

Site Controller Pump Interface Manual

Version 1.3

for Site Controller II versions 1.0 - 2.3

and CFN3 version 3.0 and above

part number: C09146

Gasboy CFN Series

Site Controller Pump Interface Manual

**Site Controller II versions 1.0 - 2.3
and
CFN3 version 3.0 and above**

03/20/03

C09146

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Lansdale, Pennsylvania**

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C09212	SC II Manager's Manual, version 2.3
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C09159	SC II Pocket Reference, version 2.3
C35920	CFN3 Manager's Manual for Windows NT, version 3.3
C09326	CFN3 Configuration Manual for Windows NT, version 3.3
C35921	CFN3 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, version 003

Credit and Debit Card Networks

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

Pump Interface

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

Card Encoding and Miscellaneous

C09136	CFN Series Clubcard Format
C01687	CFN Series Card Encoding Manual

Remote Communications

C09141	PC/SiteControl User's Manual
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1 Introduction

This manual provides the necessary information to interface various pumps with the SCII and CFN3 Site Controllers.

The following interfaces are described in this manual.

Tokheim,

Tokheim DPT,

Tokheim Insight,

Gilbarco,

Gilbarco CRIND,

Islander II,

Wayne,

Wayne CAT,

Pump Control Unit,

9800/9820 Pump Dispenser

2 Tokheim

SCII/CFN3 Configurations

The SCII must have version 1.0 or above operating system installed for all but Premier Disp. If you are upgrading the site to 2.0 and a memory add-on module is not present on the SCII CPU PCB, the hardware will also have to be upgraded. Order kit part number C07083.

If the Tokheim Premier/TCS dispensers are blenders and do not have grade select buttons, then the Site Controller will need V2.0B or above software to work correctly. All CFN3 versions will work with these dispensers.

Tokheim Pump Driver

In SCII software version 1.0J and below, the Tokheim pump driver was not optional, it was incorporated into the software. In software version 1.0K and above, the software has to have the driver set to Tokheim if the site is using the Tokheim family of pumps. All CFN3s must have this pump driver. Use the STATUS command to determine if the driver is included.

TABLE.BIN

In the **TABLE.BIN** program in the SCII and CFN3, parameter #6 (Readers) should be set to the total amount of readers at the site. This includes DPT and/or Insight readers, island readers and console receipt printers.

READER.BIN

Submenus 1 and 3 in the **READER.BIN** program in the SCII/CFN3 must be set up correctly for DPT's.

For SCII, submenu 1 must be set up as follows:

1. Do not delete the following step-types: Step-type 1 ENTER CARD, Step-type 2 SELECT PUMP, Step-type 8 PLEASE WAIT, Step-type 9 ACTIVATE PUMP.
2. Step-type 2 must be before Step-type 8 in the reader program.
3. Step-type 11, REMOVE CARD is not used with a DPT/Insight.

For CFN3, submenu 1 must be set up as follows:

1. Do not delete the following step-types: Step-type 1 ENTER CARD, Step-type 2 SELECT PUMP, Step-type 9 PLEASE WAIT, Step-type 10 ACTIVATE PUMP.
2. Step-type 2 must be before Step-type 9 in the reader program.
3. Step-type 11, REMOVE CARD is not used with a DPT/Insight.

Tokheim type	Options to set
*TCS 1 hose, multigrade non blend \$/Cr	1,2,3,7,8,9,13,19
*Premier 1 hose, multigrade	1,2,7,8,9,13,16,19
*Premier 1 hose, multigrade \$/Cr	1,2,3,7,8,9,13,16,19

The options in the above table are:

- 1 — Pump is a multi-product dispenser.
- 2 — Pump always needs switch detect (off-hook) to activate.
- 3 — Pump has a cash-credit select button. (Customer can choose cash or credit payment at the pump.)
- 4 — Site Controller can activate the pump without knowing the price or hose (for some MPDs).
- 5 — Site Controller cannot choose the hose number or price (for some MPDs).
- 6 — Site Controller cannot get the dollar amount or volume during pumping.
- 7 — Pump can't do switch detect or pulser timeouts (timeouts must be done by the driver).
- 8 — Pump is a Tokheim stand-alone dispenser or Gasboy® SPD 4.3 +/PAC 4.2+.
- 9 — Pump can only be activated from downloaded prices (the displayed prices are downloaded).
- 10 — Pump never needs switch detect to activate (can be activated while it is still on-hook).
- 11 — The PCU is slow to respond to requests (improves performance on pumps that are inherently slow to respond or at sites that have a large number of pumps and are very busy).
- 12 — The pump is a blender. (The Site Controller may not be able to keep component product tank inventories for types of blender pumps that are not specifically supported by Gasboy.) Do not use this option for Gilbarco and Tokheim Blenders except for 5 product. The 5 product blender requires the 12 option (check that mode 26 is set to 1).
- 13 — The pump is a TCS configured to always download prices. (This allows TCS pumps to display the correct price level for a sale, provided that the pump's Tokheim firmware supports the Mode 25 feature.)
- 14 — Pump is a Gasboy PAC.
- 15 — Single-sided pump (used for PCU auto-configuration).
- 16 — Tokheim Premier model.
- 17 — Requires start button (not required for Tokheim).
- 18 — Beeps without pressing payment on DPT or CRIND.
- 19 — Grade-select buttons exist.
- 20 — Beeps when offhook without START key being pressed.
- 21 — Pump has a lift-lever.
- 22 — Master Chain Pump.
- 23 — Wayne 3 product blender, hoses 1,3 and 5. For Wayne products V580 and V590U only. Previously these pumps required using 5 hoses, setting the price code for hoses 2 & 4 to 99. With this option, define 3 hoses only and the Wayne driver maps them to the appropriate pump positions automatically.

SYS_PAR.BIN

Keyboard Layout

Tokheim DPT/Gilbarco CRIND Keyboard layout on Page 4 of the SCII/CFN3 Configuration **System Parameters** allows you to program the DPT keyboard layout into the Site Controller.

The Tokheim DPT comes in two models, the TCS and the Premier. The keys on the TCS and Premier keypads can be configured for different functions. The characters that select different functions are shown below. Note: These characters are *case sensitive*.

Character	Function
0-9	Numeric digits 0 through 9
.	Decimal Point
E	ENTER
C	CLEAR
Y	Yes
N	No
\$	Cash inside
c	Cash outside
D	Debit inside
d	Debit outside
B	Credit (bank card) inside
b	Credit (bank card) outside
X	Cancel
x	CLEAR/CANCEL (CLEAR if data entry started; else CANCEL)
H	Help
h	Help/Decimal (Decimal if data started; else Help)
n	No/CANCEL (No if in yes/no state; else CANCEL)
S	Start
u	Unused key

Numbers of the keypad keys on the TCS:

1	7	13	19
2	8	14	20
3	9	15	21
4	10	16	22
5	11	17	23
6	12	18	24

Default function arrangement of the TCS keypad:

B	B	b	b
N	N	Y	Y
1	2	3	C
4	5	6	C
7	8	9	E
h	0	X	E

Numbers of keypad keys on the Premier:

6	5	4	3	2	1
12	11	10	9	8	7
18	17	16	15	14	13
24	23	22	21	20	19

Default function arrangement of the Premier keypad:

h	7	4	1	N	B
0	8	5	2	N	B
X	9	6	3	Y	b
E	E	C	C	Y	b

The string that would be typed into the Tokheim DPT keyboard layout item in SYS_PAR to give the Premier keypad function arrangement shown above is:

BN147hBN2580nY369bYCCEE

Some TCS and Premier keys are “double” keys, made up of a pair of single keys. On a double key, the same function must be selected for each member of the pair. On the TCS, 1 and 7, 13 and 19, 2 and 8, 14 and 20, 21 and 22, and 23 and 24 are pairs in a double key. On the Premier, keys 1 and 7 must be the same, and keys 13 and 19 must be the same.

Page 4 - Auto Receipt

Set Auto Receipt to 5 (Auto Ask, Auto on Pump completion) if DPT has a receipt printer.

Page 8 - Tokheim Channel

SCII only:

On page 8 of the **SYS_PAR.BIN** configuration program, **TOKHEIM CHANNEL 1** and **TOKHEIM CHANNEL 2** parameters must be configured to be the same port (either 1 or 3), when using the Tokheim splitter described later in this chapter. This setting is effective only for release 2.0B and above; it won't work for releases 1.0 or 2.0.

SCII/CFN3:

The **PUMPS ON FIRST TOKHEIM CHANNEL** parameter must be configured to the amount of pumps on the Tokheim 67 or 98 box, or to the amount of pumps on the first two 98 boxes (if there are more than two 98 boxes and a C06694 (SCII) or C07080 (CFN3) cable assembly is being used).

Page 9 - Blank pump display

Blank pump display after should be set between 30 seconds and 100 seconds with 60 seconds being a commonly used value. If the time is set for a high number of seconds (for example 600 seconds), the site may experience a problem downloading new prices to the pumps.

LO ME;C

Use the load message (LO ME) command in the site controller to load the DPT messages. To access the 4 lines of the Premier display (or 2 lines for a TCS display), use the tilde character (~)

and the line # (1 to 4) before the message. The display times for messages 1 to 3 should be loaded as 0 seconds; message #4 display time should be greater than 0 seconds. This will allow the messages on all 4 lines to display at the same time instead of one line at a time.

Note: if more than 4 messages are loaded (5-10), omit the tilde preceding the text for line 4 and the messages will be scrolled in line 4 of the display.

```
C* LO ME;C ↓
Message number? 1 ↓
Display in sec? 0 ↓
Message? ~1WELCOME TO JOE'S ↓
Message number? 2 ↓
Display in sec? 0 ↓
Message? ~2TODAY'S SPECIAL IS ↓
Message number 3: 3 ↓
Display in sec? 0 ↓
Message: ~310W30 OIL ↓
Message number? 4 ↓
Display in sec? 9 ↓
Message? ~4HAVE A NICE DAY! ↓
Message number? ↓
C*
```

See the LO ME;C example for 4 message lines below:

If desired, the message can also be configured to flash by enclosing the message text in braces {}. For example in the string PRESS {PAY INSIDE}, PAY INSIDE would flash. Using flash the text line for message 1 in the example above would read:
 Message? ~1{WELCOME TO JOE'S} ↓

If GASBOY ICRs are on a site along with DPTs, the DPT messages are usually loaded as described in the previous example. If the GASBOY ICRs will be communicating on the console loop, the broadcast messages will not be displayed on them. The GASBOY ICRs will display the message that is on the reader program under step-type 1, which is usually **Slide card** or **Insert card**.

Note: If Gasboy ICRs are on the Island loop, they will display broadcast messages. However, if multiple lines are used on the DPT (US Liq 21, etc.) the first character of the display will be garbled. Only a one line broadcast message will look correct.

Insight readers do not display broadcast messages.

LO HE

Use the load heading (LO HE) command in the site controller to load the header and footer lines for the receipts at the DPTs and stand-alone receipt printers. The form feed length (line #0) must be set to a number that will allow the receipt to be about 5.5 inches long. Start with the number 25 and either lower it or raise it to get the receipt at 5.5 inches. Failure to do so may cause receipts to be cut too short which may cause paper jams.

Note: DPT.HEX and STAR.GATE programs automatically set the form feed length.

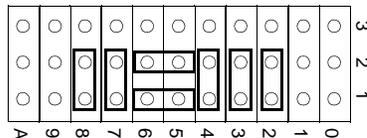
Option 9 - Product out message

In SCII software version 1.0J and below, if a site with Tokheim pumps has a problem of getting the message “Product Out” when a pump is selected, try deleting option 9 (can only activate from loaded prices) or option 13 (TCS configured to always download prices) from the pump type and verify that Mode 25 on the Tokheim pump is set to 1.

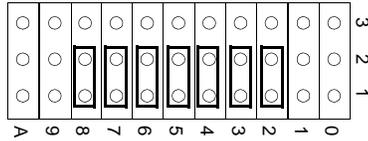
Jumpers

SCII

Jumper K1 (port 1) or K2 (port 3) on the SCII CPU. Setting if SCII software is less than v2.0.



Setting if SCII software is v2.0 and above.



CFN3

When connecting DPTs to the CFN3, the CFN3 must be jumpered for 2-wire via K6 for loop 1 and K7 on loop 2 on the CPU board. The factory default K7 (loop 2) is set for 2-wire.

Setup of DPTs for the SCII and CFN3

Note: Before proceeding, we recommend that the Tokheim dispenser and DPT electronics be tested in stand-alone mode. For additional information on topics in this section, see the *Tokheim Premier Technical Reference Manual*.

Program chip

Tokheim DPT models used with the GASBOY SCII and CFN3 must have a DPT CPU PCB with a GASBOY DPT.HEX program chip installed at location U13. Check with your service representative for the latest version. To obtain the PCB and program chip, order:

- From Tokheim, for Premier dispenser with Premier DPT CPU, P/N 420929; for TCS with Premier DPT, P/N 420929-2.
- From GASBOY, program DPT.HEX, P/N TC8175

With the GASBOY DPT program installed, the Tokheim DPT diagnostics will no longer function. Use the GASBOY diagnostics for ICRs explained in the *GASBOY CFN Diagnostic Manual*.

Note: The 10 second wait time is important because when the DPT is powered up, the keyboard follows its default layout until the DPT communicates to the Site Controller. It then follows the keyboard layout loaded in the SYS_PAR.BIN. The CLEAR/CANCEL button on the default keyboard layout in the DPT may not be at the same location on the keyboard as it is in the keyboard layout configured in the SYS_PAR.BIN.

RS-422/485

The communication between the SCII, CFN3 and DPT is RS-422/485 half duplex versus the RS-422/485 full duplex that both Site Controllers uses with the GASBOY RS-422/485 devices (mechanical PCU, island card reader, Checkpoint console and RS-232/RS-422/485 converters). The DPT communicates through the ISLAND LOOP 1 port for SCII and Loop 2 for CFN 3; the GASBOY RS-422/485 devices — not mechanical PCU — communicate through the CONSOLE LOOP 2 port for SCII. For CFN3, Gasboy RS-485 devices - including mechanical PCVs - can communicate through Loop 1.

Two wire wiring				
RS422/ 485 J-box		69 box		Tokheim Premier
Tx+	1	2		White
Tx-	2	1		Red
Rx+	3	3		Black
Rx-	4			
Prot Gnd	5	4		Shield

Jumpers

The jumpers for the DPT CPU are shown below. Additional information can be found in Section 7 of the *Premier Technical Reference Manual*, Tokheim Form #4817.

