



EECO System[®]

2000 Series Console
Installation Manual

OPW Fuel Management Systems - System and Replacement Parts Warranty Statement

Effective September 1, 2002

System and Replacement Parts Warranty

OPW Fuel Management Systems warrants that all OPW Tank Gauge and Petro Vend Fuel Control systems supplied by OPW Fuel Management Systems to the Original Purchaser will be free from defects in material and/or workmanship under normal use and service for a period of 12 months from the date of installation or 15 months from the date of shipment. Additionally, OPW Fuel Management Systems warrants that all upgrades and replacement parts (new and remanufactured) supplied by OPW Fuel Management Systems will be free from defects in material and workmanship under normal use and service for a period of 90 days from the date of installation or for the remainder of the system's original warranty, whichever is greater, as set forth in the first sentence of this statement. The foregoing warranties will not extend to goods subjected to misuse, neglect, accident, or improper installation or maintenance or which have been altered or repaired by anyone other than OPW Fuel Management Systems or its authorized representative.

The buyer's acceptance of delivery of the goods constitutes acceptance of the foregoing warranties and remedies, and all conditions and limitations thereof.

If a claim is made within the warranted time period that any equipment and/or remanufactured part is defective in material or workmanship under normal use and service, such equipment and/or remanufactured part shall be returned to OPW Fuel Management Systems, freight prepaid. If such equipment or remanufactured part is found by OPW Fuel Management Systems in its sole judgment, to be defective in material or workmanship under normal use and service, OPW Fuel Management Systems, shall, at its sole option, repair or replace such equipment and/or remanufactured part (excluding, in all instances, fuses, ink cartridges, batteries, other consumable items, etc.)

The warranties, as set forth above, are made expressly in lieu of all other warranties, either expressed or implied, including, without limitation, warranties of merchantability and fitness for any particular purpose and of all other obligations or liabilities on OPW Fuel Management Systems part. Further, OPW Fuel Management Systems neither assumes, nor authorizes any other person to assume for it, any other liability in connection with the sale of the systems, or any new/replacement part that has been subject to any damage from any act of nature or any *force majeure*.

The term "Original Purchaser" as used in these warranties shall be deemed to mean the authorized OPW Fuel Management Systems distributor to which the system or any new/replacement part was originally sold. These warranties may be assigned by the original purchaser to any of its customers who purchase any OPW Fuel Management Systems systems or new/replacement parts.

The sole liability of OPW Fuel Management Systems, for any breach of warranty, shall be as set forth above. OPW Fuel Management Systems does not warrant against damage caused by accident, abuse, faulty or improper installation or operation. In no event shall manufacturer's liability on any claim for damages arising out of the manufacture, sale, delivery or use of the goods exceed the original purchase price of the goods. In no event shall OPW Fuel Management Systems be liable for any direct, indirect, incidental or consequential damage or loss of product.

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Console Configuration Guide

The Model Q2000 systems can be configured as follows:

Q2000-100	EECO 2000 w/Tank Level Monitor (TLM)
Q2000-20x	EECO 2000 w/Leak Sensors (LS)
Q2000-30x	EECO 2000 w/TLM + LS
Q2000-400	EECO 2000 w/Line Leak Detector (LLD)
Q2000-500	EECO 2000 w/TLM + LLD
Q2000-60x	EECO 2000 w/LS + LLD
Q2000-70x	EECO 2000 w/TLM + LS + LLD

The last digit(s) of the models containing Leak Sensors is defined as follows:

- 1 - Liquid Proximity Interface
- 2 - Liquid Thermistor Interface (4 Channel)
- 3 - Interstitial Sensor Interface
- 4 - Standard Vapor Interface
- 5 - LVH Vapor Interface
- 6 - Liquid Thermistor Interface (6 Channel)
- 7 - Discriminating Sensor Family (6 Channel)

1.0 Introduction

This manual contains installation instructions for the EECO SYSTEM 2000. Any inquiries regarding installation of the system or these instructions should be directed to:

**OPW Tank Gauges
114-300 Mackenan Drive
Cary, NC 27511
Attention: Technical Support Services Mgr.,
(919) 460-6000**

INSTALLATION NOTIFICATION

READ THIS SAFETY INFORMATION BEFORE BEGINNING YOUR INSTALLATION

- This system is to be installed and operated near the highly combustible environment of an underground fuel storage tank. It is essential that you carefully read and follow the warnings and instructions in this manual to protect yourself and others from serious injury, explosion, or electrical shock.
- For safety reasons, we have taken care in the design of this product to limit power in the wiring to probes and sensors and to keep that wiring physically separated from any other wiring. It is your responsibility to maintain the effectiveness of these safety features by installing this system in accordance with the instructions and warnings that follow. Your failure to do so could create danger to life and property.
- Leaking underground tanks can create serious environmental and health hazards. It is your responsibility to install this system in accordance with the instructions and warnings found in this manual.
- Failure to install this product in accordance with the instructions and warnings found in this manual will result in voiding all warranties connected with this product.

FCC WARNING

This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with this installation manual, interference to radio communications may result. It has been tested and found to comply with the limits for Class A computing devices and section 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation in a residential area may cause interference, in which case, the user at his own expense will be required to take whatever measures required to correct the interference.

2.0 Codes and Standards

Codes and standards called for or referred to herein are hereby made part of this manual. The latest edition shall apply. In the event of discrepancies in specification codes or standards, the more stringent and/or local codes shall govern.

NEC - National Electrical Code
 UL - Underwriters Laboratories
 CSA - Canadian Standards Assoc.
 ETL - ETL Testing Laboratories

NEMA - National Electrical Mfg. Assoc.
 FCC - Federal Communication Commission
 ULC - Underwriters Laboratories, Canada

New York City Requirements:

- System installation shall conform to instructions detailed in this manual and to NYC Electrical Code.
- This system must be installed under the supervision of a NYC licensed underground tank installer.
- This system must be installed with a remote visual and audible alarm unit.
- This system must be installed with either:
 - a. The EECO SYSTEM line leak detector that is capable of 0.2 gallon per hour leak test or less to shut off the pump upon alarm condition, or
 - b. Continuously monitor the pressurized piping's interstitial space for the presence of liquid using a STP Sump sensor and Quad relay option to shut off the pump upon alarm condition.

3.0 EECO SYSTEM 2000 Console Specifications

Dimensions:	20" W, 15" H, 7.75" D (50.8 x 38.1 x 19.7 cm)
Weight:	42 lb.
Operating Temperature:	32° to 104°F (0° to 40°C)
Humidity:	90% (maximum) Non-condensing
Typical Mounting Location:	Non-hazardous area, indoor, protected
Power Requirements:	120 VAC ±10%, 60 Hz. 15 amp dedicated circuit
Listings and Approvals:	UL, FCC, CSA, ULC, ETL
Automatic Reports:	All reports available 4 times daily
Keypad:	16 Key with audible feedback.
Display:	2 Line x 20 Character Back-lit Liquid Crystal
Printer:	35 Character/line Impact (Uses 3" std. calculator paper)
System Relay:	10 amp, 250 VAC contacts, activates on any alarm or trouble
Relay Boards (optional):	2 boards (each has 4 relays) w/programmable functions
RS-232 (optional):	3 ports (modem, pass through, and local) auto dial and modem control
Internal Modem (optional)	3 ports (phone line, pass through, and local RS-232)
Internal Fax Modem (opt.)	3 ports (phone line, pass through, and local RS-232)

WARNINGS:

- The EECO 2000 options are designed to monitor various aspects associated with hydrocarbon fuels in a safe and reliable manner when installed as instructed herein. Deviation from these procedures, including the installation or use of non-approved components, could result in unsafe conditions or unreliable operation and will void the warranty. Safe installation is the responsibility of the installer and user.
- Any deviation from these instructions may void your warranty. It is the responsibility of the electrical contractor to install this equipment per these instructions.
- During installation and use of this product, comply with The National Electrical Code, Federal, State, and Local Codes, and other applicable SAFETY CODES.
- DO NOT install the console in a volatile, combustible, or explosive atmosphere.
- Failure to comply with these warnings could result in serious personal injury, property loss, and equipment damage.
- Installation shall be in accordance with NEC (NFPA 70) and Automotive and Marine Service Station Codes (NFPA 30A and local codes).

