

# TLS-4XX Consoles

## Upgrade Installation Instructions

# Notice

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Thoroughly examine all components and units as soon as they are received. If any cartons are damaged or missing, write a complete and detailed description of the damage or shortage on the face of the freight bill. The carrier's agent must verify the inspection and sign the description. Refuse only the damaged product, not the entire shipment.

Veeder-Root must be notified of any damages and/or shortages within 30 days of receipt of the shipment, as stated in our Terms and Conditions.

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1. Contact Veeder-Root Customer Service at 800-873-3313 with the specific part numbers and quantities that were missing or received damaged.
2. Fax signed Bill of Lading (BOL) to Veeder-Root Customer Service at 800-234-5350.
3. Veeder-Root will file the claim with the carrier and replace the damaged/missing product at no charge to the customer. Customer Service will work with production facility to have the replacement product shipped as soon as possible.

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1. It is the customer's responsibility to file a claim with their carrier.
2. Customer may submit a replacement purchase order. Customer is responsible for all charges and freight associated with replacement order. Customer Service will work with production facility to have the replacement product shipped as soon as possible.
3. If "lost" equipment is delivered at a later date and is not needed, Veeder-Root will allow a Return to Stock without a restocking fee.
4. Veeder-Root will NOT be responsible for any compensation when a customer chooses their own carrier.

## **RETURN SHIPPING**

For the parts return procedure, please follow the appropriate instructions in the "General Returned Goods Policy" pages in the "Policies and Literature" section of the Veeder-Root **North American Environmental Products** price list. Veeder-Root will not accept any return product without a Return Goods Authorization (RGA) number clearly printed on the outside of the package.

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## Introduction

This manual discusses removal of a TLS-3XX console and replacing it with a TLS-4XX console. The instructions assume all site monitoring devices have been previously installed and site wiring is complete.

## Related Manuals

Refer to the Tech Docs CD-ROM (V-R P/N 331650-001) for relevant information contained in the following manual:

577013-879                      TLS-4XX Series Site Prep and Installation Manual

## Contractor Certification Requirements

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









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

**TLS-450 Technician Certification:** Contractors holding valid TLS-450 Technician Certifications are approved to perform installation checkout, startup, programming and operations training, troubleshooting and servicing for all Veeder-Root TLS-450 Series 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 may be used throughout this manual to alert you to important safety hazards and precautions

 <b>EXPLOSIVE</b> Fuels and their vapors are extremely explosive if ignited.	 <b>FLAMMABLE</b> Fuels and their vapors are extremely flammable.
 <b>ELECTRICITY</b> High voltage exists in, and is supplied to, the device. A potential shock hazard exists.	 <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.
 <b>WARNING</b> Heed the adjacent instructions to avoid damage to equipment, property, environment or personal injury.	 <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.
 <b>USE SAFETY BARRICADES</b> Unauthorized people in the work area are dangerous. Always use safety cones or safety tape to block access to the work area.	 <b>STATIC SENSITIVE COMPONENTS</b> Wear grounded anti-static wrist strap before handling the printed circuit board and mounted components.

## Safety Warnings

 <b>WARNING</b>	
	<p>This console contains high voltages which can be lethal. It is also connected to low power devices that must be kept intrinsically safe.</p> <p><b>FAILURE TO COMPLY WITH THE FOLLOWING WARNINGS AND SAFETY PRECAUTIONS COULD CAUSE DAMAGE TO PROPERTY, ENVIRONMENT, RESULTING IN SERIOUS INJURY OR DEATH.</b></p> <ol style="list-style-type: none"><li>1. Turn off and tag power at the circuit breaker. Do not connect the console AC power supply wires at the breaker until all devices are connected.</li><li>2. Attach conduit from the power panel to the console's Power Area knockouts only.</li><li>3. Comply with all applicable codes including: the National Electrical Code; federal, state, and local codes; and other applicable safety codes.</li></ol> <p>Connecting power wires to a live circuit can cause electrical shock that may result in serious injury or death.</p> <p>Routing conduit for power wires into the intrinsically safe compartment can result in fire or explosion resulting in serious injury or death.</p>

## Removing the Existing Console

The key to a successful TLS-450 retrofit installation is the careful removal of the old console and wiring.



