



MDE-4820K

8 PORT COMMVERTER

OPERATION AND INSTALLATION MANUAL

This document P/N 817423401 is based on Orpak's 8 Port CommVerter Operation and Installation Manual P/N 817423400



SAFETY CONSIDERATIONS

Read all warning notes and instructions carefully. They are included to help you installing the Product safely in the highly flammable environment of the fuel station. Disregarding these warning notes and instructions could result in serious injury or property damage. It is the installer responsibility to install, operate and maintain the equipment according to the instructions given in this manual, and to conform to all applicable codes, regulations and safety measures. Failure to do so could void all warranties associated with this equipment.

Remember that the fuel station environment is highly flammable and combustible. Therefore, make sure that actual installation is performed by experienced personnel, licensed to perform work in fuel station and at a flammable environment, according to the local regulations and relevant standards.

WARNING - EXPLOSION HAZARD

Use separate conduit for the intrinsically safe. Do not run any other wires or cables through this conduit, because this could create an explosion hazard.

Use standard test equipment only in the non- hazardous area of the fuel station, and approved test equipment for the hazardous areas.

In the installation and maintenance of the Product, comply with all applicable requirements of the National Fire Protection Association NFPA-30 “Flammable and Combustible Liquids Code”, NFPA-30A “Code for Motor Fuel Dispensing Facilities and Repair Garages”, NFPA-70® “National Electric Code”, federal, state and local codes and any other applicable safety codes and regulations.

Do not perform metal work in a hazardous area. Sparks generated by drilling, tapping and other metal work operations could ignite fuel vapors and flammable liquids, resulting in death, serious personal injury, property loss and damage to you and other persons.

CAUTION - SHOCK HAZARD

Dangerous AC voltages that could cause death or serious personal injury are used to power the Product. Always disconnect power before starting any work. The Product has more than one power supply connection points. Disconnect all power before servicing.

WARNING - PASSING VEHICLES

When working in any open area of fuel station, beware of passing vehicles that could hit you. Block off the work area to protect yourself and other persons. Use safety cones or other signaling devices.

WARNING

Components substitutions could impair intrinsic safety.
Attaching unauthorized components or equipment will void your warranties.

CAUTION

Do not attempt to make any repair on the printed circuit boards residing in the Product, as this will void all warranties related to this equipment.

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1 – General Description

1.1 Scope

The 8 port CommVerter unit, referred to as “CommVerter” throughout this document, is a component within the FuelOmat system. It serves as a universal and modular hardware interface between the Ethernet communication from the Station Controller (FCC) and the other devices communication interfaces such as RS-485/422, Current Loop, etc.

As a communication interface unit, the CommVerter converts the Ethernet® communication protocol of any station devices into RS-485/422, Current Loop or Tokheim® communication interfaces and vice versa.

The CommVerter includes several interface boards designed to support each communication interface. Some of these interface boards can be configured for different protocols by means of built-in Web pages.

The CommVerter unit is designed to survive the harsh forecourt environment. The RS-485 module uses Spark Gaps protection for the links, and 1.5 KV isolation between the office controller and the forecourt devices.

1.2 Manual Organization

This manual provides information on the technical characteristics, installation and operation of the CommVerter unit. This document deals with the physical level of the communication that is, connecting the CommVerter unit to a network. It does not cover any software required to configure the system. The manual is organized as follows:

Section 1. General Description: Includes general information regarding the CommVerter unit, its components and functionality.

Section 2. Applications: Describes the types of communication where the CommVerter unit provides interface applications.

Section 3. Description: Includes detailed information regarding the CommVerter unit and its specifications.

Section 4. Installation and Removal: Provides instructions regarding the installation (and removal) of the CommVerter unit at the station office.

Section 5. Setup and Configuration: Provides instructions concerning the instructions for the setup and configuration of the CommVerter unit.

Section 6. Checks and Troubleshooting: Provides several recommended steps for checking the system operability and for basic troubleshooting.

1.3 General Description

The CommVerter is a Communication Converter, interfacing serial Forecourt devices such as pumps and tank level gauges to the station automation system through a standard Transmission Control Protocol/Internet Protocol (TCP/IP) Ethernet port.

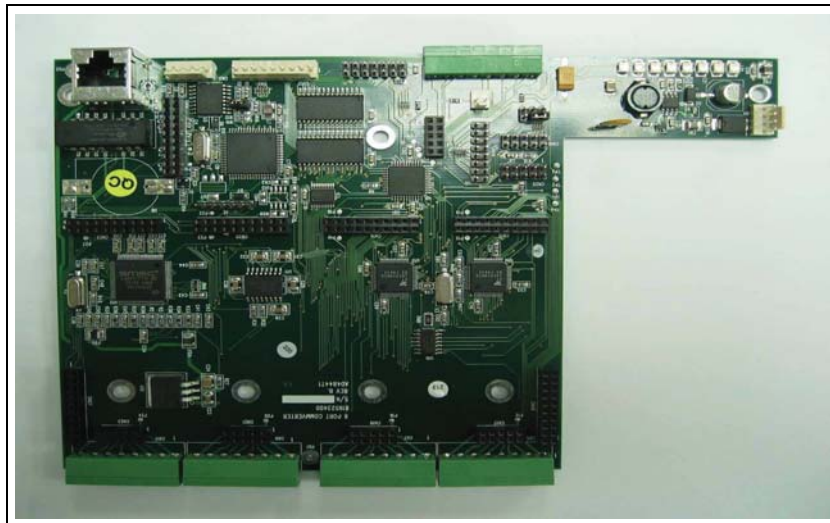
Unlike off-the-shelf Ethernet to Serial interfaces, the CommVerter is designed to function in the harsh environment of the petrol stations; eliminating ground loops, power surges and other Radio Frequency Interference/Electromagnetic Interference (RFI/EMI) noise to maximize the performance and reliability of the station automation solution. Each link is 'floating' and is DC isolated from all other links and has surge protection and enhanced filtering.

There are two CommVerter configurations: one which is supplied as an enclosed unit which includes an internal power supply (as shown in [Figure 1](#)) and the other as a PCB, which is installed in Gasboy®'s products (see [Figure 2](#)).

Figure 1: CommVerter – General View



Figure 2: CommVerter PCB - General View



The unit supports a combination of up to 8 serial links of various standards as required at the forecourt, including: RS-232, RS-485 and current loop.

All links are carried to the station automation controller over one Ethernet port.

The specific protocol for each of these forecourt devices is part of the station automation while the CommVerter unit is the physical serial interface for the specific devices.

One of the prime tasks of the CommVerter at the forecourt is to interface to the dispensers. The specific protocol for every dispenser type resides in the “pump server” software module of the station automation and is standard for all Gilbarco®’s home base controllers.

The CommVerter unit is part of Gilbarco’s complete station automation solution and is not an off-the-shelf standard product, but has a modular structure to enable flexibility for various petrol stations configurations and size.

The CommVerter is a platform with plug-in units to address each specific installation.

Petrol stations around the globe are dramatically different in many aspects and the CommVerter addresses all:

- Total number of dispensers – several CommVerter units can be installed at the same site.
- Number of different dispensers at a specific site – various plug-ins are used, according to the specific links that are required (RS-485, CL, Tokheim, etc.)
- Number of contactless tag readers (OrTR, UPI, MiTag) and outdoor printers that are needed at the petrol station (no more than 6 modules over one RS-485 link).
- Number of tank level gauges and other third-party serial devices such as payment terminals.

1.4 Interface Boards

Several types of interface boards are available to support each communication type. The configuration of the CommVerter for each application is determined by the type of the installed interface boards within. Select the CommVerter module suitable to the conversion method required at your station network. [Table 1](#) lists the available CommVerter interface boards.

Table 1: CommVerter Interface Boards

Pump Interface Boards	P/N	Gasboy P/N
4xCONTACTOR	819223481	
Current Loop	819223431	M09680B029
MPI-C+SUB	819223490	M09680B019
Nuevo Pignone (485)	819223485	M09680B031
RS-232	819223451	M09680B016
RS-232/485	819223441	
RS-422	819223471	M09680B030
RS-422 + SUB	819223472	
RS-485	819223460	M09680B017
5 V P.S. for 8-LAN switch	819523442	
Cetil	819223425	
Tokheim	819223420	M09680B028
Pumalan	819223445	

1.5 Specifications

IMPORTANT NOTICE

At a rate above 9600 bps, the communication protocol with the 8 Port CommVerter shall handle 250 bytes packets. The 8 Port CommVerter does not support a bytes stream flow at a rate higher than 9600 bps.

1.5.1 Communication Rates

The communication rates depend on the type of module.

No.	Module	Value
1	RS-232 Module	9600 bps max.
2	RS-485 Module	9600 bps max.
3	TCP/IP Module	100 Mbps (optional)
4	Current Loop 24 V 45 mA	9600 bps max.
5	Tokheim	9600 bps max.

1.5.2 Electrical

No.	Parameter	Value
1	Supply Voltage: Enclosed CommVerter unit PCB unit	110 – 230 VAC, 50-60Hz 15 to 24 VDC
2	Power Consumption	Typical 5W Maximum 25W
3	Protection	1.5 A Fuse, internal on board.

1.5.3 Mechanical Pump Rates

No.	Parameter	Value
1	Power supply output voltage to Pulsar Unit	12 VDC +/-20%
2	Power supply maximum output current	80 mA max
3	Pulsar Input High level voltage	10 to 16 VDC (standard) 4 to 10 VDC (require wiring changes)
4	Pulsar Input High level sink current (@15 V)	3 mA
5	Maximum pulse rate of MPI-C at 50% duty cycle	Up to 500 Hz
6	In use "ON" level (Input)	4 to 7 VDC
7	In use "OFF" level (Input)	-1 to 1 VDC
8	In use Input impedance	10 KOhm
9	In use-max Input current using external dry contact (5 VDC)	106 uA
10	In use-max Input current at 7 VDC	50 uA
11	12 VDC Output	25 mA max

1.5.4 Mechanical

No.	Parameter	Value
1	Dimensions (HxWxD)	140 x 180 x 50 (mm)

1.5.5 Environmental

No.	Parameter	Value
1	Operating Temperature	-30 °C to +55 °C
2	Operating Temperature (with power supply)	-20 °C to +50 °C
3	Storage Temperature	-30 °C to +70 °C

1.6 Protection

The CommVerter in its 485 communication port (refer to [Table 1](#) on [page 4](#)) is protected electrically against lightening and surges using transorbers and gas discharge (Arrosto) devices.

Additionally, grounding is required. Proper grounding is essential for protection to take place. For more information on grounding, refer to "[4.4 Grounding the CommVerter](#)" on [page 69](#).

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2 – Applications

2.1 Scope

This section provides the interfaces available between the CommVerter and several types of fuel pumps. This section also includes several applications for the CommVerter in different settings within the station. The CommVerter ensures proper communication between the FCC and the station devices in accordance with their communication protocols.

2.2 CommVerter System Architecture

2.2.1 General

The CommVerter system architecture consideration depends on the topology of the specific petrol station.

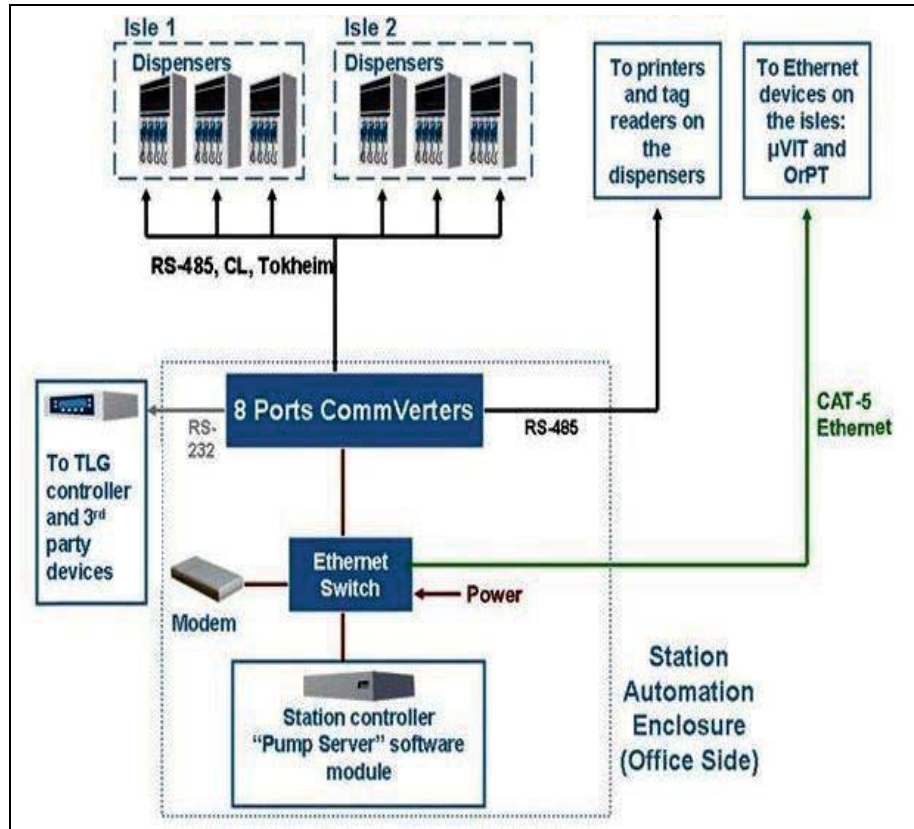
There are three main architectures:

- Centralized at the station office
- Moved to the isle side
- When using an OrPT

2.2.2 System Architecture 1: Centralized at the Station Office

The CommVerter is usually installed centralized at the station office together with the station controller. This topology requires serial links all the way from the office to each dispenser or other forecourt serial devices.

Figure 3: CommVerter System Architecture – Centralized



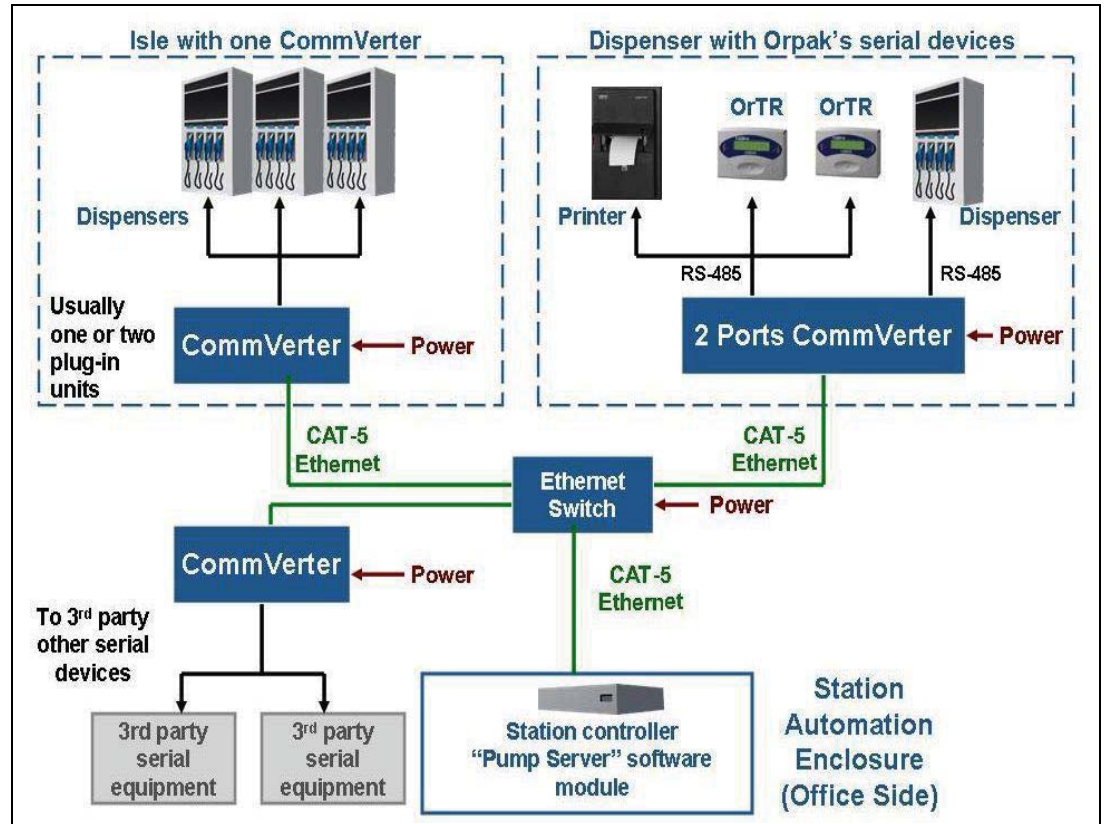
Note: TLG consoles may be connected also directly to the Ethernet Switch when available.

2.2.3 System Architecture 2: Moved to the Isle Side

In some applications, it is recommended to move the CommVerter to the isle side, carrying one Ethernet link and power cable to the isle and then split to the serial links required at each isle.

Such an architecture usually requires only one or 2 plug-in units for each CommVerter on an isle.

Figure 4: CommVerter System Architecture – Moved to Isle Side



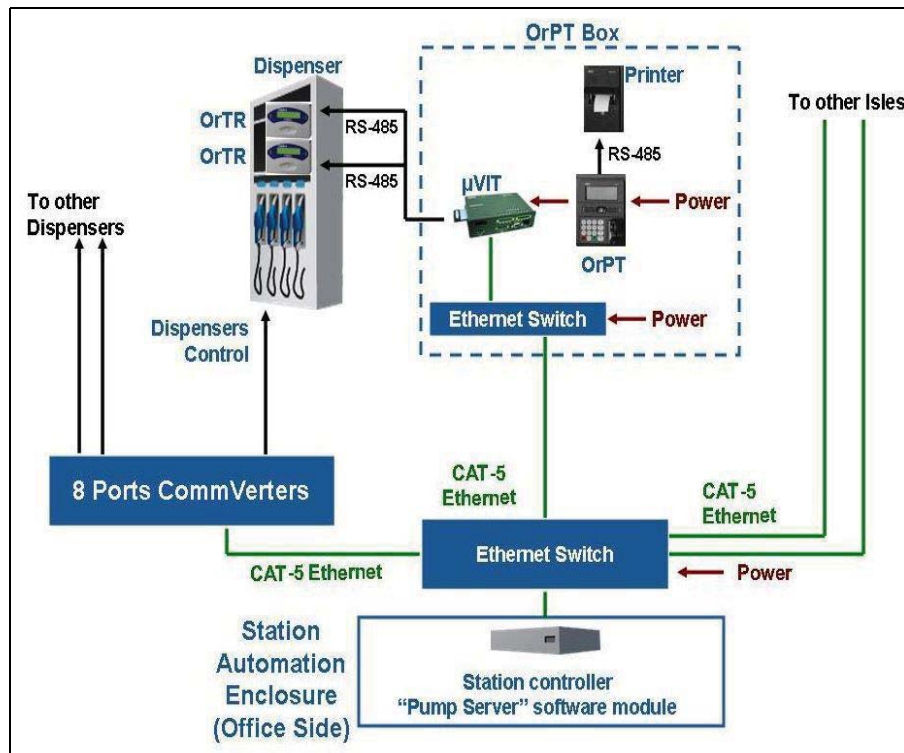
2.2.4 System Architecture 3: Using an OrPT

Other system configuration could be implemented when using an OrPT.

In this configuration, both the OrPT use a built-in Ethernet to RS-485 CommVerter, supporting serial forecourt devices on the isle such as printers and contactless tag readers.

These links provided by the OrPT could be off-loaded from the centralized CommVerter unit to minimize cabling and installation cost.

Figure 5: CommVerter System Architecture – Using an OrPT



2.3 Types of Fuel Pump and their Communication Method

The CommVerter is used as an interface for several types of fuel pumps, as listed below:

Pump/Dispenser manufacture (protocol)	EPROM version/ Model	Communication type	8 port communication Card P/N	No. of channels / board (include sub board)	Max Number of pump heads per channel
Aplab	2.21, Comm. card 1.4	RS-485	819223460	2	8
Aplab	Swadesh II				
Aspro	Galileo protocol	Current Loop	819223431	2	4
Avery	14	RS-485	819223460	2	4
Bennet	Mexico	RS-232	819223451	2	1
Bennet	USA	Current Loop	819223431	2	4
Bennet	Sauser ER5	Cetil	819523425	2	1
Cetil	EAS1	RS-485	819223460	2	8
Cetil	ER3	Cetil	819523425	2	1
Dong HWA (prime)		RS-485	819223460	2	
EMR3 (V.R.)		RS-232 +MPI-C	819223451 819223490	2	1
Europump	Wayne Dart protocol	RS-485	819223460	2	8
Falcon (LPG)	Wayne Dart protocol	RS-485	819223460	2	8
Fornovo (CNG)	Logitron Pumalan	Current Loop	819223460	2	4
FuelStar		RS-485	819223460	2	8
Gilbarco	China: B, BB	RS-485	819223431	2	4
Gilbarco	AC,JTA,NA,JEA,JT, SK700, Frontier F160 and F230 (India)	Current Loop	819223460	2	8
Gilbarco	Israel	Current Loop	819223432	2	4
Gilbarco	Sprint (India)				
Gasboy	USA	RS-422	819523471/2	2	4
Gasboy	USA	RS-485	819223460	2	8
Galileo (CNG)	GC21-XP	Current Loop	819223432	2	4
Hectronic ER3	EC2000/ER	Cetil	819523425	2	1
Hong Yang		RS-232		2	4
IPT (Turkey)		RS-485	819223460	2	8
L&T	MPD/QPD	RS-485	819223460	2	8
L&T	Sprint	RS-485	819223460	2	8
L&T	Z-Line, Pacemaker (18005 or 18011)	RS-485	819223460	2	8
L&T	Tulip (Mono and Dual)	RS-485	819223460	2	8
L&T	VMP (Mono and Dual)	RS-485	819223460	2	8
Maser	363M	RS-485	819223460	2	8
Midco	MPD/QPD (ST10 V22.1.0.3)	RS-485	819223460	2	8

Pump/Dispenser manufacture (protocol)	EPROM version/ Model	Communication type	8 port communication Card P/N	No. of channels / board (include sub board)	Max Number of pump heads per channel
Midco	Single (7.10.2.5)	RS-485	819223460	2	8
Midco	MMS	RS-485	819223460	2	8
Midco	Surefil	RS-485	819223460	2	8
MPI-C	Rev D		819223490	2	1
MPI	Orpak	RS-485	819223460	2	8
Mepsan	Unimep, ORION-C	RS-485	819223460	2	8
LG/ EnE	DC,GE,MT	RS-485	819223460	2	8
LPG 2A	Dart/Mepsan	RS-485	819223460	2	8
Novotec		RS-485	819223460	2	8
Nuovo Pignone	Blend 2003	RS-485	819223460	2	8
Nuovo Pignone	32032.008	RS-485	819223460	2	8
Nuovo Pignone	DXF	RS-422	819523471/2	2	1
Petrotec	CEM 03	RS-422	819523471/2	2	1
Petrotec CEM 03	HDX (Gilbarco)	Current Loop (45 mA)	819223431	2	4
Prime	500x,600x,800x	RS-485	819223460	2	8
PumaLAN	HT-Retrofit (005-44)	Pumalan	819223445	2	8
Pumptronics	Gilbarco	Current Loop	819223431	2	4
China Real Tech		RS-485		2	4
SAFE (CNG)	Wayne Dart protocol	RS-485	819223460	2	8
Salzkotten ER3	EC2000/ER	Cetil	819523425	2	1
S&B	V11:ZS 7xxx/6xxx/24xx,Clou	RS-485	819223460	2	1
Schlumberger		RS-422	819523471/2	2	1
Somo (EnE protocol)		RS-485	819223460	2	8
Tatsuno	MPD/QPD (ADAT,GDA,GDB,GSA,GSB,SSB)	RS-485	819223460	2	8
Tatsuno	Pooly (Non-space) 1.3	RS-485	819223460		
Tatsuno Benc		RS-485	819223460	2	8
Tokheim	UDC protocol, 262,32x,xP,BSA,D08,D4,EN	Tokheim	819223420	2	1
Tokheim Kaisen	L1+	RS-485	819223460	2	1
Tokheim 8800 (American Dispenser)		Tokheim	819223420	2	1
Yenen LPG	Wayne Dart protocol	RS-485	819223460	2	8
Wayne®	Dart (1/Vxx,G2,G3,V39x)	RS-485	819223460	2	8
Wayne	Vista, Hilex model	Current Loop	819223431	2	4
IFSF		USB ->LON or PCI->LON or RS232->LON			Max Allowed In LON

Note: For full communication parameters, please contact Gasboy's Professional Services at 1-800-444-5529.

