



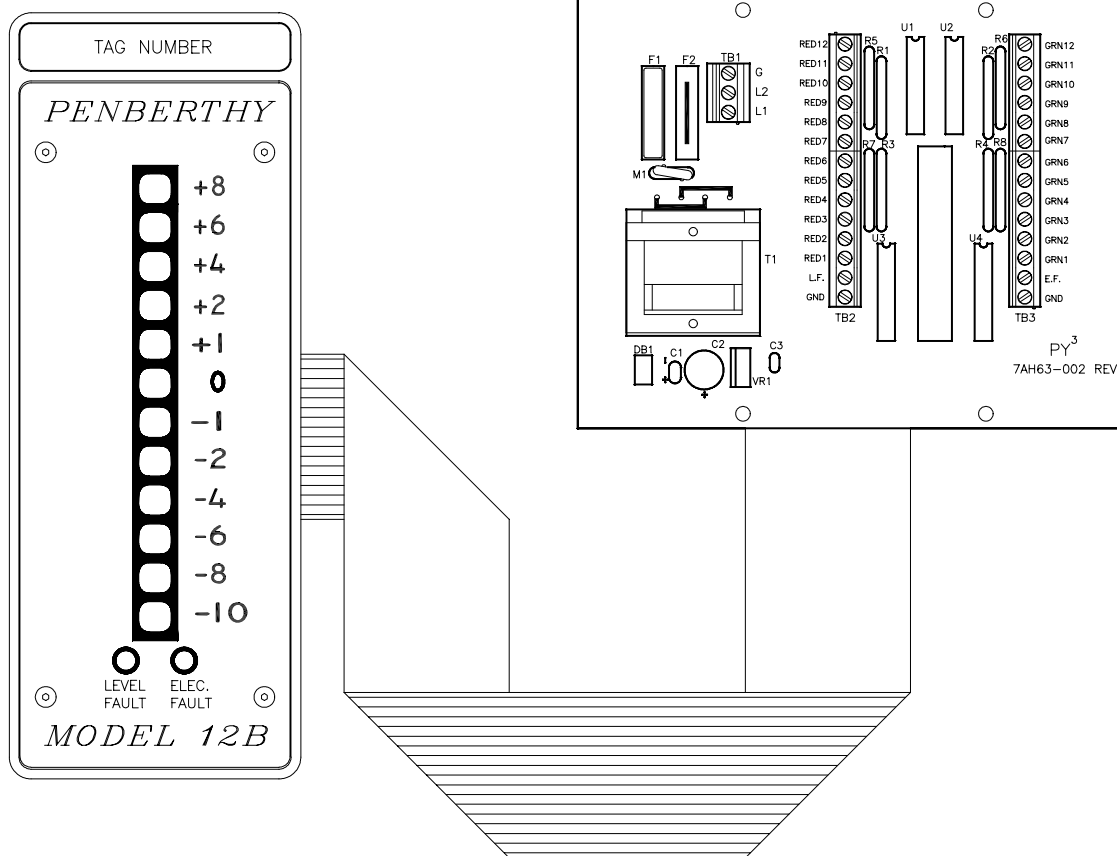
*Flow Control*

# PENBERTHY

Section: 8000  
I.O.M.: 8918  
Issued: 03/ 03  
Replaces: New

## Installation, Operation and Maintenance for Penberthy Independently Powered Display

Model IPD



Installation, Operation and Maintenance  
Instructions

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## **PENBERTHY PRODUCT WARRANTY**

Tyco Valves & Controls-Prophetstown warrants its Penberthy products as designed and manufactured by TV&C-Prophetstown to be free of defects in the material and workmanship for a period of one year after the date of installation or eighteen months after the date of manufacture whichever is earliest. TV&C-Prophetstown will, at its option, replace or repair any products which fail during the warranty period due to defective material or workmanship.

Prior to submitting any claim for warranty service, the owner must submit proof of purchase to TV&C-Prophetstown and obtain written authorization to return the product. Thereafter, the product shall be returned to TV&C in Prophetstown, Illinois, with freight paid.

This warranty shall not apply if the product has been disassembled, tampered with, repaired or otherwise altered outside of TV&C-Prophetstown factory, or if it has been subject to misuse, neglect or accident.

The responsibility of TV&C-Prophetstown hereunder is limited to repairing or replacing the product at its expense. TV&C-Prophetstown shall not be liable for loss, damage or expenses related directly or indirectly to the installation or use of its products, or from any other cause or for consequential damages. It is expressly understood that TV&C-Prophetstown is not responsible for damage or injury caused to other products, buildings, personnel or property, by reason of the installation or use of its products.

THIS IS TV&C-PROPHETSTOWN'S SOLE WARRANTY AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED WHICH ARE HEREBY EXCLUDED, INCLUDING IN PARTICULAR ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This document and the warranty contained herein may not be modified and no other warranty, expressed or implied, shall be made by or on behalf of TV&C-Prophetstown unless made in writing and signed by the General Manager or Director of Engineering of TV&C-Prophetstown.

# INSTALLATION, OPERATION and MAINTENANCE MANUAL FOR PENBERTHY MODEL IPD

## 1.0 Description

The Model IPD module is designed with versatility in mind. It can be used with any of the Penberthy Electronic Water Level Gages to power a display. The Penberthy Electronic Water Level Gages are designed to drive up to two displays. The third and subsequent displays need to be independently powered via the Model IPD.

## 2.0 Supply & Installation

### 2.1 Packing

Prior to installing this equipment clean all packing material from around the unit and inspect for any damage that may have occurred during shipment. Any claims for loss or damage must be filed by the purchaser with the carrier. A copy of the bill of lading and freight bill will be supplied on request by TV & C – Prophetstown.

### 2.2 Installation of Board

There are many mounting options with the Model IPD. If the IPD has been supplied as part of a new Electronic Water Level Gage and has been factory-installed in the host unit's enclosure or in a display enclosure (see Figures 5-8), then this section may be skipped. If the Model IPD is to be field-installed, please refer to Figure 8 for details of mounting the board in an enclosure or on a panel.

### 2.3 Wiring Requirements

All wiring shall be terminated in a screw type terminal block, a screwed crimp-on terminal or a screwed lug point. All wiring for mains in and Display input shall be bundled and tie wrapped to maintain separation. To reduce RFI/EMI pick-up, a cable with an overall shield should be used for the Display connections. This is a low current line so small wire diameters are acceptable. The maximum distance is 5 miles [8KM], refer to section 2.4 for other details.

Wiring shields should be terminated on both ends to the enclosures' ground lugs – not to circuit common. TV&C – Prophetstown recommends that all wiring be enclosed in electrical metallic tubing (EMT) and that drip loops are established at each enclosure entry point. Spiral wrap cable conduits (e.g. Greenfield, BX) should not be used.

### 2.4 Wiring (Refer to Figures 2 & 3)

**Note:** All wiring should be in accordance with applicable national and local codes by qualified personnel.



## CAUTION



**Before making any connections, make sure that the power source to be used is isolated by use of the appropriate circuit breakers and switches so that no work is being performed with “live wires”, otherwise personal injury or property damage may result.**



## WARNING



**The nature of the electronics, the harsh operating environment and the potential hazards associated with live steam require that only qualified personnel install and maintain this equipment. Without adequate qualifications, an operator could allow live steam to escape, which may cause property damage or severe personal injury.**

For reliable operation, a mains power source with the following requirements is required:

120 or 240 Vac  
Single Phase, 50/60 Hz  
4VA

Mains higher than 240 Vac will require the use of a stepdown transformer. DC voltages will require use of a voltage inverter.

(refer to fig 1, loc 1)

Mains power is connected to TB1. Mains power may be wired in parallel with the host unit mains power supply or from a separate line.

For 120 Vac operation: L1 is “hot”, L2 is “neutral”. A fuse should be installed at F1. Connect the ground wire to the host unit ground.

For 240 Vac operation: Line 1 is connected to L1 and Line 2 is connected to L2. Fuses should be installed at F1 and F2. Connect the ground wire to the host unit ground.

Mains power is MOV protected. Although the Model IPD uses a jumper set primary transformer, do not attempt to change factory set mains voltage level unless the MOV is also changed to the proper value.