Jumper	Description	Pins 1 & 2	Pins 2 & 3	Open
JU5	Watchdog*	Enabled ✓		Disabled
JU6	Normally open; when pins 1 & 2 are enabled, DPT enters diagnostics.			
JU7	Normally open, AC low power detect is not used.			
JU8	Battery**	Disabled ✓	Enabled	
JU9***	SC Communications	Half Duplex ✓		
JU10***	SC Communications	Half Duplex ✓	Full Duplex	
JU11***	SC Communications	Half Duplex ✓	Full Duplex	
JU12***	SC Communications	Full Duplex		Half Duplex ✓
*Watchdog is the power supervision of the CPU board and should be enabled.				
** The battery is the DPT CPU board RAM backup.				
*** These jumpers configure the CPU board for full or half duplex.				
✓ Indicates the correct setting for GASBOY DPT interface.				

LEDs for the DPT CPU

The LEDs for the DPT CPU are shown in the following table. The LED will be on when the described signal is active.

LED	Color	Function
LED1	Red	Serial data is being received by the DPT from the cash acceptor
LED2	Green	Serial data is being transmitted by the DPT to the cash acceptor
LED3	Red	Diagnostic test signal defined by software
LED4	Red	Receive signal (RS-422/485) site controller port J4
LED5	Green	Transmit signal (RS-422/485) site controller port J4
LED6	Red	Receive signal (RS-485) UDC port J5
LED7	Green	Transmit signal (RS-485) UDC port J5
LED8	Yellow	+5VDC logic power

Switch settings

Each side of the Premier pump must have a different address and be set up individually as side A or B. The switch settings for the DPT CPU are as follows:

- SW1, position 1 is not used for releases prior to 1.0D of the Gasboy DPT program. For release 1.0D and above, SW1, position 1 is set to OFF if the printer has a cutter bar; ON if the printer has a tear bar.
- SW1, position 2 determines the UDC poll address for the Premier pump head. SW1, position 2 must be set to On for side A and OFF for side B.
- The Premier Pump head address is set in mode 23.
- SW1, positions 3-7 indicate the address for the DPT. Use the following table to set the address.

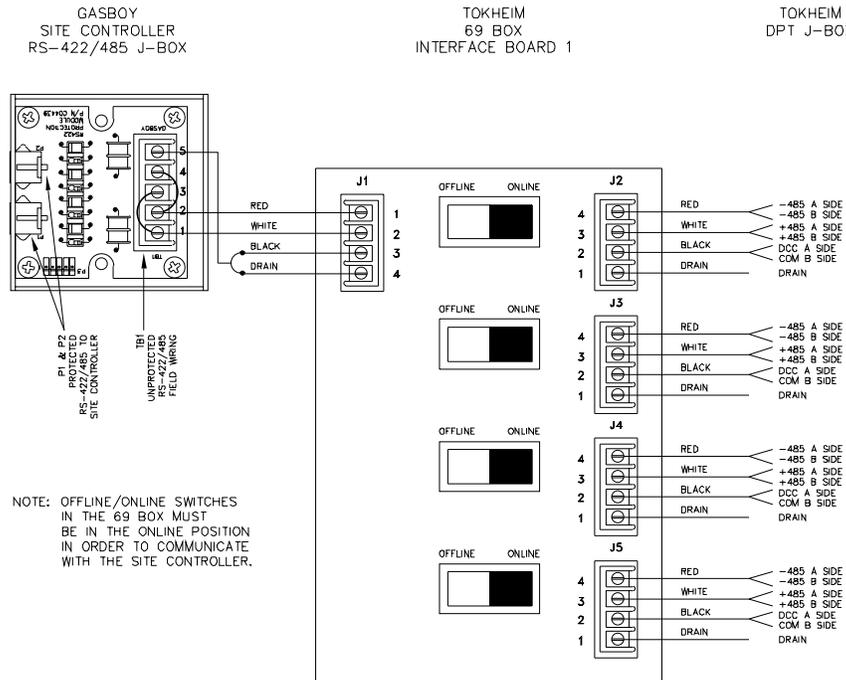
Address	1-7	1-6	1-5	1-4	1-3
1	on	on	on	on	on
2	on	on	on	on	off
3	on	on	on	off	on
4	on	on	on	off	off
5	on	on	off	on	on
6	on	on	off	on	off
7	on	on	off	off	on
8	on	on	off	off	off
9	on	off	on	on	on
10	on	off	on	on	off
11	on	off	on	off	on
12	on	off	on	off	off
13	on	off	off	on	on
14	on	off	off	on	off
15	on	off	off	off	on
16	on	off	off	off	off
17	off	on	on	on	on
18	off	on	on	on	off
19	off	on	on	off	on
20	off	on	on	off	off
21	off	on	off	on	on
22	off	on	off	on	off
23	off	on	off	off	on
24	off	on	off	off	off
25	off	off	on	on	on
26	off	off	on	on	off
27	off	off	on	off	on
28	off	off	on	off	off
29	off	off	off	on	on
30	off	off	off	on	off
31	off	off	off	off	on
32	off	off	off	off	off

- SW1, position 8 controls the line display. ON for 4-line display and OFF for 2-line display.

Tokheim 69 box

A Tokheim 69 box is used for wiring a DPT to a CFN2 or CFN3. The DPTs are wired from J2 through J5 in the 69 box. The GASBOY RS-422/485 J-Box is wired to J1 of the 69 Box. If the 69

Box contains more than one interface board, terminals 1-4 of J1 on interface board #1 can be wired 1:1 to terminal 1-4 of J1 on interface board #2, etc. The following illustration shows the wiring between the 3 devices.



Tokheim Dispenser Mode Settings

Mode 19

The Tokheim pump should be set to 0 when on-line to a Gasboy system. 0 sets the pump for console approval and permanent arming. To set it in a manual mode, set it to 2 for permanent arming, or 3 for key arming.

Mode 23

Mode 23 must be set up to reflect pump address, number of sides, number of hoses, numbers of price displays, etc. See the *Tokheim Dispenser Programming Manual* for details.

Mode 25

Mode 25 in the Tokheim pump should be set to 1 to accept downloaded prices with the handle offhook.

Mode 26

Mode 26 in the Tokheim pump must be set to 1, if the dispenser is a blender. For the Premier, mode 26 should be set as 2.

Mode 29

Mode 29 (DPT Keyboard programming) does not have to be set up. However, you may want to program the START key so the pump can operate in stand-alone mode when the DPT is down. Under normal operating circumstances, the Site Controller will download this information which was configured in SYS_PAR.

Tokheim 98 Box Resistors

The following changes are necessary for the CFN3 or SCII without a splitter. Make the following connections inside the 98 box:

- TALK DISP should be connected to +9V with a 1K Ohm resistor.
- DC COM should be connected to GND.

Tokheim Splitter

The Tokheim Splitter, which requires SCII version 2.0b or later, is part number is C05851. For complete installation information, please refer to the *Site Controller II Installation Manual*.

For CFN3 the splitter is built into the boards, you do not need this part.

SCII - Interfacing to Tokheim pumps via a Tokheim Splitter

The Tokheim splitter (P/N C05851), along with the proper cabling, allows up to 32 electronic pumps to be controlled through one SCII communication port (port 1 or port 3). The Site Controller must be running Version 2.0B for channels 1 and 2 on the splitter to be used. If a site is running Version 1.0 software then only channel 1 can be used.

A Tokheim 67 box controls the 262, 262A, TCS, and Premier families.

The 67B is a standard 67 box is configured for operation with a VX100 or VXDHC. This box works in the 422 mode when talking between the a 67 box and the Controller. The 67B box must be converted back to a standard 67 box to operate correctly.

The Tokheim 98 box controls the 162, dumb MMD's, mechanical pumps, etc. By using a 67 or 98 box, the Tokheim splitter can interface to all of the previously listed Tokheim electronic pumps.

The splitter is not needed for a Tokheim 69 box which has a totally separate communication line which controls the Premier/TCS DPTs.

Site with Single Tokheim 67 or 98 Box - requires a C05578 cable assembly. This assembly includes the Tokheim splitter (C05851).

Site with Two Tokheim 67 or 98 boxes - requires a C05876 cable (dual channel). This assembly includes the Tokheim splitter (C05851).

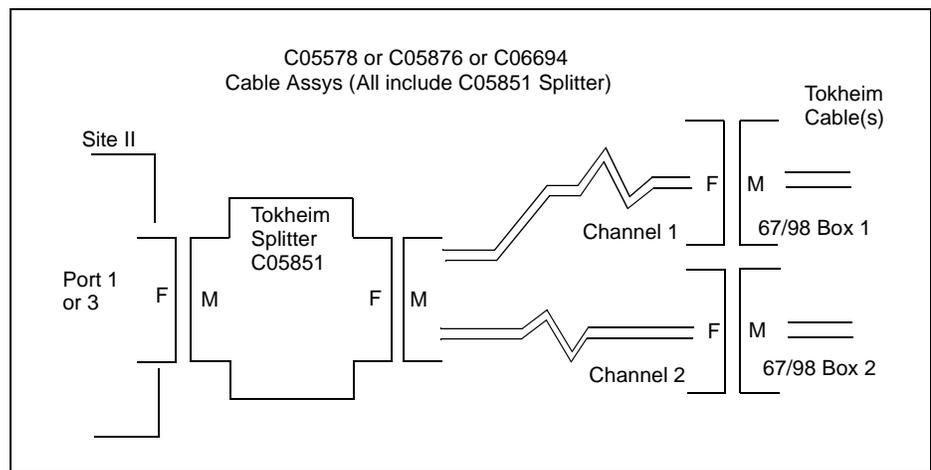
Site with More than two Tokheim 98 boxes - requires a C06694 assembly to supply the correct cabling. It consists of one C05851 (splitter), one C05878 cable, and two C05577 cables.

- The first two 98 boxes will be connected to channel 1 of the splitter. Address the first 98 box on this channel as pumps 1 to 8; address the second 98 box on this channel as pumps 9 to 16.
- 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.

Be careful to observe the channel 1 and channel 2 indicators on the splitter cables.

The diagram below shows how the Site Controller is hooked up to the Tokheim 67 and/or 98 boxes.

Note: See “Tokheim 98 Box Resistors” on page 12, if not using a splitter or SCII.



CFN3 - Interfacing to Tokheim pumps

Site with Single Tokheim 67 or 98 Box - requires a C07119 cable assembly.

Site with Two Tokheim 67 or 98 boxes - requires a C05996 cable (dual channel).

Site with More than two Tokheim 98 boxes - requires a C07080 assembly to supply the correct cabling. It consists of one C07082 cable and two C05577 cables.

- The first two 98 boxes will be connected to channel 1 of the splitter. Address the first 98 box on this channel as pumps 1 to 8; address the second 98 box on this channel as pumps 9 to 16.
- 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.

Tokheim Equipment Configuration

Addressing of Tokheim PCUs should begin at poll address 1 and increment from there, even if a Tokheim PCU is not the first pump in the CFN system. For example, if pumps 1 through 4 are mechanical and pumps 5 through 8 are Tokheim TCSs, the Gasboy PCU used to handle pumps 1-4 will be addressed as PCU #1. The TCS that is pump 5 in the Site Controller should be addressed as pump #1 in the TCS electronics. The TCS that is pump 6 in the Site Controller should be addressed as pump #2 in the TCS electronics. This follows through for pumps 7 and 8.

The reason for this is the Gasboy software establishes communication with any electronic pump interface by talking to pump 1 (poll address 1) first and then the remaining pumps in consecutive polling order. Once this communication is established, it will then assign these pumps to how they are allotted in the **PUMP.BIN** file.

When a Tokheim 98 box is used, it must be addressed by moving the red jumper on the Motherboard (above the I/O PCB). It may be jumpered for pumps 1-8 or 9-16.

Isolation diodes

When connecting 2 Tokheim 98 boxes another consideration is on the Mother Board, part number 415653 -1. There should be 2 isolation diodes mounted about 1/2" below the J9 connector and about 1/2" above the I/O board. The diodes are tan, glassy colored and labeled CR1 and CR2. These isolation diodes are on the TTC line. Older units may not have them. If they are missing, tying the TTC lines together will result in a communication loss.

SCII - Splitter Installation

On the SCII, check the CPU for Rev. V. R8 and R14 need to be a polyswitch. On PN C05852, a resistor has replaced the polyswitch.

New installation:

- Connect a Tokheim Splitter to port 1 or port 3 on the SCII.
- Connect a C05578 cable (for one 67 box) or a C05876 cable (for two 67 boxes) to the Splitter. Connect the other end(s) of the cable to the Tokheim box or boxes.
- Check jumper and configuration settings.

Upgrading an existing installation:

- If you are not installing version 2.0 of the pump driver, connect the Splitter between the SCII and the Tokheim cables.
- Back-up the data and load the software.
- Check jumper and configuration settings.

Manual mode - Tokheim Premiers

1. Place black manager key on keyswitch area in upper left corner of pump face.
2. Hold until mode number begins to blink and you hear a beep, then remove.
3. F01 should appear. 1's means battery is low, F23 means that there is a problem.
4. For a non-debit DPT, use 4x5 keypad on the left. For a debit DPT, use 1x5 keypad under the display.
5. While the mode number is blinking, hold a programming key to change to F19, then release. (If not blinking, tap a programming key).
6. While the mode number is blinking, tap a programming key until parameter on bottom of display is blinking.
7. Hold a programming key until parameter changes to 2 (stand alone, 0=on line).
8. Put manager key on keyswitch until sale appears.

3 Insight Interface - CFN3 only

NOTE: Insight is available on CFN3 only. This chapter is valid for Insight driver version 2.0Bx13 and above.