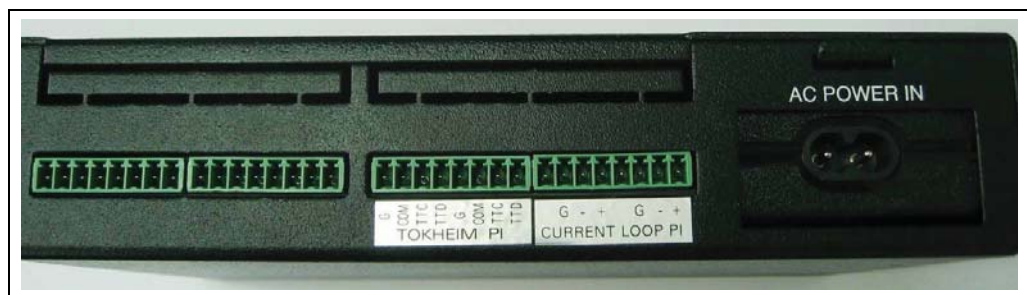
2.4 Connectors

2.4.1 General

The CommVerter in its basic version includes four separate connectors. Each connector supports up to two distinctive channels for every module. However, in RS-422 and Sub RS-422 modules, MPI-C and MPI-C + Sub, only one channel is supported.

A rear panel view of the CommVerter unit connectors is shown in [Figure 6](#).

Figure 6: CommVerter – Connectors



A general view of the CommVerter connectors in PCB configuration (without the casing) is shown in [Figure 7](#).

Figure 7: CommVerter PCB - Connectors



2.4.2 Mating a Connector

The CommVerter kit includes one size mating connectors to be wired in accordance with the selected fuel station configuration and consequently, the required conversion method.

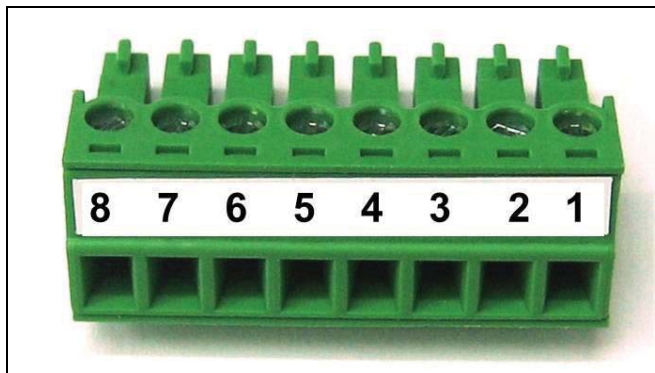
To wire a mating connector (see [Figure 8](#)), proceed as follows:

- 1 For all interface boards, use standard 8-pin Phoenix-type male connector to be connected to the CommVerter.
- 2 For Local Area Network (LAN) connection, use RJ-45 Category 5 (CAT5) LAN cable (not included in the kit).
- 3 Wire the connector in accordance with its pinout definition as described in the following paragraphs. The wiring shall be performed in accordance with the CommVerter configuration.

Note: The connector pinout definition (pin number on top, signal in second row) is provided when facing the connector, from right to left.

- 4 The following paragraphs provide the wiring definition of the ports. These wiring definitions are also shown on the connectors labels (see [Figure 6](#) on [page 13](#) and [Figure 8](#)). Verify compatibility before connection!

Figure 8: CommVerter – Connector

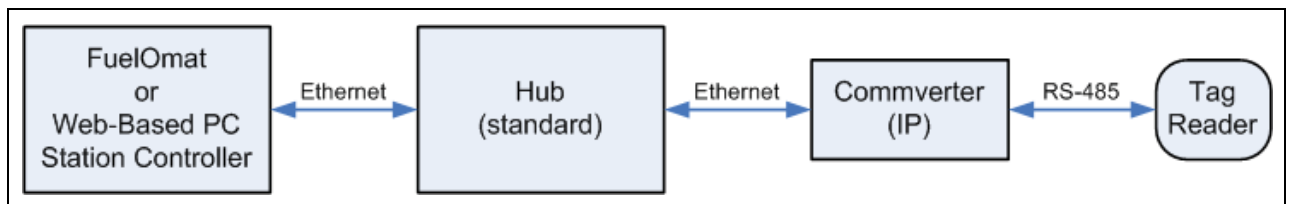


2.5 LAN to RS-485 Application

The LAN to RS-485 application is required when connecting fuel pumps and other serial devices to home base controller that uses TCP/IP communication. In this configuration, the RS-485 Two-Port module is installed within the CommVerter.

If several CommVerter units are to be connected to the FCC, a Hub must be added to the network in order to support several connections.

Figure 9: CommVerter – LAN to RS-485 Application

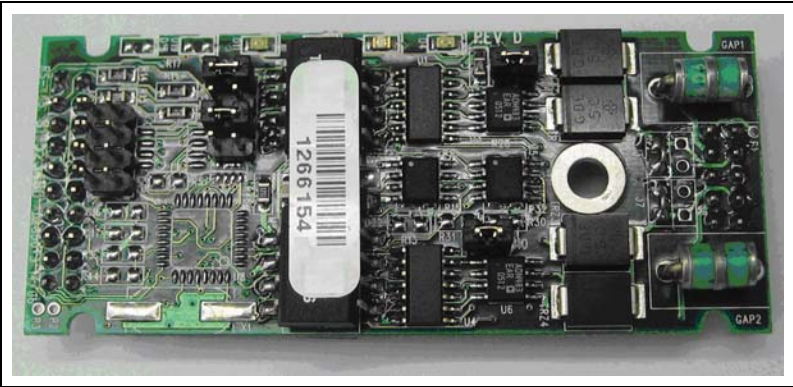


The CommVerter diverts the LAN communication to the relevant RS-485/422 device. The relevant module is addressed with its IP address, and a unique port is configured during the device setup. Interfaces using this mode of communication and conversion include Wayne Dart, Midco, L&T, Tatsuno, Aplab, and more.

The following table provides the configuration of the RS-485 pump interface board (CommVerter module) per type of pump.

CommVerter Module	Configuration
Aplab(485)	9600,8,N,1
Avery (485)	5787,8,E,1
Gasboy(485)	9600,8,N,1
L&T(485)	9600,8,N,1
Midco(485)	19200,8,N,1
Nuovo Pignone(485)	2400,8,O,1
Tatsuno(485)	19200,8,E,1
Wayne Dart(485)	9600,8,O,1

Figure 10: RS-485 Two Port Module



Note: This module does not require opening the CommVerter to view the Light Emitting Diode (LEDs) status and indications. The LEDs are displayed through the holes of the CommVerter cover. The LEDs indication can be seen in the appropriate column above the module installation position. The column holes should be seen at the right-hand side from the vents of the Power Supply, from top down.

LEDs Indication

Connector Side		
Channel 1	Rx	D4
Channel 2	Tx	D6
Channel 1	Tx	D1
Channel 2	Rx	D11
Blank		
Blank		

- LED Blinking – Communication ON
- LED OFF – No communication

2.5.1 RS-485 Connector Pinout

The following pinout is required for the LAN to RS-485 application, for all devices that supports RS-485 and RS-485 board.

(Revision D and above)

8	7	6	5	4	3	2	1
E	G	-	+	E	G	-	+
Channel 2				Channel 1			

2.5.2 RS-485 Module Jumpers

The jumpers in the RS-485 module can be set in two different configurations, as shown in [Figure 66](#) on [page 63](#). The configuration is determined by four consecutive jumpers on the board: J1, J2, J5, and J6.

Every pair of jumpers is allocated to a different channel:
J1 and J2 for Channel 1 / J5 and J6 for Channel 2.

The jumpers determine the transmission rate. Two transmission rates can be selected:

- 9600 bps
- 4800 bps

To determine the transmission rate, set the jumpers accordingly. Proceed as follows:

Set the baud rate jumpers in the RS-485 cards in accordance with the pumps that shall be connected to each channel (refer to [Table 1](#)).

The jumpers are: J1 for Channel 1 and J5 for Channel 2 (see [Figure 11](#) on [page 18](#)).

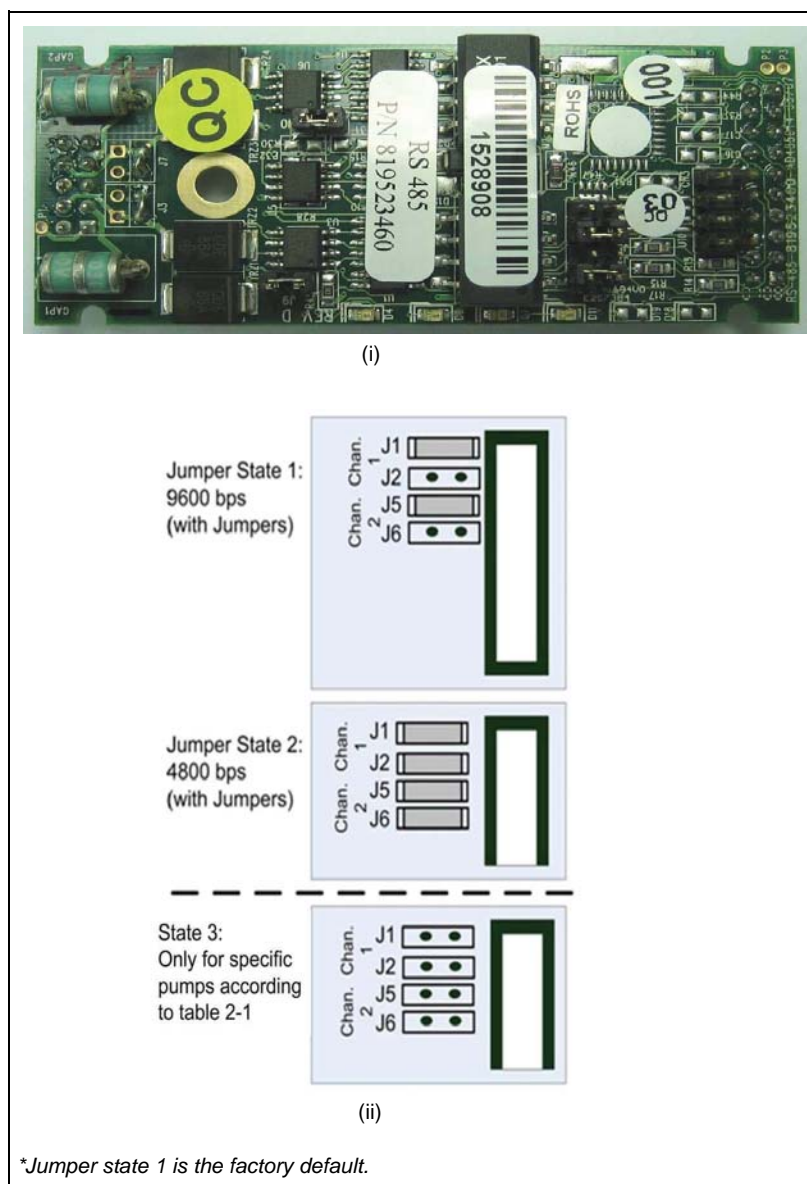
Table 1: RS-485 Module Jumpers Status (according to pumps)

8 port CommVerter	Aplab	Avery	Gasboy	MIDCO	L&T	NP	NP Blend	Tatsuno	Wayne Dart
Baud rate Jumper	Do not remove	Do not remove	Remove	Remove	Do not remove	Remove	Remove	Remove	Do not remove

The Echo jumpers are J9 and J10.

- If no jumpers exist echo is enabled. If connecting to a Gasboy dispenser, remove the jumper.
- If jumpers exist echo is disabled (factory default).

Figure 11: RS-485 Module Jumpers



RS-485 Electronic Device Pump (For any RS-485 Devices)

The wiring for the RS-485 electronic pump is provided as follows:

Figure 12 shows the specific wiring connections between the 8 Port RS-485 card and the RS-485 pump nozzle, and the terminals that differ from the Mechanical Pump. Figure 13 shows the parallel connection between two RS-485 devices and the Terminal Block.

Figure 12: RS-485 Electronic Pump - Wiring Diagram - 1

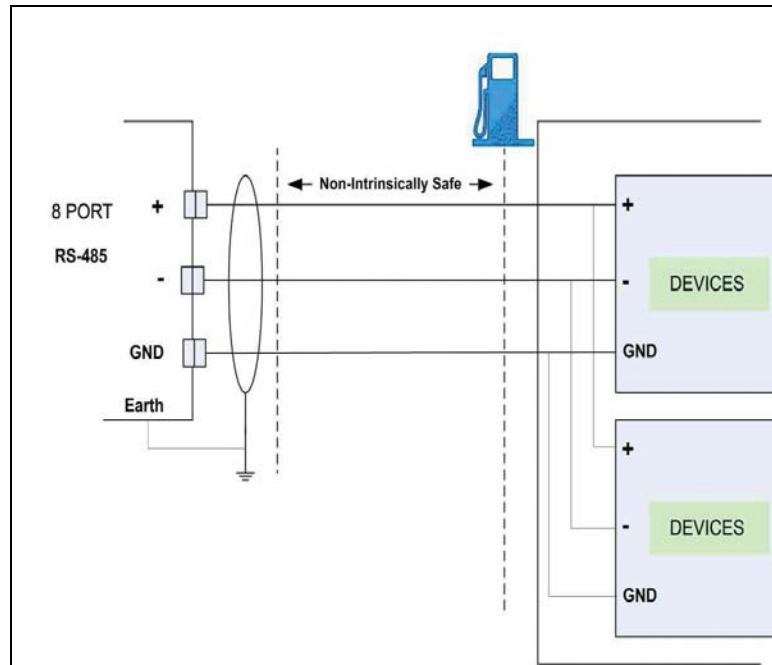
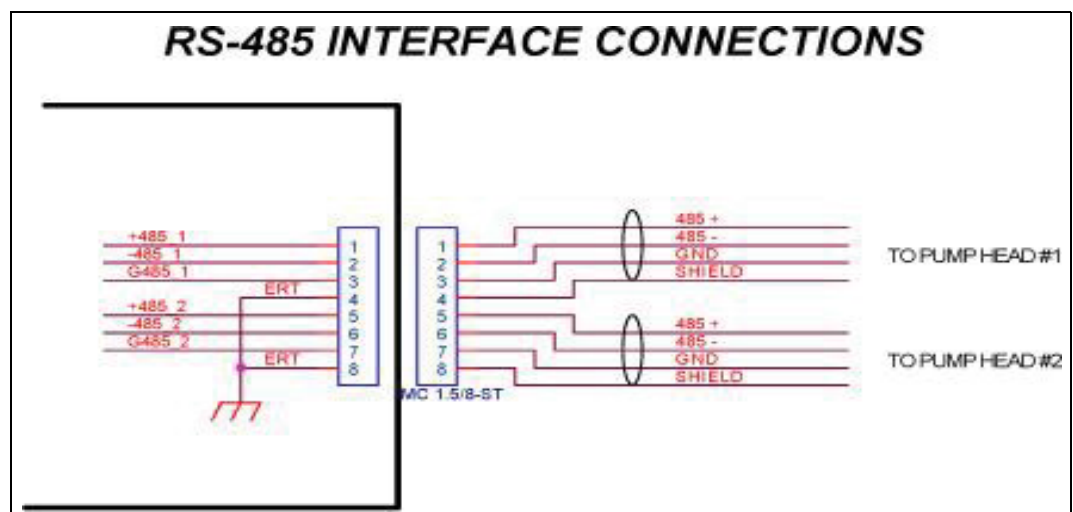


Figure 13: RS-485 Electronic Pump - Wiring Diagram - 2



2.6 LAN to RS-232 Application

The LAN to RS-232 application is required when the connection to specific devices, such as Tank Level Gauge (TLGs), is via RS-232. In this application, RS-232 Two-Port module is installed within the CommVerter.

Figure 14 shows a typical station configuration in which the CommVerter is used as an interface between the Station Controller and several station devices - TLG.

Figure 14: LAN to RS-232 Configuration

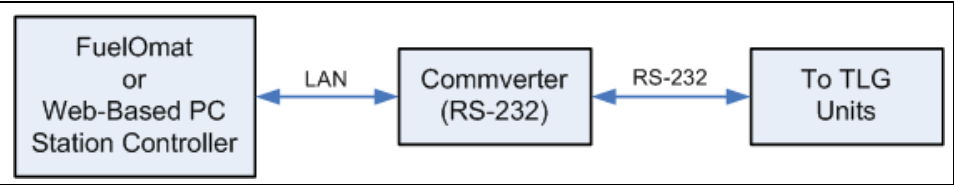
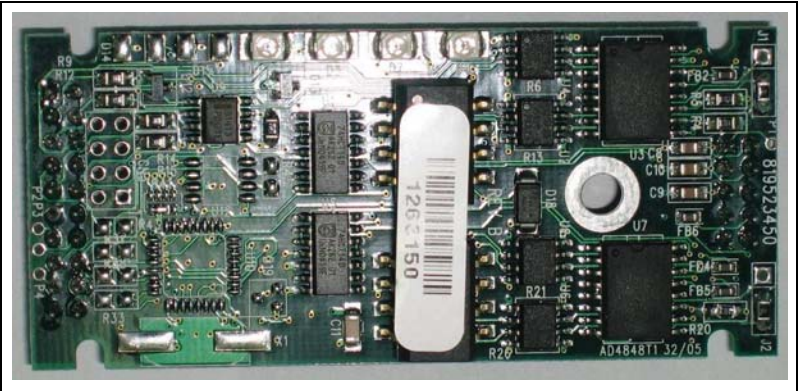


Figure 15: RS-232 Two-Port Module



Note: This module does not require opening the CommVerter to view the LED status and indications. The LEDs are displayed through the holes of the CommVerter cover. The LEDs indication can be seen in the appropriate column above the module installation position. The column holes should be seen at the right-hand side from the vents of the Power Supply, from top down.

LEDs Indication

Connector Side		
Channel 2	Rx	D8
Channel 2	Tx	D7
Channel 1	Rx	D3
Channel 1	Tx	D2
Blank		
Blank		

LED Blinking – Communication ON
LED OFF – No communication

2.6.1 RS-232 Connector Pinout

The following pinout is required for the LAN to RS-232 application.

8	7	6	5	4	3	2	1
G	D I/O*	Rx	Tx	G	D I/O*	Rx	Tx
Channel 2				Channel 1			

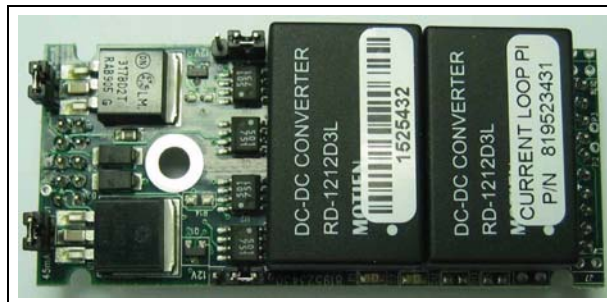
*D I/O stands for Digital Input/Output (for specific applications only).

2.7 LAN to Current Loop

2.7.1 LAN to Current Loop Application

The LAN to Current Loop configuration is applicable whenever the CommVerter includes a Current Loop Interface module. This communication conversion is used in stations with pumps such as Wayne, Bennett, or Gilbarco that use current loop communication.

Figure 16: Current Loop Two- Port Module



This module does not require opening the CommVerter to view the LEDs status and indications. The LEDs are displayed through the holes of the CommVerter cover. The LEDs indication can be seen in the appropriate column above the module installation position. The column holes should be seen at the right-hand side from the vents of the Power Supply, from top down.

LEDs Indication

Connector Side

Blank
Blank
Channel 1 Loop D1
Channel 2 Loop D7
Blank
Blank

LED ON – Loop between the module and the pump functional

LED Blinking – Communication ON

LED OFF – No communication

2.7.2 Current Loop Connector Pinout

The following pinout is required for the LAN to Current Loop application, for all Wayne and Gilbarco pumps.

8	7	6	5	4	3	2	1
E	G	-	+	E	G	-	+
Channel 2				Channel 2			

2.7.3 Current Loop Module Jumpers

The jumpers in the Current Loop module can be set in two different configurations, as shown in [Figure 17](#). The configuration is determined by the two jumpers at opposite sides of the board.

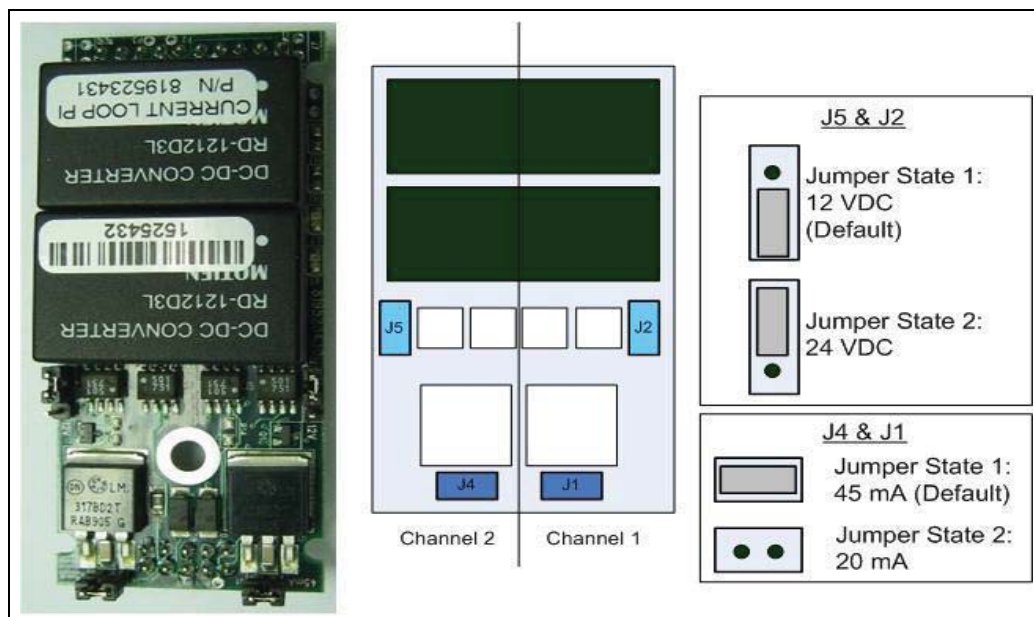
Each configuration provides different power supply voltage:

- 12 VDC
- 24 VDC (default)

In addition, there are four jumpers that determine the current level, as follows:

- Jumpers J1, J4 installed; (for old PCBs J3, J6 also installed) for 45 mA (default) consumption
- Jumpers J1, J4 not installed; (for old PCBs J3, J6 also not installed) for 20 mA consumption

Figure 17: Current Loop Module Jumpers



2.7.4 Current Loop Electronic Devices (Pump or any Current Loop Devices)

The wiring for the Current Loop electronic pump is provided as follows:

Figure 20 on page 24 shows the specific wiring connections between the 8 Port Current Loop card and Current Loop pumps. Figure 18 and Figure 19 show the connection between two Current Loop twin-pumps and the Terminal Block: In cases where connecting twin pumps on a single cluster (module channel), set each pump with a different head number. If connecting each twin pump on dedicated cluster, there is no need to reprogram the pump. Pumps with identical Head number cannot be connected to the same Cluster.

