

# Input/Output Modules

## Installation Guide

# Notice

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## **WARRANTY**

**Please see next page, iii.**

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# Warranty

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## **TLS-350R, TLS-350 PLUS, TLS-350J AND TLS-300I/C, AND TLS-2 MONITORING SYSTEMS.**

We warrant that this product shall be free from defects in material and workmanship for a period of one (1) year from the date of installation or twenty-four (24 months) from the date of invoice, whichever occurs first. During the warranty period, we or our representative will repair or replace the product, if determined by us to be defective, at the location where the product is in use and at no charge to the purchaser. **LAMPS AND FUSES ARE NOT COVERED UNDER WARRANTY.**

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This warranty applies only when the product is installed in accordance with Veeder-Root's specifications, and a Warranty Registration and Checkout Form has been filed with Veeder-Root by an Authorized Veeder-Root Distributor. This warranty will not apply to any product which has been subjected to misuse, negligence, accidents, systems that are misapplied or are not installed per Veeder-Root specifications, modified or repaired by unauthorized persons, or damage related to acts of God.

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We shall not be responsible for any expenses incurred by the user.

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# Introduction

## General

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This manual contains procedures for the installation or replacement of the following:

- Veeder-Root Four Relay Output Module (P/N 329359-00X)
- Veeder-Root Four Input Module (P/N 332451-001)
- Veeder-Root Input/Output Combination Module (P/N 329360-00X)
- Veeder-Root Dispenser Controller Module (P/N 331408-00X)

The above parts are for the TLS System designed and manufactured by Veeder-Root. This manual assumes all preliminary site preparation is completed, and that field wiring from the monitor to the sensor junction box is in place.

If site preparation is necessary, refer to the TLS-3XX Site Preparation and Installation manual, or contact your Veeder-Root representative for assistance.

## Related Manuals

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576013-879      TLS-3XX Site Prep and Installation Manual

576013-623      TLS-3XX System Setup Manual

## Contractor Certification Requirements

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Veeder-Root requires the following minimum training certifications for contractors who will install and setup the equipment discussed in this manual:







**Level 1**      Contractors holding valid Level 1 Certification are approved to perform wiring and conduit routing, equipment mounting, probe and sensor installation, tank and line preparation, and line leak detector installation.

**Level 2/3**      Contractors holding valid Level 2 or 3 Certifications are approved to perform installation checkout, startup, programming and operations training, troubleshooting and servicing for all Veeder-Root Tank Monitoring Systems, including Line Leak Detection and associated accessories.

**Warranty Registrations** may only be submitted by selected distributors.





## Safety Precautions

The following safety symbols are used throughout this manual to alert you to important safety hazards and precautions.

 <p><b>EXPLOSIVE</b> Fuels and their vapors are extremely explosive if ignited.</p>	 <p><b>FLAMMABLE</b> Fuels and their vapors are extremely flammable.</p>
 <p><b>ELECTRICITY</b> High voltage exists in, and is supplied to, the device. A potential shock hazard exists.</p>	 <p><b>TURN POWER OFF</b> Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.</p>
 <p><b>WARNING</b> Heed the adjacent instructions to avoid equipment damage or personal injury.</p>	 <p><b>READ ALL RELATED MANUALS</b> Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.</p>

## Warnings and Important Notes

### ⚠ WARNING

   	<p><b>You are working with a device in which potentially lethal voltages may be present. This product is to be installed in systems operating near locations where highly combustible fuels or vapors may be present.</b></p> <p><b>Fire or explosion resulting in serious injury or death could result if the equipment is improperly installed or modified. Serious contamination of the environment may also occur.</b></p> <ol style="list-style-type: none"> <li><b>1. Read and follow all instructions in this manual, including all safety warnings.</b></li> <li><b>2. Turn POWER OFF before installing these modules.</b></li> <li><b>3. To be installed in accordance with the National Electrical Code, NFPA 70 and the Automotive And Marine Service Station Code, NFPA.</b></li> <li><b>4. Do not alter or modify any component or substitute components in this kit.</b></li> <li><b>5. Do not use this component for other systems aside from the TLS Console. Install only as described in this manual or you will void all warranties connected with this product.</b></li> </ol>
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# Installation

## Module/Connector Positions

Figure 1 shows the Power Bay slots of the TLS console in which modules are installed.