The ribbon cable supplied with the module connects to the IPD module (Figure 1, loc 2) and to the unit's display input.

Display input terminal blocks TB2 & TB3 (Figure 1, loc 3) connect to Model 12A or Model 12B display output terminal blocks (Figure 2 or 3).

### **3.0 Maintenance**

No maintenance is required.

### **4.0 Spare Parts**

There are no recommended spares for this unit. Consult your Tyco or Penberthy distributor or TV&C-Prophetstown for replacement Model IPD modules. Please have available the serial number of the unit with which the Model IPD module will be used.

## 5.0 Model IPD Specifications \*

Input Voltage:	120Vac / 240Vac
Frequency:	50-60 Hz
Power (max):	4VA max / 2.5VA nominal
Operating Temperature:	32 – 160°F [0°C –70°C] 121°F [50°C] MAXIMUM AMBIENT
Wiring Specifications:	300V, 221°F [105°C]
Control Unit to IPD	20 – 28 AWG or larger PVC,
Remote Display	Refer to control unit manual for number of conductors required.
Dimensions/Weights:	(12-LED panel mount display) 8" [20 cm] H x 10" [25 cm] W x 4.75" [12 cm] D 1 lb [0.5 kg]
Manufacturing Standards:	CSA 22.2 NFPA-70 (NEC)

\*Specifications and descriptions are subject to change without notice.

## 6.0 Disposal at End of Useful Life

The Model IPD may be used in a variety of applications. By following the appropriate national and industry regulations, the user must determine the extent of preparation and treatment the Model IPD must incur before its disposal. A Material Safety Data Sheet (MSDS) may be required before disposal services accept certain components.

Metal, glass and polymers should be recycled whenever possible. Refer to order and TV&C - Prophetstown Material Specification sheets for materials of construction.

### **RIGHT TO KNOW LAWS AND OSHA STANDARD 29CFR (1910.1200) Material Safety Data Sheets on the following Penberthy product: Model IPD**

The OSHA Hazard Communication Standard 29CFR 1910.1200, states that the standard does not apply to "articles". The standard defines an article as:

\*A manufactured item formed to a specific shape or design for a particular use which does not release or otherwise expose an employee to a hazardous chemical under normal conditions of use".

The above named products fall within the definition of an "article", no Material Safety Data Sheets are available or are required. Our product is manufactured as an "end product".

If the product is a weld end the following applies.

**WARNING:** Materials used in manufacture of Penberthy products are considered in a stable condition when shipped. However, under certain conditions purchasers could create potential hazardous conditions by their future operations.

**Caution:** Welding, cutting, burning, machining or grinding of this product can generate toxic dust and fumes of potentially hazardous ingredients. The dust or fumes can cause irritation of the respiratory tract, nose, throat, skin and eyes. It may cause temporary or permanent respiratory disease in a small percentage of exposed individuals. Use moderate ventilation when grinding or welding. Avoid breathing dust, fumes or mist. Avoid prolonged skin contact with dust or mist. Maintain dust levels below OSHA and ACGIH levels. Use protective devices. Wash hands thoroughly after contact with dust before eating or smoking.

For emergency information contact:

Tyco Valves & Controls, L.P. Prophetstown  
320 Locust St., Prophetstown, Illinois 61277  
Phone: 815-537-2311  
Fax: 815-537-5365  
E-mail:boilertrimteam@tycovalves.com

## **7.0 Telephone Assistance / Factory Repair**

If you are having difficulty with your Model IPD, contact your local Tyco / Penberthy distributor. You may also contact the factory direct at (815) 537-2311 and ask for an applications engineer. So that we may assist you more effectively, please have as much of the following information available when you call:

- Model #
- Serial #
- Name of the company from whom you purchased the Model IPD
- Invoice # and date
- Process conditions (pressure, temperature, cycle rate, etc.)
- A brief description of the problem
- Troubleshooting procedures that failed

If attempts to solve your problem fail, you may request to return your Model IPD to the factory for intensive testing. You must obtain a Return Authorization (R.A.) number from TV&C - Prophetstown before returning anything. Failure to do so will result in the unit being returned to you without being tested, freight collect. To obtain an R.A. number, the following information (in addition to that above) is needed:

- Reason for return
- Person to contact at your company
- "Ship To" address

There is a minimum charge of \$75.00 for evaluation of non-warranty units. You will be contacted before any repairs are initiated should the cost exceed the minimum charge. If you return a unit under warranty, but is not defective, the minimum charge will apply.