Figure 18: Current Loop Wiring Diagram – Single Cluster

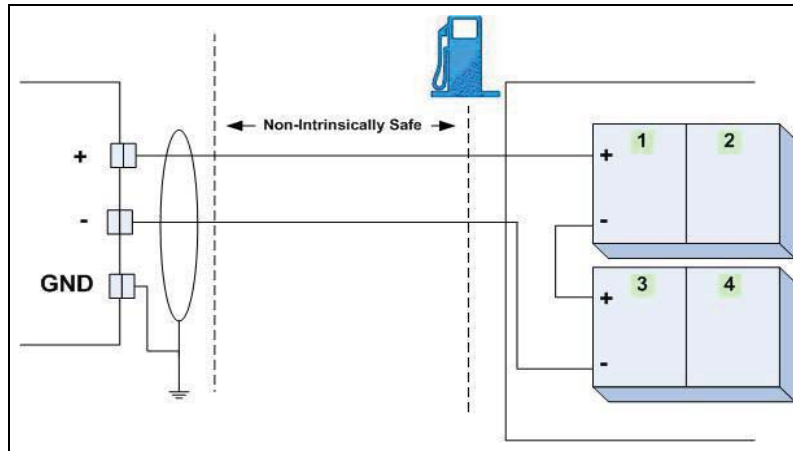


Figure 19: Current Loop Wiring Diagram – Multi Cluster

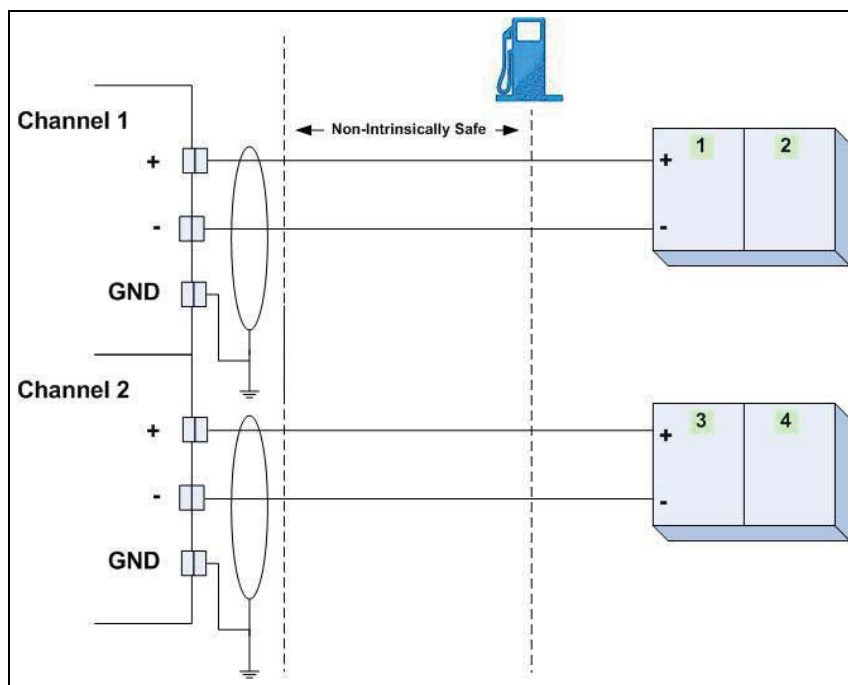
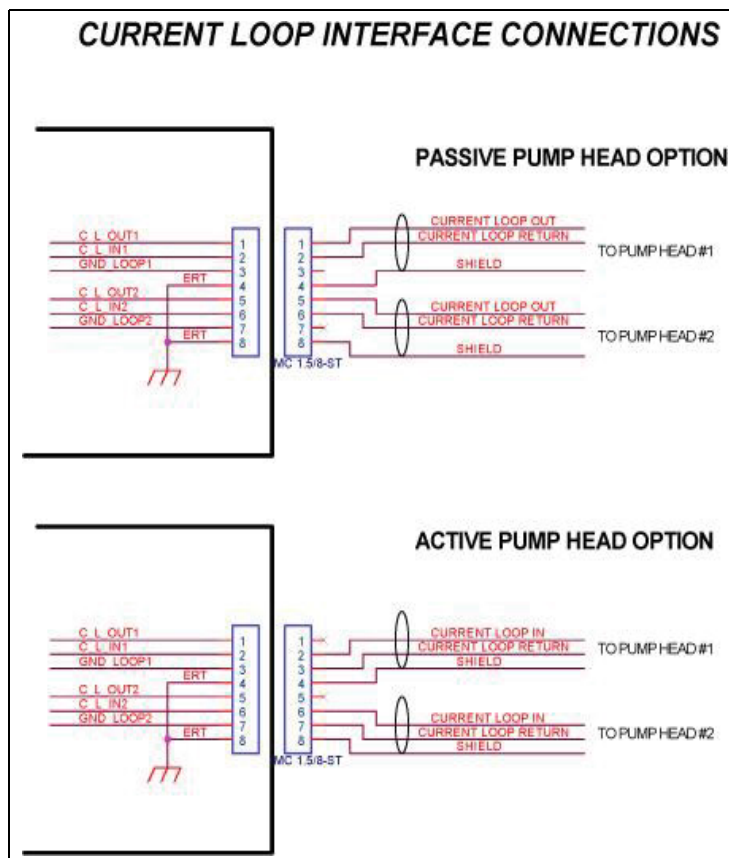


Figure 20: Current Loop Electronic Pump-Wiring Diagram



2.7.5 Wayne Pump Configuration Example

The following paragraph provides the pump configuration required for models 3/G7237D/GHJKM/ - P/N 887695-0154/053. Unit version: 54 IGEM.

Verify programming codes on the pump as follows:

- 1 Set F01.00 to “1” for Serial Communications.
- 2 Set F05.00 for the A side address (1-98).
- 3 Set F06.00 for the B side address (1-98).
- 4 Set F20.00 to “4” for U.S. Current Loop.
- 5 Set F20.01 to “02” for 9600 baud rate.
- 6 Set F27.00 to “8” for Serial Comm.
- 7 Set F27.01 to “0” for Serial Comm.
- 8 Set F28.00 to “8” for Serial Comm.
- 9 Set F28.01 to “0” for Serial Comm.

*Note: The F27 and F28 settings are dependent on whether the unit was shipped with a Pulse Output board. If the dispenser does not have pulse output, the above settings should work. If it does have a pulse output option and a pulse output template loaded, they may need to be changed. **For serial communication, they should be set as noted above.***

Make sure that the Current Jumper on Current Loop module (P/N MO9680B029) is set to 45 mA and Voltage Jumper is set to 24 VDC.

Verify that the serial communication parameters are set to: Baud 9600, Parity Odd, 1 stop bit (refer to [“2.3 Types of Fuel Pump and their Communication Method”](#) on [page 11](#)).

The Current Loop connector on the Wayne Pump – U.S./UK J25 is found on the top right hand side.

2.7.6 Gilbarco Legacy and Gasboy 8800 Current Loop Electronic Pumps Configuration

To set up the Gasboy 8800 current loop electronic pumps install the current loop board in the correct slot of the 8 port CommVerter board.

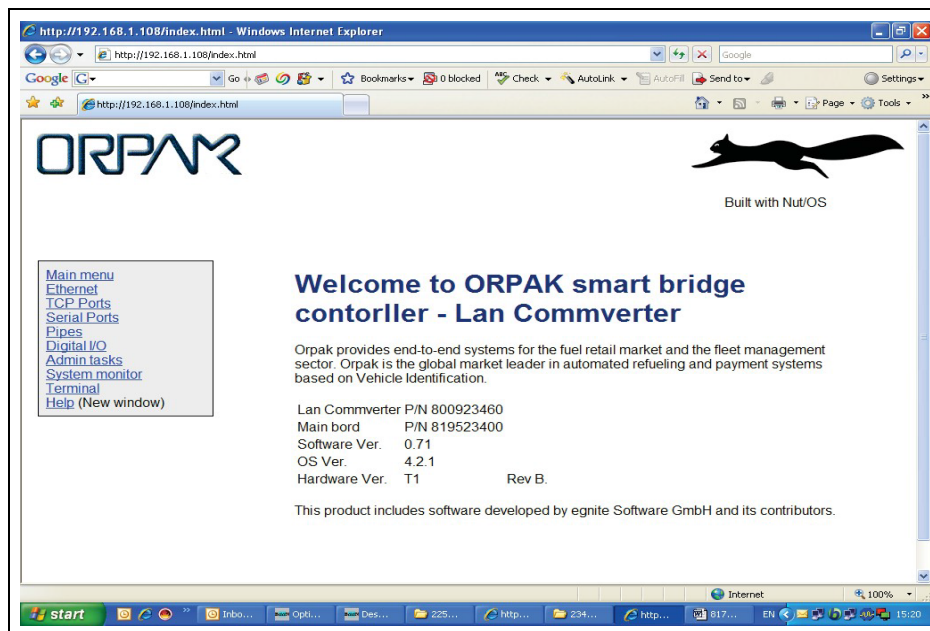
In the following example Slot 3 of the 8 port CommVerter board is used. The port assigned to Channel 1 of this Slot is 3005.

Note: The Current Loop Interface module can be installed in any slot of the 8 port CommVerter board. The slot used may vary depending on system configuration. Adjust the instructions according the slot used for the Current Loop Interface module board. The slot used is mapped to the assigned port number.

In order for the Current loop board to communicate with the Gasboy 8800 pumps the ports setting must be changed. Proceed as follows:

- 1 Connect the CommVerter to a PC (LAN Connection).
- 2 Open the Web browser, and enter the IP address of the CommVerter. The Setup Main Screen is displayed (see [Figure 21](#)).

Figure 21: CommVerter Unit Setup Site – Main Screen



- 3 Click **Admin Tasks**. The Admin screen is displayed. Scroll down the page to reach the **TCP/IP timeouts** section (see [Figure 22](#)).

Figure 22: CommVerter Unit Setup Site – Admin Screen

Admin

Set/Get eeprom

Settings will take effect after next restart

☒ Read eeprom
☐ Read defaults
☐ Write to eeprom
☐ Write to eeprom and reset
☐ Read defaults and Write to eeprom
☐ Clear reset counter
☐ Reset

Service web ports

Web server port: 80

Web terminal port (0, terminal closed): 0

TCP/IP timeouts

Close connection timeout [sec] 3, 300

No communication timeout [sec] 10, 60

☐ Temporary disable (up to 5 minutes)

Login information

Settings will take effect immediately

Enable passwords: ☐

User name: root

Password name:

System

[System monitor](#)

- 4 Select the **Temporary disable (up to 5 minutes)** checkbox.
- 5 Click **Send**.
- 6 Select the **Write to eeprom** radio button in the **Set/Get eeprom** section.
- 7 Click **Send**.
- 8 Select the **Reset** radio button in the **Set/Get eeprom** section.
- 9 Click **Send**.

Note: These steps need to be completed in a timely manner or the EEPROM will reset all changes made prior to the reset.

- 10 Click **Serial Ports**. The Serial Ports screen is displayed. Scroll down the page to reach the Port that needs to be changed (see [Figure 23](#)).
- 11 This example refers to Port 205. Actual Port number 2xx is determined by the Port assigned to the slot of the Current Loop Interface module board.
- 12 Change the port setting as needed. Refer to “[2.3 Types of Fuel Pump and their Communication Method](#)” on [page 11](#).
- 13 Click **Send** button for the appropriate port.

Figure 23: CommVerter Unit Setup Site – Serial Ports Screen

The screenshot shows the 'Serial Ports' configuration screen. It contains two identical sections for 'PORT 205' and 'PORT 206'. Each section has a table of settings:

Active	Name	Speed	Data Bits	Parity	Stop Bits
PORT 205: <input checked="" type="checkbox"/>	Serial 5	5787	8	EVEN	1
<input type="button" value="send"/> <input type="button" value="cancel"/>					

Active	Name	Speed	Data Bits	Parity	Stop Bits
PORT 206: <input checked="" type="checkbox"/>	Serial 6	5787	8	EVEN	1
<input type="button" value="send"/> <input type="button" value="cancel"/>					

- 14 After changing and sending the Port settings, the eeprom must be updated and reset:
 - a Click **Admin Tasks**. The Admin screen is displayed.
 - b Select the **Write to eeprom** radio button in the **Set/Get eeprom** section.
 - c Click **Send**.
 - d Select the **Reset** radio button in the **Set/Get eeprom** section.
 - e Click **Send**.

Give the system a few minutes to reboot and then verify that the settings have been saved.

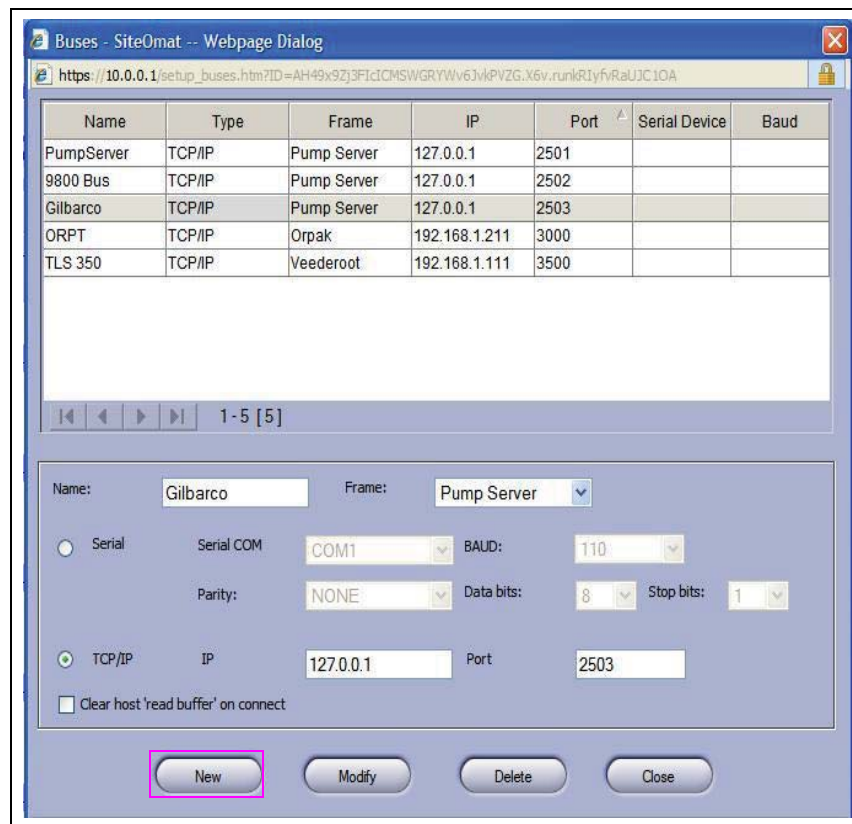
2.7.7 SiteOmat Configuration for Gilbarco Legacy and Gasboy 8800 Current Loop Electronic Pumps

Note: For further information, refer to MDE- 4817 SiteOmat Installation and Maintenance Manual.

In order to configure Gilbarco Legacy and Gasboy 8800 Current Loop Electronic Pumps, proceed as follows:

- 1 Go to the SiteOmat Setup screen and click **Advanced Mode**.
- 2 Select the Buses tab. The Buses dialog box opens (see [Figure 24](#)).

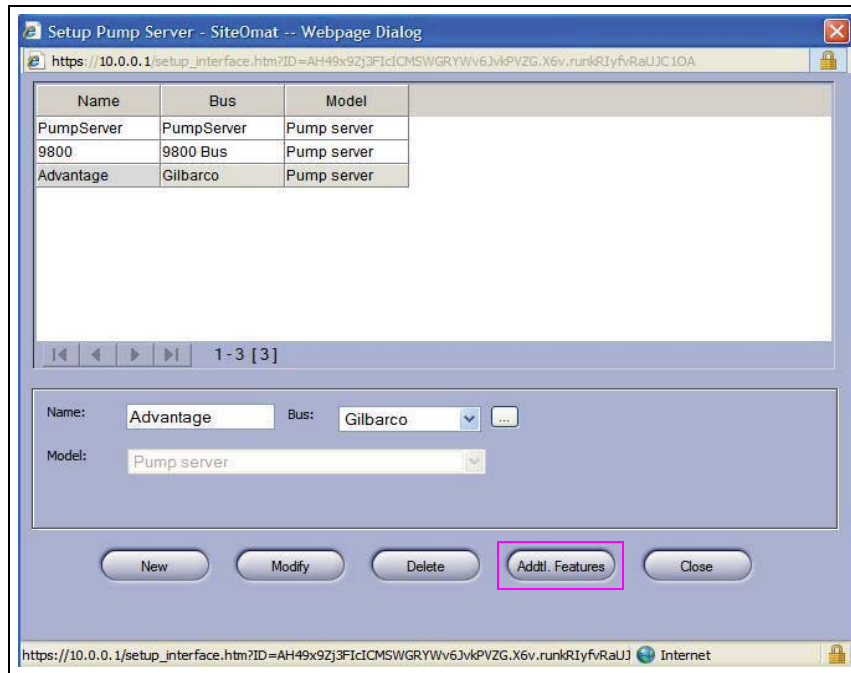
Figure 24: Buses Dialog Box



- 3 Set up a bus for use by Gilbarco Legacy® and Gasboy8800 pumps.
Note: Port number may differ.
- 4 Save the newly added Bus by clicking on the **New** button.
- 5 Select the P. Servers tab. The Setup Pump Server dialog box appears (see [Figure 25](#) on [page 30](#)).
- 6 Set up a Pump Server for use by Gilbarco Legacy and Gasboy8800 pumps.
Note: Port number may differ.

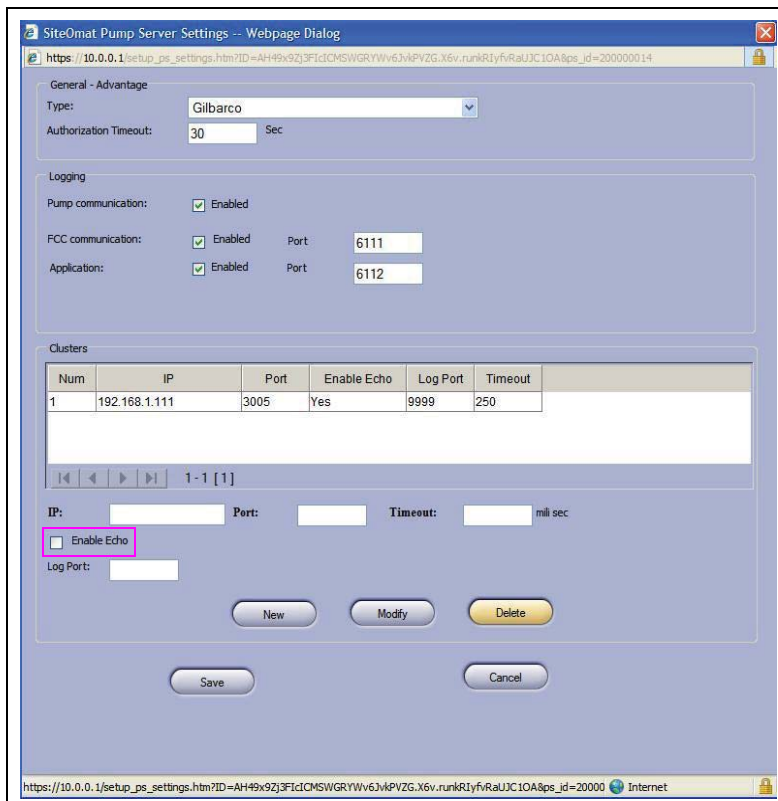
- 7 Save the newly added Pump Server by clicking on the **New** button.

Figure 25: Setup Pump Server Dialog Box



- 8 After adding the Pump server, highlight the Pump Server and Click **Addtl. Features**. The Pump Server Settings dialog box opens (see [Figure 26](#)).

Figure 26: Pump Server Settings Dialog Box



- 9 Add a cluster for use by Gilbarco Legacy and Gasboy 8800 pumps. Be sure to select the **Enable Echo** checkbox when adding the cluster.
- 10 Save any changes that were made.
- 11 On the Setup screen, click **Save** and then **Reload**. After the reload has been successfully completed, the Gilbarco Legacy and Gasboy 8800 pumps may be added.
- 12 Click **Add Pump** on the Setup screen. The Setup Pump Settings dialog box opens (see [Figure 27](#)).

Figure 27: Setup Pump Settings Dialog Box

Setup Pump Settings - SiteOmat -- Webpage Dialog

https://10.0.0.1/setup_pump_settings.htm?ID=AH49x9Zj3FidCMSWGRYVW63vkPYZG.X5v.runkRlyfRaUJC.10A&pump_id=200000012

General

Pump Number: 7 Pump Head: 7 Number of nozzles: 1

Mode: Need Authorize

Pump server: Advantage Cluster: 1

Printer: Reader: OrPT:

Message Factors

Volume: Amount: Totalizer volume: Totalizer amount: Preset volume: Preset amount: Price per volume (PPV):

Specific

Gilbarco

Authorize with six positions?: No Pump of a single type?: No

Skip authorize response?: No Supports preset money?: Yes

Flow protection timeout: 0

Save Cancel More Options...

- 13 Fill in the **Pump number**, **Pump Head**, and **Number of nozzles**. The Pump Head number must match the Pump ID set in Gilbarco Legacy and Gasboy 8800 pump.
- 14 Select the correct **Pump server** and **Cluster** from the drop-down lists.
- 15 Set the **Message Factors** as shown in the screen above. These settings work in most cases but may need to be adjusted to make the pump and transaction data match.
- 16 Set the **Specific** section as shown [Figure 27](#). These settings work in most cases but may need to be adjusted to match the specific pump used.

- 17 Save any changes that were made.
- 18 Select the newly added Pump.
- 19 Select the **More Options** button. The screen as shown in Figure 28 opens.
- 20 Set the additional parameters as shown in the screen below. These settings work in most cases but may need to be adjusted to match the specific pump used.
- 21 Save any changes that were made.
- 22 On the Setup screen, click **Save** and then **Reload**.
- 23 After the reload has completed successfully, verify that all added pumps have been saved.

Figure 28: Setup Pump Settings (More) Dialog Box

Setup Pump Settings (more)- SiteOmat -- Webpage Dialog

https://10.0.0.1/setup_pump_settings_more.htm?ID=AH49x9Zj3FicICMSWGRYWv6JvkPVZG,X6v,runkRIyfvRaUJC1OA8pump_id=2

Grade Type

☐ Single grade

☒ Multi grade

Nozzle State For Authorization Policy

☒ Must always be lifted before authorization

☐ Must be lifted for preset authorization only

☐ Authorization does not check nozzle state

Price Update Policy

☒ Do not allow fuelling if price was not updated

☐ As soon as price needed

☒ After all retries failed

Number of retries:

☒ Update price if PPV in transaction do not match

☒ Update price after connection lost

☐ Update price before any transaction

Flow Rate

☐ Enable flow rate control

Pump flow rate:

Authorization Parameters

Number of retries:

Delay between retries: Sec.

Force pump check every: Sec.

External EFT

☐ Use Extern Auth - VIT/mVIT Only

EFT:

☐ Vehicle Must Be Defined In SiteOmat

Save **Cancel**

2.8 LAN to Tokheim Application

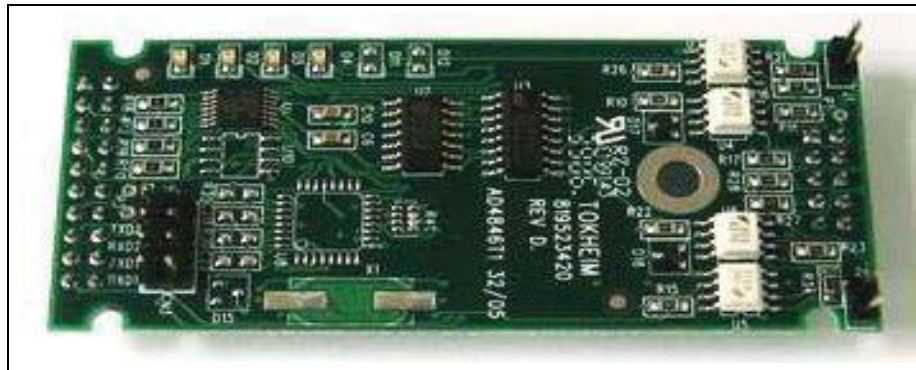
The LAN to Tokheim module is installed in the CommVerter whenever the pumps in the station are of Tokheim brand. The CommVerter converts the LAN into Tokheim (and vice versa). [Figure 29](#) shows a block diagram of a LAN to Tokheim communication application.

Figure 29: LAN to Tokheim Configuration



- This module (two separate ports) interfaces with up to two pumps. In this configuration each pump is interfaced in a separate port.
- This module can be set to 5 V or 12 V according to the Pump Interface requirement (Jumper setting).

Figure 30: LAN to Tokheim Module, Two Pumps Configuration



Note: There is no external indication of the LEDs status. Remove the CommVerter cover to reveal the module LEDs.

LEDs Indication

Connector Side		
Channel 1	Rx	D1
Channel 1	Tx	D2
Channel 2	Rx	D3
Channel 2	Tx	D4

LED Blinking – Communication ON
 LED OFF – No communication

2.8.1 Tokheim Connector Pinout

The following pinout is required for the LAN to Tokheim application, for all Tokheim brand pumps.

8	7	6	5	4	3	2	1
G	COM*	TTC*	TTD*	G	COM*	TTC*	TTD*
Channel 2				Channel 1			

**TTD, TTC, and COM are standard Tokheim communication lines.
These labels should also be found on Tokheim dispenser CPU.*

2.8.2 Tokheim Module Jumpers

This module can be set to 5 V or 12 V according to the Pump Interface requirement. There are two jumpers that determine the voltage level, as follows:

- Jumpers J1, J2 installed: 5 V
- Jumpers J1, J2 removed: 12 V

2.8.3 Tokheim Electronic Devices (Pump or any Tokheim Devices)

The wiring for the Tokheim electronic pump is provided as follows:

- [Figure 31](#) shows the specific wiring connections between the 8 Port Tokheim card and the Tokheim pump nozzle, and the terminals that differ from the Mechanical Pump.