4.0 Console Installation

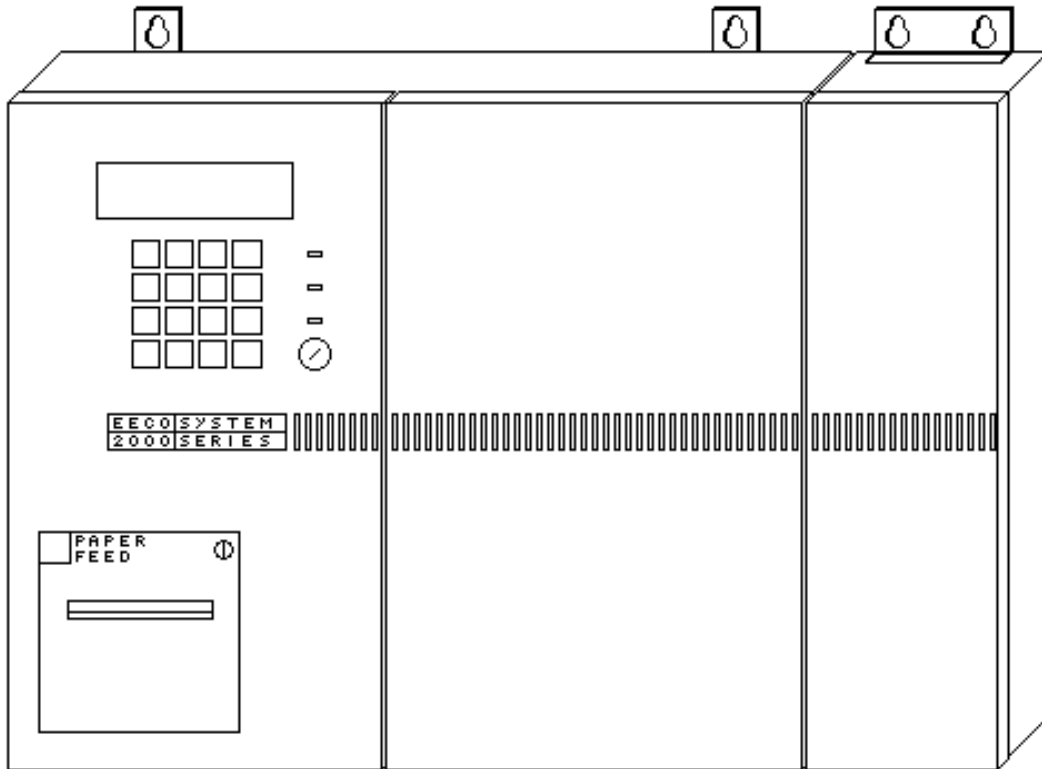


Figure 1 - EECO 2000 Console

4.1 Console Mounting

When mounting the EECO SYSTEM console on the wall:

- The console must be mounted in a NON HAZARDOUS, PROTECTED area.
- All conduits must enter the box in the knockouts provided in console bottom.
- Allow minimum of 12" below console for conduit access.
- Allow 6" on left side and front of console for air circulation.
- Maintain temperature and humidity range at the console location.

The KEYHOLE SLOT at the top of the console has an opening for maximum 3/8" diameter head and 1/4" shaft.