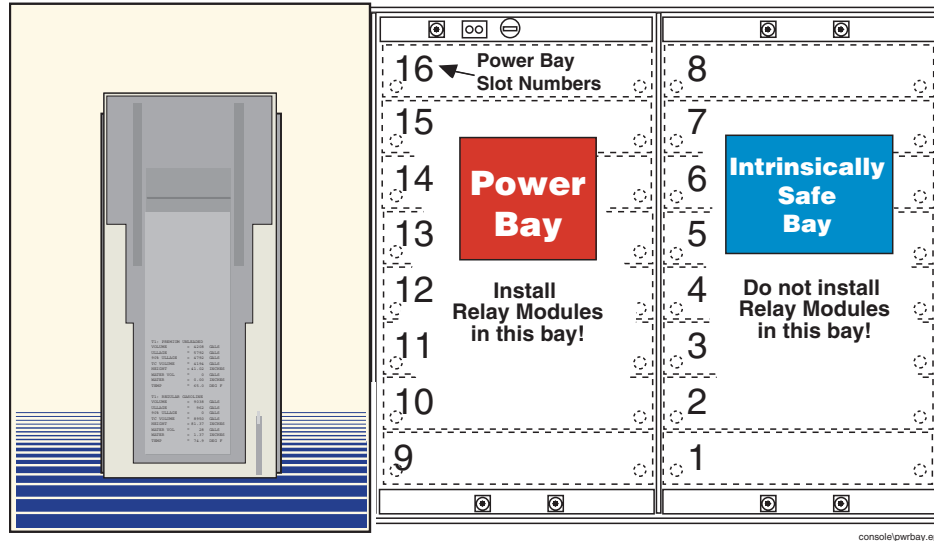


Figure 1. Power Bay in TLS console

### MODULE POSITION

- Record on the circuit directory (on the inside front panel of the console) the type of module you are installing in this slot.
- Once a particular type of module has been installed in that slot, the system will always look for that type of module in that slot.

### CONNECTOR POSITION

- Identify all connectors according to their slot location using the self-adhesive numbering labels supplied with each module.
- Once a device has been wired to certain terminals on the connector and the system has been programmed, terminal position may not be changed without reprogramming the system.

### Module Installation

For additional information regarding the below steps, refer to the Veeder-Root TLS-3XX Site Preparation and Installation manual. Read and follow all instructions carefully.

1. Open the right-hand door of the TLS console by unscrewing the right-top and right-bottom locking bolts.
2. To retain current programming, be sure that the CPU (for TLS-350) or ECPU (for TLS-350R) board battery switch is set to "ON" (see Figure 2). To avoid electrical shock or damage to components, if accessing the battery switch, avoid touching any circuit components with your hand or any conductive tool or jewelry.

3. Turn console POWER OFF before installing the module.
4. While working in the Power Bay of the console, avoid shorting high voltage across any component or module in the adjacent intrinsically safe bay of the console. This could result in an explosion near the sensor.
5. Remove a blank cover plate from any unused slot in the Power Bay compartment.
6. Slide the new module into the empty slot until its rear board connector engages the connector in the console. Gently push in on the module until the connector is completely seated. Do not apply excessive force when installing the module. Push the two snap fasteners on the front panel of the module until they snap in.
7. Be sure all of remaining unused slots in the Power Bay have blank plates installed.



If you are installing these modules in a system that has already been programmed, you **CANNOT CHANGE** the position of existing modules and/or connectors without reprogramming the entire system. If any connectors are removed during installation, **BE SURE** they are reconnected to their original modules.