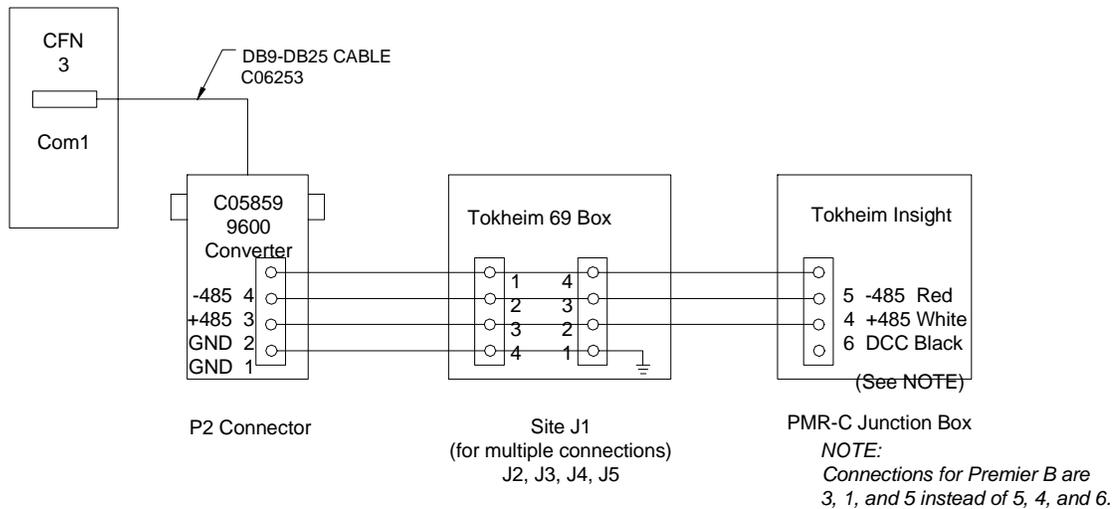
Setup for NT based application using SC3 program

The site setup and configuration are the same as when using a DPT except as noted in this document. The reader type in the reader configuration is DPT. The Site Controller considers the Insight a newer version of the DPT. For the site controller setup refer to the CFN3 Configuration and Managers manuals that came with this system. Setup your keyboard layout in Sys_Par according to the Site Controller *Configuration Manual*, page 4.

This requires SC3 to PC version 1.0Bx8 or above, CFN3 version 3.0B or above, and Insight MTPQ0500 or additional versions when certified by Gasboy. The use of broadcast messages or the use of keypad entered look-up (numeric) numbers are currently not supported.

Hardware Connections

Connect Com1 (default) or alternate PC Com port to the DB25 connector of the 9600 converter (Gasboy part# C05859). Use a standard PC DB9 to DB25 cable (part# C06253). The following is an overview of the connections and a wiring illustration:



Connect the power supply (part# C05440) to the 9600 converter and plug it in.

Insight Board Switches

SW1 on the Insight board is used to set the Insight address and baud rate for the site controller port.

Leave position 1 and 2 alone. These control internal settings for the Insight/pump interface, which should be set at the factory or by a Tokheim service person. Set each Insight address to match the site's DPT address. These are set using positions 3-7.

3	4	5	6	7	address
ON	ON	ON	ON	ON	1
OFF	ON	ON	ON	ON	2
ON	OFF	ON	ON	ON	3
OFF	OFF	ON	ON	ON	4
ON	ON	OFF	ON	ON	5
OFF	ON	OFF	ON	ON	6
ON	OFF	OFF	ON	ON	7
OFF	OFF	OFF	ON	ON	8
ON	ON	ON	OFF	ON	9
OFF	ON	ON	OFF	ON	10
ON	OFF	ON	OFF	ON	11
OFF	OFF	ON	OFF	ON	12
ON	ON	OFF	OFF	ON	13
OFF	ON	OFF	OFF	ON	14
ON	OFF	OFF	OFF	ON	15
OFF	OFF	OFF	OFF	ON	16
ON	ON	ON	ON	OFF	17
OFF	ON	ON	ON	OFF	18
ON	OFF	ON	ON	OFF	19
OFF	OFF	ON	ON	OFF	20
ON	ON	OFF	ON	OFF	21
OFF	ON	OFF	ON	OFF	22
ON	OFF	OFF	ON	OFF	23
OFF	OFF	OFF	ON	OFF	24
ON	ON	ON	OFF	OFF	25
OFF	ON	ON	OFF	OFF	26
ON	OFF	ON	OFF	OFF	27
OFF	OFF	ON	OFF	OFF	28
ON	ON	OFF	OFF	OFF	29
OFF	ON	OFF	OFF	OFF	30
ON	OFF	OFF	OFF	OFF	31
OFF	OFF	OFF	OFF	OFF	32

Set position 8 to OFF for 9600 baud.

Installation

To install:

1. If SC3 is running, shut down the site using ALT-X to end the session.
2. Place the Insight diskette into the disk drive.
3. Run a:install from the Insight release disk. In the Taskbar select:
Start->Run->A:\install
4. Answer “y” for yes when responding to the question “Are you connecting Tokheim Insights to any comm ports?”.
5. Enter the comm port number when prompted.
6. Edit the parameter file to match your site setup when prompted by the Install program. You can edit this file later if necessary in the XBIN directory.
7. If you have multiple comm ports for Insights, enter the next comm port number when prompted or press ENTER to end the program.

When SC3 is started, it will automatically start the Insight program on the selected ports. The session title will be “Insight session on COM 1” or “Insight session on COM 2”.

For COM 1, the parameter file is C:SC3\XBIN\insight.A01. For COM 2, the file is C:SC3\XBIN\insight.A02. These files can be edited with any text editor.

Start the SC3 program. If the Insights don’t come up, switch to the ‘Insight session’ window and press ‘1’. If there are communication problems, error messages should display on the screen. A message should display at least once every 10 seconds. Press ‘2’ to show all messages, successful or not. If no Insights come up, check the number of site polls. If it is 0 then the site is not polling for any Insights in the range specified in the parameter file. If some come up but others do not, make sure those addresses are in the range shown in the parameter file.

Softkey and animation sequences

The Insight is capable of several softkey screens and several animation sequences. To use them, embed the specified ~ sequence in the text or prompt. Any display message (or prompt) may contain graphic animation sequences. The fixed DPT messages already have these (site V3.0B+), but you may want to add to the messages loaded in the reader configuration.

Examples

If you want to use the card animation sequence with the ‘Insert Card’ prompt, use the sequence “Insert Card~C”.

You may use a softkey and 1 animation sequence together. For example, “Insert Card~C~c” uses both the card animation AND ‘cancel/help’ softkeys.

Softkeys

- ~s = start/cancel/help
- ~p = payment type
- ~c = cancel/help
- ~q = Yes/No
- ~h = enter/cancel/help
- ~d = dollar preset (use with “enter amount” step in reader configuration)
- ~M = merchandise
- ~m = show softkeys for CASH, CREDIT, CANCEL, and HELP.

Animation sequences

~C = insert card	~W = car wash
~R = receipt printing	~\$ = cash
~N = remove nozzle	~B = spinning clock
~n = replace nozzle	~l = lift lever
~L = remove nozzle and lift lever	

SDI applications

For SDI applications, there is one 'insight.axx' for each SDI where xx is the SDI address. For an NT application, all Insights are controlled by one virtual SDI, which uses 'insight.a01'.

The Insight program only reads this file when it starts, so you must restart the program, using ALT-R, whenever a change is made. The same is true for broadcast messages and receipt headings loaded in the site.

NOTE: Each SDI must have unique .A0# and .B0# files in the XBIN directory. For example, if the site has one (1) Insight with an insight.A01 parameter file and another SDI for a Unitec car wash, the car wash parameter file should be named WASH.A02 with a corresponding WASH.B02 binary file. These are all located in C:SC3\XBIN\.

The insight.axx file contains the following parameters. These are sample settings and the information after '=' may vary between systems. At the end of this manual is an example.

FIRST_ADDRESS= and LAST_ADDRESS= refer to the Insight address range this SDI is supposed to control.

```
ID=Insights1-16
FIRST_ADDRESS=1
LAST_ADDRESS=16
```

The following setting determines if the Insight is to run in debit mode (TED or DEBIT module). If the line is missing, the Insight assumes non-debit mode (DEBIT_MODE=N).

```
DEBIT_MODE=Y
or
DEBIT_MODE=N
```

The PROMPT= lines refer to the DES prompts loaded in the DEBIT module. These are referenced by prompt number in the DEBIT module and they are listed here in order starting with prompt #1. Load according to your particular DEBIT module.

If you get an error message saying "Debit prompt error" you are using a message that is not listed. Make sure that all your prompts are listed with a PROMPT= line and match the site controller prompts.

The following are the defaults. Everything after the "PROMPT=" is the wording of the prompt, multiple spaces and punctuation are ignored.

```
PROMPT=   enter amount $
PROMPT=   enter   driver id:
PROMPT=   enter   odometer:
PROMPT=   enter PIN   number:
PROMPT=   enter vehicle number:
```

The parameter file also allows you to set messages to be used for some pre-defined conditions. The keyword phrase should be sufficient to describe the condition in which each message is displayed.

```

INSERTED_WRONG_MESSAGE=Card inserted wrong Please insert again
READ_ERROR_MESSAGE= Read error Please insert again
REMOVE_CARD_MESSAGE= Remove Quickly
BAD_CARD_MESSAGE=Unable to read card Use a different card
SALE_CANCELLED_MESSAGE=Sale Cancelled
PLEASE_WAIT_MESSAGE=One moment please...

```

Cash, credit and debit prompt are displayed for softkey labels during “Press payment key”.

```

CASH_HERE_PROMPT=Cash Here
CASH_INSIDE_PROMPT=Cash Inside
CREDIT_HERE_PROMPT=Credit Here
CREDIT_INSIDE_PROMPT=Credit Inside
DEBIT_HERE_PROMPT=Debit Here
DEBIT_INSIDE_PROMPT=Debit Inside

```

The following setting determines whether the Insight should run in graphics mode or in native mode with no graphics or softkeys. If the line is missing the Insight assumes graphics mode (NATIVE_MODE=N).

```

NATIVE_MODE=Y
or
NATIVE_MODE=N

```

Car Wash

Use the softkey sequence ~w in the Unitec car wash parameters (3) menu in gate configuration (of the site controller - see your Configuration manual). This gives the most basic wash type selection with 4 choices.

This can be further refined by adding the following lines to the parameter file (insight.a0x). With this setting it does not use the DEBIT module, only softkeys. This is the main car wash type prompt that appears:

```
WASH_TYPE_PROMPT=Select car wash type
```

Substitute your own text as desired.

The following are the types of washes available for wash types 1-4 listed in order starting with 1. There may be up to 6 types. This group of wash types can be placed anywhere in the Insight.A0x file.

```

WASH_TYPE=reg
WASH_TYPE=super
WASH_TYPE=deluxe
WASH_TYPE=ult

```

Softkeys ~W “car wash” and ~q “yes/no” are used by the graphical display. ~W will display “Want Car wash” and ~q displays “Yes/No” question hands. Insert these in the ICR Program (menu 1) Want Car Wash, type step 8 (of the site controller - see your Configuration manual). Substitute your own softkey labels as desired.

Merchandise Sales (CFN III version 3.3+ only)

The insight.axx file contains the following parameters for selling merchandise:

```
ITEM_AMOUNT_PROMPT=enter amount $
ITEM=Cig pack:189:22
ITEM=Qt oil:99:22
ITEM=Other:0:22
ITEM=Donut:75:22
ITEM=Beer:129:22
ITEM=Junk:999:22
```

The ITEM_AMOUNT_PROMPT= line is the prompt to use for merchandise entry when an ITEM with 0 price is selected. This prompt is used to ask the user to enter the dollar amount of the item. This prompt is also required for debit.

The ITEM= lines are the merchandise items that are to be displayed on the Insight menu when merchandise is requested. Following the name of the item (and after :) is the price in cents (no decimal point). After that (and another :) is the department number to use for the item. Currently all department numbers should be the same because all items are added together locally before sending. In the future we may allow multiple items from different departments to be sent separately.

In order to do merchandise, there must be at least 1 ITEM= line in the file so the site knows what department to use for the merchandise. This may be a single item with 0 price, which causes the Insight to ask for a dollar amount instead of displaying a list of items. There must also be a Step-type 8 in your ICR program (see your CFN3 Configuration manual).

When the site asks for merchandise, the Insight displays the prompt and waits for an answer. If the answer is YES, the Insight displays the items in the insight parameter file (insight.axx) on the screen. When the user selects an item, the total is added to the merchandise total which is displayed on the top of the screen. The user can select multiple items, pressing DONE to exit. If the item's price is 0, the Insight prompts the user to enter the price on the keypad. That amount is then added to the total and the item menu reappears.

If the DPT doesn't have a graphic display or doesn't have softkeys or the parameter file has no non-zero priced items in it, then the DPT will skip the item menu screen and go straight to entering an amount if the answer to "want merchandise?" is yes. After an amount is entered it shows the total amount and asks "More merchandise?". This repeats until the customer presses NO or CANCEL in response to "More merchandise?"

Refer to your *CFN3 Manager's Manual* for information on loading merchandise in the site controller.

Debit

If you are using a TED or DEBIT keypad, use the following setting in the Insight parameter file:

```
DEBIT_MODE=Y
```

If you are using DEBIT with a TED module, the Insight boards in each pump must be injected. If you are not using a TED module, then each of the boards must be non-injected. If you have an injected insight and no TED module, or if you have a TED module and a non-injected Insight board, the system will not operate properly.

Injected/Non-injected

To verify if your Insight's are injected or non-injected, use the Insight diagnostic mode as described in your Insight and/or pump manual from Tokheim. Start with pump manager mode 98 and then press a key on the Insight keypad. Scan through the settings until you come to 'Injection status', then press EXECUTE. It should display DPT injected or DPT not injected.

Prompts

All the prompts the site controller uses for numeric data entry must be loaded in the parameter file using 'PROMPT='. These prompts may come from the reader configuration or from your specific router (or bank network). These may vary from site to site, even for the same network (i.e. depending on what is loaded in the reader configuration).

For the TED/DEBIT module, all the prompts are in the TED/DEBIT module and can only be accessed by prompt number. These vary between TED/DEBIT modules, usually according to the network. Your TED/DEBIT module should come with a list of prompts and prompt numbers.

All the prompts from the Site Controller are given as text. To determine which TED/DEBIT module prompt number to use in place of the Site Controller text, list all the prompts with 'PROMPT=' in the parameter file in the same order as they are listed in the TED/DEBIT module. The first 'PROMPT=' line is prompt 1, the second is prompt 2, etc. For example, if the 'ENTER PIN' prompt is prompt #3, then the third 'PROMPT=' line is the text the site controller uses for the PIN prompt (from the reader configuration). For some networks the PIN prompt may be prompt #7. In this case the 7th 'PROMPT=' line contains the text the site will use for the PIN prompt. Odometer prompts and any other prompts are also loaded this way. The text after the PROMPT= must match what is loaded in the ICR program for that prompt # to be displayed.