The first concern is safety, so if you are working in a public area of the store, you want to make sure to barricade off your work area to prevent injuries.



1. Turn off and tag the breaker that supplies power to the console.
2. Remove the door screws (with a T-15 Torx driver), open the console and unplug the power connector in the power bay. It's always a good idea to use your multimeter to confirm that the circuit is dead, especially since you will be pulling these wires through the knockout.
3. Verify all Intrinsically safe wires are labeled before removing them so you will know to what device they are connected and their polarity if applicable. Verify all Non-Intrinsically wiring connections are labeled before removing them.
4. Unplug the high and low voltage connectors from the console. Remove the connectors from the high and low voltage wires. Be sure not to lose these connectors. If you plan to reinstall this console at another location you'll want to make sure to plug them back into the modules once the wires have been removed.
5. Disconnect and label all communication wires from the comm modules.
6. Remove both ground wires, the chassis ground and the barrier ground, from the grounding lugs in the console.
7. Loosen the power conduit ring, remove it and pull the wires through the knockout. Once both the high and low voltage wires have been removed, it's time to physically remove the console from the wall. Keep your screws if possible because the mounting holes for the TLS-450 will match the mounting holes for the TLS-350 that you're removing.
8. Remove the power and ground wires for the wire bundle if they were run in the same conduit with the High Voltage wires. A separate power conduit will need to be run to the TLS-450.

## Installing the TLS-450 Console

### Mounting the Console

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The TLS-450 has the same mounting bolt pattern and approximate weight as the TLS-350 that you just removed. One major consideration for the placement of the TLS-450 is that the screen is at eye level so it can be seen and touched (see Figure 1).

The TLS-450 doesn't have pre-assigned slots for the Module bay modules so you can use any of the four slots to accommodate intrinsically safe (USM) or non-intrinsically safe (I/O, MDIM, etc.) modules (see Figure 2). Since the Module Bay modules can be installed in any of these 4 slots, install them where it makes the most sense for conduit connections. Caution! USM wiring inputs are intrinsically safe and conduit containing this wiring must attach to the knockouts above or below the slot in which you install the USM module(s).

Never use a drill to open up your knockouts. This could potentially result in metal filings getting into the console. It's much easier to just knock out the pre-punched slugs in the console anyway. Remember only knock out the smallest size you need. The console is pre-punched for 3/4" and 1" for Module Bay slots, but you may use up to 1-1/4" if needed but normally, this is only when direct burial cable has been used. Again, if you need to use 1-1/4" conduit, then use a punch, not a drill. Make sure that the conduit fitting ring is tight.

### Installing USM Module(s)

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Try not to have too much wire in your console. Pull unneeded wire back into your wiring trough and loop it neatly.



**Warning! only intrinsically-safe wiring can enter a USM module slot knockout.**

1. Figure 2 illustrates acceptable Intrinsically-Safe USM module positions in the Module Bay of the console. After installing the USM module, remove a connector from the USM module, loosen the screws, insert your wires and tighten well. Don't let loose wires on the connector drive you crazy when you begin the startup and probes or sensors are missing – make sure these wires are tight in the connector block. Connect all probe and sensor wires and then reconnect your block to the USM module.

Make sure that you terminate the ground shields to the ground lug on the module. As you already know, the other end at the probe or sensor is NOT grounded.

2. Write in the device name for each wire connection on the connector block in the module's wiring label attached to the inside of the door.
3. Make sure that you loop the wire neatly under the lip of the module. This will keep your wires from interfering with the door when it closes.

### Installing I/O, MDIM or LVDIM Modules

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Try not to have too much wire in your console. Pull unneeded wire back into your wiring trough and loop it neatly.

1. Figure 2 illustrates acceptable Non-intrinsically Safe module positions in the Module Bay of the console. After installing the I/O, MDIM or LVDIM module, remove the connector from the module, loosen the screw, insert your wires and tighten well.
2. Write in the device name for each wire connection on the connector block in the module's wiring label attached to the inside of the door.

3. Make sure that you loop the wire neatly under the lip of the module. This will keep your wires from interfering with the door when it closes.
4. Close the right door and replace and tighten the top and bottom screws on the right side of the door.