## Module Wiring Connections

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### OUTPUT RELAY RATINGS

Output relay ratings are based on resistive loads:

- Four Form-C relays (4-Relay Output Module)
  - 2 A maximum
  - 120/240 Vac or 24 Vdc
- Two Form-C relays (Input/Output Combination Module)
  - 2 A maximum
  - 120/240 Vac or 24 Vdc
- Four Form-A relays (Dispenser Controller Module)
  - 10 A maximum
  - 120/240 Vac

### INPUT RATINGS

- Four inputs (4-Input Module)
  - 0.25 A maximum
  - 8 Vdc
- Two inputs (Input/Output Combination Module)
  - 0.25 A maximum
  - 8 Vdc



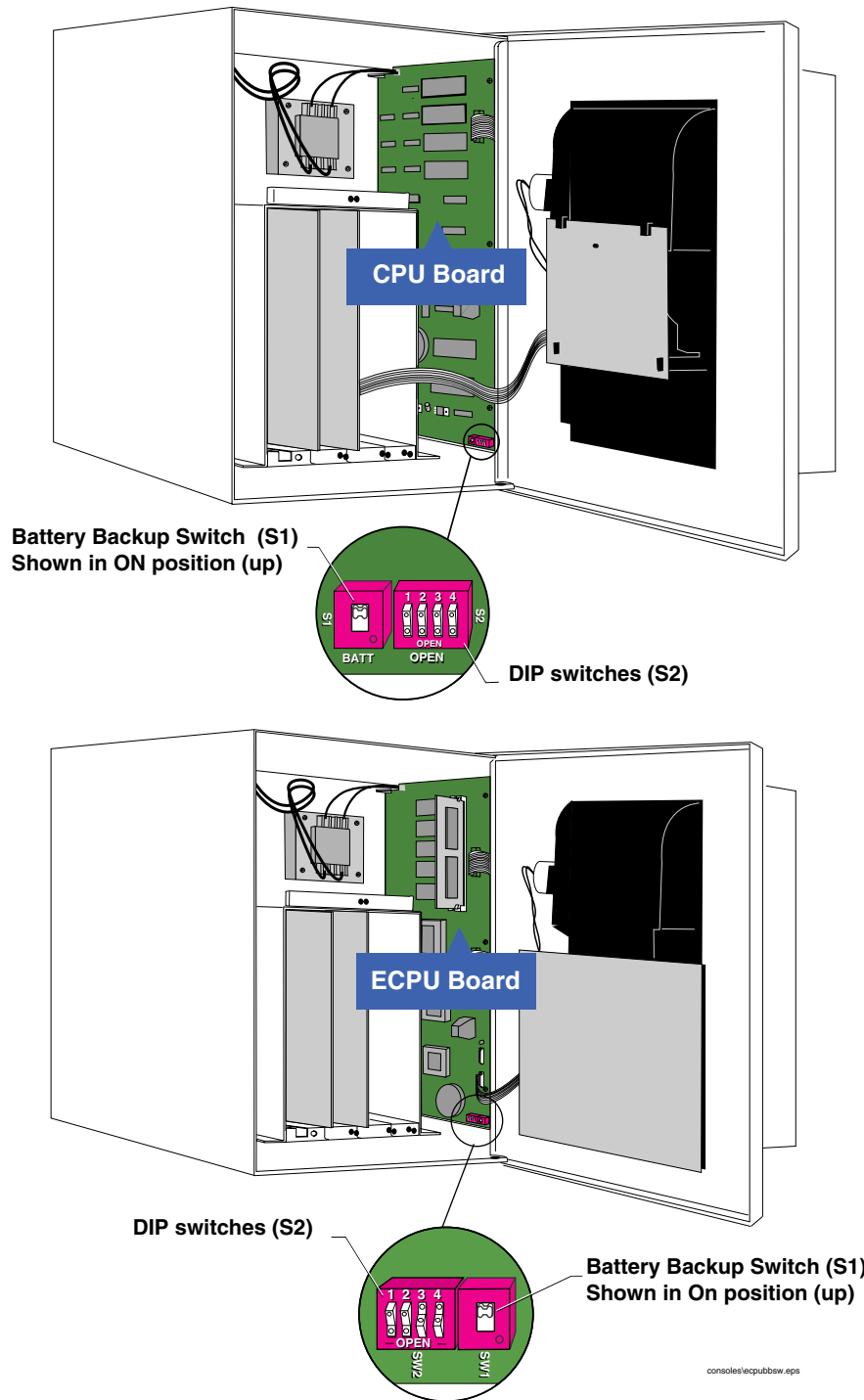


Figure 2. CPU/ECPU board battery backup switch locations

⚠ **WARNING**

**You are working with a device in which potentially lethal voltages may be present.**

**If high voltage is shorted across any barrier terminal, explosion and fire could result.**

**Be sure AC POWER to the TLS console is OFF before opening the front panel and installing or wiring any module.**

Be sure to record on the circuit directory the type of module and the name or location of each device wired to the connector.

Once external devices have been connected and the system has been programmed, module, connector and wiring positions cannot be changed without re-programming the system.

Improper system operation will result if any one of these positions are changed without re-programming.

Refer to the appropriate module wiring diagram below and connect the wires from each external device to the appropriate terminals on the module connector.

Module wiring is connected to devices located in the non-hazardous area and it must be in accordance with the National Electrical Code (NFPA 70) and the Automotive and Marine Service Station Code (NFPA 30A).