CLUB Cards and Debit

If the site is using DEBIT and also taking CLUB cards (or GASCARD) which take non-encrypted PINS the Insight parameter file (insight.A0x) must be adjusted. There are 2 PIN prompts in the TED/DEBIT module; one for encrypted PIN and one for non-encrypted PIN. Load the PROMPT= line in the Insight parameter file corresponding with the encrypted PIN to match the prompt in the site reader configuration for PIN entry. Load the PROMPT= line for the non-encrypted with the same text except insert CLUB as the first word.

For example, if the site reader program uses 'Enter PIN' for PIN entry, then load 'Enter PIN' for the encrypted prompt and load 'CLUB Enter PIN' for the non-encrypted prompt in the Insight parameter file. See the illustration at the end of this manual for detailed location.

Troubleshooting tips

DEBIT prompt error

The site controller is sending a prompt that does not match any of the PROMPT= lines in the Insight parameter file. Either load the Insight parameter file or change the site controller prompts to match the Insight parameter file. The text after the PROMPT= must match what is loaded in the ICR program for that prompt # to be displayed.

The wrong payment keys are showing up on the Insight display and/or any other keys on the keypad aren't where you expect them

The Tokheim keyboard layout (sys_par page 4) needs to be adjusted for the preferred payment types.

DES not ready

This message only appears if the TED or DEBIT module is not operating at the time the site tries to encrypt PIN, or if the site doesn't have the encryption keys loaded (needs fake master key, but real working key).

This message is possible if the TED/DEBIT is going up and down periodically. If it's down consistently, you will get "Need DEBIT module" error.

Need DEBIT prompts

If you don't have PROMPT= lines in Insight parameter file, then you will get the message "Need DEBIT prompts" when you try to get keypad data with the TED/ DEBIT operating.

Need DEBIT Module

If the TED/DEBIT is not operating when you attempt keypad entry and if you have PROMPT= lines and also have DEBIT_MODE=Y, then you will get the message "Need DEBIT module".

Need DEBIT_MODE=Y

In addition to having DEBIT prompts loaded, the line "DEBIT_MODE=Y" must be in the parameter file to use a TED or DEBIT keypad. Either add DEBIT_MODE=Y or change the DEBIT_MODE=N to DEBIT_MODE=Y in the Insight parameter file.

Unexpected graphics appear on the Insight Reader display

If you add animation sequences to any of the card prompts or the receipt printer program, verify they match the function in READER configuration.

The Insight session does not open up with the CFN 3 session

The *insight.exe* may not be installed. Re-install the Insight files by typing **a:install** from the Insight installation disk. It could also mean the site controller program is not running or crashed. Verify the site controller window is up and running.

Insight readers are not communicating with Site Controller

Verify the cable connected to com 1 of the Site Controller and the 9600 converter box is securely connected. Also check that the connection between the 69 box and the 9600 converter box follows the wiring diagram in this manual.

Some of the Insight readers do not come online

Verify the first and last address in the Insight parameter file. If you have eight readers then the first and last reader address will need to be set to 1 and 8 respectively for all of the readers to come up. If the addresses check out okay, recheck the wiring and validity of the hardware for the Insight readers.

The Insight readers will not load

If there is a TED module attached to the 69 box, it can take up to 10 minutes to load, just be patient. Also check the reader addresses in the Insight parameter file.

The Insight readers go up and down periodically throughout the day

Verify that all of the Gasboy equipment is sharing the same ground. This includes the site

controller, the 9600 converter box and the Tokheim 69 box. Also verify the readers were installed with, at a minimum, Insight MTPQ0500 or the latest Gasboy certified software.

Technical debug options

At the Insight session (on NT), the following keystrokes serve debug purposes:

0 = debug off (default)

1 = debug level 1, only display errors

2 = debug level 2, display all Insight traffic

3 = debug level 3, display all Insight and site traffic

s = send debug output to the screen (default)

f = send debug output to the file *dpt_log.cxx* (described below)

' ' (space) = toggles the display ON and OFF when debug output is going to the screen.

ALT-R = restarts the Insight session

Debug log file

The debug log file is saved as *dpt_log.cxx*, where:

c = com port number

xx = cycles from 00 to 99, then 00 over again

When starting for the first time on com1 and press "f", the logging will go to:

dpt_log.100 for 1Meg of data, then to

dpt_log.101 for another 1Meg, then

.

.

.

dpt_log.199 for another 1Meg, then

dpt_log.100 and cycles through again.

It is possible to have logging on 2 sessions at one time. For com2, the file would start at dpt_log.200 following the same format as com1.

If you restart the Insight session, it starts with the next file after the last one written. For example: if you quit during dpt_log.123 with (ALT-X) and start over, or restart (ALT-R), and turn on file logging again it will begin with dpt_log.124.

If you see an event you want to capture, press ALT-R (then "f" again if you want to continue with logging which will start a new log file), you can remove the old file which is not in use.

Example Insight.A0x file

The following file is for illustration purposes only. Your file will differ depending on your specific site requirements. The Insight.A0x file should contain only what is necessary to operate but you can comment out lines by placing an asterisk (*) at the beginning of the line. When setting up this file, if you have a TED/DEBIT module, begin with the module requirements.

	ID=Insight1-16
	FIRST_ADDRESS=1
	LAST_ADDRESS=16
	NATIVE_MODE=N
	DEBIT_MODE=Y
Prompt #1	PROMPT=
Prompt #2	PROMPT=ENTER DRIVER #
Prompt #3	PROMPT=ENTER VEHICLE #
	*PROMPT=ENTER USER ID#
Prompt #4	PROMPT=
Prompt #5	PROMPT=ENTER ODOMETER
Prompt #6	PROMPT=ENTER LIC #
Prompt #7	PROMPT=ENTER PIN
	PROMPT=ENTER AUTH CODE
	PROMPT=CLUB ENTER PIN
	PROMPT=WHAT TYPE OF WASH REG SUPER DELUXE
	ITEM=Qt oil:99:42
	ITEM=Other:0:42
	ITEM=Beer:129:42
	ITEM=Junk:999:42
	INSERTED_WRONG_MESSAGE=Card inserted wrong Please insert again
	READ_ERROR_MESSAGE= Read error Please insert again
	REMOVE_CARD_MESSAGE= Remove Quickly
	BAD_CARD_MESSAGE=Unable to read card Use a different card
	CASH_INSIDE_PROMPT=CASH INSIDE
	CREDIT_INSIDE_PROMPT=CREDIT INSIDE
	DEBIT_INSIDE_PROMPT=DEBIT INSIDE
	PLEASE_WAIT_MESSAGE=One moment please
	WASH_TYPE_PROMPT=Select car wash type
	WASH_TYPE=reg
	WASH_TYPE=super
	WASH_TYPE=deluxe

4 Gilbarco Interface Unit

Part number: C05688.

Interfacing to Gilbarco pumps

NOTE: For more detailed information on a Gilbarco Interface please read the *Gilbarco Interface Unit Installation Manual* (C01745).

Use only SCII v2.0B or above with CRINDS. With Gasboy Gilbarco interface firmware, use v2.0 or above with CRINDS. All versions of CFN3 software work with Gilbarco.

Use Gilbarco firmware version 70.2 or later. Product authorization does not work with Gilbarco pumps before version 2.0c of Gasboy's interface firmware and version 2.0cp2 of the SCII software.

Compatibility of Gilbarco Pumps with CFN Series

The only Gilbarco Electronic pump that does not interface to the SCII is the Gilbarco MPD-2. The Site Controller I does not interface to the MPD Pro Blender or any Gilbarco Cash/Credit pumps.

The following is a brief description of the different types of Gilbarco Pumps:

1. **HIGHLINE:** This is equivalent to the Gasboy Model 8800. This pump can be a single or twin hose. They can be modular or non-modular. The modular pumps are programmed through a keypad that is on the pump. The non-modular pumps have a logic board (assembly #W01520) that has to be jumpered. Newer Gilbarcos are all modular. Hoses are mounted on the sides of the pump.
2. **SALESMAKER II:** Very similar to Highlines except hoses are mounted on the front and back faces of the pump versus the sides.
3. **SALESMAKER IV:** Same as Salesmaker II but has 2 hoses on each face versus 1 (like a MPD).
4. **MPD:** Multi Product Dispenser. Has multiple hoses mounted on the front and back faces of the dispenser. Can be modular or non-modular.
5. **SALESMAKER PRO BLENDER:** Variable Blender (1 hose, 5 products)
6. **MPD PRO BLENDER:** Variable Blender (2 hoses, 1 hose is assigned to 1 product, other hose allows 5 product blending). This pump was specifically designed for Sunoco stations. **REMEMBER,** Gasboy does not interface to this blender.
7. **ADVANTAGE SERIES:** Several different types. It can be a variable blender or a fixed blender or a straight 3 hose MPD (requires Gilbarco Firmware version 70.5 or greater).
8. **3+1.** 3 Blended products (regular, plus, and super) plus a diesel hose.

Potential Problems

The following Gilbarco pump versions may experience problems with the site controller:

Pump	Affected Versions	Corrected Versions
MPD	70.8.0 thru 70.8.2	70.8.3 released 8/96
MPDSH	72.1.7 thru 72.1.9	72.2.10 (in beta)
ASB	75.5.0 thru 75.5.1	75.5.2 released 7/96
AFB	77.4.0	77.4.1 released 7/96
ECAL	84.2.3 thru 84.2.5	84.2.6 (in beta)
B78	75.5.1	75.5.2 released in 7/96
B21	75.8.2	75.8.3 released in 8/96

If you are experiencing problems, check your version number. Update to the new version if necessary.

Note: Currently there is a problem with Gasboy interfacing with the Advantage Series. The pump will occasionally lock up and give us a “halted” message. To correct the problem, type the command “TEST PCU”. Any pump on the PCU is sent an “activate” command, followed by a “halt” command after ten seconds if pump has not gone complete by then. The command is accepted only once after an activate.

Warning: This will allow an operator to pump gas followed by STOP STOP on the console which completes the sale; then if TEST PCU is issued, the pump turns back on for about ten seconds. Fuel pumped during this time is not registered by the site.

Installation of Gilbarcos to the CFN Series

The Gasboy Site Controller I, II or III Current Loop Interface can connect to 1 or 2 Gilbarco distribution boxes. A distribution box can control up to 8 Gilbarco pumps (dual or single).

Current Loop distribution boxes come in two types: Old style passive distribution boxes, and the new universal distribution “smart” boxes. The smart boxes have powered current loops, and can be split into 2 sides, each handling one current loop. Gilbarco terminology often refers to distribution boxes as “D-boxes”. If the site has CRINDS, the universal box must be used.

Current Loop Jumpers and Switch Selections

The jumper positions K1 through K8 are typically set as described next, for more detailed information please refer to the *Gilbarco Interface Unit Installation Manual*.

CPU Board

Jumper	Function and/or Normal Setting
K1	All K1 jumpers are absent.
K2	All K2 jumpers are absent.
K3	Position 1: enables the dead man timer. K3-1 jumper must be installed. K3-1 is the pair of K3 terminals closest to P9, the long double-row offboard connector at the edge of the board. Position 2: K3-2 jumper is absent. K3-2 is the pair of K3 terminals farthest from P9.
K4	_____
K5	Battery to U31; must install.
K6	Battery to U32; must install.
K7	Enables the AC power fail circuit; must install.
K8	K8 jumper is absent.

DIP Switch Bank 2. This switch sets the poll address and allows memory to be cleared.

Position & Definition		Setting(*=customary)
1	debug mode	*closed=normal mode open=debug mode
2	erase memory on reset	*closed=no open=yes
3-8	interface address	see below

Address	2-3	2-4	2-5	2-6	2-7	2-8
1	cl	cl	cl	cl	cl	cl
2	cl	cl	cl	cl	cl	op
3	cl	cl	cl	cl	op	cl
4	cl	cl	cl	cl	op	op
5	cl	cl	cl	op	cl	cl
.
.
.
64	op	op	op	op	op	op

DIP Switch Bank 3

Position & Definition	Setting(*=customary)
1-2	local terminal baud rate *open=9600 (also see below)
3	CRIND *open=RS-422/485 to CRIND closed=current loop
4	reports (see below) open=onhook activate closed=no report
5	allow product authorization OPEN = No grade restrictions CLOSED = Restrict grades
6	money amounts OPEN = Money amounts are five digits CLOSED = Money amounts are six digits
7-8	reserved

All positions are normally OPEN.

Position 5 is CLOSED if you wish to enable grade restrictions for fleet or club cards. This option is available only at sites where all multi-fuel pumps are Advantage™.

Position 6 setting must agree with the configuration of every pump on an interface. Available with Gilbarco firmware version 2.1 or above, position 6 sets digit monetary amounts, OPEN for 5 digit amounts, CLOSED for 6 digit money amounts.

Switch 3-5: Must be closed for Product Auth feature that is in v2.0C and above firmware.

Switch 3-4: with Site Controller versions before 2.0b, pumps are deactivated if offhook, and activated if onhook. This is the sequence reported with push-to-start and cash-credit.

Baud Rate	3-1	3-2
9600	open	open
2400	open	closed
1200	closed	open
300	closed	closed

DIP Switch Bank 4

This switch selects certain price level options and allows either twelve or sixteen pumps (six or eight double-sided units) on a loop. 5-8 are not used.

Position & Definition	Setting(*=customary)
1 (see next table)	
2 # of pumps per loop	*open=6 dual pumps closed=8 dual pumps
3 dead man timer	*open=enabled closed=disabled
4 (see next table)	
5-8 _____	

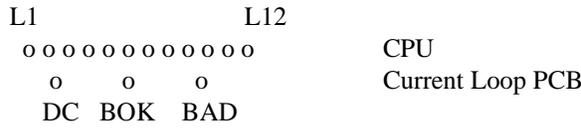
Dip Switch Bank 4 for a single-display price bar:

Pricing policy	Bar shows level:	SW4-1	SW4-4
all levels have same price	1	op	cl
	2	op	op
level 1 same as level 2	1	op	cl
	2	op	op
level 0 same as level 1	1	op	cl
	2	op	op
levels 0, 1, and 2 all different	1	cl	cl
	2	cl	op

Dip Switch Bank 4 for a cash/credit select button, dual-display price bar, or a single alternating-display price bar (only three prices levels—0, 1, and 2—can be loaded, and level 0 must be the same as level 1 or level 2):

Pricing policy	SW4-1	SW4-4
level 0 same as level 1	op	cl
level 0 same as level 2	op	op

Front Panel LEDs



Lamp	Indication
L1	transmit data on CRIND 422/485 port
L2	receive data on CRIND 422/485 port
L3	transmit data on 422/485 loop #1
L4	receive data on 422/485 loop #1
L5	dead man timer refresh
L6	current loop power enabled
L7	current loop #1 active if flashing
L8	current loop #2 active if flashing
L9	program crash code bit 1
L10	program crash code bit 2
L11	program crash code bit 3
L12	program crash code bit 4
DC	DC 5V power OK (green)
BOK	battery OK (green)
BAD	battery bad (red)

Interface Board

Jumper	Function and/or Normal Setting
K1	Baud rate clock source; must be installed in position 1.
K2	Battery backup enable. Boards should be stored with this jumper out; it should be installed at assembly time. Lamp BAD will light if K2 is omitted.

