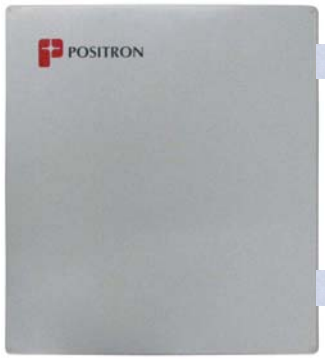
POSITRON

TeleLite optical isolation



TeleLite 722 Series

CFJ and OEI Assemblies

TeleLite 722 Series Assemblies

Table of Contents

Acronyms used in this guide, listed in order of appearance:

CFJ:	**Copper Fiber Junction (Defined in IEEE 487)**
OEI:	**Optical Electrical Interface (Defined in IEEE 487)**
ZOI:	**Zone of Influence (Defined in IEEE 487 as the area surrounding an electric supply location)**
ZOI CFJ:	**Zone of Influence Copper Fiber Junction**
NEMA:	**National Electrical Manufacturers Association**
GPR:	**Ground Potential Rise**
AWG:	**American Wire Gauge**
IEEE:	**Institute of Electrical and Electronic Engineers**
RJ:	**Registered Jack**
RX:	**Receive**
TX:	**Transmit**
HVI:	**High Voltage Interface**
PSTN:	**Public Switched Telephone Network**
LED:	**Light Emitting Diode**
T1:	**Digital service @ 1.544 MHz/sec**
DDS:	**Digital Data Service**
NCTE:	**Network Channel Terminating Equipment**
NID:	**Network Interface Device**
HDSL:	**High-bit-rate Digital Subscriber Loop**
NIU:	**Network Interface Unit (sometimes interchangeable term with NID)**

1.0 TeleLite CFJ/OEI Backboard and Cabinet Assembly Overview

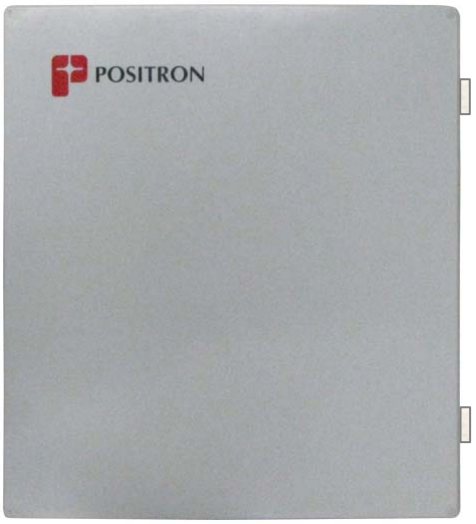
List of TeleLite hybrid fiber assemblies covered in this section:

722301/05	17.5” x 15.5” TeleLite OEI / CFJ Backboard Assembly with a single 3-slot shelf
722301/15	18” x 16” TeleLite OEI / CFJ Cabinet Assembly with a single 3-slot shelf
722300/15	18” x 16” TeleLite ZOI CFJ Cabinet Assembly with a single 3-slot shelf

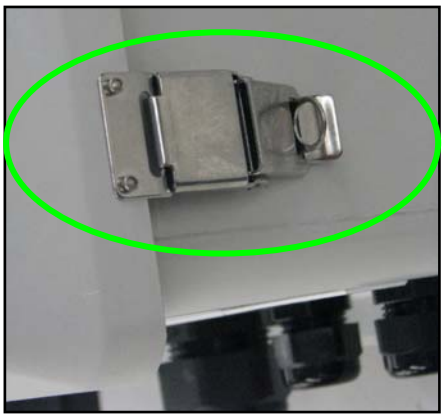
General Information

The TeleLite 722 Series of assemblies feature the following:

- 18”H x 16”W x 10”D NEMA 4X fiberglass cabinet with dual stainless steel lockable latches
- Treated backboards are painted with flame retardant paint
- Engraved plates identifying critical elements, and cabling entrance and exit ports.
- Equipped with moisture-tight strain reliefs for cable entrance and exit.



18” x 16” x 10” Fiberglass
NEMA 4X Cabinet



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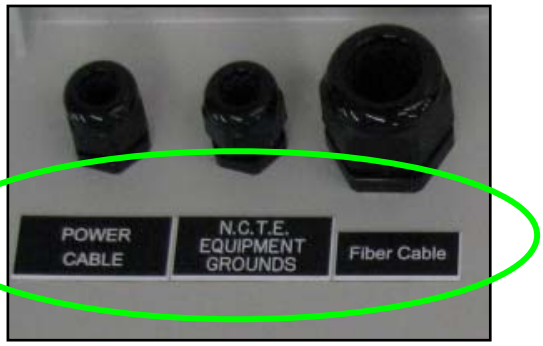


Engraved plates identify cabling entrance and exit.
Vapor-tight strain relief provided for cabling

1.1 Mounting

- Mount TeleLite Cabinet onto “H”-Frame, Pole-mount fixture, or an interior wall.
  - 7223PL: Pole-Mount Kit for 7223xx/15
- Mount TeleLite 722301/05 Backboard Assembly in either a suitable weather resistant cabinet, or onto an interior wall.