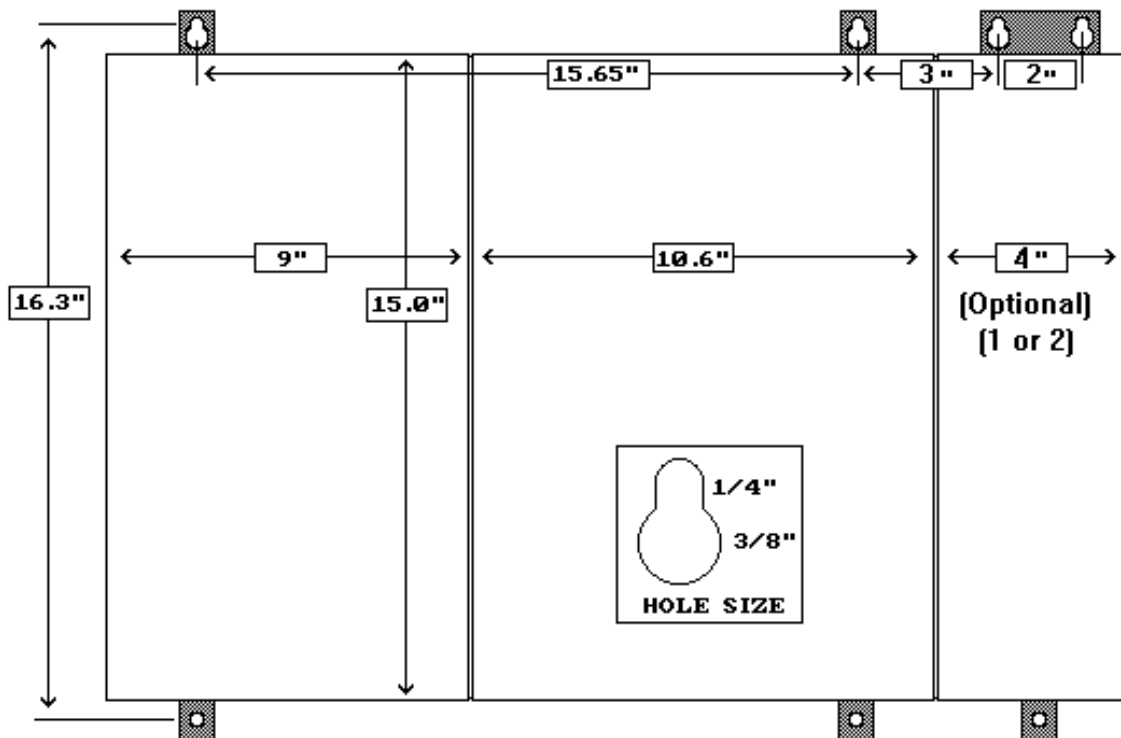


Figure 2 - Console Mounting Dimensions

Console mounting hardware is not supplied with the console due to various wall materials. Use hardware that will support the weight of the system and is the correct type for the installation. Note keyhole size for mounting hardware. Install two top screws. Place console on screws. Secure bottom of console with two bottom screws.

4.3 Conduit and I/O Ports

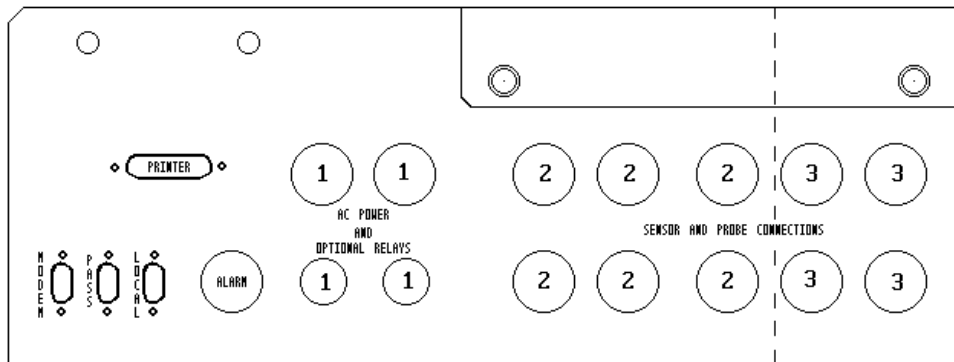


Figure 3 - Bottom View of Console

Refer to Figure 3 to locate the conduit knockouts. Knockouts identified by ① are for AC power and External relay wiring. Knockouts ② are for Intrinsically safe circuit wires. Knockout ③ are used for Line Leak Detector (if installed) Knockouts ③ may be used for Tank Level Monitor or Leak Sensor circuits if the Line Leak Detector is not installed.