### FOUR RELAY OUTPUT MODULE WIRING

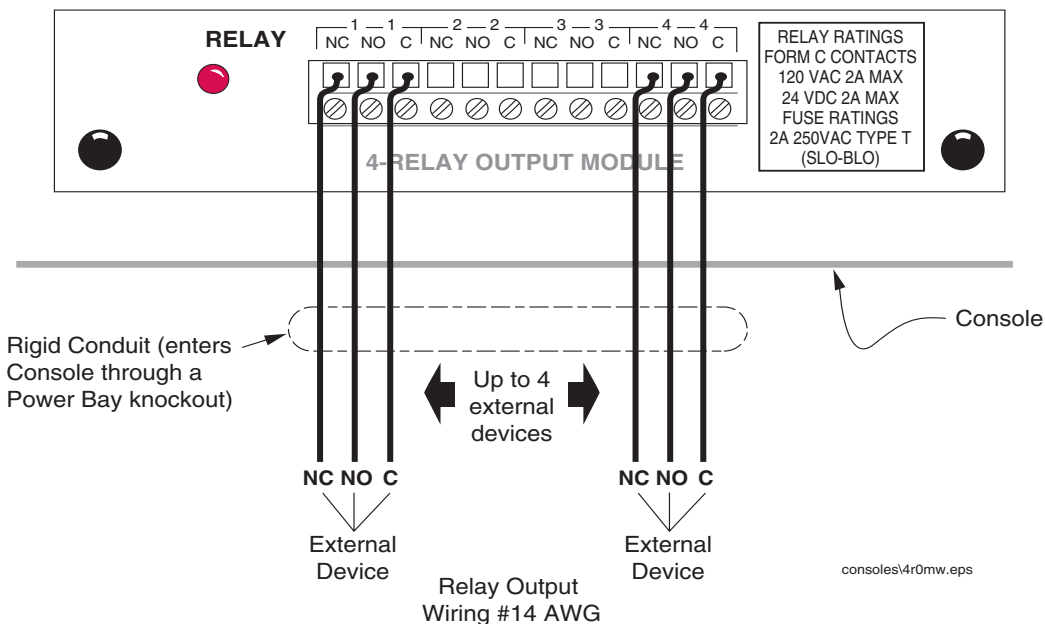
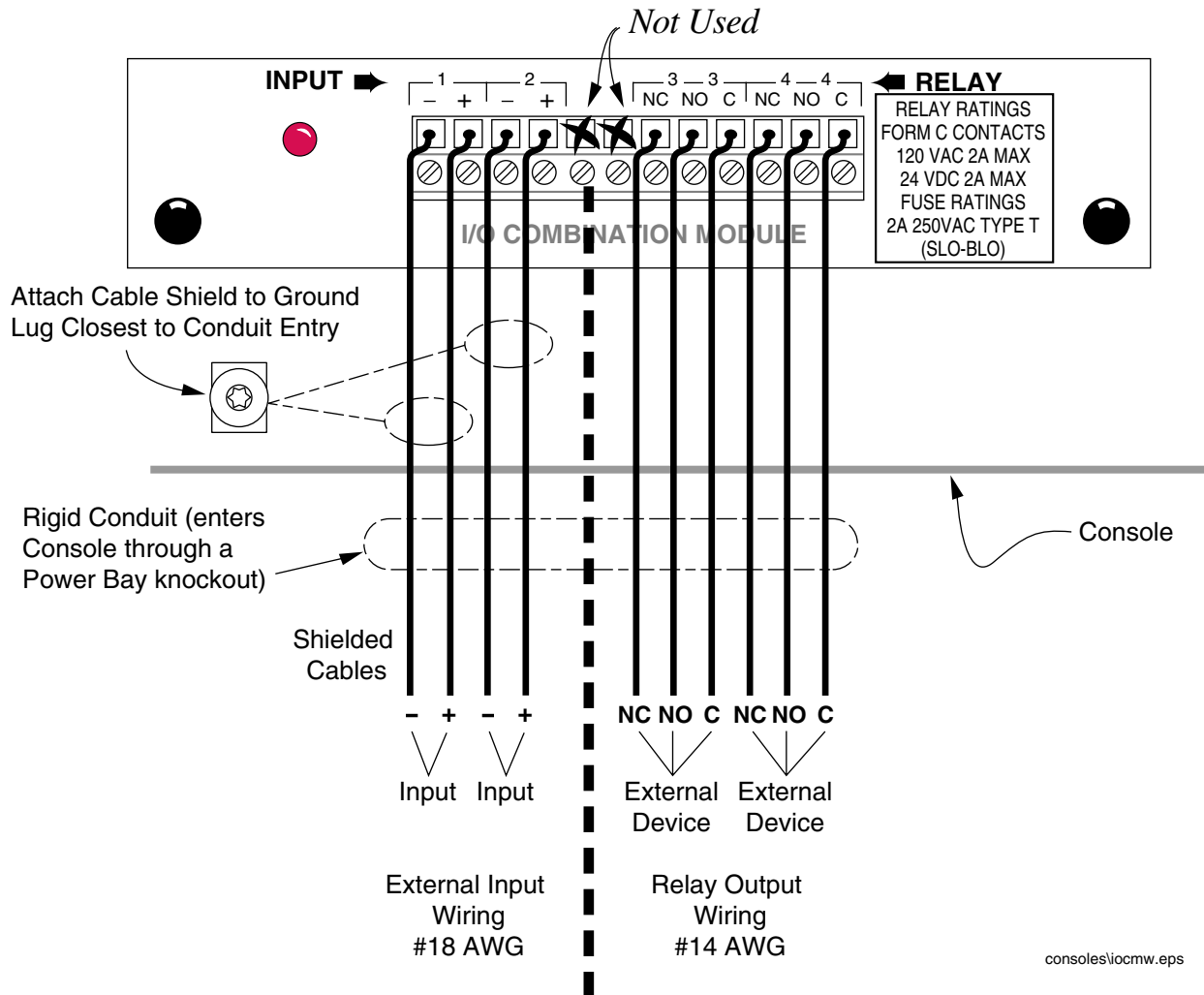


Figure 3. Four Relay Output Module Wiring Diagram

### INPUT/OUTPUT COMBINATION MODULE WIRING

The TLS-350 and TLS-350R can accept a dry-contact switch closure input from an external device such as a line leak detector or well monitoring system. Each Input/Output Module accepts two external inputs.