1.2 Grounding

1.2.1 CFJ:

Only if the TeleLite CFJ cabinet is located **at, or beyond, the 300 volt point** of the substation’s GPR contour, connect local ground to assembly ground bar using a minimum 6 AWG conductor. If cabinet is placed within the ZOI of the substation DO NOT connect the ground, per IEEE-487.3. If a CFJ must be located in the ZOI of the substation, refer to the ZOI CFJ Section 2.0 of this document.

1.2.2 OEI:

Connect station-ground to ground bar on backboard of the TeleLite OEI.

1.3 Fiber Installation in the CFJ

Feed incoming pre-connectorized fiber cable to the assembly backboard, using the fiber take-up spools to store excess fiber length.

- If splicing of pigtails to the incoming fiber cable is required, these splices must be external to the assembly due to space considerations, or use **TeleLite Assembly Model # Series 724** where the provided Channell fiber splice case is pre-installed on the TeleLite backboard to house the splice, using the fiber take-up spools to wind the excess fiber.

1.4 Power Installation in the CFJ

1.4.1 The Positron TeleLite CFJ or OEI assemblies can be powered from either -48Vdc, 120Vac or 130Vdc, depending on site conditions. Feed the incoming power to the fused power input terminal block mounted on the assembly backboard. See Figure 1, per the power sourcing requirement for a hybrid fiber CFJ located at the 300 volt point of the GPR contour, per IEEE 487.3.

If a power supply is required, plug the TeleLite power supply into an available slot of the TeleLite 3-slot “Swing-Out” shelf. Secure the power supply in the card-slot using the thumb screws on the TeleLite power supply faceplate.

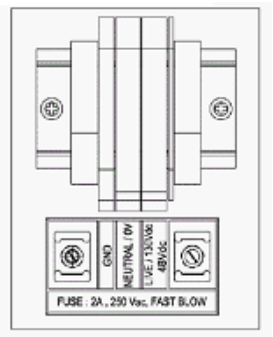


Fig. 1: Universal Power Input Terminal Block

1.4.2 Using the pre-installed, orange and yellow power conductors pre-wired to the drop-side of the Universal Input Terminal Block, route these power conductors from the drop-side of the fused power input terminal block to the power input terminals located on the faceplate of the TeleLite plug-in power supply or access card (Positron model #'s 720001, 721123, 721124 or 721125).

1.4.3 If a -48Vdc source is already locally available, feed the -48Vdc in through the universal, fused power input terminal block and connect the pre-installed Orange and Yellow conductors to the -48Vdc .input power terminals located on the side of the TeleLite 3-slot "Swing-Out" shelf. See Figure 2.

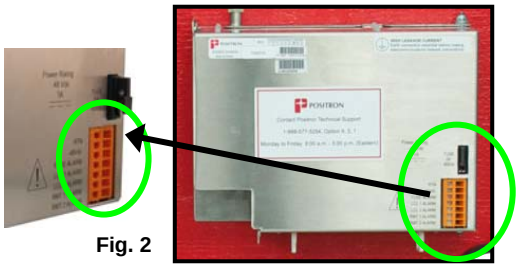


Fig. 2

1.5 Optical Modules in the CFJ

1.5.1 Insert the TeleLite optical modules into an available shelf card-slot, in preparation for connection using the 48" RJ connection cables provided with the installation kit.

For details on individual optical fiber TeleLite modules switch settings and LED indications, or for information on troubleshooting, please refer to the associated TeleLite fiber module User's Manual, shipped with each fiber module.

1.5.2 Connect incoming fibers (or fiber patch cords) to the TeleLite fiber module connectors per Figure 3.

NOTE:

- ✓ Incoming fibers to the TeleLite modules should be landed on the rear connector of the module (RX).
- ✓ Outgoing fibers from the TeleLite modules should be landed on the front connector of the module (TX).

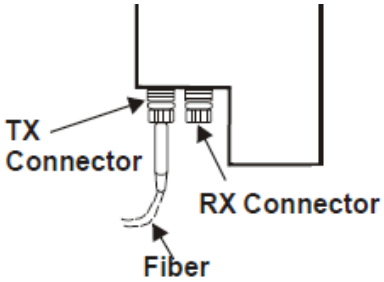


Fig 3: Fiber Connections

1.6 Installing Copper Entrance Cable in the Copper Fiber Junction (CFJ)

1.6.1 Punch incoming copper pairs onto the "Out" side of the available pins of the 6-pair solid state protector block. See Figure 4. The "Out" side of the protector block always "points" to the world outside of the HVI, be it in the substation (Control House) or in the network (PSTN). The pre-installed protector block is pre-connected to the ground bar installed on the backboard. Refer to Section 1.2 for notes on grounding.

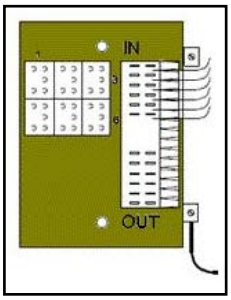


Fig. 4

1.6.2 The protector block comes complete with 6 (six) solid state protectors (Positron Model #'s 72505P-06, replacements sold separately).