Figure 31: Tokheim Electronic Pump - Wiring Diagram - 1

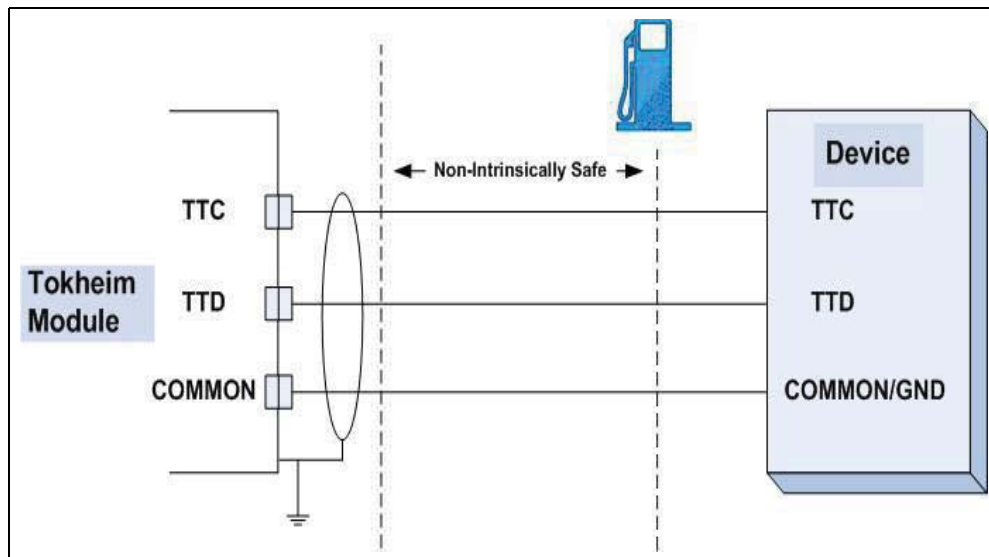
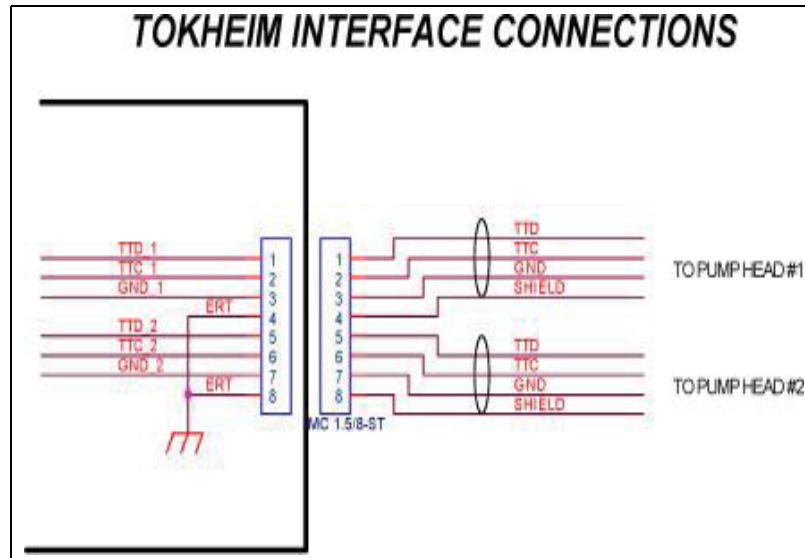


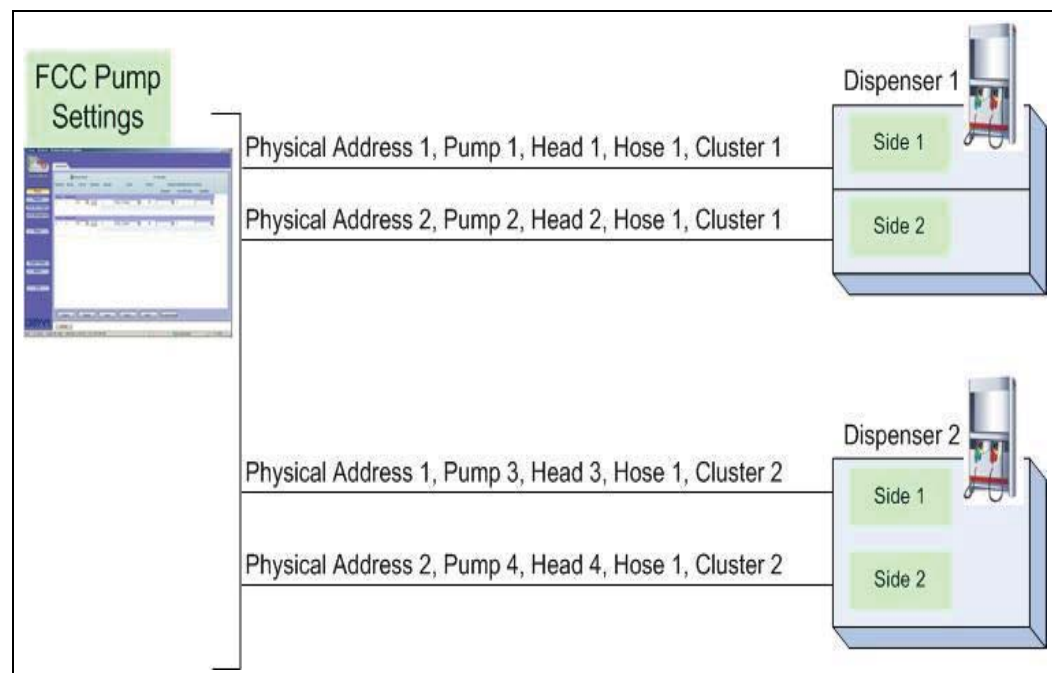
Figure 32: Tokheim Electronic Pump - Wiring Diagram - 2



2.8.4 Addressing Dual-Sided Tokheim Pumps

Figure 33 shows an example of the pump settings that should be defined in SiteOmat FCC to address dual-sided Tokheim pumps.

Figure 33: Addressing Tokheim Dual-Sided Pumps



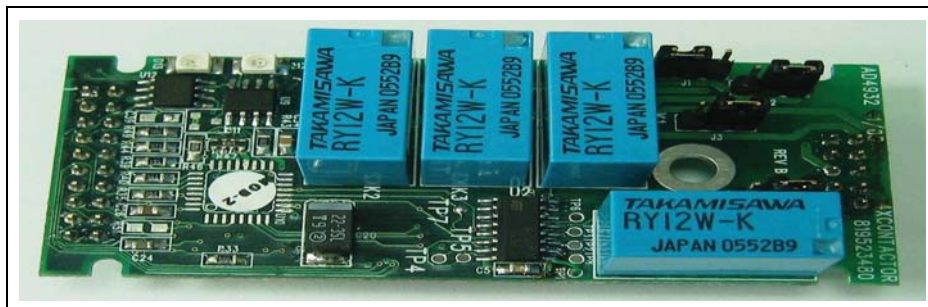
2.9 4xContactor Application

The 4xContactor module includes four relays that toggle status from NC (normally close) to NO (normally open), and vice versa in accordance with the jumper position (refer to “[2.9.2 4xContactor Module Jumpers](#)” on [page 37](#)). This board is a relays module for four channels.

The relays contact rating is:

- 1A 24 VDC
- 0.5A 120 VAC

Figure 34: 4xContactor Module



2.9.1 4xContactor Connector Pinout

The following pinout is required for the 4xContactor application.

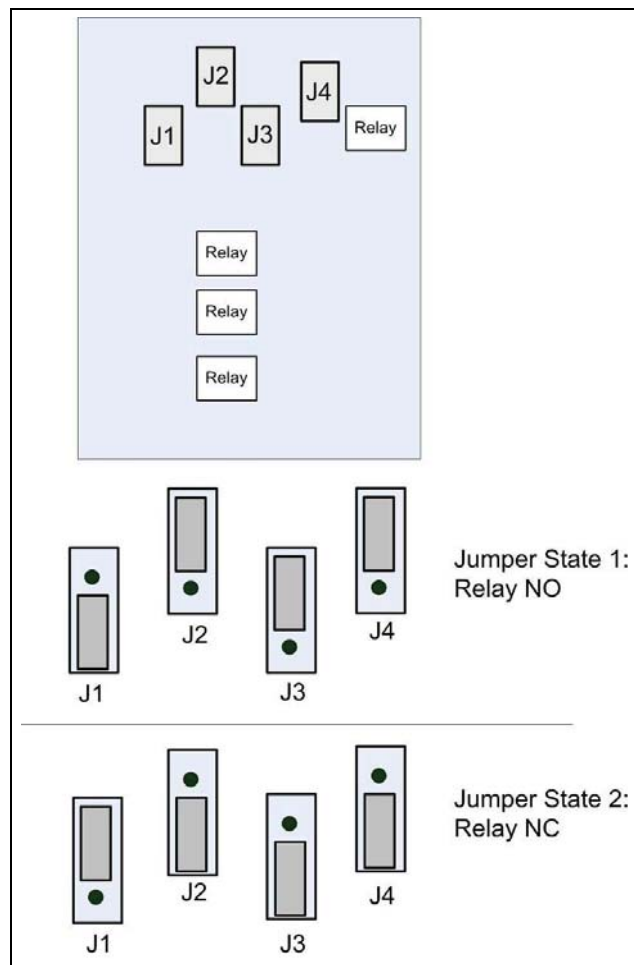
8	7	6	5	4	3	2	1
K4		K3		K2		K1	
Switch 4		Switch 3		Switch 2		Switch 1	

2.9.2 4xContactor Module Jumpers

The jumpers in the 4xContactor module can be set in two different configurations. The module includes four consecutive jumpers, J1 to J4.

The jumper configuration determines the status of its related relay.

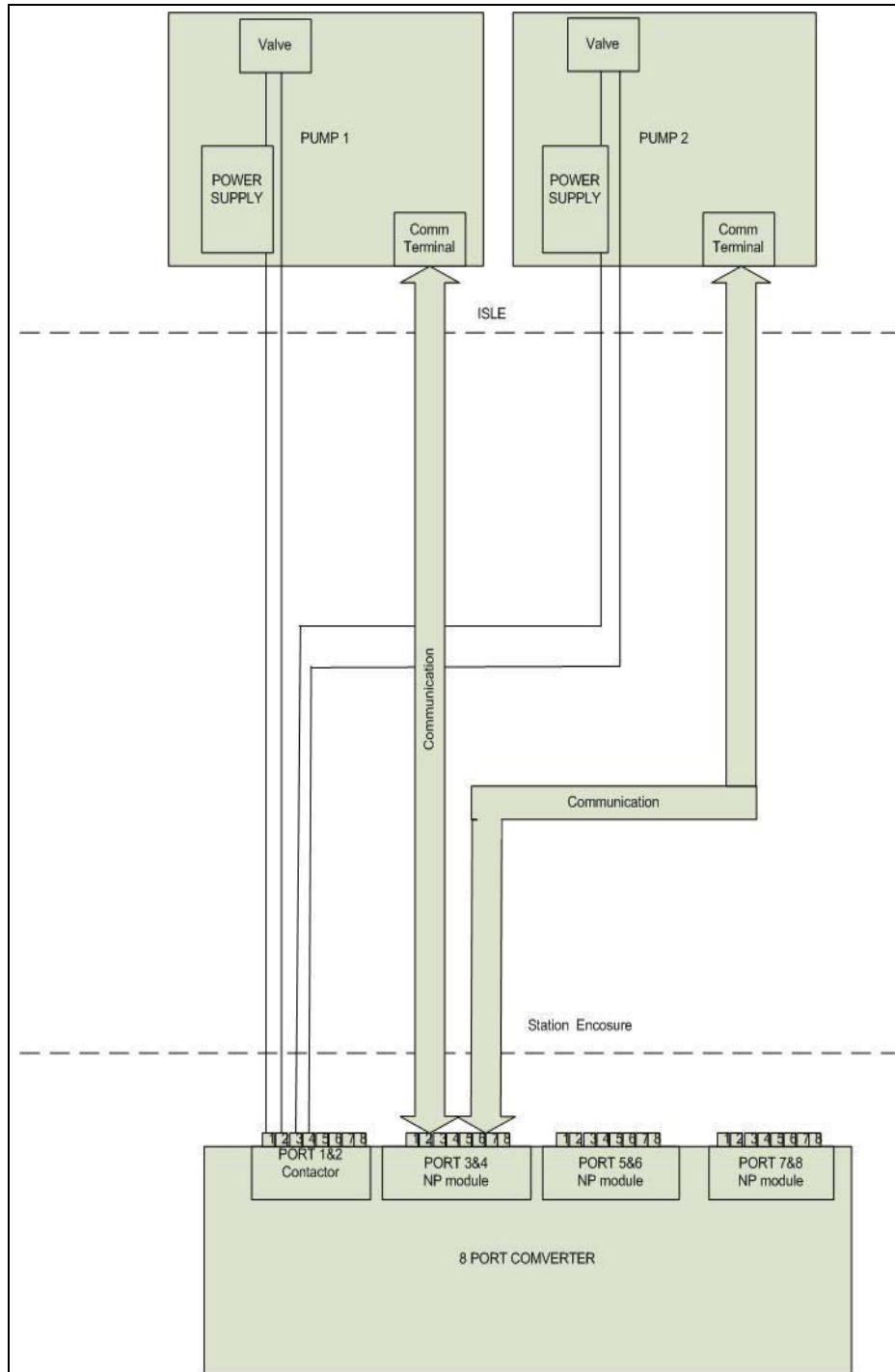
Figure 35: 4xContactor Module Jumpers



Station Setup

The relays control the pump's valve according to pump server's pump state which does not support the suspend resume commands by protocol. Each valve of such pump should be connected to the relay or through another power relay (according to the voltage or current needs of the valve). Dual pumps example connection is shown on [Figure 36](#).

Figure 36: Station Setup



2.9.3 Pump Server Setup

The ini file contains definitions used to communicate with the relays. Example for one pump is given below:

```
[cluster_01]
commtype=tcp
ip=192.168.1.108
port=3001
enable_echo=N
log_cluster_port=10001
```

```
[pump_01]
clusterid=1
addr=1
num_of_nozzles=1
specific=specific_01
```

```
[specific_01]
taiwan_soft_ver=N
use_relay=Y
relay_port=6500
relay_ip=192.168.1.108
relay_con_timeout=200
channel=1
```

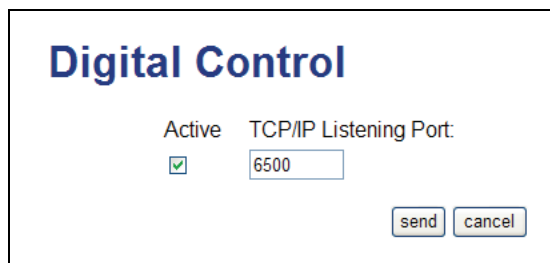
New definitions are

- relay_port – This is the Digital I/O port for relay's communication.
- relay_ip - The commverter IP where the relays are placed.
- channel - The relay channel which will be activated (it could be from 1 to 8).

2.9.4 8 Port CommVerter Setup

The 8 Port CommVerter should be activated via its digital control (see [Figure 37](#)) listening port. After setting the port number (should be the same as in the ini file of pump server) and enabling the checkbox save and reset the CommVerter.

Figure 37: Digital Control



The image shows a dialog box titled "Digital Control" in blue text. Inside the dialog, there are two labels: "Active" and "TCP/IP Listening Port:". Under "Active", there is a green checkmark in a small box. Under "TCP/IP Listening Port:", there is a text input field containing the number "6500". At the bottom right of the dialog, there are two buttons: "send" and "cancel".

2.10 LAN TO RS-422 Application

2.10.1 RS-422 Module Application

The RS-422 module (and the RS-422 sub-module) transforms incoming data transmission into RS-422 standard point to point. The RS-422 module is installed on the main board and controls Channel 1. In this module, pins 1 to 5 (GND) only are active, to provide RS-422 transmission.

Figure 38: LAN to RS-422 Configuration

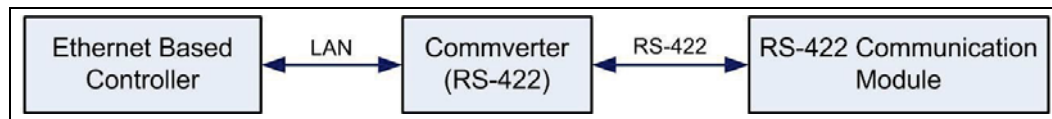
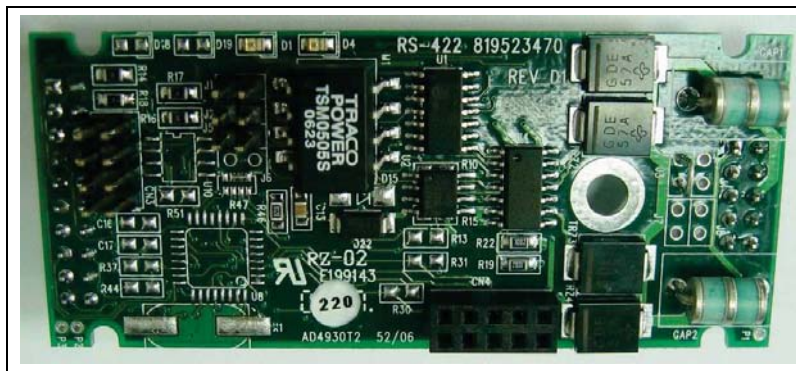
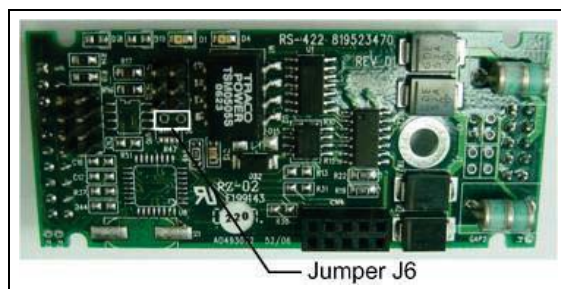


Figure 39: RS-422 Module



Note: In order to disable echo, short jumper J6 as shown in [Figure 40](#).

Figure 40: RS-422 Module Jumper J6



Note: There is no external indication of the LEDs status. Remove the CommVerter cover to reveal the module LEDs.

LEDs Indication**Connector Side**

Channel 1	Rx	D4
-----------	----	----

Channel 1	Tx	D1
-----------	----	----

LED Blinking – Communication ON

LED OFF – No communication

2.10.2 RS-422 Connector Pinout

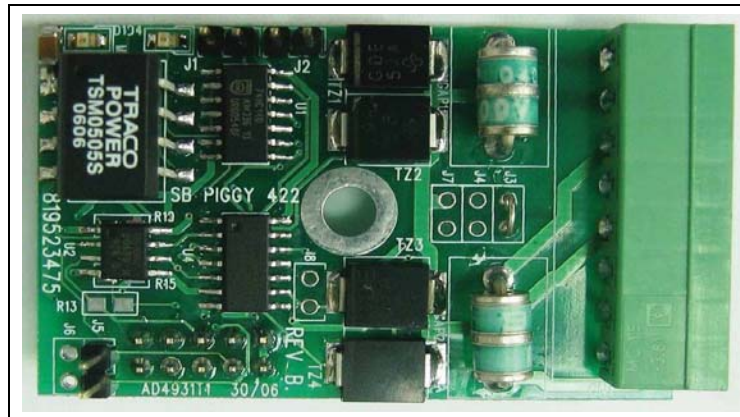
The following pinout is required for the LAN to RS-422 application.

8	7	6	5	4	3	2	1
			G	T-	T+	R-	R+

2.10.3 Sub-RS-422 Module Application

The RS-422 Module has an additional sub-RS-422 module on top of it (connector CN4). This sub-module provide data transmission conversion into RS-422 for Channel 2.

The pinout of the connection is the same as for the RS-422 module. Pins 1 to 5 (GND) only are active, to provide RS-422 transmission).

Figure 41: Sub-RS-422 Module

Note: There is no external indication of the LEDs status. Remove the CommVerter cover to reveal the module LEDs.

LEDs Indication**Connector Side**

Channel 2	Rx	D4
-----------	----	----

Channel 2	Tx	D1
-----------	----	----

LED Blinking – Communication ON

LED OFF – No communication

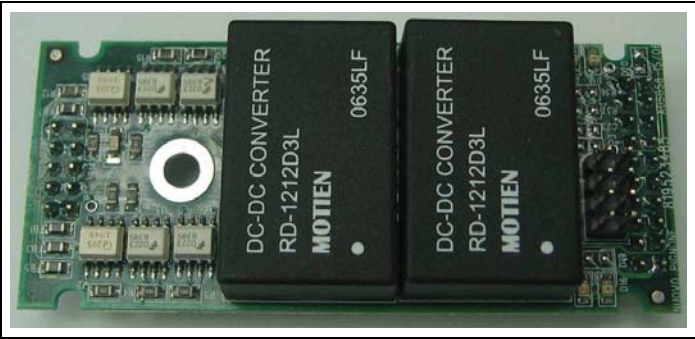
2.11 LAN to Nuovo Pignone Application

The LAN to Nuovo Pignone module transforms data transmission into Nuovo Pignone Pump Interface.

Figure 42: Nuovo Pignone Module Configuration



Figure 43: Nuovo Pignone Module



Note: There is no external indication of the LEDs status. Remove the CommVerter cover to reveal the module LEDs.

LEDs Indication

Connector Side		
Channel 1	Rx	D15
Channel 1	Tx	D16
Channel 2	Rx	D17
Channel 2	Tx	D18

LED Blinking – Communication ON
LED OFF – No communication

2.11.1 Nuovo Pignone Connector Pinout

The following pinout is required for the LAN to RS-232 application.

8	7	6	5	4	3	2	1
TX2-	TX2+	RX2-	RX2+	TX1-	TX1+	RX1-	RX1+
Channel 2				Channel 1			

COPTRON Communication to Nuovo Pignone Card

Connector TB4A in Coptron pump (Pump Head1).

Table 2: Pump Communication Connector for 8 Port NP Module

Coptron Pin Out	Nuovo Pignone Card Pin Out
pin1_TXB	pin3_Tx1+
pin2_TXA	pin4_Tx1-
pin3_RXB	pin1_Rx1+
pin4_RXA	pin2_Rx1-

When Coptron dispenser detects serial-communication, it starts working in automatic mode.

2.12 LAN to RS-232/485 Application

This module is dual-purpose and supports two different communication protocols: RS-232 and RS-485.

The LAN to RS-232 application is required when the connection to specific devices, such as TLGs, is via RS-232. The RS-232 circuit is dedicated for Channel 1.

The LAN to RS-485 application is required when connecting fuel pumps and other serial devices to home base controller that uses TCP/IP communication. The RS-485 circuit is dedicated for Channel 2.

Note: There is no external indication of the LEDs status. Remove the CommVerter cover to reveal the module LEDs.

LEDs Indication

Connector Side		
Channel 1 (RS232)	Rx	D3
Channel 1 (RS232)	Tx	D2
Channel 2 (RS-485)	Rx	D9
Channel 2 (RS-485)	Tx	D4

LED Blinking – Communication ON
LED OFF – No communication

2.12.1 RS-232/485 Connector Pinout

The following pinout is required for the LAN to RS-232/485 application.

8	7	6	5	4	3	2	1
	G	-	+	G	D I/O	RX	TX
Channel 2 – RS-485				Channel 1 – RS-232			

2.13 Mechanical Pump Interface (MPI-C)

This paragraph describes the required wiring connections between the mechanical pump and the MPI-C Card and the MPI-C sub-module (see [Figure 44](#) and [Figure 45](#)).

Figure 44: MPI-C Module

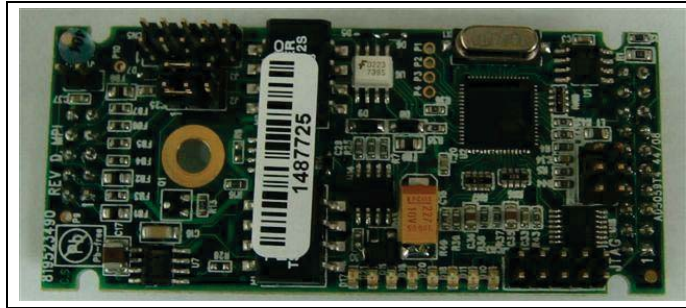
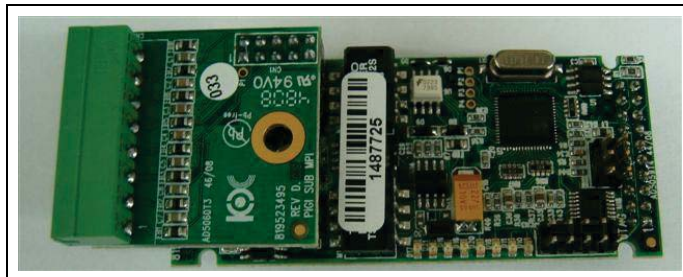


Figure 45: MPI-C with Sub-Module



2.13.1 MPI-C Connector Pinout and Signals

[Table 3](#) details the MPI-C pinout, [Table 4](#) describes MPI-C signals.