4.3 AC Power Connection

- 120 VAC power must be supplied to the EECO SYSTEM from a dedicated 15 AMP circuit (located in a main power distribution panel) with wires routed through a 1/2" metal conduit.
- Install 1/2 INCH CONDUIT (or larger) between the designated conduit opening (refer to Figure 3) in the console and the AC power distribution panel.
- Use STRANDED, 14 gauge wire for Line, Neutral, and Ground (black, white, and green). Leave an additional 10" length in console for easy connection.
- Make wire connections as shown in Figure 4. Connect Ground, Line, and Neutral for US installations, include the second Ground wire for Canada.

Note that the connector view is positioned with the screws on the back side. Strip 1/4" insulation from the end of each individual wire. Insert the wires into the connector as shown in Figure 4 and tighten each screw securely. Insert the 4-position AC power connector into the mating receptacle.

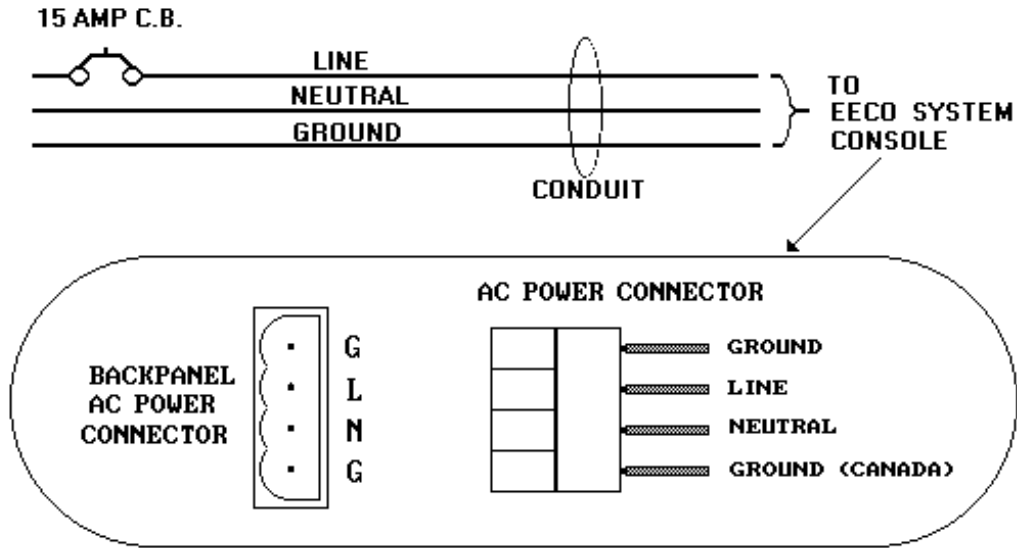


Figure 4 - Console AC Power Wiring

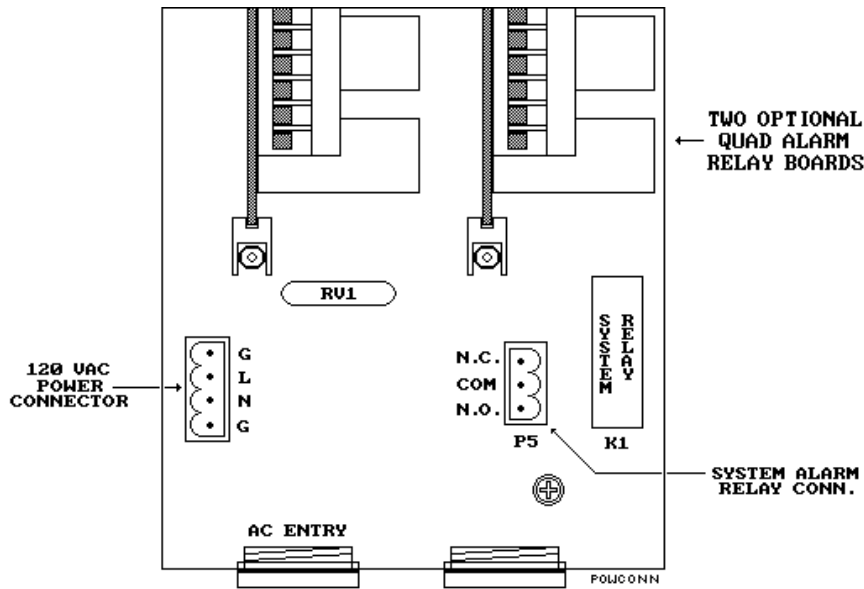


Figure 5 - AC Power and Relay Connectors

5.0 Multi-Relay Boards (optional)

Refer to Figure 5 for location of two Quad Relay Boards located in the AC entry compartment (complete boards are not shown in diagram). Conduits for wires connecting to the Quad Relay Boards must be installed in openings provided as shown in Figure 3 and identified as ① openings.

WARNING:

Wires connected to the Quad Relay MAY NOT be run with any intrinsically safe Leak Sensor wires or Tank Level Monitor data cables.

The connector in Figure 6 is used for Quad Relay Board one and two (Relays 1, 2, 3, and 4 or Relays 5, 6, 7, and 8). Each relay has a Common, Normally Closed (N.C.), and Normally Open (N.O.) circuit connection. Use Common and N.C. connections for "open-on-alarm" circuits and Common and N.O. connections for "close-on-alarm" circuits. Each relay is programmable during setup to respond to various alarm conditions. The relay contacts are rated at 10 amps, 250 VAC (30 VDC).

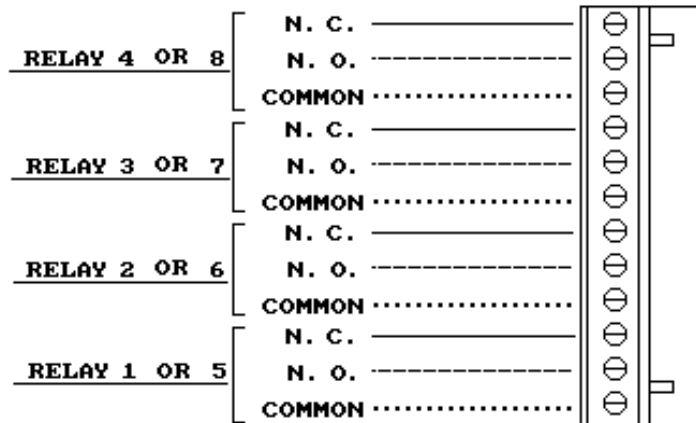


Figure 6 - Quad Relay Connector

6.0 System Alarm Relay

A single System Alarm Relay is provided as standard on all system consoles. This relay is actuated by all system alarms and may be set to be deactivated by the SILENT KEY or remain activated after the audible alarm has been silenced.

Refer to Figure 5 for location of System Alarm Relay Connector (P5) and Relay (K1). Figure 7 shows Normally Open and Normally Closed connections to the relay contacts. Refer to Figure 3 to locate the correct conduit opening (identified with ⊙) for connection to the system alarm relay contacts.

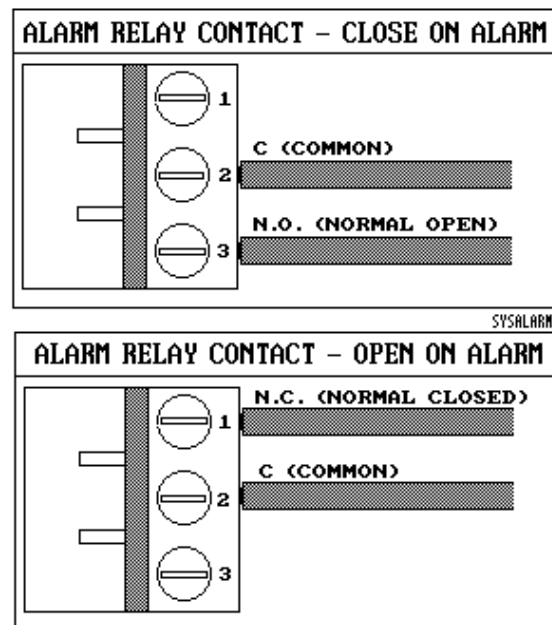


Figure 7 - System Alarm Connection

7.0 Internal Modem (Optional)

The Internal Modem Option provides both an RJ11 phone port and RS-232 local serial port. The following specifications apply:

Modem Baud Rate:	Data: 2400/1200
Fax Modem Baud Rate:	Data: 2400/1200, Fax: 9600
RS-232 Baud Rate:	9600/4800/2400/1200/300
Certifications:	FCC Part 15A, FCC Part 68, DOCS CS-03, ETL, UL, CSA

Parts List:	Internal Modem	Internal Fax Modem
Board Number	Q439974	Q439973
Ribbon Cable	Q439513	Q439513
Modular Adapter	Q439571	Q439571
Modular Line Cord	Q439561	Q439561

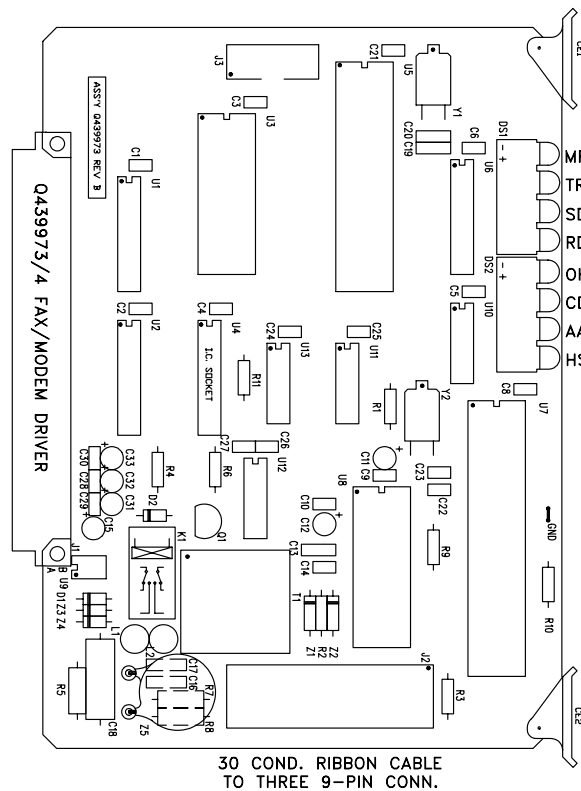


Figure 8 - Modem Driver Board

Use an anti-static wrist strap attached to a console ground (bare metal) when handling the modem board. Insert the modem driver board into the first available slot (from left to right) of the console card cage. The component side of the board will face left.

Insert the ribbon cable 30 conductor plug into the Internal Modem Board connector located at the bottom edge of the board. The connector is "keyed" and cannot be installed incorrectly.

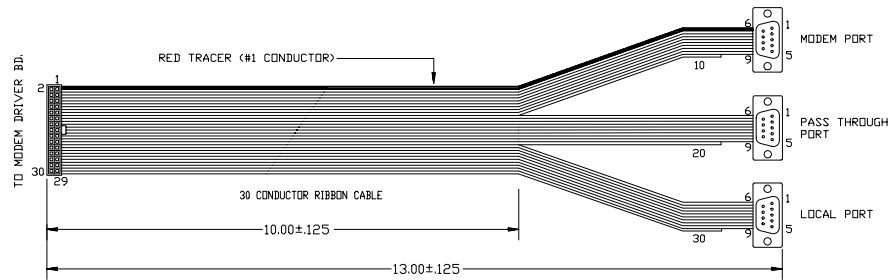


Figure 9 - Internal Ribbon Cable

Locate the modem port connector with Red (or Blue) tracer (refer to Figure 9). Position the connector into the console modem port opening (refer to Figure 3). Secure the connector with two connector retaining nuts and washers (supplied with connector).

Locate the pass through port connector (refer to Figure 9) and position it into the console pass through port opening (refer to Figure 3). Secure the connector with two connector retaining nuts and washers (supplied with connector).