Site Controller Configuration

Site Controller I

Site Controller I version 4.0 software and above will work with Gilbarco pumps.

Normally the Site Controller I is configured at the factory for the pump types. The pump types are configured at TABLE 24, OFFSET 18+(PMP#-1)x4. Refer to the *Site Controller I Technical Manual* to help understand the following CONFIGS.

- a) 2 sided, 1 hose per pump. Byte = 64
- b) 1 sided, 1 hose per pump. Byte = 74
- c) 2 sided, 2 hose per pump. Byte = 65
- d) 1 sided, 2 hose per pump. Byte = 75
- e) 2 sided, 3 hose per pump. Byte = 66
- f) 1 sided, 3 hose per pump. Byte = 76

Note: SC I will not work with multi hose unit.

SCII and CFN3

All versions of SCII and CFN3 software work with Gilbarco pumps. The pumps are configured in the **PUMP.BIN** program in the site controller. The pump type is set up in submenu 1 (pumps). Options are:

Highline (old) {used for nonmodular}
 Highline {modular}
 Highline cash/credit
 MPD
 MPD cash/credit

Note: Try configuring all Highlines as Highline (modular), even the Non-modular pumps. If the pump does not display ongoing dollars while pumping then change to Highline (old).

The PCU type is set up in submenu 2 (PCUs). Gilbarco's are always set up as PCU driver type 2 (electronic pcu). A maximum of 2 pumps can be assigned to each PCU.

The 2-wire address of the Gilbarco pumps should begin as pump poll address 1 and increment from there. The site controller then assigns which pump number is assigned to that poll address in the **PUMP.BIN** configuration. In other words, the pump addressed as poll address 1 does not necessarily have to be assigned to pump 1 in the site controller.

For example, poll address 1 can be assigned to pump 3 as long as in **PUMP.BIN**, PCU1 slot 1 is set to 3.

In rare cases you may have a scenario where a site has a mechanical PCU and Gilbarco pumps. The mechanical PCU is addressed as PCU #1. Address Gilbarco pumps as pumps 1 and up. The Current Loop Interface Unit will need to have its base address set to 2. This is done by setting SW2 positions 3 to 7 closed and position 8 open in the Current Loop Interface Unit. If a site had 2 PCUs addressed as PCU #1 and PCU #2, then SW2 would be set to base address 3 (position 7 open, 3 to 6, & 8 closed). When mechanical PCU's are addressed before Gilbarco Electronics the base address of the Current Loop Interface Unit must be changed accordingly.

For Gilbarco 3+1 pumps set the hose value to 6.

If single sided highlines are being used, the blank (unused) side of the highline should still be addressed as a pump number. For example, if a site has 2 single sided highlines and 2 dual highlines, it should be set up as follows:

1. Pump 1 in the site controller is a single sided highline. That pump should be addressed as pumps 1 and 2 in the Gilbarco electronics.
2. Pumps 2 and 3 in the controller is a dual highline. That pump should be addressed as pumps 3 and 4 in the Gilbarco electronics.
3. Pump 4 in the site controller is a single sided highline. That pump should be addressed as pump 5 and 6 in the Gilbarco electronics.
4. Pump 5 and 6 in the site controller is a dual pump. That pump should be addressed as pumps 7 and 8 in the Gilbarco electronics.

There is another way of configuring the pumps from the previous example. If there are no more than 14 pumps, you can just address the blank sides as pump 16.

In the **PUMP.BIN**, in submenu 3, set the following options:

Gilbarco type	Options to set
Highline (old)	6,9
Highline	9
Highline\$/Cr	3,9
MPD	1,5,9
MPD \$/Cr	1,3,5,9

In most cases, the limits and cutoffs should be in dollars. Gallon cutoffs and limits can only be used on Highlines. Cash/credit must have a cutoff loaded as \$999. The limits and cutoffs are explained in further detail in the *Current Loop Interface Unit Installation Manual*.

An ongoing transaction viewed on the console will never show the incrementing gallons, only the dollars. Older pumps may not even show the dollars incrementing.

Use Gilbarco firmware version 70.2 or later. Product authorization does not work with Gilbarco pumps before version 2.0c of Gasboy’s interface firmware and version 2.0cp2 of the SCII software.

Advantage Super High special settings

Advantage Super High (model BD1) has the following PUMP.BIN configuration requirements. Side ‘B’ of the pump must have 2 hoses assigned as illustrated.

In Pump type - submenu 1:

#	Pump type	Cl	Slow	Fill	Max	Pulse	Hoses
1.	GILBARCO MPD	1	0.250	\$50	0	1000/G	1
2.	GILBARCO MPD	1	0.250	\$50	0	1000/G	2

In Pump Control Units - submenu 2:

1.	ELECTRONIC PCU	1:1	2:2
2.	ELECTRONIC PCU	1:3	2:4
3.	ELECTRONIC PCU	1:5	2:6

In Add Pump types - submenu 3:

#.	GILBARCO MPD	(2) 1,5,7,9
----	--------------	-------------

CRIND

Version 2.0B or later of the Site Controller software and 2.0 or later of Gasboy’s interface firmware are required to run a Gilbarco CRIND (Card Reader IN Dispenser). The CRIND should be on the RS-422/485 port.

Keypad

The keys on the CRIND keypad can be configured for different functions with the *Tokheim DPT/ Gilbarco CRIND keyboard layout item* on page 4 of the SCII and CFN3’s SYS_PAR program. The characters that select different functions are shown below. Note that these characters are case-sensitive:

Character	Function
0-9	Numeric digits 0 through 9
.	Decimal Point
E	ENTER
C	CLEAR
Y	yes
N	No
\$	Cash inside
c	Cash outside
D	Debit inside
d	debit outside
B	Credit (bank card) inside
b	Credit (bank card) outside
X	Cancel
x	CLEAR/CANCEL (CLEAR if data entry started; else CANCEL)
H	Help
h	Help/Decimal (Decimal if data started; else Help)
n	No/CANCEL (No if in yes/no state; else CANCEL)
S	Start
u	unused key

The numbers of the keypad keys on the CRIND are:

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Note that keys on the left half of the keyboard—that is, 1, 2, 3, 6, 7, 8, 11, 12, 13, 16, 17, and 18—cannot be programmed.

The default function arrangement of the CRIND keypad is:

1	2	3	u	b
4	5	6	\$	B
7	8	9	N	Y
C	0	E	H	X

The string that would be typed into the *Tokheim DPT/Gilbarco CRIND keyboard layout item* in SYS_PAR to give the CRIND keypad function arrangement shown above is:

123ub456\$B789NYC0EHX

Cabling

D-Box to Gilbarco Interface

Interface to D-Box Current Loop Wiring - Pump Loop

Part number: C06691.

On the older version of the cable there are two wires, which have spade lugs on one end and a DB-9S connector on the other. The wires connect the terminal block on the back of the interface box to the male 9-pin connector current loop at the distribution box.

Interface Terminal	Short Wire Color	Terminal Block Connection	Field Wire Color	DB-9S to D-Box
P1-1	red	1 + (top terminal)	black	Pin 7
P1-2	black	1 - (next down)	red	Pin 6

At the terminal block, connect the red wire to the black wire and the black wire to the red wire. This may be extended by any 1:1 9-pin “D” connector extension cable having pins 6 and 7 connected.

Newer version of the C06691 cable have the mating connector to P1 on one end and a DB 9S connector on the other. These cables connect right from P1 to the DB-9S connector as follows:

Interface Terminal	Short Wire Color	DB-9S
P1-1	black	Pin 7
P1-2	red	Pin 6

Interface to D-Box RS-422/485 Wiring - CRIND Loop
(must use universal D-box)

Part number: adaptor is C06692; eight foot cable is C06242; both together are C06326.

There are four wires, which have a modular handset plug on one end and a DB-9P connector on the other. The wires connect the CRIND RS-422/485 jack on the interface box to the DB-9S RS-422/485 loop at the D-box.

Modular Plug	DB-9P	Signal Name
Pin 1	Pin 2	RX+
Pin 2	Pin 6	RX-
Pin 3	Pin 3	TX-
Pin 4	Pin 7	TX+

The wire colors are not significant. This cable may be extended using an RJ-11 or RJ-12 1:1 telephone extension cable.

The modular pins are numbered from right to left when looking at the modular plug from the retainer-clip side, with the cable inserted into the plug on the side closest to you.

Interface Terminal	Short Wire Color	Terminal Block Connection	Field Wire Color	Gilbarco dist. Box	Terminal Legend
P1-1	red	1+ (top terminal)	black	box 1	-BLK
P1-2	black	1- (next down)	red	box 1	+RED
P2-1	red	2+ (third down)	black	box 2	- BLK
P2-2	black	2- (bottom)	red	box 2	+ RED

Site Controller to Interface RS-422/485 wiring

The cable to the current loop interface RS-422/485 connection is a modular handset connector cross cable assembly with the transmit and receive pairs reversed, Gasboy part number C04500. The connections are:

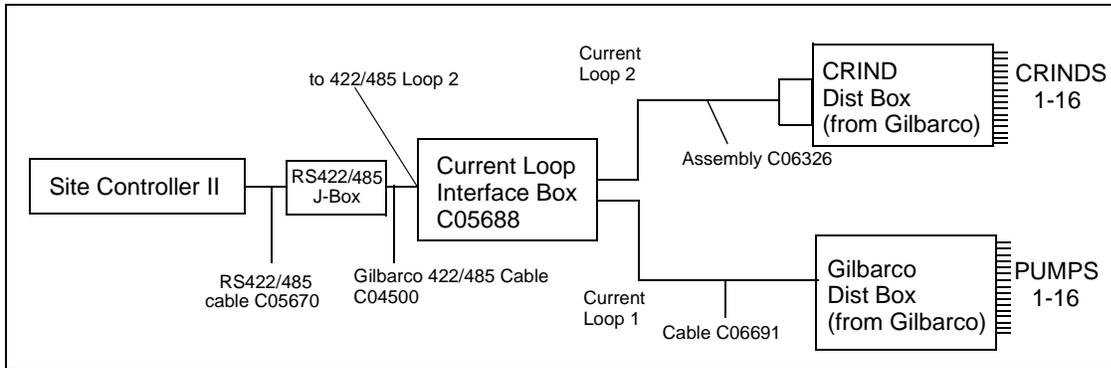
Junction Box Pin	Current Loop Interface Pin
1 (Rx+)	3 (TX+)
2 (Rx-)	4 (TX-)
3 (TX+)	1 (Rx-)
4 (Tx-)	2 (Rx-)

This cable runs from a RS-422/485 protection box to the interface unit. The RS-422/485 from the protection box to the Site Controller should be in loop 1 (CFNII and III) or PCU/RT (CFN1) port. This pinout is symmetrical, so it does not matter which pin you count as pin 1, so long as you use the same corresponding pin at both ends. Also, the cable is symmetrical from end to end, so it does not matter which end you plug into the interface unit.

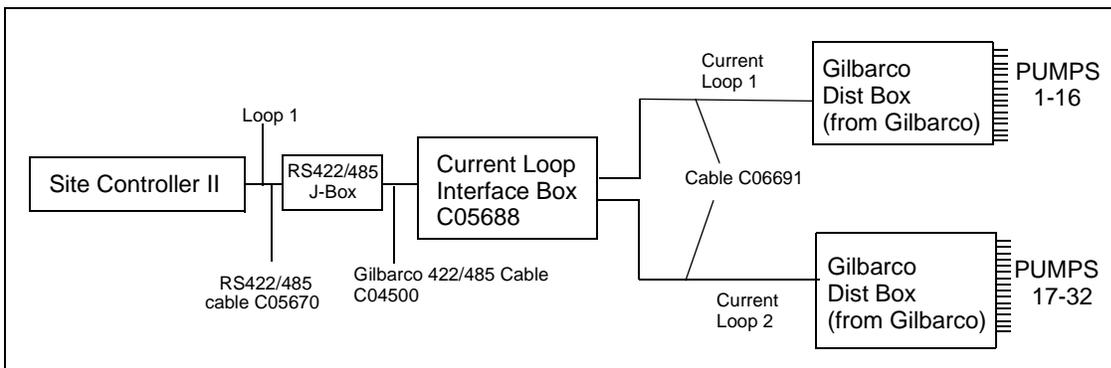
System Layout

All wiring/installation of Gilbarco pumps and dispensers to the distribution box should follow Gilbarco installation instructions. For more detailed information on installing an electronic interface to Gilbarco dispensers, refer to the *Current Loop Interface Manual*, part no. C01745.

Below is the system layout for the Gilbarco interface and a SCII w/ CRIND.



Below is the system layout for the Gilbarco interface and a SCII w/o CRIND.



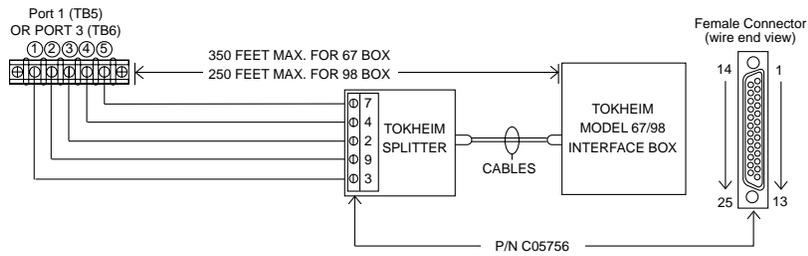
Note: this will not work with interface version 2.0 and above.