1.6.3 Sets of 48" connection cables, terminated in the appropriate RJ connectors, have been provided with the assembly. Trim the un-terminated end of the connections cable to the desired length, routing the connection cables through the cable guides installed on the base of the TeleLite 3-slot "swing-Out" shelf. See Figure 5.

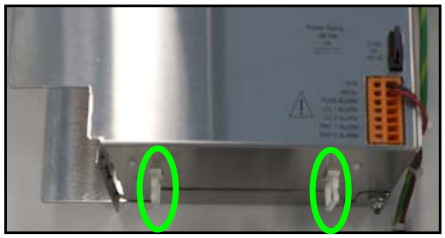


Fig 5: Routing the trimmed 48" connection cables via the cable guides installed

1.6.4 After determining the optimum length, the trimmed, unterminated (open) end of the 48" connection cable are to be punched down onto the "IN" side of the 6-pair solid state protector block. See Figure 6.

NOTE: When used as an OEI at the Control House, the TX and RX copper pairs must be crossed at the 6-pair protected 66-punch block for only T1 and DDS circuits.

Fig. 6: "IN" Side

1.6.5 The RJ-terminated end of the connection cable will plug into the faceplate of the TeleLite optical module inserted in the shelf. See Figure 7.

Fig. 7: Faceplate mounted RJ receptacle

NOTE: If the telephone company requires the placement of NCTE at the CFJ, then the Telephone company must provide a weatherproof NID (Network Interface Device) containing a device such as an HDSL HxTU-R.

If an NCTE Mounting (aka NIU Housing/Chassis) must be house internally on the backboard in the CFJ, refer to the **TeleLite Assembly Model # Series 724** where space for a standard 4-slot, 200 mechanics is provided between the 66-cross connect block and the 25-pair solid state protector block. The backboards of the **724 Series** have been prepared with 4 screws to mount the 200 mechanics, 4-slot chassis. A standard 200 mechanics NCTE Mounting is available from Positron under model # 7200DT-04.

If network span power is not available at the CFJ, bring -48Vdc power to the screws terminals inside the Network Interface Chassis (aka NIU Housing).

1.7 Power Installation in the OEI

1.7.1 The Positron TeleLite OEI assemblies can be powered from either -48Vdc, 120Vac or 130Vdc, depending on site conditions. Feed the incoming power to the fused power input terminal block mounted on the assembly backboard. See Figure 8.

If a power supply is required, plug the TeleLite power supply into an available slot of the TeleLite 3-slot “Swing-Out” shelf. Secure the power supply in the card-slot using the thumb screws on the TeleLite power supply faceplate.

A spare 2A, 250V Fast Blow fuse is provided in the kit.

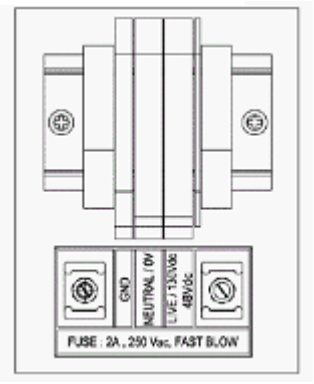


Fig. 8: Universal Power Input Terminal Block

1.7.2 Using the pre-installed, orange and yellow power conductors pre-wired to the drop-side of the Universal Input Terminal Block, route these power conductors from the drop-side of the fused power input terminal block to the power input terminals located on the faceplate of the TeleLite plug-in power supply or access card (Positron model #’s 720001, 721123, 721124 or 721125).

1.7.3 If a -48Vdc source is already locally available, feed the -48Vdc in through the universal, fused power input terminal block and connect the pre-installed Orange and Yellow conductors to the -48Vdc .input power terminals located on the side of the TeleLite 3-slot “Swing-Out” shelf. See Figure 9.

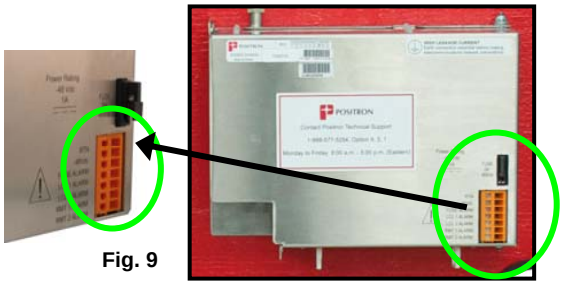


Fig. 9

1.8 Optical Modules in the OEI

1.8.1 Insert the TeleLite optical modules into an available shelf card-slot, in preparation for connection using the 48” RJ connection cables provided with the installation kit.

For details on individual optical fiber TeleLite modules switch settings and LED indications, or for information on troubleshooting, please refer to the associated TeleLite fiber module User’s Manual, shipped with each fiber module.

1.8.2 Connect incoming fibers (or fiber patch cords) to the TeleLite fiber module connectors per Figure 10.

NOTE:

- ✓ Incoming fibers to the TeleLite modules should be landed on the rear connector of the module (RX).
- ✓ Outgoing fibers from the TeleLite modules should be landed on the front connector of the module (TX).