Table 3: MPI-C Pinout

8	7	6	5	4	3	2	1
GND	ByPass	Inuse	Pulse B	Pulse A	SSR	V GND	V OUT
CHANNEL 1/2							

Table 4: MPI-C Signals

Signal	Description
Pulse Input (5)	The dispenser outputs pulses to the system by means of the Pulser unit, installed in accordance with the manufacturer instructions. The Pulse rate per volume (liter/gallon) is determined by the Pulser unit. It is programmed as a “factor” by the Head Office controller.
Handle Status Input (6)	The handle signal is used to indicate the system that the pump is “In Use” mode. When the dispenser handle is lifted this contact will close. This should signal the system that the pump is “In Use” or that the transaction ended.
Authorization Output (3)	The dispenser requires an authorization signal from the MPI-C card to start a sale transaction. Without this authorization signal, the electric valve (or pump) will not open and the sale transaction will not begin. The MPI-C card switches the AC power signal to the valve. When the dispenser receives the authorization signal, fuel is flowing.

2.13.2 Mechanical Pump - Pulser Connections

This paragraph describes the required wiring connections between the pulser in the mechanical pump and the MPI-C. The system can accept many types of pulsers, please contact Gilbarco for more information. Two types of pulsers can be found in pumps:

- Electronic pulser
- Mechanical pulser

Connect the MPI-C card to the Pulser in accordance to its characteristics.

Pulse Rate

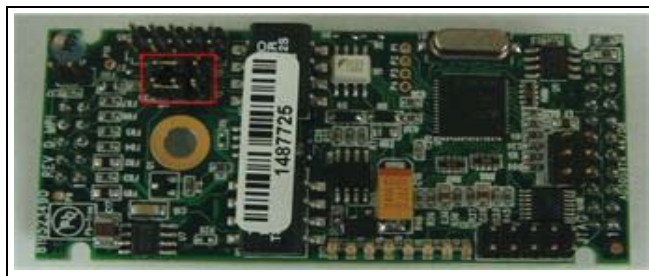
The MPI-C may be configured to work with normal and high rate pulses (see [Table 5](#)), as may be generated by Electronic Pulsers. The wiring is identical for both cases, yet the technician is required to change jumper settings as detailed below. It is highly recommended to use normal rate pulsers to prevent noise.

Table 5: Pulse Rate Specifications

Parameter	Normal Rate	High Rate
Input Voltage	Minimum: 7 VDC	Minimum: 4VDC
	Maximum: 15 VDC	Maximum: 12 VDC
Pulse Rate	Maximum: 0.5 KHz	Maximum: 0.5 KHz
Cycle Width	Minimum: 2 ms	Minimum: 0.2 ms

By default the MPI-C card is set to work with Normal Rate pulses: J2 and J3 jumpers pins 1 and 2 are shorted (see [Figure 46](#)). In cases where the pump outputs high rate pulses, short pins 2 and 3.

Figure 46: MPI-C J2 and J3 Jumpers



Interface Connections

Figure 47 shows Mechanical Pump Interface Connections, including Mechanical and Electronic Pulsers.

Figure 47: Terminal Block Wiring Connections

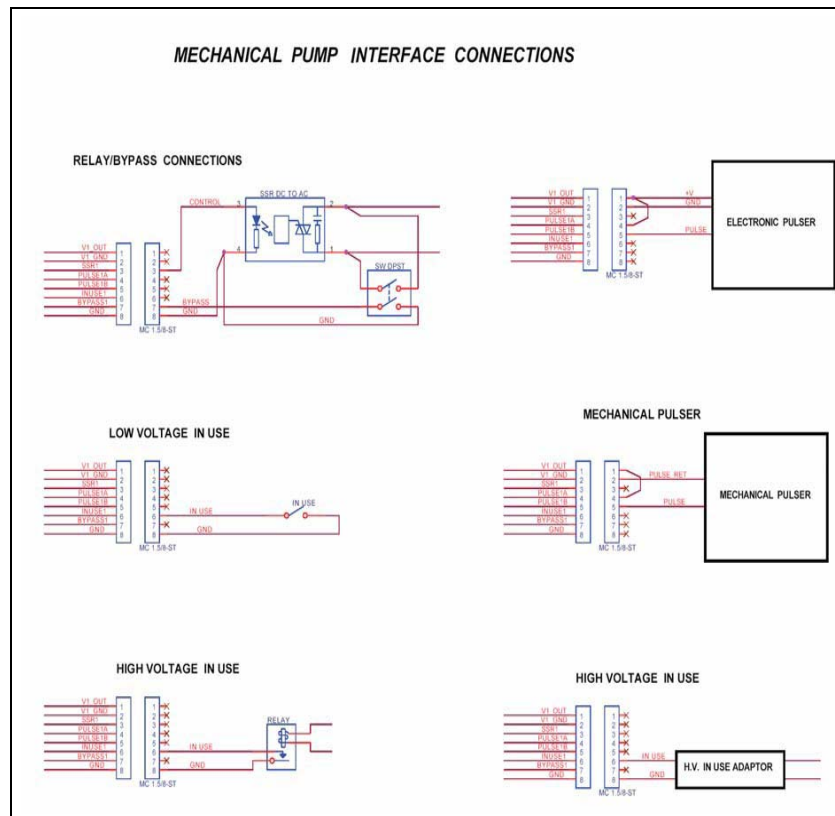


Figure 48 shows the MPI-C – Low Voltage Electronic Pulser Wiring Connection.

Figure 48: Low Voltage Electronic Pulser

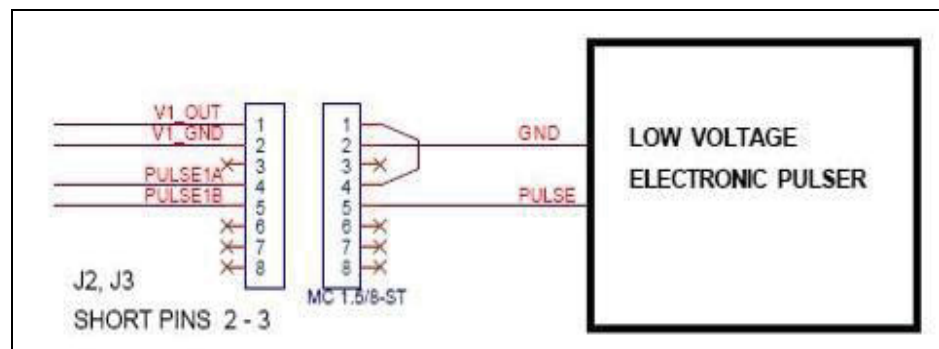
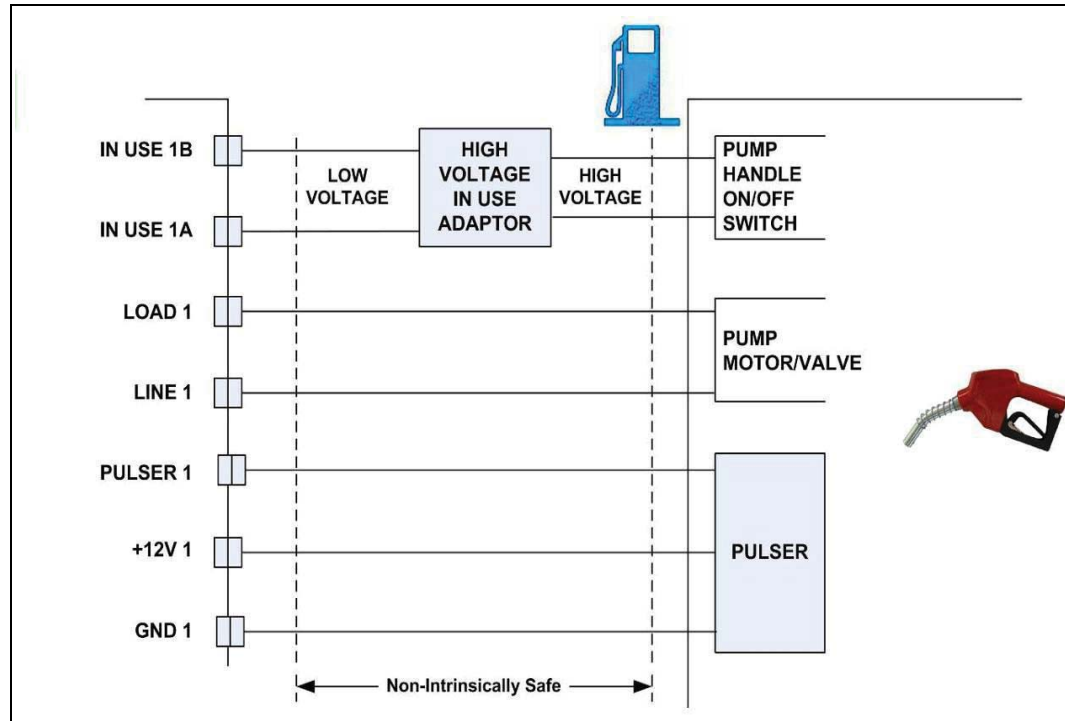


Figure 49 shows a schematic diagram of the connections between the Terminal Block and a 3-wire Pulser, which requires an external power source (12 V) in order to operate.

Figure 49: Terminal Block and 3-Wire Pulser – Wiring Connections



2.13.3 Pulse Divider

The Pulse Divider (see Figure 50) is used in cases where the pulser output cannot be read by the MPI-C due to weak signal, too high frequency or differential signal.

The Pulse Divider receives the inappropriate pulser signal (Pickup signal), shapes it and/or divides its frequency to match the signal to the MPI-C requirements for reading.

The Pulse Divider can be connected in three ways: refer to Table 6 and Table 7 on page 49 for optional connections and pinout.

Figure 50: Pulse Divider



Table 6: Pulse Divider Connections

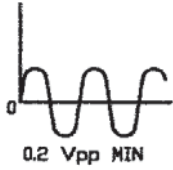
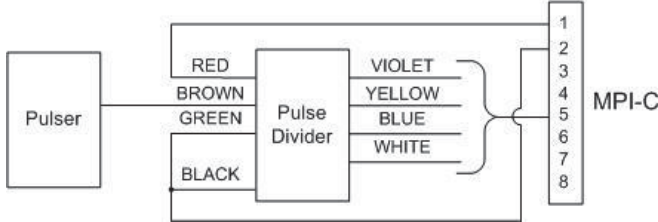
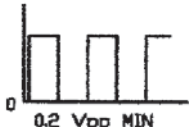
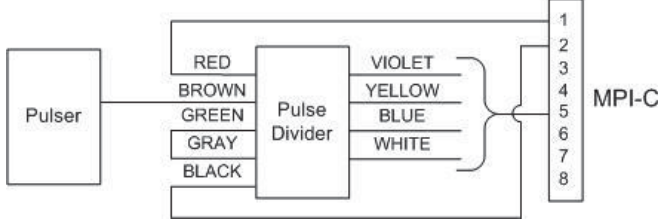
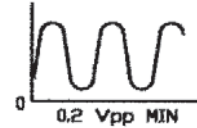
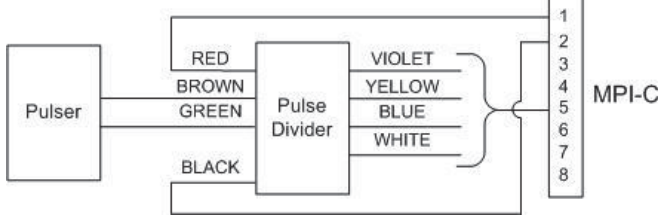
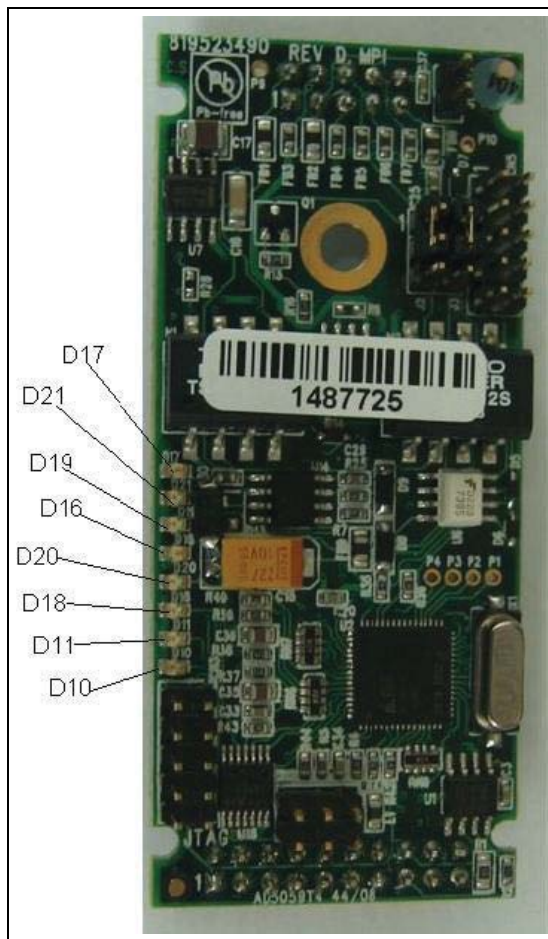
Signal Type	Description	Connection Diagram
Option A 	Input pulses are above/under zero level and/or weak	SINGLE OUTPUT AC PICKUP 
Option B 	Input pulses are above zero level (positive)	DIGITAL OUTPUT PICKUP 
Option C 	Input pulses are differential	DIFFERENTIAL OUTPUT AC PICKUP 

Table 7: Pulse Divider Pinout

Pin#	Wire Color	Name	Description
1	RED	DC INPUT	Input voltage from CommVerter to Pulse Divider (10-28 VDC)
2	BLACK	GROUND	Ground
3	BROWN	SIGNAL IN 1	Input pulses from pulser to Pulse Divider
4	GREEN	SIGNAL IN 2	Input pulses from pulser to Pulse Divider (when input signal is differential). Threshold voltage applied to Pulse Divider when Input pulses are other than differential.
5	ORANGE	DC OUT	N/A
6	GRAY	REF/V OUT	1.4 VDC reference voltage connected to the green wire only in cases where Option B is utilized (otherwise unused)
7	VIOLET	:2 OUT	Output signal divided by 2
8	YELLOW	:4 OUT	Output signal divided by 4
9	BLUE	:8 OUT	Output signal divided by 8
10	WHITE	:16 OUT	Output signal divided by 16

2.13.4 Description for LED's on the MPI-C board

Figure 51: LEDs on the MPI-C



MPI-C	MPI-C sub	Signal	Description
D_21	D_20	In Use	ON=NOZZLE Out
D_16	D_17	Bypass/Authorization	Bypass or Authorization ON=IN Bypass
D_18	D_19	Pulse	Flash
D_10	D_11	N/A	Software LED

2.14 5-Port LAN Switch

The 5-Port LAN Switch enables internal communication to peripheral devices. It supports up to five LAN channels.

The 5-Port LAN Switch is shown in [Figure 52](#).

The user can connect the LAN cables to any one of the five ports on the 5-Port LAN Switch.

Note: Make sure the RJ-45 connector of a LAN cable is plugged and locked properly into the port.

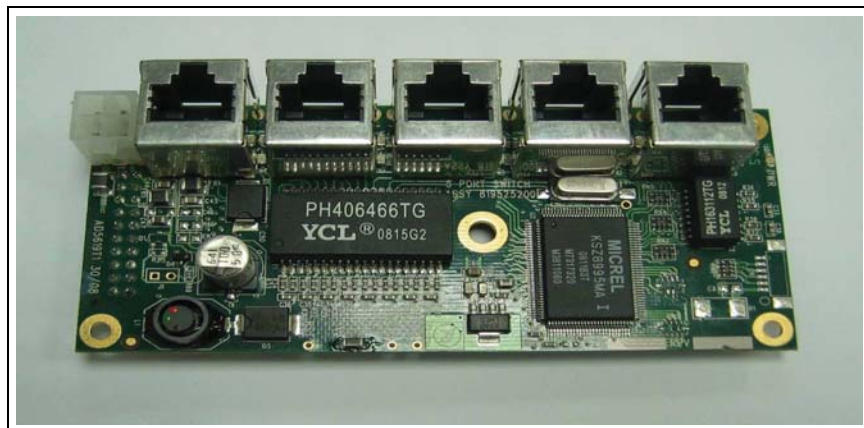
LEDs Indication

The 5-Port LAN Switch has several indication LEDs. The power LED indicates supply voltage to the device.

Each channel has two indication LEDs: green and red. If the green LED illuminates, it indicates a communication rate of 100 Mbps. If it is not illuminated, the communication rate is 10 Mbps.

If the red LED blinks, it indicate communication traffic in the channel.

Figure 52: 5-Port LAN Switch



The location of the 5-Port LAN Switch is on the 8-port PCB, at CN14 connector (see [Figure 53](#)).

Figure 53: 5-Port LAN Switch on 8-Port PCB



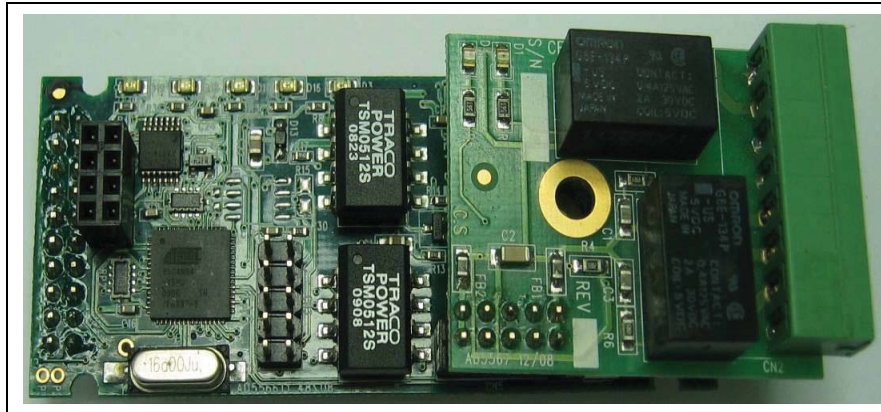
2.15 Cetil ER3 Module

(see [Figure 54](#))

For ER3 use the following:

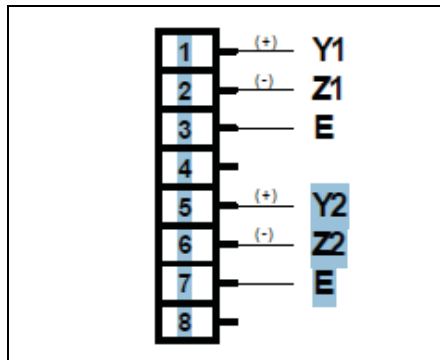
- Cetil ER3 CommVerter module
- Sub (relay card)
- Cetil ER3 module + Sub

Figure 54: Cetil ER3 Module + Sub



Connect pump communication wires to the 8 port CommVerter (see [Figure 55](#)).

Figure 55: CommVerter External Connector



The following pinout is required for the Cetil application.

8	7	6	5	4	3	2	1
G (chassis ground)	G (chassis ground)	-Z	+Y	G (chassis ground)	G (chassis ground)	-Z	+Y
Channel 2				Channel 1			

LEDs Indications

Connector Side		
Channel 1	Tx	D16
Channel 1	Rx	D17
Channel 2	Tx	D18
Channel 2	Rx	D19
S/W LED		D3

Note: Each pump head is connected to a single port. Each CommVerter can connect to eight pump heads (total).

2.15.1 Sub module (Suspend Resume Relay Card)

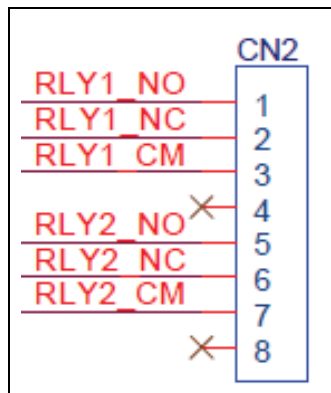
Since ER3 protocol doesn't support the Stop (suspend) command, there is a need to use an external relay in order to suspend VIU refueling.

The relay card can drive low voltage contactor, or a solenoid valve as follow:

Voltage 12-24 volt

Current 1A max

Figure 56: Cetil Sub Relay Module – Connections



The following pinout is required for the Cetil sub-module application.

8	7	6	5	4	3	2	1
N/A	COMMON	NC*	NO^	N/A	COMMON	NC*	NO^
Channel 2				Channel 1			

*NC stands for relay normally closed

^NO stands for relay normally open

2.15.2 Sub Module Pumalan

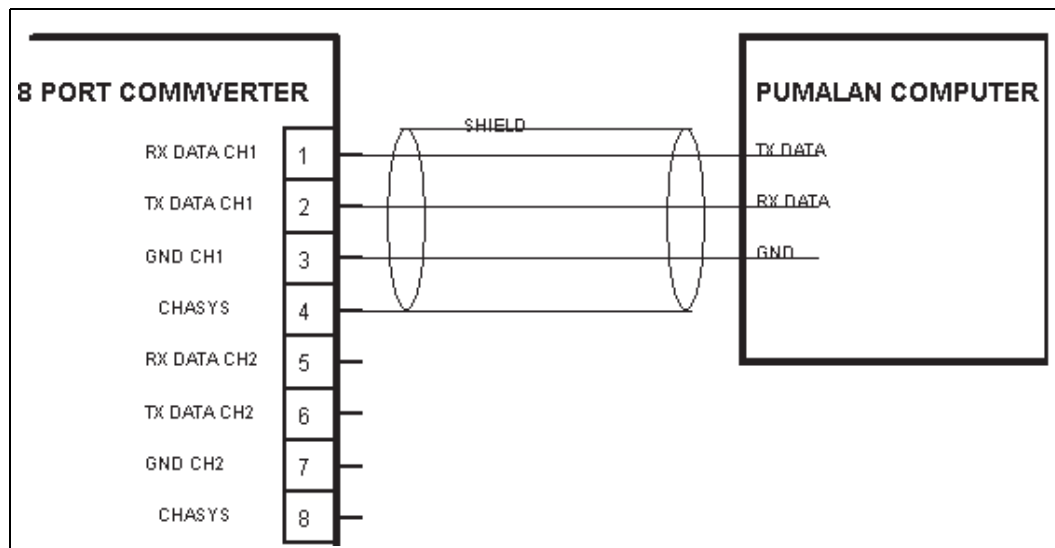
Pumalan Module consists of two separate communication ports (clusters).

Pin 1-4 = first communication port Pin 5-8 = second communication port

The Pumalan pump protocol does not support Suspend/Resume commands, therefore, an external relay connection is required.

In cases where the relay should be used, refer to “[2.9 4xContactor Application](#)” on [page 36](#), to conduct the appropriate connections.

Figure 57: Sub Module Pumalan – Connections



Pumalan Connector Pin out

8	7	6	5	4	3	2	1
E	G	TX	RX	E	G	TX	RX

Figure 58: Pumalan Port Module – General View



2.16 Door Open Detection

The FCC includes a feature for preventing unauthorized third parties from forcing the sealed FCC box door.

The FCC generates an alarm in cases where the door was opened. The function setup procedure comprehends:

- a Physical connection of the detector, as described below.
- b Digital I/O jumper setup (described in [“5.7.1 Door Open Detection Digital I/O Port Setup”](#) on [page 82](#)).
- c SiteOmatsetup (described in *MDE-4817 SiteOmat In-House Station Controller Setup and Maintenance Manual*, paragraph 6.3.1).

2.16.1 Door Open Detector Installation

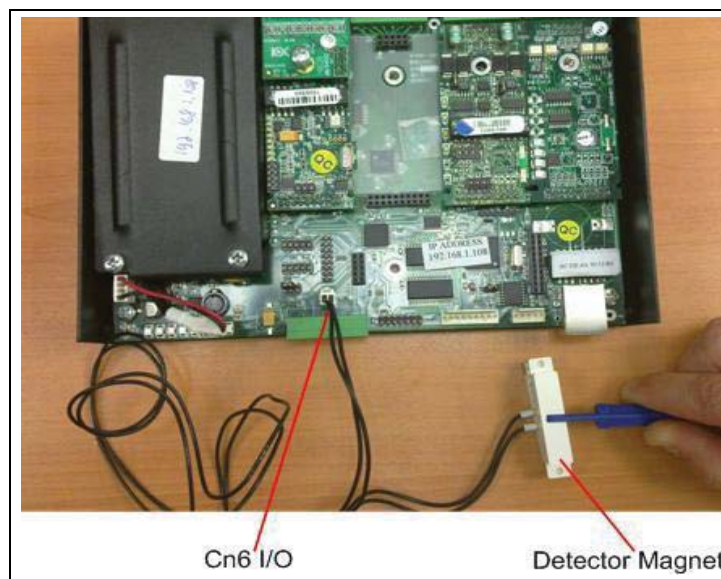
The detector is composed of two parts:

- A connector including a magnet at the end of the cable
- An additional magnet

The detector should be connected to the 8-Port CommVerter and affixed to the FCC cabinet. Proceed as follows:

- 1 Connect the detector connector to the I/O CN6 Jumper (see [Figure 59](#)).
- 2 Attach the additional magnet to the inner side of the FCC door, using the adhesive tape.
- 3 Attach the detector magnet to the box inner wall in front of the additional magnet, using the adhesive tape.