Function	Port 1	Term. Block 5 Connects To	Port 3	Term. Block 6 Connects To		
Tokkehim port (RS-232)	 K1	 K3	P3	 K2	 K4	P4

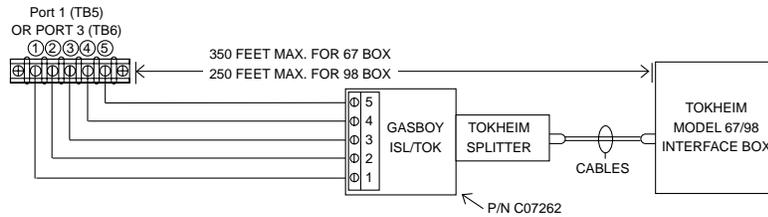
A C07263 cable is also needed on the Site Communication I/O board from P10 connector to pins 6 through 10 of P3 (for port1) or P4 (for port 3). This cable is installed in the head of the Islander at the factory.

Below is the system interconnection for the Islander II and Tokheim interface.

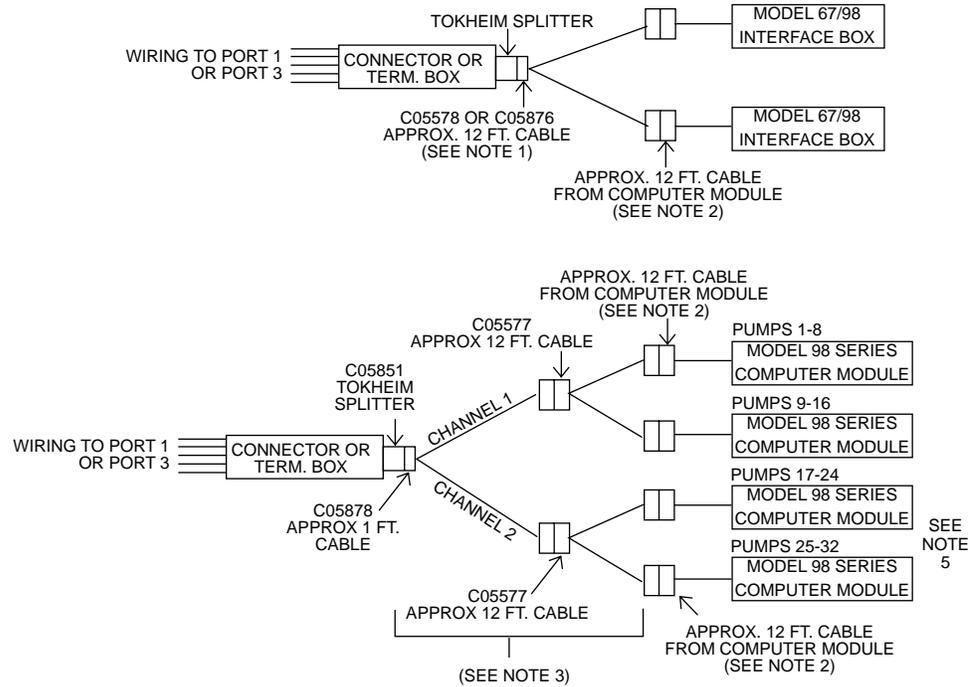
D Connector



GASBOY ISL/TOK Termination Box



Splitter Cabling



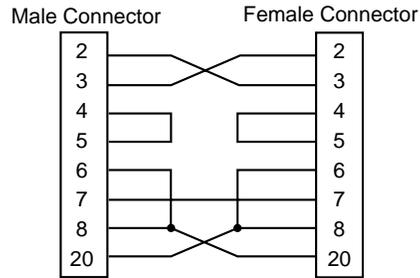
NOTES:

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 and field wiring should not exceed 350 feet. The maximum distance for a 98 Interface box is 250 feet.
3. Use part number C06694 for connection to three or more 98 Interface boxes. 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 Islander 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.

Islander II to Wayne Pumps

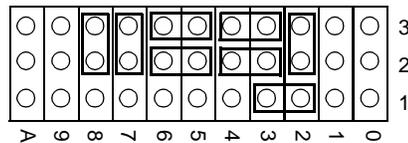
Cabling and port jumper configuration

The Wayne 2400 Controller is connected to either port 1 (TB5) or 3 (TB6) of the Islander II with either a C05756 25 pin D-type connector (female) or a C05928 (null modem, 25 pin male to 25 pin female, 8 ft.) cable and a C05769 Gasboy termination box. The maximum distance for this connection (from the Islander II to the Wayne 2400 controller) is 100 ft. The C05928 cable wiring is illustrated:



The C05928 cable is provided with a 9 to 25 pin adapter, which is not used in this application. The C05756 connector can accept up to a maximum of 22 AWG wire. The C05769 termination box will accept up to 18 AWG wire. All RS-232 requirements defined in the *Islander II Installation Manual C35963* apply.

The SCII CPU K1 (port1) or K2 (port 3) jumper patch must be configured for a Wayne port.

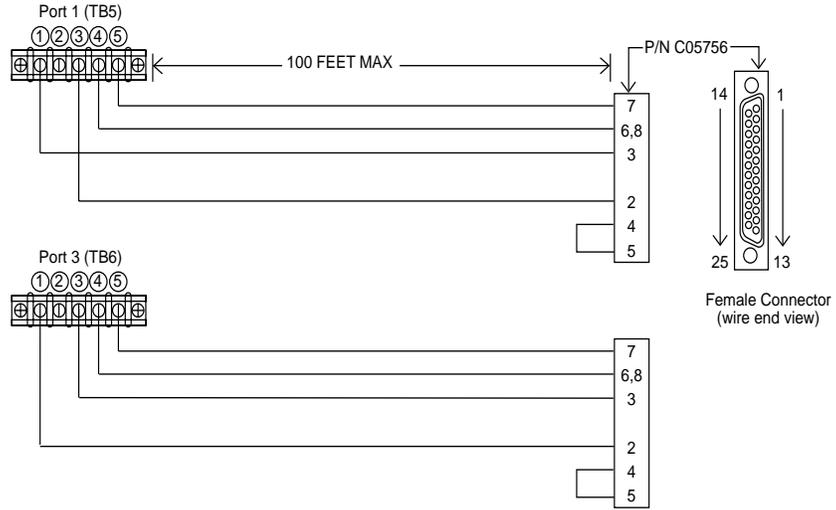


The jumpers on the Site Communication I/O board in the head of the Islander (on the inside of the left partition) for port 1 or port 3 must be configured as shown below:

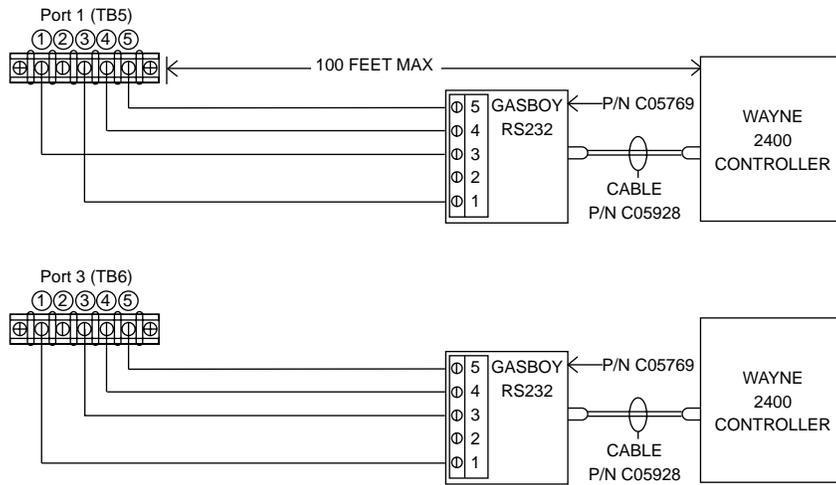
Function	Port 1	Term. Block 5 Connects To	Port 3	Term. Block 6 Connects To
Wayne port (RS-232)	 K1	 K3 P3	 K2	 K4 P4

Following is the systems interconnection for the Islander II and a Wayne interface.

D Connector



GASBOY Termination Box



6 Wayne

The FRAMOS.BIN must have the Wayne pump driver installed. The SCII must have v1.0K or above for Wayne. For CATS, the SCII must have v2.1 or above.

All CFN3 versions will work with Wayne pumps and CATS.

The Wayne EC Cabinet

Requirements for the Wayne EC Cabinet and Data Distribution Box:

Rev. 49 2400 CPU board. This unit must be equipped with a **PIB/Plus** board also available from Wayne. All dispenser wiring to/from the Wayne 2400 Controller should be done according to Wayne Installation instructions.

Notes:

- Older EC Cabinets can be upgraded to a Rev. 49 CPU and PIB/Plus board. All Wayne Electronic dispensers except early 1980 “type 0” dispensers will work. The version 37000 PIB/Plus board allows full programming capabilities from a third party device and does not require a 2400 Console to complete the station programming.
- In the Wayne Data Distribution Box there are switches labeled BYPASS and AUTO. There may be one switch per dispenser or one switch per side depending on the vintage of the Wayne devices. Any switches that are not wired to a dispenser must be in the BYPASS position. If any of the switches that are not wired to a dispenser are in the AUTO position it will create a break in the communication loop and none of the dispensers will come up on-line.
- The Wayne dispensers must be addressed starting with number 1, regardless of the actual pump number that it is configured as in the Site Controller.
- The baud rate on Wayne controller must set to communicate at 1200 bps with the Site Controller.

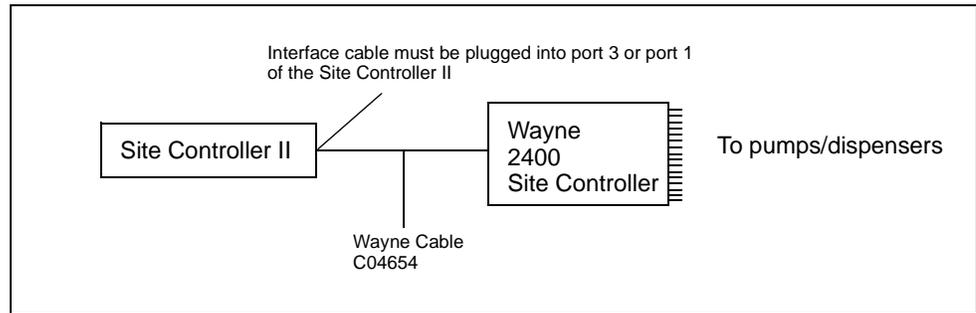
SCII cabling and port jumper configuration

The Wayne 2400 Controller is connected to either port 1 or 3 of the SCII with a C04654 (1:1, 25 pin male to 25 pin female) cable. The cable comes in 8 ft lengths. The maximum distance for this cable is 100 ft. The pins in the cable are wired like the following:

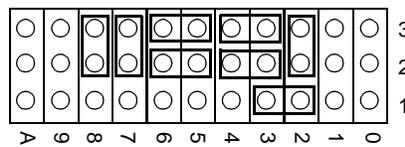
Male DB-25P Connector		Female DB-25S Connector
2	_____	2
3	_____	3
4	_____	4
5	_____	5
6	_____	6
7	_____	7
8	_____	8
20	_____	20

The SCII K1 (port 1) or K2 (port 3) jumper patch must be configured for a Wayne port.

Below is the system layout for the Wayne interface and a SCII.



K2 Jumper Settings.



CFN3 cabling

The Wayne 2400 Controller is connected to either ports 4, 5 or 6 of the CFN3 with a C06006 cable. The cable comes in 8 ft lengths. The maximum distance for this cable is 100 ft.

SCII and CFN3 Configurations

SYS_PAR.BIN, page 8

In SYS_PAR.BIN (page 8), the “Special pump handler channel” parameter must be configured for the ports listed under cabling for either the SCII or CFN3 (see previous sections).

PUMP.BIN

In PUMP.BIN, the Wayne pump types must have options 1, 2, 5, 7, & 9. Option 3 must be included if the dispensers have the Cash/Credit feature.

Note: The FRAMOS.BIN file on the Release disk must have a date of 01/29/93 or later in order to work properly with dispenser presets.

For Wayne pumps:

- The cash price must be lower than or equal to the credit price.
- The pump limit must be \$999 for the cash/credit selection to work.
- All Wayne dispensers must be configured in sequential, consecutive order. All Wayne dispensers must be addressed as starting with number 1, regardless of the actual pump numbers that they are configured with in the Site Controller.
- In the Wayne Data Distribution Box, any switches that are not wired to a dispenser must be in the Bypass position.
- The last digit of the price code determines the grade of fuel as far as the Wayne controller is concerned (6, 16, 26, and 36 are the same product).
- All price codes for a side of a dispenser must be in the same decade (i.e. you cannot use price code 3 for hose 1 and price code 12 for hose 2 on the same side of a dispenser).

For non-blenders:

- each hose must be assigned a price code in ranges 1-5, 11-15, 21-25, 31-35; all hoses on a pump must be in the same decade.

For all blenders:

- The blend ratio must be the same for price codes with the same last digit (price codes 6, 16, 26, and 36 must be for the same blend ratio).
- use price codes 6-9, 16-19, 26-29, 36-39 for blended hoses. Use price codes 4, 14, 24, 34 for low feedstock (non-blended hoses). Use price codes 5, 15, 25, 35 for high feedstock (non-blended hoses).
- product names for products in blended hoses should contain blend rate (for example, *blended 40%*, using a percent sign); do not use a percent sign in non-blended hoses.

For fixed blenders:

- hose 1 is always a non-blended, low-feedstock hose and must have price code 4 (or 14 or 24 or 34). Hose 3 is always a non-blended, high-feedstock hose and must have price code 5 (or 15 or 25 or 35). Hose 2 is the blended hose and must have a price code in ranges 6-9, 16-19, 26-29, 36-39. Hose 2 and 4 are fictitious.

For variable 5-product blenders:

- hoses 1-5 must use price codes 4-9, 14-19, 24-29, 34-39, with no repeats.

For variable 3-product blenders:

- assign 5 hoses, but assign price code 99 to hoses 2 and 4 since the system uses only hoses 1, 3, and 5.
- With SCII version 2.3 and CFN3 version 3.3, for Wayne models V580 and V590U, do not assign 5 hoses but use Option 23 of the submenu #3 in PUMP.BIN. With this

option, define 3 hoses only and the Wayne pump driver maps them to the appropriate pump positions automatically.