1. For each external input, connect a shielded cable consisting of two 18 AWG conductors to the appropriate terminals on the I/O Module (see Figure 4).
2. Ground the cable shield to the ground terminal closest to the conduit entry.  
DO NOT ground both ends of the shield on the cable run.



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Figure 4. Input/Output Combination Module Wiring Diagram

### DISPENSER CONTROLLER MODULE WIRING

The TLS-350R Console may be used to interrupt the power supplied to individual dispensers.

Each Dispenser Controller Module consists of four pairs of relay outputs (see Figure 5). To use the Dispenser Controller Module, each dispenser must draw less than 10 amperes of current.

Connect only one dispenser circuit to a single pair of relay outputs using two 12 or 14 AWG conductors:

- NO - Normally Open Contact
- C - Common side

The relay contacts are not polarized. Each pair of output terminals is isolated from the other pairs and from ground.

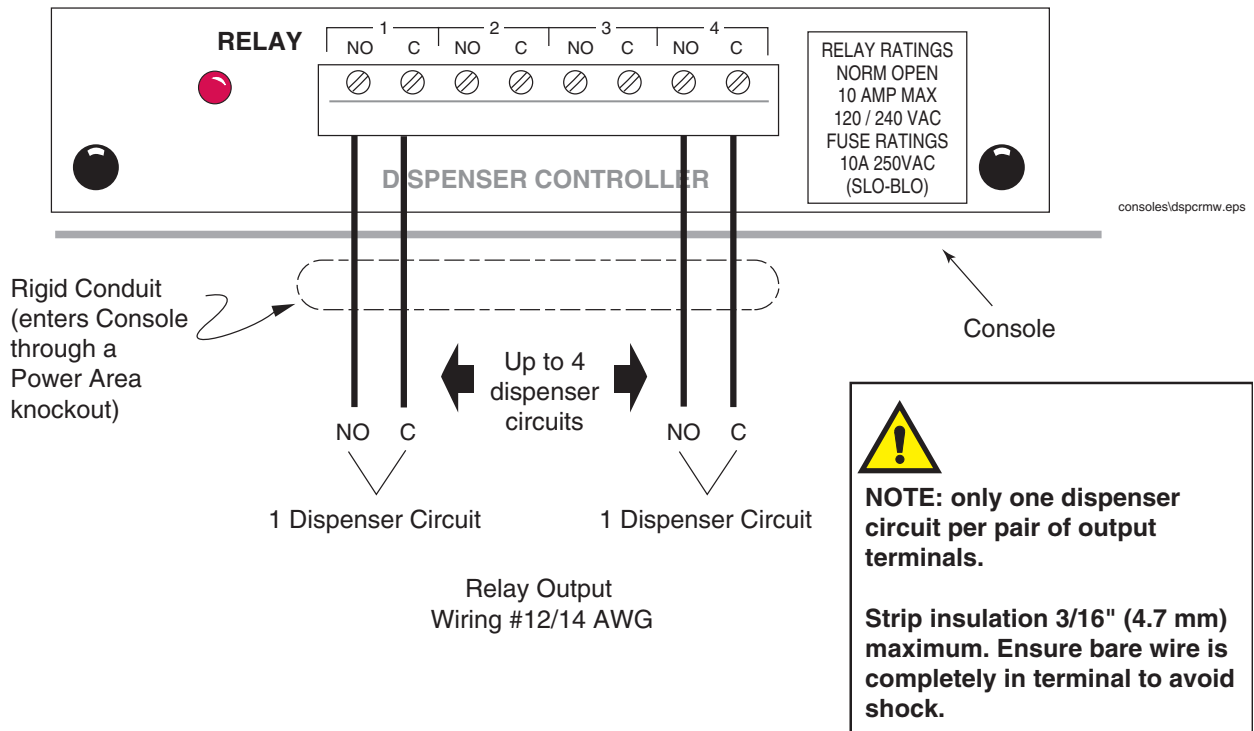


Figure 5. Dispenser Controller Module Wiring Diagram

### FOUR INPUT MODULE WIRING

The TLS-350 and TLS-350R can accept up to four dry-contact switch closure inputs from external devices such as a line leak detector or well monitoring system.