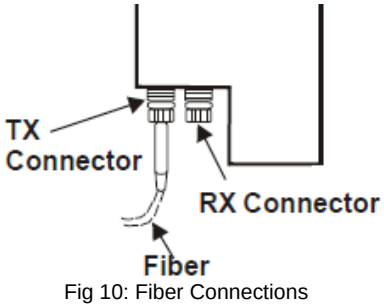


Fig 10: Fiber Connections

1.9 Fiber Connections in the OEI

1.9.1 Connect incoming fibers (or fiber patch cords) to the TeleLite fiber module connectors. Incoming fibers to the TeleLite modules should be landed on the rear connector of the module (RX)

1.9.2 Outgoing fibers from the TeleLite modules should be landed on the front connector of the module (TX)

NOTE: If splicing of pigtails to the outgoing fiber cable is required, these splices must be external to the assembly due to space considerations, or use **TeleLite Assembly Model # Series 724** where the provided Channell fiber splice case is pre-installed on the TeleLite backboard to house the splice, using the fiber take-up spools to wind the excess fiber.

2.1 Installing Outgoing Station Cable in the Optical Electrical Interface (OEI)

2.1.1 Punch outgoing copper pairs onto the “Out” side of the available pins of the 6-pair solid state protector block. See Figure 11. The “Out” side of the protector block always “points” to the world outside of the HVI, be it in the substation (Control House) or in the network (PSTN). The pre-installed protector block is pre-connected to ground bar installed on the backboard. Refer to Section 1.2 for notes on grounding.

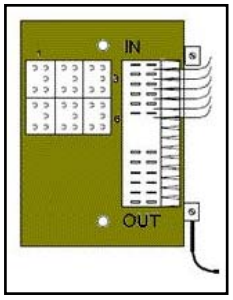


Fig. 11

2.1.2 The protector block comes complete with 6 (six) solid state protectors (Positron Model #’s 72505P-06, replacements sold separately).

2.1.3 Sets of 48” connection cables, terminated in the appropriate RJ connectors, have been provided with the assembly. Trim the un-terminated end of the connections cable to the desired length, routing the connection cables through the cable guides installed on the base of the TeleLite 3-slot “swing-Out” shelf. See Figure 12.

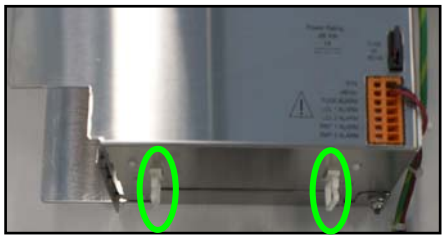


Fig 12: Routing the trimmed 48” connection cables via the cable guides installed

2.1.4 After determining the optimum length, the trimmed, unterminated (open) end of the 48” connection cable are to be punched down onto the “IN” side of the 6-pair solid state protector block. See Figure 13.

NOTE: When used as an OEI at the Control House, the TX and RX copper pairs must be crossed at the 6-pair protected 66-punch block for only T1 and DDS circuits.

Fig. 13: “IN” Side

2.1.5 The RJ-terminated end of the connection cable will plug into the faceplate of the TeleLite optical module inserted in the shelf. See Figure 14.

Fig. 14: Faceplate mounted RJ receptacle

NOTE: If a Smart Jack NIU or other NCTE mounting is required by the telephone company on the drop-side of the OEI, it must be located external to the **Series 722 TeleLite OEI Assembly**.

If a Telco NCTE Mounting (aka NIU Housing/Chassis) must be house internally on the backboard in the CFJ, refer to the **TeleLite Assembly Model # Series 724** where space for a standard 4-slot, 200 mechanics is provided between the 66-cross connect block and the 25-pair solid state protector block. The backboards of the **724 Series** have been prepared with 4 screws to mount the 200 mechanics, 4-slot chassis. A standard 200 mechanics NCTE Mounting is available from Positron under model # 7200DT-04.

3.0 TeleLite ZOI CFJ Cabinet Assembly

List of TeleLite hybrid fiber assemblies covered in this section:

722300/15 18” x 16” TeleLite ZOI CFJ Cabinet Assembly with a single 3-slot shelf

NOTE: This Model # 722300/15 polymer/fiberglass Cabinet Assembly (See Figure 15) is especially equipped for placement of the CFJ inside the ZOI of a substation. The treated, plywood backboard is painted red and is equipped with a 6-pair punch block with plug-in grey continuity (pass-through) plug.

Fig. 15: TeleLite ZOI CFJ, Model #722300/15

These grey plugs can be removed to break the copper continuity to the metallic TeleLite 3-Slot “Swing-Out” shelf. This removes the remote-ground electrical potential from the TeleLite shelf and optical modules. The ZOI CFJ Assembly has no provision for a local ground connection due to the inherent nature of the hazards associated with a CFJ placed within the ZOI of a substation.

This assembly should only be used as a CFJ within the ZOI.