Site Controller Pump Configuration

In the PUMP configuration program, in submenu 3, set the following options:

Wayne type	Options to set
Wayne MPD	1,2,5,7,9
Wayne MPD \$/Cr	1,2,3,5,7,9
Wayne Blender	1,2,5,7,9,12
Wayne Blender \$/Cr	1,2,3,5,7,9,12

Note: Set option 23 for models V580 and V590U if using SCII version 2.3 and CFN3 version 3.3 only.

Considerations when loading Site information

1. The Wayne controller must be set at 1200 baud.
2. When a dispenser has been authorized, fuel can be dispensed from any hose on that dispenser.
3. All pulser units, limits, etc., must be in the same units (gallons or dollars) in both the pump configuration and in the loadable commands.
4. Limits and cutoffs should be loaded in gallons in order for the dispenser presets to work properly. If the dispensers have the Cash/Credit feature, the limits must be loaded for \$999.
5. Club cards that have a price level higher than 2 cannot be preset in \$\$\$.
6. The dispensers can only display price levels 1 or 2. The \$TOTAL will be recalculated if other price levels are used.
7. Price level 2 (credit) must be loaded in order for the dispenser to work and must contain the same price as loaded in price level 0.
8. The price loaded in price level 1 (cash) must be less than or the same as the price loaded in price level 2 (credit).
9. Wayne dispensers can be assigned price codes in the ranges of 1-9 (with 6-9 reserved for blends), 11-19 (16-19 reserved for blends), 21-29 (26-29 reserved for blends), and 31-39 (36-39 reserved for blends). There are several restrictions as follows:
 - Requires a FRAMOS.BIN file on the Release disk that has a date of 11/10/93 or later (for systems with a FRAMOS.BIN file dated prior to 11/10/93, see below).
 - For Site Controllers with a FRAMOS.BIN file dated prior to 11/10/93:
 - Only price codes 1-9 may be used, with 6-9 reserved for blenders.
 - If a pump is assigned a price code higher than 9 or equal to 0, the dispenser will display the price loaded in price code 1, level 1 or 2. The \$TOTAL will be recalculated and the transaction \$TOTAL will reflect the correct price.

Considerations for Wayne Blenders

The blend ratio followed by a percent sign must be included in the product name for the product code that is assigned to the blended hose. The blend ratio entered is the percentage of high feedstock. Example.... “Unl Plus 40%” would be 60% unleaded and 40% super.

1. Fixed Blenders
 - Hose 1 is the low feedstock and must use price code x4.
 - Hose 2 is the blended hose and must use price codes x6, x7, x8, or x9.
 - Hose 3 is the high feedstock and must use price code x5.
2. Variable Blenders with a side hose
 - Currently the SCII will not recognize the fixed product side hose unless option 16 is listed in the Pump configuration.
 - Hoses 1-5 are the blended hoses and must use price codes x4-x9.
 - Price code x4 must be assigned to the low feedstock (0%) hose.
 - Price code x5 must be assigned to the high feedstock (100%) hose.
3. Variable blenders with no side hose
 - Hoses 1-5 are blended products and must use price codes x4-x9.
 - Price code x4 must be assigned to the low feedstock (0%) hose.
 - Price code x5 must be assigned to the high feedstock (100%) hose.

Important Notes

- For the above price codes x=1, 2, or 3.
- Each price code may only be assigned to one hose per side of a dispenser (Example; price code 1 cannot be assigned to both hoses 1 and 3 of pump 6).
- Variable blenders with less than 5 products must still be configured as 5 hose blenders. Unused positions must be assigned price code 99. If the variable blender is a 3 product blender, hoses 1, 3, and 5 would be assigned the actual product and price codes and price code 99 would be assigned to hoses 2 and 4. The unused hoses must be assigned a loaded product number and the price code (99) must have a level 0 and 2 loaded.

Troubleshooting Tips

ICRs won't work with the Wayne blenders.

Possible cause: All pulser units, fill limits, card limitations, etc. are not in the same units (gallons or dollars). Check the data tables and the **PUMP.BIN** configuration.

The Wayne EC Cabinet to SCII communications will not come up or the Wayne dispensers will not work properly.

Possible cause(s):

- Wayne dispenser addressing doesn't start with 1.
- In the Wayne Data Distribution Box, a BYPASS/AUTO switch that is not wired to a dispenser is in the AUTO position.
- Incorrect port assignment, improperly configured port jumper patch, defective port, wrong or defective cable from the Wayne EC Cabinet to the Site Controller.

- If prices were loaded in the dispensers with a Wayne Console, they may have to be removed before the dispensers will work properly.
- If the problems occurred after a dispenser's Price Codes were changed, REBOOT the Site Controller and cycle power to the dispenser.

After a price change, prices do not change at the dispensers and/or all or some of the hoses won't reset.

(Keep in mind that it is normal for the prices not to change until the dispenser has been authorized and goes through reset.)

Possible cause: Communication errors with Interface. May need to clear the RAM on the Wayne 2400 CPU and REBOOT the Site Controller.

Unassigned transactions or "Malloc out of buffer" crashes when the Wayne EC Cabinet is connected to the SCII.

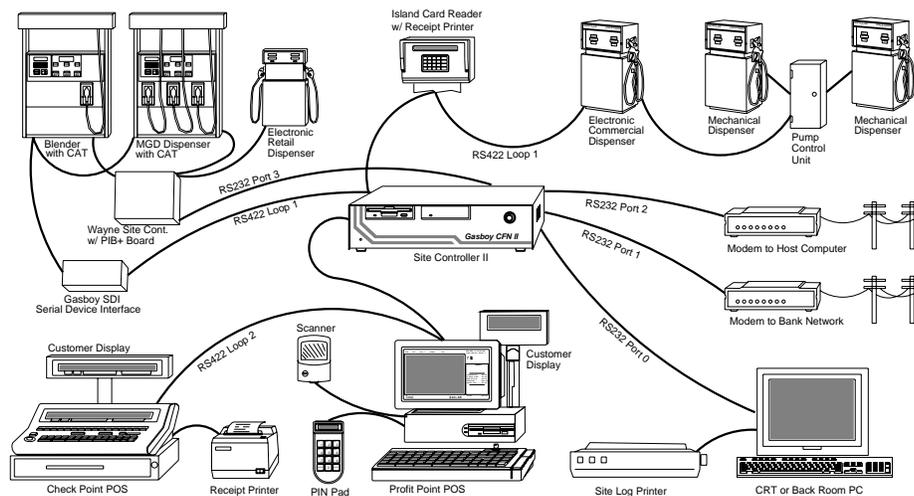
Possible cause: Bad or wrong revision PIB/Plus board in the Wayne EC Cabinet.

7 SDI/Wayne CAT Interface

Overview

The interface from the Gasboy SCII/CFN3 to the Wayne CAT (Wayne's Pump Card Reader) uses a device called the Gasboy SDI (Serial Device Interface). This device translates Wayne CAT messages to Gasboy Reader messages.

The Gasboy SDI box has two RJ handset style connectors on one end to connect to the Gasboy RS-485 loop. On the other end there is a DB-25S connector which connects to the Wayne CATs. The SDI is powered by an external power supply which connects to the SDI box by way of a circular DIN connector. The power supply plugs into an 110VAC outlet, which should be on the same phase and referenced to the same ground as the Gasboy Site Controller. The box also contains switches for setting the system configuration.



Use this manual if running SCII software version 2.2 and above or SCIII software version 3.0 and above.

Note: Because of loads on the resistors, one SDI box can only handle up to 6 CATs. If you have 12 CATs, you will need 2 SDI boxes. Also, there can be only one SDI with CATs per DB25 connection.

Installation

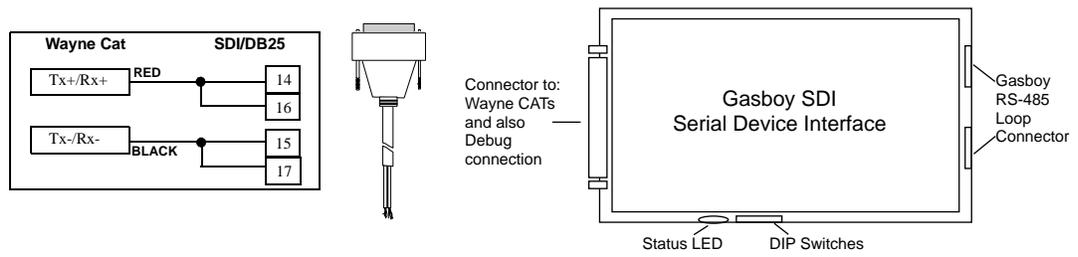
Set the CAT address to match reader address, regardless of what the `FIRST_ADDRESS` parameter is set to. CAT number 1 responds as reader number 1, number 2 as 2, etc.

If a Master Security Module is used, connect it to the Wayne 485 loop along with all the CATs. Connect this to the SDI box DB25 connector using the supplied cable. You must use the Master Security Module if you need data encryption for debit cards.

Connect the Gasboy RS485 loop into one of the phone-type jacks in the SDI box. Other Gasboy devices, including additional SDI boxes can be connected to the same Gasboy loop. The Gasboy loop is the only connection that can have more than one SDI.

There can be only 1 SDI per DB25 loop. A single SDI unit can handle up to 6 CATs and one security module (if DES encryption is used). A second SDI box is needed to handle each additional 6 CATs. If more than one SDI is used, a security module is also required for each additional SDI.

The CAT display is 2x16, you will also need the Merit/CAT driver in the operating system.



Setup

In order to support the Wayne CAT interface, a version of the SDI driver which is a subset of the actual driver in the Site Controller has been included. Use the commands `ENABLE SDI`, `DISABLE SDI`, `DOWNLOAD SDI`, and `SEND SDI`.

TABLE.BIN

Set the number of SDIs to be polled by setting the number of SDIs in `TABLE.BIN`. For one SDI you must leave at least 236 bytes of free space as reported by `TABLE.BIN`. For each additional SDI you must leave 118 bytes more.

Application files

For each Wayne interface you need an application binary file and a parameter file. These are stored in the root directory of the Site Controller. For a SCII, the location would be `C:\XBIN`. For a CFN3 the location would be `C:\SC3\XBIN`.

Application Binary file

The application binary for SDI #1 will have an extension of 'B01'. For example, `CAT.B01` would be a correct application binary name for SDI #1. There should only be one file that has B01 in the directory. A second SDI (SDI#2) will have a binary file called `CAT.B02`. The files are identical with two different names. If you need to create the `CAT.B02` for the second SDI, copy the `CAT.B01` file and name it `CAT.B02`.

For SCII:

1. C* **cd xbin**
2. C:\xbin\ **copy CAT.B01 CAT.B02**

For SC3 on OS/2:

1. From the Menu bar at the top of the screen select Command Prompt
2. Select OS/2 window
3. At the prompt enter:
 [C:] **cd SC3\Xbin**
 [C:\SC3\XBIN] **dir** *check to make sure you see the CAT.B01 file*
 [C:\SC3\XBIN] **copy CAT.B01 CAT.B02**

For CFN3 on NT:

1. From the Start button in the lower left, select **Programs->Windows NT Explorer**.
2. Double click on the **SC3** folder.
3. Double click on the **XBIN** folder.
4. Click once on the file **CAT.B01** to highlight it.
5. From menu bar, select **File->Copy**, This will create a file at the bottom of the directory called "Copy of CAT.B01."
6. With this file highlighted, from the menu bar, select **File->Rename**.
7. **Enter CAT.B02**. Now you should have two CAT.B0# files.

Parameter files

Parameter files begin with 'A' instead of 'B', so CAT.A01 would be the parameter file name for SDI unit #1. The site will attempt to keep the SDI loaded with the correct application and parameters. Remember to put file CAT.A01 in the XBIN directory using the correct location for your computer (see Application files above).

You must use the parameter file to assign the addresses. The following is the default parameter file for CAT.A01:

```
ID=CAT 1-6
FIRST_ADDRESS=1
LAST_ADDRESS=6
(no spaces adjacent to equal sign, use different numbers if appropriate)
```

The second SDI (SDI#2) parameter file (CAT.A02) would contain the following:

```
ID=CAT 7-12
FIRST_ADDRESS=7
LAST_ADDRESS=12
```

The SDI controls all CATs in the specified range, inclusive. The maximum range is 6 CATs per SDI (i.e. 1-6, 7-12). No other data should be in the file.

To modify the existing CAT.A01 file use a text editor. To add an additional parameter file either create a new file named CAT.A0n where 'n' is the address of the SDI and enter the information. Or you can copy an existing application file and then edit it. For example, CAT.A02 would be the parameter file for SDI#2.

The text editor for the Site II is FRED, see the SCII, versions 2.2 and above, Manager's Manual for instructions. The text editor for OS/2 is available from on OS/2 window. See the SC3

Manager’s Manual for OS/2, chapter 16 for more information. The text editor on NT is either NotePad or WordPad. See the CFN3 Manager’s Manual for NT, chapter 16 for more information.

Make sure there is only one .B0’n’ and one .A0’n’ for each SDI box.

If you want to force the site to reload the application, DOWNLOAD SDI n where ‘n’ is the SDI number. This will force a download.

SDI status will show up in the gate section of diagnostics. Use the command:

Print Diagnostics 12 (P Di 12)

to display the SDI status.

Animation sequences

The SDI is capable of several graphic sequences. The graphic CAT comes embedded supporting the following:

- ~C = insert card
- ~R = receipt printing
- ~N = remove nozzle
- ~n = replace nozzle
- ~L = remove nozzle and lift lever
- ~W = car wash
- ~S = press START
- ~B = spinning clock
- ~P = pump is pumping

Graphic sequences are entered into either the READER program or broadcast messages.

Using the READER program, to display an insert card graphic, place a ~C in the Insert Card step as illustrated below. To insert spinning clock while the customer’s card is being verified, insert a ~B into the Verify Card step. The words will display on the top of the screen with the graphic under the words.

#	Ty	S/D	DISPLAY	WHILE ENTERING	OPTIONS
1	1	!	INSERT CARD~C	!	!
2	3	6	ENTER YOUR PIN	!YOUR PIN	! Optional Auto-enter Masked
3	7	7	ENTER ODOMETER	!ODOMETER	! Optional
4	2	2	SELECT PUMP NUMBER	!SELECT PUMP	!
5	9		!Verifying Card...~B	!	!
6	10	!	!	!	!
7	16	2	! [PRODUCT]	!	!
8	19	2	!PUMP #XX IS READY	!	!
9	13	2	! We Thank You	!	!
10			!-----END-----!	!	!

