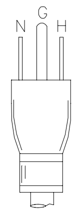
The Star printer is connected directly to the console via the RS-422 port labeled Receipt Printer or the port labeled Printer (RS-232 and parallel). If a PIN Pad is used, it is connected to the console separately from the printer (see the PIN Pad section for details on the Verifone PIN Pad).

Layout

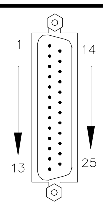


Star Printer Connectors

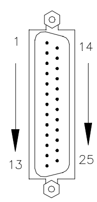
AC Power

Pinout	Pin	Function	Voltage
	H	AC hot input	115 VAC
	N	AC neutral input	AC neutral
	G	AC ground input	AC ground

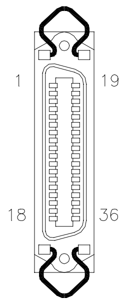
RS-422 Serial

Pinout	Pin	Function	Voltage
	17	Rx+ – Receive Data from Console	⎍⎍ +5VDC signal between pins 17 & 18
	18	Rx– – Receive data from Console	⎍⎍ +5VDC signal between pins 17 & 18
	Pins 1–16, 19–25 not used		

RS-232 Serial

Pinout	Pin	Function	Voltage
	2	TXD – Transmit data	⎍⎍ ±12 VDC signal output
	3	RXD – Receive data	⎍⎍ ±12 VDC signal input
	4	RTS – Request to send	+12 VDC – On output
	5	CTS – Clear to send	+12 VDC – On input
	7	DC ground	DC ground
	8	FAULT – Printer error condition	+12 VDC – On input
	20	DTR – Data terminal ready	+12 VDC – On output
	Pins 1, 6, 9–19, 21–25 not used		

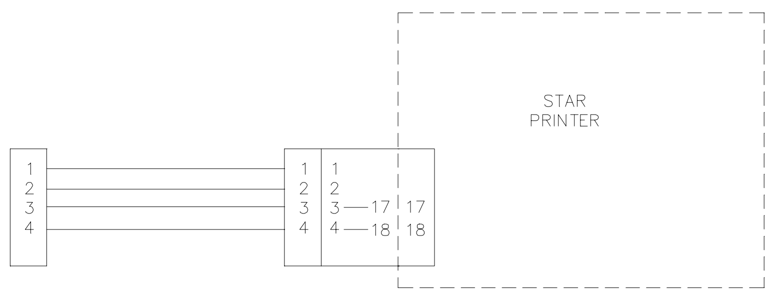
Parallel

Pinout	Pin	Function	Voltage
	1	$\overline{\text{STROBE}}$ – input to printer	0 VDC signal – on
	2	PD0 – Printer data 0	+5 VDC signal – on
	3	PD1 – Printer data 1	+5 VDC signal – on
	4	PD2 – Printer data 2	+5 VDC signal – on
	5	PD3 – Printer data 3	+5 VDC signal – on
	6	PD4 – Printer data 4	+5 VDC signal – on
	7	PD5 – Printer data 5	+5 VDC signal – on
	8	PD6 – Printer data 6	+5 VDC signal – on
	9	PD7 – Printer data 7	+5 VDC signal – on
	10	$\overline{\text{ACK}}$ – Not used	
	11	BUSY – Printer busy	+5 VDC signal – on
	12	PAPER OUT	+5 VDC signal – on
	13	SELECTED – Printer online	+5 VDC signal – on
	16	SIGNAL GND	
	17	CHASSIS GND	
	18	+5 VDC – Output from printer	
	19–30	GND	
	31	$\overline{\text{INIT}}$ – Initialize	0 VDC signal – on
	32	$\overline{\text{FAULT}}$ – Printer error condition	0 VDC signal – on
	33–34	N/C	
	14–15, 35–36 not used		

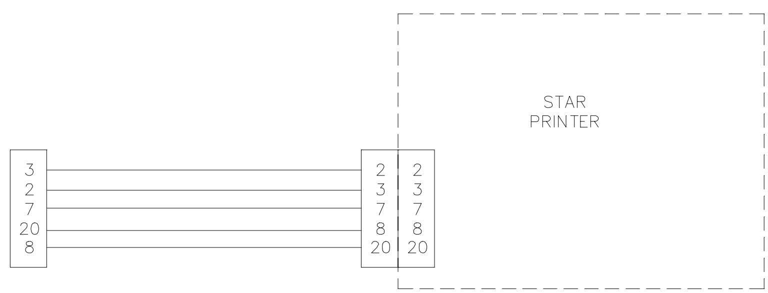
Star Printer Wiring

All field wiring is made to the unit by plug-in connectors. The AC power for the unit comes from the AC power plug. Communication wiring is different depending on the printer configuration. RS-232 comes from the console thorugh a standard RS-232 25-position cable. RS-422 comes from the console via a modular cable through an adaptor and a 25-position cable. Parallel printer communication comes from the console via a parallel printer cable. See the *CFN SCI or SCII Installation Manual* for detailed wiring instructions.

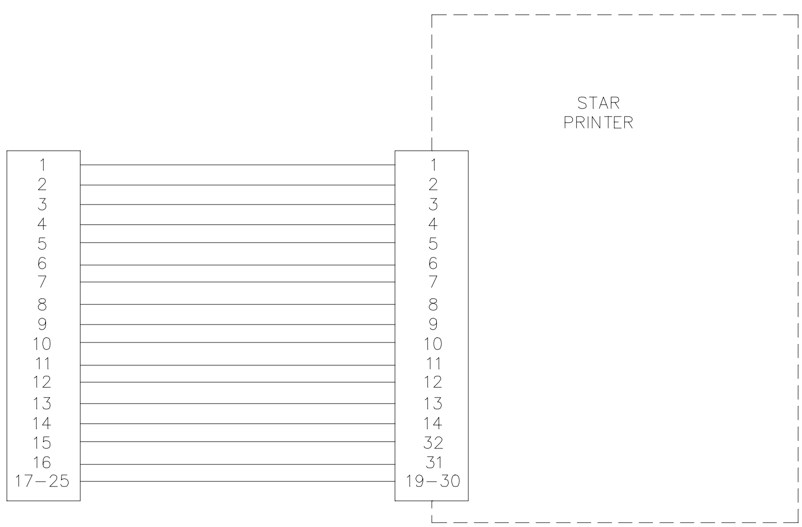
RS-422 Serial Wiring



RS-232 Serial Wiring



Parallel Wiring



Star Printer Jumpers - Main Logic Board

The Star printer's Main Logic Board has two jumper patches SW5 and SW6. Both are set at the factory and need to be changed only if installing the RS-422 Interface Board.

SW5 and SW6

Jumper	Setting	Function
SW5	A C	RS–232 Serial – Factory Default Setting
	B C	RS–422 Serial – Use with optional interface board
SW6	A C	RS–232 Serial – Factory Default Setting
	B C	RS–422 Serial – Use with optional interface board

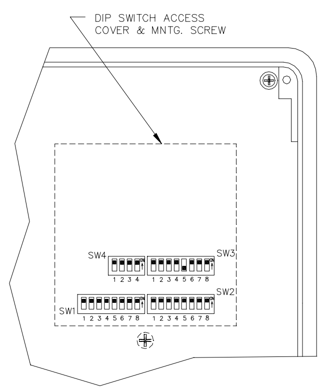
Star Printer LED's and Operating Controls

The Star printer has three external LED's and two buttons. The LED's and buttons perform the following functions:

LED/Button	Function
POWER	Lights when power is on
ALARM	Solid light=paper out
	Flashing light=cover open or mechanical error
ON LINE	ON=printer on line
	OFF=printer offline
	Flash=validation mode set
FEED	Press less than .5 seconds=line feed
	Press more than .5 seconds=continuous feed
FEED & POWER ON	Self–test prints dip switch settings and character set

Star Printer Switches

The serial Star printer has four switch banks (DSW1 through DSW4) which are accessible by removing the bottom cover. The parallel Star printer has only two switch banks (DSW1 and DSW2).



DSW1

Switch	RS-232 Serial or Parallel	RS-422 Serial	Function
1-1	Not Used	Not Used	N/A
1-2	Not Used	Not Used	N/A
1-3	ON	ON	Control Cord CR Invalid
1-4	ON	ON	Mode Select/Deselect
1-5	ON	ON	Paper feed length 1/6-inch
1-6	ON	ON	Buffer Size - 4K
1-7	ON - YES	OFF - NO	RAM Backup
1-8	ON - Valid	OFF - Invalid	Paper out detect

DSW2

Switch	All Models	Function
2-1	ON	Character Code Table, US and Europe
2-2	ON	Character Code Table, US and Europe
2-3	ON	Not Used
2-4	ON	Paper Width 3.25-inch, 3.0 inch
2-5	ON	Not Used
2-6	ON	US Character Set
2-7	ON	US Character Set
2-8	ON	US Character Set

DSW3 - Serial Only

Switch	All Models	Function
3-1	ON	
3-2	ON	Set Baud Rate to 9600
3-3	ON	
3-4	ON	Not Used
3-5	OFF	Mode set to X-ON/X-OFF
3-6	ON	8-data bit
3-7	ON	No parity check
3-8	ON	Odd parity

DSW4 - Serial Only

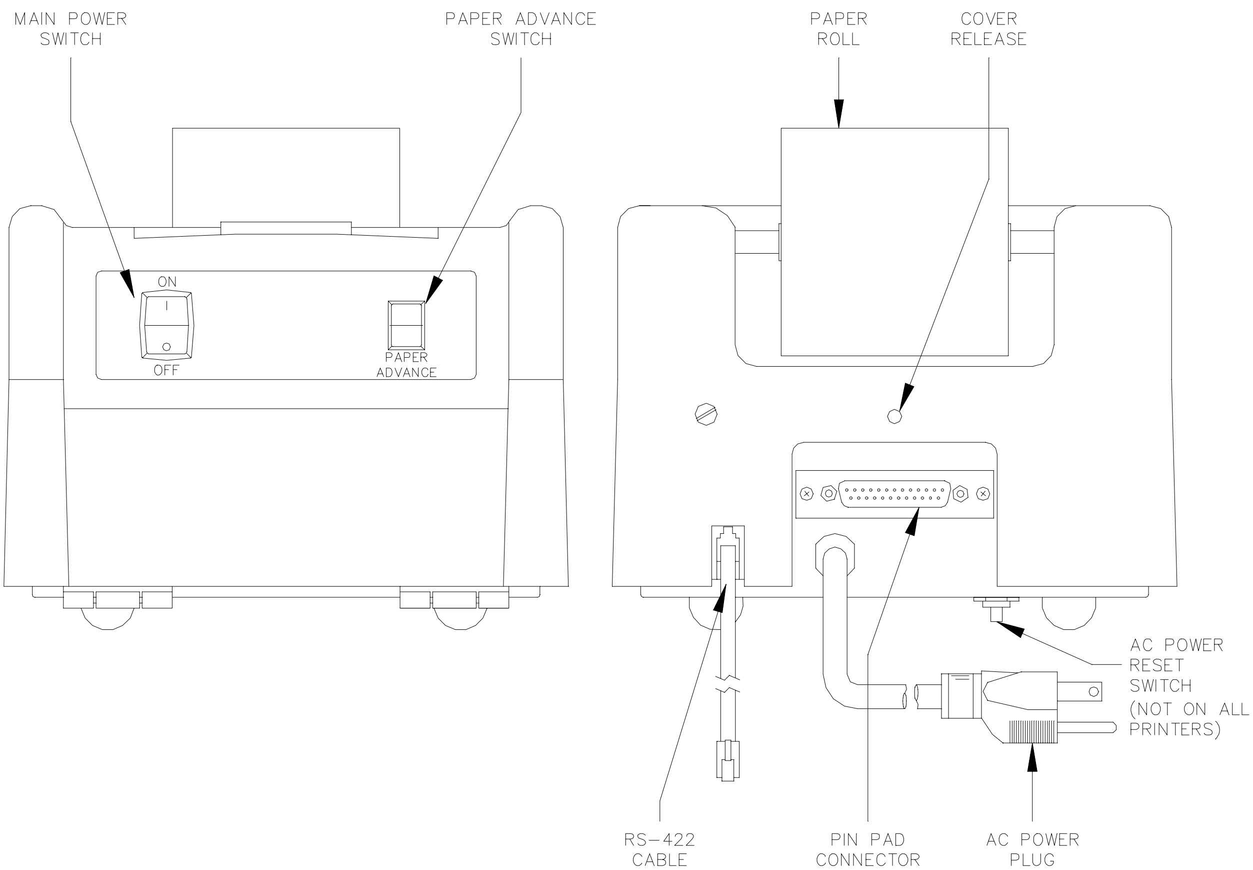
Switch	DC1, DC3 Invalid Mode*	Addressable Mode 1**														DC1, DC3 Valid Mode
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	
4-1	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
4-2	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
4-3	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
4-4	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

* RS-232
** RS-422 only. Address #4 cannot be used.

EPSON PRINTER

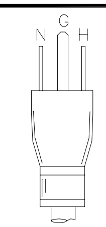
The Epson receipt printer is capable of supporting a PIN pad used for entry of customer's PIN's for inside purchases.

Layout

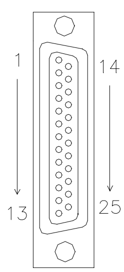


Epson Printer Connectors

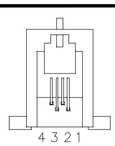
AC Power Plug

Pinout	Pin	Function	Voltage
	H	AC hot input	115 VAC
	N	AC neutral input	AC neutral
	G	AC ground input	AC ground

PIN Pad

Pinout	Pin	Function	Input/Output
Remote 	2	Y1 – Input from 1, 2, 3	0 VDC–Key pressed, +5 VDC–Not pressed
	3	Y3 – Input from 7, 8, 9	0 VDC–Key pressed, +5 VDC–Not pressed
	4	X3 – Output to 2, 5, 8, 0	0 VDC–Key pressed, Off–Not pressed
	5	X4 – Output to 3, 6, 9	0 VDC–Key pressed, Off–Not pressed
	7	LED 5	0 VDC–LED on, +5 VDC–off
	11	LED 3	0 VDC–LED on, +5 VDC–off
	14	LED 4	0 VDC–LED on, +5 VDC–off
	16	X1 – Output to CLEAR	0 VDC–Key pressed, Off–Not pressed
	17	X2 – Output to 1, 4, 7, ENTER	0 VDC–Key pressed, Off–Not pressed
	20	Y2 – Input from 4, 5, 6	0 VDC–Key pressed, +5 VDC–Not pressed
	21	LED 1	0 VDC–LED on, +5 VDC–off
	22	LED 2	0 VDC–LED on, +5 VDC–off
	23	+5 VDC	+5 VDC
	24	Y4 – Input from CLEAR, 0, ENTER	0 VDC–Key pressed, +5 VDC–Not pressed

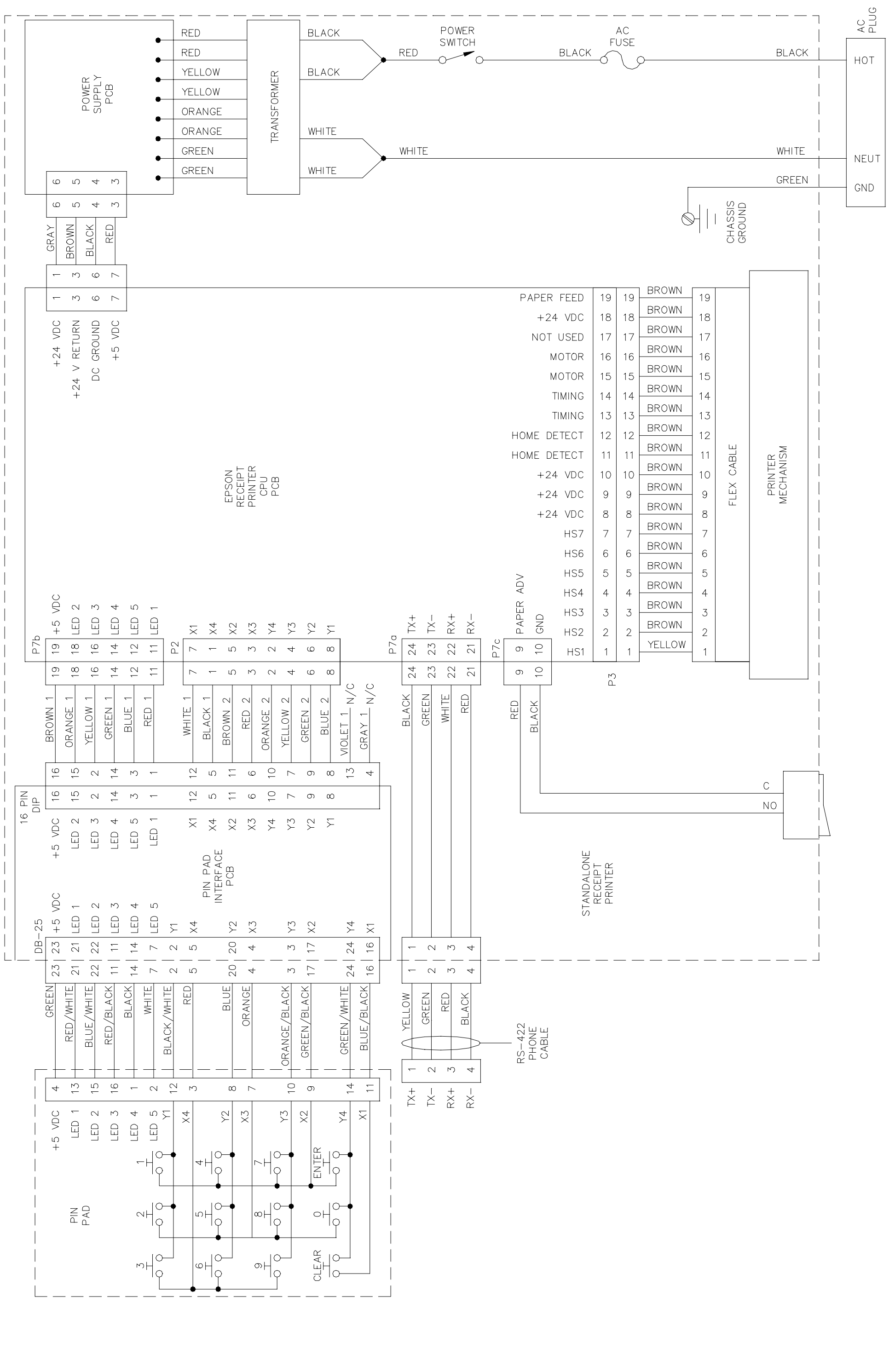
RS-422

Pinout	Pin	Function		Voltage
	1	RS–422 Tx+	To	⊓⊓ +5 VDC signal
	2	RS–422 Tx–	Console Loop	between pins 1 & 2
	3	RS–422 Rx+	From	⊓⊓ +5 VDC signal
	4	RS–422 Rx–	Console Loop	between pins 3 & 4

Epson Printer Wiring

All field wiring is made to the unit by plug-in connectors. The AC power for the unit comes from the AC power plug. The RS-422 communication comes through the phone cable that plugs into the rear of the console. Communication to the optional GASBOY PIN Pad goes through the 25-pin connector located in the rear of the unit. See the *CFN SCI or SCII Installation Manual* for detailed wiring instructions.

Chassis Wiring

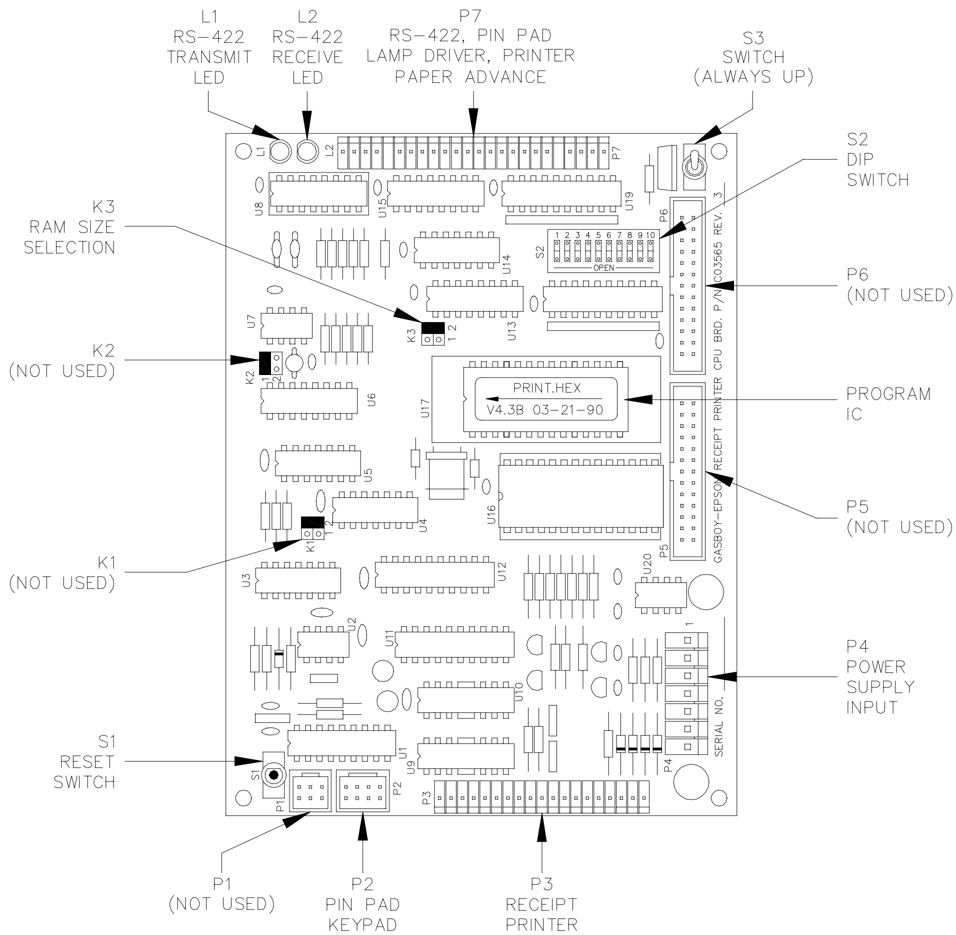


EPSON CPU PCB (C04934)

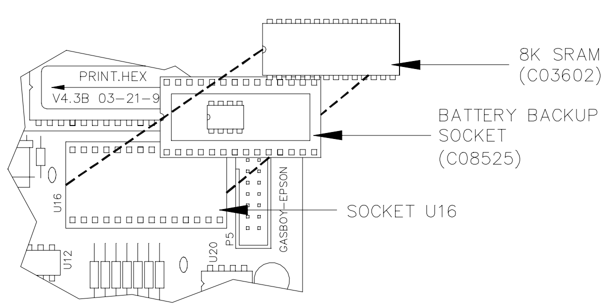
The Epson CPU PCB is the heart of the GASBOY Standalone Receipt Printer. This CPU PCB:

- processes all receipt data
- sends and receives the RS-422 data to and from the site controller
- provides diagnostic LED's to monitor operation of the RS-422 lines
- controls the operation of the optional PIN Pad

Layout



DES Encryption Option



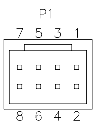
Epson CPU PCB LED Indicators

LED indicators are provided to allow you to monitor the RS-422 communication.

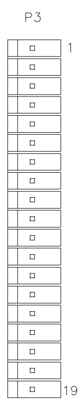
LED	Function
L1	RS–422 transmit to Site Controller
L2	RS–422 receive from Site Controller

Epson CPU PCB Connectors

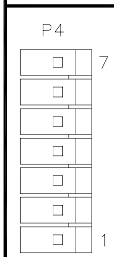
P2 - PIN Pad

Pinout	Pin	Wire	Function	Voltage
	1	Black 1	X4 – Output to 3, 6, 9	0 VDC–Key pressed, Off–Not pressed
	2	Orange 2	Y4 – Input fron ENTER, 0, CLEAR	0 VDC–Key pressed, +5 VDC–Not pressed
	3	Red 2	X3 – Output to 2, 5, 8, 0	0 VDC–Key pressed, Off–Not pressed
	4	Yellow 2	Y3 – Input from 7, 8, 9	0 VDC–Key pressed, +5 VDC–Not pressed
	5	Brown 2	X2 – Output to 1, 4, 7, ENTER	0 VDC–Key pressed, Off–Not pressed
	6	Green 2	Y2 – Input from 4, 5, 6	0 VDC–Key pressed, +5 VDC–Not pressed
	7	White 1	X1 – Output to CLEAR	0 VDC–Key pressed, Off–Not pressed
	8	Blue 2	Y1 – Input from 1, 2, 3	0 VDC–Key pressed, +5 VDC–Not pressed

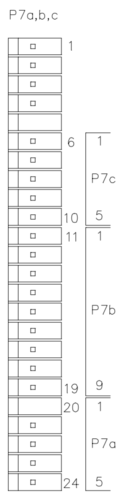
P3 - Receipt Printer

Pinout	Pin	Wire	Function	Voltage
	1	Yellow	Head solenoid 1 drive	0 VDC–On, +24 VDC–Off
	2	Brown	Head solenoid 2 drive	0 VDC–On, +24 VDC–Off
	3	Brown	Head solenoid 3 drive	0 VDC–On, +24 VDC–Off
	4	Brown	Head solenoid 4 drive	0 VDC–On, +24 VDC–Off
	5	Brown	Head solenoid 5 drive	0 VDC–On, +24 VDC–Off
	6	Brown	Head solenoid 6 drive	0 VDC–On, +24 VDC–Off
	7	Brown	Head solenoid 7 drive	0 VDC–On, +24 VDC–Off
	8	Brown	+24 VDC printhead solenoid power	+24 VDC
	9	Brown	+24 VDC printhead solenoid power	+24 VDC
	10	Brown	+24 VDC printhead solenoid power	+24 VDC
	11	Brown	Printhead home detector input	+3 VDC–Home, 0 VDC–Not home
	12	Brown	Printhead home detector output	+3 VDC
	13	Brown	Timing detector input	⎍⎍⎍ +6 VDC signal
	14	Brown	Timing detector input	⎍⎍⎍ +6 VDC signal
	15	Brown	Motor –	0 VDC–On, +24 VDC–Off
	16	Brown	Motor +	+24 VDC
	17	Brown	Not used	
	18	Brown	+24 VDC paper feed & ribbon shift solenoid power	+24 VDC
	19	Brown	Paper feed solenoid drive	0 VDC–On, +24 VDC–Off

P4 - Power Supply Input

Pinout	Pin	Wire	Function	Voltage
 Note: PCB silkscreen shows pin 1 at the wrong end of the connector.	1	Gray	+24 VDC	+24 VDC
	2	N/C		
	3	Brown	DC ground	DC ground
	4	N/C		
	5	N/C		
	6	Black	DC ground	DC ground
	7	Red	+5 VDC	+5 VDC

P7 - RS-422, PIN Pad Lamps, Paper Advance Switch

Pinout	Pin	Connector	Wire	Function		Voltage
	1			N/C		
	2			N/C		
	3			N/C		
	4			N/C		
	5			N/C		
	6	c-1		N/C		
	7	c-2		N/C		
	8	c-3		N/C		
	9	c-4	Red	Paper advance switch		0 VDC-Switch pressed
	10	c-5	Black	DC ground		DC ground
	11	b-1	Red 1	Pin pad LED 1 drive		0 VDC-LED on, +5 VDC-off
	12	b-2	Blue 1	Pin pad LED 5 drive		0 VDC-LED on, +5 VDC-off
	13	b-3		N/C		
	14	b-4	Green 1	Pin pad LED 4 drive		0 VDC-LED on, +5 VDC-off
	15	b-5		N/C		
	16	b-6	Yellow 1	Pin pad LED 3 drive		0 VDC-LED on, +5 VDC-off
	17	b-7		N/C		
	18	b-8	Orange 1	Pin pad LED 2 drive		0 VDC-LED on, +5 VDC-off
	19	b-9	Brown 1	+5 VDC pin pad LED power		+5 VDC
	20	a-1		N/C		
	21	a-2	Red	RS-422 Rx-	From	+5 VDC signal
	22	a-3	White	RS-422 Rx+	Console loop	between pins 21 & 22
	23	a-4	Green	RS-422 Tx-	To	+5 VDC signal
	24	a-5	Black	RS-422 Tx+	Console loop	between pins 23 & 24

Epson CPU PCB Jumpers

Jumpers on the CPU PCB are only used to set the type of RAM (U16) and usually do not need to be set in the field.

K1 & K2

Jumper	Position	Function
K1	Don't care	Not used
K2	Don't care	Not used

K3 - RAM Type

U16 RAM type	K3-1	K3-2
2K x 8 SRAM	Open	Jumpered
8K x 8 SRAM	Jumpered	Open

Epson CPU PCB Switches

S1 - Reset Switch

The Reset switch starts a hardware and software reset of the CPU PCB. The S2 switch settings are read when a reset occurs (and at power up). This switch should be pressed whenever switch settings are changed while power is on.

Switch	Function
S1	Push to reset CPU PCB

S2 - Miscellaneous Switches

These switches are used to set the basic configuration of the printer. They are software dependent (the version of software may change the nature of the switch).

PRINT.HEX V4.2B Software 07/31/87 & Earlier

Switch	Function – PRINT.HEX V4.2B software 07–31–87 & earlier		
S2–1	DEAD	Open	Deadman timer enabled
S2–2	N/A	Don't care	
S2–3	BR1	Open	9600 baud
S2–4	BR2	Closed	
S2–5	CRC	Open	CRC check enabled
S2–6		Closed	
S2–7	ADDR4	Closed	Console printer 1
S2–8	ADDR3	Closed	
S2–9	ADDR2	Closed	
S2–10	ADDR1	Closed	

PRINT.HEX V4.3 Software 08/14/86 & Later

Switch	Function – PRINT.HEX V4.3 software 08–14–87 & later		
S2–1	DEAD	Open	Deadman timer enabled
S2–2	N/A	Don't care	
S2–3	DES	Open	DES encryption enabled
S2–4	N/A	Don't care	
S2–5	CRC	Open	CRC check enabled
S2–6		Closed	
S2–7	ADDR4	Closed	Console printer 1
S2–8	ADDR3	Closed	
S2–9	ADDR2	Closed	
S2–10	ADDR1	Closed	

DEAD This switch enables the deadman timer. It should always be open.

BR1, BR2 These switches select the baud rate and should always be left in the positions shown.

CRC This switch should always be open to allow data integrity checks to be performed on the data going between the ICR and the site controller.

DES When open, the PIN number entered with a bank card transaction is encrypted before it is sent to the site controller. DES requires battery backup socket and 8K RAM.

ADDR4, ADDR3, ADDR2, ADDR1 These switches select the address of the printer on the RS-422 loop. The printer can be set for any address; we recommend address 1.

S3

This switch should always be left in the Up position.

Switch	Function
S3	Up=normal, Down=test mode

STANDALONE RECEIPT PRINTER PROBLEMS

Receipt printer is dead. Site Controller reports READER TERMINAL WENT DOWN. Nothing happens when Paper Advance is pressed.

Possible Cause	Checks	Corrective Action
No 115VAC power to printer.	Check if circuit breaker is off or tripped.	Turn breaker on, if off.
	Check if 115VAC is being switched through circuit breaker.	Replace breaker if 115VAC is not being switched.
	If the power conditioner has a power switch, make sure the switch is on.	Turn power conditioner power switch on, if off.I
	Check the power conditioner's fuse or circuit breaker.	f the power conditioner has a fuse or built-in circuit breaker, replace or reset as necessary.
	Check the output voltage of the power conditioner.	If 115VAC is measured at the power conditioner input but not at the output, replace the power conditioner.
	Check the printer power cord.	Make sure the printer power cord is installed properly.
Printer power switch is off.	Check the printer power switch.	Turn printer power switch on, if off.
EPSON ONLY. Blown fuse on rear of printer (earlier Capitol circuits) or tripped breaker on bottom of printer (newer Capitol circuits).	Check the fuse with an ohmmeter or check circuit breaker.	Replace fuse or reset breaker if necessary.
EPSON ONLY. Defective power supply.	Check red and black wires.	Replace printer

Portion of printed characters is missing.

Possible Cause	Checks	Corrective Action
Ribbon is not installed properly or is worn out or dry.	Check that the ribbon is installed properly. The ribbon must not have any holes or tears	Re-install the ribbon and replace if necessary.
Defective print head, improper head clearance, improper print speed.	EPSON: None STAR: Self-test or check head adjust lever position.	EPSON: Replace receipt printer mechanism. STAR: Push the lever as far as possible towards the rear and pull it two notches forward (standard position). If no good, replace the unit.
Defective head solenoid drivers.	EPSON: None. STAR: Self-test.	EPSON: Replace the CPU board if replacing the receipt printer mechanism didn't fix problem. STAR: Replace unit.

EPSON ONLY: Paper doesn't advance when printing receipts or when paper advance switch is pressed.

Possible Cause	Checks	Corrective Action
No +24VDC.	Measure +24VDC between the brown (gnd) and gray (+24) wires.	Replace printer if no +24VDC.
Defective Epson receipt printer CPU board.	Using an oscilloscope, measure the signal at pin 19 on the flexible printed circuit connector while pressing the paper advance switch.	Replace the Epson receipt printer CPU board if a 24VDC square wave is not seen at pin 19.
Defective clutch mechanism or clutch solenoid.	Using an oscilloscope, measure the signal at pin 19 on the flexible printed circuit connector while pressing the paper advance switch.	Replace the receipt printer mechanism if a 24VDC square wave is seen at pin 19 and paper still doesn't advance.

Printing appears light.

Possible Cause	Checks	Corrective Action
Worn out inked ribbon.	Check if ribbon looks worn.	Replace ribbon.
Improper head clearance.	EPSON: None. STAR: Self-test. Check head adjust lever position	Replace the receipt printer mechanism. STAR: Set head adjust lever to standard position (see 8-15)
Insufficient solenoid drive circuit.	EPSON: None. STAR: Self test.	EPSON: Replace the receipt printer CPU board, if replacing the printer mechanism didn't fix problem. STAR: Replace unit.

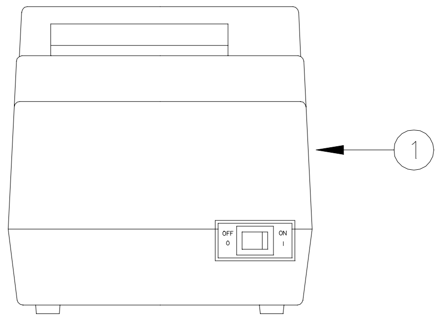
Printer is not printing when print key is pressed.

Possible Cause	Checks	Corrective Action
Unit is not ON.	Check the unit power switch.	Turn unit ON if OFF.
Not connected.	Check connections.	Make corrections if needed.
EPSON: No +24VDC.	Measure +24VDC between the brown (gnd) and gray (+24) wires.	Replace printer if +24VDC is not measured at the power supply.
STAR: Out of paper.	Check to see if ALARM light is on.	Reload new roll of paper if out.
Printer is off line.	Check that ON LINE light is on.	Press ON LINE switch to put printer online.
Front cover not on.	Check ALARM light for flashing.	Mount front cover properly and press the ON LINE switch.
Printer jammed.	Check ALARM light for flashing	Try to unjam printer. If unjammed, turn the power off and back on again.

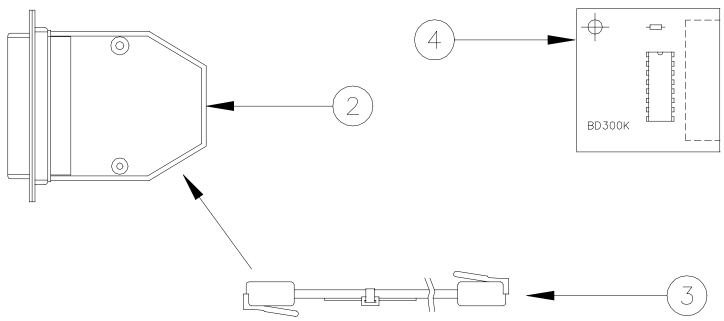
This page intentionally left blank.