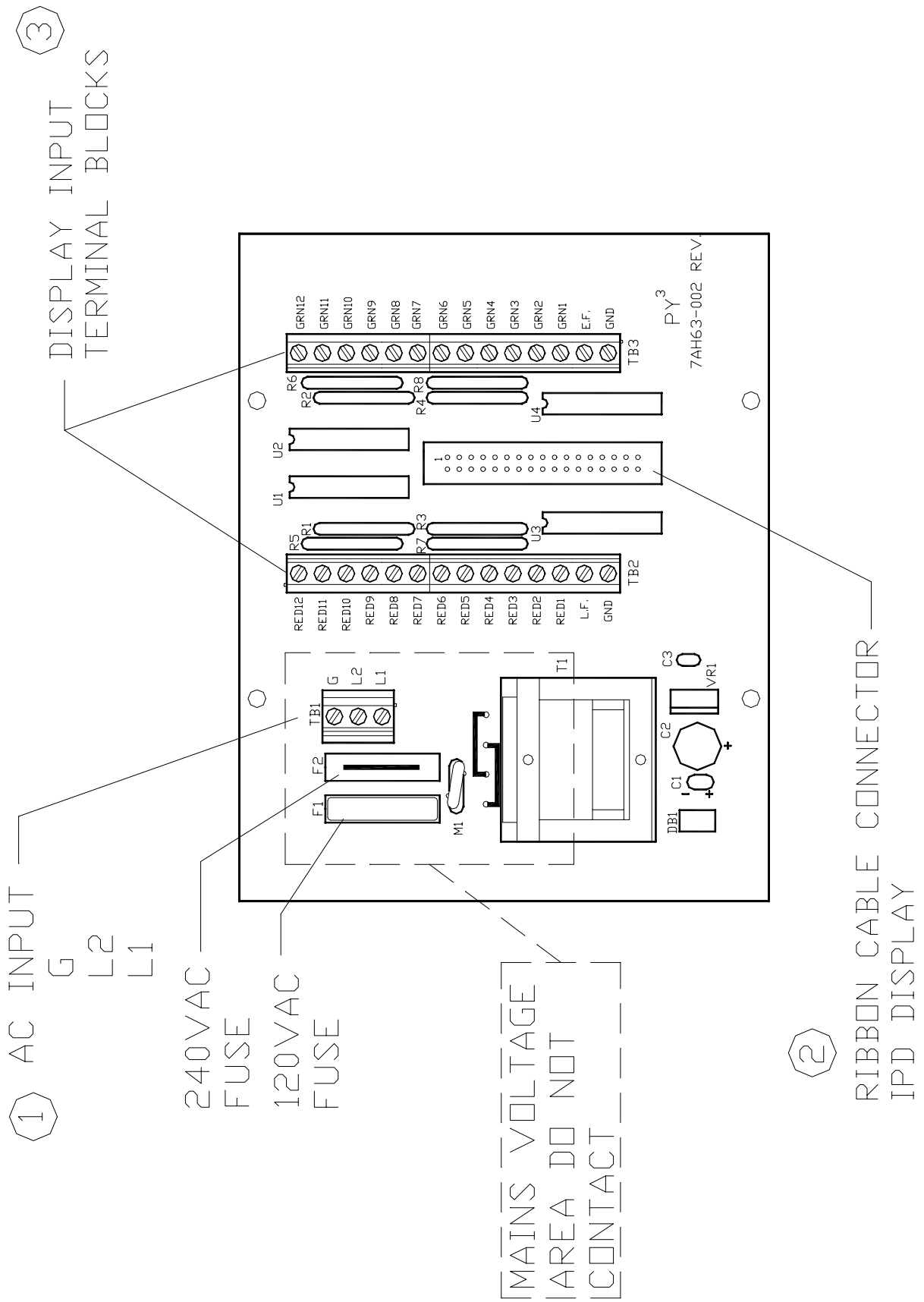
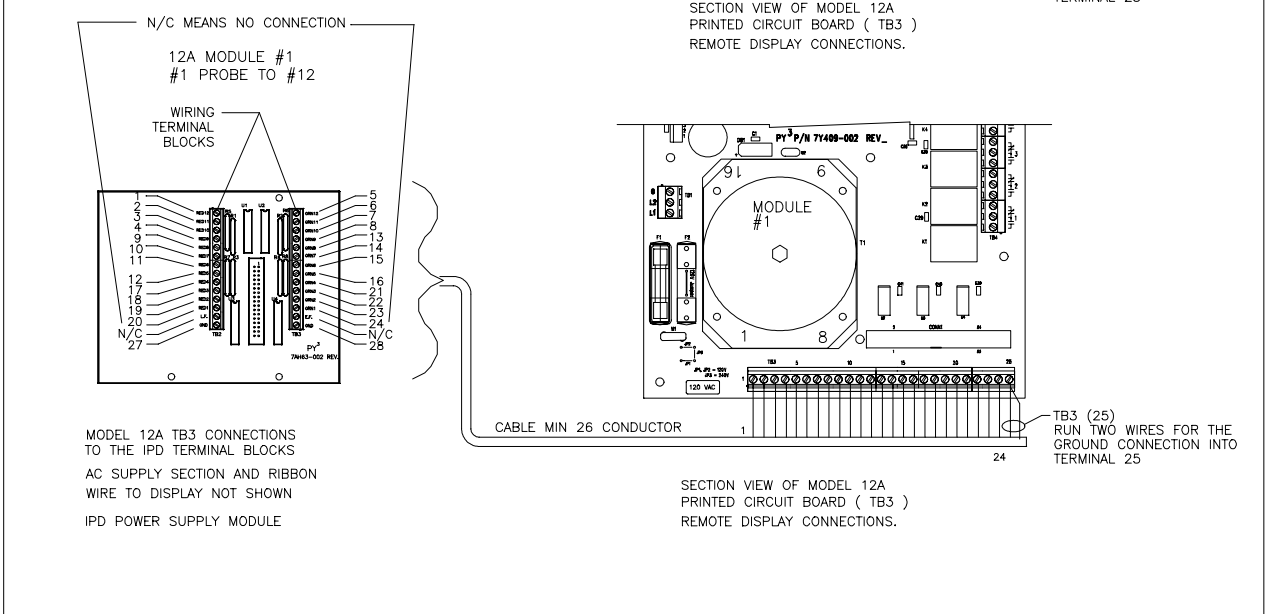
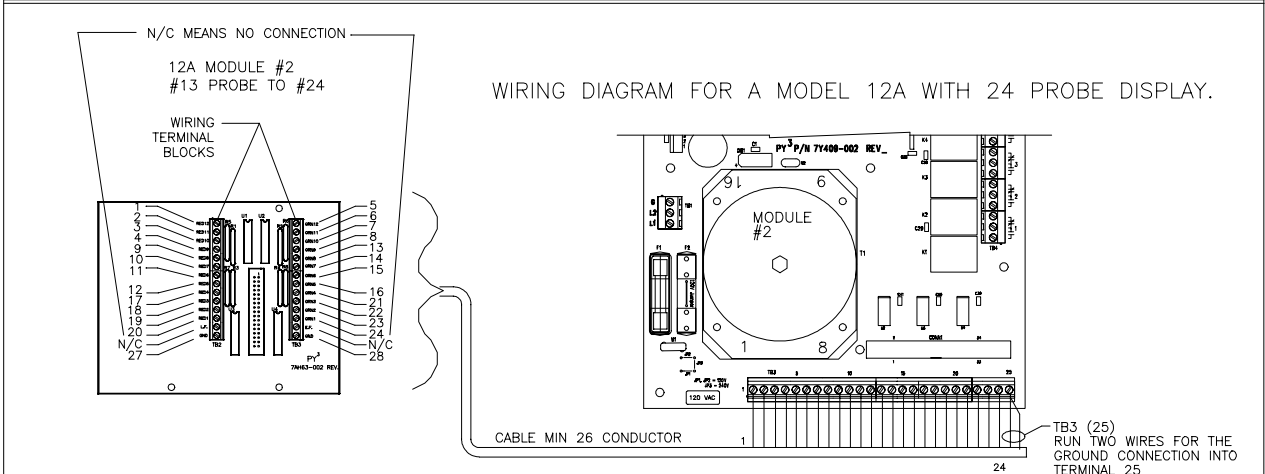
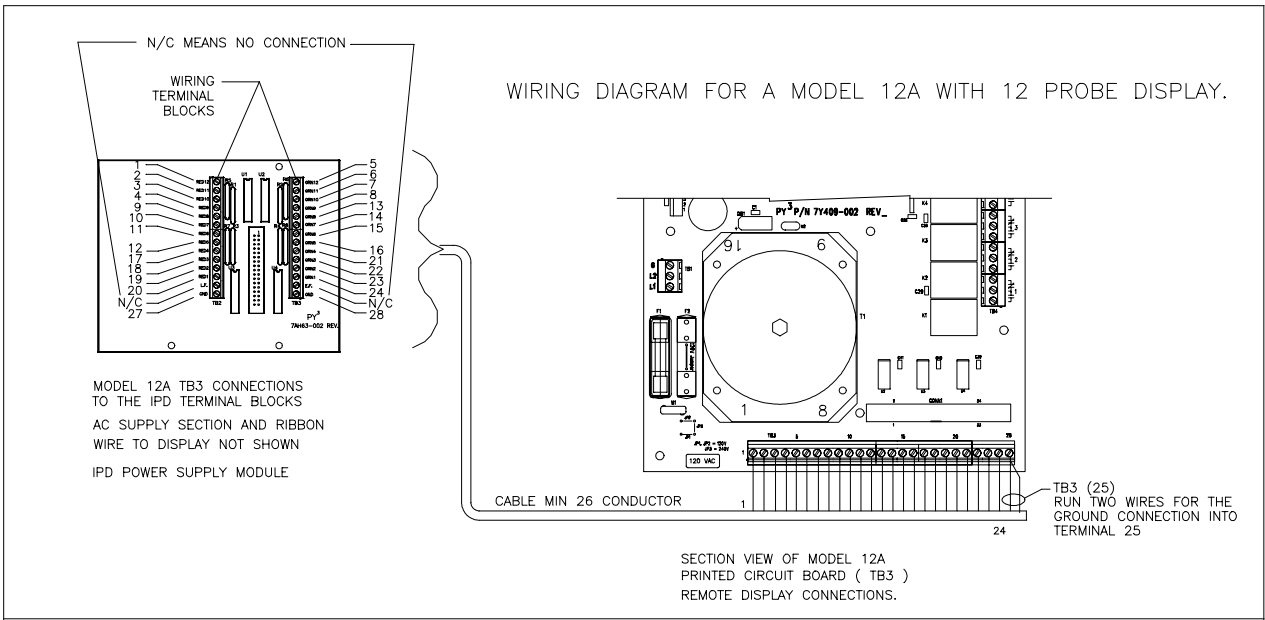