Figure 59: Door Open Detector Connection



3 – CommVerter Description

3.1 Scope

This section provides a detailed description of the CommVerter and its specifications.

3.2 Physical

3.2.1 Housing

The CommVerter can be installed in various places either on a desk or a shelf, or on a wall, or any location within the fuel station office. The CommVerter kit includes the required items for on-wall mounting as well as required mating connectors.

Figure 60: CommVerter – Front Panel



In some cases, the CommVerter is installed without its casing (see [Figure 1](#) on [page 2](#)).

3.2.2 Front and Rear Panel

The CommVerter front panel includes eight red LED indicators behind a transparent protecting window (see [Figure 60](#) on [page 57](#)).

The rear panel of the case includes the communication connectors and the power connector. A 110 VAC to 230 VAC power cord is added. The rear panel connectors layout is determined by the CommVerter interface boards installed in it.

For example: The LAN to Current Loop, Tokheim interface boards, that convert LAN communication into Current Loop, Tokheim communication only, feature a rear panel with four connectors for four different interface boards.

Figure 61: CommVerter – Rear Panel (Current Loop/Tokheim Configuration)



3.3 LED Indicators

3.3.1 General

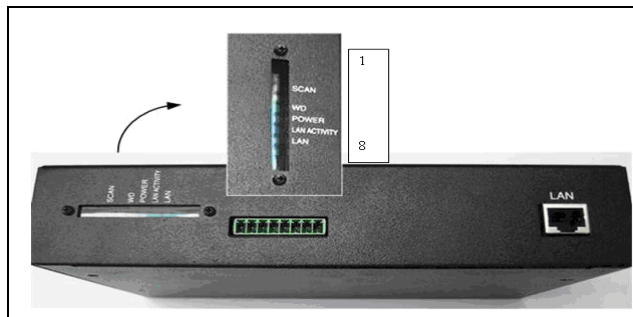
The CommVerter unit includes eight LED indicators on its front panel, protected behind a transparent plastic window. The LED indicators provide visual display on data traffic, power on as well as system functionality.

The LED indicators enable performing a system check after installation in accordance with the status of LEDs 1 to 4.

3.3.2 Configuration

The LED indicators are configured as shown below, from left to right, when facing the CommVerter front panel.

Figure 62: Front Panel LEDs Configuration



If the CommVerter PCB is used, the locations of the LEDs on the board are shown in [Figure 63](#).

Figure 63: CommVerter LEDs Configuration on PCB

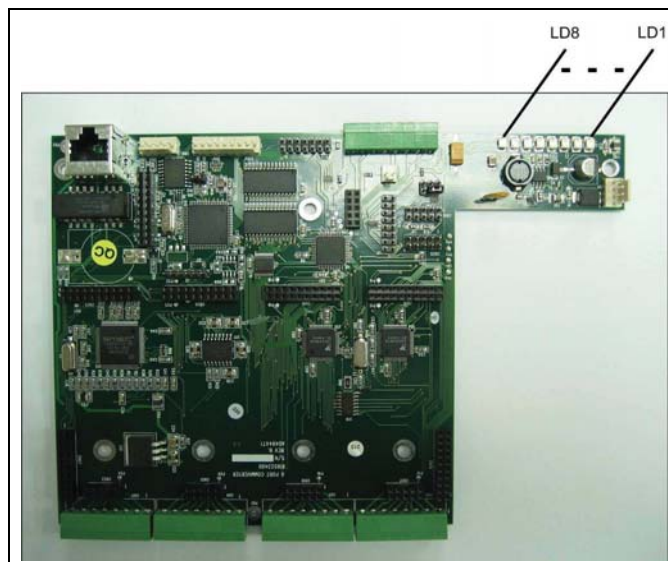


Table 8: CommVerter LED Indication

LED No.	Name	Assigned to	Indication
1	---	Blinking	Application running
2	---	Blinking	One of the channels send/receives messages
3	SCAN	Channel reconnect	Digital I/O status has changed
4	---	For future use	N/A
5	WD	WD	Watch dog - Hardware failure
6	POWER	Power ON	ON - System is ON
7	LAN ACTIVITY	LAN activity	Communication activity in the line
8	LAN	LAN connection	LAN communication is active

3.4 Main Board Connectors

The Main Board includes two special purpose connectors, as listed below (see [Figure 64](#) on [page 61](#)).

Table 9: Main Board Connector Functionality

Connector	Function
J2	MONITOR /future use
J1	Hardware Watchdog / Normally closed

3.5 Main Board Jumpers

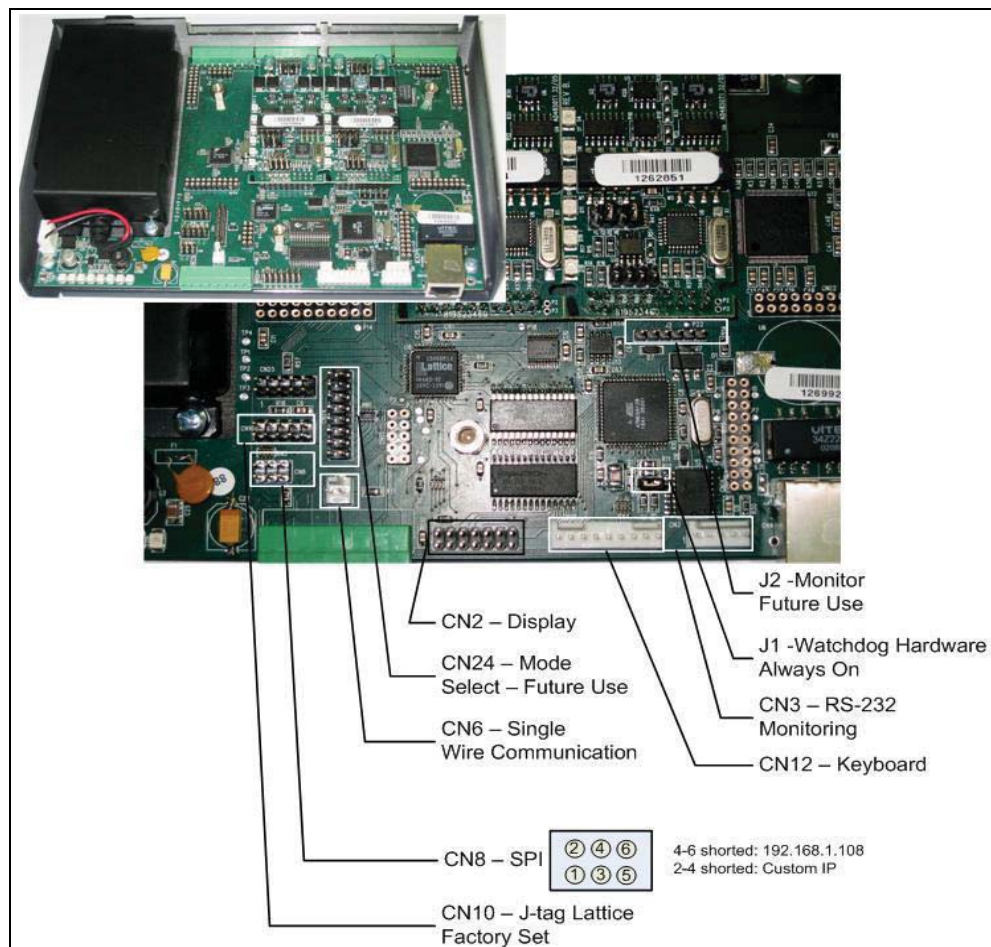
The main board includes several jumpers for different conversion methods. Each conversion method can be set by a different jumper setting (see [Figure 64](#)).

Note: The RS-232 to RS-485 conversion configuration is factory-set only; no access to the jumper set is required.

Table 10: Main Board Jumpers Functionality

Jumper Number	Function
Cn3	RS-232 monitoring
Cn12	Keyboard option
Cn2	Display connector
Cn24	Mode select /future use
Cn6	Single wire com – Open Door Detection Feature
Cn8	SPI/pin 1-2 shorted
Cn10	J –tag lattice
Cn25	J-tag AVR

Figure 64: Main Board Jumpers and Connectors



3.6 Changing the IP Address

In order to change the CommVerter IP address, as it may be required, proceed as follows:

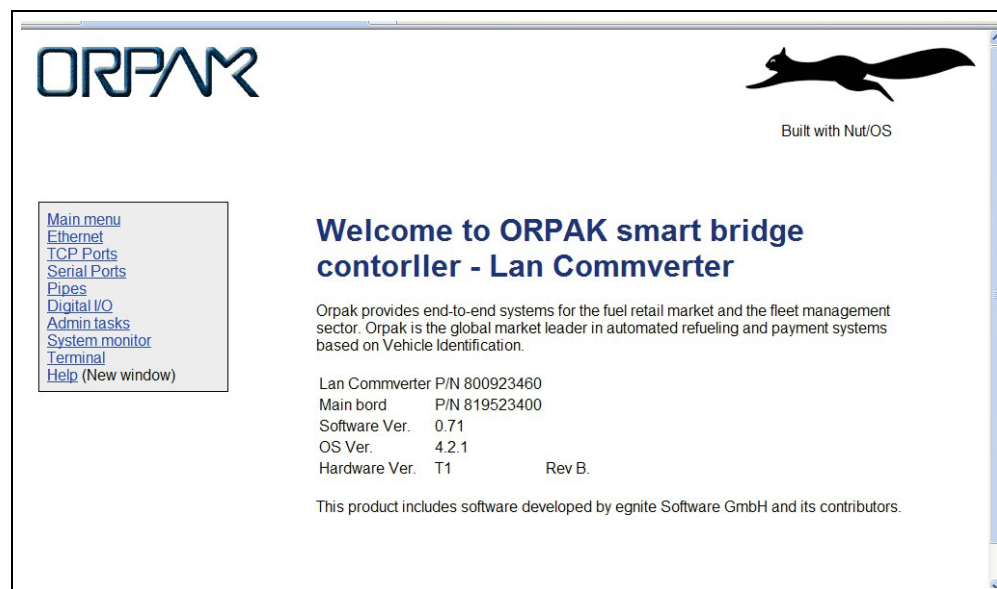
In cases where unit's IP is unknown or there is no ping to the unit, proceed as follows:

- 1 Power OFF the unit.
- 2 Short CN8 jumper pins 4 and 6 (see [Figure 64](#) on [page 61](#)).
- 3 Power ON the unit.
- 4 Browse to the default IP address 192.168.1.108 to view the current settings.

In cases where more than one unit is in use in the station, proceed as follows:

- 1 Power OFF the unit.
- 2 Short CN8 jumper pins 2 and 4.
- 3 Power ON the unit.
- 4 Connect the CommVerter to a PC (LAN Connection).
- 5 Open the Web browser, and enter the IP address of the CommVerter: 192.168.1.108. The Setup Main Screen is displayed (see [Figure 65](#)).

Figure 65: CommVerter Unit Setup Site – Main Screen



- 6 Click on Admin Tasks. The Admin screen is displayed. Scroll down the page to reach the **TCP/IP timeouts** section (see [Figure 66](#)).

Figure 66: CommVerter Unit Setup Site – Admin Screen

Admin

Set/Get eeprom
Settings will take effect after next restart.

- ☒ Read eeprom
- ☐ Read defaults
- ☐ Write to eeprom
- ☐ Write to eeprom and reset
- ☐ Read defaults and Write to eeprom
- ☐ Clear reset counter
- ☐ Reset

Service web ports
Web server port:

80
Web terminal port (0, terminal closed):
3030

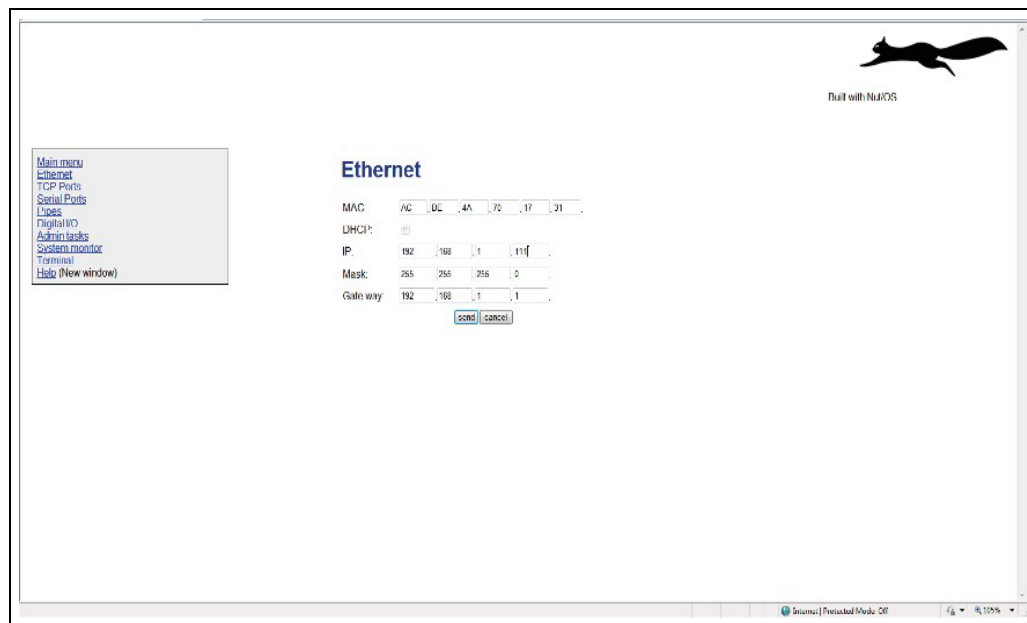
TCP/IP timeouts
Close connection timeout [sec] 3..300
☒ No communication timeout [sec] 10..60
☒ Temporary disable (up to 5 minutes)

Login information
Settings will take effect immediately.
Enable passwords:
User name:
root
Password name:

- 7 Select the **Temporary disable (up to 5 minutes)** checkbox.
- 8 Click **Send**.

- 9 Click **Ethernet**. The Ethernet screen opens (see [Figure 67](#)).

Figure 67: CommVerter Unit Setup Site – Ethernet Screen



- 10 Enter the required **IP Address**.
- 11 Click **Send**.
- 12 Click **Admin Tasks**. The Admin screen is displayed (see [Figure 66](#) on [page 63](#)).
- 13 Select **Write to eeprom** and reset radio button.

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4 – Installation and Grounding

4.1 General

This section provides the installation procedures for the CommVerter, and the removal instructions for pump interface board replacement. Sections “4.2 Preliminary Procedures” to “4.4 Grounding the CommVerter” on page 69 provide the installation procedures specifically for the enclosed type CommVerter unit only.

4.2 Preliminary Procedures

4.2.1 Unpacking and Inspection

This section provides information for unpacking and inspection:

- Examine the shipping container for damage before unpacking the unit. Perform a visual inspection to reveal any physical damage to the equipment.
- Verify that the equipment is complete, as listed in Table 11.

4.2.2 Installation Equipment

The CommVerter is supplied in a kit with the necessary items for its proper installation, as listed below.

Table 11: CommVerter Unit Kit

No.	Description
1	CommVerter Unit
2	Connector for RS-485/RS-232/Current Loop/Tokheim and more
3	Mounting Bracket for wall installation

Note: The kit includes the relevant connector only (Item 2), in accordance with the supported communication conversion method.

4.2.3 Protective Procedures

Prior to installing the unit, verify the following safety and operating environment requirements:

- Ensure the local AC power voltage (110 VAC to 230 VAC) meets the model requirements of the CommVerter unit you are installing. If not, add a proper voltage converter.
- Check all safety warnings (as included in the manual opening pages) are met before proceeding with the installation.
- Connect the CommVerter unit (neutral, line and earth) lines to the local electricity network only after all installation procedures are completed.

4.3 Installing the CommVerter

4.3.1 General

The CommVerter can be mounted in two ways as follows:

- Desktop installation
- Wall installation

4.3.2 Desktop Installation

This type of installation means that the CommVerter can simply be installed on any plane, clean surface in the station offices.

Proceed as follows:

- Locate a secure, well-shaded and ventilated, location place at the office.
- Install the CommVerter in the selected area.
- Perform the necessary connections.

Ensure that the unit is placed in a well-shaded and ventilated location.

4.3.3 Cables Connections

The next step in the installation procedures requires connection of cables to the CommVerter.

Note: The connection to the main power plug should be done only after all the communications cables are inserted, and not previously.

Proceed as follows:

- 1 Make all necessary communication cables connections to the CommVerter, in accordance with the fuel station configuration and with the special requirements of the installed cables.

Note: The CommVerter kit includes only the relevant connectors as specified in the supported communication conversion method.

- 2 Connect the Power Supply cable to the CommVerter.
- 3 Connect the power cable to the Mains (110 VAC to 230 VAC).

*Notes: 1) If an adapter to the main wall plug is required (in accordance with the local configuration), please obtain it beforehand – it is not included in the shipment.
2) The CommVerter kit includes only the relevant connectors as specified in the supported communication conversion method.*

4.4 Grounding the CommVerter

4.4.1 General

The CommVerter must be grounded for safety and protection, once installed. This requirement is achieved by grounding the RS-485 connector of the external communication cable.

4.4.2 Grounding – General Concept

The shields of the density probes, density displays, Tag Readers, and pumps (RS-485) are looped to the Earth of the FCC enclosure.

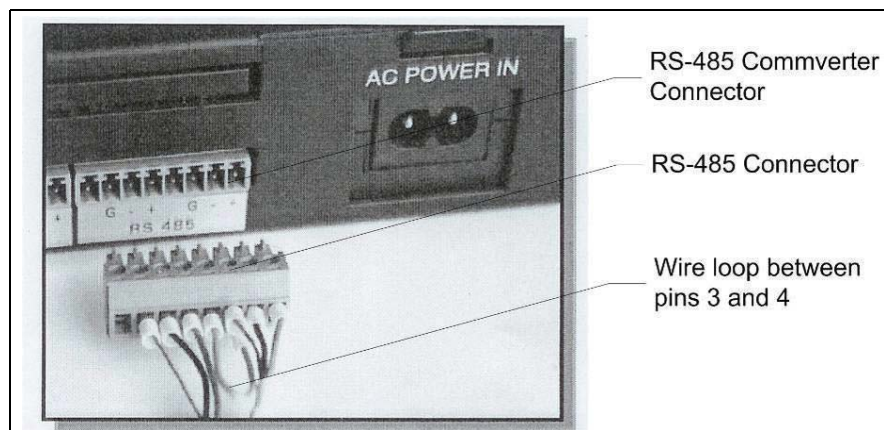
In order to connect the 8-port CommVerter with the Earth of the FCC enclosure, it is enough to loop only one of the shield pins of the enclosure with the Earth pins at the 8-port CommVerter RS-485 connector.

4.4.3 Grounding the 8-port CommVerter (without RS-485 card)

Proceed as follows:

- 1 Make a wire loop between pin 3 and pin 4 (see [Figure 69](#)) in the RS-485 input connector of channels 1 and 2.
- 2 Use at least 1 mm of yellow-green wire.
- 3 Use a separate lug for each wire-end inside the port.

Figure 69: CommVerter Unit – Grounding Cable in RS-485 Connector



4.4.4 Grounding the 8-port CommVerter (without RS-485 card)

Proceed as follows:

Figure 70: CommVerter Unit – Grounding the Unit (without RS-485 Card)



- 1 Connect a round lug to a grounding cable (color green or yellow).
- 2 Connect the other end of the grounding cable to the FCC enclosure main ground.
- 3 On the corner of the CommVerter at the power supply side, open the screw that closes the cover of the 8 port CommVerter.
- 4 Insert the lug between the cover and the chassis of the CommVerter.
- 5 Close the screw and tight it well.
- 6 Verify proper grounding

4.4.5 Verifying the Grounding

Proceed as follows:

- 1 After connecting the Earth cable between the 8-port CommVerter and the FCC enclosure earth bar, use a multi-meter to verify it is properly grounded.
- 2 Verify impedance [up to 5 Ω] between the 8-port CommVerter chassis and the FCC earth.

4.5 Pump Interface Board Installation and Grounding

Note: When installing interface boards on the CommVerter, power to the board should be disconnected.

4.5.1 Installation of Protective Isolator Sheet

Before installing a pump interface board on the CommVerter main board, insert a Protective Isolator Sheet between the board and the interface board. This Isolator Sheet prevents damage during removal of the item from the board due to the use of a screwdriver or other unsuitable sharp device.

4.5.2 Connector Mechanical Outline – Check Procedure

When installing an interface board on the CommVerter main board, carefully check that the interface board connector mechanical outline is identical with the connector in the Main board. The current connectors have a rectangular form, where in previous versions of the main board, the connectors were circular. Do not use force, you may damage the boards.

4.5.3 Interface Board - Grounding

Once you have installed any interface board on the main board, secure the interface board by locking it with the appropriate screw. This screw also serves as protective grounding.

4.5.4 Interface Board Installation – Wiring Label Placing

In enclosed type CommVerter, after placing a pump interface board on the PCB, stick the supplied wiring label associated with the specific installed pump interface board. The label should be placed on the rear panel, under the relevant interface board connector.

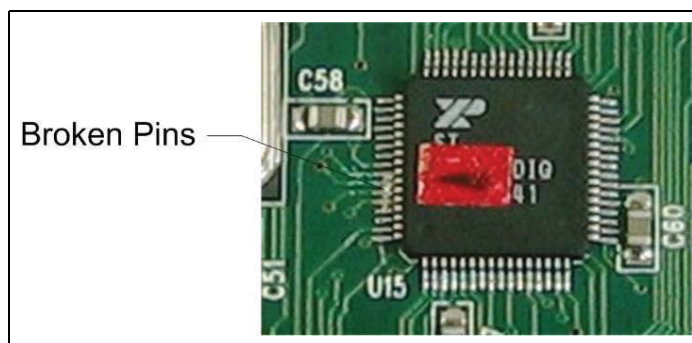
4.6 Interface Board Replacement - Removal Instructions

4.6.1 General

Pump interface boards in the CommVerter main board may need to be replaced during maintenance and replacement procedures. These units may be heavily damaged as a result of mishandling. Use of screwdrivers or other unsuitable sharp devices to detach the item can cause broken pins due to excessive force exerted on the interface board.

You are required to use the proper tool and operate properly, as described below.

Figure 71: CommVerter Unit – Damaged Interface board



4.6.2 Removal Tool – Spring ARC

In order to detach an interface board from the CommVerter main board, use only the Spring-ARC tool, a unique device from Gasboy.

Figure 72: Spring ARC Tool

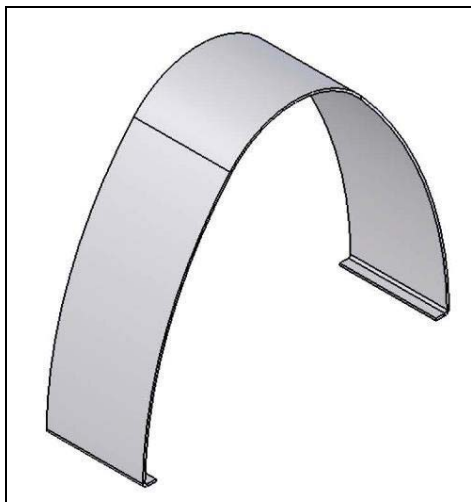
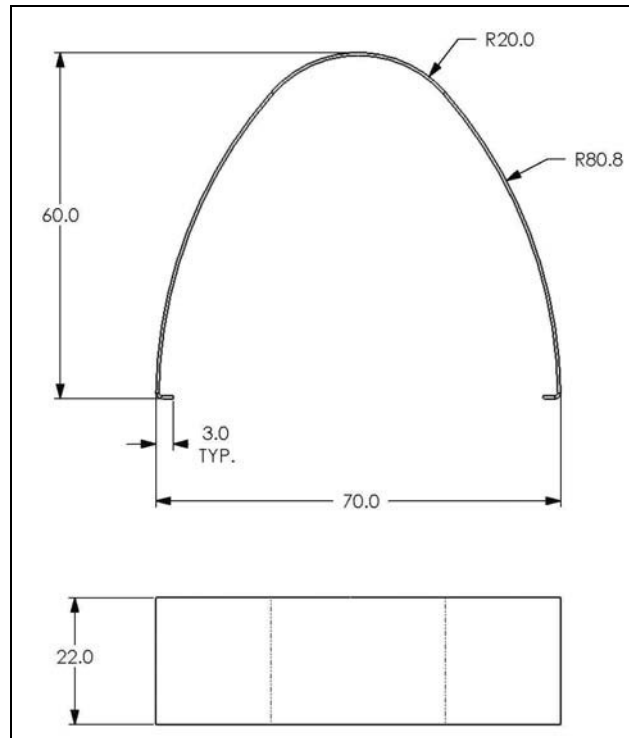


Figure 73: Spring ARC Tool – Dimensions

4.6.3 Removal Tool –Procedures

To detach an interface board from the CommVerter main board, proceed as follows:

- 1 Position the Spring-ARC tool on the two far edges of the module vertically and tightly.
- 2 Push out the interface board while taking care to detach it evenly.
- 3 Perform the procedure in a straightforward action.