STAR STANDALONE RECEIPT PRINTER PARTS

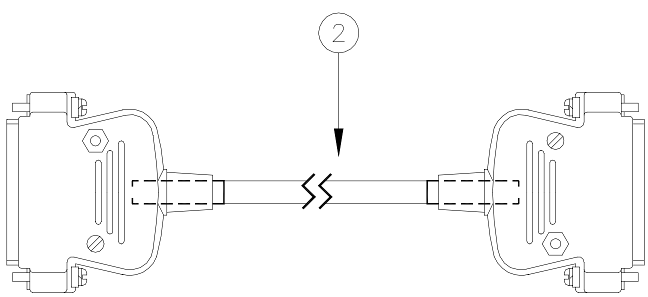
Star Printer - All Models



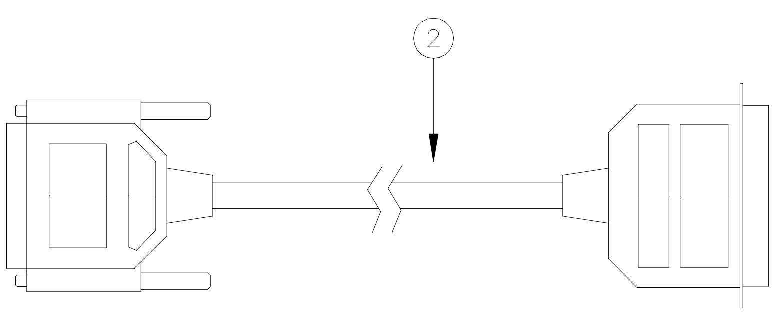
C06244 Star Printer RS-422 Serial



C06297 Star Printer RS-232 Serial



C06451 Star Printer - Parallel



STAR STANDALONE RECEIPT PRINTER PARTS

Star Printer - RS-422 Serial

1	CR6244	Printer, Standalone Star Serial
2	C06243	Adaptor Assy., DB25M/RJ11 Jack
3	C06242	Cable Assy., 4-position 1:1 HS line
4	C01340	Board, RS-422 Printer Control
5	C03495	Paper roll, 3x3 white bond (Not Shown)
	C01772	Paper roll, 3x3 two-copy carbonless (Not Shown)
6	C01631	Ribbon cartridge (Not Shown)

Star Printer - RS-232 Serial

1	CR6297	Printer, Standalone Star Serial
2	C04532	Cable Assy., RS-232 Modem M/M 8
5	C03495	Paper roll, 3x3 white bond (Not Shown)
	C01772	Paper roll, 3x3 two-copy carbonless (Not Shown)
6	C01631	Ribbon cartridge (Not Shown)

Star Printer - Parallel

1	CR6451	Printer, Standalone Star Parallel
2	C01303	Cable Assy., DB25M/36M x 6'
5	C03495	Paper roll, 3x3 white bond (Not Shown)
	C01772	Paper roll, 3x3 two-copy carbonless (Not Shown)
6	C01631	Ribbon cartridge (Not Shown)

Section 9

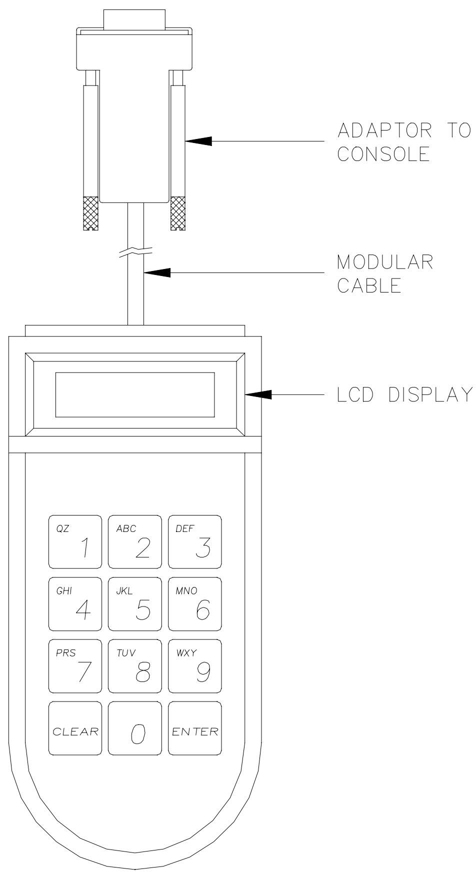
PIN PAD

DESCRIPTION

The PIN pad is used for entry of customer personal identification numbers at the GASBOY Console. There are two models of PIN pad currently supported: a Verifone PIN pad and a GASBOY PIN pad. Since the Verifone PIN pad is currently being shipped with new orders, it is presented first in this section. The GASBOY PIN pad exists with older systems and that information is presented later in this section.

VERIFONE PIN PAD

Layout



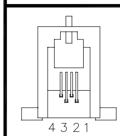
Verifone PIN Pad LCD Display

The LCD display can accommodate 8 digits without wrapping. The PIN digits display as asterisks for security. When 8 digits are exceeded, the 9th through 12th digits appear as # characters.

Digit Entered	Display Shows							
1st								*
2nd							*	*
3rd						*	*	*
4th					*	*	*	*
5th				*	*	*	*	*
6th			*	*	*	*	*	*
7th		*	*	*	*	*	*	*
8th	*	*	*	*	*	*	*	*
9th	*	*	*	*	*	*	*	#
10th	*	*	*	*	*	*	#	#
11th	*	*	*	*	*	#	#	#
12th	*	*	*	*	#	#	#	#

Verifone PIN Pad Connector

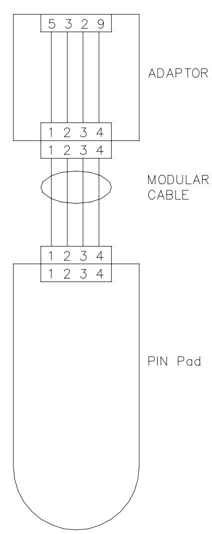
PIN Pad Modular Connector



Pinout	Pin	Wire	Function	Input/Output
	1	Black	DC ground	DC ground
	2	Red	Receive data	Input
	3	Green	Transmit data	Output
	4	Yellow	+9 VDC (unregulated)	Input

Verifone PIN Pad Wiring

The Verifone PIN pad is connected directly to the console via a modular cable and adaptor assembly. See the diagram **Chassis Wiring for Consoles IA+ and II+** in Section 7 for a wiring overview.



Verifone PIN Pad Self-Tests

You can perform various standalone self-tests using the PIN pad keypad. To perform the self-tests, the console to which the PIN pad is connected must have the configuration temporarily changed to **NO CONSOLE PRNT/PAD** (See Section 7, **Configuration - Console 1A+ and II+**). To perform each self test:

1. Press CLEAR, then 3. The PIN pad displays **PASSWORD**.

   *NOTE: If the **PASSWORD** prompt does not display, you may be pressing the 3 key too slowly. Pressing the CLEAR and 3 keys quickly should produce the desired result.*

2. Press **83746** and then ENTER.

   If the password is incorrect, the idle prompt (**--------**) displays. Repeat Steps 1 and 2.

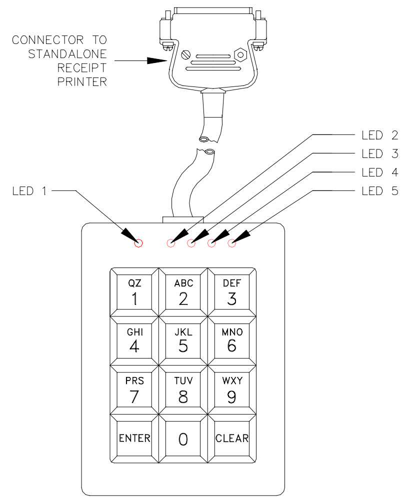
   If the password is correct, the PIN pad displays the self-test menu (shown below). Once the password has been accepted, press the numeric key of the desired test. Most tests exit automatically. If the test does not exit automatically or you want to return to the idle prompt, press CLEAR.

Number	**Test Name**	**Function/Use**
0	CHG PROC MSG	Not used.
1	ONE MEM TST	Press 1 on the PIN pad. The PIN pad displays **RAM TST BEGIN**. It runs a RAM test and displays **RAM TST OK** if it completes without error.
2	CON MEM TST	Press 2 on the keypad. The PIN pad displays **RAM TST BEGIN** followed by **RAM TST OK** continuously. To exit, press and hold down CLEAR.
3	PROM CKSUM	Press 3 on the keypad. The PIN pad runs a test on its internal program. If the completes without error, **PROM OK** displays.
4	KEY TST	Press 4 on the keypad. **KEY TST** displays. Press any number **0-9** or ENTER and the PIN pad displays that character in all 8 characters of the display. The ENTER key displays as **#**. To exit, press CLEAR.
5	DISP TST	Press 5 on the keypad. The PIN Pad begins a display test. The following three patterns display sequentially and the text exits. **'O.'O.'O.'O.'O.'O.'O.'O.** *** * * * * * * *** *** 'O.**
6	SHOW SER NUM	Not used.
7	SUART LOOP	Not used.

GASBOY PIN PAD

The GASBOY PIN Pad must be used in conjunction with a GASBOY Standalone Receipt Printer.

Layout



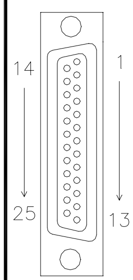
LED Indicators

LED indicators are provided to assist the customer with the entry of the PIN The green LED indicates the unit is ready for the PIN entry. The four red LED's produce a sequential pattern that indicates the number of digits entered.

	Green	Red	Red	Red	Red
Digit Entered	L1	L2	L3	L4	L5
None	On	Off	Off	Off	Off
1st	On	On	Off	Off	Off
2nd	On	On	On	Off	Off
3rd	On	On	On	On	Off
4th	On	On	On	On	On
5th	On	Off	On	On	On
6th	On	Off	Off	On	On
7th	On	Off	Off	Off	On
8th	On	Off	Off	Off	Off
9th	On	On	Off	Off	Off
10th	On	On	On	Off	Off
11th	On	On	On	On	Off
12th	On	On	On	On	On

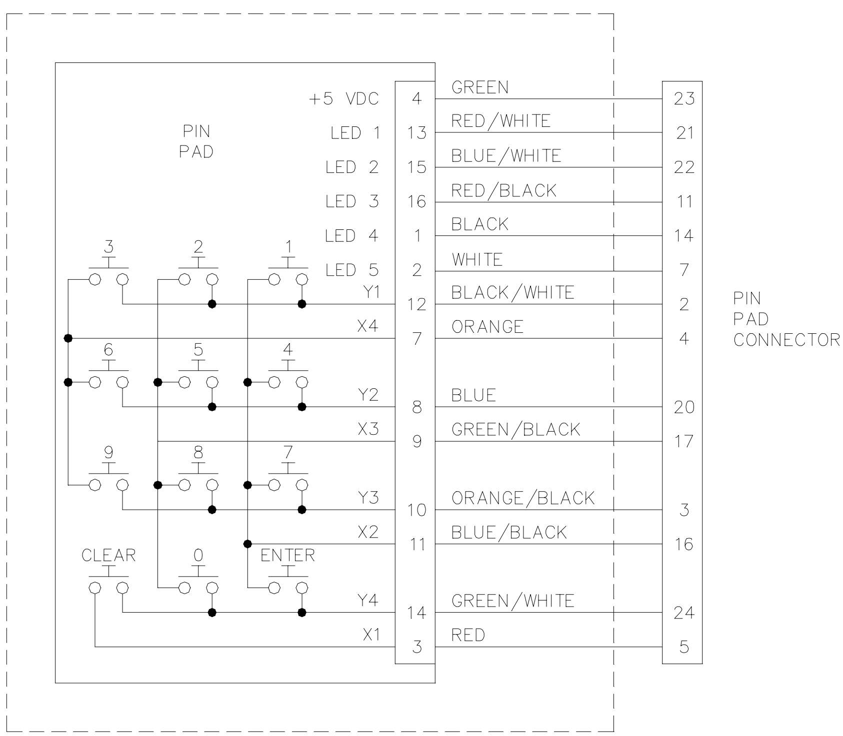
GASBOY PIN Pad Connector

PIN Pad Interface

Pinout	Pin	Pin	Function	Input/Output
	2	BLK/WHT	Y1 – Input from 1, 2, 3	0 VDC–Key pressed, +5 VDC–Not pressed
	3	ORA/BLK	Y3 – Input from 7, 8, 9	0 VDC–Key pressed, +5 VDC–Not pressed
	4	ORA	X4 – Output to 3, 6, 9	0 VDC–Key pressed, Off–Not pressed
	5	RED	X1 – Output to CLEAR	0 VDC–Key pressed, Off–Not pressed
	7	WHT	LED 5	0 VDC–LED on, +5 VDC–off
	11	RED/BLK	LED 3	0 VDC–LED on, +5 VDC–off
	14	BLK	LED 4	0 VDC–LED on, +5 VDC–off
	16	BLU/BLK	X2 – Output to 1, 4, 7, ENTER	0 VDC–Key pressed, Off–Not pressed
	17	GRN/BLK	X3 – Output to 2, 5, 8, 0	0 VDC–Key pressed, Off–Not pressed
	20	BLU	Y2 – Input from 4, 5, 6	0 VDC–Key pressed, +5 VDC–Not pressed
	21	RED/WHT	LED 1 – Pin pad enabled	0 VDC–LED on, +5 VDC–off
	22	BLU/WHT	LED 2	0 VDC–LED on, +5 VDC–off
	23	GRN	+5 VDC	+5 VDC
	24	GRN/WHT	Y4 – Input from CLEAR, 0, ENTER	0 VDC–Key pressed, +5 VDC–Not pressed

GASBOY PIN Pad Wiring

The only field wiring connection to the PIN pad is made through the cable which connects the unit to the GASBOY Standalone Receipt Printer. This cable is considered to be a DC connection.



PIN PAD PROBLEMS

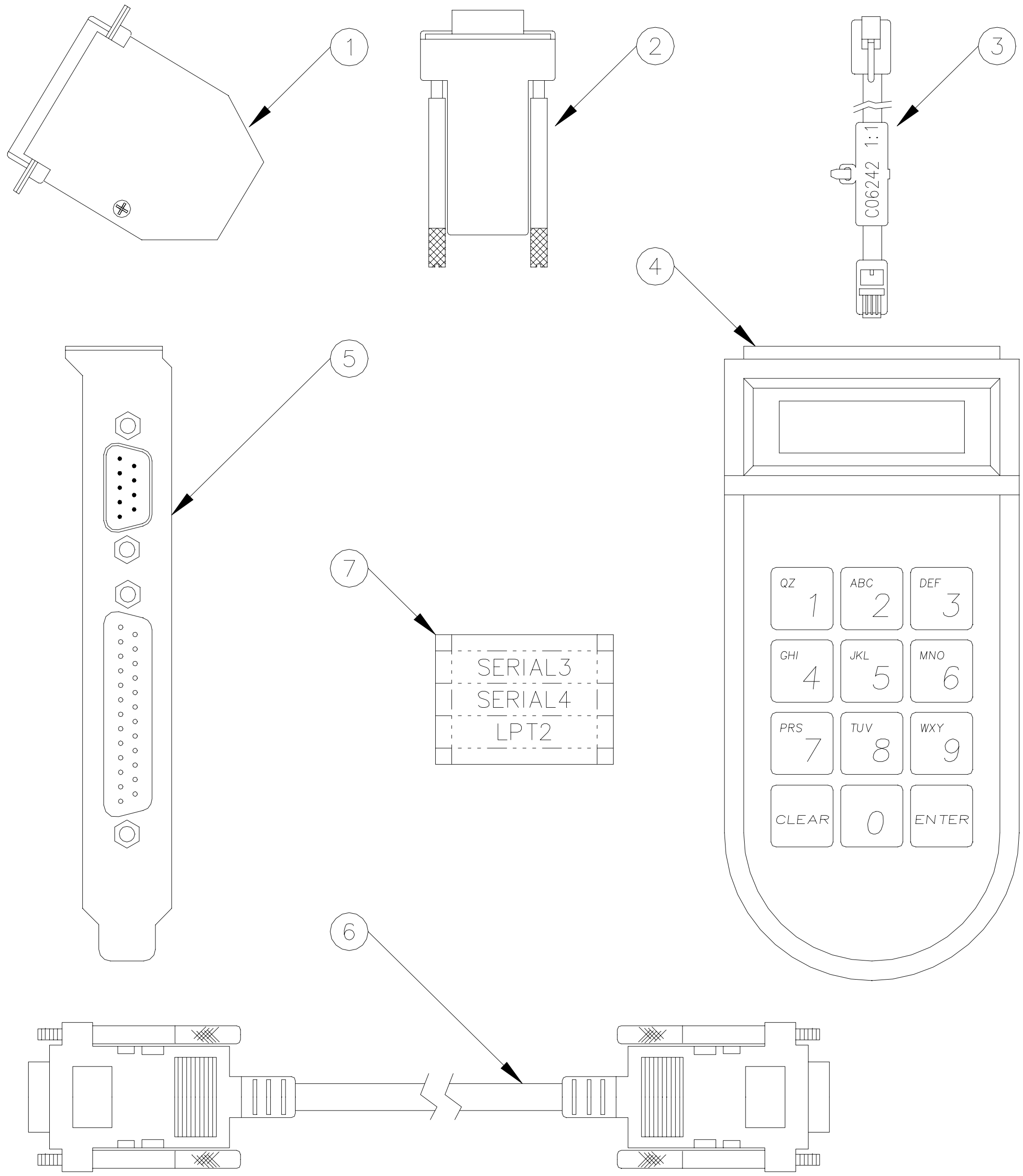
PIN pad is dead. No LED's or display. No beep when keys are pressed.

Possible Cause	Checks	Corrective Action
No power to printer (Gasboy) or console (Verifone).	Check power to unit.	Refer to proper section to restore unit power.
Not connected.	Check cables.	Connect if not connected.
GASBOY: Bad printer CPU board.	None.	Replace printer CPU board.
Bad PIN pad.	None.	Replace PIN pad if replacing CPU did not fix.
VERIFONE: No +12VDC.	Measure between TP2 (gnd) and TP5 (+9V) on console CPU board	Replace console CPU board if +9 VDC is not measured.
Bad cable or adapter.	None.	Replace cable and/or adapter
Bad PIN pad.	Run self-tests 4 and 5.	Replace PIN pad if tests fail.

CLEANING

Periodically clean the PIN pad with a clean cloth dampened with water and a mild soap or cleaner. Do not use harsh chemicals. Do not spray liquid cleaners directly on the PIN pad terminal, as damage to the unit may occur. Always apply the cleaner to the cloth before cleaning the PIN pad.

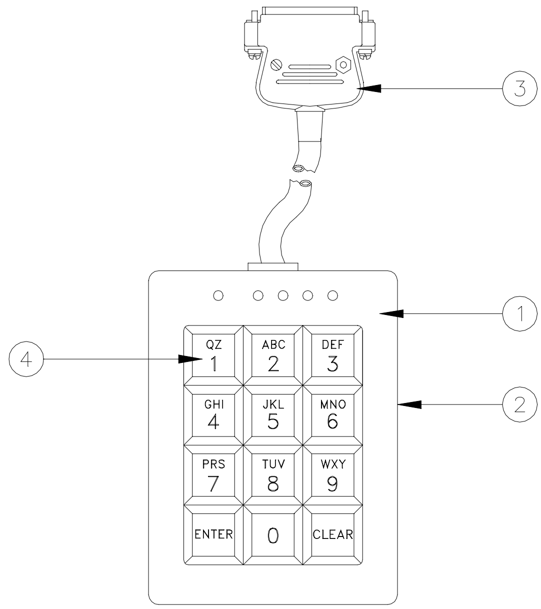
PIN PAD PARTS



C06981 PIN Pad Assy., Modular Profit Point/CFN III
C06286 PIN Pad Assy., Checkpoint
C06535 PIN Pad Assy., Profit Point

Item	Part No.	Description
1	C06533	Mod. Adaptor (IPC Profit Point Only)
2	C06285	Adaptor, Modified RJ11 to DB9 (Checkpoint Only)
3	C06242	Cable Assy., 4-pos, 1:1 HS/Line
4	C01626	PIN Pad
5	C01271	PC Expansion Port Adapter Mod (Mod. Profit Point/CFN III)
6	C05991	Cable Assy., DB9F to DB9F x 6' (Mod. Profit Point/CFN III)
7	C09543	Decal, SERIAL3/SERIAL4/LPT2, Blk., Clr (Mod. Profit Point/CFN III)

GASBOY PIN PAD PARTS



C05036 Pin Pad Assy.

Item	Part No.	Description
1	C34100	Cover, Pin Pad Housing - White
2	C32725	Base, Pin Pad Housing - Gray
3	C05038	Cable Assy., Pin Pad
4	C05324	PCB Assy., Pin Pad - CFN
5	*C08027	Keytop, 1 x 1 (QZ/1) - Gray
6	*C08028	Keytop, 1 x 1 (ABC/2) - Gray
7	*C08029	Keytop, 1 x 1 (DEF/3) - Gray
8	*C08030	Keytop, 1 x 1 (GHI/4) - Gray
9	*C08031	Keytop, 1 x 1 (JKL/5) - Gray
10	*C08032	Keytop, 1 x 1 (MNO/6) - Gray
11	*C08033	Keytop, 1 x 1 (PRS/7) - Gray
12	*C08034	Keytop, 1 x 1 (TUV/8) - Gray
13	*C08035	Keytop, 1 x 1 (WXY/9) - Gray
14	*C08036	Keytop, 1 x 1 (0) Gray
15	*C08037	Keytop, 1 x 1 (ENTER)
16	*C08038	Keytop, 1 x 1 (CLEAR) - Gray

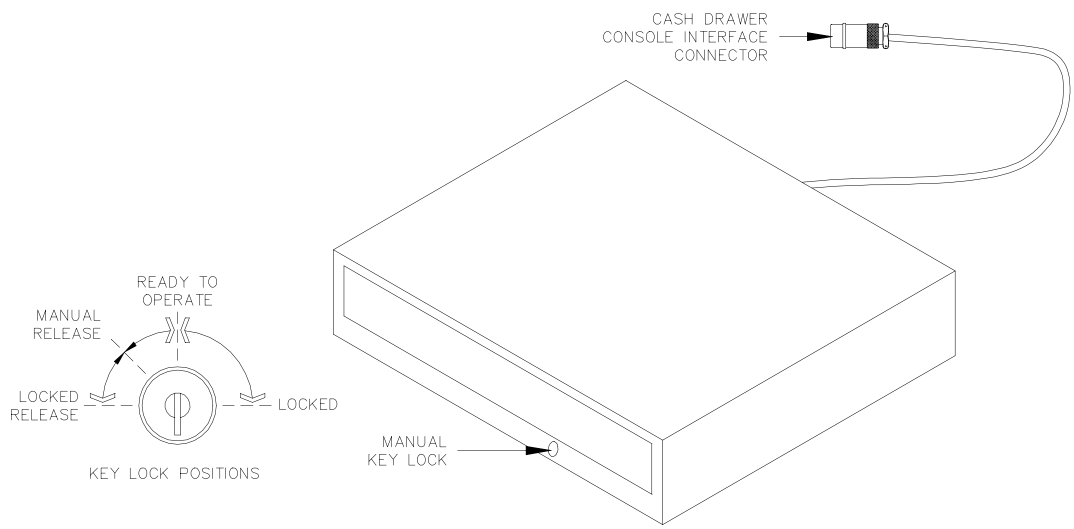
* Denotes this is a sub-part used in the preceding assembly

CASH DRAWER

DESCRIPTION

The GASBOY Cash Drawer is used for the storage of cash and works in conjunction with the postpay-prepay console. The console must be equipped with a cash drawer connector and a cash drawer interface PCB. (Cash drawer: C05787, black, C08400, white; cash tray, C08701).

Layout



WIRING

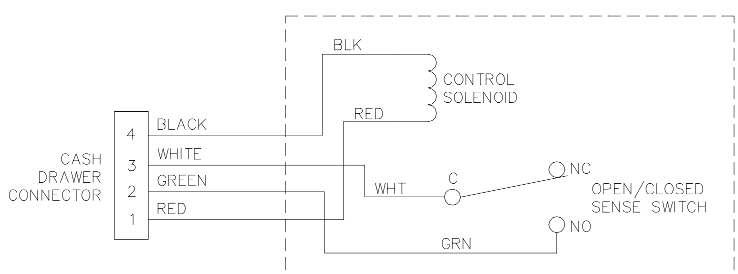
The only field wiring to the cash drawer is made by a plug-in connection to the rear of the postpay-prepay console. This connection supplies the DC power, drive, and sense signal used in conjunction with the cash drawer.

Connector

Cash Drawer

Pinout	Pin	Color	Function	Voltage
4 1 3 2	1	Red	+12 VDC to solenoid cash drawer latch	+12 VDC unregulated
	2	Green	Cash drawer status to CPU	0 VDC – Closed
	3	White	DC ground	DC ground
	4	Black	Solenoid drive	0 VDC – Energized

Chassis Wiring



PREVENTATIVE MAINTENANCE

1. Approximately every three months the slide assembly should be checked for lubrication. This time may vary due to the operating conditions of individual installations. The ball bearing raceways should maintain a thin film of lubricating grease. Relubrication can be accomplished by using a small amount of petroleum jelly or other type of lubricating grease.

2. Lubrication of the latch and striker plate should also be done approximately every 3 months depending upon individual operating conditions. The striker plate located on the back of the inner drawer assembly should maintain a film of grease at all times. If this film has been removed, it should be replaced with a thin film of petroleum jelly or other lubricating grease.

3. To prevent damage to your cash drawer, avoid breaking rolls of coins over either the till insert or drawer front.

REPLACEMENT INSTRUCTIONS

Remove Inner Cash Drawer From Case

1. Open the drawer.
2. Remove the cash till insert.
3. Lift inner drawer upward.
4. With inner drawer up, pull it straight out.

Replace Inner Cash Drawer

1. Engage both inner drawer slides into mating slides inside case.
2. Lift inner drawer (with slides engaged) to clear projection over both the front bottom edge of the case and the brake plate projecting up from the case.
3. Push the inner drawer to the fully closed position (resistance is expected because ball bearings are skidded back to operating position).

CONSOLE CASH DRAWER PROBLEMS

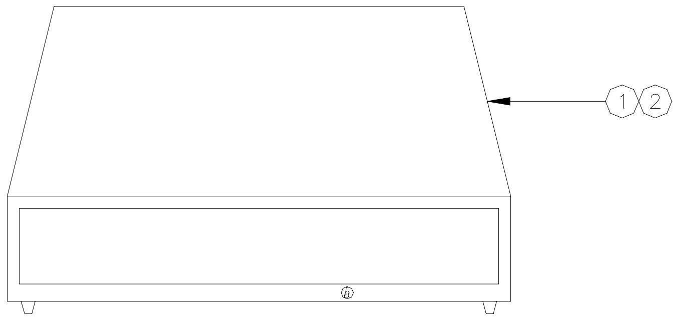
Cash drawer does not open.

Possible Cause	Checks	Corrective Action
Cash drawer is locked.	Check if cash drawer is locked	If cash drawer is locked, put it in the ready-to-operate position.
Defective cash drawer.	Check if drawer opens in the manual release position.	If cash drawer doesn't open in Manual release position, remove the bottom cover and re-install the cam rod, if it came off. Replace the cash drawer if this didn't fix the problem
Loose cable.	Check the cash drawer cable connection on the Console rear panel	Reconnect the cash drawer cable, if it is loose.
Cash drawer disabled by console CPU board switch.	Check switch SW2-5 on the Console CPU board.	Close switch SW2-5 and press reset switch SW1.
Defective power supply.	Measure between the +VDC (+12VDC) and COM (DC ground) posts on the Console power supply	Replace the Console power supply if +12VDC is not measured.
Defective Console CPU board.	Using an oscilloscope, measure between the COM (DC ground) post on the power supply and pin 1 of P1 on the cash drawer I/F board.	Press the 00/NO SALE key on the console keyboard. The +5VDC should pulse low (0VDC) for approximately 20 mS. Replace the Console CPU board if pin 1 of P1 does not pulse low.
Defective cash drawer I/F.	Using an oscilloscope, measure between the COM (DC ground) post on the power supply and pin 2 of P1 on the Cash Drawer I/F Board.	Press the 00/NO SALE key on the Console keyboard. The +12VDC should pulse low (0VDC) for approximately 20 mS. Replace the cash drawer I/F Board if pin 2 of P1 does not pulse low.

Console doesn't sense cash drawer closure.

Possible Cause	Checks	Corrective Action
Defective cash drawer.	Measure between the COM (DC ground) post of the Console power supply and pin 5 (green wire) of P6 on the Console CPU board.	Replace the cash drawer if the signal at pin 5 of P6 doesn't go from +5VDC (drawer open) to 0VDC (drawer closed)
Improper switch setting on Console II CPU board. Skip this part if you have a Console I.	Check position of SW2-6	Close SW2-6 and press reset switch SW1 on the Console CPU board
Defective Console CPU board.	None.	Replace the Console CPU board if cash drawer closure is still not sensed

CASH DRAWER PARTS



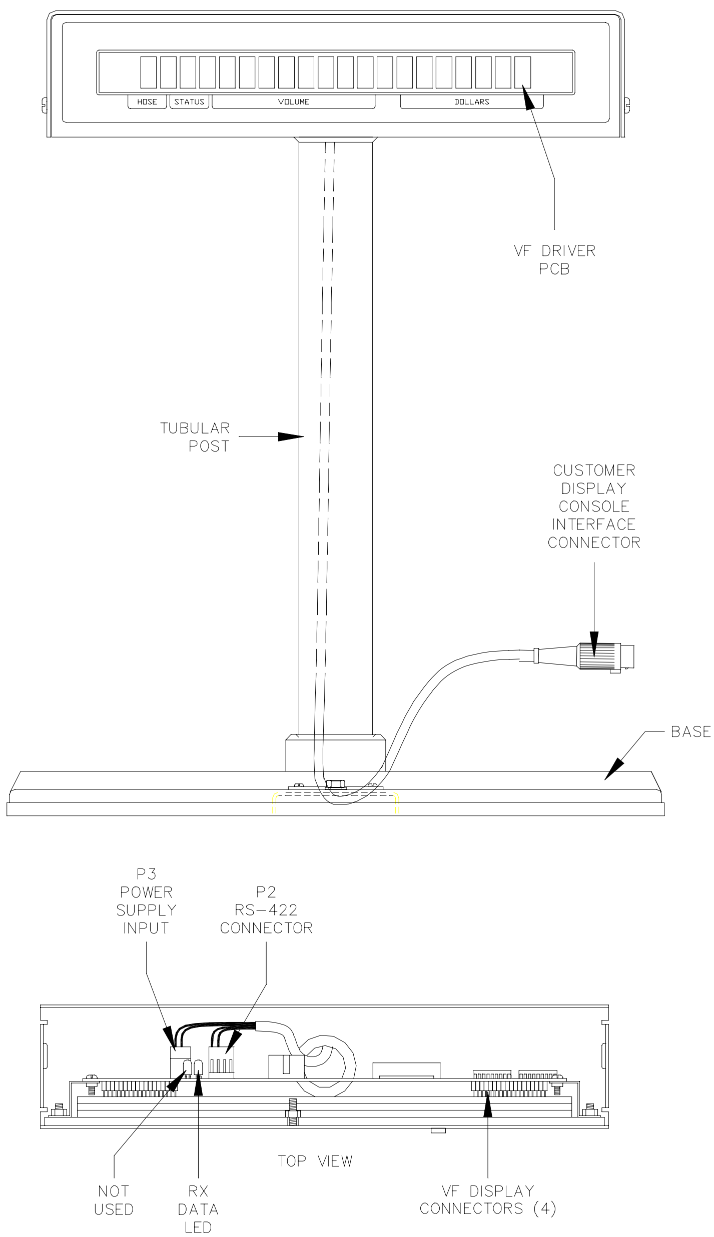
Item	Part No.	Description
1	C05787	Cash Drawer, Checkpoint, Black
	C08400	Cash Drawer, Checkpoint, White
	C01458	Cash Drawer, Profit Point
2	C08701	Cash Drawer Tray, 15-3/8" W, Checkpoint (Not Shown)
	C01248	Cash Drawer Tray, 16" W, Profit Point (Not Shown)
3	C03560	Key Set (Not Shown) *Must specify code A1 to A10.*

CUSTOMER DISPLAY

DESCRIPTION

The GASBOY Customer Display allows you to display sales so they are visible to the customer. The platform of the unit mounts under the postpay-prepay console. The display is mounted in a rectangular cabinet that sits on top of a tubular post. The display can be rotated for different viewing angles. The console must be equipped with a customer display connector to drive the unit.

Layout

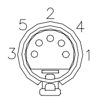


WIRING

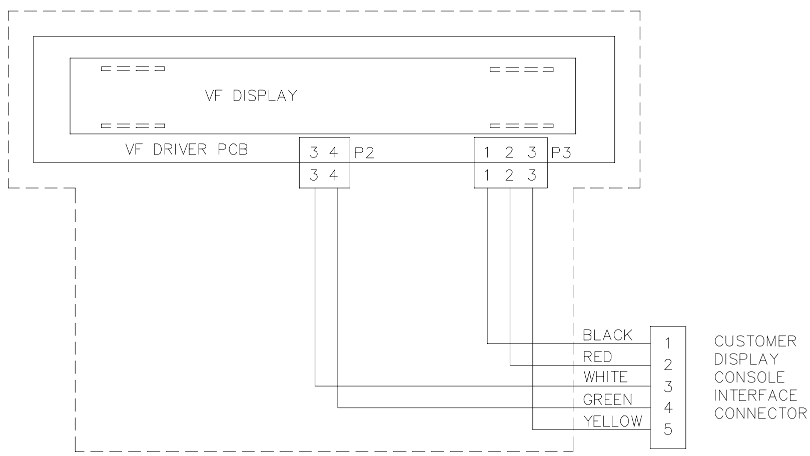
The only field wiring to the customer display is made by a plug-in connection to the rear of the postpay-prepay console. This connection supplies the DC power and RS-422 communication for the unit.

Connector

P-P Console

Pinout	Pin	Color	Function		Voltage
	1	Black	DC ground		DC ground
	2	Red	+5 VDC		+5 VDC
	3	White	RS-422 Rx+	From Console	+5 VDC signal
	4	Green	RS-422 Rx−	VF Driver	between pins 3 & 4
	5	Yellow	External reset (not used yet)		

Chassis Wiring

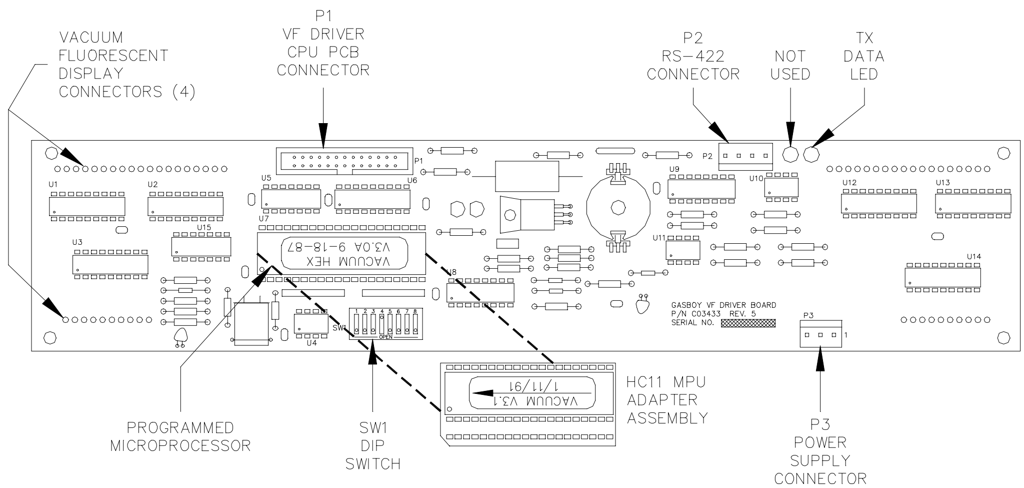


VACUUM FLUORESCENT DRIVER PCB (C04839)

The VF driver PCB:

- decodes and drives the VF display with the data received from the console VF driver PCB
- provides diagnostic LED's to monitor communication from the console

Layout



LED Indicators

LED indicators are provided to allow you to monitor the RS-422 communication between the customer display and console.

LED	Function
L1	RS422 Receive
L2	Not used

P2 - RS-422 Communication from Console

Pinout	Pin	Wire	Function		Voltage
P2	1		N/C		
	2		N/C		
	3	White	RS−422 Rx+	From Console	+5 VDC signal between pins 3 & 4
	4	Green	RS−422 Rx−		

P3 - Power Supply Input

Pinout	Pin	Wire	Function	Voltage
P3	1	Black	DC ground	DC ground
	2	Red	+5 VDC	+5 VDC
	3	Yellow	External reset (not used)	

Switches

SW1 - Miscellaneous Switches

Switch	Function	
SW1-1		Not used
SW1-2		Not used
SW1-3	TEST*	Open=Normal mode, Closed=Test mode
SW1-4	MSTR	Open=Display only
SW1-5	SLAV	Closed=VF driver used in customer display
SW1-6	TEST	Open=Normal mode, Closed=Test mode
SW1-7		Not used
SW1-8		Not used

*V3.0 – 3.0A only; all other versions use SW1-6.