Checking the revision level of the Vista Card terminal

For the SDI interface to work with the Wayne CAT, the revision level of the Vista Card terminal must be greater than 50. To check the revision level:

1. Switch OFF the power to the Vista Card terminal.
2. While holding down any key on the keypad, switch ON the power to the Vista Card terminal. Hold the key down until the display reads “REV”, then release the key.
3. The unit will then enter the self test mode. It will wait 25 seconds for the response to self test prompts, then proceed to the next test (after the last test) revert to on-line mode.

The first display in the self test shows:

```
REV XXX XX/XX/XX
ADDRESS = XX
```

The top row is the Vista Card terminal software revision level and the bottom row is the currently assigned terminal address for the card processing terminal communication data link. The top line must display the revision level of 50 or greater.

Press to exit.

Follow the instructions in the manual Installation Operation, Vista Series from Wayne Dresser for completing the self test.

Site Controller Software Configuration

Version 2.2 or later of the SCII or version 3.0 or later for the CFN3 software is required to run a Wayne CAT. The CAT should be on the RS-422 port.

All readers that are to be CATs must be set up in the Reader configuration to be device type Wayne CAT. The Reader Parameter "TYPE" (device type) must be changed to 8, for Wayne CAT.

Reader Addresses

No reader can be set to the address of 30, that is reserved for the Master Security Module. The reader that would have been 30, give the address of 40. The Site Controller will read the address as 30.

Keypad

The keys of the CAT keypad can be configured for different functions with the Tokheim DPT/Wayne CAT keyboard layout item on page 4 of the Site Controller's SYS_PAR program. The characters that select different functions are shown below. Note that these characters are case-sensitive:

Character	Function
0-9	Numeric digits 0-9
.	Decimal point
E	ENTER
C	CLEAR
Y	Yes
N	No
\$	Cash inside
c	Cash outside
D	Debit inside
d	Debit outside
B	Credit (bank card inside)
b	Credit outside
X	CANCEL
x	CLEAR/CANCEL (CLEAR if data entry started; else CANCEL)
H	Help
h	Help/Decimal (Decimal if data entry started; else Help)
n	No/CANCEL (No if in yes/no state; else CANCEL)
S	Start
u	unused key

The numbers of the keypad keys on the CAT are:

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20

Note that keys on the left half of the keyboard - that is: 1, 2, 3, 6, 7, 8, 11, 12, 13, 16, 17, and 18 - cannot be changed..

The default function arrangement of the CAT keypad is:

1	2	3	u	b
4	5	6	\$	B
7	8	9	N	Y
C	0	E	H	X

The string that would be typed into the Tokheim/DPT/Wayne CAT keyboard layout item in SYS_PAR to give the CAT keypad function arrangement shown above is:

123ub456\$B789NYCOEHX

Refer to the *SCII* or *CFN3 Configuration Manual* for more information.

SDI Box Switches

The SDI box contains a switch for setting the SDI box number and for clearing the unit's memory. Switch functions are:

1	2	3	4	5	6	7	8
ADDR	ADDR	ADDR	ADDR	ADDR	DLD	MODA	RESET
4	3	2	1	0		MODB	

MODA/MODB are on switch 7, RESET on switch 8.

For Wayne CAT, SDI #1, make all switches to OFF (open).

For Wayne CAT, SDI #2, make position 5 ON (closed), all others OFF (open).

To clear application memory:

(Do this under instruction from qualified support engineer only)

1. Close switch position 6
2. Close switch position 8
3. Open switch position 8
4. Wait a few seconds
5. Open switch position 6

SDI LED Display

The SDI unit has a single LED located next to the switch assembly. This LED is used to display the status of the SDI unit and the Wayne CAT units. The LED display consists of a series of blinks and delays that show the site status. SDI unit status is shown using a slow or fast blinking LED with no delay between blinks. SDI run time status is shown by a series of 1 to 4 blinks in a group followed by a delay between groups. The display codes are:

SDI Unit Status

Slow steady blink	SDI unit is ready; but needs application loaded
Fast blink	SDI unit has problems; Call your service representative

SDI Run Time Code

Number of Blinks	Status (with delay between group)
1	Site down; all CAT's down
2	Site up; all CAT's down
3	Site down; some CAT's up
4	Site up; some CAT's up (normal operation)

Equipment provided

- This documentation
- SDI Box
- SDI power supply w/ AC power cable
- Interface cable for the Wayne CAT's w/ two wires marked plus and minus.
- Disk with Wayne CAT software

8 Pump Control Unit

EXPMUX CPU Board

Part number: C05837

LEDs

LED	Color	Function
DL1	green	reset high
DL2	green	battery okay
DL3	red	422/485 receive
DL4	red	422/485 transmit
DL5, 8, 11, 14	red	slow flow, pump 1, 2, 3, 4
DL6, 9, 12, 15	red	fast flow, pump 1, 2, 3, 4
DL7, 10, 13, 16	red	submersible, pump 1, 2, 3, 4

Switches

DIP switch banks B and C on the EXPMUX CPU board set options latched in at power-up time:

DIP Switch Bank B

Position & Definition		Setting(*=customary)
1-4	address	see below
5	pulser type	closed
6-8	relay	closed

Address	B-1	B-2	B-3	B-4
1	cl	cl	cl	cl
2	op	cl	cl	cl
3	cl	op	cl	cl
4	op	op	cl	cl
5	cl	cl	op	cl
6	op	cl	op	cl
7	cl	op	op	cl
8	op	op	op	cl
9	cl	cl	cl	op
10	op	cl	cl	op
11	cl	op	cl	op
12	op	op	cl	op
13	cl	cl	op	op
14	op	cl	op	op
15	cl	op	op	op
16	op	op	op	op

DIP Switch Bank C

Position & Definition		Setting(*=customary)
1-4	pulser enabled (pumps 1-4) (see note below)	closed=after reset is complete open=upon activation
5	---	
6	dead man timer	*always open=enabled
7	---	
8	test mode	*closed=no open=yes

Note: In connection with pulser enabled, there are two error codes, each with three characters, that can show up in the error column on a transaction printout. The reset-failed-to-start transaction code is \$D2 through \$DF, and the reset-failed-to-complete transaction code is \$E5 through \$EF (\$ indicates hexadecimal). The last character in each code (2 through F or 5 through F) is the number of seconds the PCU waited for reset to start or complete. This numeric character is incremented by one each time the PCU reset-to-start/complete times out, until the maximum time-out of 15 (15 is F in hexadecimal counting) seconds is reached.

Test Mode. When test mode is activated with switch C-8, switch C-5 determines the relay limits:

C-5	Function
open	pump slows at 500 pulses and turns off at 510 pulses
closed	pump slows at 50 pulses and turns off at 60 pulses

In test mode, switches C-6 and C-7 select the pump to be tested:

Pump to Test	C-6	C-7
1	closed	closed
2	open	closed
3	closed	open
4	open	open

Jumpers

Jumper	Setting	Setting	Default
K1	installed=battery connected	removed=battery disconnected	installed

CMOS CPU Board (old style)

Part number: C05321

LEDs

LED	Color	Function
L1	red	422/485 transmit
L2	red	422/485 receive
L3, 4, 5, 6	red	submersible & slow flow, pump 1, 2, 3, 4
L7, 8, 9, 10	red	fast flow, pump 1, 2, 3, 4

Switches

DIP switch banks B and C on the CMOS CPU board set options latched in at power-up time.

DIP Switch Bank B

Position & Definition		Setting(*=customary)
1-4	address	see below
5	address	*always closed
6	address	*always closed
7	baud rate	*open=9600 closed-see below
8	baud rate	*closed=9600 open-see below

Address	B-1	B-2	B-3	B-4	B-5	B-6
1	cl	cl	cl	cl	cl	cl
2	op	cl	cl	cl	cl	cl
3	cl	op	cl	cl	cl	cl
4	op	op	cl	cl	cl	cl
5	cl	cl	op	cl	cl	cl
6	op	cl	op	cl	cl	cl
7	cl	op	op	cl	cl	cl
8	op	op	op	cl	cl	cl
9	cl	cl	cl	op	cl	cl
10	op	cl	cl	op	cl	cl
11	cl	op	cl	op	cl	cl
12	op	op	cl	op	cl	cl
13	cl	cl	op	op	cl	cl
14	op	cl	op	op	cl	cl
15	cl	op	op	op	cl	cl
16	op	op	op	op	cl	cl

Baud Rate	B-7	B-8
not used	closed	closed
9600	open	closed
1200	closed	open
300	open	open

DIP Switch Bank C

Position & Definition		Setting(*=customary)
1-4	pulser enabled pumps 1-4	*closed=after reset is complete open=upon activation
5	CRC required	*open=required closed =not required
6	dead man timer	*always open=enabled
7	_____	
8	test mode	*closed=no open=yes

Jumpers

Jumper	Setting-IN	Setting-OUT	Default
K1	normal	battery test	installed
K2	battery	no battery	installed

I/O Board

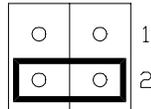
The part number of the original PPC I/O board is C05668.

Jumpers

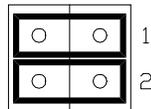
Jumper	Position	Position	Default
K1-K4	(see below)		
K-5	in=low speed main pulsers	out=high speed main pulsers	out

K1-K4 power pulsers 1-4.

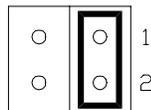
For pulsers with mechanical switch closures (such as VR 1871 series):



For electronic pulsers requiring +12 Volt power (such as VR 7671 series):



For pulsers with an external power supply (such as VR 7874 series):



Note: If V/R totalizers brackets are present, the I/O PCB must be jumpered correctly or damage will occur to the I/O.

9 9800/9820 Pump Dispenser

Requirements

- RS-485 PCB is required for all CFNs (1-3).
- Pulser Interface PCB is required for Series 1000, System 'A', or other outside card systems (i.e. Petrovend).
- C06394 CPU will work in place of any of the 7 other versions.
- C06397 power supply will work in place of other 3 versions.

CPU Board

LED Indicators

LED	Function
L1	AUTH1 - side 1 AC authorization present
L2	SLOW1 - side 1 slow flow solenoid
L3	FAST1 - side 1 fast flow solenoid
L4	SUBM1 - side 1 submersible starter relay
L5	AUTH2 - side 2 AC authorization present
L6	SLOW2 - side 2 slow flow solenoid
L7	FAST2 - side 2 fast flow solenoid
L8	SUBM2 - side 2 submersible starter relay
L9	PUL1A - side 1 pulser, channel A
L10	PUL1B - side 1 pulser, channel B
L11	HAND1 - side 1 handle switch
L12	PUL2A - side 2 pulser, channel A
L13	PUL2B - side 2 pulser, channel B
L14	HAND2 - side 2 handle switch

Jumpers

Jumper K1 is set according to the size of the RAM IC in socket U19. At this time, only the 2K size is being used:

RAM	Jumper Pins
2K	across 2 and 3
8K	across 1 and 2

Test Points

Test points are provided for voltage measurements.

Test Point	Function
TP1	+5VDC
TP2	DC ground

Switches

Switch settings should be changed with the power switch OFF. The new settings are read by the CPU board when the power is turned ON again.

Switch Bank 1

Position & Definition		Setting(*=customary)
1	baud rate	*open=9600 closed=1200
2	communication mode	*open=on-line closed =standalone
3-4	leak detect delay	see below
5	_____	
6	authorization activates	*open=no closed=yes
7	totalizers	*open=normal closed=reset
8	_____	

Note: 6 authorization activates must be open for CFN Series.

Delay Time	1-3	1-4
0	closed	closed
4	closed	open
5	open	closed
6	open	open

Switch Bank 2

This bank serves two purposes:

- address setting when communicating on the Gasboy RS-485/RS-422 loop, or
- pulser output rate selector when pulser data is sent to a fuel management system other than a Gasboy CFN.

Address	2-1	2-2	2-3	2-4
1	cl	cl	cl	cl
2	op	cl	cl	cl
3	cl	op	cl	cl
4	op	op	cl	cl
5	cl	cl	op	cl
6	op	cl	op	cl
7	cl	op	op	cl
8	op	op	op	cl
9	cl	cl	cl	op
10	op	cl	cl	op
11	cl	op	cl	op
12	op	op	cl	op
13	cl	cl	op	op
14	op	cl	op	op
15	cl	op	op	op
16	op	op	op	op

Pulse Rate	2-1	2-2	2-3
1	cl	cl	cl
10	op	cl	cl
100	cl	op	cl
250	op	op	cl
500	cl	cl	op
1000	op	cl	op
none	cl	op	op
none	op	op	op

LCD Board

Jumpers

Display Address K1

Hose	Jumper Pins
1	across 1 and 2
2	across 2 and 3

Display of Units

Units	K2	K4	K6
whole units	1-2	1-2	1-2
tenths - .0	2-3	1-2	1-2
hundredths - .00	1-2	2-3	1-2
thousandths - .000	1-2	1-2	2-3

Display also depends on pulse rate (latest software) for stand alone mode. Un-used digits are masked.

Site Controller Configurations

Site Controller I

Site Controller I version 4.0 software and above will work with 9800 pumps.

Normally the Site Controller I is configured at the factory for the pump types. The pump types are configured at TABLE 24, OFFSET $18+(PMP\#-1)\times 4$. Refer to the *Site Controller I Technical Manual* to help understand the following CONFIGS.

- a) 2 sided, 1 hose per pump. Byte = 64
- b) 1 sided, 1 hose per pump. Byte = 74
- c) 2 sided, 2 hose per pump. Byte = 65
- d) 1 sided, 2 hose per pump. Byte = 75
- e) 2 sided, 3 hose per pump. Byte = 66
- f) 1 sided, 3 hose per pump. Byte = 76

SCII and CFN3

Configure the 9800/9820 as a Gasboy SPD. Use type 2 PCU slots. Add option 15 for singles.

Manual mode - Gasboy 9800

1. Turn off power to the pump.
2. Unlock and remove the front panel.
3. Remove the two bolts located over the tabs of the bezel assembly. Lift the bezel assembly upwards and out to remove.
4. Loosen the two screws located on the left and right door support brackets and pivot display panel down.
5. Locate the switch pack SW1 on the CPU board.
6. Close switch position 2 on SW1 for stand-alone mode (open=on line).
7. Restore power to pump.