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5 – Setup and Configuration

5.1 General

This section provides the setup and configuration procedures to enable the CommVerter to operate properly in its local environment.

Note: The following instructions are provided, taking into consideration that the setup and configuration software program is installed in the Station Controller.

The setup and configuration procedures consist of:

- Displaying the LAN CommVerter Main page
- Configuring the Ethernet parameters such as IP and Message Authentication Code (MAC) addresses of the CommVerter
- TCP/IP port addressing
- Changing the parameters for each serial ports such as; baud rate, parity, stop bit
- Performing administrative task
- Monitoring

Notes: 1) The 8-port CommVerter performs an automatic Restart procedure every 30 seconds (default) whenever it is not connected to external equipment. You can determine this timeout value by clicking in the appropriate box. For more information, refer to [“5.8.2 Service Web Ports – TCP/IP Timeout Definition Procedures”](#) on page 84.

2) The values entered for each type of configuration are saved separately. For example, changes in UART 1 are saved separately to changes in UART 2. In any case, the change will be saved only by writing the new data in the EEPROM by means of the Admin Task.

3) The changes shall be effective only after resetting the 8-port CommVerter.

4) The 8-port CommVerter is not suitable for transmission rate above 9600 bps. To operate at higher than 9600 bps, division into packets is employed (Packets are truncated to 250 bytes). Otherwise, there may be loss of data.

However, the current applications already in use, are not affected by this limitation.

5.2 Displaying the Main Page

To display the LAN CommVerter Main page, proceed as follows:

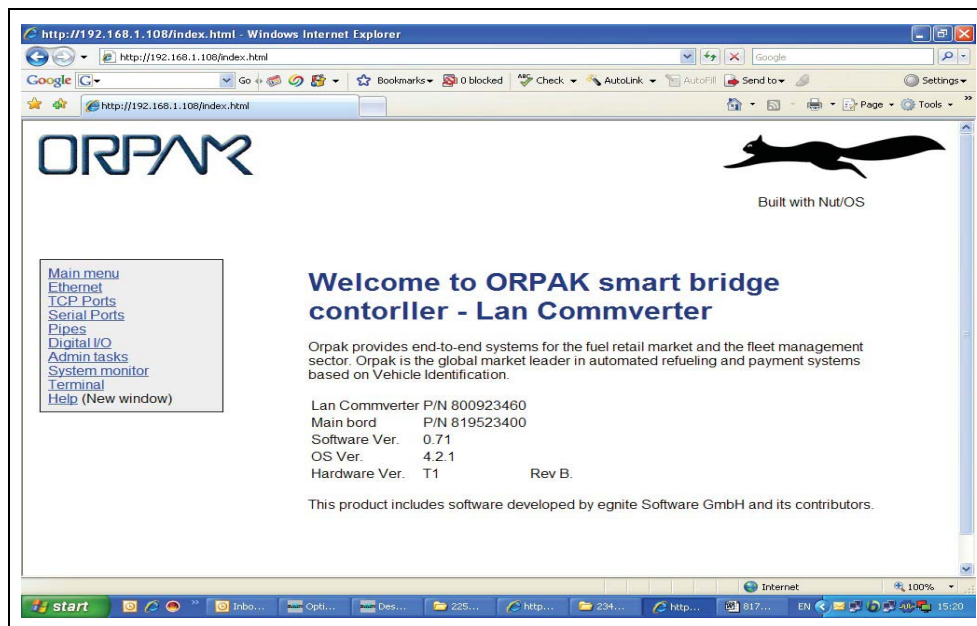
Connect the CommVerter to a PC (LAN Connection).

Open the Web browser, and enter the IP address of the CommVerter.

Default: <http://192.168.1.111>

The LAN CommVerter Main page is displayed (see [Figure 74](#)).

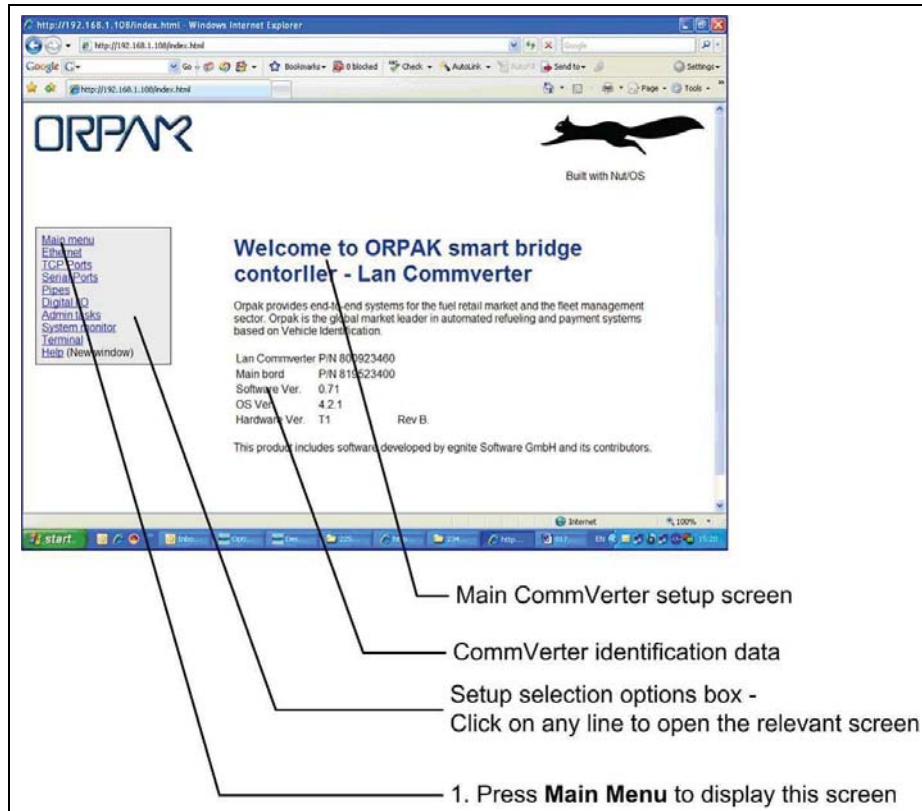
Figure 74: CommVerter Unit – Setup Main Screen



The Main Screen includes on its left pane a list of communication protocols and standards for your selection, in accordance with the local station environment.

Click on the appropriate selection to display the relevant setup and configuration screen. The following paragraphs provide a description for each available communication protocols and standards.

Figure 75: Setup Main Screen – Fields



5.3 Ethernet Setup Procedures

To setup and define the Ethernet communication on the Ethernet screen, proceed as follows (see [Figure 76](#)):

- 1 In the Main screen, press on the Ethernet selection.
- 2 Insert the relevant data to enable Ethernet communication.
- 3 Press Send to store the selected data in the RAM memory.

Note: Before changing the MAC Address, check that the new address is not in use by any other device in the network. In any case, the 8-port CommVerter is supplied with a unique MAC Address, which should not be changes unless there is a local problem.

The new identification data is uploaded only after writing in the EEPROM (see “[5.8 Administration Tasks Procedures](#)” on [page 83](#)) and Reset action.

Note: The MAC Address is stored and kept independently of the Reset action, that is kept unchanged.

Figure 76: Ethernet Setup Screen

3. Once defined, press SEND to transmit and store the data temporarily in the RAM memory. However, the data will be stored in the EPROM from the Admin screen only. See paragraph below.

2. Define the Ethernet communication:

- Enter the MAC Address for the Ethernet channel in Hex base 16
- Click on DHCP if you want to define it as DHCP
- Enter IP number, Mask number and Gateway

1. Press Ethernet to display this screen

5.4 TCP Ports Setup Procedures

To setup and define the TCP ports in the 8-port CommVerter, proceed as follows:

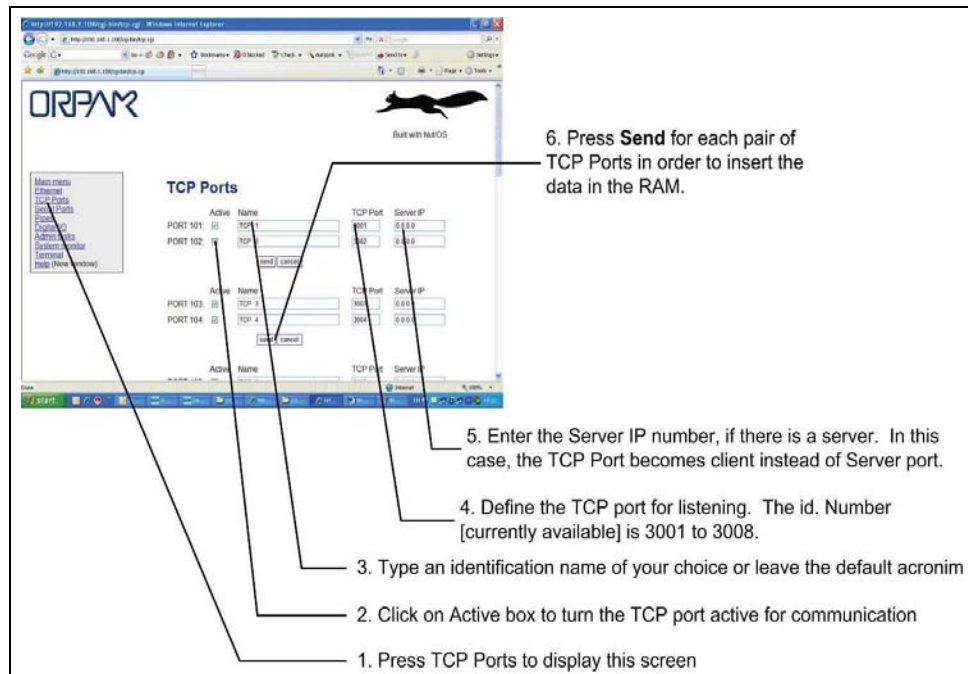
- 1 In the Main screen, press on the TCP Ports selection.
- 2 Insert the relevant data to define the TCP ports. You should add a name of your choice for the port (or leave the default name).

Just as well, if you add a Server IP, the port becomes a Client instead of a Server (as when there is no IP Server).

- 3 The screen allows you to define up to eight (8) TCP ports. Scroll the screen to reach all ports.
- 4 Press Send to store the selected data in the Random RAM memory. The stored data is temporarily kept. The CommVerter resets the data every 30 seconds default time-out. To obtain a longer time-out, click on the Admin selection, then TCP IP Time Out, then click on Temporary Disable (this enable you to obtain a 5 minute delay).

The new identification data is uploaded only after writing in the EEPROM (see “5.8 Administration Tasks Procedures” on page 83) and Reset action.

Figure 77: TCP Ports Setup Screen



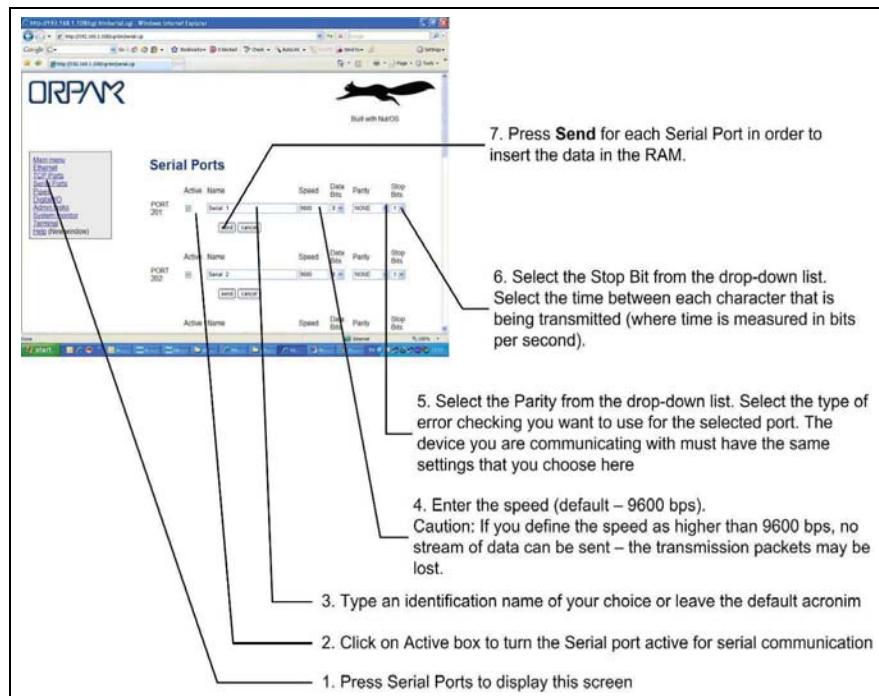
5.5 Serial Ports Setup Procedures

To setup and define the serial ports in the CommVerter, proceed as follows:

- 1 In the Main screen, press on the Serial Ports selection.
- 2 Define each Serial Port separately.
- 3 Press Send to store the selected data in the RAM memory. The stored data is temporary kept.

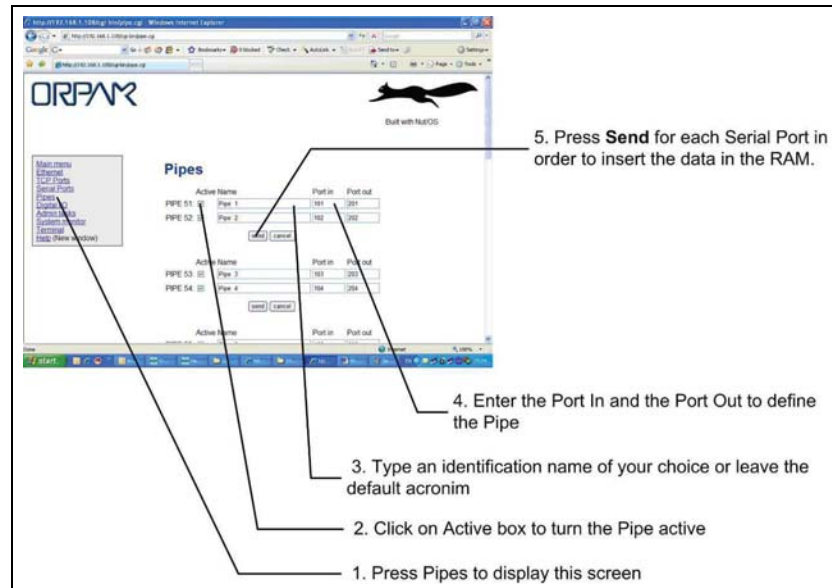
The new identification data is uploaded only after writing in the EEPROM (see “5.8 Administration Tasks Procedures” on page 83) and Reset action.

Figure 78: Serial Ports Setup Screen



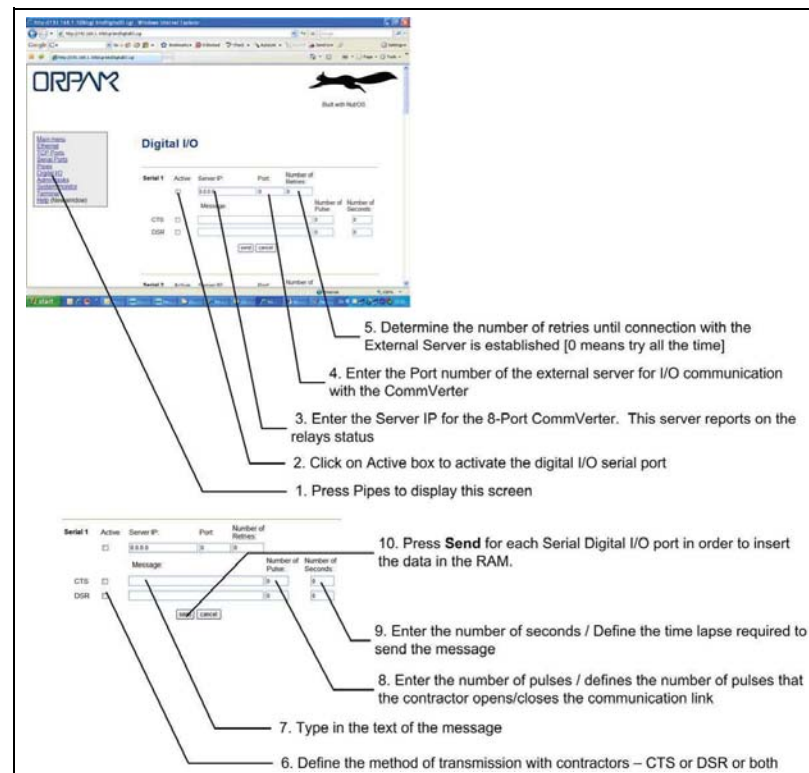
5.6 Pipes Setup Procedures (Not to be Used)

Figure 79: Pipes Setup Screen



5.7 Digital I/O Ports Setup Procedures (Not to be Used)

Figure 80: Digital I/O Ports Setup Screen



5.7.1 Door Open Detection Digital I/O Port Setup

In order to activate the door open detection feature (refer to “[2.16 Door Open Detection](#)” on [page 56](#)), scroll down in the page and select the **Active** checkbox (see [Figure 81](#)).

Figure 81: Digital I/O Ports Setup Screen – Door Open Detection Activation

The screenshot shows a web browser window with the address bar displaying `http://172.16.6.25/cgi-bin/DigitalIO.cgi`. The page content includes configuration fields for CTS and DSR ports. At the top, there are checkboxes for CTS and DSR, each followed by input fields for 'Server IP', 'Port', and 'Number of Retries'. Below these are 'send' and 'cancel' buttons. A section titled 'Digital Control' is visible, featuring an 'Active' checkbox (which is checked) and a 'TCP/IP Listening Port' input field with the value '6500'. There are also 'send' and 'cancel' buttons for this section. The browser's status bar at the bottom shows 'Done' and 'Internet'.

5.8 Administration Tasks Procedures

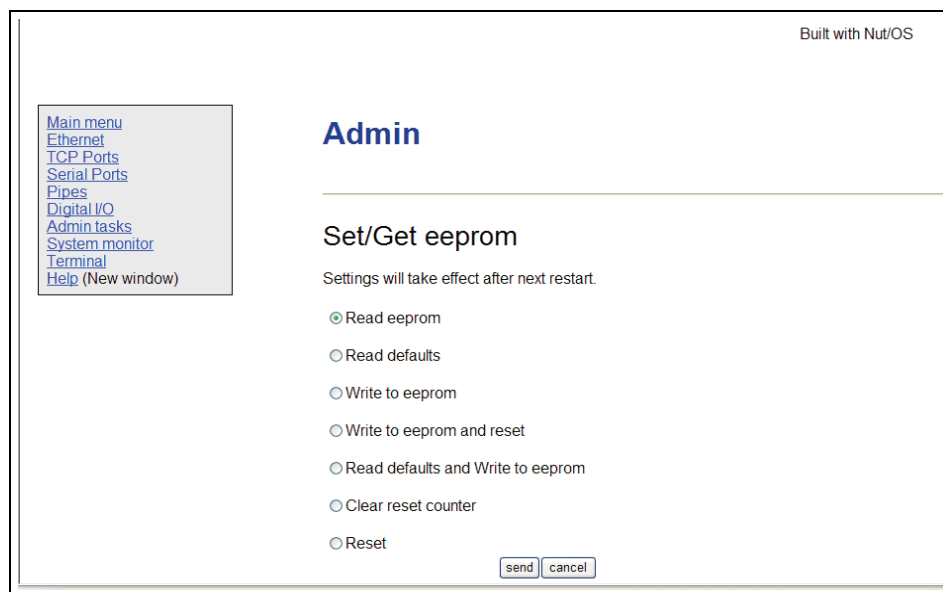
The Setup and Configuration screen provides an administration screen whereby you can display the data stored during the various setup procedures. This screen also enables you to read and write all the setup changes and parameters to/from an EEPROM, as well as the Web ports and more as described below.

5.8.1 EEPROM Save Procedures

To perform the administration tasks to set the EEPROM, proceed as follows (see [Figure 82](#)).

In the Main screen, press on the “Admin tasks”.

Figure 82: Administration Tasks Screen



The available tasks are as follows:

“Read EEPROM”

With this option, you can read stored data and setup parameters from the EEPROM to RAM memory. At this stage, changes can be done and restored in EEPROM with the “write to EEPROM” option.

“Read default”

This option enables reading all the factory defaults from the memory. At this stage, you can introduce all necessary changes and store it in EEPROM.

“Write to EEPROM”

This option is necessary to transfer and store all the changes and parameters from the RAM memory to the EEPROM. If you do not use this option after performing any change, the changes will be lost after the CommVerter setup. However, this Save is temporary. You must initialize a Reset procedure for the change to take effect (like power cycle).

“Write to EEPROM and Reset”

Use this option to transfer and store all the changes and parameters from the RAM memory to the EEPROM and perform an automatic Reset procedure afterwards, fully implemented. Once this procedure is performed successfully, the changes are implemented in the CommVerter.

“Read default and Write to EEPROM”

Use this option to read all the factory defaults and at the same time write them into the EEPROM.

“Clear reset counter”

This option enables setting to zero the counters responsible for counting the system “start ups”.

“Reset”

Use this option to reset the CommVerter, like a power cycle.

5.8.2 Service Web Ports – TCP/IP Timeout Definition Procedures

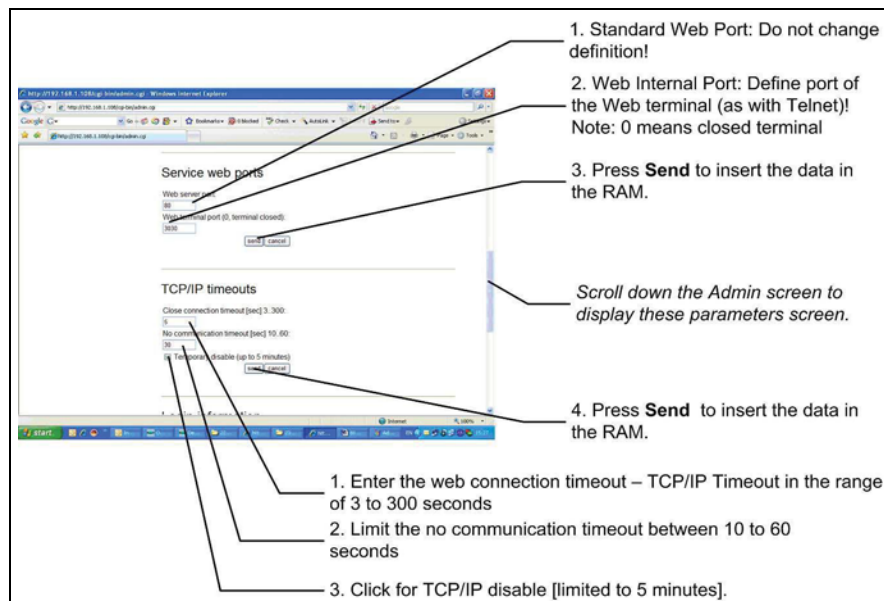
The Service Web ports are shown for information only. They are shown by scrolling down in the Admin screen selection. You are requested not to change their identification unless in accordance with Gilbarco Systems service personnel.

The TCP/IP fields are provided to allow you to determine the timeout for the IP connection whenever it is not in use. Proceed as follows:

In the Admin screen, scroll down until this screen is shown.

Proceed as described in [Figure 83](#).