TEST In the closed position, the VF driver will begin displaying a rotating barber-pole pattern self-test. In the open position, the VF driver will function normally.

MSTR Must always be open for this application.

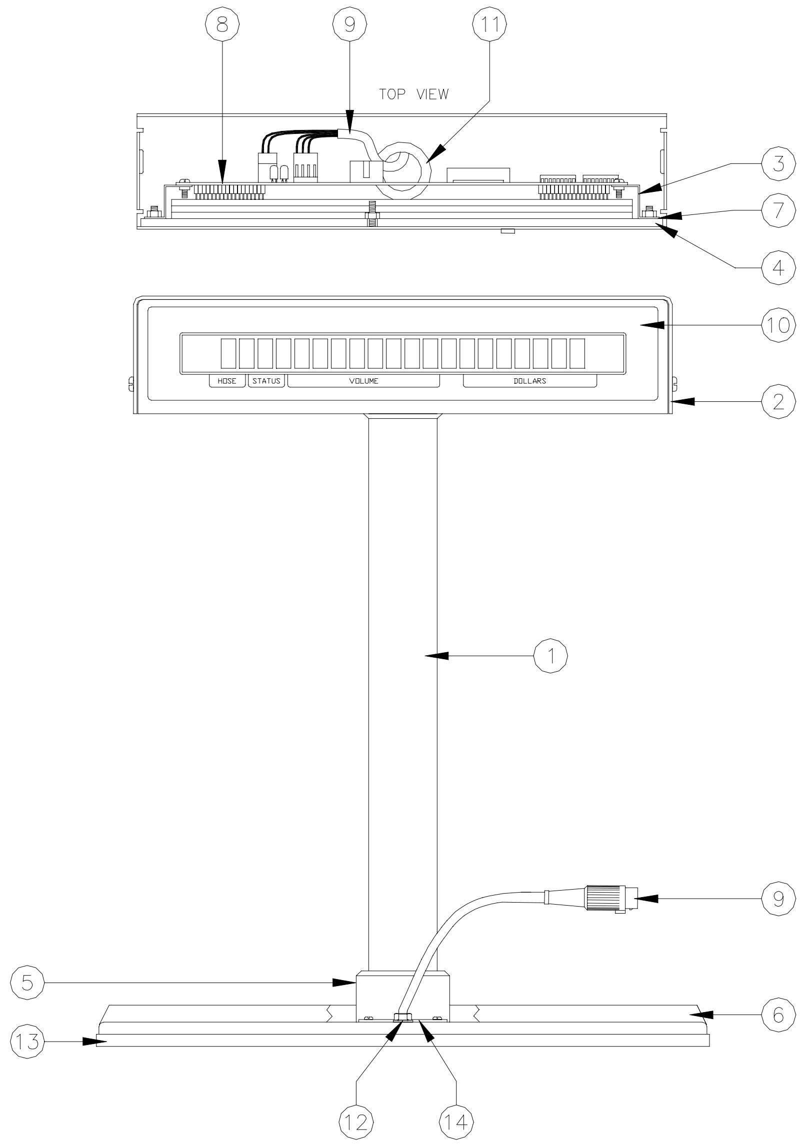
SLAV Must always be closed for this application.

CONSOLE CUSTOMER DISPLAY PROBLEMS

Console customer display is blank or scrambled. Console operator display functions properly.

Possible Cause	**Checks**	**Corrective Action**
Loose cable on rear of console.	Check cable at CUST DISPLAY connector for proper connection.	Install cable properly, if loose.
Incorrect switch settings on console operator display.	Check the switch settings on the VF Driver board in the console.	Close SW1-4, open all others
Defective VF display board in console.	Check LED's on both displays. L1 should be flashing on the customer display and L2 should be flashing on the console. If they are not, use an oscilloscope, to measure between pins 1 and 2 of P2 on the Console VF Display board while repeatedly pressing one of the pump keys.	Replace the Console VF Display board if a 5VDC square wave is not measured.
Incorrect switch settings on Console customer display.	Check the switch settings on the VF Driver board in the customer display	Close SW1-5, open all others.
Defective VF Display board in customer display.	Close SW1-3 to begin self-test.	Replace the VF Display board in customer display if self-test fails.

CUSTOMER DISPLAY PARTS



C05398 Customer Display Console

Item	Part No.	Description
1	C35209	Housing final weld assy cust.
2	C35201	Cover-housing customer display
3	C35211	Brkt - display support assy.
4	C35207	Lens-console display
5	C35204	Brkt - Monitor support assy.
6	C35205	Baseplate - monitor customer display
7	C35212	Filter - gray, customer display
8	C04839	PCB Assy., VF driver, console
9	C05086	Cable assy., customer display plug
10	C08930	Window display silkscreen
11	C02827	Bushing, snap-in 1" ID
12	C01693	Bushing - Heyco
13	C04371	Trim material - edge
14	C35216	Plt-str relief customer display

Section 12

SITE CONTROLLER III

DESCRIPTION

The Site Controller III is the heart of the CFN System at the fueling site. It controls and allows interaction between all of your automated fueling equipment, including electronic pumps, pump control devices, card readers, registers, tank monitors, and terminals that are activated by a customer. It can also be used as a Profit Point POS workstation. The unit uses advanced microprocessor technology and incorporates multiple hardware and software safeguards.

The Site Controller III is supplied in a PC platform; however the SC III board set is shipped separately from the PC and must be installed at time of startup.

The SC III PC comes standard with a hard disk drive for mass storage of data, a 3-1/2" disk drive and a CD-ROM drive. The Site Controller III provides the following ports:

- Ports 1, 4, 5, and 6 are local RS-232 ports. They can accept a modem, printer or other device.

- Port 3 is a dual Tokheim port. It is the only port that can be used for a Tokheim interface cable.

- Loop 1 Island port connects to the RS-485 junction box. All Gasboy devices (PCUs, ICRs, etc.) must connect to this port.

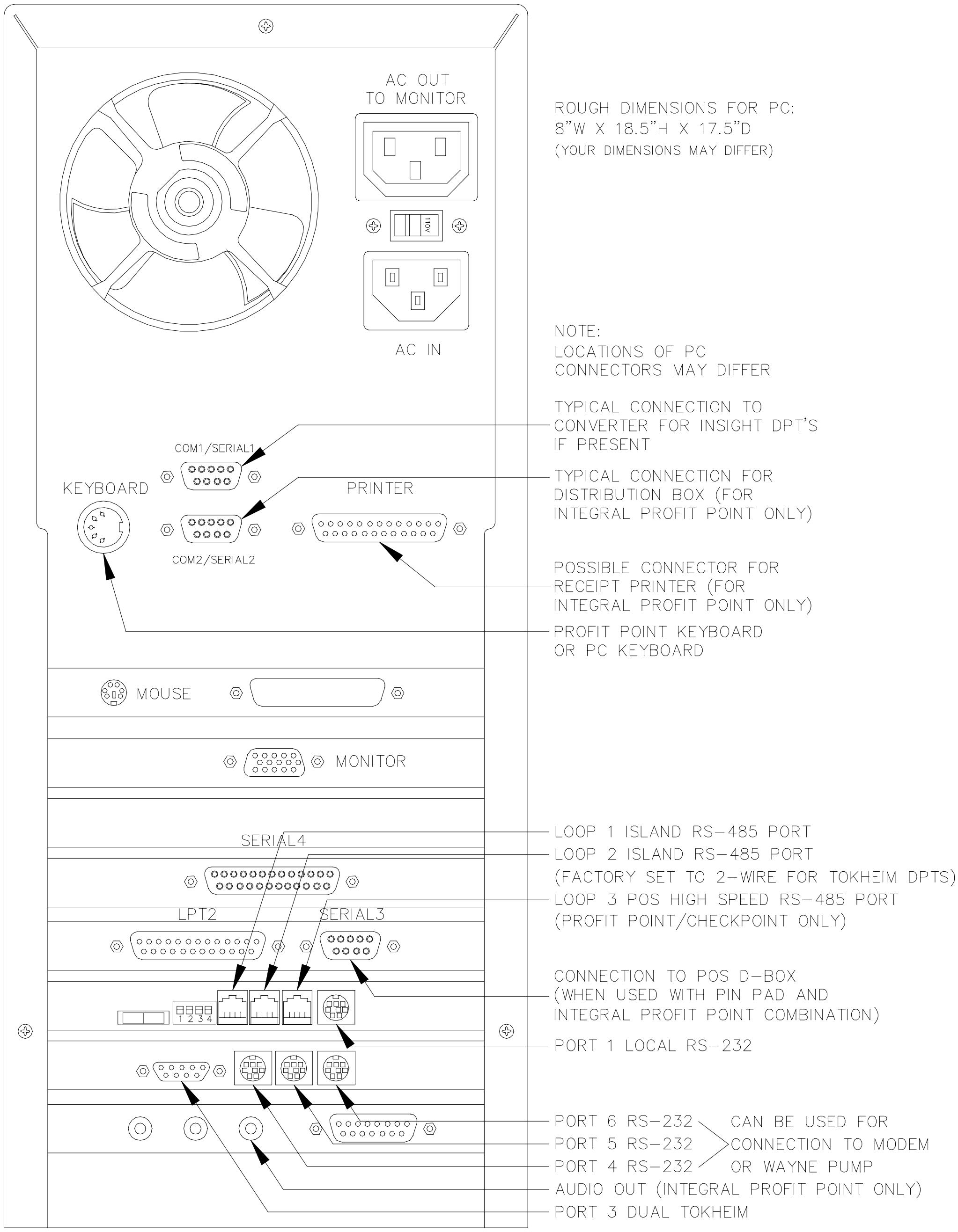
- Loop 2 is an alternate island RS-485 port. The factory setting for this loop is 2-wire for communication to Tokheim DPT's. For additional information on Tokheim DPT wiring, see the *Pump Interface Manual, C09146*.

  WARNING: If a 2-wire device, such as a DPT, is connected to a loop that is set for 4-wire, the site controller will not operate correctly. Four-wire devices on a 2-wire loop may not communicate with the site controller.

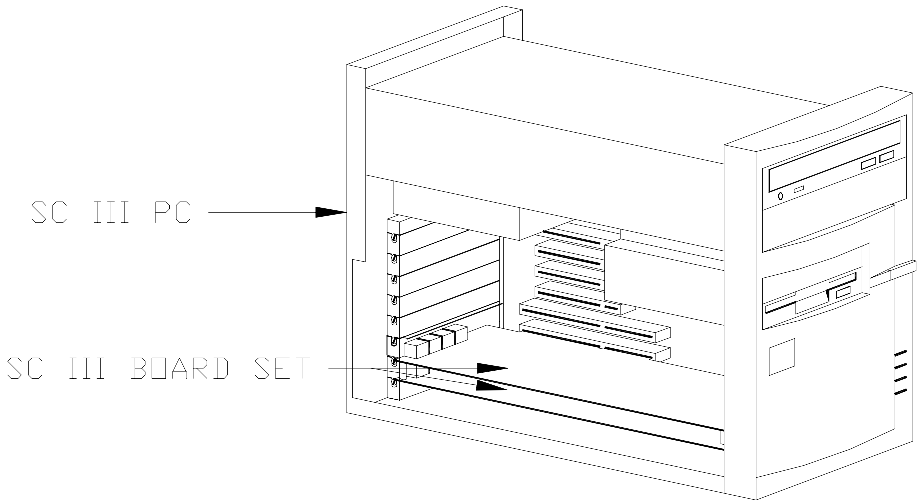
- Loop 3 is the POS high speed port. It is the only port to which a Checkpoint console or Profit Point can be connected.

In addition to the site controller ports, PC peripherals (monitor, mouse, etc.) are connected per the manufacturer's instructions. The pages that follow show the ports as installed on a representative PC (Your actual PC layout may differ), and the site controller board set placement in a PC.

Rear View showing port locations



SC III board placement in PC



ENVIRONMENTAL AND OPERATING SPECIFICATIONS

Temperature: Operating: 10ºC to 40ºC
Transportation: -15ºC to 60ºC
Storage: -15ºC to 60ºC

Relative Humidity: Operating: 20% to 80% (noncondensing).
Max. wet bulb temperature: 26ºC
Transportation: 20% to 80% (noncondensing).
Max. wet bulb temperature: 26ºC

Power Requirements
Voltage: 90 to 132VAC.
Frequency: 47 to 63 Hz.

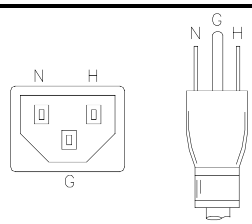
Safety Standard: UL

WIRING

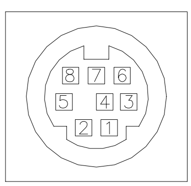
All field wiring is made to the unit by plug-in connectors. PC peripherals (monitor, mouse, etc.) are connected per the manufacturer's instructions. The AC power for the unit comes from the AC power plug. The RS-485 communication comes through the modular cable that is connected to the RS-485 junction box. Communication to the Checkpoint console or Profit Point goes through the RS-485 connector designated loop 3 POS high speed. See the *CFN SC III Installation Manual* for detailed wiring instructions.

Connectors

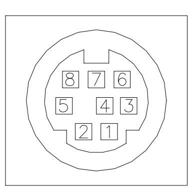
AC Power

Pinout	Pin	Function	Voltage
	H	AC hot input	115 VAC
	N	AC neutral input	AC neutral
	G	AC ground input	AC ground

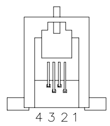
RS-232 - General Purpose Communications Port 1

Pinout	Pin	Function	Input/Output
	1	DTR – Data terminal ready	Output
	2	CTS – Clear to send	Input
	3	TxD – Transmit data	Output
	4	Signal ground	Ground
	5	RxD – Receive data	Input
	6,7,8	Not connected	

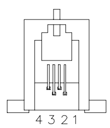
RS-232 - General Purpose Communications Ports 4, 5, and 6

Pinout	Pin	Function	Input/Output
	1	DTR – Data terminal ready	Output
	2	CTS – Clear to send	Input
	3	TxD – Transmit data	Output
	4	Signal ground	Ground
	5	RxD – Receive data	Input
	6	DSR – Data set ready	Input
	7	RTS – Request to send	Output
	8	DCD – Carrier Detect	Input

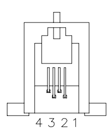
RS-485 - Loop 1 Island Communications

Pinout	Pin	Function		Voltage
	1	RS-485 Rx+	From Island Loop	+5 VDC signal between pins 1 & 2
	2	RS-485 Rx-		
	3	RS-485 Tx+	To Island Loop	+5 VDC signal between pins 3 & 4
	4	RS-485 Tx-		

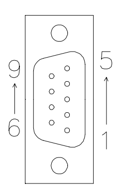
RS-485 - Loop 2 Island Communications (Usually to Tokheim DPTs)

Pinout	Pin	Function		Voltage
	1	RS-485 Rx+	From Island Loop	+5 VDC signal between pins 1 & 2
	2	RS-485 Rx-		
	3	RS-485 Tx+	To Island Loop	+5 VDC signal between pins 3 & 4
	4	RS-485 Tx-		

RS-485 - Loop 3 Console Communications

Pinout	Pin	Function		Voltage
	1	RS-485 Rx+	From Console Loop	+5 VDC signal between pins 1 & 2
	2	RS-485 Rx-		
	3	RS-485 Tx+	To Console Loop	+5 VDC signal between pins 3 & 4
	4	RS-485 Tx-		

Dual Tokheim Pump Communications Port 3

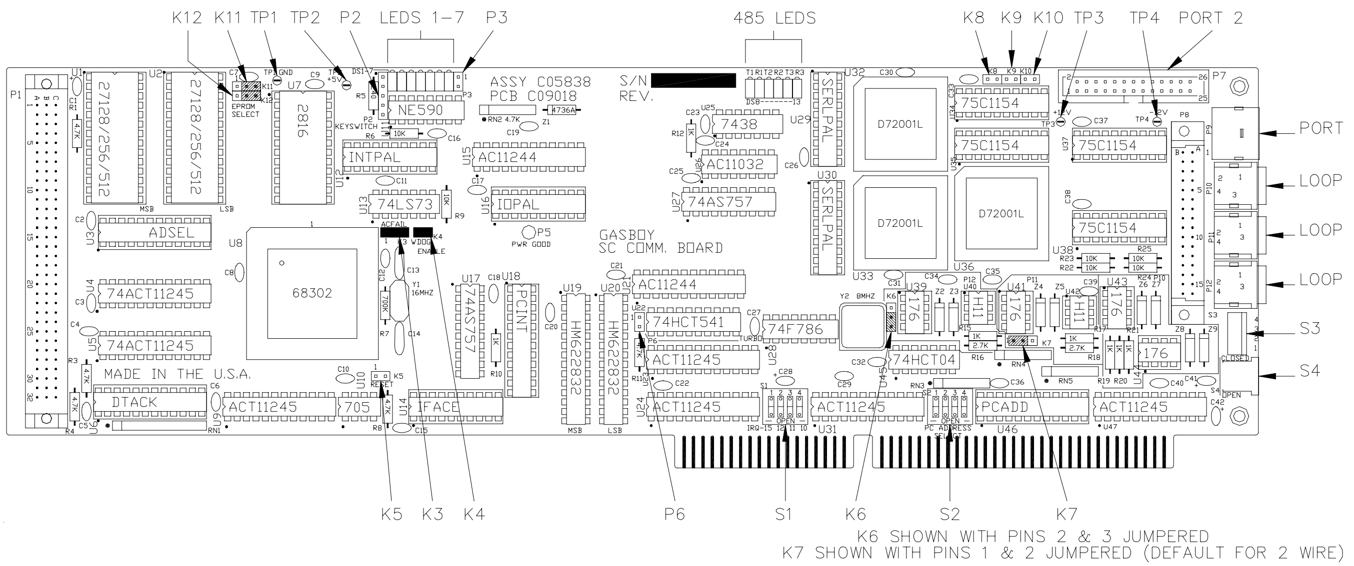
Pinout	Pin	Function	Input/Output
	1,8	Not connected	
	2	TTDA – Talk to Dispenser, Channel 1	Output
	3	TTCA – Talk to Console, Channel 1	Input
	4	TTDB – Talk to Dispenser, Channel 2	Output
	5	TTCB – Talk to Console, Channel 2	Input
	6,7,9	Signal ground	Ground

SITE CONTROLLER III COMM. (CPU) PCB (C05838)

The CPU PCB for the Site Controller III (C05838) controls all activity in the site controller. The CPU PCB:

- processes all site controller data
- provides an interface to the PC
- communicates to all CFN equipment via the RS-485 lines
- communicates on five RS-232 ports
- controls the Memory I/O PCB
- communicates to Tokheim Pumps via the Memory I/O PCB dual Tokheim port
- provides diagnostic LED's
- requires OS version 3.0A or greater
- requires Memory PCB C05839
- requires DSite 1.0C or higher

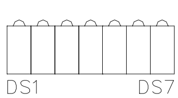
Layout



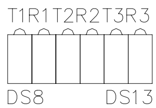
LED Indicators

LED indicators are provided to allow you to monitor the CPU's operation.

PCB Functions

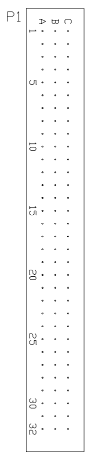
	LED	Color	Function	Status
	DS1	Red	Network Poll	Flashes–Polled by online network
	DS2	Red	CFN Poll	Flashes–Polled by CFN host
	DS3	Red	ICR or FPR Poll	Flashes–Polling ICR or FPR
	DS4	Red	PCU Poll	Flashes–Polling PCU
	DS5	Red	Console Poll	Flashes–Polling console
	DS6	Red	Foreground Task	Flashes once per second
	DS7	Red	Checksum Complete	Flashes when checksum is complete

485 Loop Communications LEDs

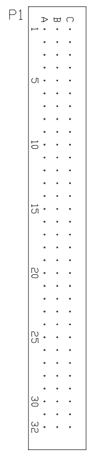
	LED	Color	Function	Status
	DS8	Green	Transmit on RS-485 loop 3	Flashes during communications
	DS9	Red	Receive on RS-485 loop 3	Flashes during communications
	DS10	Green	Transmit on RS-485 loop 2	Flashes during communications
	DS11	Red	Receive on RS-485 loop 2	Flashes during communications
	DS12	Green	Transmit on RS-485 loop 1	Flashes during communications
	DS13	Red	Receive on RS-485 loop 1	Flashes during communications

Connectors

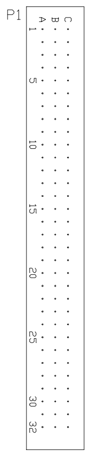
P1 - Memory PCB Interface
Pins A1- A32

Pinout	Pin	Function	Voltage
	A1	+5VDC	+5VDC
	A2	+5VDC	+5VDC
	A3	W/$\overline{\text{R}}$ – Read Enable	⎍⎍ 0VDC – Read
	A4	PB9	⎍⎍ +5VDC – ON
	A5	$\overline{\text{MBSEL}}$ – Memory Board Select	⎍⎍ 0VDC – ON
	A6	$\overline{\text{BUSSEL}}$ – Not used, grounded on Memory PCB	0VDC – Normal
	A7	N/C	
	A8	N/C	
	A9	N/C	
	A10–A25	GND – DC Ground	DC Ground
	A26	N/C	N/C
	A27	N/C	N/C
	A28	IPL0	⎍⎍ +5VDC – ON
	A29	IPL1	⎍⎍ +5VDC – ON
	A30	$\overline{\text{BGACK}}$	⎍⎍ 0VDC – ON
	A31	$\overline{\text{BG}}$	⎍⎍ 0VDC – ON
	A32	$\overline{\text{BR}}$	⎍⎍ 0VDC – ON

P1 - Memory PCB Interface (Continued)
Pins B1- B32

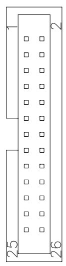
Pinout	Pin	Function	Voltage
	B1	+5VDC	+5VDC
	B2	+5VDC	+5VDC
	B3	$\overline{LDS}$ – Lower data select	⎍⎍ 0VDC – ON
	B4	$\overline{UDS}$ – Upper data select	⎍⎍ 0VDC – ON
	B5	$\overline{WS1}$ – Wait State 1	⎍⎍ 0VDC – ON
	B6	A2 – Address 2	⎍⎍ +5VDC – ON
	B7	A4 – Address 4	⎍⎍ +5VDC – ON
	B8	A6 – Address 6	⎍⎍ +5VDC – ON
	B9	A8 – Address 8	⎍⎍ +5VDC – ON
	B10	A10 – Address 10	⎍⎍ +5VDC – ON
	B11	A12 – Address 12	⎍⎍ +5VDC – ON
	B12	A14 – Address 14	⎍⎍ +5VDC – ON
	B13	A16 – Address 16	⎍⎍ +5VDC – ON
	B14	A18 – Address 18	⎍⎍ +5VDC – ON
	B15	A20 – Address 20	⎍⎍ +5VDC – ON
	B16	A22 – Address 22	⎍⎍ +5VDC – ON
	B17	$\overline{AS}$ – Address strobe	⎍⎍ 0VDC – ON
	B18	MD14 – Data 14	⎍⎍ +5VDC – ON
	B19	MD12 – Data 12	⎍⎍ +5VDC – ON
	B20	MD10 – Data 10	⎍⎍ +5VDC – ON
	B21	MD8 – Data 8	⎍⎍ +5VDC – ON
	B22	MD6 – Data 6	⎍⎍ +5VDC – ON
	B23	MD4 – Data 4	⎍⎍ +5VDC – ON
	B24	MD2 – Data 2	⎍⎍ +5VDC – ON
	B25	MD0 – Data 0	⎍⎍ +5VDC – ON
	B26	$\overline{BERR}$ – Bus error	⎍⎍ 0VDC – ON
	B27	FC1	⎍⎍ +5VDC – ON
	B28	IAC	⎍⎍ +5VDC – ON
	B29	IPL2	⎍⎍ +5VDC – ON
	B30	$\overline{CS1}$ – Chip select 1	⎍⎍ 0VDC – ON
	B31	$\overline{CS2}$ – Chip select 2	⎍⎍ 0VDC – ON
	B32	$\overline{CS3}$ – Chip select 3	⎍⎍ 0VDC – ON

P1 - Memory PCB Interface (Continued)
Pins C1 - C32

Pinout	Pin	Function	Voltage
	C1	+5VDC	+5VDC
	C2	$\overline{\text{MBSET}}$ – Not used; grounded on memory board	0VDC – Normal
	C3	R/$\overline{\text{W}}$ – Write Enable	⎍⎍ +0VDC – Write
	C4	$\overline{\text{WS4}}$ – Wait state 4	⎍⎍ 0VDC – ON
	C5	$\overline{\text{WS0}}$ – Wait state 0	⎍⎍ 0VDC – ON
	C6	A1 – Address 1	⎍⎍ +5VDC – ON
	C7	A3 – Address 3	⎍⎍ +5VDC – ON
	C8	A5 – Address 5	⎍⎍ +5VDC – ON
	C9	A7 – Address 7	⎍⎍ +5VDC – ON
	C10	A9 – Address 9	⎍⎍ +5VDC – ON
	C11	A11 – Address 11	⎍⎍ +5VDC – ON
	C12	A13 – Address 13	⎍⎍ +5VDC – ON
	C13	A15 – Address 15	⎍⎍ +5VDC – ON
	C14	A17 – Address 17	⎍⎍ +5VDC – ON
	C15	A19 – Address 19	⎍⎍ +5VDC – ON
	C16	A21 – Address 21	⎍⎍ +5VDC – ON
	C17	A23 – Address 23	⎍⎍ +5VDC – ON
	C18	MD15 – Data 15	⎍⎍ +5VDC – ON
	C19	MD13 – Data 13	⎍⎍ +5VDC – ON
	C20	MD11 – Data 11	⎍⎍ +5VDC – ON
	C21	MD9 – Data 9	⎍⎍ +5VDC – ON
	C22	MD7 – Data 7	⎍⎍ +5VDC – ON
	C23	MD5 – Data 5	⎍⎍ +5VDC – ON
	C24	MD3 – Data 3	⎍⎍ +5VDC – ON
	C25	MD1 – Data 1	⎍⎍ +5VDC – ON
	C26	FC0	⎍⎍ +5VDC – ON
	C27	FC2	⎍⎍ +5VDC – ON
	C28	$\overline{\text{CS0}}$ – Chip Select 0	⎍⎍ 0VDC – ON
	C29	$\overline{\text{RESET}}$ – Reset	+5VDC normal; 0VDC reset
	C30	$\overline{\text{DTACK}}$	⎍⎍ 0VDC – ON
	C31	$\overline{\text{DREQ}}$	⎍⎍ 0VDC – ON
	C32	CLK0	⎍⎍ +5VDC – ON

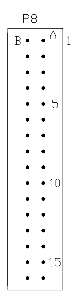
P2 – PC Keyboard Lock Keyswitch - Not Used
P3 – PC Turbo LED - Not Used
P5 - Power Fail from PC Power Supply - Not Used
P6 – PC Turbo switch - Not Used

P7 – RS-232 General Purpose Synchronous Communications Port 2

Pinout	Pin	Function	Input/Output or Determining Jumper
	1	N/C	N/C
	2	N/C	N/C
	3	TXD – Transmit data	Output
	4	TXC – Transmit clock synchronous	Input if K10 jumpered
	5	RXD – Receive data	Input
	6	N/C	N/C
	7	RTS – Request to send	Output
	8	RXC – Receive clock synchronous	Input if K8 jumpered
	9	CTS – Clear to send	Input
	10	N/C	N/C
	11	DSR – Data set ready	Input
	12	N/C	N/C
	13	DC ground	DC ground
	14	DTR – Data terminal ready	Output
	15	DCD – Carrier detect	Input
	16-21	N/C	N/C
	22	ETXC – External serial clock, synchronous	Output if K9 jumpered
	23-26	N/C	N/C

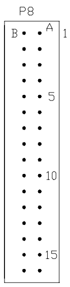
P8 - Memory PCB Communication ports Interface

Pins A1 - A16

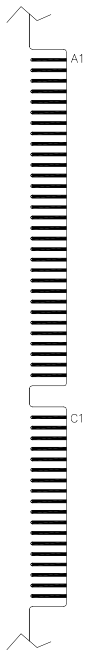
Pinout	Pin	Function	Input/Output
	A1	RXD – Receive data, port 6	Input
	A2	TXD – Transmit data, port 6	Output
	A3	DSR – Data set ready, port 6	Input
	A4	DTR – Data terminal ready, port 6	Output
	A5	CTS – Clear to send, port 6	Input
	A6	RTS – Ready to send, port 6	Output
	A7	DCD – Carrier detect, port 6	Input
	A8	DC Ground	DC Ground
	A9	DCD – Carrier detect, port 5	Input
	A10	RTS – Ready to send, port 5	Output
	A11	CTS – Clear to send, port 5	Input
	A12	DTR – Data terminal ready, port 5	Output
	A13	DSR – Data set ready, port 5	Input
	A14	TXD – Transmit data, port 5	Output
	A15	RXD – Receive data, port 5	Input
	A16	-12VDC	-12VDC

P8 - Memory PCB Communication ports Interface (Continued)

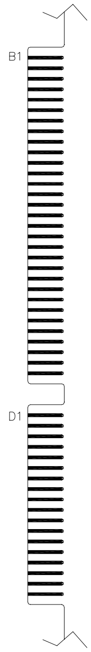
Pins B1 - B16

Pinout	Pin	Function	Voltage
	B1	RXD – Receive data, port 4	⊓⊔⊓ receive; +5VDC OFF
	B2	$\overline{\text{DSR}}$ – Data set ready, port 4	⊓⊔⊓ 0VDC – ON
	B3	TXD – Transmit data, port 4	⊓⊔⊓ transmit; +5VDC OFF
	B4	$\overline{\text{CTS}}$ – Clear to send, port 4	⊓⊔⊓ 0VDC – ON
	B5	$\overline{\text{DCD}}$ – Carrier detect, port 4	⊓⊔⊓ 0VDC – ON
	B6	$\overline{\text{RTS}}$ – Ready to send, port 4	⊓⊔⊓ 0VDC – ON
	B7	$\overline{\text{DTR}}$ – Data terminal ready, port 4	⊓⊔⊓ 0VDC – ON
	B8	DC Ground	DC Ground
	B9	$\overline{\text{DTR}}$ – Data terminal ready, port 3	Not used +5VDC
	B10	$\overline{\text{RTS}}$ – Ready to send, port 3	0VDC Tokheim Channel 1; +5VDC Tokheim Channel 2
	B11	TXD – Transmit data, port 3	⊓⊔⊓ transmit; +5VDC OFF
	B12	$\overline{\text{DSR}}$ – Data set ready, port 3	Not used 0VDC
	B13	RXD – Receive data, port 3	⊓⊔⊓ receive; +5VDC OFF
	B14	$\overline{\text{DCD}}$ – Carrier detect, port 3	Not used 0VDC
	B15	$\overline{\text{CTS}}$ – Clear to send, port 3	Not used 0VDC
	B16	+12VDC	+12VDC

PC ISA Bus Interface Connector – Component Side
Sections A and C

Pinout	Pin	Function	Voltage
	A1	N/C	N/C
	A2	PCD7 – PC Data 7	⎍ +5VDC-On
	A3	PCD6 – PC Data 6	⎍ +5VDC-On
	A4	PCD5 – PC Data 5	⎍ +5VDC-On
	A5	PCD4 – PC Data 4	⎍ +5VDC-On
	A6	PCD3 – PC Data 3	⎍ +5VDC-On
	A7	PCD2 – PC Data 2	⎍ +5VDC-On
	A8	PCD1 – PC Data 1	⎍ +5VDC-On
	A9	PCD0 – PC Data 0	⎍ +5VDC-On
	A10	I/O RDY – I/O Ready	⎍ 0VDC-On
	A11	N/C	N/C
	A12	PCA19 – PC Address 19	⎍ +5VDC-On
	A13	PCA18 – PC Address 18	⎍ +5VDC-On
	A14	PCA17 – PC Address 17	⎍ +5VDC-On
	A15	PCA16 – PC Address 16	⎍ +5VDC-On
	A16	PCA15 – PC Address 15	⎍ +5VDC-On
	A17	PCA14 – PC Address 14	⎍ +5VDC-On
	A18	PCA13 – PC Address 13	⎍ +5VDC-On
	A19	PCA12 – PC Address 12	⎍ +5VDC-On
	A20	PCA11 – PC Address 11	⎍ +5VDC-On
	A21	PCA10 – PC Address 10	⎍ +5VDC-On
	A22	PCA9 – PC Address 9	⎍ +5VDC-On
	A23	PCA8 – PC Address 8	⎍ +5VDC-On
	A24	PCA7 – PC Address 7	⎍ +5VDC-On
	A25	PCA6 – PC Address 6	⎍ +5VDC-On
	A26	PCA5 – PC Address 5	⎍ +5VDC-On
	A27	PCA4 – PC Address 4	⎍ +5VDC-On
	A28	PCA3 – PC Address 3	⎍ +5VDC-On
	A29	PCA2 – PC Address 2	⎍ +5VDC-On
	A30	PCA1 – PC Address 1	⎍ +5VDC-On
	A31	PCA0 – PC Address 0	⎍ +5VDC-On
	C1	$\overline{\text{PCBSHE}}$	⎍ 0VDC-On
	C2 to C10	N/C	N/C
	C11	PCD8 – PC Data 8	⎍ +5VDC-On
	C12	PCD9 – PC Data 9	⎍ +5VDC-On
	C13	PCD10 – PC Data 10	⎍ +5VDC-On
	C14	PCD11 – PC Data 11	⎍ +5VDC-On
	C15	PCD12 – PC Data 12	⎍ +5VDC-On
	C16	PCD13 – PC Data 13	⎍ +5VDC-On
	C17	PCD14 – PC Data 14	⎍ +5VDC-On
	C18	PCD15 – PC Data 15	⎍ +5VDC-On

PC ISA Bus Interface connector – Solder Side
Sections B and D



Pinout	Pin	Function	Voltage
	B1	GND – DC Ground	DC Ground
	B2	N/C	N/C
	B3	VCC - +5VDC	+5VDC
	B4	N/C	N/C
	B5	N/C	N/C
	B6	N/C	N/C
	B7	-12VDC	-12VDC
	B8	N/C	N/C
	B9	+12VDC	+12VDC
	B10	GND – DC Ground	DC Ground
	B11	PCMEMW – Dual RAM Write	⎍⎍ 0VDC-On
	B12	PCMEMR – Dual RAM Read	⎍⎍ 0VDC-On
	B13 to 28	N/C	N/C
	B29	+5VDC	+5VDC
	B30	N/C	N/C
	B31	GND – DC Ground	DC Ground
	D1	PCMEMCS16	⎍⎍ 0VDC – On
	D2	~~N/C~~	N/C
	D3	IRQ10 – Interrupt Request 10	S1-4 closed - ⎍⎍ 0VDC – On S1-4 open – N/C
	D4	IRQ11 – Interrupt Request 11	S1-3 closed - ⎍⎍ 0VDC – On S1-3 open – N/C
	D5	IRQ12 – Interrupt Request 12	S1-2 closed - ⎍⎍ 0VDC – On S1-2 open – N/C
	D6	IRQ15 – Interrupt Request 15	S1-1 closed - ⎍⎍ 0VDC – On S1-1 open – N/C
	D7 to D15	N/C	N/C
	D16	+5VDC	+5VDC
	D17	N/C	N/C
	D18	GND – DC Ground	DC Ground

See the charts shown earlier in this section for the exact pinouts of these connectors:
P9 - RS-232 General Purpose Communications Port 1
P10 - RS-485 Console Communications Loop 3
P11 & P12 - RS-485 Island Communications Loops 1 & 2

Jumpers

Switch	Function	Setting	Default
K3	AC power fail sense	1, 2, & 3 Jumpered	Jumpered
K4	AC watchdog timer	1-2 to enable	Jumpered
K5	SC-Comm CPU (testing only)	1-2 to reset	Open
K6	RS-485 loop 1, 2 to 4 wire	2-3 for 4-wire	Jumpered
		1-2 for 2-wire	Open
K7	RS-485 loop 2, 2 to 4 wire	2-3 for 4-wire	Open
		1-2 for 2-wire	Jumpered
K8	Rx clock from synchronous modem (Port 2)	1-2 to connect	Open
K9	ETC output to synchronous modem (Port 2)	1-2 to connect	Open
K10	Tx clock input from synchronous modem (Port 2)	1-2 to connect	Open
K11	EPROM type	1-2 for 27512 2-3 for 27256/25128	Open Jumpered
K12	EPROM type	1-2 for 27512 2-3 for 27256/25128	Open Jumpered

Switches S1 and S2

Switch S1 – PC IRQ

Indicates the interrupt. Only one can be selected. SC3.EXE defaults to interrupt 10. No other device can use this interrupt.