3.1 Grounding

3.1.1 ZOI CFJ:

This CFJ **cannot** be grounded due to safety considerations inside the ZOI, per IEEE-487.3

3.1.2 OEI:

This assembly **cannot** be used as an OEI, per IEEE-487.3

3.2 Optical Modules

Insert TeleLite optical modules into an available shelf card-slot.

For details on individual optical fiber TeleLite modules switch settings and LED indications, or for information on troubleshooting, please refer to the associated TeleLite fiber module User’s Manual, shipped with each fiber module.

3.3 Fiber Installation in the ZOI CFJ

Feed incoming pre-connectorized fiber cable to the assembly backboard, using the fiber take-up spools to store excess fiber length.

NOTE: If splicing of pigtails to the incoming fiber cable is required, these splices must be external to the assembly due to space considerations, or use **TeleLite Assembly Model # Series 724** where the provided Channell fiber splice case is pre-installed on the TeleLite backboard to house the splice, using the fiber take-up spools to wind the excess fiber.

Feed incoming fiber cable to the cabinet assembly backboard.

- If splicing of pigtails to the incoming fiber cable is required, use the provided Channell fiber splice case located on the TeleLite backboard to house the splice, using the fiber take-up spools to wind the excess fiber.
- If a pre-connectorized fiber cable is used, patch cords may be required. In this case, mount a fiber patch panel (Positron Model #'s 7200FO-SM or 7200FO-MM) onto the metal bracket provided, using the fiber take-up spools to wind the excess fiber.

3.4 Fiber Connections in the ZOI CFJ

Connect incoming fibers (or fiber patch cords) to the TeleLite fiber module connectors per Figure 16.

NOTE:

- ✓ Incoming fibers to the TeleLite modules should be landed on the rear connector of the module (RX).
- ✓ Outgoing fibers from the TeleLite modules should be landed on the front connector of the module (TX).

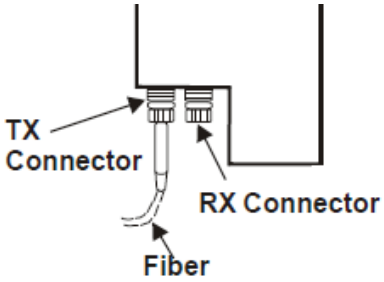


Fig 16: Fiber Connections

3.5 Copper Entrance Cable and Optical Module Connections in the ZOI CFJ

NOTE: Be sure to comply with all craft safety requirements when working in the Zone of Influence of a power substation or electric supply location.

The 6-pair 66-type block comes complete with 6 (six) grey pass-through modules. The grey pass-through modules complete the circuit across the punch block. By removing the pass-through, the circuit is opened. These modules should be re-inserted after all connections are made.

3.5.1 Remove the grey pass-though modules of the 6-pair 66-type terminal block.

3.5.2 Punch the incoming pairs to the “OUT” side of the 6-pair 66-type terminal. This terminal is intentionally ungrounded. Using the 48” connection cables provided with the assembly, punch the appropriate pairs of the connection cable to the “IN” side of the 6-pair 66-type terminal block. See Figure 17.

3.5.3 After inserting the Optical Module in the shelf, route the connection cable via the guides installed on the shelf, inserting the RJ terminated cable into the faceplate of the TeleLite Optical Module. See Figures 18 & 19.

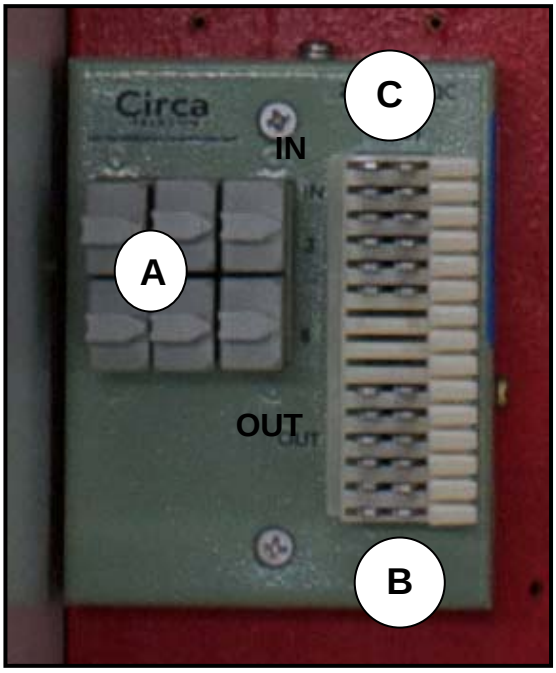


Fig. 17: 6-pair 66-type punch block with pass-though modules for quick disconnect

A Remove Grey Pass-through Modules

B Punch incoming cable on “OUT”-side

C Punch 48” connection cable in “IN”-side

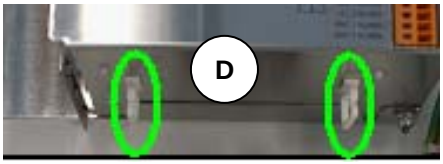


Fig. 18: TeleLite “Swing-Out” shelf connection cable guides

D Route connection cable via cable guides on shelf

E Insert RJ into the faceplate of the TeleLite Optical Module

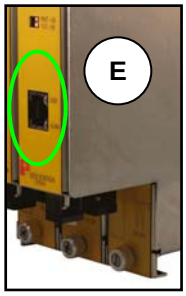


Fig. 19: Faceplate mounted RJ receptacle

3.5.4 Once all copper connections are made, re-insert the grey pass-through modules. See Figure 20. This will complete the connection. A replacement set of 6 pass-through modules is available from Positron under part # 72504P-06.