Figure 1 - Board Layout



**Figure 2 - Connection Points: Model 12A**

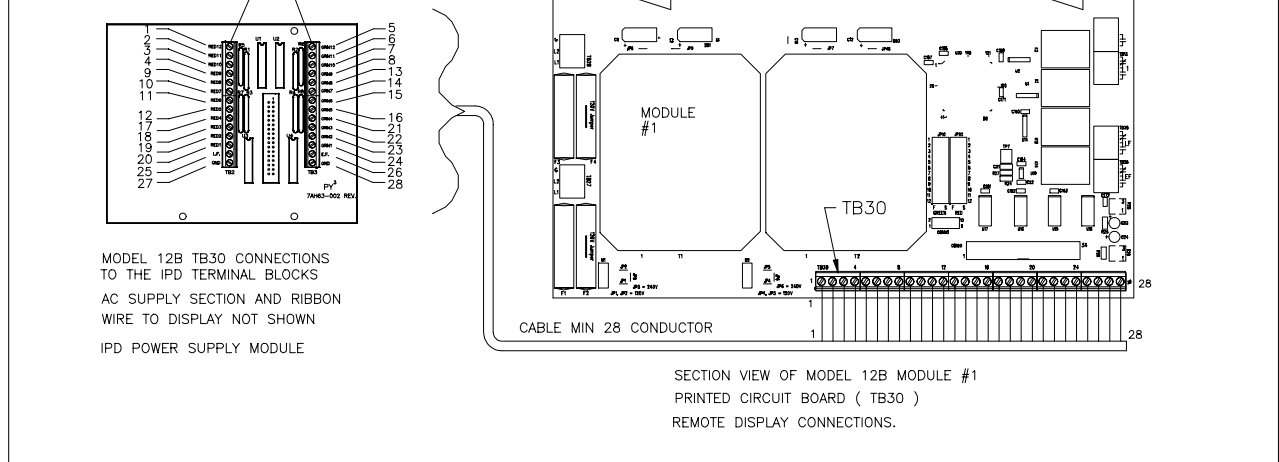
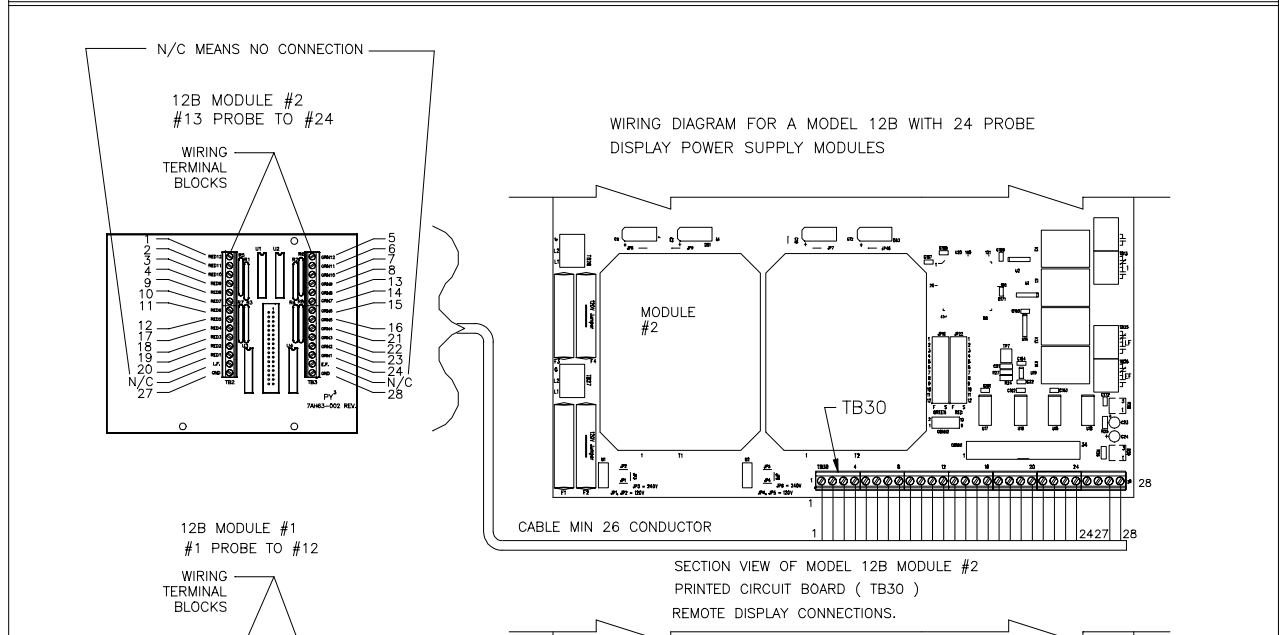
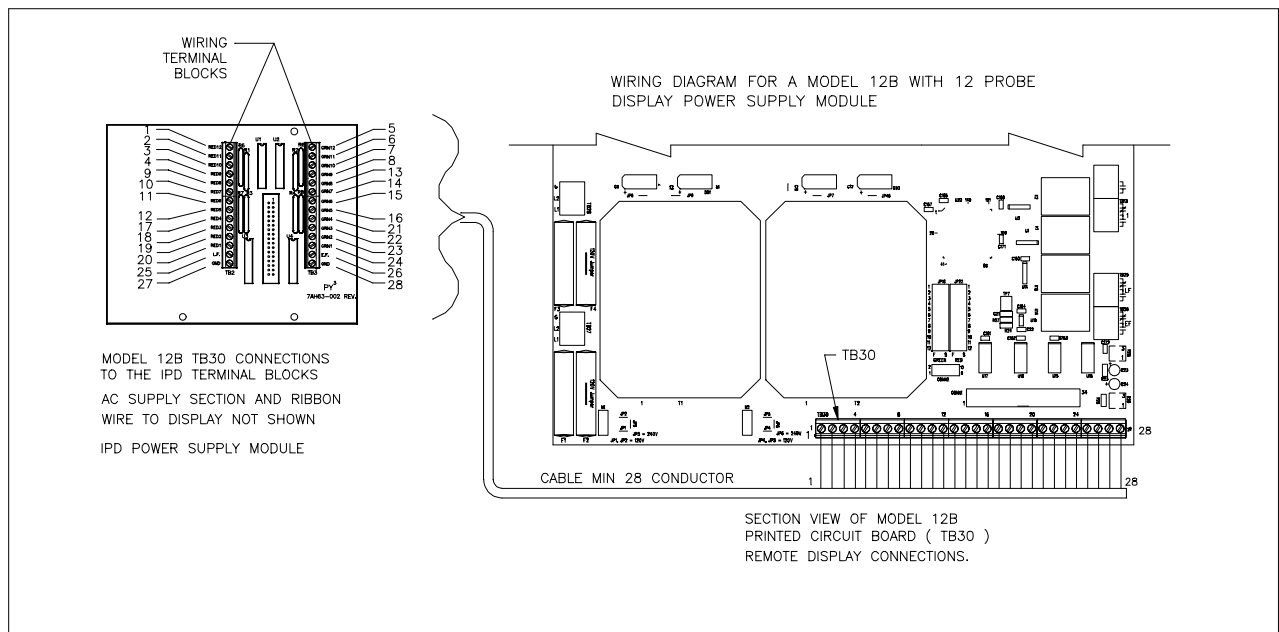
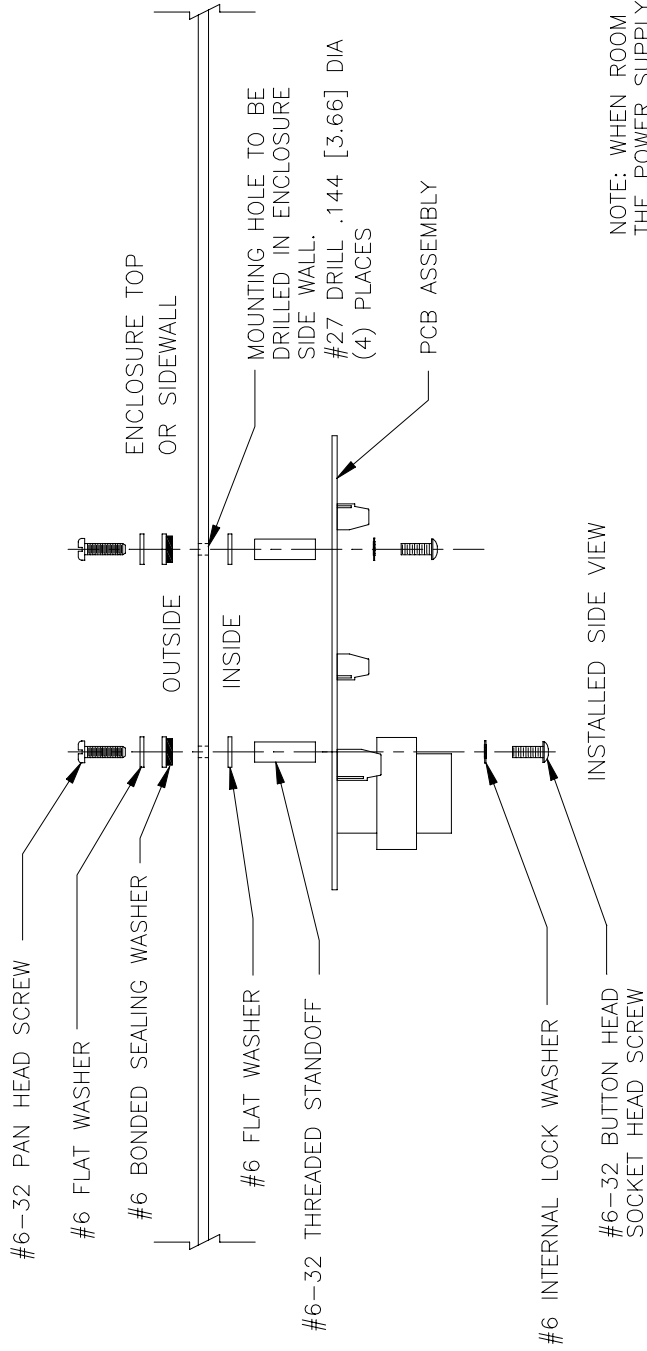