## Installing Comm Modules

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### PRECAUTIONS AGAINST STATIC ELECTRICITY

Before removing electronic components from their antistatic bags read the following static electricity precautions.

1. Before handling any components, discharge your body's static electric charge by touching a grounded surface.
2. Do not remove parts from their antistatic bags until you are ready to install them.
3. Do not lay parts on the antistatic bags! Only the insides are antistatic.
4. When handling parts, hold them by their edges and their metal mounting brackets.
5. Avoid touching components or edge connectors that plug into slots and wear the antistatic wrist strap (Part No. 576010-908) included in your component replacement kit.
6. Never slide parts over any surface.
7. Avoid plastic, vinyl, and styrofoam in your work area



### COMM MODULE SLOTS AND CONFIGURABLE PORTS

1. The Comm Bay is divided into 5 communication slots numbered from 1 to 5 going from left to right (see Figure 2).
2. Identify the Comm module you would like to install. Comm modules are only allowed in specific Comm Bay slots as defined in Table 1.
3. Using a T-15 Torx driver, loosen the screw securing the comm module clamp until you can remove the clamp (see Figure 2).
4. Remove the blank cover from the desired comm slot by punching it out towards the inside of the console or using pliers to remove it from the inside of the console. Be careful not to damage any internal components in the process of removing the blank cover.
5. Place the new Comm module in the slot. As you align the edge connector on the back of the board in the center of the vertical connector on the Comm Backplane board, push the board firmly in as far as it can go. The sheet metal bracket of the Comm module slides into the slot and is keyed in the front where the comm module clamp holds it down.
6. After all Comm modules are installed, replace the comm module clamp and the screw that secures it.
7. Attach all of the labeled comm wiring to the appropriate Comm module(s).