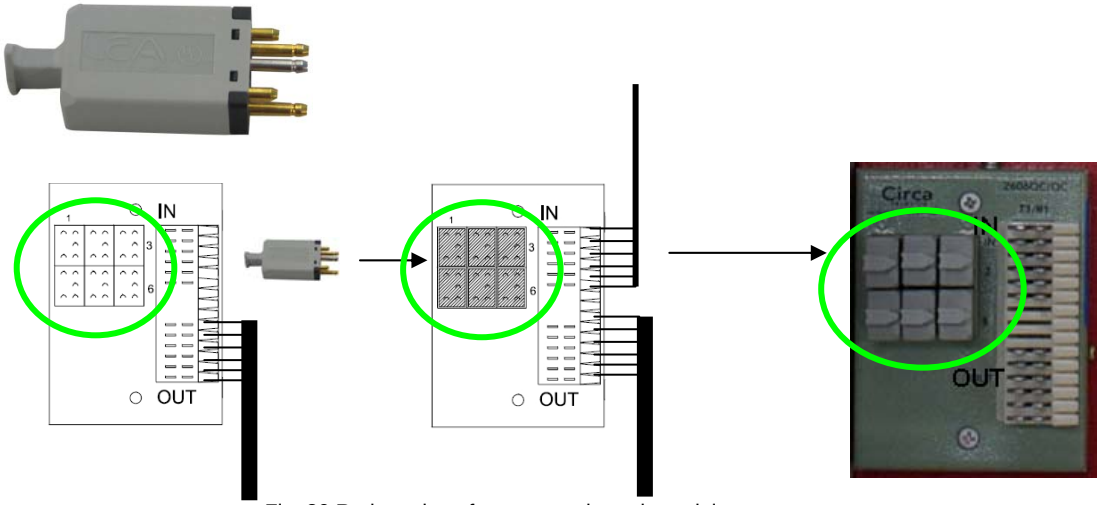


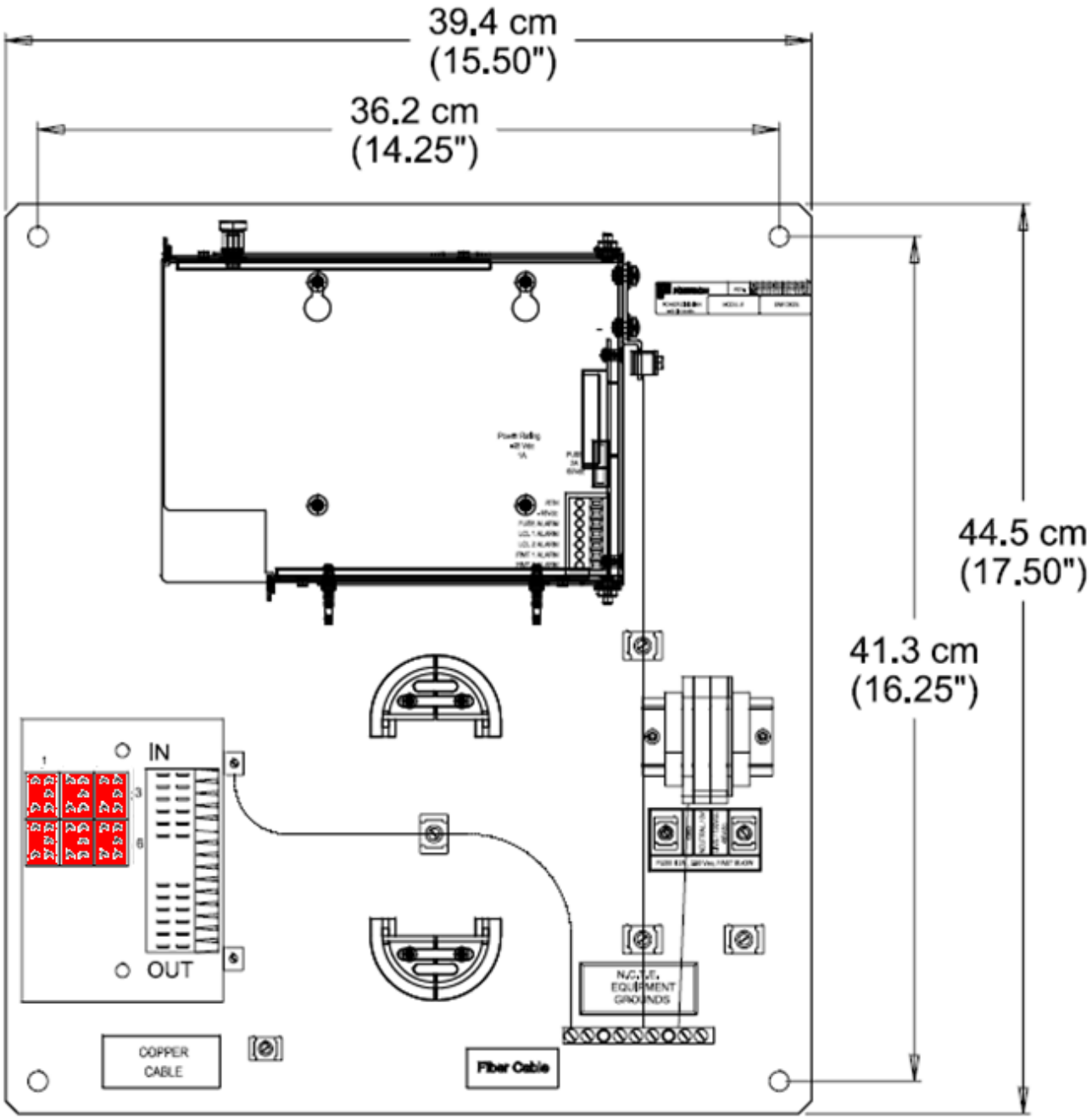
Fig. 20 Re-insertion of grey pass-through modules