Figure 3 - Connection Points: Model 12B



NOTE: WHEN ROOM ALLOWS THE POWER SUPPLY PCB WILL BE MOUNTED ON THE ENCLOSURE PANEL.

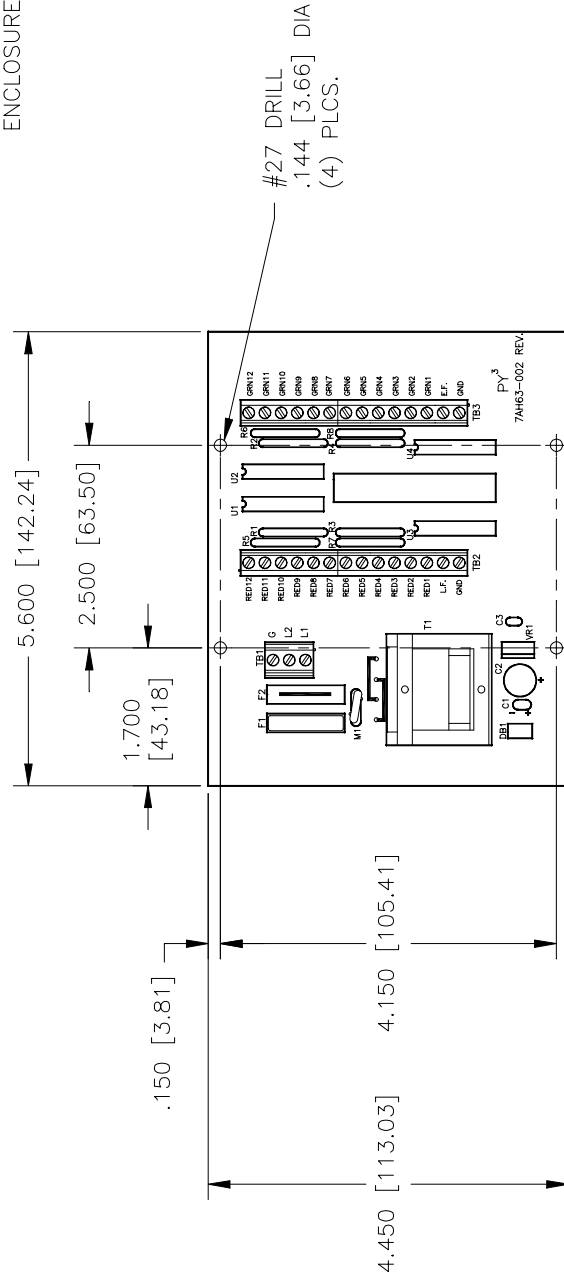
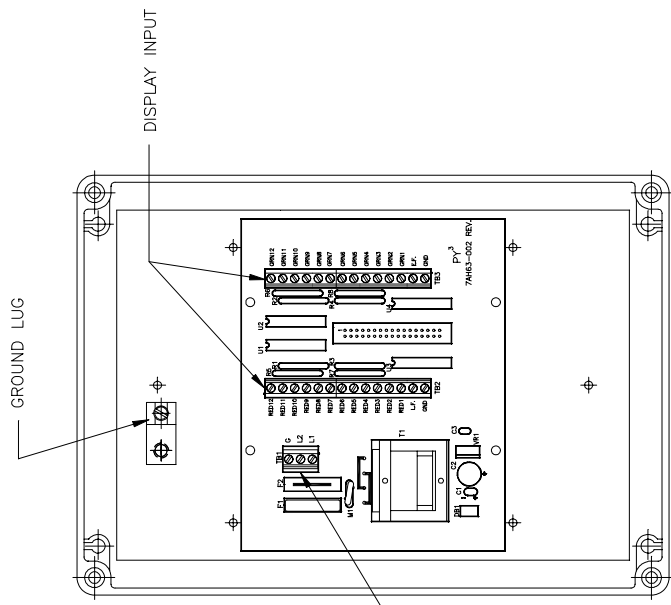


Figure 4 – PCB Mounting Dimensions / Details

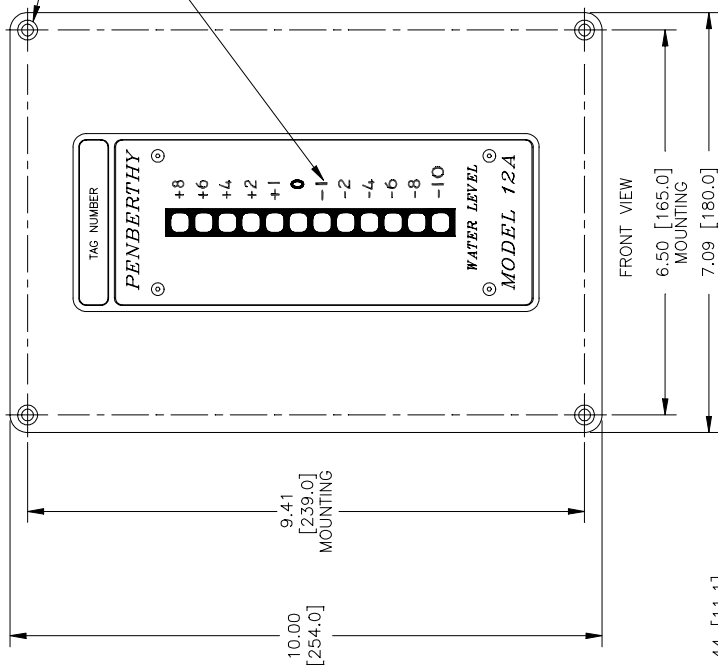


4X ENCLOSURE WITH IPD POWER MODULE  
DISPLAY RIBBON WIRE NOT SHOWN

INSIDE VIEW OF ENCLOSURE  
SHOWING ELECTRICAL CONNECTIONS

MOUNTING THROUGH HOLES  
ARE UNDER THE COVER  
ATTACH SCREWS.  
.190 [4.83] DIA.  
(4) PLCS.

EXAMPLE PROBE DISTANCES  
(CUSTOMER SPECIFIED BY ORDER)



FRONT VIEW

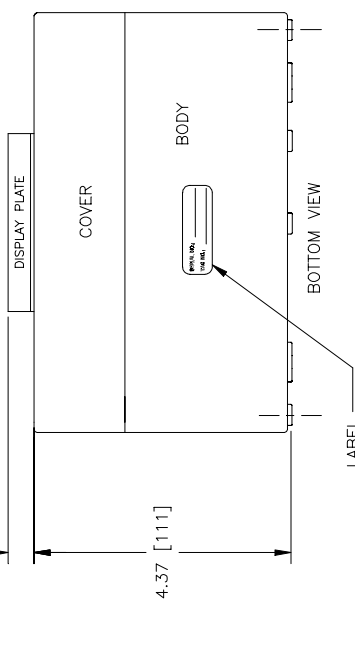
6.50 [165.0]  
MOUNTING

7.09 [180.0]

10.00 [254.0]

9.41 [239.0]  
MOUNTING

.44 [11.1]



BOTTOM VIEW

4.37 [111]

LABEL

MODEL 12A WITH IPD (W/NEMA 4X ENCLOSURE)  
(5-12 PROBE CONFIGURATION)

MATERIAL: FIBERGLASS REINFORCED POLYCARBONATE  
COLOR: LIGHT GRAY (RAL 7035)  
RATINGS: NEMA 4X  
IP 66 per EN 60 529/10.91  
ALL FIELD WIRING PENETRATIONS ARE  
THE CUSTOMER'S RESPONSIBILITY.