Switch	Function	Default
S1-1	IRQ-15	Open
S1-2	IRQ-12	Open
S1-3	IRQ-11	Open
S1-4	IRQ-10	Closed

Switch S2 – PC Address

Sets PC dual RAM address. SC3.EXE currently defaults to D0000.

Address	Switch				Address	Switch			
	1	2	3	4		1	2	3	4
C0000	C	C	C	C	D6000	O	C	C	C
C3000	C	C	C	O	D9000	O	C	C	O
C6000	C	C	O	C	DC000	O	C	O	C
C7000	C	C	O	O	DF000	O	C	O	O
CC000	C	O	C	C	E0000	O	O	C	C
CF000	C	O	C	O	E3000	O	O	C	O
D0000*	C	O	O	C	E6000	O	O	O	C
D3000	C	O	O	O	E9000	O	O	O	O

O=Open; C=Closed *=Default

Switch S3 – Default Sign-on

Position 4 defaults to Open (backup sign-on enabled); Closed backup sign-on disabled.

Switch S4 – Weights and Measures

Set to Open for enable; Closed for disable.

Test Points - CPU PCB

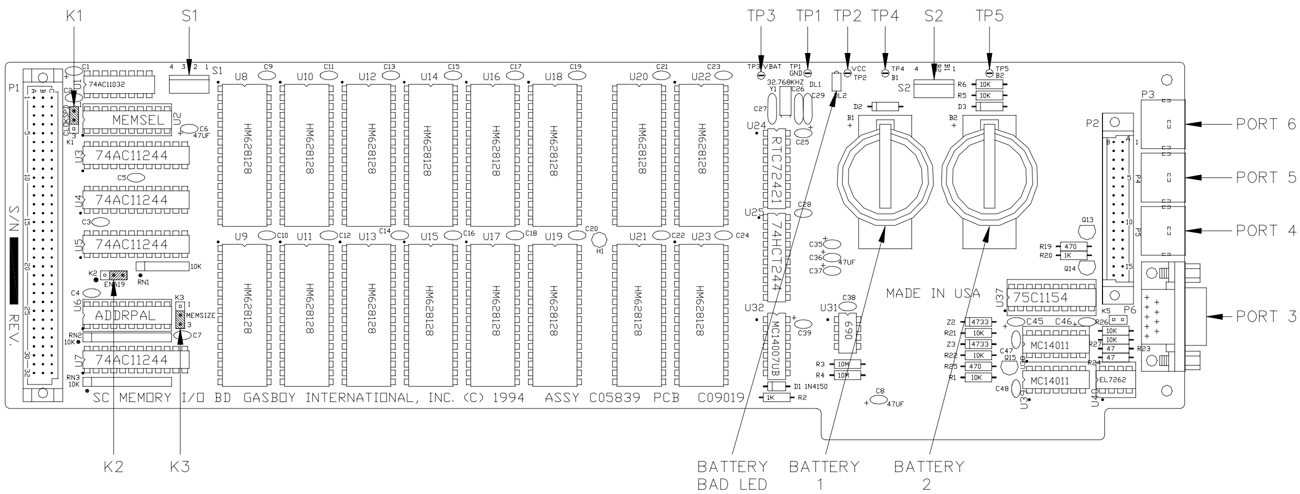
Test Point	Function	Voltage
TP1	Ground	0 VDC
TP2	+5	+4.9 to +5.1 VDC
TP3	+12	+11.5 to +13.5 VDC
TP4	-12	-11.0 to –12.5 VDC

SITE CONTROLLER III MEMORY I/O PCB

The Site Controller III Memory I/O PCB (C05839):

- provides the battery-backed RAM for the storage of all transaction and system data
- provides lithium batteries for data retention during power failures
- provides additional RS-232 ports and dual Tokheim port 3

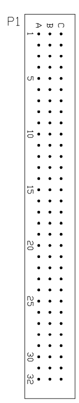
Layout



Connector

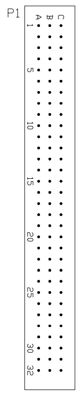
P1 CPU PCB Interface

Pins A1 – A32

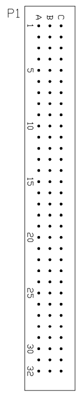
Pinout	Pin	Function	Voltage
	A1	+5VDC	+5VDC
	A2	+5VDC	+5VDC
	A3	$W/\overline{R}$ – Read Enable	⎍⎍ 0VDC – Read
	A4	PB9	⎍⎍ +5VDC – ON
	A5	$\overline{\text{MBSEL}}$ – Memory Board Select	⎍⎍ 0VDC – ON
	A6	$\overline{\text{BUSSEL}}$ – Not used, grounded on Memory PCB	0VDC – Normal
	A7	N/C	N/C
	A8	N/C	N/C
	A9	N/C	N/C
	A10–A25	GND – DC Ground	DC Ground
	A26	N/C	N/C
	A27	N/C	N/C
	A28	IPL0	⎍⎍ +5VDC – ON
	A29	IPL1	⎍⎍ +5VDC – ON
	A30	$\overline{\text{BGACK}}$	⎍⎍ 0VDC – ON
	A31	$\overline{\text{BG}}$	⎍⎍ 0VDC – ON
	A32	$\overline{\text{BR}}$	⎍⎍ 0VDC – ON

P1 - CPU PCB Interface (Continued)

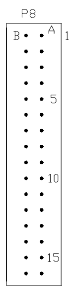
Pins B1- B32

Pinout	Pin	Function	Voltage
	B1	+5VDC	+5VDC
	B2	+5VDC	+5VDC
	B3	$\overline{LDS}$ – Lower data select	⎍⎍ 0VDC – ON
	B4	$\overline{UDS}$ – Upper data select	⎍⎍ 0VDC – ON
	B5	$\overline{WS1}$ – Wait State 1	⎍⎍ 0VDC – ON
	B6	A2 – Address 2	⎍⎍ +5VDC – ON
	B7	A4 – Address 4	⎍⎍ +5VDC – ON
	B8	A6 – Address 6	⎍⎍ +5VDC – ON
	B9	A8 – Address 8	⎍⎍ +5VDC – ON
	B10	A10 – Address 10	⎍⎍ +5VDC – ON
	B11	A12 – Address 12	⎍⎍ +5VDC – ON
	B12	A14 – Address 14	⎍⎍ +5VDC – ON
	B13	A16 – Address 16	⎍⎍ +5VDC – ON
	B14	A18 – Address 18	⎍⎍ +5VDC – ON
	B15	A20 – Address 20	⎍⎍ +5VDC – ON
	B16	A22 – Address 22	⎍⎍ +5VDC – ON
	B17	$\overline{AS}$ – Address strobe	⎍⎍ 0VDC – ON
	B18	MD14 – Data 14	⎍⎍ +5VDC – ON
	B19	MD12 – Data 12	⎍⎍ +5VDC – ON
	B20	MD10 – Data 10	⎍⎍ +5VDC – ON
	B21	MD8 – Data 8	⎍⎍ +5VDC – ON
	B22	MD6 – Data 6	⎍⎍ +5VDC – ON
	B23	MD4 – Data 4	⎍⎍ +5VDC – ON
	B24	MD2 – Data 2	⎍⎍ +5VDC – ON
	B25	MD0 – Data 0	⎍⎍ +5VDC – ON
	B26	$\overline{BERR}$ – Bus error	⎍⎍ 0VDC – ON
	B27	FC1	⎍⎍ +5VDC – ON
	B28	IAC	⎍⎍ +5VDC – ON
	B29	IPL2	⎍⎍ +5VDC – ON
	B30	$\overline{CS1}$ – Chip select 1	⎍⎍ 0VDC – ON
	B31	$\overline{CS2}$ – Chip select 2	⎍⎍ 0VDC – ON
	B32	$\overline{CS3}$ – Chip select 3	⎍⎍ 0VDC – ON

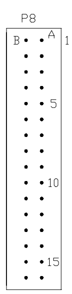
P1 - CPU PCB Interface (Continued)
Pins C1 - C32

Pinout	Pin	Function	Voltage
	C1	+5VDC	+5VDC
	C2	$\overline{\text{MBSET}}$ – Not used; grounded on memory board	0VDC – Normal
	C3	R/$\overline{\text{W}}$ – Write Enable	⎍⎍ 0VDC – Write
	C4	$\overline{\text{WS4}}$ – Wait state 4	⎍⎍ 0VDC – ON
	C5	$\overline{\text{WS0}}$ – Wait state 0	⎍⎍ 0VDC – ON
	C6	A1 – Address 1	⎍⎍ +5VDC – ON
	C7	A3 – Address 3	⎍⎍ +5VDC – ON
	C8	A5 – Address 5	⎍⎍ +5VDC – ON
	C9	A7 – Address 7	⎍⎍ +5VDC – ON
	C10	A9 – Address 9	⎍⎍ +5VDC – ON
	C11	A11 – Address 11	⎍⎍ +5VDC – ON
	C12	A13 – Address 13	⎍⎍ +5VDC – ON
	C13	A15 – Address 15	⎍⎍ +5VDC – ON
	C14	A17 – Address 17	⎍⎍ +5VDC – ON
	C15	A19 – Address 19	⎍⎍ +5VDC – ON
	C16	A21 – Address 21	⎍⎍ +5VDC – ON
	C17	A23 – Address 23	⎍⎍ +5VDC – ON
	C18	MD15 – Data 15	⎍⎍ +5VDC – ON
	C19	MD13 – Data 13	⎍⎍ +5VDC – ON
	C20	MD11 – Data 11	⎍⎍ +5VDC – ON
	C21	MD9 – Data 9	⎍⎍ +5VDC – ON
	C22	MD7 – Data 7	⎍⎍ +5VDC – ON
	C23	MD5 – Data 5	⎍⎍ +5VDC – ON
	C24	MD3 – Data 3	⎍⎍ +5VDC – ON
	C25	MD1 – Data 1	⎍⎍ +5VDC – ON
	C26	FC0	⎍⎍ +5VDC – ON
	C27	FC2	⎍⎍ +5VDC – ON
	C28	$\overline{\text{CS0}}$ – Chip Select 0	⎍⎍ 0VDC – ON
	C29	$\overline{\text{RESET}}$ – Reset	+5VDC normal; 0VDC reset
	C30	$\overline{\text{DTACK}}$	⎍⎍ 0VDC – ON
	C31	$\overline{\text{DREQ}}$	⎍⎍ 0VDC – ON
	C32	CLK0	⎍⎍ +5VDC – ON

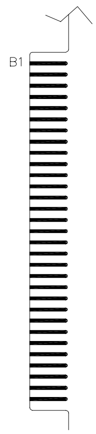
P2 - CPU PCB Communication ports Interface
Pins A1 - A16

Pinout	Pin	Function	Input/Output
	A1	RXD – Receive data, port 6	Input
	A2	TXD – Transmit data, port 6	Output
	A3	DSR – Data set ready, port 6	Input
	A4	DTR – Data terminal ready, port 6	Output
	A5	CTS – Clear to send, port 6	Input
	A6	RTS – Ready to send, port 6	Output
	A7	DCD – Carrier detect, port 6	Input
	A8	DC Ground	DC Ground
	A9	DCD – Carrier detect, port 5	Input
	A10	RTS – Ready to send, port 5	Output
	A11	CTS – Clear to send, port 5	Input
	A12	DTR – Data terminal ready, port 5	Output
	A13	DSR – Data set ready, port 5	Input
	A14	TXD – Transmit data, port 5	Output
	A15	RXD – Receive data, port 5	Input
	A16	-12VDC	-12VDC

P2 - CPU PCB Communication ports Interface (Continued)
Pins B1 - B16

Pinout	Pin	Function	Voltage
	B1	RXD – Receive data, port 4	⊓⊔⊓ receive; +5VDC OFF
	B2	$\overline{\text{DSR}}$ – Data set ready, port 4	⊓⊔⊓ 0VDC – ON
	B3	TXD – Transmit data, port 4	⊓⊔⊓ transmit; +5VDC OFF
	B4	$\overline{\text{CTS}}$ – Clear to send, port 4	⊓⊔⊓ 0VDC – ON
	B5	$\overline{\text{DCD}}$ – Carrier detect, port 4	⊓⊔⊓ 0VDC – ON
	B6	$\overline{\text{RTS}}$ – Ready to send, port 4	⊓⊔⊓ 0VDC – ON
	B7	$\overline{\text{DTR}}$ – Data terminal ready, port 4	⊓⊔⊓ 0VDC – ON
	B8	DC Ground	DC Ground
	B9	$\overline{\text{DTR}}$ – Data terminal ready, port 3	Not used +5VDC
	B10	$\overline{\text{RTS}}$ – Ready to send, port 3	0VDC Tokheim Channel 1; +5VDC Tokheim Channel 2
	B11	TXD – Transmit data, port 3	⊓⊔⊓ transmit; +5VDC OFF
	B12	$\overline{\text{DSR}}$ – Data set ready, port 3	Not used 0VDC
	B13	RXD – Receive data, port 3	⊓⊔⊓ receive; +5VDC OFF
	B14	$\overline{\text{DCD}}$ – Carrier detect, port 3	Not used 0VDC
	B15	$\overline{\text{CTS}}$ – Clear to send, port 3	Not used 0VDC
	B16	+12VDC	+12VDC

PC ISA Bus Interface connector

Pinout	Pin	Function	Voltage
Component side	A1-A31	No connections	N/C
Solder Side 	B1	Ground	Ground
	B2	N/C	N/C
	B3	+5 VDC	+5 VDC
	B4-6	N/C	N/C
	B7	-12 VDC	-12 VDC
	B8	N/C	N/C
	B9	+12 VDC	+12 VDC
	B10	Ground	Ground
	B11-28	N/C	N/C
	B29	+5 VDC	+5 VDC
	B30	N/C	N/C
	B31	Ground	Ground

See the charts shown earlier in this section for the exact pinouts of these connectors.
P3, P4, & P5 - RS-232 General Purpose Communications Ports 6, 5, and 4 respectively
P6 – Dual Tokheim Port 3

LED Indicator DL2
LED indicator is provided to allow you to monitor the battery voltage. When lit, it indicates the battery voltage is low or the battery is not connected.

Jumpers

Jumper	Description	Setting
K1	Date/Time clock speed	1-2 for 4 wait state; default
		2-3 for 1 wait state
K2	Enable A19 to RAM	2-3 for 128Kx8; default
		1-2 for 512Kx8
K3	RAM size	2-3 for 128Kx8; default
		1-2 for 512Kx8
K5	Tokheim reset output	Not used.

Switches
Switch S1

Switch	Function	Setting
S1-1	Boot to monitor after reset	Open
	Boot to OS after reset	Closed; default
S1-2	Debug mode	Open
	Normal	Closed; default
S1-3	Don’t talk to PC while in monitor	Open
	Monitor I/O goes to PC also	Closed; default
S1-4	Monitor I/O goes to SC port 1 also	Open
	No monitor I/O to SC port 1	Closed; default

Switch S2

Switch	Function	Setting
S2-1	Battery 1	Open – Disabled
		Closed – Enabled; default
S2-2	Battery 2	Open – Disabled; default
		Closed – Enabled
S2-3	N/A	Unused
S2-4	N/A	Unused

Test Points - Memory PCB

Test Point	Function	Voltage
TP1	Ground	0 VDC
TP2	+5	+4.9 to +5.1 VDC
TP3	Battery	4.95 to 5.1 VDC with power on
		3.0 to 3.3 VDC with power off
TP4	Battery 1	3.0 to 3.3 VDC
TP5	Battery 2	3.0 to 3.3 VDC

DC Power Measurements

1. Remove the Phillips screws from the side access panel or cover of the PC. Carefully remove the access panel or cover.

2. To measure the +5V, on the CPU PCB, measure at the TP1 and TP2 test points, with the positive (+) probe on TP2 and the negative (-) probe on TP1. The voltage should be +5.00 to +5.15 VDC. No adjustment is possible.

3. To measure the +12V, on the CPU PCB, measure at the TP1 and TP3 test points, with the positive (+) probe on TP3 and the negative (-) probe on TP1. The voltage should be +11.00 to +14.00 VDC. No adjustment is possible.

4. To measure the -12V, on the CPU PCB, measure at the TP1 and TP4 test points, with the positive (+) probe on TP4 and the negative (-) probe on TP1. The voltage should be -11.00 to -14.00 VDC. No adjustment is possible.

NOTE: These voltages can not be adjusted.

SITE CONTROLLER III PC (C07118)

The Site Controller III PC (which consists of a keyboard, mouse, monitor, case, and cables) houses the site controller board set. The PC:

- provides power to site controller board set
- provides an interface to site controller board set
- contains a hard disk drive for mass storage of PC operating system software, data and application software
- contains a 3-1/2" disk drive and a CD-ROM drive
- contains a video and sound card
- contains a minimum of 32M of RAM and minimum 200 watt power supply
- contains PS/2 mouse port, 2 serial ports, and 1 parallel port
- requires Windows NT OS version 4.0 or greater with Service Pack 3 or greater
- requires Netscape V4.5 and AdobeReader V4.0 for the CFN on-line help

BIOS settings

The following BIOS settings are needed for the PC to work with the Site Controller III board set:

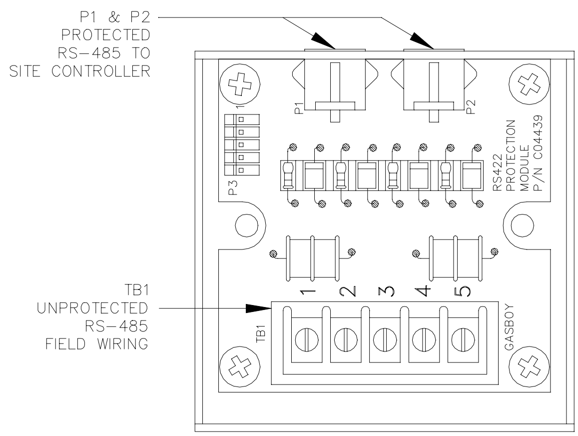
For Pentium 1 Computers	For Pentium 2 or 3 Computers
Under Advanced Setup: • PS/2 Mouse Support set to Enabled • Adapter ROM C800 – DC00, 16K set to Disabled for all.	**Under Advanced Setup:** • Quick Boot set to disable • System BIOS Cacheable set to Enabled • CPU ECC set to Disabled • C000 – DC00, 16K Shadow set to Disabled for all.
Under Chipset Setup: • Set IRQ 10 available to ISA/EISA. If using a additional ISA expansion Comm port board (for Integral Profit Pt PIN pad), set 5 & 9 to ISA/EISA.	**Under Chip Set Setup:** • Memory Buffer Strength set to Auto.
Under Power Management: • Advanced Power Management is disabled.	**Under PCI/PnP Setup:** • Set IRQ 10 available to ISA/EISA. If using a additional ISA expansion Comm port board (for Integral Profit Pt PIN pad), set 5 & 9 to ISA/EISA.
Under Peripheral Setup: • Programming mode is set to manual. • Set Serial Port 1 to 3F8H • Serial Port 2 to 2F8H • Parallel Port to 378H • Parallel Port Extended Mode to SPP • LPT IRQ Selection to IRQ 7.	**Under Peripheral Setup:** • Parallel Port Mode set to EPP • EPP version set to 1.9 • Parallel Port IRQ set to 7.

RS-485 JUNCTION BOX

The RS-485 junction box provides the interface for the RS-485 section of the site controller. This unit:

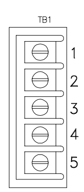
- provides the terminal block for field wiring of the RS-485 lines
- provides protection against noise on the RS-485 lines
- must be properly grounded

Layout

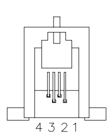


Connectors

TB1 - RS-485 Field Wiring (Unprotected)

Pinout	Pin	Function		Voltage
	1	RS-485 Tx+	To Site Controller	⎍⎍ +5 VDC signal between pins 1 & 2
	2	RS-485 Tx-		
	3	RS-485 Rx+	From Site Controller	⎍⎍ +5 VDC signal between pins 3 & 4
	4	RS-485 Rx-		
	5	Ground		Ground

P1 & P2 - Protected RS-485 Signals to Site Controller

Pinout	Pin	Function		Voltage
	1	RS-485 Rx+	To Site Controller	⎍⎍ +5 VDC signal between pins 1 & 2
	2	RS-485 Rx-		
	3	RS-485 Tx+	From Site Controller	⎍⎍ +5 VDC signal between pins 3 & 4
	4	RS-485 Tx-		

TOKHEIM PUMPS

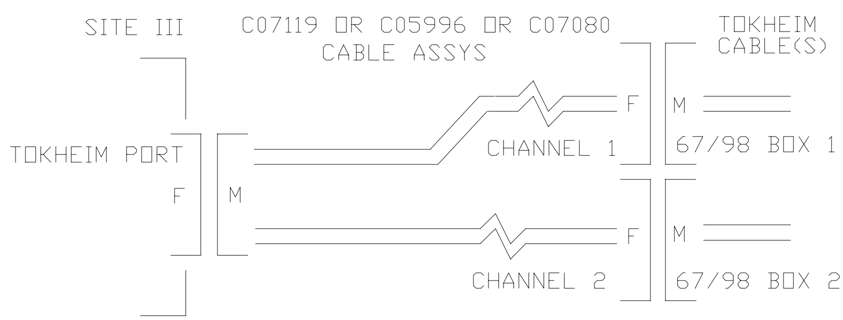
The dual Tokheim port allows the Site Controller III to communicate with Tokheim pumps. This requires a C07119 or C05996 cable assembly. C07080 is used when connecting to 3 or more 98 boxes.

NOTE: When using a Tokheim 98 box, the following connections must be made within the box: TALK DISP must be connected to +9V with a 1K Ohm resistor; DC COM must be connected to GND.

NOTE: If using multiple 98 boxes, the motherboard (P/N 415653-1) must be equipped with two isolation diodes (mounted about 1/2" below the J9 connector).

Refer to the *Pump Interface Manual, C09146* for more information.

Layout



SITE CONTROLLER III PROBLEMS

Site Controller PC is dead. No LED's are lit. The fan is not working.

Possible Cause	Checks	Corrective Action
No 115VAC power to site controller PC.	Check the site controller PC power cord.	Make sure both ends of the site controller PC power cord are installed properly.
	If the power outlet strip has a power switch, make sure the switch is on.	Turn power outlet strip switch on, if off.
	Check the power outlet strip's fuse or circuit breaker.	If the power outlet strip has a fuse or built-in circuit breaker, replace or reset as necessary.
	Check if circuit breaker is off or tripped.	Turn breaker on, if off.
	Check the output voltage of the power outlet strip.	If 115VAC is measured at the power outlet strip input but not at the output, replace the power outlet strip.
	Check if 115VAC is being switched through circuit breaker.	Replace breaker if 115VAC is not being switched.
PC power switch is off.	Check the PC power switch. Some newer PCs have a switch on the back as well.	Turn PC power switch on, if off.
Defective power supply.	Measure the output of the power supply when power is on. It is easiest to measure at a free disk drive power connector. Black wire is ground, red is +5 volts, and yellow is +12 volts.	If no voltage is measured, disconnect power from each disk drive. If a drive is found to cause the problem, replace it. If power supply is still not working, replace PC (C07118).
PC processor is loose in its socket or has come out of the socket.	Switch power off. Check that the PC processor is seated in socket.	Re-seat processor if loose or out of socket.
Defective sound card, Comm port board, video board, or SC III board set.	Pull all cards from PC motherboard. Turn on power and listen for PC to beep.	If PC fails to beep or is still dead, replace PC (C07118). If PC beeps & starts booting, shut down and try each removed board, one at a time starting with the video board, until PC fails (be sure to turn off the power when adding or removing boards), then replace defective board or SC III board set (C07077).

Site Controller won't communicate with PC. Error being displayed when the CFN3 application is started; SCIII Dual RAM is not working.

Possible Cause	**Checks**	**Corrective Action**
Site Controller board set not installed or not seated properly.	Check if board set is installed or seated properly.	Install or re-install board set (always remember to shut down PC before adding or removing boards).
PC shadow ROM has not been disabled.	Reboot PC. Run BIOS setup by pressing the DEL key while the PC boots. Under Advanced Setup, check to see that all ROM adapter addresses are set to disabled.	If not disabled, select each address and the disabled setting. Save the changes and reboot the PC.
Site Controller switches set to wrong address.	Check PC Address switch S2 on SC-COMM CPU. Check the **SC3.INI** file in the SC3 directory.	Address setting must match what is in the **SC3.INI** file. Default setting is 1 & 4 closed, 2 & 3 open (Address D0000).
Defective Site III board set.	None.	Replace board set.

Site Controller won't communicate. All loop device are down. PC is booted and runnning. Error being displayed when the CFN3 application is started; Read timeout, inctl=XXXX outctl=XXXX.

Possible Cause	Checks	Corrective Action
Site Controller board set not installed or not seated properly.	Check if board set is installed or seated properly.	Install or re-install board set (always remember to shut down PC before adding/removing boards).
Incorrect power fail jumper.	Check K3 on Site Comm CPU board. There should be a 3 position jumper on K3.	Correct as needed.
Site memory I/O switches set wrong.	Check switch S1 on SC-memory I/O.	All switches are normally closed.
Site Controller memory needs complete reinitialization.	None	Open the SC III tower. On the Memory Board DIP switch S1, set positions 1, 2, and 4 to open (up). On the Comm board, remove the K4 jumper. On the keyboard, press ALT-N. At the Debug >> prompt, press **!** Let the system run for about 20 seconds. Press ENTER. Return the switches and the jumper to their proper positions. On the keyboard, press ALT-N. The site should come back up. *NOTE: It is normal to get read/write timeout errors during this process, but if the errors continue after the last ALT-N, the problem has not been corrected.*
Defective Site III board set.	None.	Replace board set.

Site Controller won't read from or write to PC drive. The system is working.

Possible Cause	Checks	Corrective Action
CFN3 application closed.	Check to see if the CFN3 application is running (may be minimized).	If not running, double click the CFN3 icon.
Defective hard drive.	Try writing to a file on the hard drive from another application.	If access fails, replace drive.
Defective Site III Boards set.	None.	Replace board set.

Log printer is not printing. The system is working. May not be running reports.

Possible Cause	Checks	Corrective Action
Printer turned off.	Check printer power indicator.	Turn on, if off.
Printer is offline.	Check ON LINE indicator.	Put online if offline.
Cable disconnected.	Check connections.	Re-connect cable if not connected or loose.
Incorrect printer set-up.	Check the printer set-up parameters. If it is a serial printer, it should be set for 8 data bits, no parity, 1 stop bit. The baud rate should match the site controller's baud rate, 9600. For Okidata printer, follow instructions in Start-Up Manual.	Configure the proper set-up parameters according to the printer manufacturer's instructions.
Printer is jammed.	Check printer paper feeds correctly.	Clear paper feeding if jammed.
Printer is out of paper.	Check that the printer has paper.	Re-load paper if needed.
Short haul modem off, offline, disconnected, or bad.	If short haul modems are being used, check both modems at site and printer.	If off, turn on; if offline, put online; if disconnected, reconnect; if bad, replace.
Defective site controller board set.	Try using a different site controller communications port. This requires changing the port configuration in **SYS_PAR**. Make sure the printer is connected to the new port before you reboot the site.	Replace the site controller board set if port or ports do not work.
Defective printer.	Most printers have a self test (ex: turn off, press and hold Line Feed button while you turn power on).	If the printer doesn't work in self test, replace the printer.

No Island Loop communications. All devices on Island Loop are down.

Possible Cause	Checks	Corrective Action
Site controller is down.	Check logger or do a **PRint DIagnostics** command for indication that the site is not running.	Do a **RUN** or **RUN;I** command if site is down.
RS-485 phone cable is loose or not installed correctly.	Check that one end of the cable is installed in the junction box and the other end is installed in the loop 1 or 2 connector on the rear of the Site Controller III.	Install cable properly if it is incorrect.
Incorrect wiring of junction box or island loop devices.	Verify all field wiring with the SC III Installation Manual (C35880).	Make wiring connections if needed.
Incorrect jumper setting on Site Comm CPU Board.	Check the K7 (loop 2 default setting is 2 wire) or K6 (loop 1 default setting is 4 wire) jumpers. Jumper on pins 2 & 3 for 4 wire, pin 1 & 2 for 2 wire.	Correct jumpers if needed. You should only need 2 wire for communicating to Tokheim DPTs. If the loop is not connected to DPTs, it should be jumpered for 4 wire.
Defective Site board set.	Try switching from loop 1 to 2 or vice versa. Make sure K6 or K7 are set correctly (see above).	If neither loop works, replace the Site board set.
Defective RS-485 junction board.	None.	Replace the RS-485 junction box.
Defective RS-485 cable.	None.	Replace defective cable (C05670).

No console loop communications. All devices on console loop are down.

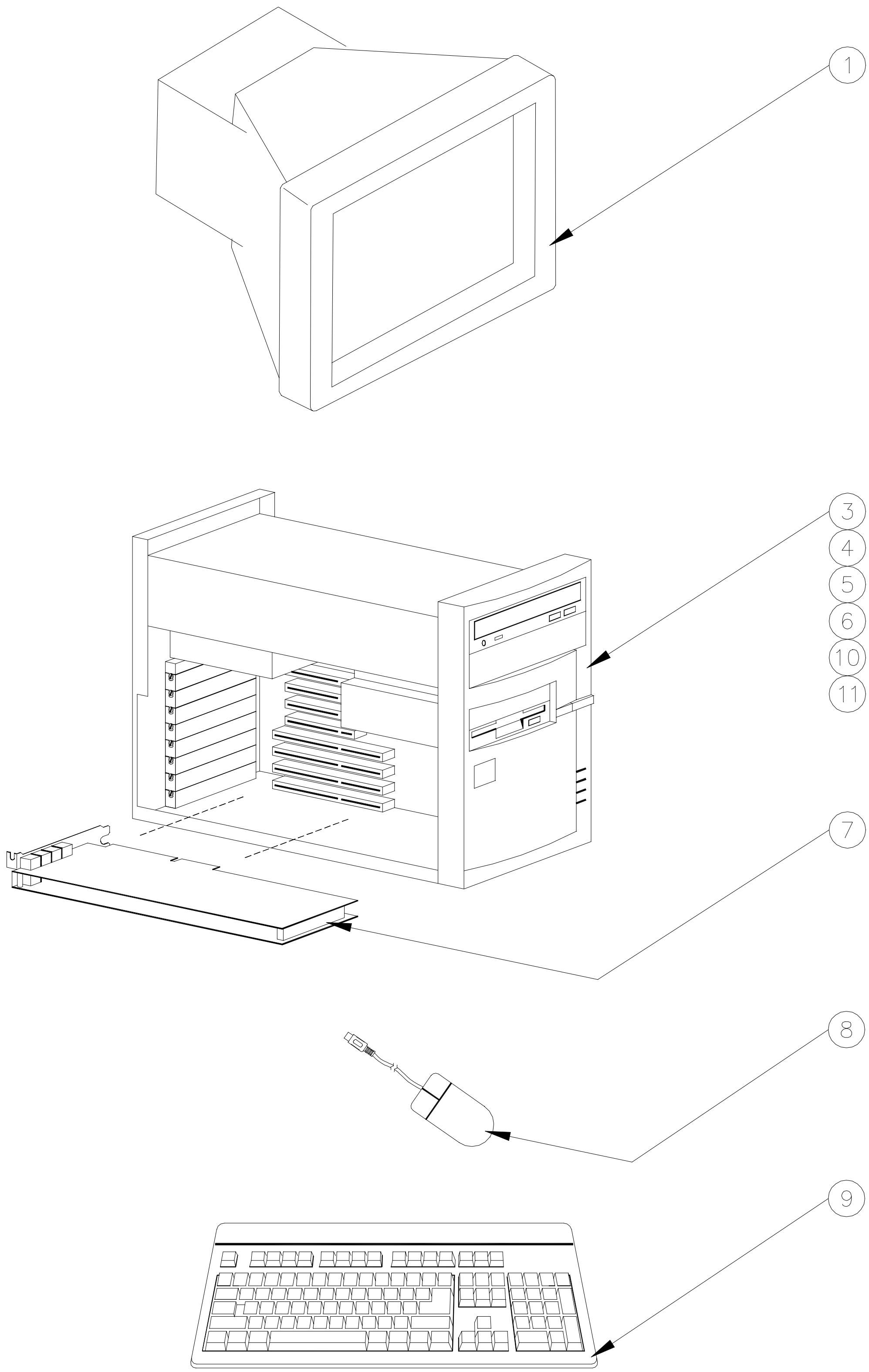
Possible Cause	Checks	Corrective Action
Site Controller is down.	Check logger or do a **PRint DIagnostics** command for indication that the site is not running.	Do a **RUN** or **RUN;I** command if site is down.
RS-485 phone cable is loose or not installed correctly.	Check that one end of the cable is installed in the loop 3 connector on the rear of the site controller and the other end is installed in the **SITE CONTROLLER** connector on the rear of the console, or into the console junction box or RS232-RS485 converter (if used). Check all cables (both ends) from converter to make sure they are connected.	Install cable properly, if it is incorrect.
Incorrect wiring between junction boxes (used only when console is located more than eight feet from site controller).	Verify all field wiring with the SC III Installation Manual (C35880).	Make wiring connections, if needed.
Console CPU not configured correctly.	Check console #7 set up.	Correct, if necessary.
Defective Site board set.	None.	Replace Site board set.
Defective console CPU board or RS232-RS485 converter (if used).	None.	Replace the console CPU board or RS232-RS485 converter (if used).
If used, defective RS232-RS485 converter power supply.	Measure the output of the power supply from the center of the connector at the converter to the outside of the connector. The output should be +10 to +16.5 volts.	Replace if bad.
Defective RS-485 junction board (if used).	None.	Replace the RS-485 junction board.
Bad RS-485 cable.	None.	Replace bad cable.

Red battery failure LED (DL2) is lit on memory board.

Possible Cause	Checks	Corrective Action
Switches open.	On the Memory I/O PCB, at least one switch position (1 or 2) on DIP switch S2 must be closed.	If both positions are open, close S2-1. If the LED remains lit, open S2-1 and close S2-2.
Dead or shorted battery, defective battery circuit.	Measure the voltage at the test points on the PCB. If one or both of the battery voltages are within range specified, one or both batteries are okay; perform corrective actions listed.	If possible, always back up and poll all system data before replacing the batteries or SC III boards. On the memory PCB, if S2-1 is closed, open S2-1 then close S2-2. If S2-2 is closed, open S2-2 then close S2-1. If the LED does not remain lit, replace the bad battery as soon as possible (S2-1 connects battery B1 & S2-2 connect battery B2). If the LED remains lit, replace SC III board C07077 set as soon as possible.
Batteries not installed.	Check B1 & B2 on C05839.	Install needed batteries.

Page intentionally left blank.