NOTE: If a Telco NID is required, the Telco-mounted NID must be located external to the **Series 722 TeleLite ZOI CFJ Assembly** in a weatherproof closure.

If a Telco NCTE Mounting (aka NIU Housing/Chassis) must be house internally on the backboard in the ZOI CFJ, refer to the larger **TeleLite ZOI CFJ Assembly Model # 724200/15** where there is ample space on the backboard for ancillary equipment. Screws to mount a standard 4-slot, 200 mechanics are pre-installed in that ZOI CFJ assembly.

A standard 4-slot, 200 mechanics NCTE (NID) Mounting is available from Positron under model # 7200DT-04.

4.0 TeleLite Assembly Layout Drawings



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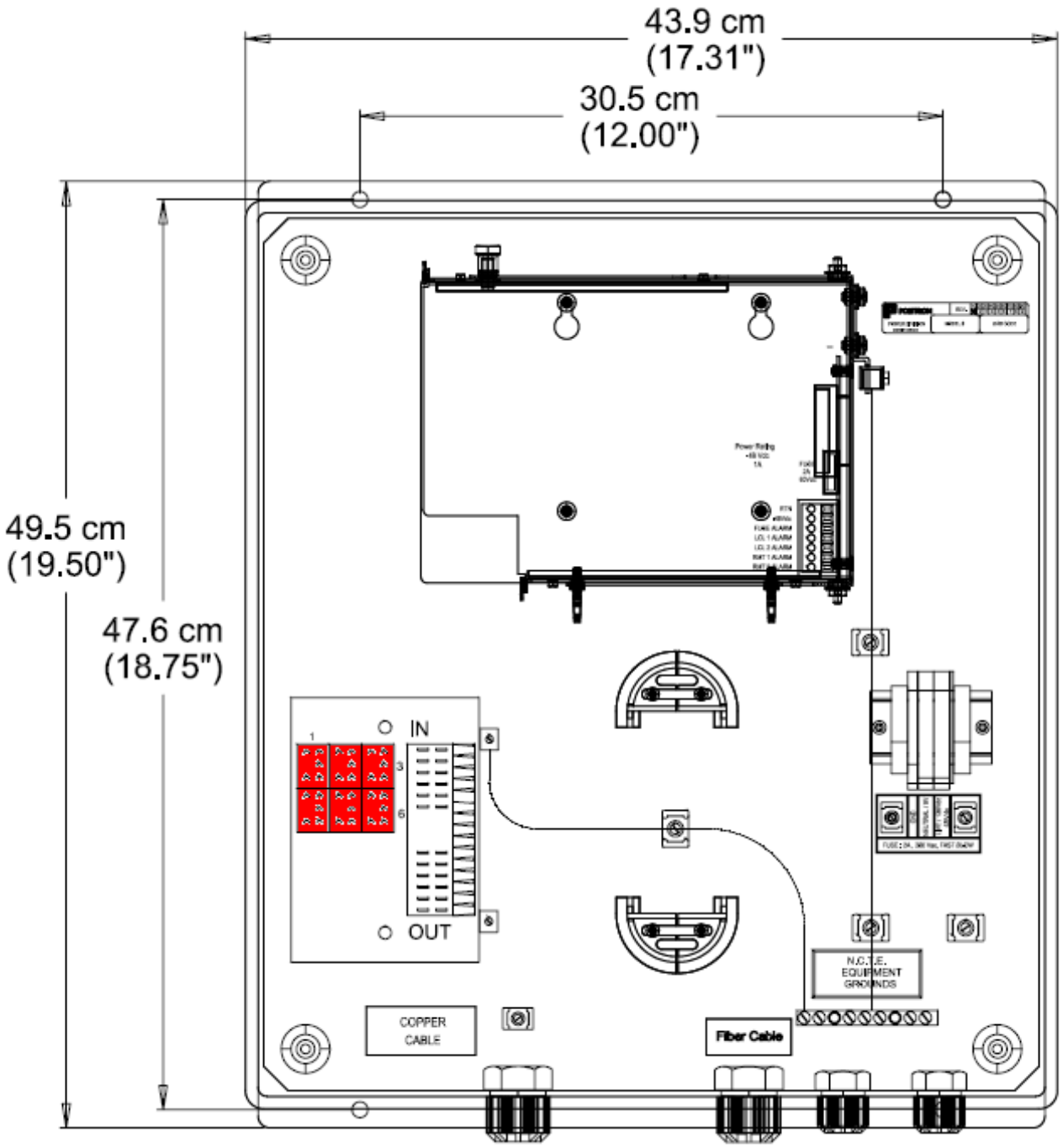