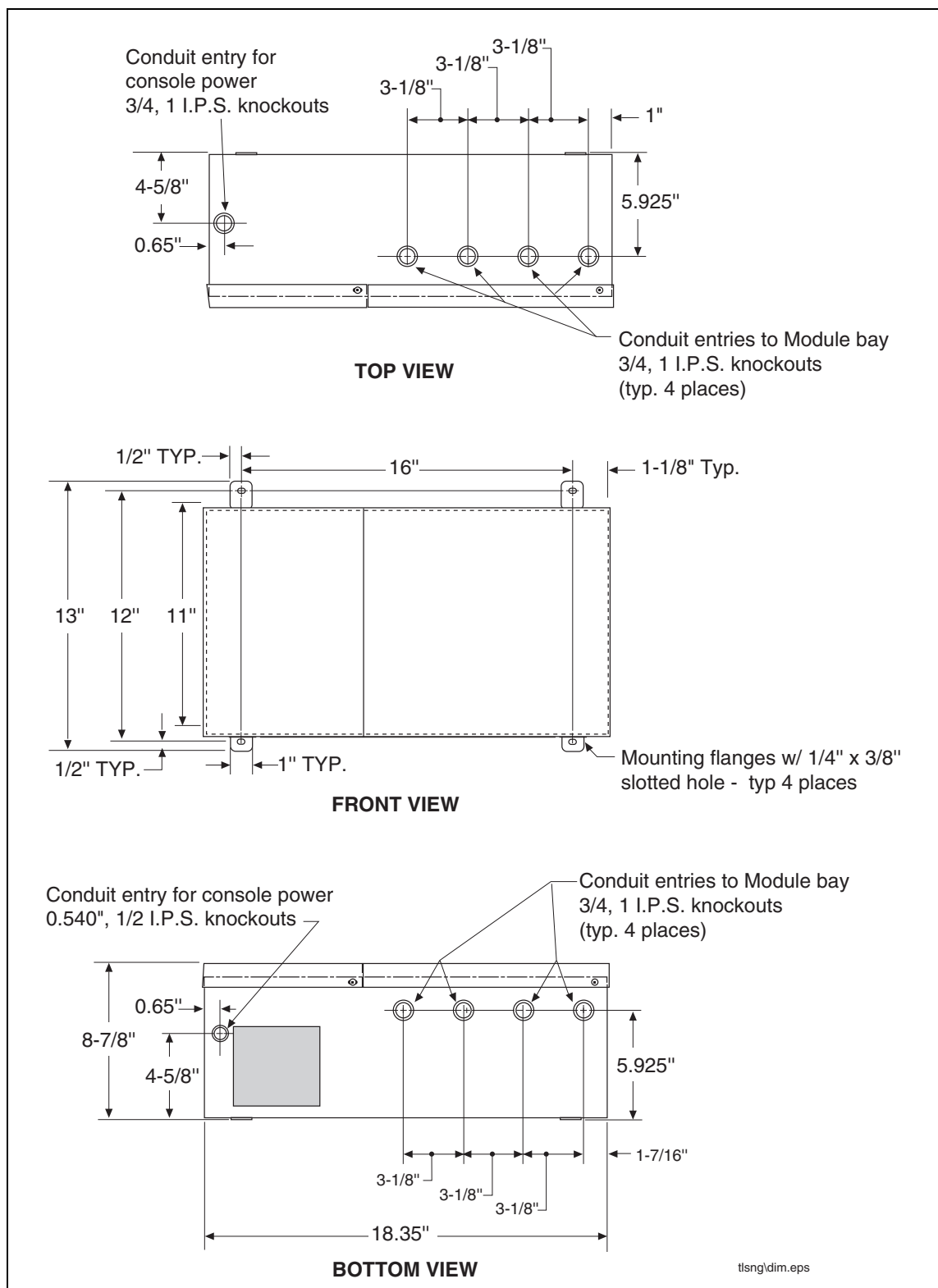


Figure 1. TLS-450 Console Dimensions and Designated Conduit Knockouts

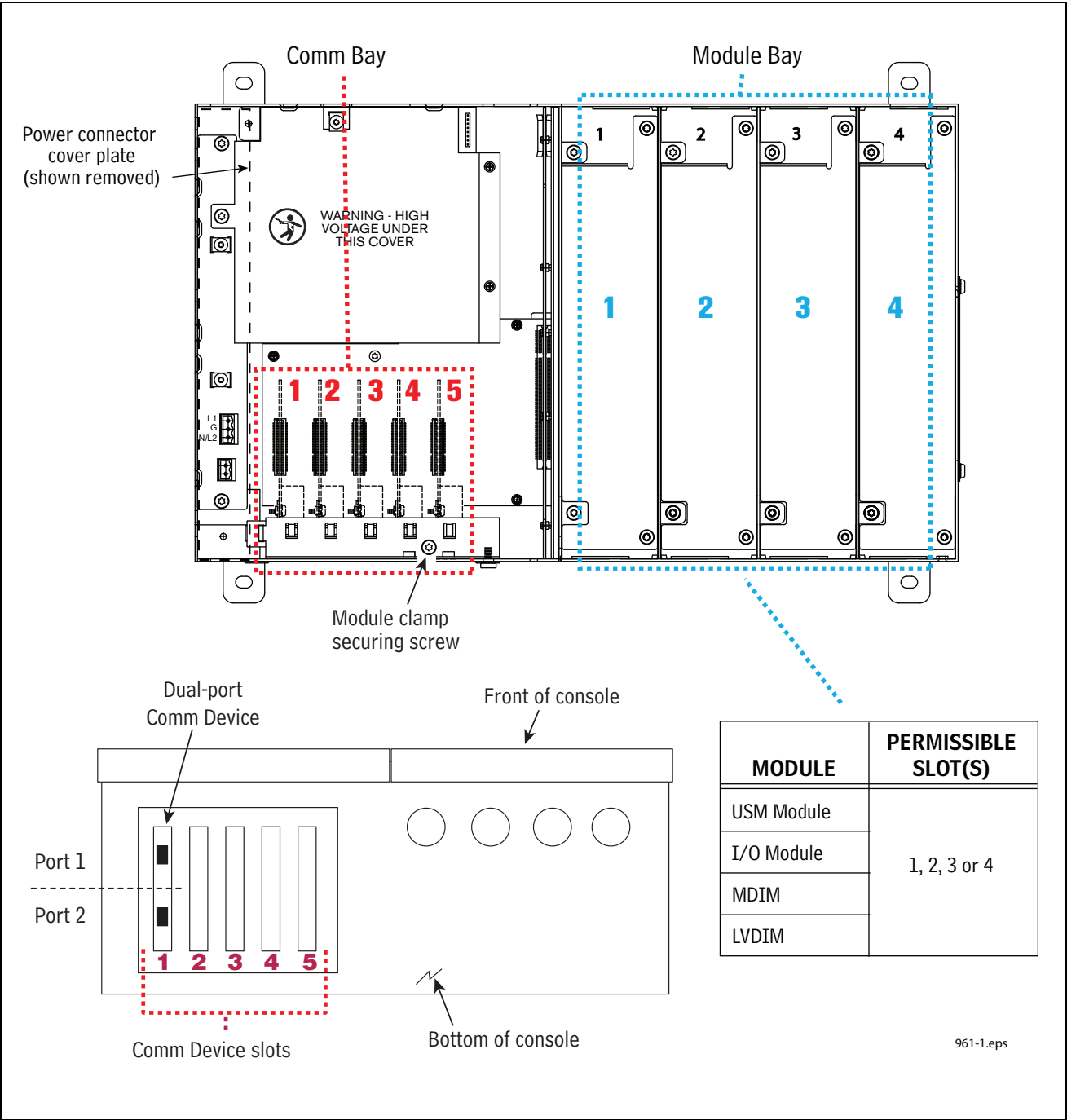


Figure 2. TLS-450 Console - Plug-in Module Bays

**Table 1.- Comm Module Permissible Slots and Port Availability**

Comm Module	Comm Type	Slot 1		Slot 2		Slot 3		Slot 4		Slot 5	
		Port		Port		Port		Port		Port	
		1	2	1	2	1	2	1	2	1	2
RS-232 Single Port (also EDIM, Satellite S-SAT and Satellite H-JBox apps.)	Serial	NC	C	NC	C	NC	C	----	----	----	----
RS-232 Dual Port (also EDIM, Satellite S-SAT and Satellite H-JBox apps.)		C	C	C	C	NC	C	C <sup>1</sup>	NC	----	----
RS-485 Single Port		NC	C	NC	C	NC	C	----	----	----	----
RS-485 Dual Port		C	C	C	C	NC	C	----	----	----	----
RS-232/RS-485 Dual Port		C (RS-232)	C RS-485	C (RS-232)	C (RS-485)	NC	C (RS-485)	C <sup>1</sup>	NC	----	----
SiteFax / Modem		NC	C	NC	C	NC	C	----	----	----	----
Ethernet	TCPIP	----	----	----	----	----	----	NC	C	NC	C
Ethernet / USB Dual Port	TCPIP/ USB	----	----	----	----	----	----	NC	C (TCPIP)	C (USB)	C (TCPIP)
USB	USB	----	----	----	----	----	----	----	----	C	NC
CDIM <sup>2</sup>	DIM	C	NC	C	NC	----	----	C	NC	----	----

<sup>1</sup>Limited RS-232 availability (only RX, TX and Enable are active and this port is without full handshaking capability)

<sup>2</sup>Slot 4 is preferred.

## Connecting the Power Wires to the Console

Now we will conclude the TLS-450 retrofit installation by connecting power to the console.

1. With the left of the console open, remove the two screws that attach the power connector cover plate (see Figure 2).
2. Once you have removed this cover, you will see the power connector already attached to the console. This is where your panel ground, L1 and neutral (for 120 volt applications) will be used.
3. Next, remove the knockouts for console power and install the conduit from the power trough to the console. If your local code requires rigid conduit you will need to plan carefully before knocking out these holes. The console is prepunched for 1/2" conduit. This should be large enough since the only wires going through this conduit will be for the console power and possibly 1 relay. Refer to manual 577013-879 for proper wire gauge, but you will need an L1, neutral, panel ground and earth ground to be routed through this conduit and into the console.