1. For each external input, connect a shielded cable consisting of two 18 AWG conductors to the appropriate terminals on the module (see Figure 6).
2. Ground the cable shield to the ground terminal closest to the conduit entry.  
**DO NOT** ground both ends of the shield on the cable run.

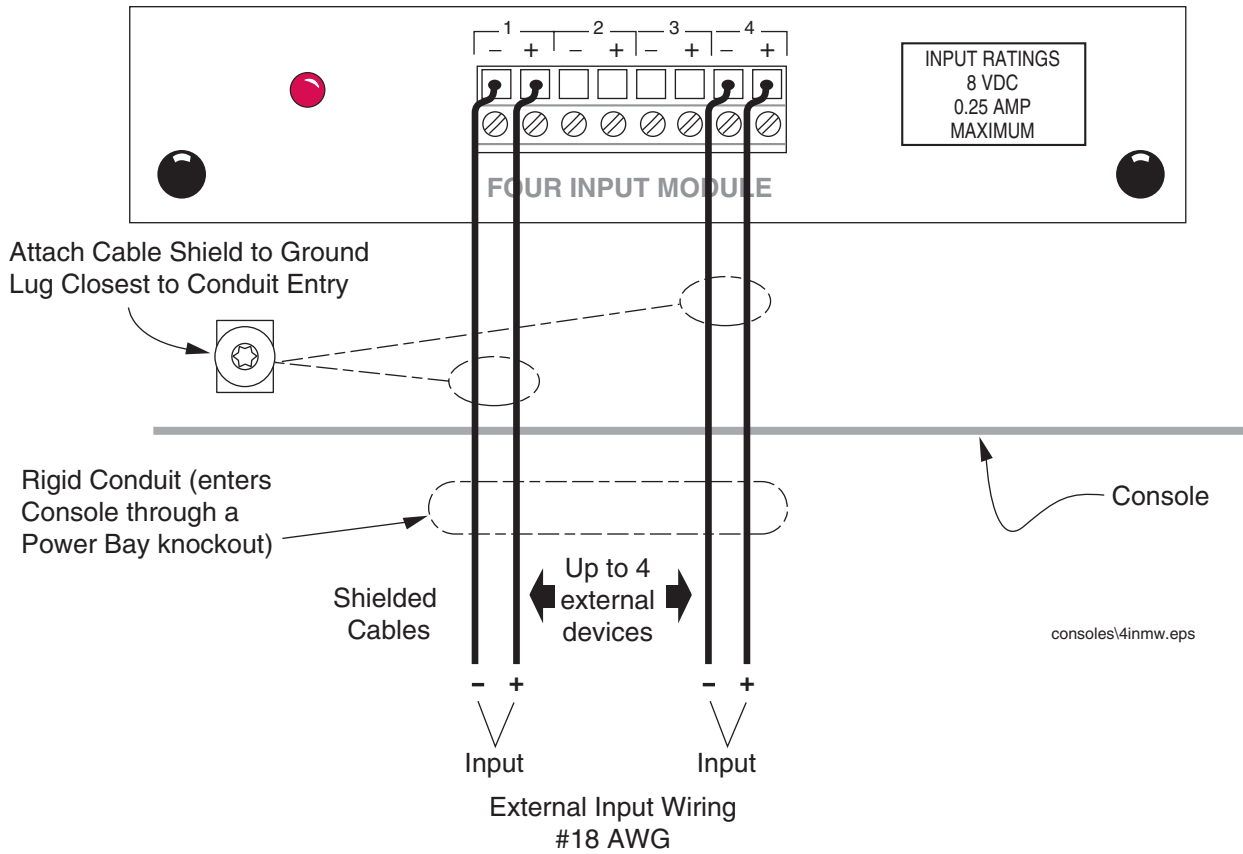


Figure 6. Four Input Module Wiring Diagram



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other assistance, please visit:  
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