Locate the local port connector (refer to Figure 9) and position it into the console local port opening (refer to Figure 3). Secure the connector with two connector retaining nuts and washers (supplied with connector).

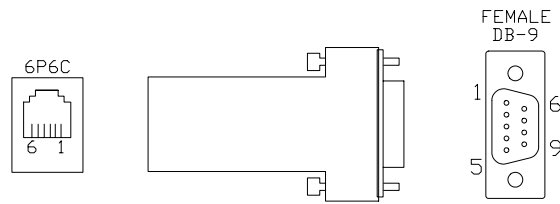


Figure 10 - Modular Adapter

Locate the modular adapter (refer to Figure 10). Connect the modular adapter to the modem port (refer to Figure 3) and secure with captive screws.

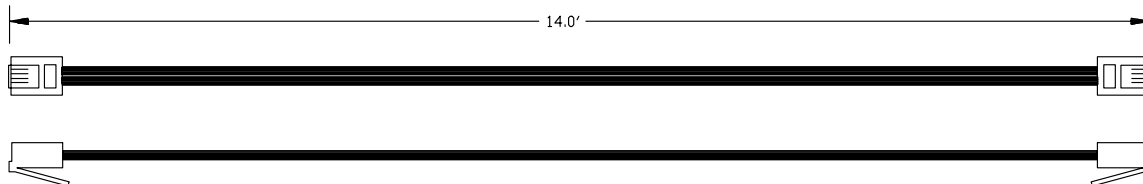


Figure 11 - Modular Phone Cable

Locate the modular phone cable (refer to Figure 11) and connect between the modular adapter (refer to Figure 10) and the site phone jack. Note that the modem requires an analog phone line, such as the phone in most residences and the outside lines in most businesses. Many private branch exchange (PBXP) phone systems use digital phone lines that will not work with this modem. Use the following guidelines to determine whether you have an analog phone line:

Rotary phone: All rotary phones are analog phones. If you hear a dial tone when you plug a rotary phone into the phone wall jack, you have an analog phone line and your modem will work.

Push-button phone: If you have a push-button phone, check the bottom of the phone to see whether it has a ringer equivalence number (REN) or a load number (LN). All analog phones have a REN or a LN. If you hear a dial tone when you plug the phone into the wall jack, you have an analog line, and your modem will work.

The remaining ports have the same pin connections as the 9-pin serial connectors on a compatible PC. You must use a Null Modem adapter to connect a PC (portable) to the local port. Cables and adapters are available at most Radio Shacks or computer stores. Modem/EECO SYSTEM software compatibility requires revision 30.02 or later.

RS-232C ports are supplied with the communication option. Only computer devices meeting EIA standards for RS-232C and listed by Underwriters Laboratories may be connected to these ports.

Attach FCC Certification Label to the left side of the console below system labels.

8.0 Console Installation Checklist

The system must be installed per the EECO SYSTEM installation manual. This checklist must be completed by the installation contractor. **Note:** Any "NO" response must be corrected by the installation contractor prior to scheduling the startup contractor to inspect and commission the system. The most common installation problems are listed in *bold italics*. **Warning: Failure to complete this checklist may cause the site owner or start-up contractor to reject portions of your installation.**

-
1. Yes No Is the console located where Temperature will be between 32° and 104°C with Humidity below 90% (non-condensing)?
 2. Yes No Is the console located to allow air flow into the front of the console and out the left side air vents?
 3. Yes No Is the console mounted with room below to install the remote display and remote printer connectors?
 4. Yes No Does location provide easy access for servicing?
 5. Yes No Is AC Power provided from dedicated 15 Amp circuit breaker?
 6. Yes No Does each conduit enter the console through knockouts provided as illustrated in the installation manual?
 7. Yes No Are the electrical conduits installed per site plan specifications?
-

When the installation is completed and all questions can be answered with "YES", (for the installed options) notify the startup contractor to schedule system inspection and startup. Present a completed form to the startup contractor.

Notes:



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