4. We're done with the power trough now, so you can seal it up. Next strip the ends of the wires that you brought into the console. Referring to Figure 3 and to the locations printed where the power connector attaches to the console, attach the L1, panel ground and neutral wires to the connector block.
5. Next, attach the earth ground to the grounding lug as shown. Please refer to the manual 577013-879 for impedance guidelines for the earth ground.
6. Plug in the power connector and route your wires so that the cover plate will conceal them when installed.
7. Replace the power connector cover plate using both screws and close the bay door.
8. Reconnect the communication wires to the appropriate comm cards. Wires which are not used on the TLS-450 should be pulled back into the wiring trough.
9. Return to the panel, remove your lock-out/tag-out device and label the breaker with the supplied self-adhesive label. Re-energize the circuit and you are ready to start up the unit.

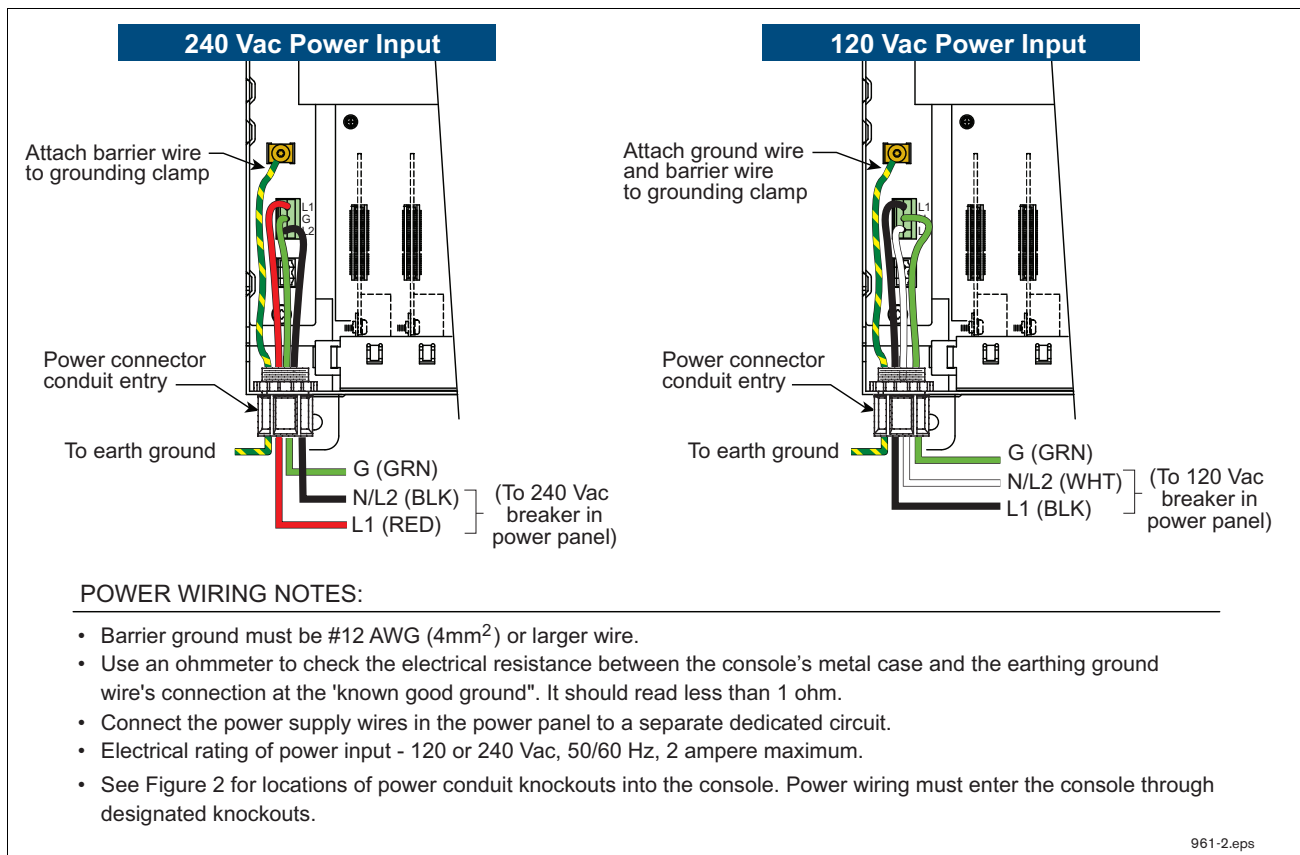


Figure 3. Wiring AC Power to the TLS-450 Console