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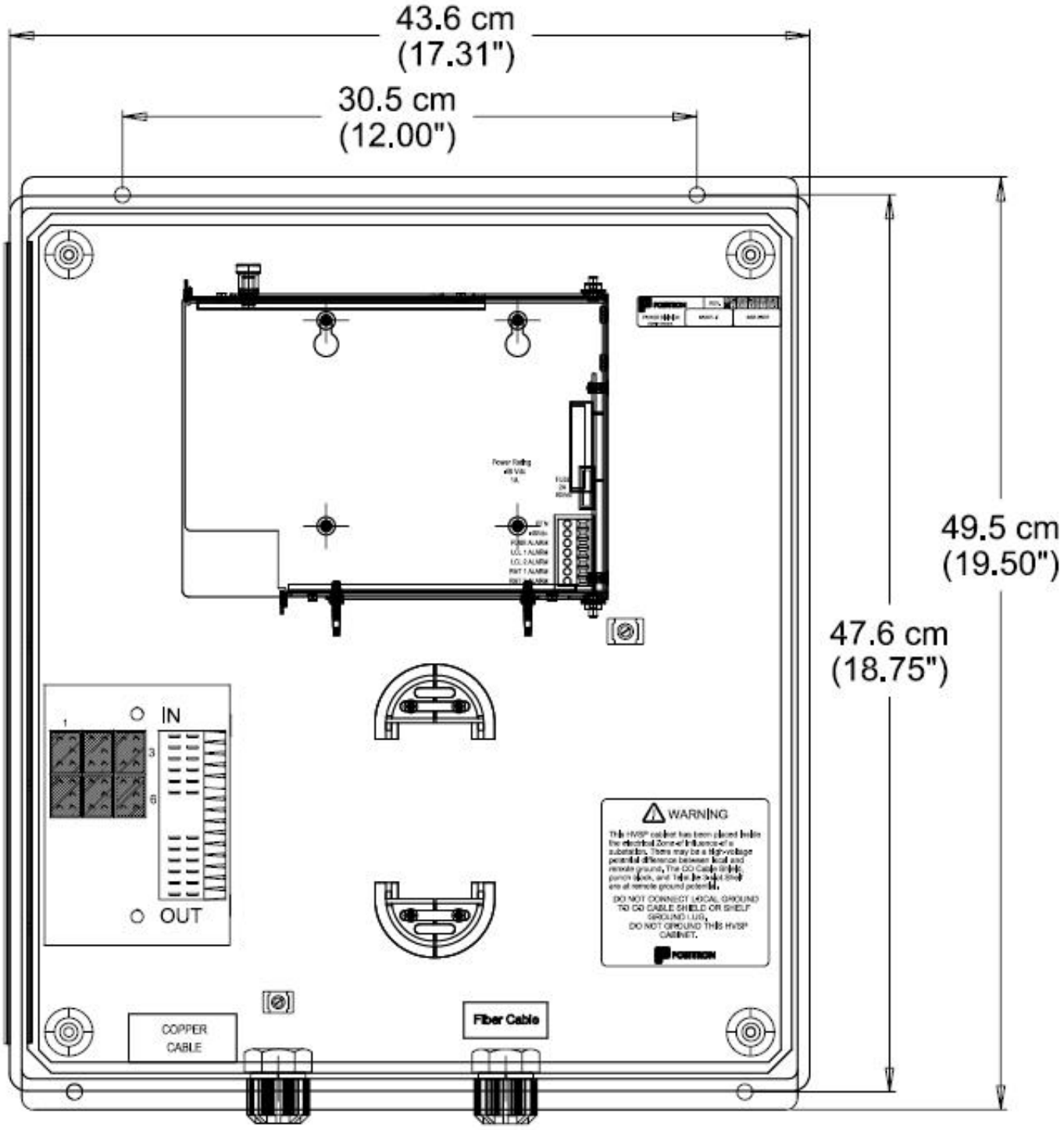

722300/15

5.0 Contact Information

Customer Support:

Toll-Free 1-888-577-5254, Option 9, 1

Technical Support:

Toll-Free 1-888-577-5254, Option 9, 3, 1

Sales Support:

Visit Positronpower.com, select “Contact Us” and select your region.

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