SC III PC AND ACCESSORIES



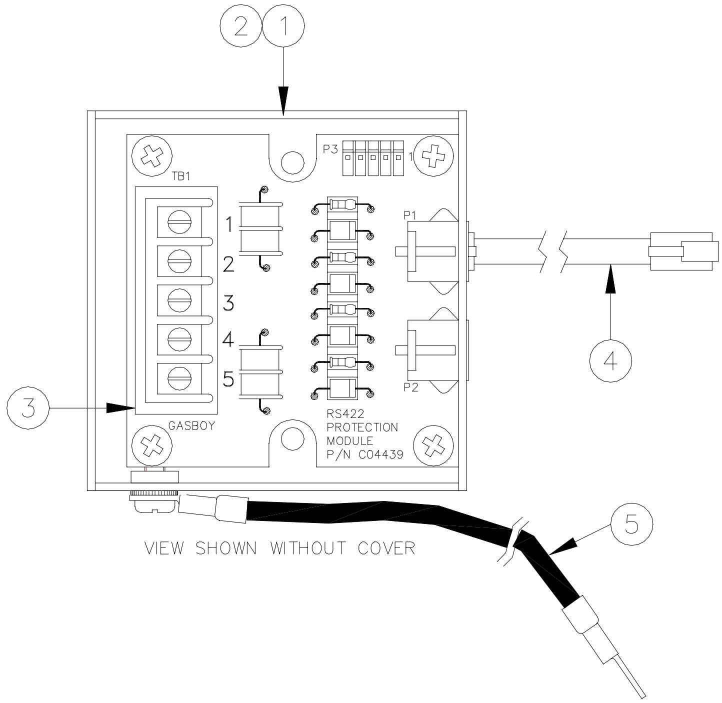
SC III PC AND ACCESSORIES

Item	Part No.	Description
1	C09504	Monitor, 14" SVGA Color
3	C07118	PC, Replacement
4	C07260	Kit, Hard Drive Replacement
5	C09681	Drive, CD-ROM
6	C09553	Drive, 3.5" FD 1.44M
7	C07077	PCB Assy., set (mem and comm)
8	C09510	Mouse, MS w/6-pin mini-DIN, CFN3
9	C07096	Keyboard, w/adapters 101/4
10	C09736	Video Card
11	C09870	PCI Sound Card (used in integral Profit Point only)
♦12	C09088	Power Supply Assembly (Not Shown)
♦13	C09089	Fan, Chassis (Not Shown)

♦*Parts applicable only to PC's with a serial number of S3 311817 or above.*

NOTE: Refer to the CFN Replacement Parts Manual, C35353 for parts not covered in this list.

RS-485 JUNCTION BOX PARTS



C05020 RS-485 Junction Box Assy.

Item	Part No.	Description
1	C35362	Base, RS-485 Junction Box Housing
2	C32707	Cover, RS-485 Junction Box Housing
3	C05379	PCB Assy., RS-485 Protection
4	C05670	Cable Assy., 4 Conductor Handset 8', 1:1
5	C06399	Wire Assy., 14 Ga, Green, 36" long

Section 13

CFN ISLANDER

DESCRIPTION

The CFN Islander is the heart of the CFN System at the fueling site. The Islander consists of a Site Controller I or II, which controls and allows interaction between all your automated fueling equipment including pump control devices and satellite Islander readers. The Islander can be ordered to provide magnetic or optical card (no longer available) or cardless operation. The Islander can control up to 32 hoses and up to 7 satellite readers (Islander readers).

The CFN Islander comes in two post configurations, a standard post and a receipt printer post. If pump control units are required, the standard pedestal can accommodate two pump control units controlling up to eight hoses. The receipt printer pedestal can accommodate one pump control unit controlling up to four hoses. Remote wall-mount pump control unit(s) can also be used.

SYSTEM TYPES

Islander I

The Islander I consists of a Site Controller I containing up to 512K memory. The Islander I contains two asynchronous ports for terminal and/or computer communications. The ports can be set for either RS-232 or RS-422 communications to meet individual requirements. The local port is used for communications to a CRT/printer (logger). The remote port is used for communication through a modem or can be directly connected to a computer or terminal. A built-in keyswitch can be used to limit access to specified commands. Two RS-485 ports are provided for communications with other CFN devices at the fueling site.

Islander II

The Islander II consists of a Site Controller II, which comes standard with two PCMCIA card slots and two PCMCIA SRAM cards for mass storage of data and loading in of operating system programs. In addition to magnetic or cardless operation, the Islander II can be ordered to provide datakey operation. The Islander II contains four asynchronous ports for terminals, modems and/or computer communications. The ports can be set for either RS-232 or RS-422 communications to meet individual requirements. Port 0 is used for communications to a data terminal (logger). Port 2 is used for communication through a modem or to a computer. Ports 1 and 3 are additional ports, which can be programmed according to the application. Two RS-485 ports are provided for communications with other CFN devices at the fueling site.

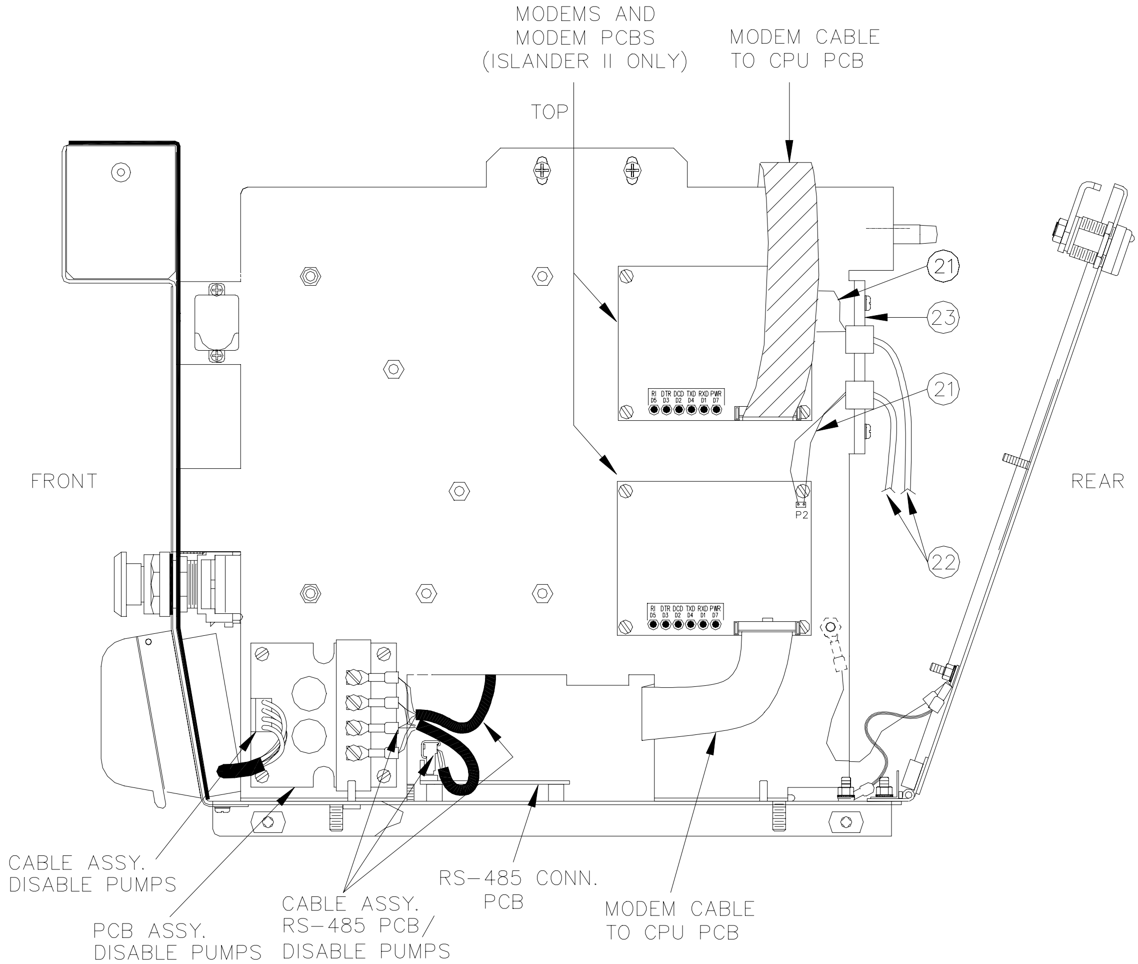
Islander Satellite

Satellite readers contain same features (listed below) as an Islander, minus Site Controller CPU and memory boards:

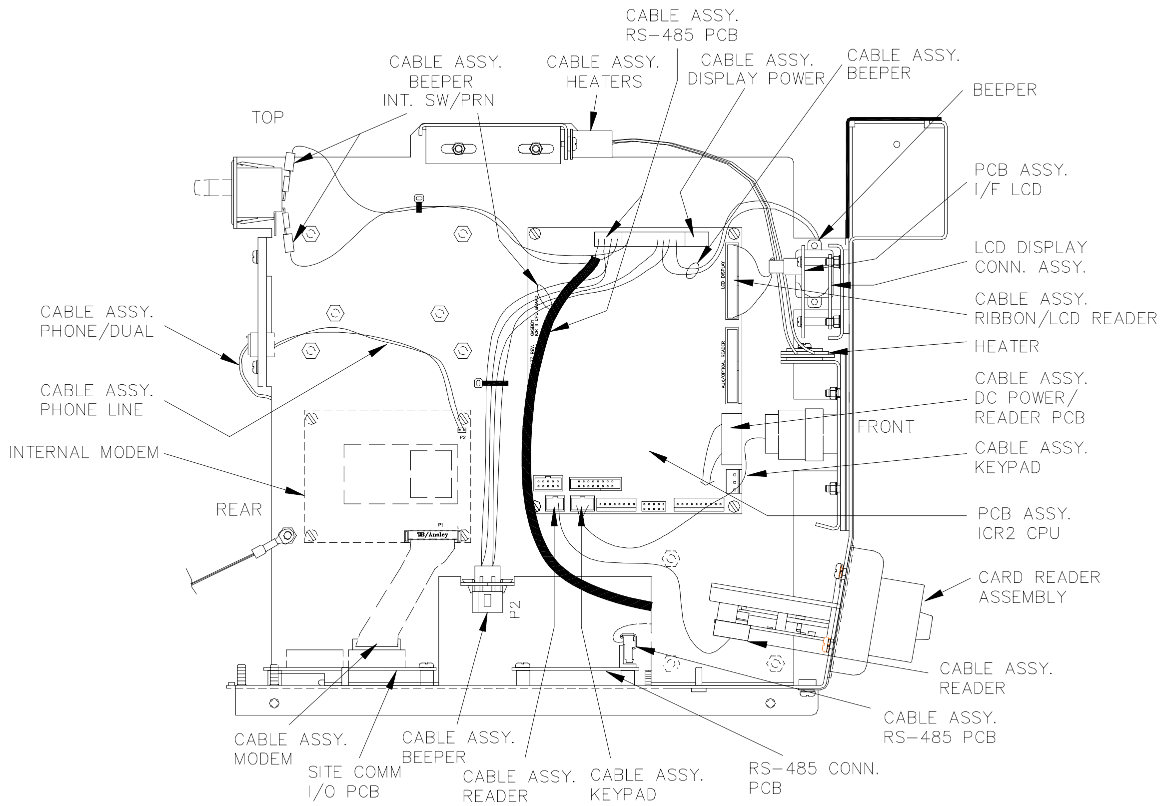
- Display: 1X20 or 2x20, .5”, character LCD that displays programmable instructional messages.
- Read Method: ABA Track II Magnetic manual swipe; Datakey (Islander II only), or Static read optical.
- 4x4 Membrane keypad, disable pumps button.
- Options: DES Encryption of PIN numbers, receipt printer mounted in pedestal or pump control unit mounted in pedestal.

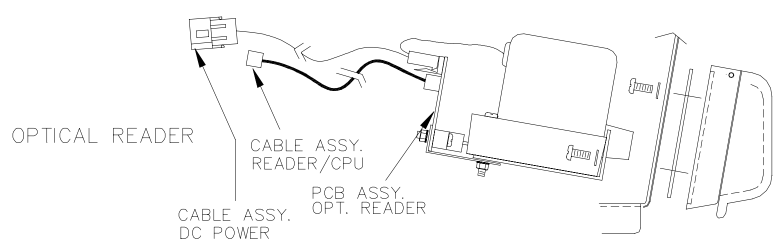
LAYOUT

Head, Outside Right Partition, Islander I and II

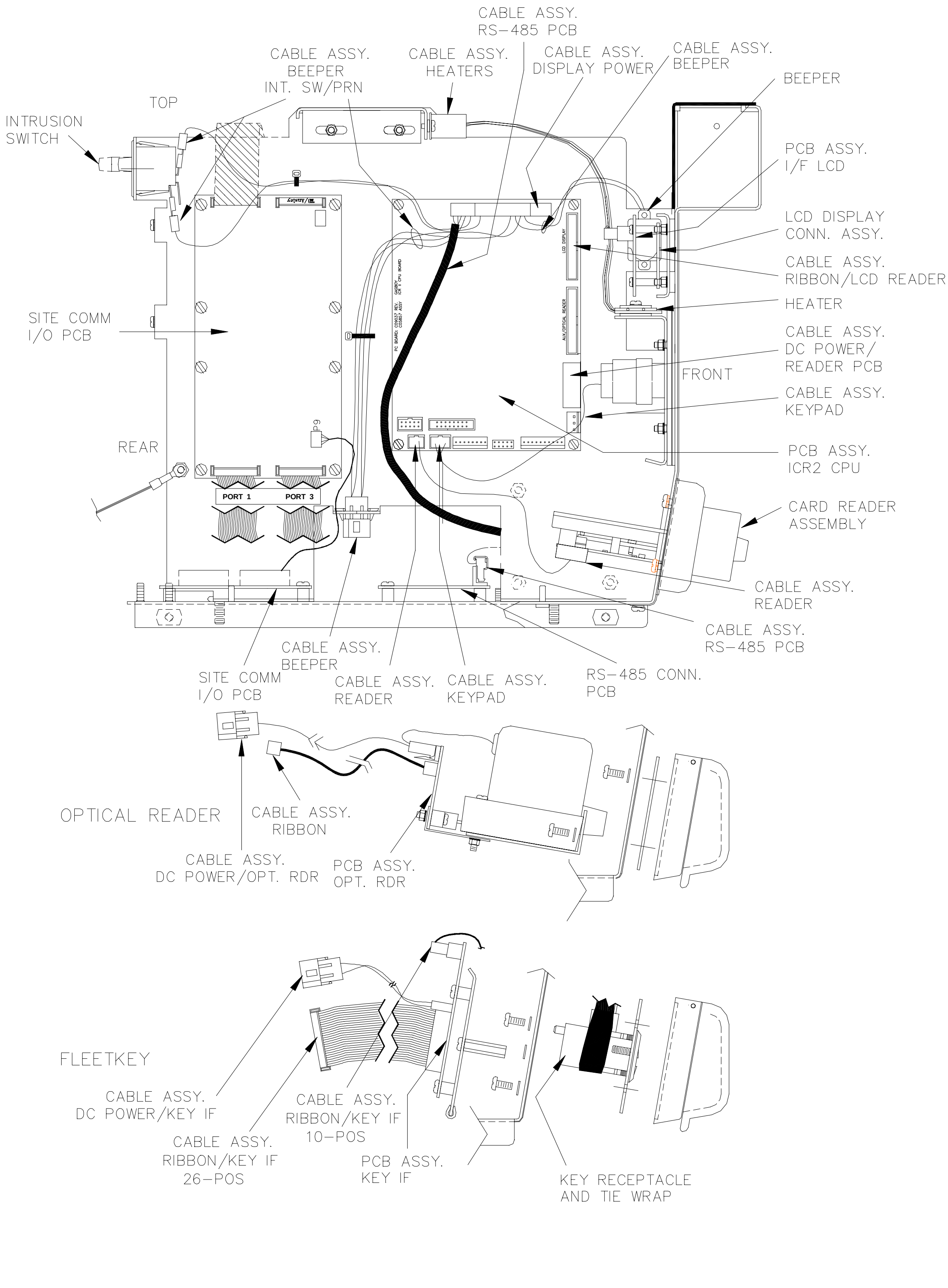


Head, Inside Right Partition, Islander

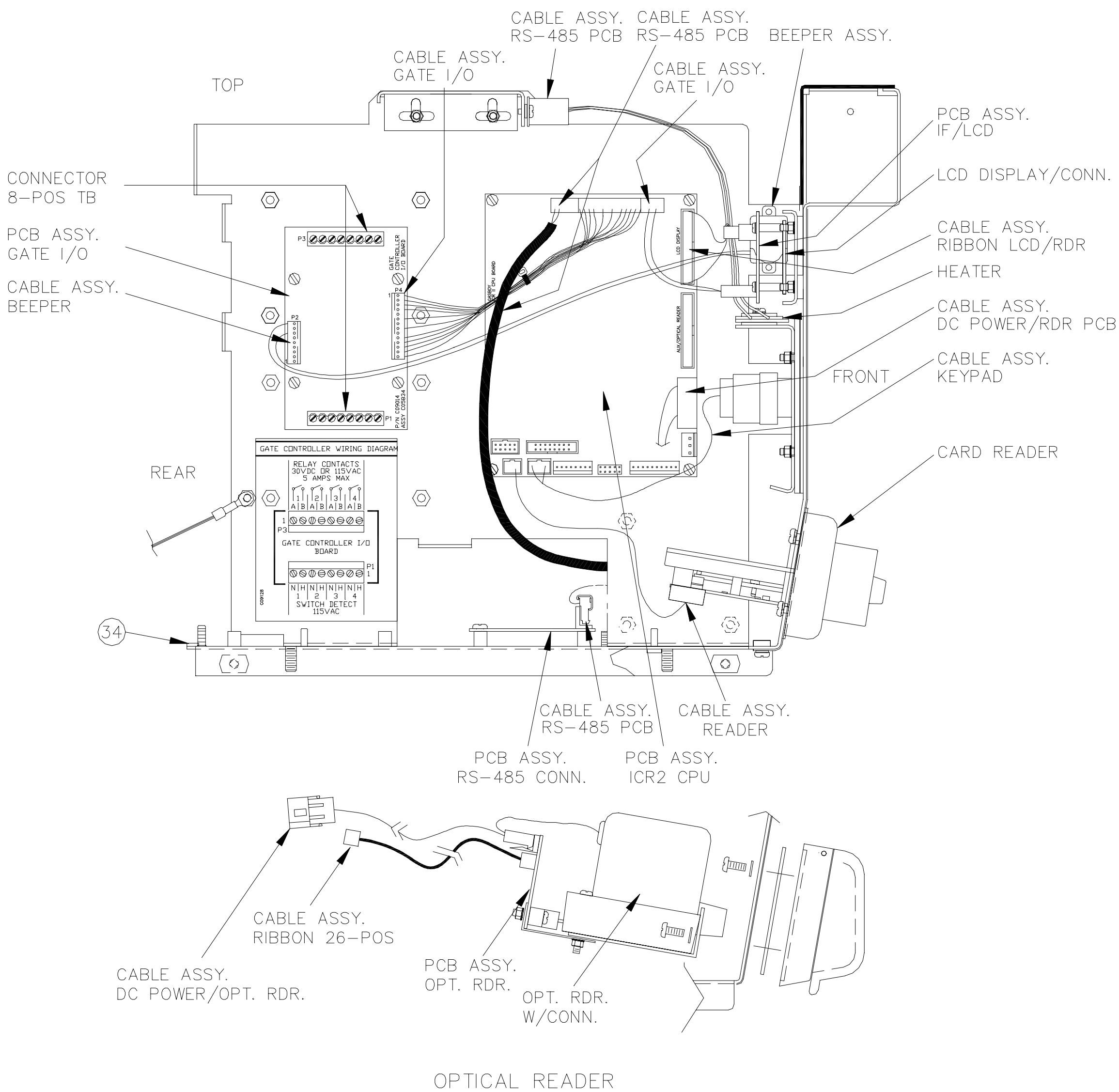




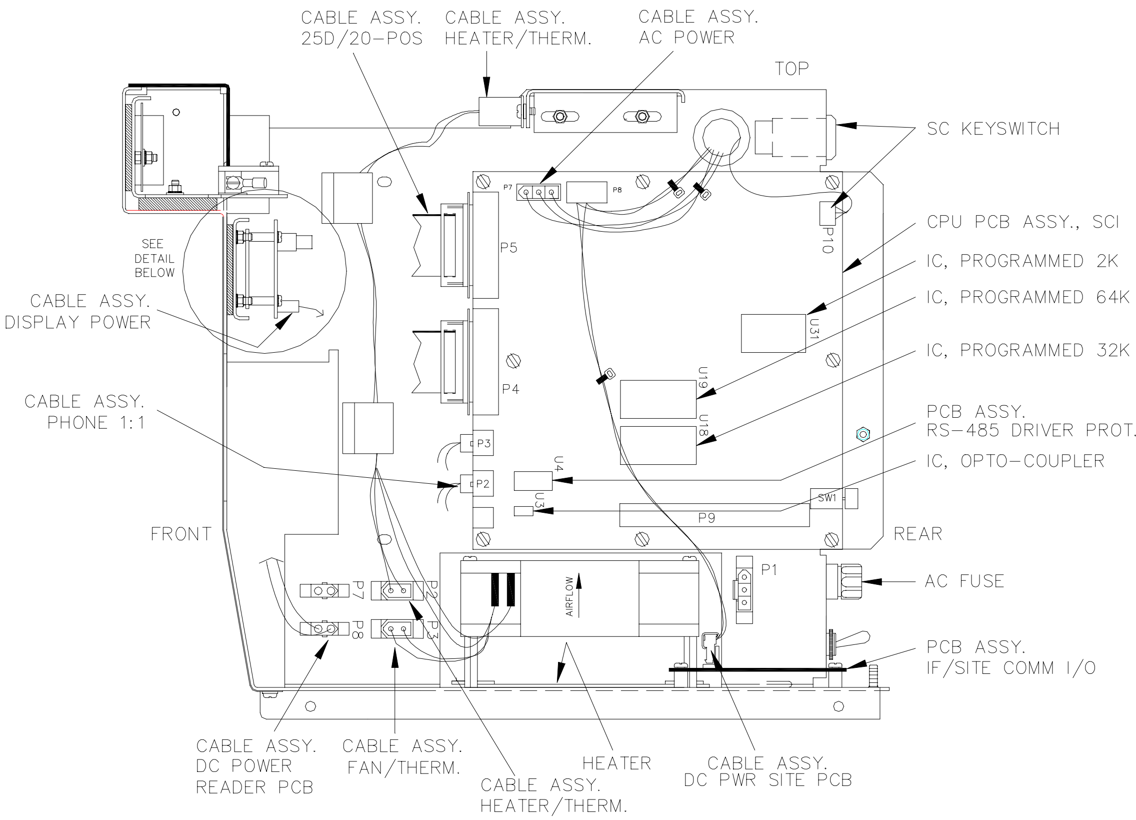
Head, Inside Right Partition, Islander II

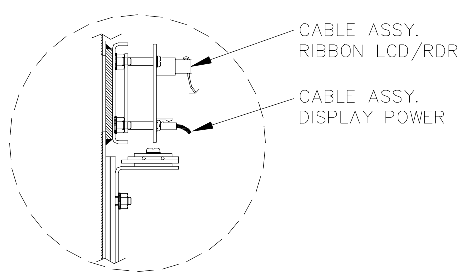


Head, Inside Right Partition, Islander Satellite with Gate



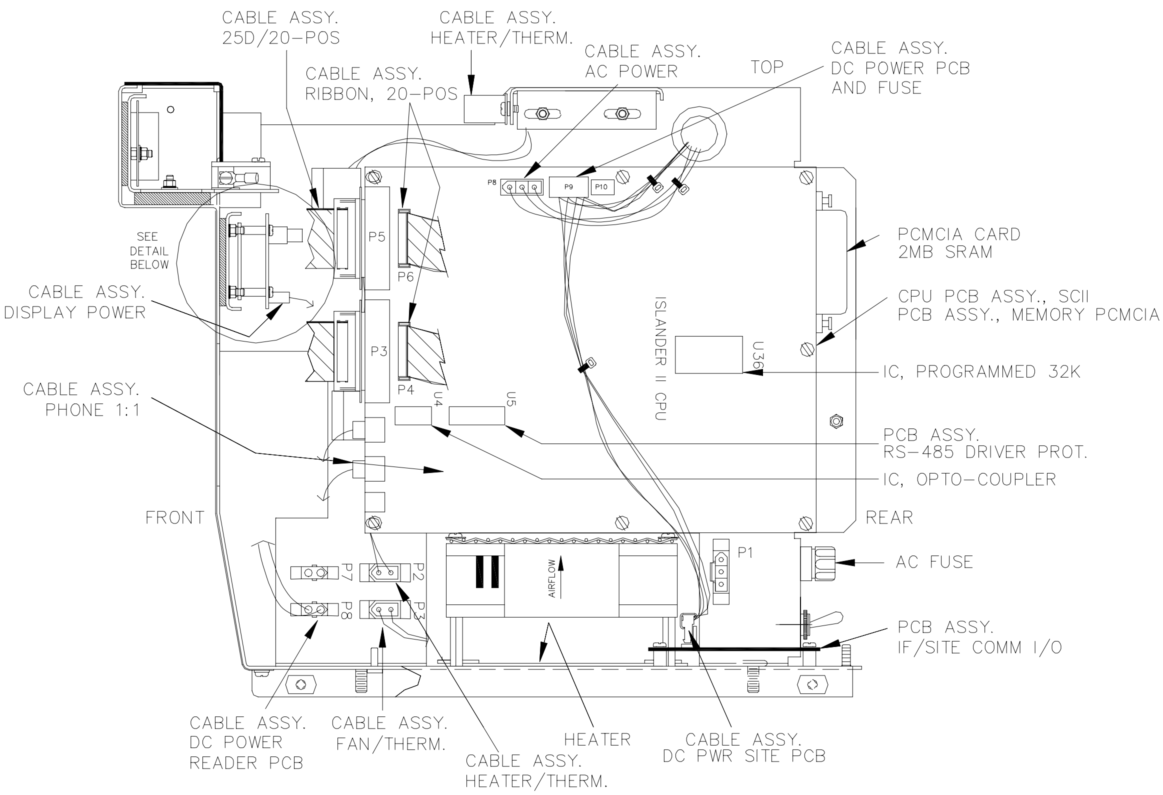
Head, Inside Left Partition, Islander

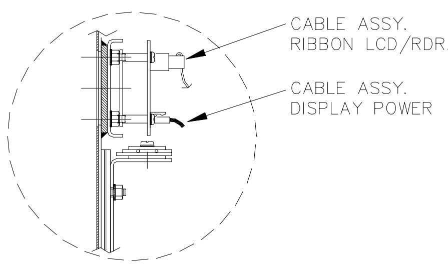




DETAIL OF DISPLAY
AND HEATER MOUNTING

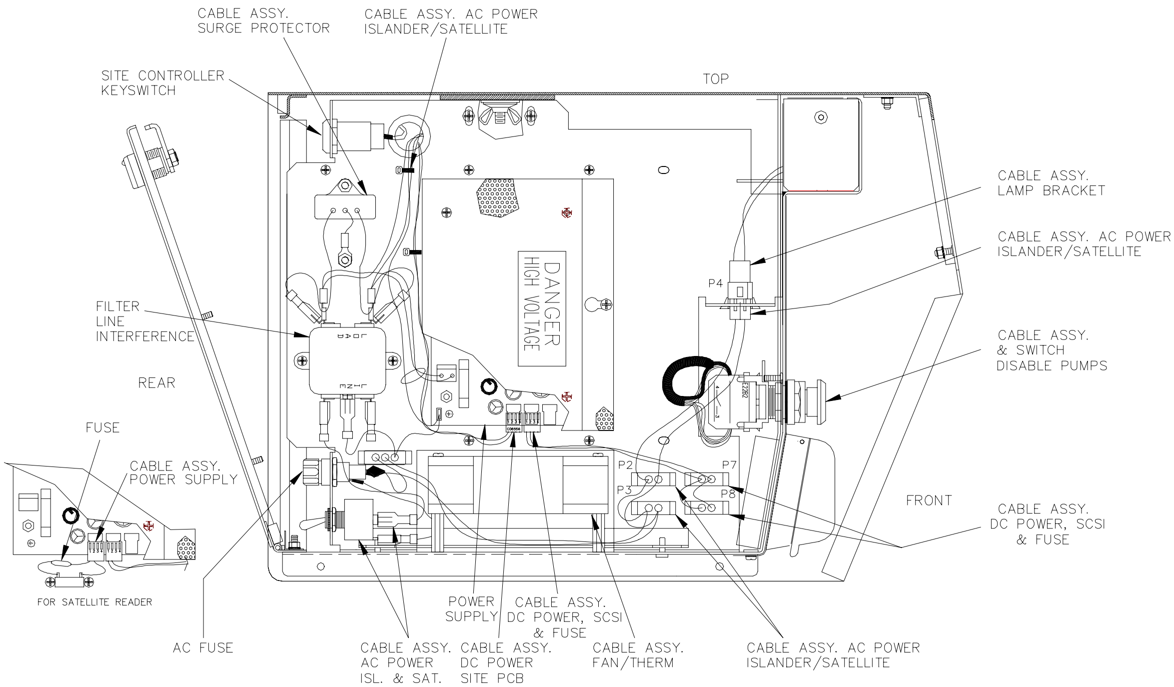
Head, Inside Left Partition, Islander II



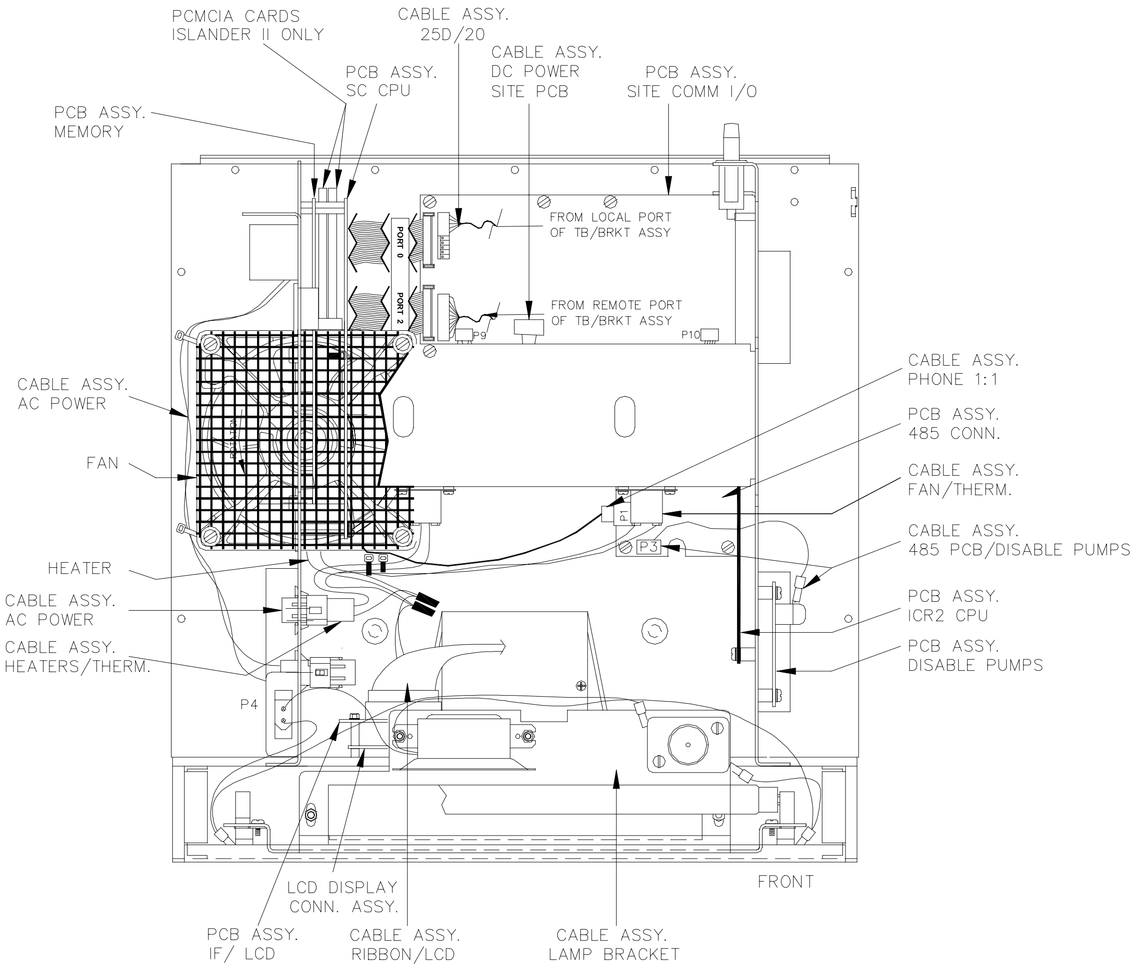


DETAIL OF DISPLAY
AND HEATER MOUNTING

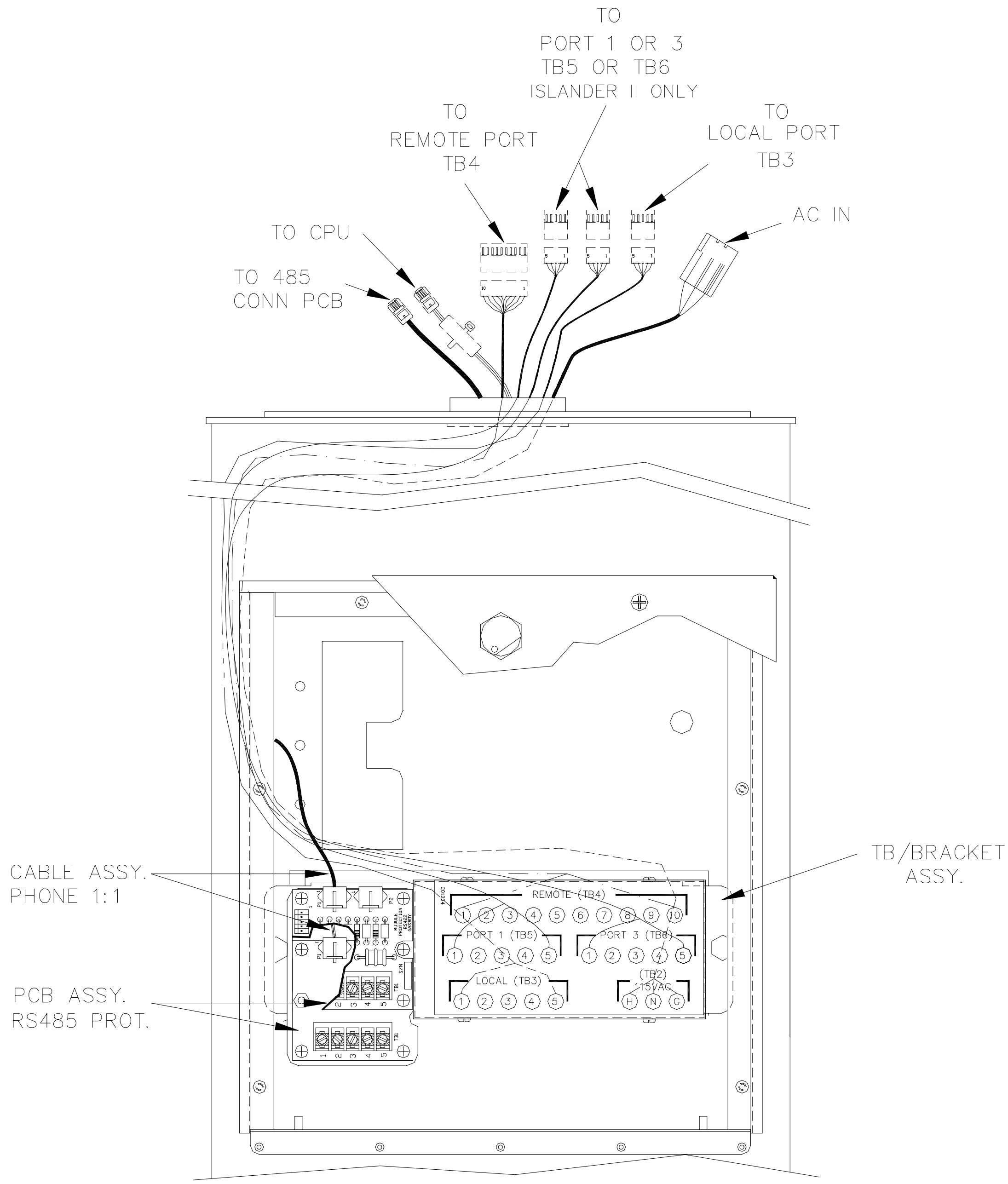
Head, Outside Left Partition

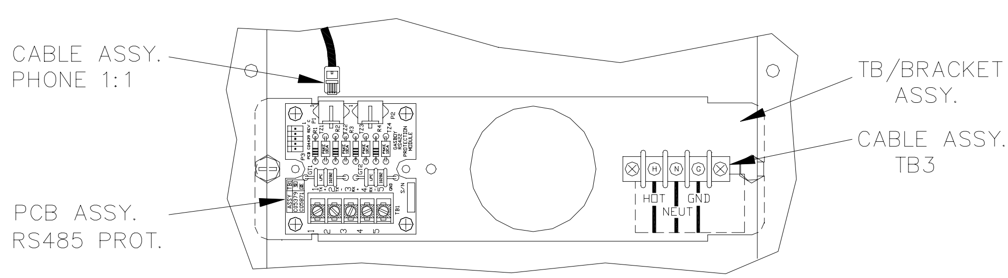


Head, Top View, Islander I and II



Printer Pedestal, Left Side





ENVIRONMENTAL AND OPERATING SPECIFICATIONS

Temperature: Operating: -40^{o}C to 50^{o}C
Transportation: -15^{o}C to 60^{o}C
Storage: -15^{o}C to 60^{o}C

Relative Humidity: Operating: 2% to 99% (noncondensing).
Max. wet bulb temperature: 26^{o}C
Transportation: 2% to 99% (noncondensing).
Max. wet bulb temperature: 26^{o}C

Power Requirements: Voltage: 90 to 132VAC.
Frequency: 47 to 63 Hz.