Figure 5 – 4X Enclosure 5-12 probe: Model 12A

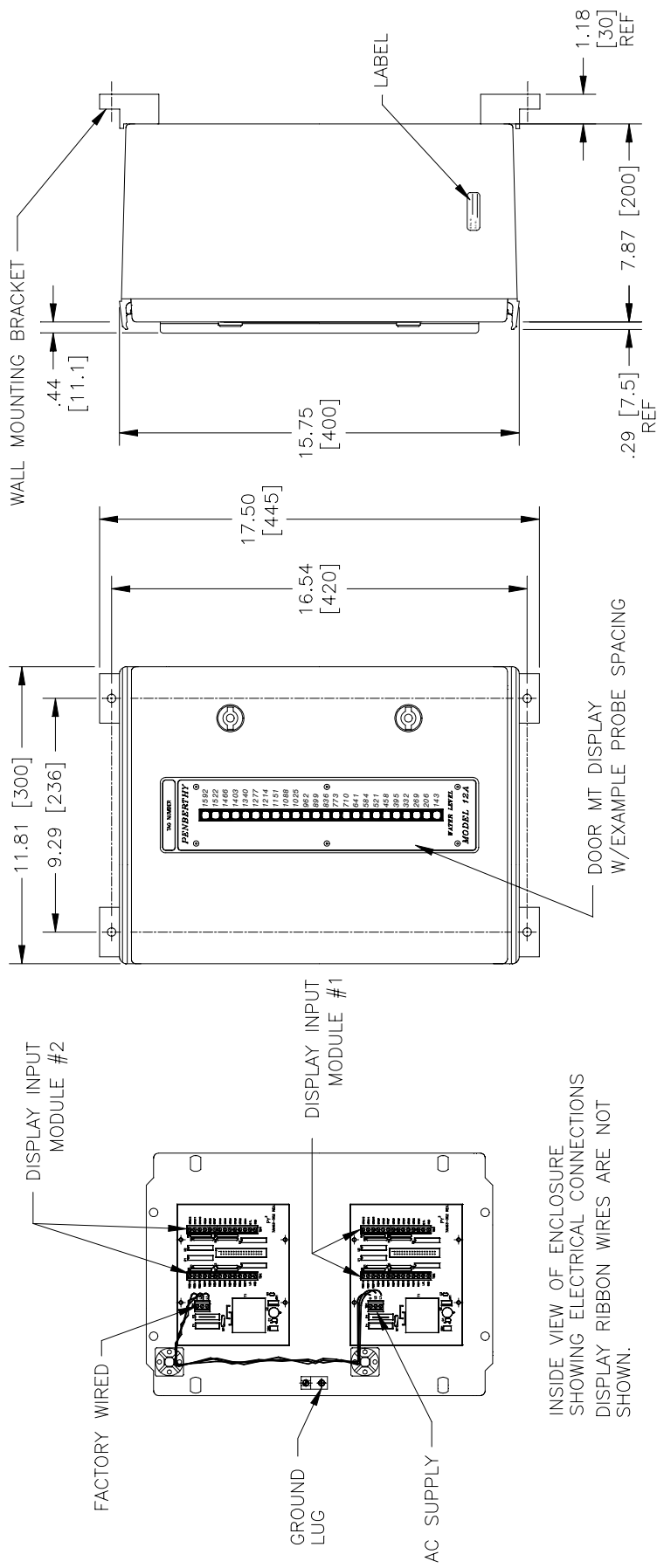
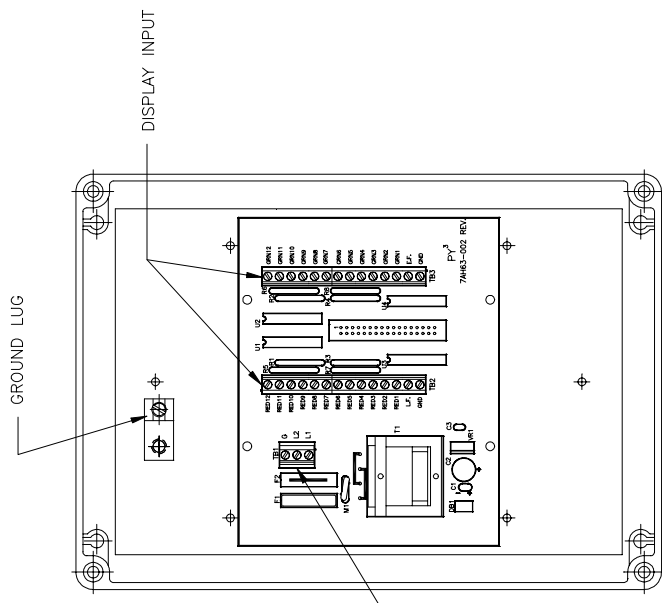
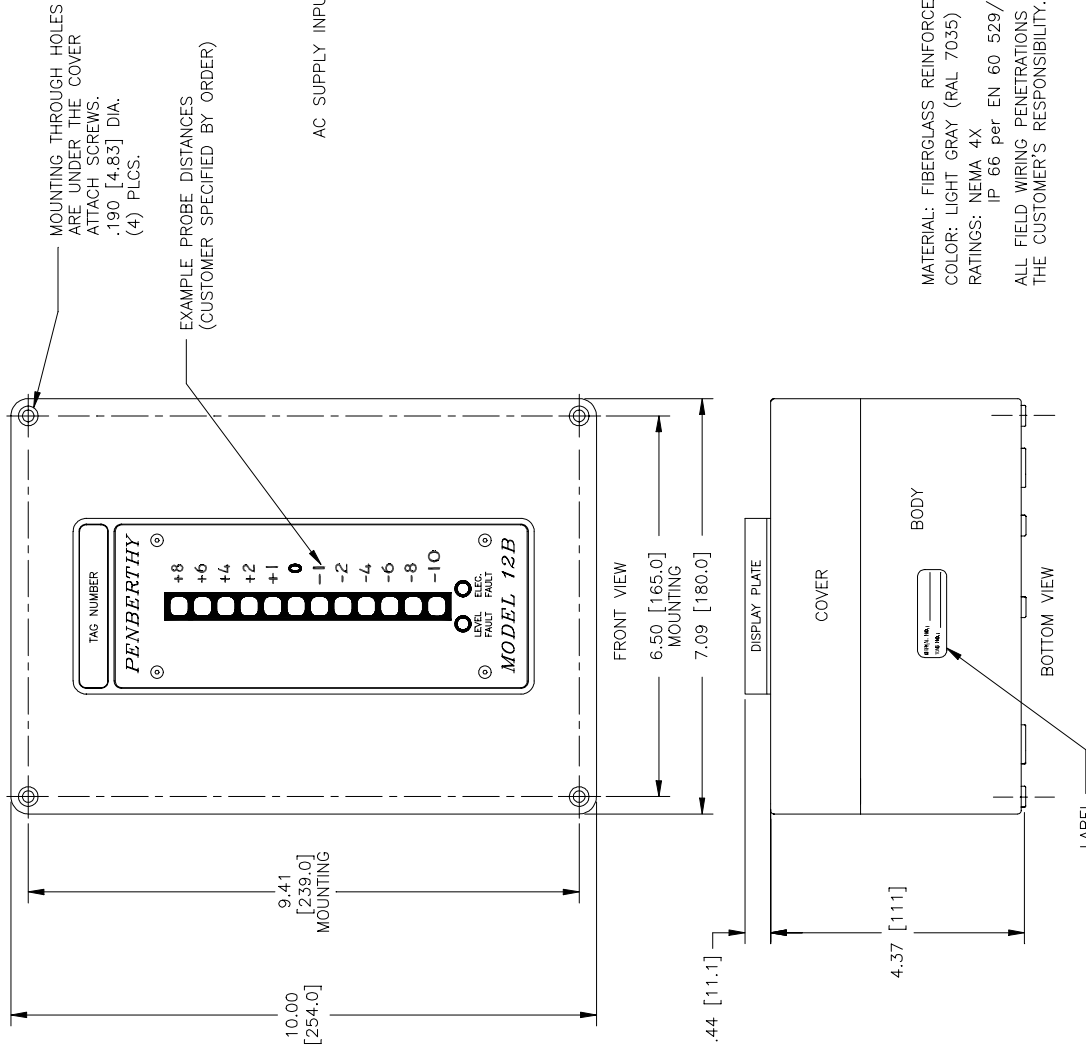