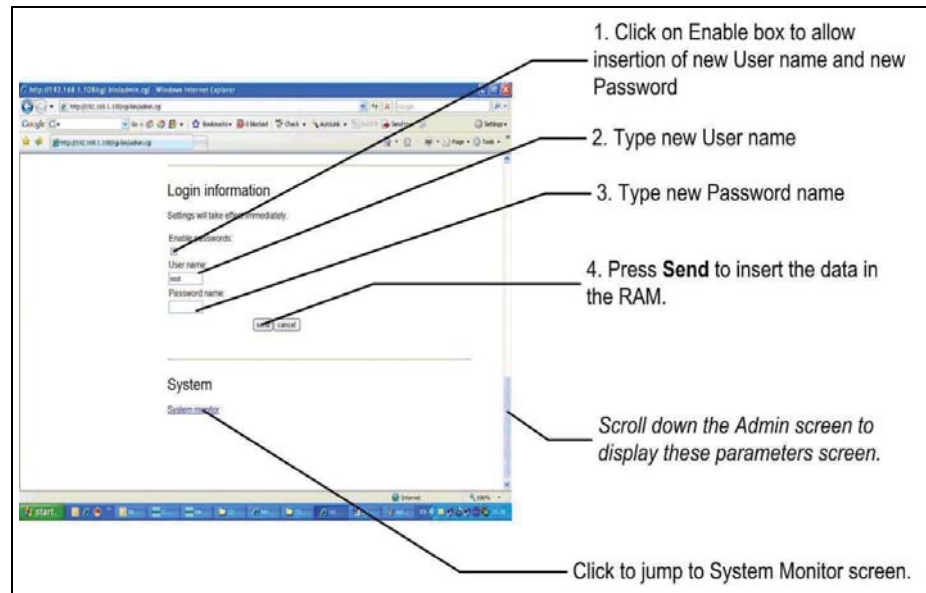
Figure 83: Service Web Ports – TCP/IP Timeout Screen



The new identification data is uploaded only after writing in the EEPROM (see “[5.8 Administration Tasks Procedures](#)” on [page 83](#)) and Reset action.

5.8.3 Login Information Definition Procedures (Not to be used)

Figure 84: Service Web Ports – TCP/IP Timeout Screen



5.9 System Monitor Information Screens

5.9.1 General

The System Monitor screen provides information about:

- Ports and their definition - in the Threads running table
- Sockets status – in the Open Sockets table
- Memory status - in the Heap memory field
- File status – in the Open Files field
- Counters status – in the Reset Counters field
- Configuration – in that field

Proceed as described below:

Figure 85: System Monitor Screen – Threads Running

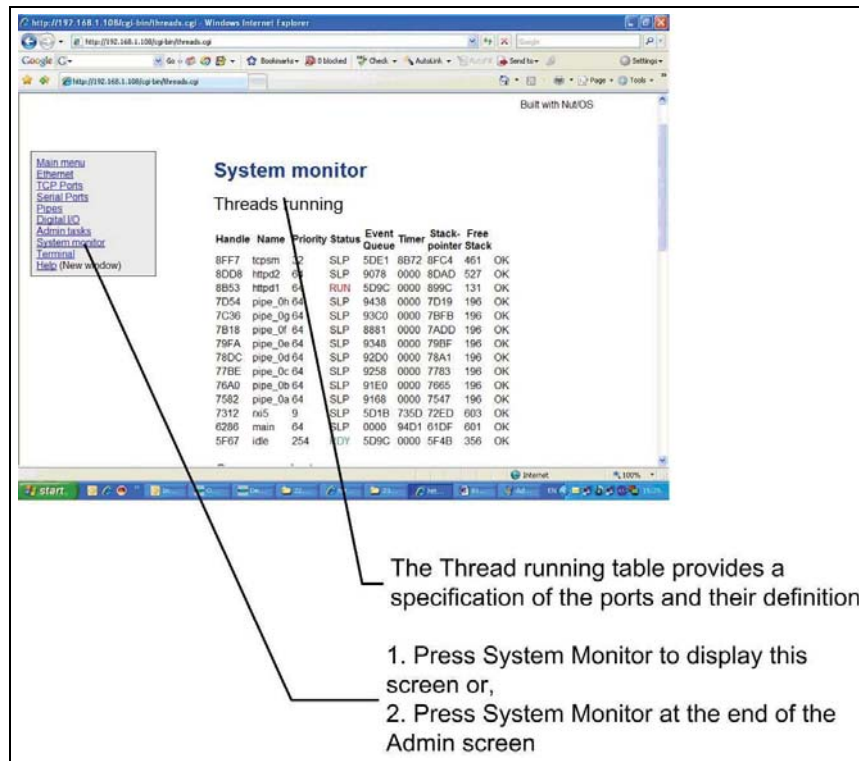
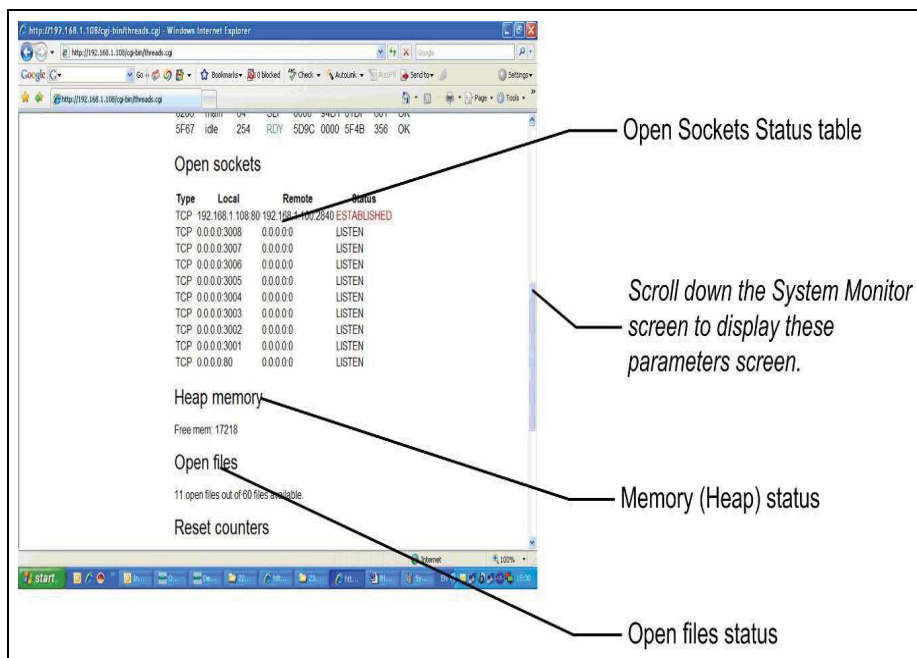
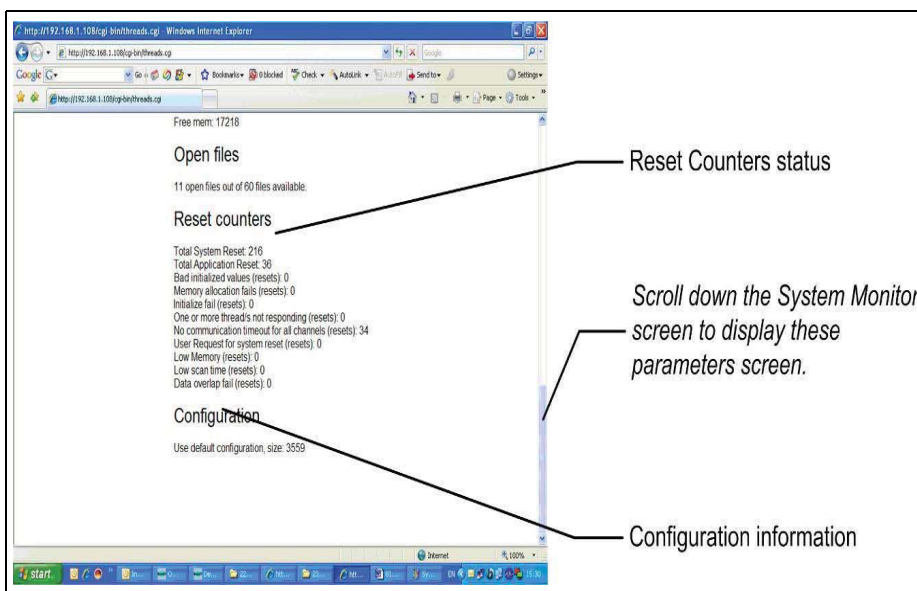


Figure 86: System Monitor Screen – Sockets, Memory, File Status**Figure 87: System Monitor Screen – Reset Counters, Configuration Status**

5.9.2 Counters Description

This paragraph provides a description of the several counters, as shown in the Reset Counters list, within the System Monitor screen.

Total System Reset – Holds the total resets occurred on system. Both unexpected resets (such as power fail, manual reset, and application crash) and application reset as when the application experiences some critical fault (low memory, no communication and so) and must restart.

Total Application Reset – Holds all application reset as when the application experiences some critical fault (low memory, no communication and so) and must restart. The total application reset is equal to the sum of all types of reset as listed on the web page.

Bad Initialized Value – Provides indication of some bad values on some global variables. This can occur due to an unexpected crash prior to the reset.

Memory Allocation Fail – Indicates that the system has no memory.

Initialize Fail – Error that occurs during the application start-up.

One or more threads not responding – Provides indication that one or more active communication threads is busy or not responding within the requested timeout (2 seconds). Means the application has not reset the alive flag.

No Communication timeout for all channels – Indicate that no communication (both send and receive) occurs on all active communication threads within the requested timeout.

User request for system reset – User request for manually reset from the Administrator web page.

Low memory – The application identifies low when the heap memory is behind the minimum size required by the application.

Low scan time - The application identifies that the main thread is too busy and not responding within the expected time frame.

Data overlap fail – Provides indication about critical application problem while some data variables overlap and have bad values.

5.10 Terminal Screen

This screen is not to be used.

6 – Checks and Troubleshooting

6.1 General

This section provides the checks and troubleshooting procedures to ensure CommVerter proper operation and to provide repair suggestions.

The setup and configuration procedures consist of:

6.2 Post-Installation Checks

After completing the installation procedure in accordance refer to “[Installation and Grounding](#)” on [page 67](#), carefully inspect the connections between the CommVerter unit and station controller.

The LED indicators are intended for quick troubleshooting, verify status as follows:

- 1 PWR LED indicator is OFF - Check power connections
- 2 TXD or RXD are OFF - Check communication lines connections.

Pay attention to the following issues:

- Correct wiring.
- Correct routing of wires and good separation between the various wire harnesses.
- Clean dirt and wire remnants.

In case some problems are detected after installation or during operation, repeat the post-installation checks listed above.

If the problem persists, contact Gilbarco. Under no circumstances, are you allowed to open the CommVerter unit case. The CommVerter unit repair should be performed at the producer laboratories only.

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Appendix A: Upgrading the CommVerter to a New Version

A.1 General

This appendix provides the procedures for the upgrading of the CommVerter to a new version.

A.2 Applicability

These procedures are applicable only for a CommVerter with an installed Loader.

A.3 Upgrading Procedures

The upgrading procedures consist of the following main steps:

- Preliminary setup procedures
- Setting the DHCP Server
- Setting the application parameters

A.4 Preliminary Setup Procedures

Required Equipment:

- Laptop with applicable software
- Switch hub
- CommVerter

The following preliminary actions are required prior to the updating procedures. Proceed as follows:

- Turn on your laptop
- Disable the XP firewall from the control pane
- Obtain a dedicated switch hub and disconnect all equipment

Note: Disconnect all equipment and then connect the CommVerter to your laptop using a dedicated switch hub only.

Obtain and write down on a separate paper all the relevant communication parameters of the CommVerter:

- MAC address
- IP address
- Serial ports parameters
- TCP port configuration and so on

Note: After the upload procedure (from versions 0.58 or 0.69 to any other later version) all parameters in CommVerter are being erased and should be set again.

- Connect the laptop to the switch hub
- Connect the CommVerter to the switch hub
- Try to ping the CommVerter from your laptop (in order to validate the Comm. link)
- In the laptop, create a directory and enter the following files:
 - “bsp8p_controler.bin”
 - “tfd32.exe”
- Disconnect the CommVerter from the switch hub

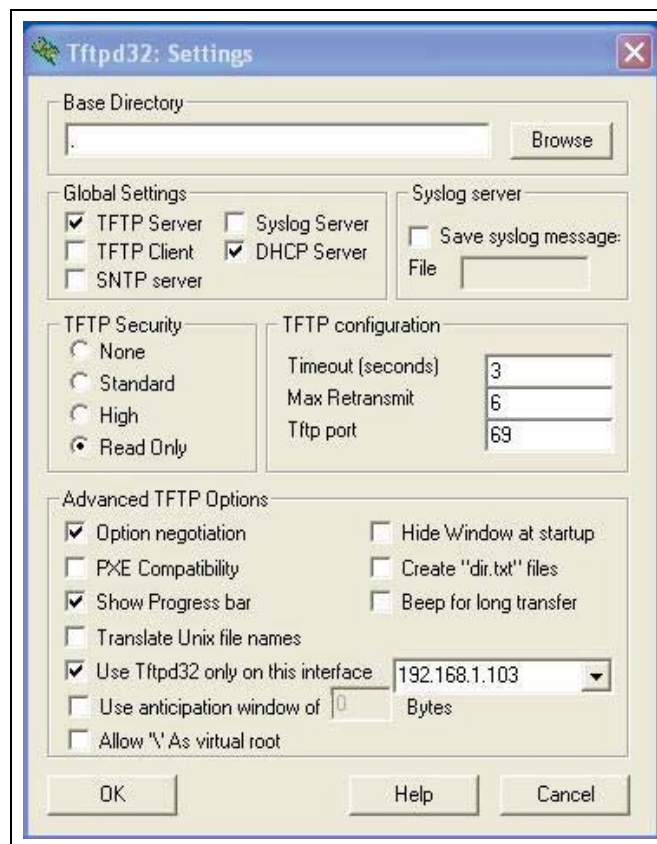
The next procedure consists of running the tfdp32.exe application.

A.5 Setting the Application Parameters

Proceed as follows:

- Go to “settings” by Press the Screen button. The “settings” screen is displayed.
- Check all the parameters as shown in [Figure 88](#).
- After checking that the correct parameters are displayed, click **OK**.
- Close the application.

Figure 88: Application Setting Parameters

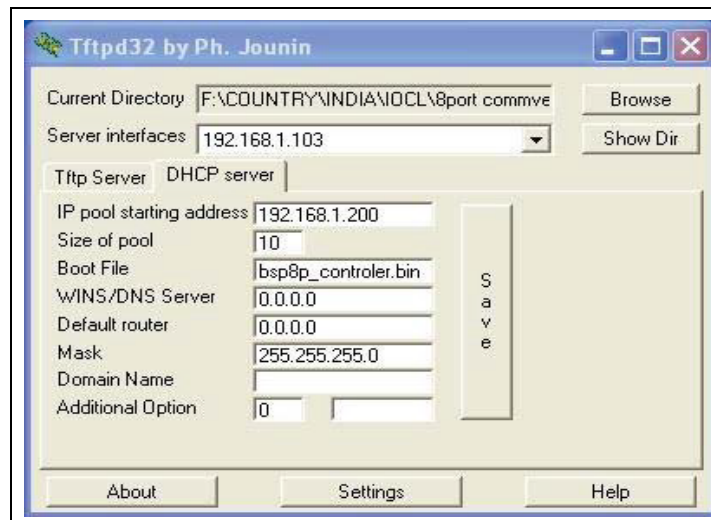


A.6 Setting the Application Parameters in the DHCP Server

Proceed as follows:

- Set your local computer network address to 192.168.1.103 with mask 255.255.255.0
- Right click on the tfdp32.exe file and select Run as administrator
- Fill exactly the following parameters in “DHCP server” screen as shown in [Figure 88](#) on [page 92](#).
- Press the Save button (see [Figure 89](#)).

Figure 89: DHCP Server – Communication Parameters

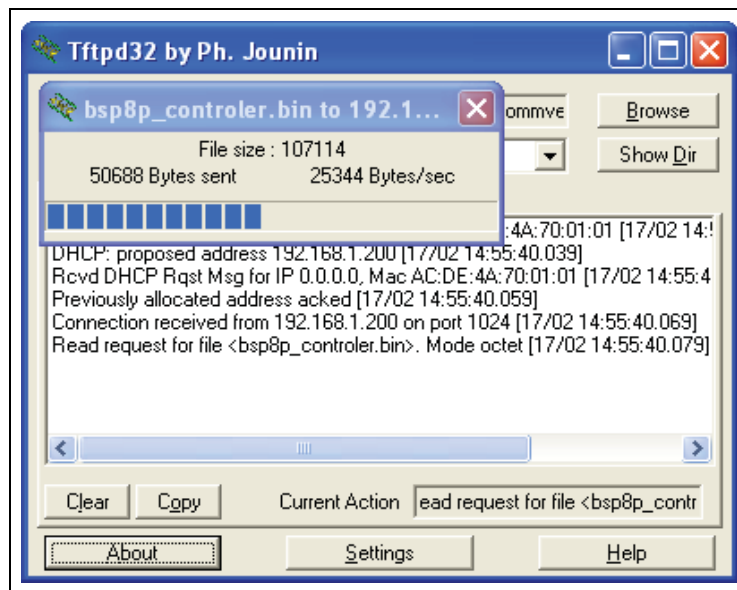


A.7 Final Procedures

Proceed as follows:

- Connect the CommVerter to a new switch hub.
- Turn the CommVerter ON.
- Run the tftp32.exe file as an administrator and open the “tftpd32” application again (see [Figure 90](#)).
- From your laptop, try to ping the CommVerter and confirm the valid communication link.
- Browse the CommVerter > admin task.
- “Reset” the CommVerter. Reset also can be done by turning off then on the CommVerter while the “tftp32” application is open.
- The firmware version is automatically updated within the CommVerter with the “bsp8p_controler.bin” file (see [Figure 90](#)). The upload process is shown graphically.

Figure 90: Application Setting Parameters



- After the upload procedure is finalized, turn OFF the application.
- For the next upgrade, just change the firmware in the directory and perform the above mentioned procedures.

Note: After each upload, try to configure the MAC address of the CommVerter as well as other parameters as required.

A.8 MPI-C - Dynamic Pulser Sampling Period

A.8.1 General

The dynamic sampling period is introduced to better cope with low quality pulsers. The MPI-C is required to count high frequency pulses (up to 5K PPS). With slower and low quality pulsers, intermittent noise (resulting from pulser relay bouncing) is inside the band width of the 5K MPI-C pulses range. It is suggested to have an adjustable pulser sampling period that will be closer to the actual pulse rate.

A.8.2 Calculation

The actual sampling rate will be calculated based on the Pulser Factor. Parameters:

F = Factor in Pulse/Liter

FR = Pump Flow Rate in Liter/Min

PPS = Pulse per second

PW = Pulse Width in millisecond

$$F \frac{\text{Pulse}}{\text{Liter}} * FR \frac{\text{Liter}}{\text{Min}} * \frac{1}{60} = \text{PPS} \frac{\text{Pulse}}{\text{Second}}$$

The pulse width for 50% duty cycle is

$$PW_{\text{msec}} = 1000/(2*PPS)$$

The final formula for a Flow Rate of 200 Liter/Minute, is therefore:

$$PW_{\mu\text{Sec}} = 150000/F_{\text{Pulse/Lit}}$$

A.8.3 Setting the MPI-C

The following values are calculated for some representative factors:

F	PPS	PW	Actual
<small><u>Pulse</u> Liter</small>	<small><u>Pulse</u> Second</small>	<small>Msec</small>	<small>PW μSec</small>
10	33.33	15.000	1000
25	83.33	6.000	1000
50	166.67	3.000	1000
100	333.33	1.500	1000
200	666.67	0.750	750
500	1666.67	0.300	300
1000	3333.33	0.150	150
2000	6666.67	0.075	100
5000	16666.67	0.030	100

The “Actual Pulse Width” range will limited to MaxPW=1000 and MinPW=100 microseconds.

The pulse width will be sent to the MPI-C by the Pump Server. In dual mode, the MPI-C will use the received PW form either channel, for both channel. It is the responsibility of the Pump-Server to send the lower PW value to either channel.

The default value of the MPI-C is PW=1000.

Appendix B: Planning and Connection of Pump Interface Boards

B.1 General

This appendix provides the general rules with planning and connecting interface boards and tag readers/printers to the LAN 8 port CommVerter. Regarding RS-485 pump interfaces, only the same brand pumps can be connected to either channel. In case that any channel is left unused, Tag reader/printer can be connected to that port.

The Number of CPU heads connected to each pump interface board has been optimized. For more information, refer to [“2.3 Types of Fuel Pump and their Communication Method”](#) on [page 11](#).

All pump interface boards have protection against lightening/ESD.

B.2 Connectors

All the pump interface boards will be provided with relevant 8 pin connectors, each 4 pin shall represent a distinctive channel.

B.3 Working with CommVerter

The CommVerter in all products supplied by Gasboy includes 4 slots for plug in units:

- Slot 1 and 2 – Used for pump connection plug-in's
- Slot 3 – Optional RS-232 plug-in for TLG (or other peripherals or electronic RS-232 pump)
- Slot 4 – Optional RS-485 plug-in for peripherals or electronic pumps (e.g. Gasboy 485 pump)

The products are supplied by Gasboy with the following plug-ins installed:

- Any controller that support 2 mechanical pumps – One MPI-C plug-in in slot 1.
- Any controller that support 4 mechanical pumps – One MPI-C plug-in in slot 1 and One MPI-C plug-in in slot 2.
- Any controller that support electronic pumps – One RS-485 plug-in in slot 1.

Distributors have different plug-in types as spare parts. Distributor or technician has the option to add, in the station, and according to specific station peripherals the following plug-ins:

Mechanical pumps:

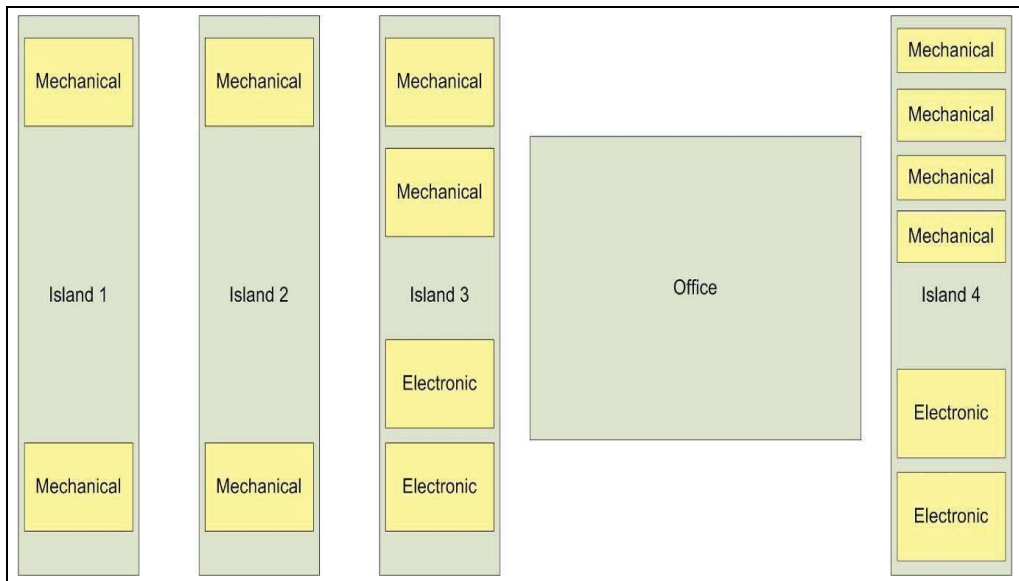
- RS-232 plug-in in slot 3 for TLG.
- RS-485 plug-in in slot 4 if controller already supports 4 mechanical pumps and need to support more electronic pumps.

Electronic pumps:

- RS-232 plug-in in slot 3 for TLG.
- RS-485 plug-in in any slot if site has more than 16 electronic pumps (Gasboy Atlas 9800).
- Different electronic dispenser types that require different plug-in cards, for example:
 - Each Current loop plug-in card can support up to 8 Bennett pump heads.
 - Each Tokheim plug-in card can support up to 2 Tokheim pump heads.
 - The different wiring in such cases is described in the installation manual and in specific label inside the product.

In cases where a station or island includes both electronic and mechanical, they can be supported by one controller, up to 4 mechanical dispensers with 2 MPI-C cards and up to 16 electronic dispensers with one RS-485 card (Slot 4). This solution requires adding extra RS-485 plug-in to support the electronic pumps.

Example of complex station (Each yellow square represent one pump head):



Example of suggested solution for complex station:

- **For Island 1,2 and 3** - ICR PLUS w/Mechanical Pumps for 4 hose and 1 RS-485 plug-in card to support 2 electronic pumps.
- **In the office** - Controller for Mechanical Pumps - 2 hose that supports 2 more mechanical pumps in island 3.
- **For Island 4** - ICR PLUS w/Mechanical Pumps for 4 hose and 1 RS-485 plug-in card to support 2 electronic pumps.

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