Power Ratings:

Model	**VA Max. at 120 VAC**	**Model**	**VA Max. at 120 VAC**
ISL -	120	ISL - 4HS	135
ISL - S	115	ISL - 4HP	220
ISL - SG	115	ISL - 4HPS	215
ISL - P	200	ISL - 8H	150
ISL - SP	195	ISL - 8HS	145
ISL - 4H	140		

NOTE: Add 10VA to reading above for units with –2 suffix. Not applicable for units with –S option.

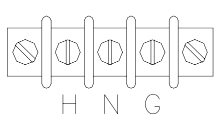
Safety Standard: UL

WIRING

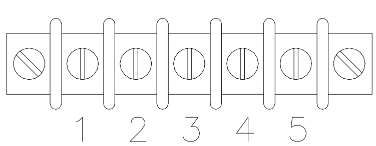
All field wiring connections are made to the Islander via terminal block. The Islander wiring is split into two classifications, AC and DC. Separate conduits must be provided for each. AC and DC wiring must never be mixed in any common junction box, conduit, or trough (see *CFN Islander I or Islander II Installation Manual* for detailed instructions). The following tables list the connections that can be found in the *Installation Manual*.

Connectors

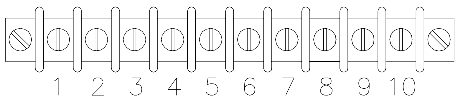
AC Power – TB2

Pinout	Pin	Function	Voltage
	H	AC hot input	115 VAC
	N	AC neutral input	AC neutral
	G	AC ground input	AC ground

RS-232 Data Terminal Communications Local Port – TB3
RS-232 General Purpose Communications Port 1 – TB5 or Port 3 – TB6 (Islander II only)

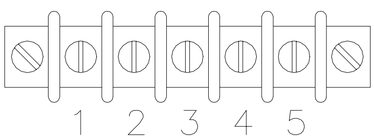
Pinout	Pin	Function	Input/Output
	1	TxD – Transmit data	Output
	2	DTR – Data terminal ready	Output
	3	RxD – Receive data	Input
	4	CD – Carrier Detect	Input
	5	Signal ground	Ground

RS-232 - Modem Communications Remote Port – TB4

Pinout	Pin	Function	Input/Output
	1	TxD – Transmit data	Output
	2	DTR – Data terminal ready	Output
	3	RxD – Receive data	Input
	4	CTS – Clear to send	Input
	5	Signal ground	Ground
	6	RTS – Request to send	Output
	7	CD – Carrier Detect	Input
	8	DSR – Data set ready	Input
	9	TxC – Transmit clock, synchronous	Not used
	10	RxC – Receive clock, synchronous	Not used

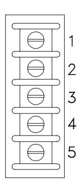
All the RS-232 ports listed above can also be configured for RS-422 mode. The table below shows the pinout and function for these ports in the RS-422 mode. Note: On the remote port (TB4) in RS-422 mode, pins 6 – 10 are not connected.

Communication Port RS-422 Mode – TB3, TB4,TB5 or TB6

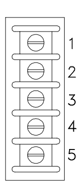
Pinout	Pin	Function		Voltage
	1	RS-422 Tx+	From Islander	+5 VDC signal between pins 1 & 2
	2	RS-422 Tx-		
	3	RS-422 Rx+	To Islander	+5 VDC signal between pins 3 & 4
	4	RS-422 Rx-		
	5	Ground		

The RS-485 communication to other CFN components (satellite readers, wall-mount PCUs, etc.) comes through the upper RS-485 junction box board in the pedestal. Communication to the console, if present, goes through the lower RS-485 junction box board in the pedestal.

RS-485 - Loop 1 Island Communications TB1 – Upper junction box board

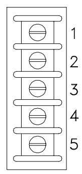
Pinout	Pin	Function		Voltage
	1	RS-485 Rx+	From Island	+5 VDC signal between pins 1 & 2
	2	RS-485 Rx-		
	3	RS-485 Tx+	To Island	+5 VDC signal between pins 3 & 4
	4	RS-485 Tx-		
	5	Ground		Ground

RS-485 - Loop 2 Console Communications TB1 – Lower junction box board

Pinout	Pin	Function		Voltage
	1	RS-485 Rx+	From Console	+5 VDC signal between pins 1 & 2
	2	RS-485 Rx-		
	3	RS-485 Tx+	To Console	+5 VDC signal between pins 3 & 4
	4	RS-485 Tx-		
	5	Ground		Ground

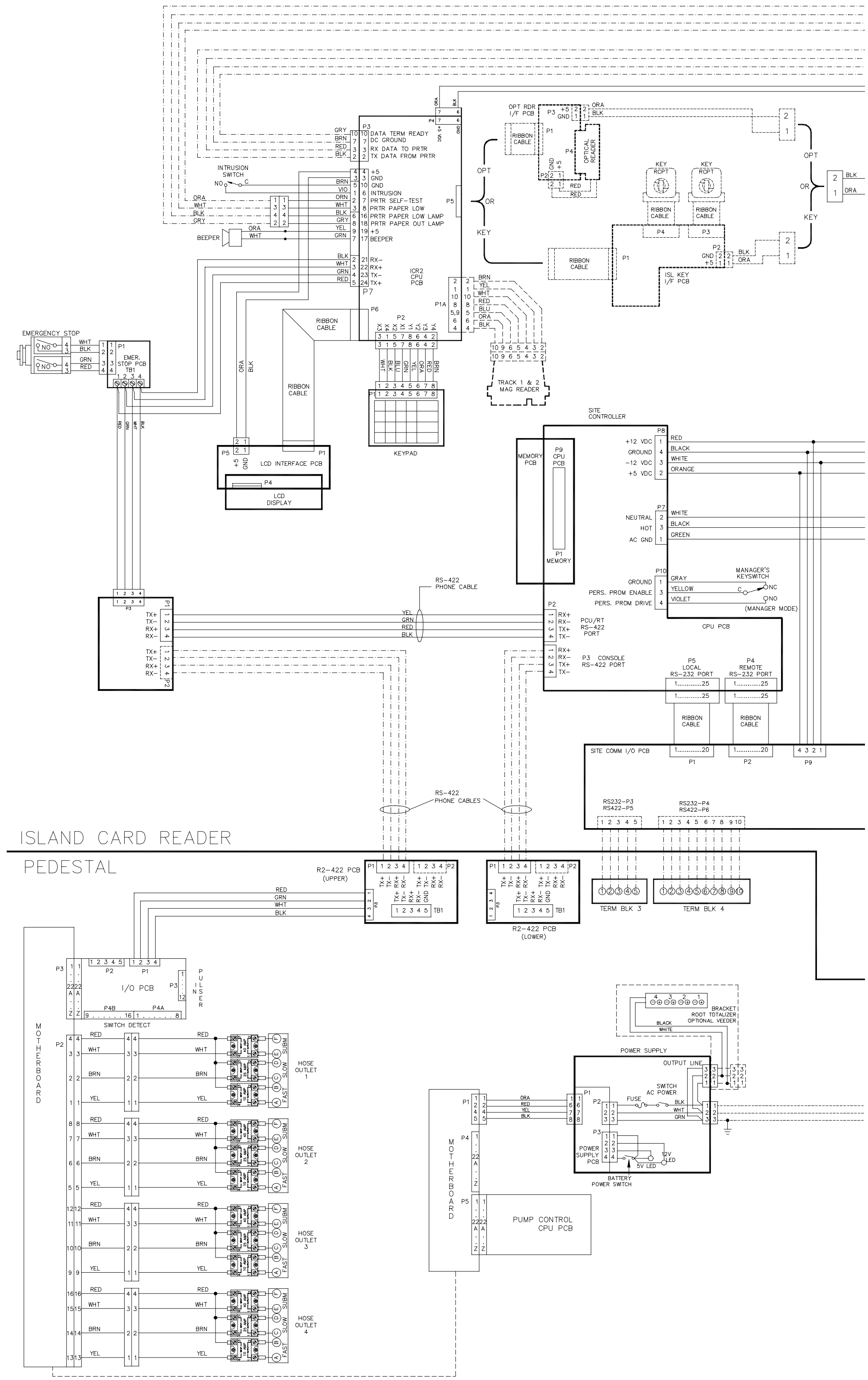
Islander satellite readers have only one RS-485 junction box board.

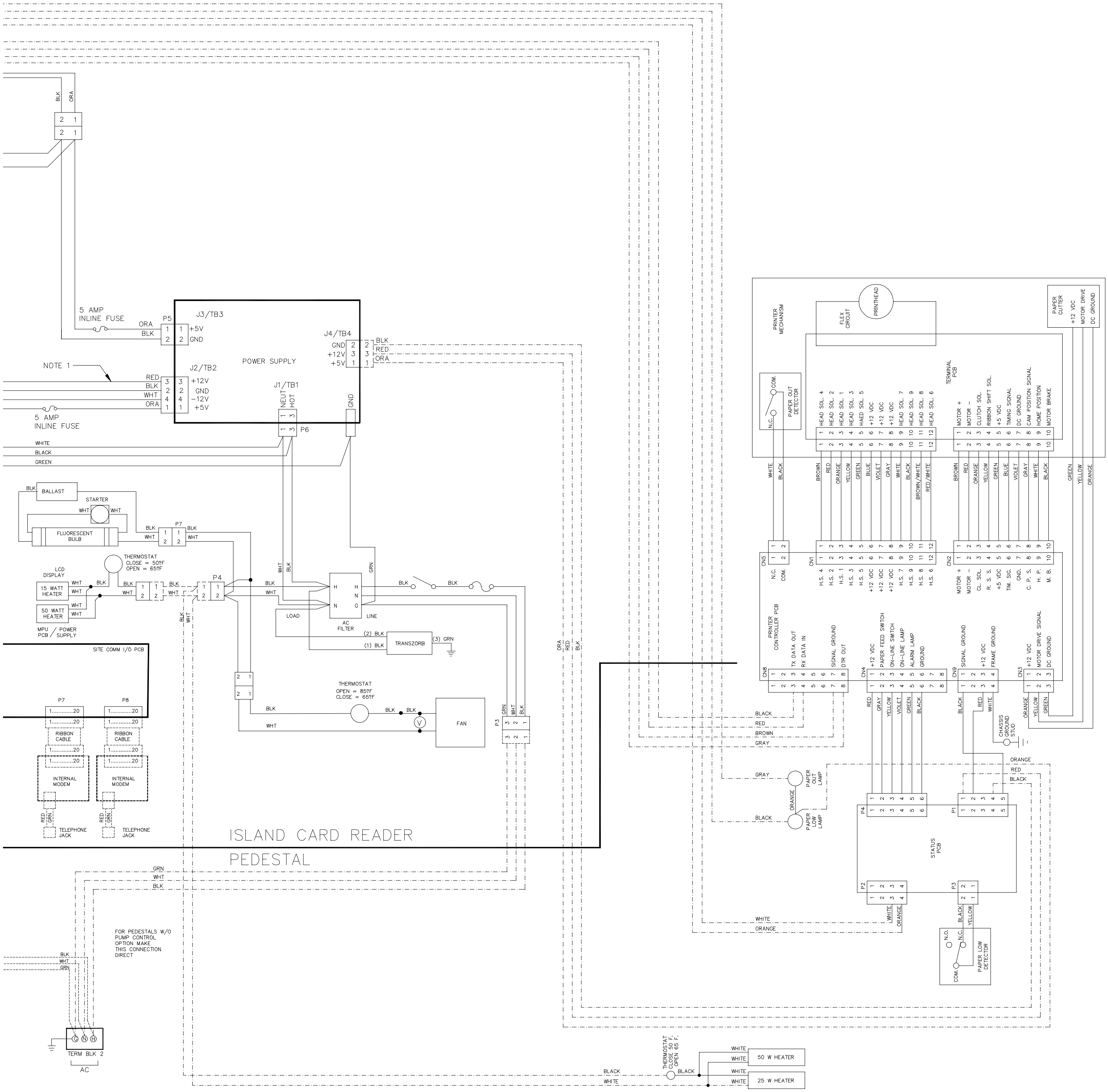
RS-485 – Islander Satellite Communications TB1 – junction box board

Pinout	**Pin**	**Function**		**Voltage**
	1	RS-485 Tx+	To Islander	+5 VDC signal between pins 1 & 2
	2	RS-485 Tx-		
	3	RS-485 Rx+	From Islander	+5 VDC signal between pins 3 & 4
	4	RS-485 Rx-		
	5	Ground		Ground

If the Islander contains Pedestal Pump Control Units, all pump wiring connections are made to the Pump Control Unit terminal blocks. See **Wiring** in section 6 of this manual for a pinout and description of these terminal blocks.

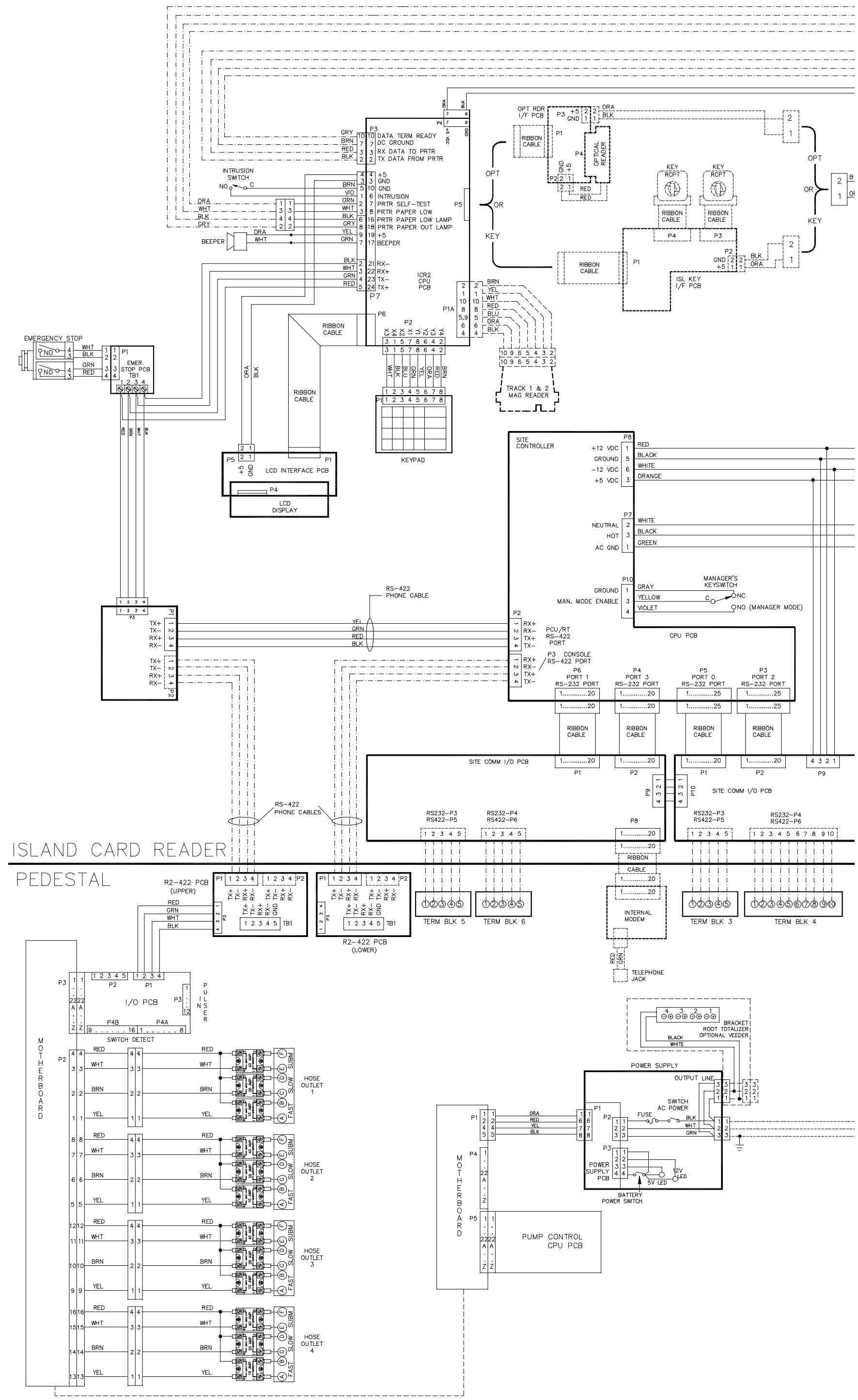
Chassis Wiring, Islander/Satellite, Printer Pedestal

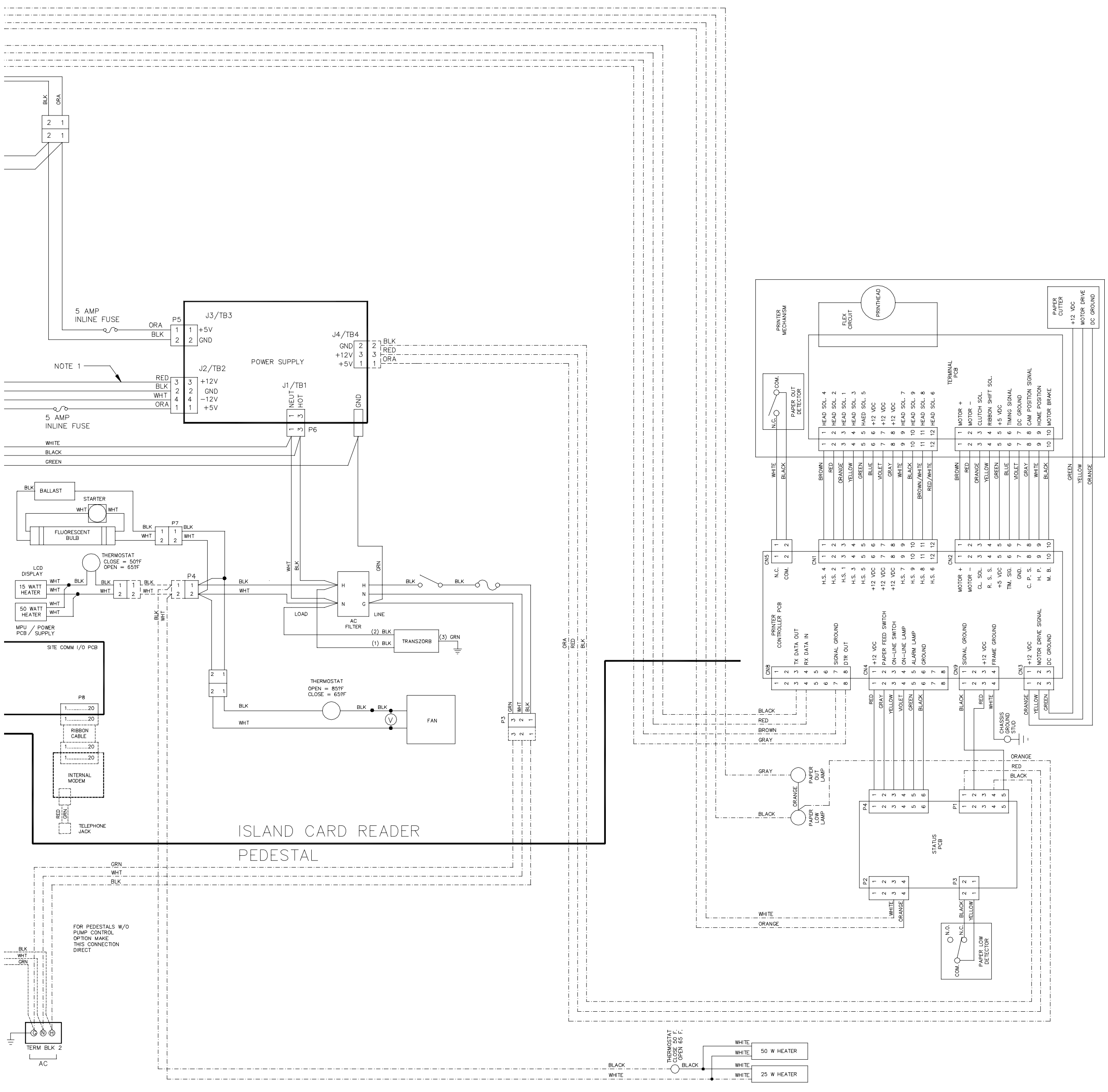




NOTES: –
1– IF "COMPUTER PRODUCTS" POWER SUPPLY IS USED, FUSE RED WIRE NOTED WITH A 5 AMP INLINE FUSE.

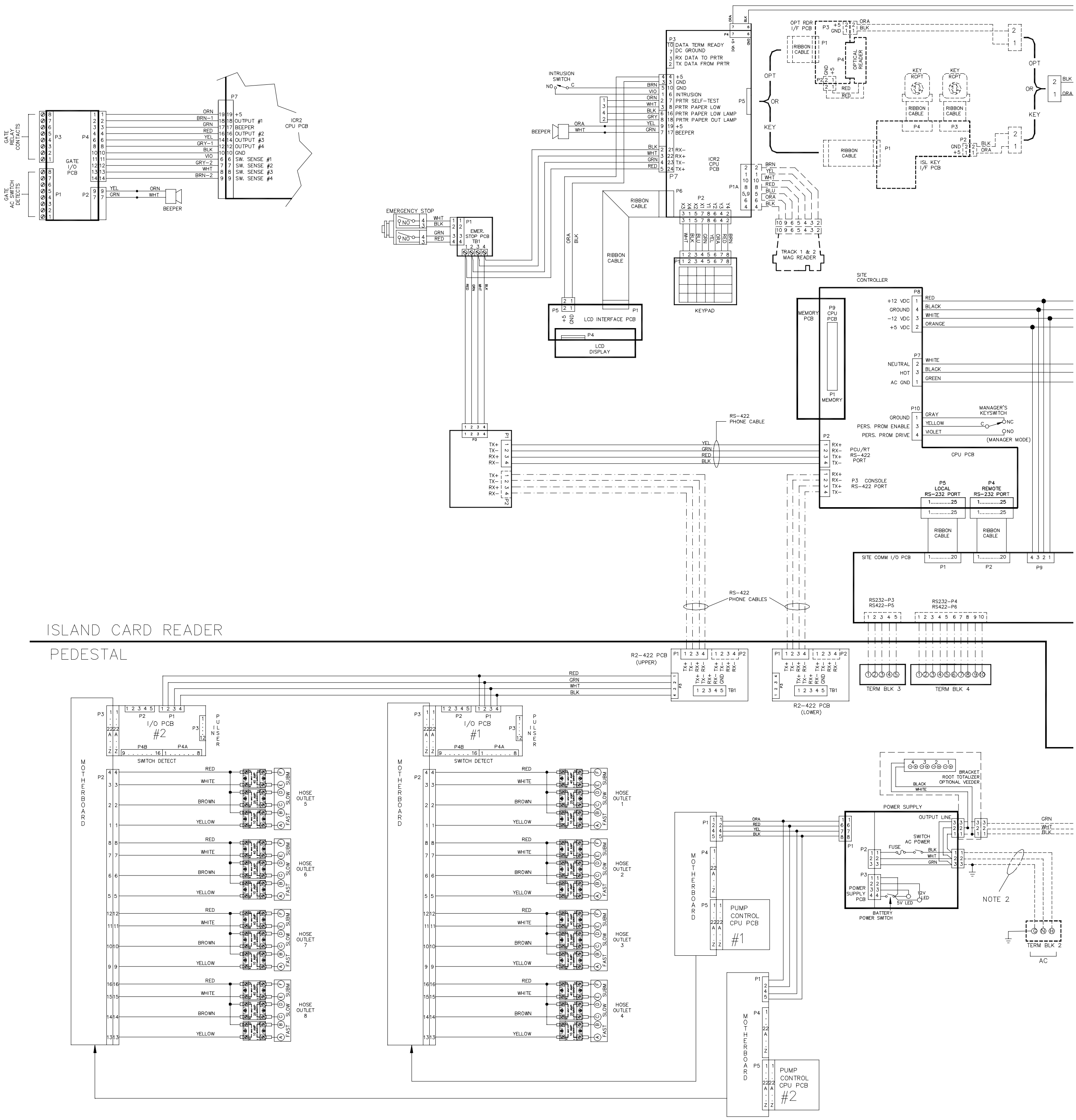
Chassis Wiring, Islander II, Printer Pedestal

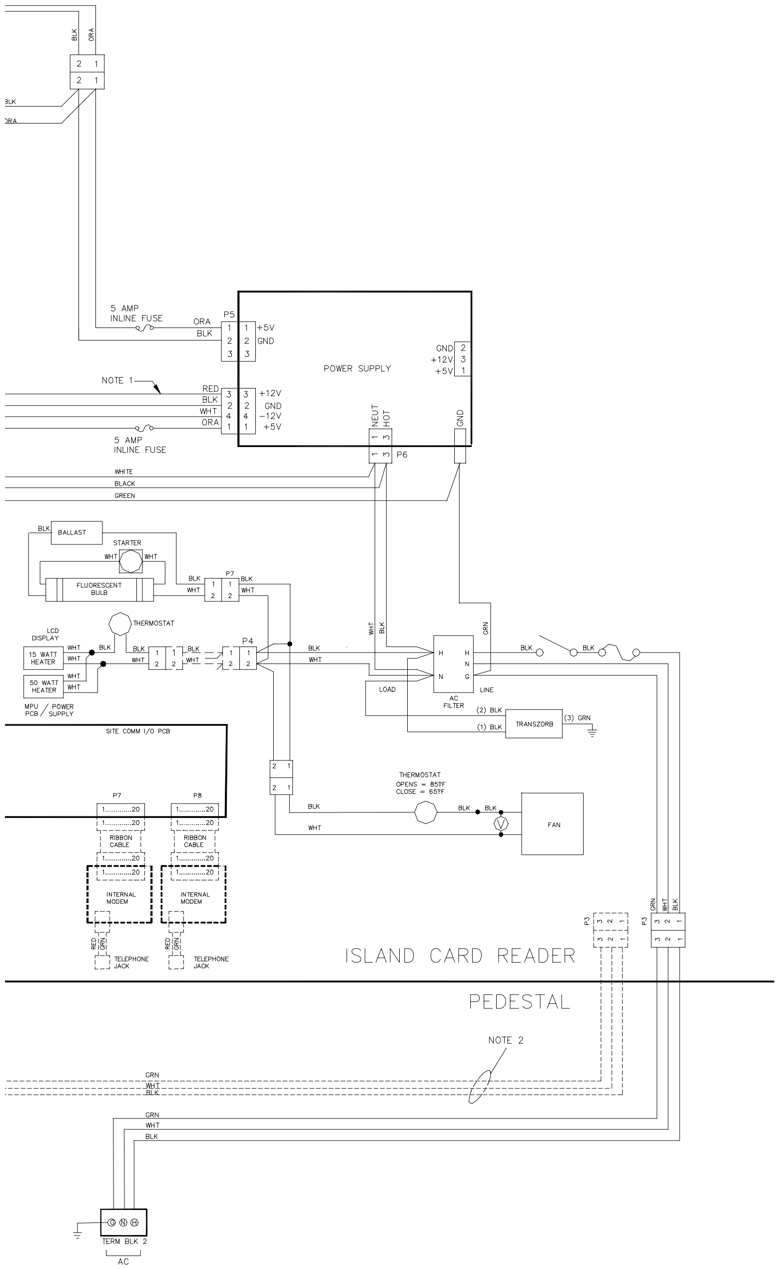




NOTES: –
1– IF "COMPUTER PRODUCTS" POWER SUPPLY IS USED, FUSE RED WIRE NOTED WITH A 5 AMP INLINE FUSE.

Chassis Wiring, Islander/Satellite, Non-Printer Pedestal



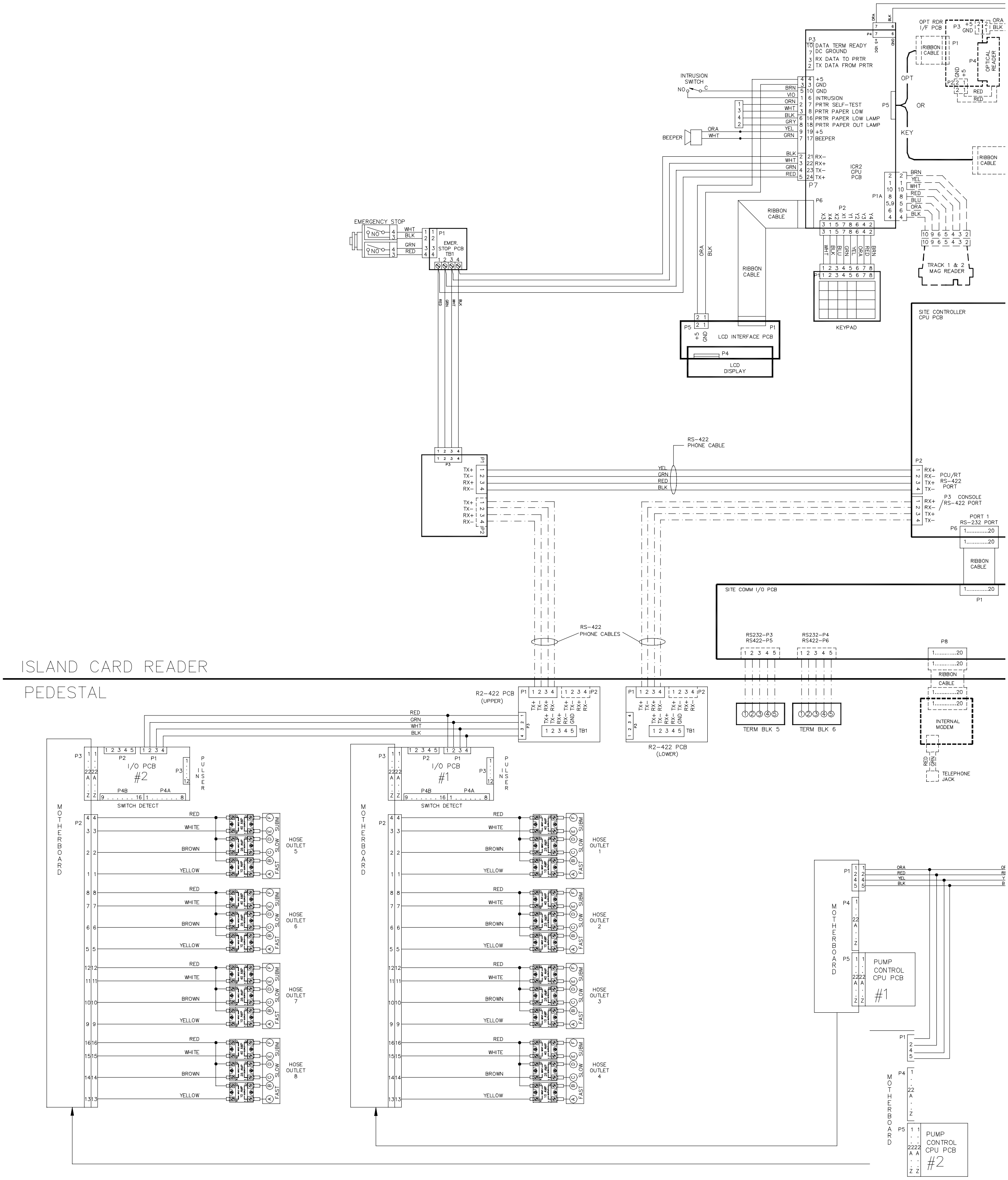


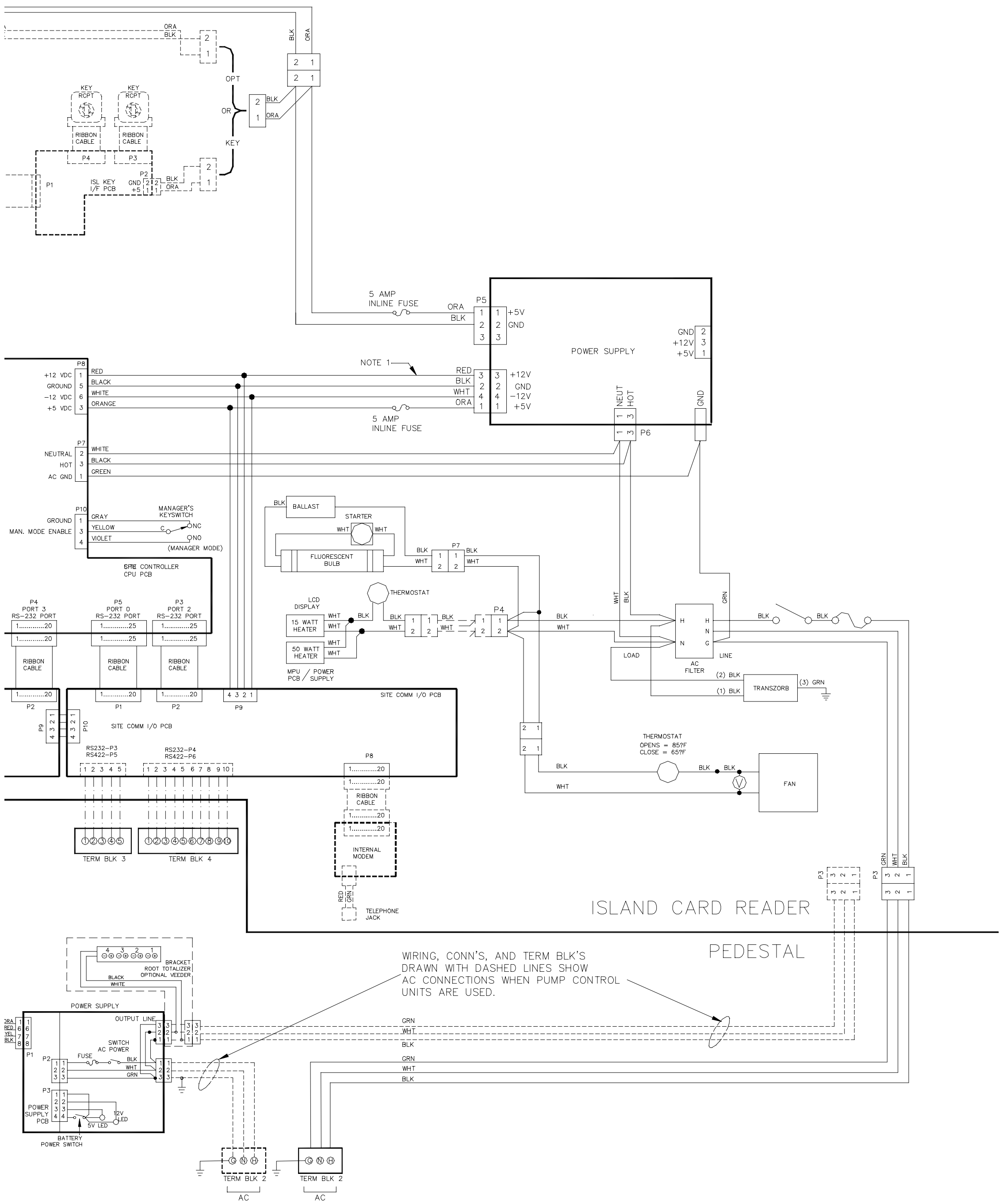
NOTES: –

1– IF "COMPUTER PRODUCTS" POWER SUPPLY IS USED, FUSE THE RED WIRE NOTED WITH A 5 AMP INLINE FUSE.

2– WIRING, CONN'S, AND TERM BLK'S DRAWN WITH DASHED LINES SHOW AC CONNECTIONS WHEN PUMP CONTROL UNITS ARE USED.

Chassis Wiring, Islander II, Non-Printer Pedestal





NOTES:–
1– IF "COMPUTER PRODUCTS" POWER SUPPLY IS USED, FUSE THE RED WIRE NOTED WITH A 5 AMP INLINE FUSE.