Figure 6 – 4X Enclosure 13-24 probe: Model 12A



4X ENCLOSURE WITH IPD  
 DISPLAY RIBBON WIRE NOT SHOWN  
 INSIDE VIEW OF ENCLOSURE  
 SHOWING ELECTRICAL CONNECTIONS



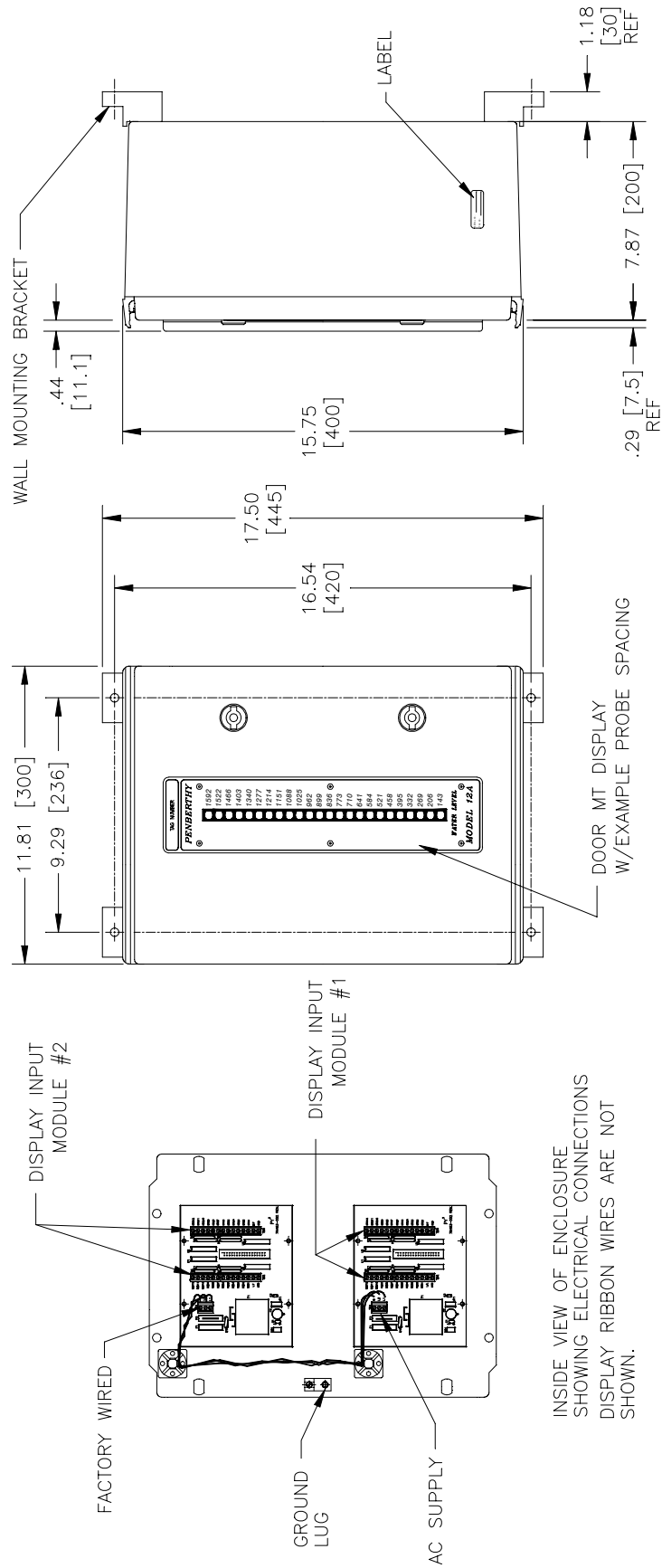
MOUNTING THROUGH HOLES  
 ARE UNDER THE COVER  
 ATTACH SCREWS.  
 .190 [4.83] DIA.  
 (4) PLCS.

EXAMPLE PROBE DISTANCES  
 (CUSTOMER SPECIFIED BY ORDER)

MATERIAL: FIBERGLASS REINFORCED POLYCARBONATE  
 COLOR: LIGHT GRAY (RAL 7035)  
 RATINGS: NEMA 4X  
 IP 66 per EN 60 529/10.91  
 ALL FIELD WIRING PENETRATIONS ARE  
 THE CUSTOMER'S RESPONSIBILITY.

MODEL 12B IPD (W/NEMA 4X ENCLOSURE)  
 (5-12 PROBE CONFIGURATION)