ISLANDER I (SITE CONTROLLER I C05820) CPU – 512K PCB

This CPU PCB controls all activity in the Islander. The CPU PCB:

- processes all Islander data
- communicates to all CFN equipment via the RS-485 lines
- communicates to the RS-232 equipment
- contains the system program (EPROM & EEPROM)
- contains on-board scratchpad RAM
- provides diagnostic LED's
- provides a manual reset switch
- controls the memory PCB

Layout

See section 2 of this manual for a detailed view, LED indicator functions, switch and jumper settings, and connector pinouts for this board.

ISLANDER I MEMORY PCB

The Islander I had two different versions of memory PCB:

512K Memory PCB (C08331)

This version of memory PCB contained 32K RAM's and provided 512K of memory.

PCMCIA 760K Memory PCB (C06731)

This memory PCB provides 760K of memory and can serve as a drop-in replacement for memory PCB C08331.

The memory PCB:

- provides the battery-backed RAM for storage of all transaction and system data
- provides Ni-Cad batteries (lithium batteries for C06731) for data retention during power failures
- can provide battery power to specified devices on the CPU PCB
- alerts site CPU PCB of impending DC power failure

Layout

See section 2 of this manual for a detailed view, LED indicators functions, switch and jumper settings, and connector pinouts for these boards.

ISLANDER II (SITE CONTROLLER II C05852) CPU PCB

This CPU PCB controls all activity in the Islander. The CPU PCB:

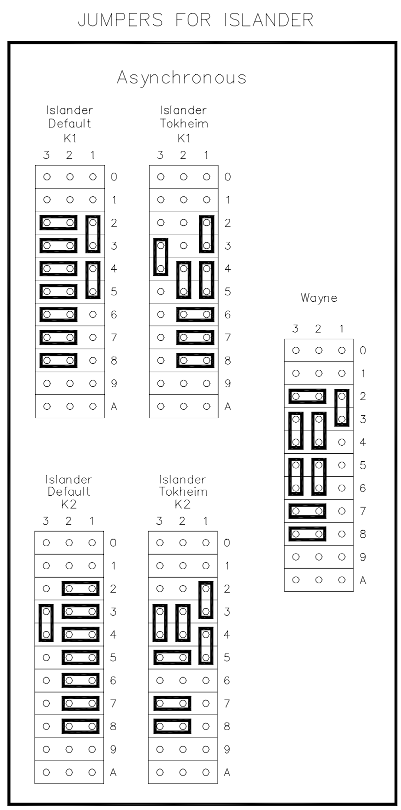
- processes all Islander data
- communicates to all CFN equipment via the RS-485 lines
- communicates on four RS-232 ports
- provides diagnostic LED's
- provides a manual reset switch
- requires Memory PCB C05849
- requires Dsite V4.0 or higher
- requires OS version 2.0C or greater

Layout

See section 3 of this manual for a detailed view, LED indicator functions, switch and jumper settings, and connector pinouts for this board. Any jumper settings specific to the Islander II are shown below.

Jumpers

K1 and K2, Port 1 and Port 3 Configuration Jumpers for the Islander II

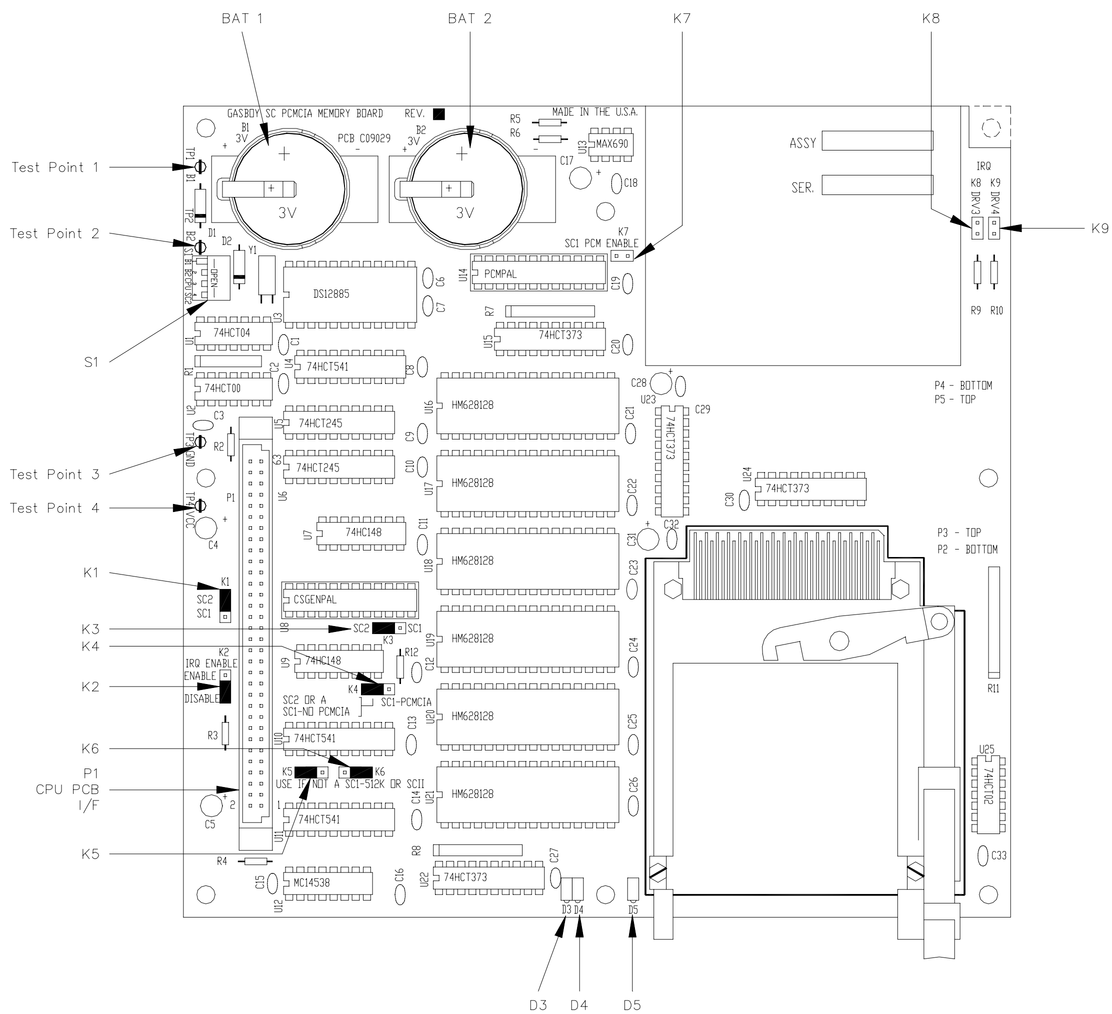


ISLANDER II MEMORY PCB (C05849)

The Islander II Memory PCB:

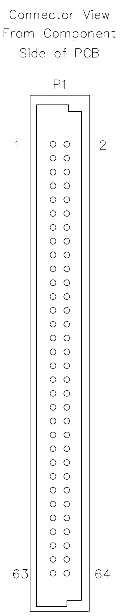
- provides the battery-backed RAM for storage of all transaction and system data
- provides lithium batteries for data retention during power failures
- interface to PCMCIA SRAM cards for file and program storage
- alerts site CPU PCB of impending DC power failure

Layout



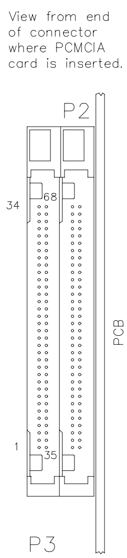
Connectors

P1 CPU PCB Interface

Pinout	Pin	Function	Voltage
	1-4	DC ground	DC ground
	5	A13-Address line 13	+5 VDC - On
	6	A14-Address line 14	+5 VDC - On
	7	$\overline{\text{BSTAT1}}$ - Battery 1 Status	+5 VDC - Normal, 0 VDC - Fail
	8	$\overline{\text{BSTAT2}}$ - Battery 2 Status	+5 VDC - Normal, 0 VDC - Fail
	9-10	VBB - Battery voltage from memory PCB	0 VDC
	11	$\overline{\text{DCFL}}$ - DC power fail	+5 VDC - Normal, 0 VDC - Fail
	12	$\overline{\text{S18}}$ - Paged memory bank 18 select	0 VDC - On
	13	R/$\overline{\text{W}}$	0 VDC - Write
	14	CLKE - Memory clock	+5 VDC signal
	15	$\overline{\text{S17}}$ - Paged memory bank 17 select	0 VDC - On
	16	A12 - Address 12	+5 VDC - On
	17	$\overline{\text{MEMIN}}$ - Not used, grounded on memory PCB	0 VDC - Normal
	18	A11 - Address 11	+5 VDC - On
	19	$\overline{\text{MRDY}}$ - extends access time for slower memory devices	0 VDC - On
	20	A10 - Address 10	+5 VDC - On
	21	N/C	+5 VDC - Normal
	22	A9 - Address 9	+5 VDC signal
	23	$\overline{\text{R}}$/W	+5 VDC - Write
	24	A8- Address 8	+5 VDC - On
	25	$\overline{\text{S15}}$ - Paged memory bank 15 select	0 VDC - On
	26	A7 - Address 7	+5 VDC - On
	27	$\overline{\text{S14}}$ - Paged memory bank 14 select	0 VDC - On
	28	A6 - Address 6	+5 VDC - On
	29	$\overline{\text{S13}}$ - Paged memory bank 13 select	0 VDC - On
	30	A5 - Address 5	+5 VDC - On
	31	$\overline{\text{S12}}$ - Paged memory bank 12 select	0 VDC - On
	32	A4 - Address 4	+5 VDC - On
	33	$\overline{\text{S11}}$ - Paged memory bank 11 select	0 VDC - On
	34	A3 - Address 3	+5 VDC - On
	35	$\overline{\text{S10}}$ - Paged memory bank 10 select	0 VDC - On
	36	A2 - Address 2	+5 VDC - On
	37	$\overline{\text{S9}}$- Paged memory bank 9 select	0 VDC - On
	38	A1 - Address 1	+5 VDC - On
	39	$\overline{\text{S8}}$ - Paged memory bank 8 select	0 VDC - On
	40	A0 - Address 0	+5 VDC - On
	41	$\overline{\text{S7}}$ - Paged memory bank 7 select	0 VDC - On
	42	D7 - Data 7	+5 VDC - On
	43	$\overline{\text{S6}}$ - Paged memory bank 6 select	0 VDC - On
	44	D6 - Data 6	+5 VDC - On
	45	$\overline{\text{S5}}$ - Paged memory bank 5 select	0 VDC - On
	46	D5 - Data 5	+5 VDC - On
	47	$\overline{\text{S4}}$ - Paged memory bank 4 select	0 VDC - On
	48	D4 - Data 4	+5 VDC - On
	49	$\overline{\text{S3}}$ - Paged memory bank 3 select	0 VDC - On
	50	D3 - Data 3	+5 VDC - On
	51	$\overline{\text{S2}}$ - Paged memory bank 2 select	0 VDC - On
	52	D2 - Data 2	+5 VDC - On
	53	$\overline{\text{S1}}$ - Paged memory bank 0 select	0 VDC - On
	54	D1 - Data 1	+5 VDC - On

	55	$\overline{S0}$ - Paged memory bank 0 select	⎍⎍ 0 VDC - On
	56	D0 - Data 0	⎍⎍ +5 VDC - On
	57	$\overline{SELCLK}$	⎍⎍ 0 VDC - On
	58	$\overline{S16}$ - Paged memory bank 16 select	⎍⎍ 0 VDC - On
	59	$\overline{BS0}$ - Board select 0	⎍⎍ +5 VDC - On
	60	$\overline{BS1}$ - RAM U15 chip select	⎍⎍ +5 VDC - On
	61-64	+5 VDC	+5 VDC

P2 & P3 PCMCIA Card Connectors

Pinout	Pin	Function	Voltage
	1	DC ground	DC ground
	2	MD3 - Data 3	⎍⎍ +5 VDC - On
	3	MD3 - Data 3	⎍⎍ +5 VDC - On
	4	MD3 - Data 3	⎍⎍ +5 VDC - On
	5	MD3 - Data 3	⎍⎍ +5 VDC - On
	6	MD3 - Data 3	⎍⎍ +5 VDC - On
	7	$\overline{CE1}$ - Card Enable 1	⎍⎍ 0 VDC - On
	8	MA10 - Address 10	⎍⎍ +5 VDC - On
	9	$\overline{OE}$ - Output enable	⎍⎍ +5 VDC - On
	10	MA11 - Address 11	⎍⎍ +5 VDC - On
	11	MA9 - Address 9	⎍⎍ +5 VDC - On
	12	MA8 - Address 8	⎍⎍ +5 VDC - On
	13	PA13 - Address line 13	⎍⎍ +5 VDC - On
	14	PA14 - Address line 14	⎍⎍ +5 VDC - On
	15	$\overline{WE}$ - Write enable	⎍⎍ 0 VDC - Write
	16	Not connected	NC - not used
	17	+5 VDC	+5 VDC
	18	Not connected	NC - not used
	19	PA16 - Address line 16	⎍⎍ +5 VDC - On
	20	PA15 - Address line 15	⎍⎍ +5 VDC - On
	21	MA12 - Address 12	⎍⎍ +5 VDC - On
	22	MA7 - Address 7	⎍⎍ +5 VDC - On
	23	MA6 - Address 6	⎍⎍ +5 VDC - On
	24	MA5 - Address 5	⎍⎍ +5 VDC - On
	25	MA4 - Address 4	⎍⎍ +5 VDC - On
	26	MA3 - Address 3	⎍⎍ +5 VDC - On
	27	MA2 - Address 2	⎍⎍ +5 VDC - On
	28	MA1 - Address 1	⎍⎍ +5 VDC - On
	29	MA0 - Address 0	⎍⎍ +5 VDC - On
	30	MD0 - Data 0	⎍⎍ +5 VDC - On
	31	MD1 - Data 1	⎍⎍ +5 VDC - On
	32	MD2 - Data 2	⎍⎍ +5 VDC - On
	33	WP - Write Protect	+5 VDC - On
	34-35	DC Ground	DC ground
	36	$\overline{CD1}$ - Card Detect	⎍⎍ 0 VDC - On
	37-45	Not Connected	NC - not used
	46	PA17 - Address line 17	⎍⎍ +5 VDC - On
	47	PA18 - Address line 18	⎍⎍ +5 VDC - On
	48	PA19 - Address line 19	⎍⎍ +5 VDC - On
	49	PA20 - Address line 20	⎍⎍ +5 VDC - On
	50	PA21 - Address line 21	⎍⎍ +5 VDC - On
	51	+5 VDC	+5 VDC
	52	Not connected	NC - not used

	53	PA22 - Address line 22	⎍⎍ +5 VDC - On
	54	PA23 - Address line 23	⎍⎍ +5 VDC - On
	55	PA24 - Address line 24	⎍⎍ +5 VDC - On
	56	PA25 - Address line 25	⎍⎍ +5 VDC - On
	57-61	Not connected	NC - not used
	62	BVD1 - PCMCIA Battery 1 Voltage	+5 VDC - PCMCIA Battery 1 OK
	63	BVD2 - PCMCIA Battery 2 Voltage	+5 VDC - PCMCIA Battery 2 OK
	64-66	Not connected	NC - not used
	67	CD2 - Card Detect	⎍⎍ 0 VDC - On
	68	DC Ground	DC ground

LED indicators

LED	Function
D3	Battery Function OK
D4	Battery Function Low
D5	Accessing PCMCIA Cards

Jumpers

Jumper	Function	Setting for SC 2
K1	SC1 / SC2 Selection	SC2
K2	PCMCIA IRQ Enable	Disable
K3	SC1 / SC2 Selection	SC2
K4	SC2 or SC1 – NO PCMCIA / SC1 - PCMCIA	SC2
K5	Memory Address line 14 Disable	open
K6	Memory Address line 13 Disable	open
K7	SC1 PCMCIA Enable	open
K8	PCMCIA Drive 3 IRQ Enable	open
K9	PCMCIA Drive 4 IRQ Enable	open

Switches

Switch	Function	Settings for SC 2
SW1-1	Enable battery 1	Closed
SW1-2	Enable battery 2	Open
SW1-3	Enable battery backup to CPU PCB	Open
SW1-4	SC1/SC2 Selection	Open for SC2

Test Points

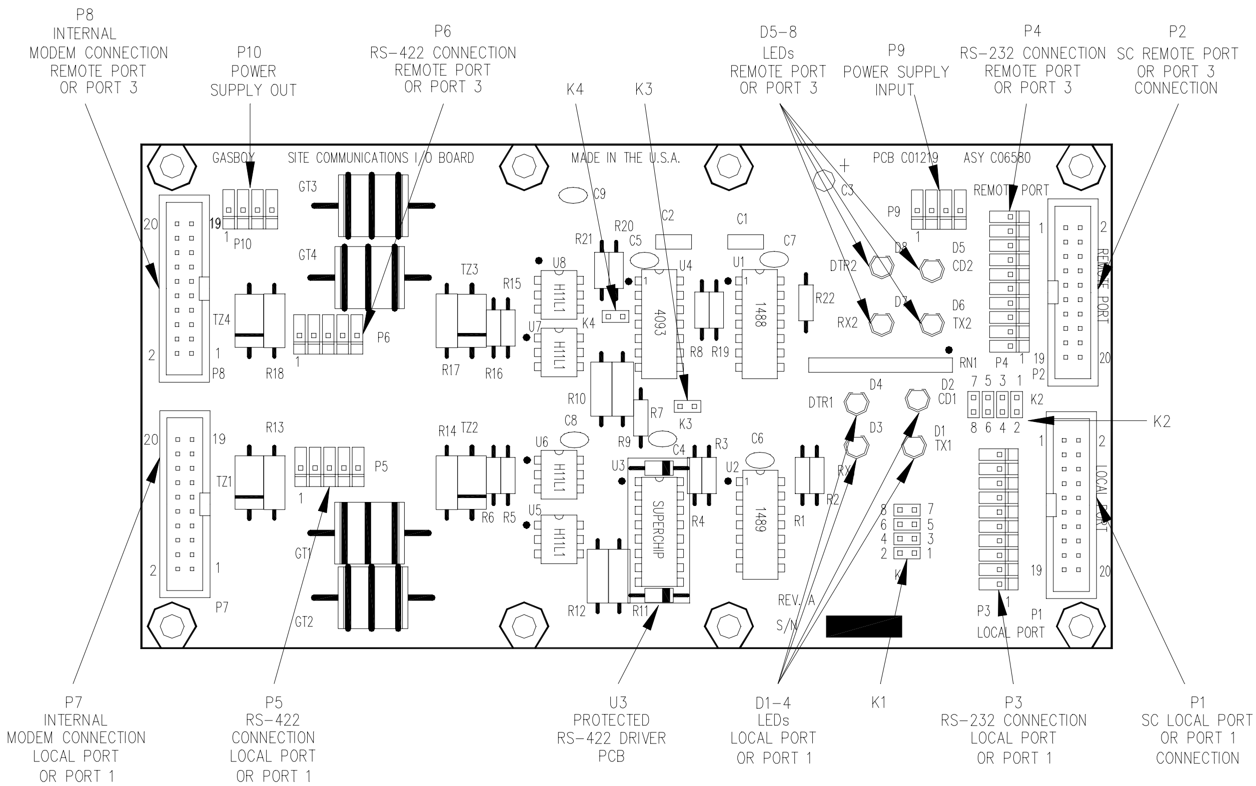
Test Point	Function	Voltage
TP1	Battery-1	3.0 - 3.5 VDC
TP2	Battery-2	3.0 - 3.5 VDC
TP-3	Ground	0 VDC
TP-4	Vcc	4.90 - 5.10 VDC

SITE COMMUNICATIONS I/O PCB (C06580)

The Islander II Site Communications I/O PCB:

- interfaces with 2 of the site controller RS232 ports
- provides the ability to select RS232 or RS422 communication
- provides connection for internal modem
- provides diagnostic LED's

Layout

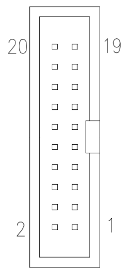


LED Indicators

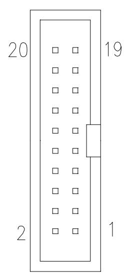
LED	Function	Status
D1	Transmit data local port (or port 1)	Flashing when data transmitted to Islander
D2	Carrier Detect local port (or port 1)	Lit when carrier detect is received
D3	Receive data local port (or port 1)	Flashing when data received from Islander
D4	Data terminal ready local port (or port 1)	Lit when data terminal ready is on
D5	Carrier Detect remote port (or port 3)	Lit when carrier detect is received
D6	Transmit data remote port (or port 3)	Flashing when data transmitted to Islander
D7	Receive data remote port (or port 3)	Flashing when data received from Islander
D8	Data terminal ready remote port (or port 3)	Lit when data terminal ready is on

Connectors

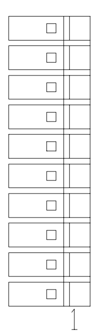
P1 Local port (or port 1 on Islander II) Interface

Pinout	Pin	Function	Input/Output
	3	TxD – Transmit data	Output to SC CPU
	4	RxC – Receive clock, synchronous	Not used
	5	RxD – Receive data	Input from SC CPU
	7	RTS – Request to send	Output to SC CPU
	8	TxC – Transmit clock, synchronous	Not used
	9	CTS – Clear to send	Input from SC CPU
	11	DTR – Data terminal ready	Input from SC CPU
	13	Signal ground	Ground
	14	CD – Carrier Detect	Output to SC CPU
	15	DSR – Data set ready	Output to SC CPU
	1,2,6,10, 12,16-20	Not connected	Not connected

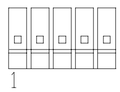
P2 Remote port (or port 3 on Islander II) Interface

Pinout	Pin	Function	Input/Output
	3	RxD – Receive data	Input from SC CPU
	4	TxC – Transmit clock, synchronous	Not used
	5	TxD – Transmit data	Output to SC CPU
	7	CTS – Clear to send	Input from SC CPU
	8	RxC – Receive clock, synchronous	Not used
	9	RTS – Request to send	Output to SC CPU
	11	DSR – Data set ready	Output to SC CPU
	13	Signal ground	Ground
	14	DTR – Data terminal ready	Input from SC CPU
	15	CD – Carrier Detect	Output to SC CPU
	1,2,6,10, 12,16-20	Not connected	Not connected

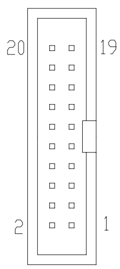
P3 Local port (or port1) & P4 Remote port (or port 3) RS-232 Connections

Pinout	Pin	Function	Input/Output
	1	TxD – Transmit data	Output
	2	DTR – Data terminal ready	Output
	3	RxD – Receive data	Input
	4	CTS – Clear to send	Input
	5	Signal ground	Ground
	6	RTS – Request to send	Output
	7	CD – Carrier Detect	Input
	8	DSR – Data set ready	Input
	9	TxC – Transmit clock, synchronous	Not used
	10	RxC – Receive clock, synchronous	Not used

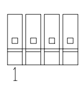
P5 Local port (or port 1) & P6 Remote port (or port 3) RS-422 Connections

Pinout	Pin	Function		Voltage
	1	RS-422 Tx+	From Islander	+5 VDC signal between pins 1 & 2
	2	RS-422 Tx-		
	3	RS-422 Rx+	To Islander	+5 VDC signal between pins 3 & 4
	4	RS-422 Rx-		
	5	Ground		

P7 Local port (or port 1) & P8 Remote port (or port 3) Internal modem Connections

Pinout	Pin	Function	Voltage
	1	RXD – Receive Data	receive; +5 VDC OFF
	4	-12 VDC	-12 VDC
	5,14,19	+5 VDC	+5 VDC
	7	$\overline{\text{DTR}}$ – Data terminal ready	0 VDC ON
	10,18,20	DC Ground	DC Ground
	13	+12 VDC	+12 VDC
	15	TXD – Transmit Data	transmit; +5 VDC OFF
	17	$\overline{\text{CD}}$ – Carrier detect	0 VDC ON
	2,3,6,8,9 11,12,16	Not connected	

P9 & P10 DC Power Input/Output

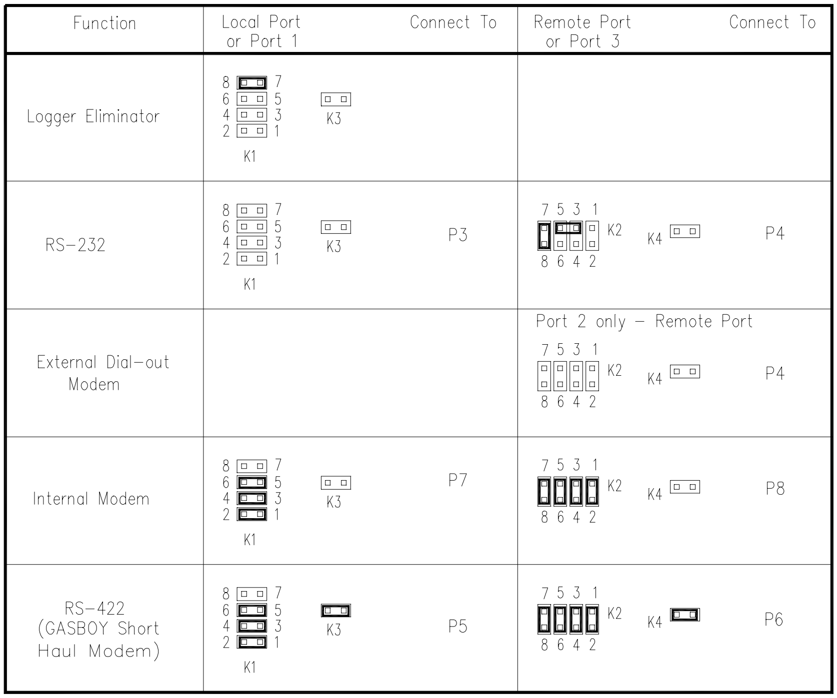
Pinout	Pin	Wire	Function	Voltage
	1	White	-12 VDC	-12 VDC
	2	Red	+12 VDC	+12 VDC
	3	Black	DC Ground	DC Ground
	4	Orange	+5 VDC	+5 VDC

Jumpers and Connections

Inside the Islander II, there are two Site Communication I/O boards. One connects Port 0 (referred to as LOCAL) and Port 2 (referred to as REMOTE) to the terminal blocks in the pedestal or an internal modem. The other Site Communication I/O board connects Port 1 and Port 3 to the terminal blocks or an internal modem. The connection from the Site Communication I/O board to the terminal blocks in the pedestal must match method of communications used (**RS-232** or **RS-422**). The three 5-position and one 10-position connector cable assemblies are marked with the terminal block number to which they connect in the pedestal. The default setting of the Islander is RS-232 and the ports are as follows:

Port 0 to TB3 (5-position)
Port 2 to TB4 (10-position)
Port 1 to TB5 (5-position)
Port 3 to TB6 (5-position)

The brown wire from the cable connects to pin 1 of the connector. Pin 1 of the cable must align with pin 1 of the board connector it is attached to. Use the illustration below to locate the jumpers and use the chart on the following page to set the jumpers and to connect the terminal block cables to the proper connectors on the board



NOTES: *When the internal modem is used, no connection to the terminal block cables should be made.*

*RS-422 communications must be connected to a Gasboy Short Haul Modem at the remote end (see the Islander Installation Manual for details). When the 10-position connector cable assembly is connected to the RS-422 connector on the Site Communication I/O board (**P6**), half of the connector will hang off to the right side.*

ISLAND CARD READER CPU PCB (C05375)

The Island card reader CPU PCB controls the reader terminal functions of the Islander. This CPU PCB:

- processes all ICR data
- controls data sent to the LCD display
- controls the beeper
- monitors data from the keypad
- monitors the intrusion switch
- monitors the mag or optical reader
- sends and receives the RS-485 data to and from the site controller
- provides diagnostic LEDs to monitor operation of the RS-485 lines
- provides a diagnostic switch for testing of various unit functions
- allows for DES encryption of data with optional hardware

Layout

See section 4 of this manual for a detailed view, LED indicators functions, switch and jumper settings, and connector pinouts for this board.

ISLAND CARD READER 2 CPU PCB (C05857)

The Island Card Reader 2 CPU PCB controls the reader terminal functions of the Islander. This CPU PCB:

- processes all ICR data
- controls data sent to the LCD display
- controls the beeper
- monitors data from the keypad
- monitors the intrusion switch
- monitors the mag or optical reader
- monitors the datakey receptacle(s)
- sends and receives the RS-485 data to and from the site controller
- provides diagnostic LEDs to monitor operation of the RS-485 lines
- provides a diagnostic switch for testing of various unit functions
- allows for DES encryption of data (always enabled)
- reads Track 1 and Track 2 mag data
- can also interface to a dual line display

Layout

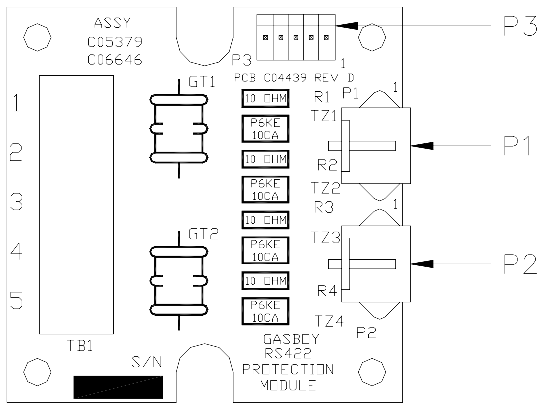
See section 4 of this manual for a detailed view, LED indicators functions, switch and jumper settings, and connector pinouts for this board.

RS-485 CONNECTION PCB (C06646)

The RS-485 connection PCB:

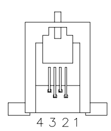
- provides connections for the RS-485 island loop internal to the Islander

Layout

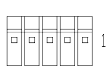


Connectors

P1 & P2 - RS-485 Signals to Site Controller

Pinout	Pin	Function		Voltage
	1	RS-485 Rx+	To Islander	+5 VDC signal between pins 1 & 2
	2	RS-485 Rx-		
	3	RS-485 Tx+	From Islander	+5 VDC signal between pins 3 & 4
	4	RS-485 Tx-		

P3 – RS-485 Signals to island card reader CPU PCB and disable pump PCB.

Pinout	Pin	Wire	Function		Voltage
	1	Red	RS-485 Tx+	To Islander (Site Controller) CPU	+5 VDC signal between pins 1 & 2
	2	Green	RS-485 Tx-		
	3	White	RS-485 Rx+	From Islander (Site Controller) CPU	+5 VDC signal between pins 3 & 4
	4	Black	RS-485 Rx-		
	5	N/C			

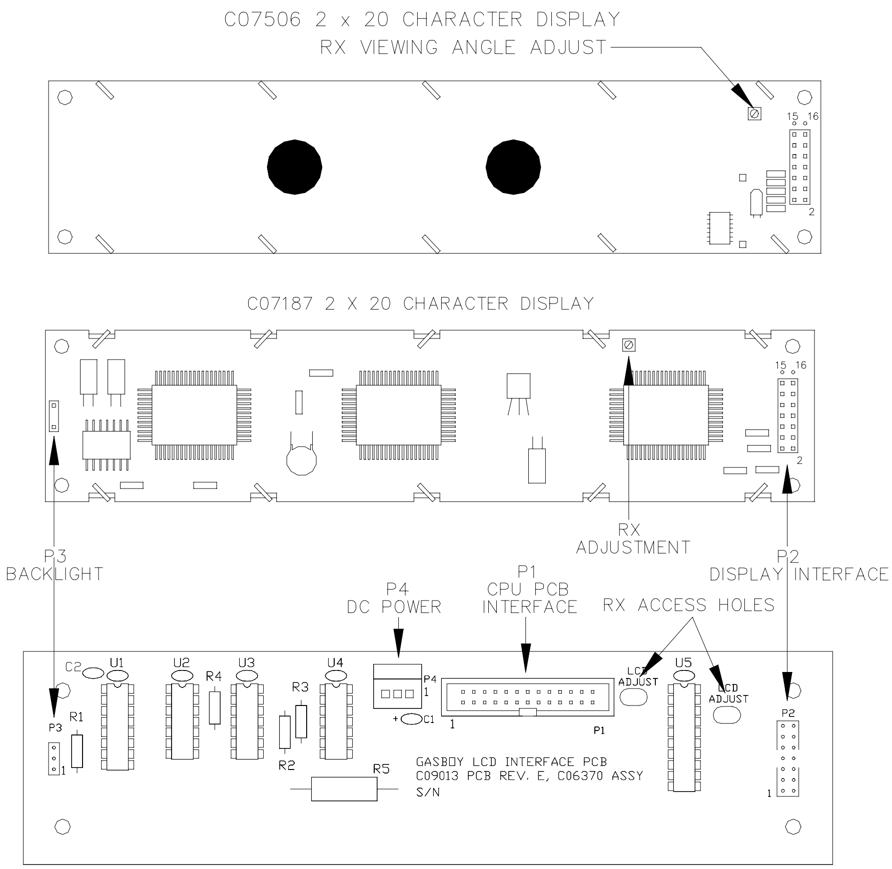
LCD DISPLAY & INTERFACE PCB - NEW (C05567 & C06370)

C07506 is the current production model. Formerly, it was C07187. Both boards are shown below because they differ in appearance. See Parts Lists at the end of this chapter for ordering information.

The LCD Display and LCD Interface PCB provide the visual interface for the customer. They:

- provide a 2 x 20 character display
- provide backlighting for viewing the display at night
- provide a viewing angle adjustment
- contain temperature compensation circuitry to assure uniform character contrast as temperature varies

Layouts

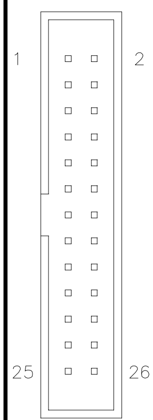


RX - Viewing Angle Adjustment

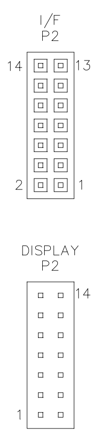
Use the RX adjustment to set the character intensity. The adjustment potentiometer is accessible through one of the access holes in the Interface PCB.