Figure 7 – 4X Enclosure 5-12 probe: Model 12B

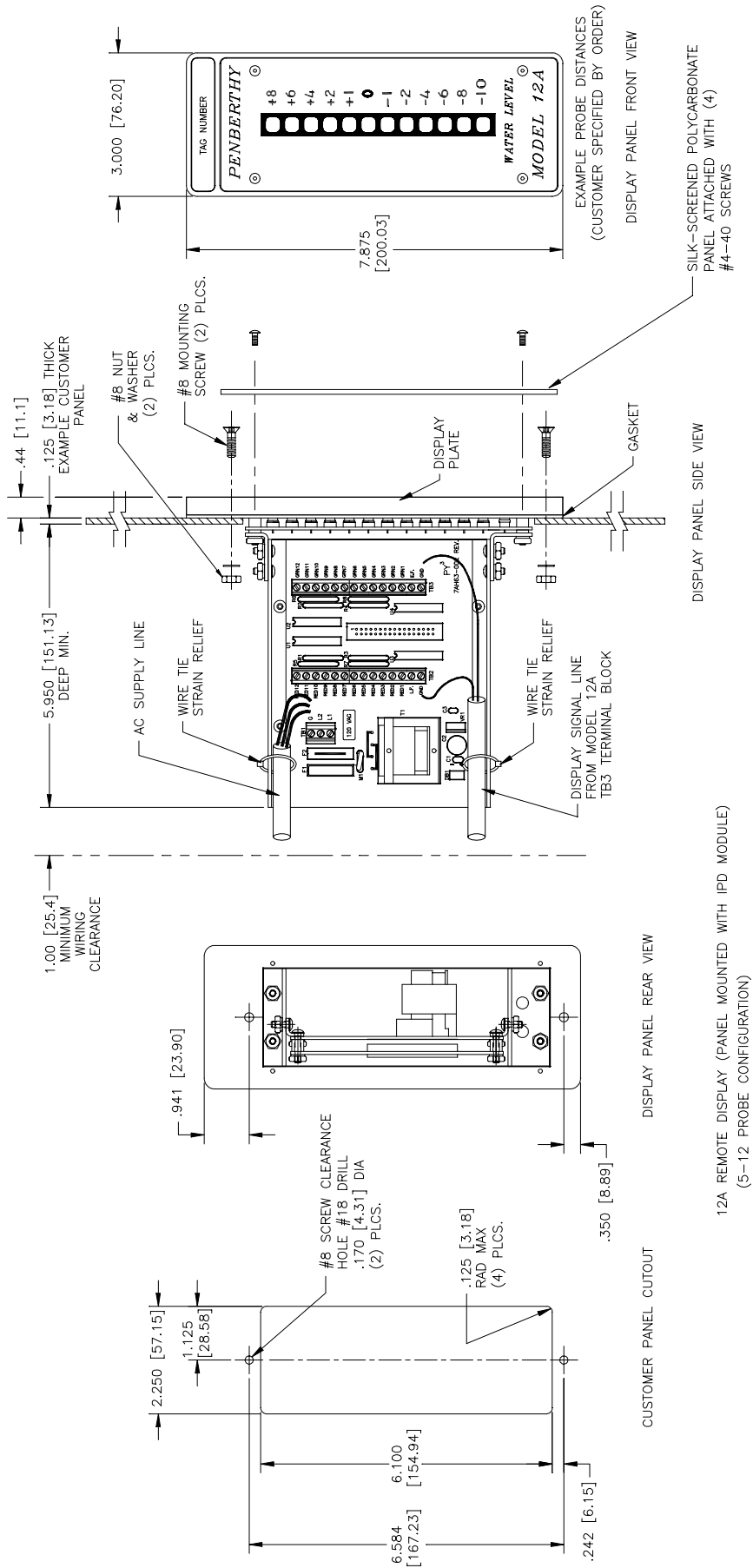


INSIDE VIEW OF ENCLOSURE  
SHOWING ELECTRICAL CONNECTIONS  
DISPLAY RIBBON WIRES ARE NOT  
SHOWN.

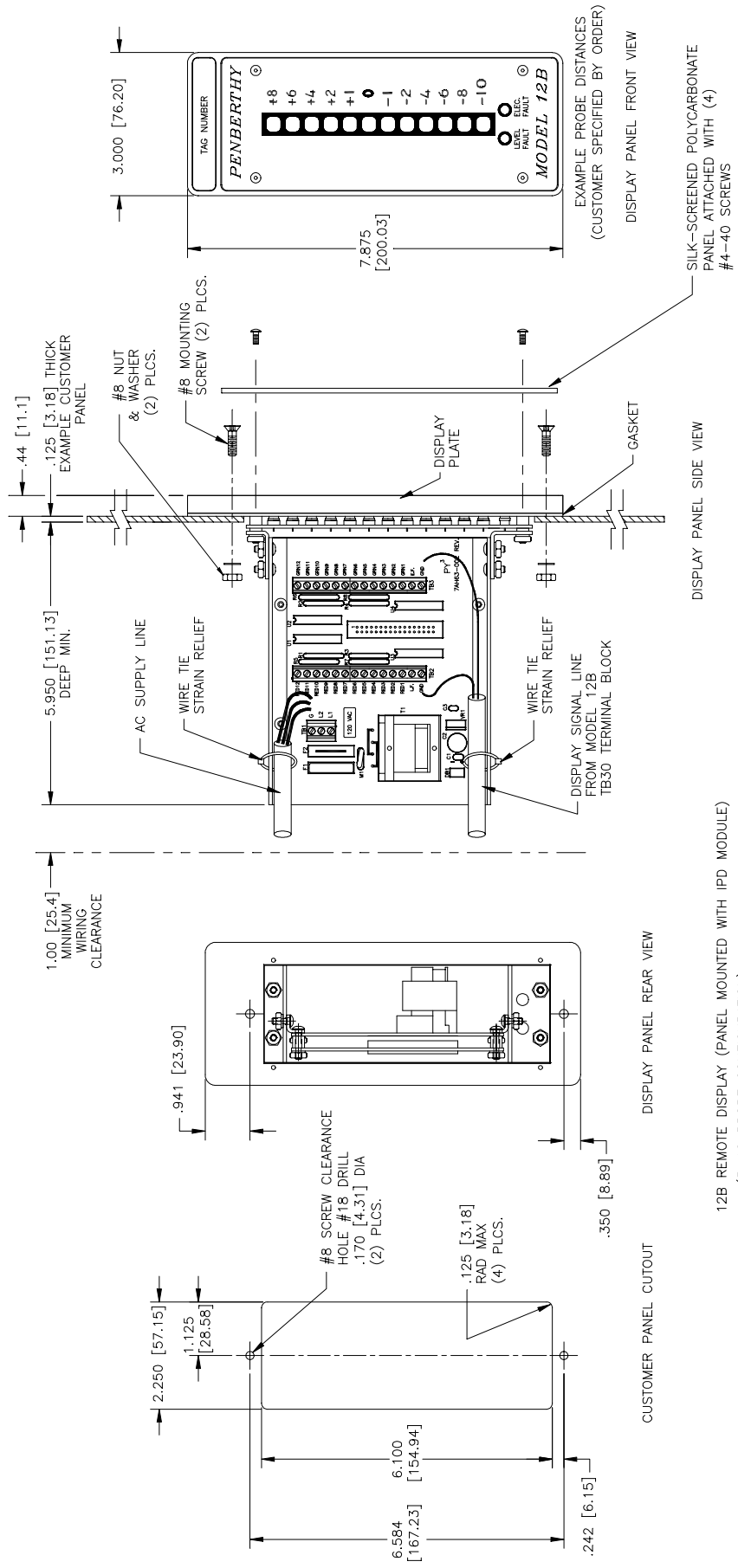
MATERIAL: FIBERGLASS REINFORCED UNSATURATED POLYESTER GFK  
 COLOR: PEBBLE GRAY PLASTIC PIGMENT  
 RATINGS: NEMA 4X  
 IP 66 per EN 60 529/10.91  
 UL E 76083  
 CSA LR 59132  
 ALL FIELD WIRING PENETRATIONS ARE  
 THE CUSTOMERS RESPONSIBILITY.

MODEL 12A WITH IPD  
 MODULE (W/ NEMA 4X ENCLOSURE)  
 (13 TO 24 PROBE CONFIGURATION)

Figure 8 – 4X Enclosure 13-24 probe: Model 12B



**Figure 9 – Panel Mounted Display w/ IPD Module: Model 12A**



**Figure 10 – Panel Mounted Display w/ IPD Module: Model 12B**

## Notes

# TV&C - Prophetstown

## ≈ DECLARATION of CONFORMITY ≈

In conformance with ISO/IEC Guide 22 - 96

BTEIPD.DC r 0

Manufacturer's Name: Tyco Valves and Controls – Prophetstown, L.P.  
Manufacturer's Address: 320 Locust Street  
Prophetstown, IL 61277-1147 U.S.A.  
Product:  
Type of Equipment: Electronic Water Level Gauge  
Equipment Class: Industrial Instrumentation (ISM)  
Model Designation: Penberthy Independently Powered Display (IPD)

The product described above is in conformity with:

Standards:

CISPR 11

EN55011, Amend A1

EN61362-1

EN61000-4-2/IEC801-2/IEC1000-4-2

EN61000-4-3/IEC801-3/IEC1000-4-3/ENV50140

EN61000-4-4/IEC801-4/IEC1000-4-4

EN61000-4-5/IEC801-5/IEC1000-4-5/ENV50142

EN61000-4-6/IEC801-6/IEC1000-4-6/ENV50141

EN61000-4-8/IEC801-8/IEC1000-4-8 50Hz

EN61000-4-11/IEC801-11/IEC1000-4-11

Radiated Emissions

EM Disturbance

Industrial Immunity

Electrostatic Discharge

Radiated

Electromagnetic Fields

Electrical Fast

Transient

Surge (Lightning)

RF Conducted (CW)

Radiated Susceptibility

Voltage Dips and

Variations

Directives:

73/23/EEC Low Voltage

89/336/EEC Electromagnetic Compatibility

When field installed per instructions in I.O.M. Penberthy Part # 18MJ2-009

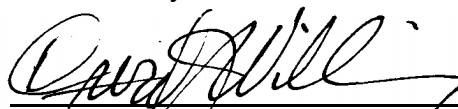
Date: 01 March 2003

Prophetstown, IL U.S.A.

Signature:

Name:

Position:



David J. Williams, C.Q.E.

Quality Assurance Manager

Technical Construction File is available at stated address. Signatory is contact person.

***tyco***

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***Flow Control***

Tyco Valves & Controls, L.P. Prophetstown  
320 Locust St., Prophetstown, Illinois 61277  
Phone: 815-537-2311  
FAX: 815-537-5365  
Printed in USA  
Part No. 18MJ2-009

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