Connectors

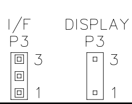
P1 – Island card reader CPU PCB Interface

Pinout	Pin	Function	Voltage
	1-4,26	N/C	
	5	$R/\overline{W}$ – Read/$\overline{\text{Write}}$ select	+5 VDC – Read, 0 VDC - Write
	6	DC ground	DC ground
	7	RS – Register select	0 VDC – Bus contains instruction +5 VDC – Bus contains character to display
	8	DC ground	DC ground
	9	E - Enable	Neg. transition latches data into LCD
	10	DC ground	DC ground
	11	D0 – Data 0	+5 VDC - On
	12	DC ground	DC ground
	13	D1 – Data 1	+5 VDC - On
	14	DC ground	DC ground
	15	D2 – Data 2	+5 VDC - On
	16	DC ground	DC ground
	17	D3 – Data 3	+5 VDC - On
	18	DC ground	DC ground
	19	D4 – Data 4	+5 VDC - On
	20	DC ground	DC ground
	21	D5 – Data 5	+5 VDC - On
	22	+5 VDC	+5 VDC
	23	D6 – Data 6	+5 VDC - On
	24	+5 VDC	+5 VDC
	25	D7 – Data 7	+5 VDC - On

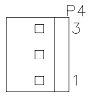
P2 - Display Interface

Pinout	Pin	Function	Voltage
	1	DC ground	DC ground
	2	+5 VDC	+5 VDC
	3	Not connected	NC-not used
	4	RS - Register select	0 VDC – Bus contains instruction +5 VDC – Bus contains character to display
	5	$R/\overline{W}$-Read/$\overline{\text{Write}}$ select	+5 VDC –Read, 0 VDC-Write
	6	E-Enable	Neg. transition latches data into LCD
	7	D0-Data 0	+5 VDC - On
	8	D1-Data 1	+5 VDC - On
	9	D2-Data 2	+5 VDC - On
	10	D3-Data3	+5 VDC - On
	11	D4-Data 4	+5 VDC - On
	12	D5-Data 5	+5 VDC - On
	13	D6-Data 6	+5 VDC - On
	14	D7-Data 7	+5 VDC - On

P3 – Backlight Power – Islander displays are not equipped with backlighting

Pinout	Pin	Function	Voltage
	1	DC ground	DC ground
	2	N/C	
	3	LED Power	+4 VDC

P4 – DC Power

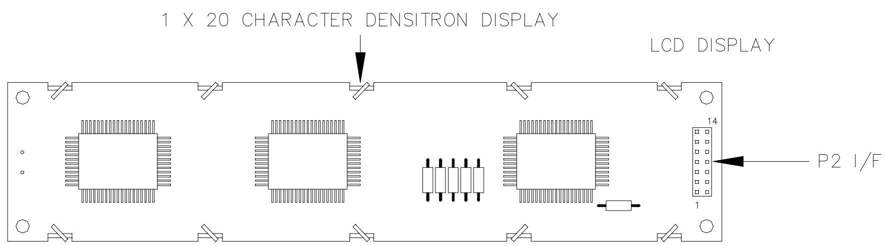
Pinout	Pin	Wire	Function	Voltage
	1	Black	DC ground	DC ground
	2	Orange	+5 VDC	+5 VDC
	3	N/C		

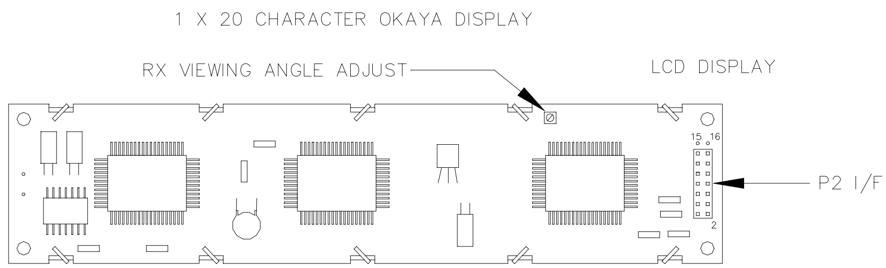
LCD DISPLAY - OLD (C06693)

The LCD Display provide the visual interface for the customer. This display:

- provides a 1 x 20 character display
- provides a on-board viewing angle adjustment (Okaya only. Densitron viewing angle adjustment was on earlier revision of the LCD I/F PCB {C06370})
- contain temperature compensation circuitry to assure uniform character contrast as temperature varies (Okaya only)

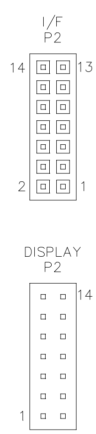
Layouts





Connectors

P2 – LCD interface

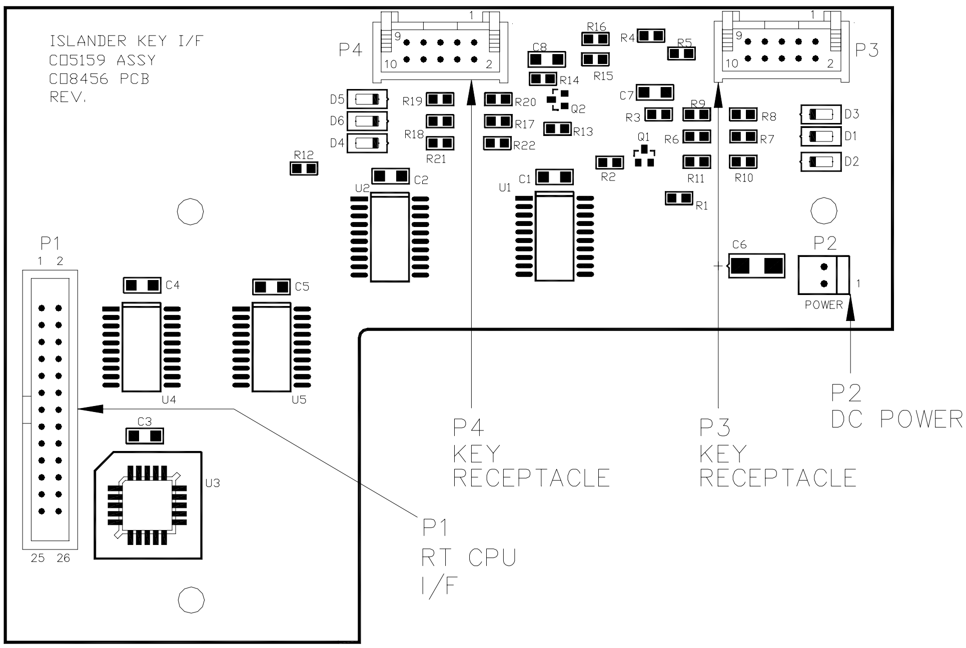
Pinout	Pin	Function	Voltage
	1	DC ground	DC ground
	2	+5 VDC	+5 VDC
	3	VO - Viewing angle voltage	0 VDC-Dark, +5 VDC-Light (Densitron)
	4	RS - Register select	0 VDC – Bus contains instruction +5 VDC – Bus contains character to display
	5	R/$\overline{W}$-Read/$\overline{Write}$ select	+5 VDC –Read, 0 VDC-Write
	6	E-Enable	Neg. transition latches data into LCD
	7	D0-Data 0	+5 VDC - On
	8	D1-Data 1	+5 VDC - On
	9	D2-Data 2	+5 VDC - On
	10	D3-Data3	+5 VDC - On
	11	D4-Data 4	+5 VDC - On
	12	D5-Data 5	+5 VDC - On
	13	D6-Data 6	+5 VDC - On
	14	D7-Data 7	+5 VDC - On

KEY INTERFACE PCB (C05159)

The Key interface PCB acts as a buffer between the key receptacles and the reader terminal CPU. The key interface PCB:

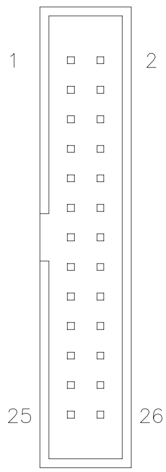
- provides an interface between two key receptacles and the reader terminal CPU PCB
- provides ESD (electrostatic discharge) protection for the key interface lines
- controls selection of and power to the key receptacles

Layout

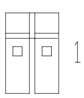


Connectors

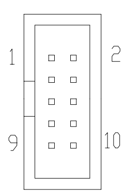
P1 – CPU Interface

Pinout	Pin	Function	Voltage
	1	DC ground	DC gorund
	2	D0 – Data 0	+5 VDC - On
	3	DC ground	DC ground
	4	D1 – Data 1	+5 VDC - On
	5	DC ground	DC ground
	6	D2 – Data 2	+5 VDC - On
	7	N/C	N/C
	8	D3 – Data 3	+5 VDC - On
	9	N/C	N/C
	10	D4 – Data 4	+5 VDC - On
	11	N/C	N/C
	12	D5 – Data 5	+5 VDC - On
	13	N/C	N/C
	14	D6 – Data 6	+5 VDC - On
	15	N/C	N/C
	16	D7 – Data 7	+5 VDC - On
	17	N/C	N/C
	18	A0 – Address 0	+5 VDC - On
	19	N/C	N/C
	20	N/C	N/C
	21	DC ground	DC ground
	22	A1 – Address 1	+5 VDC - On
	23	N/C	N/C
	24	RD – Read data	0 VDC - On
	25	N/C	N/C
	26	WD – Write data	0 VDC - On

P2 – DC Power Input

Pinout	Pin	Function	Voltage
	1	+5 VDC	+5 VDC
	2	DC ground	DC ground

P3 & P4 – Key Receptacle Interface

Pinout	Pin	Function	Voltage
	1	N/C	N/C
	2	+5 VDC	+5 VDC
	3	DC ground	DC ground
	4	N/C	N/C
	5	Chip select	+5 VDC – Key on
	6	Data in (to key)	+5 VDC - On
	7	SK (clock)	+5 VDC - On
	8	Data out (from key)	+5 VDC - On
	9	N/C	N/C
	10	Key in	0 VDC – key in receptacle

DISABLE PUMPS (EMERGENCY STOP) PCB (C05377)

The Disable Pumps PCB (formerly known as the Emergency Stop PCB) used with a disable pumps/emergency stop switch, provides the ability to shut down the site from the front of the island card reader. This PCB:

- monitors the disable pumps/emergency stop switch
- interrupts the RS-485 lines if the switch is activated

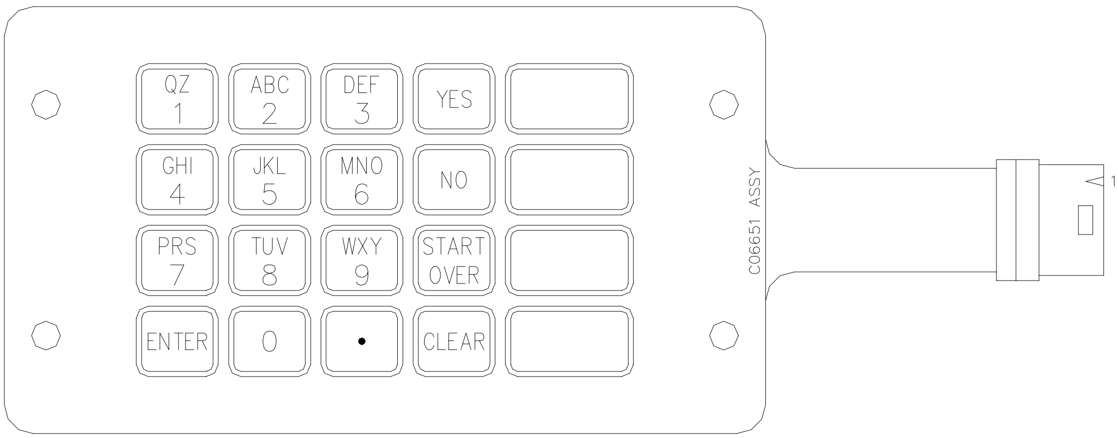
Layout
See section 4 of this manual for a detailed view and connector pinouts for this board.

KEYPAD

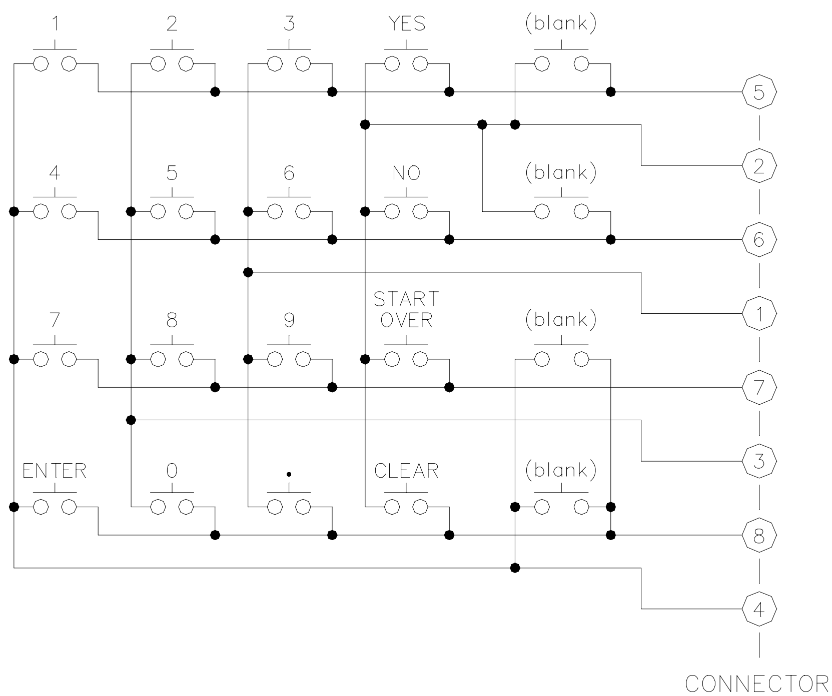
The keypad is located on the face of the Islander. The keypad:

- allows the user to enter data into the ICR
- runs various diagnostic tests

Layout



Schematic

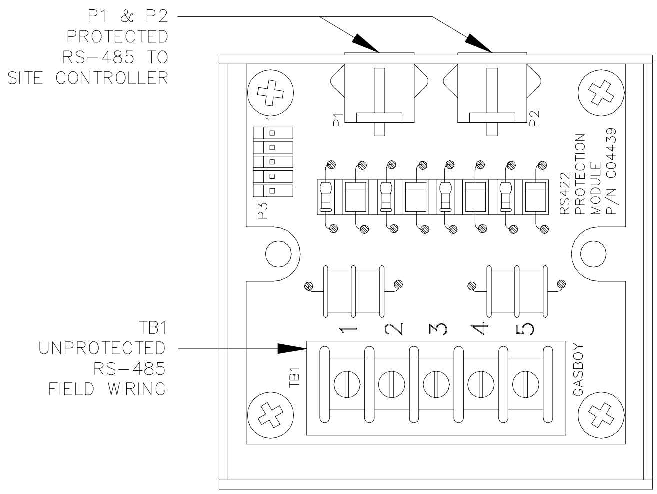


RS-485 JUNCTION BOX

The RS-485 junction box provides the interface for the RS-485 section of the Islander. This unit:

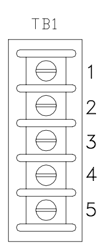
- provides the terminal block for field wiring of the RS-485 lines to a console, SDI box, or tank monitor, if needed
- provides protection against noise on the RS-485 lines
- must be properly grounded

Layout

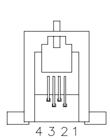


Connectors

TB1 - RS-485 Field Wiring (Unprotected)

Pinout	Pin	Function		Voltage
	1	RS-485 Tx+	To Islander	+5 VDC signal between pins 1 & 2
	2	RS-485 Tx-		
	3	RS-485 Rx+	From Islander	+5 VDC signal between pins 3 & 4
	4	RS-485 Rx-		
	5	Ground		Ground

P1 & P2 - Protected RS-485 Signals to Site Controller

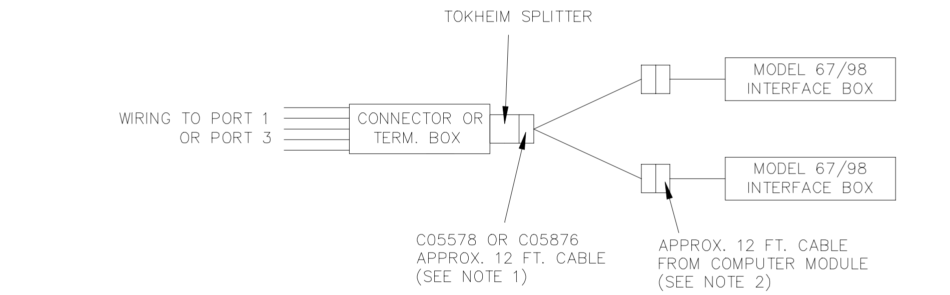
Pinout	Pin	Function		Voltage
	1	RS-485 Rx+	To Islander	+5 VDC signal between pins 1 & 2
	2	RS-485 Rx-		
	3	RS-485 Tx+	From Islander	+5 VDC signal between pins 3 & 4
	4	RS-485 Tx-		

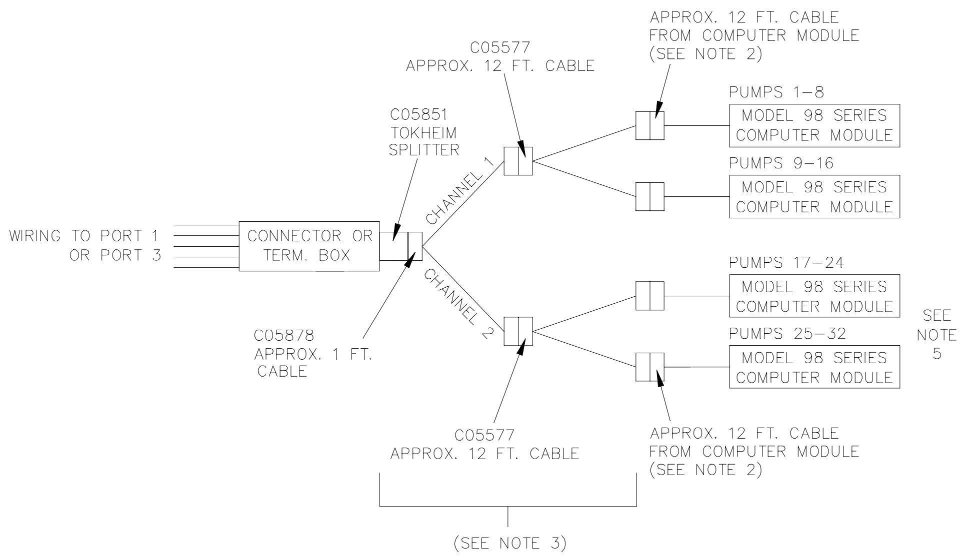
TOKHEIM PUMPS

Only the Islander II can directly communicate with Tokheim pumps. Tokheim pumps controlled by an Islander I would have to be connected to Pump Control Units. The Tokheim splitter allows the Islander II (Site Controller II) to communicate with Tokheim pumps using only one RS-232 port (ports 1 or 3). The splitter requires a C05876 or C05878 cable assembly and version 2.0B or above software for dual channel operation. The splitter splits communications to Tokheim pumps by using the RTS signal from the port. C06994 is used when connecting to 3 or more 98 boxes and includes C05878.

NOTES: When using a Tokheim 98 box, the following connections must be made within the box: TALK DISP must be connected to +9V with a 1K Ohm resistor; DC COM must be connected to GND. If using multiple 98 boxes, the motherboard (P/N 415653-1) must be equipped with two isolation diodes (mounted about 1/2" below the J9 connector). Refer to the Pump Interface Manual, C09146 for more information.

Layout





1. Use a C05578 cable for connection to a single 67 or 98 Interface box. Use a C05876 cable for connection to two 67 or 98 Interface boxes. Both cables include the Tokheim Splitter.
2. A Model 180 signal cable extension is available as an accessory from Tokheim. The maximum distance of the combined cables should not exceed 350 feet. The maximum distance for a 94 or 98 interface box is 250 feet.
3. Use part number C06694 for connection to three or four 98 series computer modules. C06694 is the combination of one C05878 cable, two C05577 cables and a Tokheim Splitter.
4. Communication for pumps 1-32 may be provided through port 1 or 3 of the Site Controller II.
5. The second two 98 boxes must be connected to channel 2 of the splitter. Address the third 98 box (first 98 box on channel 2) as pumps 1 to 8; address the fourth 98 box (second 98 box on channel 2) as pumps 9 to 16.

CFN ISLANDER PROBLEMS

Entire system is dead. Doesn't accept cards, keys, or keypad input for fueling. No terminal communication. The LCD display is blank. No LED's are lit.

Possible Cause	Checks	Corrective Action
No 115VAC power to Islander.	Check if circuit breaker is off or tripped.	Turn breaker on, if off.
	Check if 115VAC is being switched through circuit breaker.	Replace breaker if 115VAC is not being switched.
	Check the voltage at the power input terminal block of the Islander.	If 115VAC is not measured at the power input terminal block, correct wiring problem.
Islander power switch is off.	Check the Islander power switch.	Turn Islander power switch on, if off.
AC power inlet fuse is blown.	Check the fuse with an ohmmeter.	Replace fuse if blown.
Defective AC surge protector cable assy. If AC fuse blows repeatedly.	Disconnect surge protector cable assy. from line interference filter. Use an ohmmeter to check if surge protector cable assy. is shorted.	Replace the surge protector cable assy. if it is shorted.
Defective Islander power supply or power supply cable.	Measure the voltages between the black (DC ground) and orange (+5VDC), black and red (+12VDC), and black and white (-12VDC), wires at the DC input connector on the Islander (site controller) CPU Board (P8 for Islander I, P9 for Islander II)	If the +12 VDC or -12VDC voltages are not present, replace the power supply. If +5VDC is not present, measure the continuity of the orange wire using an ohmmeter. If an open circuit is measured between both ends of the orange wire, replace the DC power cable and recheck the voltages. If +5VDC is still not present at the DC input connector, replace the power supply.
Defective Islander (site controller) CPU PCB.	None.	If the proper voltages are measured at the DC input connector but the Islander doesn't power up, replace the CPU board.

(Continued)

Possible Cause	Checks	Corrective Action
Defective Memory PCB.	None.	Replace the Memory board if replacing the CPU board didn't correct the problem.

Islander II won't boot. OUT OF SERVICE displayed on LCD display. (Islander II only)

Possible Cause	Checks	Corrective Action
PCMCIA card is not fully inserted into slot on memory PCB or is in the wrong slot or is missing.	Check PCMCIA card is installed properly.	To boot from the card, it must be fully inserted into the drive E: slot (the slot to the right). Install the card properly, if it is loose. If missing, find card and insert it fully into slot.
Operating system became corrupted on drive E: (PCMCIA card) or card is blank.	Turn off AC power and connect floppy drive to system. Turn on AC power and install the backup copy of the operating system into drive A: (floppy) and try to re-boot.	If the system boots from drive A:, check all the files on drive E:. Copy the operating system onto drive E. If the card is blank, format it then copy all files from the floppy (A:/BIN/RCP A: E:).
Defective E: drive (PCMCIA card).	Copy a file to the E: drive and try to read it back. Turn AC power off for a few minutes. Turn AC power on and check file.	If data can not be read back, replace card. If the card is losing data when the power is off, check battery switch on card to make sure it is on. If switch is on, check battery in card. If battery voltage is below 2.5 VDC, replace battery. If battery is not defective, replace card.
Release software is not compatible with DSITE program IC.	If the release software or the DSITE program IC (U36) was just changed, verify their compatibility with GASBOY Technical Service	Upgrade the necessary software to achieve compatibility.
Defective Islander II (site controller II) CPU Board.	None.	Replace Islander II CPU Board.
Defective Memory Board.	None.	Replace Memory Board.

Terminal communications are down. The system is working.

Possible Cause	Checks	Corrective Action
Terminal turned off.	Check terminal power indicator.	Turn on, if off.
Terminal offline.	Check ON LINE indicator	Put online, if offline.
Cable disconnected.	Check connections.	Re-connect cable if not connected or loose
Incorrect terminal set-up.	Check the terminal set-up parameters. If a CRT, the terminal should be set for VT52 emulation, 8 data bits, no parity, 1 stop bit. The baud rate should match the Islander's baud rate.	Configure the proper set-up parameters according to the terminal manufacturer's instructions.
Defective power supply.	Measure the voltages between the black (DC ground) and red (+12VDC), and black and white (-12VDC) wires at the DC input connector on the Islander CPU Board (P8 for Islander I, P9 for Islander II)	Replace the power supply if the proper voltages are not measured at the DC input connector.
Incorrect baud rate switch settings on the site controller CPU board.	Check that the baud rate settings are correct. For Islander I, check SW3. For Islander II, check DSW2.	If baud rate switches are wrong, correct the settings and press reset switch SW1.
Islander I only - Incorrect jumper settings on the Islander I (site controller) CPU board. (Remote port)	Check the K1 jumper patch on the Islander CPU board.	Remove all jumpers from K1, if any.
Incorrect configuration of remote port.	For Islander I, check the configuration at Table 17, offset 23. For Islander II, check page 8 of SYS_PAR.	If you are using a terminal to communicate to the site controller's remote port, the configuration at Table 17, offset 23, should be 80 for an Islander I. For Islander II, the remote port should be configured for direct or dumb modem. If it is not, you can only change the configuration through the local port.

(Continued)

Possible Cause	Checks	Corrective Action
Incorrect jumper settings on the site communication I/O board.	Check the jumpers (K1 & K3 for the first port, K2 & K4 for the second) on the site communication I/O board.	Correct the jumper settings if they are wrong.
Terminal is connected to the wrong port.	Check that the cables from the terminal blocks are connected to the correct connector on the site communications I/O board. The brown wire from the cable connects to pin 1 of the connector. Pin 1 of the cable must align with pin 1 of the board connector it is attached to.	For connection to the local port (port 0 or 1 on Islander II), P3 for RS-232, P5 for RS-422. For the remote port (port 2 or 3 on Islander II), P4 for RS-232, P6 for RS-422.
Short haul modem off, offline, disconnected, or bad	Check short haul modem at the terminal.	If off, turn on; if offline, put online; if disconnected, reconnect. If possible perform a loopback test on the modem. Refer to manufacturer's instructions for loopback test. Replace if none of these actions correct the problem.
Defective terminal.	Try using a different Islander communications port. This requires changing the terminal block cable connection. For RS-232, use P3 if the terminal is in the LOCAL port (port 0 or 1 on Islander II), or use a P4 if the terminal is in the REMOTE port. For RS-422, use P5 if the terminal is in the LOCAL port (port 0 or 1 on Islander II), or use a P6 if the terminal is in the REMOTE port. Make sure the terminal's baud rate matches the baud rate of the new communications port	If the terminal doesn't work in either port, replace the terminal.

(Continued)

Possible Cause	Checks	Corrective Action
Incorrect or defective wiring.	Check wiring from terminal to terminal block in the Islander pedestal. Refer to Islander Installation Manual (C35520 – Islander I, C35963 – Islander II).	Correct wiring errors or replace defective wiring.
Defective Site Communication I/O board. (RS-422)	Disconnect the cables to the CPU board and try connecting via RS-232 directly to the CPU board.	Replace I/O board if communicating directly to the port works.
Site unable to log messages (Remote port – Islander I, port 2 – Islander II)	Check logger or logger eliminator jumper on K1 of site communications I/O board.	Correct logger problem or try again. If the printer as been offline for a long time, it may be necessary to reset the Islander CPU.
Defective Islander (site controller) CPU PCB.	None.	Replace the Islander CPU PCB.

MODULE ERROR 14 is printed on local port terminal whenever the Islander is reset. (Islander I only)

Possible Cause	Checks	Corrective Action
Personality prom is not installed or is improperly installed.	Check U30 (C04940) or U31 (C05820) of the CPU board.	Properly install personality prom.
Personality prom checksum is not correct.	None	Replace and reload.
Personality prom is defective	None	Call GASBOY Technical Service

Islander doesn't accept entered sign-on code.

Possible Cause	Checks	Corrective Action
Sign-on code was changed.	Ask site manager if sign-on code was changed.	Enter new sign-on. If a software polling package is used, make sure the new password is loaded into the PC.
Wrong case is being used.	Make sure the proper case letters are used.	Change terminal keyboard to upper/lowercase as necessary. Make sure the password loaded into the PC uses the correct case.
Defective terminal keyboard.	Check if the terminal keyboard works in the LOCAL or offline mode.	Replace the terminal keyboard if the keys don't work in LOCAL or offline mode.
Sign-on became scrambled.	Check local printout for file error 00 message (for Islander I) or reconstructed tables (Islander II).	Close backup sign-on switch (SW4-2 for Islander I, DSW1-1 for Islander II) on the Islander (site controller) CPU board. On the terminal keyboard, try to sign-on using the backup (default) sign-on configured in the Islander. The default sign-on code can be found on the customer's configuration information that was shipped with the system. Call GASBOY Technical Service if you can't find the default sign-on. If you are able to sign-on using the default code, open backup sign-on switch (SW4-2 for Islander I, DSW1-1 for Islander II) and re-load the correct sign-on using the LOAD SIGNON command. On the Islander II, it might be necessary to run the ADD SIGNON command, if the LOAD SIGNON responds with an error.

Site stopped due to a battery failure reported from the memory board. One or more red battery failure LED's is lit on memory board.

Possible Cause	Checks	Corrective Action
Batteries need to be charged. (Islander I only)	If you are changing the memory board or starting up a new Islander, the batteries may require up to 18 hours of charge time.	Keep the Islander power on for 18 hours. If the battery failure message doesn't go away, try a new memory board.
Jumpers not installed (C08331 on Islander I only).	Check E5 through E7	Install needed jumpers.
Switches open on memory board.	Check switches.	Close all switches on a C08331. For C06731 and C07041, either SW1-1 or SW1-2 must be closed.
Dead or shorted battery, blown battery fuse, defective battery charge circuit.	Check which red LED on the Memory PCB is lit. Measure the voltage at the test points on the PCB. If voltage is within range specified, battery is okay; if not, perform corrective actions listed.	If possible, always poll all system data before replacing the Memory PCB. For C08331 Memory board, open the **BATTERY CHARGE** and **BATTERY FAILURE ALERT** switches that correspond to the battery indicated by the lit LED. Do a **RUN;I** command. Replace Memory board as soon as possible. For a C06731 and C07041 Memory boards, close switch SW1-2 and open SW1-1. Do a **RUN;I** command. Replace battery 1 as soon as possible OR if switch SW1-2 is closed, close SW1-1 and open SW1-2. Do a **RUN;I** command. Replace battery 2 as soon as possible

Printout shows one or more files reconstructed - General

Possible Cause	Checks	Corrective Action
CPU jumper K5 off and/or K6 on (Islander I only).	Check if jumper is on K5.	Install K5 jumper or move jumper from K6 to K5. C04940 and C05820 require K5 on, K6 off.
Power surge.	None.	Reload data. For Islander II, try to restore data from backup.
File sizes were changed.	Check if the maximum number of records in one or more files was changed, in an Islander I, either by the CONFIG command or by a new personality prom download, or in an Islander II, running the TABLE configuration program.	Re-load data. For Islander II, try to restore data from backup.

Printout shows one or more files reconstructed – Islander I with C08331 Memory Board

Possible Cause	Checks	Corrective Action
Power was off and jumpers E5, E6, and E7 were removed.	Check jumpers E5, E6, and E7.	Install jumpers E5, E6, and E7, if they are off.
Incorrect memory board jumper configurations.	Check the E1, E2, and E3 configuration jumpers	Install the jumpers correctly if they are wrong.
Battery failure while power was off.	Check if the red battery failure LED's are on.	Go to **Battery Failure** problem.
Defective memory board.	None.	Replace the Memory board if the files continue to get reconstructed.

Printout shows one or more files reconstructed – Islander with C06731 Memory Board

Possible Cause	Checks	Corrective Action
Switch SW1 positions 1 & 2 are open and power was off.	Check switch position.	Close position 1. If LED 4 is on, open position 1 and close 2.
Batteries not installed.	Check to see if B1 and B2 are in sockets.	Defective battery may have been removed and not replaced. Install new batteries if needed.
Incorrect memory board jumper or switch settings.	Check K1-K6 and SW1 for proper settings.	Install the jumpers or set switches correctly if they are wrong.
Batter failure while power was off.	Check if the red battery failure LED is on.	Go to battery failure problem.
Defective memory board.	None.	Replace the memory board if the files continue to be reconstructed.

Remote polling problems. Unable to communicate to the Islander remotely via phone line dial-up. System accepts card, keys, or keypad entry and allows fueling.

Possible Cause	Checks	Corrective Action
Incorrect baud rate at originating polling station.	Check baud rate setting for port that is being connected to. Check baud rate at originating polling station	Make baud rate corrections if needed.
Failure within originating polling station.	If the customer has more than one site, try polling a different site or have GASBOY technical service try polling the site. If you can't communicate to another site or GASBOY can communicate to the site, there is a problem at the originate polling station.	Due to varying configurations of originate polling stations, troubleshooting procedures would be very lengthy. Check and correct if necessary: phone line, modem, modem settings, data terminal, PC, interconnections, and software.
Poor phone line connection at Islander.	Locate the phone jack in the Islander post and head. Check the phone line plug connection to the jack. Check the plug connection to the jack of the modem.	Make correct and good connection if it was incorrect.
Incorrect jumper settings on the site communication I/O board.	Check the jumpers (K1 & K3 for the first port, K2 & K4 for the second) on the site communication I/O board.	Correct the jumper settings if they are wrong.
Modem is connected to the wrong port (built-in modem).	Check modem ribbon cable is connected to P7 for Local port (port 0 on Islander II) or P8 for remote (port 2 on Islander II). If using a built-in modem, there must be nothing else connected to the terminal blocks in the pedestal for that port.	Correct cabling and wiring if necessary.

(Continued)

Possible Cause	**Checks**	**Corrective Action**
Modem is connected to the wrong port (external modem).	Check that the cables from the terminal blocks are connected to the correct connector on the site communications I/O board. The brown wire from the cable connects to pin 1 of the connector. Pin 1 of the cable must align with pin 1 of the board connector it is attached to. Check field wiring to terminal blocks.	For connection to the locale port (port 0 or 1 on Islander II), P3 for RS-232, P5 for RS-422. For the remote port (port 2 or 3 on Islander II), P4 for RS-232, P6 for RS-422. Correct field wiring problem if necessary.
Defective built-in modem.	Disconnect cable from the site communication I/O board to the CPU board and try connecting a terminal directly to the port on the CPU.	Replace built-in modem if terminal can communicate to the Islander.
Defective Islander CPU.	Disconnect cable from the site communication I/O board to the CPU board and try connecting a terminal directly to the port on the CPU.	Replace CPU board if terminal can not communicate to the Islander.

No Island Loop communications. Display shows OUT OF SERVICE. All devices on Island Loop are down.

Possible Cause	Checks	Corrective Action
Islander is down.	Check logger or do a **PRint DIagnostics** command for indication that the Islander (site) is not running.	Do a **RUN** command if site is down.
Defective Disable Pumps PCB (formerly known as the Emergency Stop PCB).	Remove the wiring from the terminal block on the board.	Replace board if loop communications while it is disconnected.
Incorrect wiring of RS-485 junction board in the pedestal or island loop devices.	Verify all field wiring (Islander I Installation Manual – C35520, Islander II Installation Manual – C35963).	Make wiring connections if needed.
Defective RS-485 receiver IC and Protected Driver Board.	None.	Replace U2 and U3 for Islander I, U4 and U5 for Islander II on the CPU Board. When replacing U3 or U5, replace the entire Protected Driver Board (C05848), not just the driver IC.
Defective Islander CPU Board.	None	Replace the CPU Board.
Defective RS-485 junction board.	None.	Replace the RS-485 junction board.

No console loop communications. All devices on console loop are down.

Possible Cause	Checks	Corrective Action
Islander is down.	Check logger or do a **PRint DIagnostics** command for indication that the Islander (site) is not running.	Do a **RUN** command if site is down.
RS-485 phone cable is loose or not installed correctly.	Check that one end of the cable is installed in the RS-485 junction box (should be located near the console) and the other end is installed in the SITE CONTROLLER connector on the rear of the console. If Profit Point, it must be installed in either modular connector on the RS-485 to RS-232 converter box.	Install cable properly, if it is incorrect.
Incorrect wiring between Islander and console RS-485 junction box.	Verify all field wiring (Islander I Installation Manual – C35520, Islander II Installation Manual – C35963).	Make wiring connections, if needed.
Defective RS-485 receiver IC and Protected Driver Board.	None.	Replace U2 and U3 for Islander I, U4 and U5 for Islander II on the CPU Board. When replacing U3 or U5, replace the entire Protected Driver Board (C05848), not just the driver IC. Verify that the RS-485 junction box is properly grounded as shown in the Islander Installation Manual.
Defective RS-485 junction board.	None.	Replace the RS-485 junction board.
Defective Islander CPU board.	None.	Replace the CPU board.

KEY READ/RECEPTACLE PROBLEMS

Islander does not respond correctly to keys. Terminal communication is fine. When idle, system displays shows idle message or broadcast messages (when messages are loaded).

Possible Cause	Checks	Corrective Action
Bad key.	Run several keys to see if problem is consistent. Perform Preventive Maintenance below.	Replace key if problem follows key. If possible, re-encode key and retry.
Incorrect switch setting on reader terminal CPU board.	Check switch S2-6 on reader terminal CPU board. Switch S2-6 must be closed for keys to be read.	Correct switch settings if needed.
Islander is not configured to match key.	Check the system configuration to the key layout information supplied with system.	Make configuration changes if necessary.
Defective key receptacle Defective Key I/F PCB Defective reader terminal CPU	The DC signals between the key receptacle, Key I/F PCB, and reader terminal CPU occur quickly and are best viewed with an oscilloscope. To eliminate lengthy oscilloscope procedures, follow the corrective actions.	Replace key receptacle and retest. Replace Key I/F PCB and retest. Replace reader terminal CPU and retest.

Preventive Maintenance

To prevent key read errors, perform the following preventive maintenance on the keys as needed: clean the key's contacts using isopropyl alcohol and a toothbrush. Dip the toothbrush in the alcohol and brush the contacts of the key until they are clean.

ISLANDER SATELLITE OR CARD READER PROBLEMS

Refer to the troubleshooting near the end of the **Island Card Reader** section of this manual (Section 4).

PEDESTAL RECEIPT PRINTER PROBLEMS

Refer to the troubleshooting near the end of the **Receipt Printer** section of this manual (Section 5).

PUMP CONTROL UNIT PROBLEMS

Refer to the troubleshooting near the end of the **Pump Control Unit** section of this manual (Section 6).

CFN ISLANDER PARTS

Refer to the *CFN Islander Parts Manual, C35585*.