# TeleLite Zone of Influence (ZOI) CFJ Pedestal Assembly

## Model #7220PZ/27

**Equipped with Single TeleLite 3-Slot Swing-Out Shelf, Model #720013**

## Description and Installation Guide

**User Manual Part# 925W720125-01E**

# Contents

# Chapter 1

## General Information

# 1.0 General Information

This user manual describes the Positron TeleLite ZOI (Zone of Influence) CFJ Pedestals, Model #7220PZ/27, including installation instructions**:**

## 1.1 Publication Information



**TeleLite ZOI CFJ Pedestal with Single 3-Slot Swing-Out Shelf (7220PZ/27) Pedestal Assemblies Description and Installation Guide**

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# Chapter 2

## Introduction to the TeleLite ZOI Pedestal Assembly and 3-Position Shelf

## Model #7220PZ/27

# 2.0 Introduction

## 2.1 TeleLite ZOI Pedestal Assembly and 3-Position Shelf

The TeleLite ZOI Pedestal Assemblies Single 3-Slot Swing-Out shelf, model 7220PZ/27 is a freestanding pedestals equipped with a self locking cover and one Positron TeleLite 720013 3-Slot Swing-Out Shelf. They provide limited environmental protection and full access to the shelves. The covers of the units are dark green and feature a hex-head locking system and anti-insect vents.

This 7220PZ/27 TeleLite ZOI Pedestal is intended for installation within the Zone of Influence (ZOI) of a power substation. As such, this pedestal will be placed where there may be a substantial difference in electrical potentials between the location placement and the remote ground potential of the telephone network.

**CAUTION**

During a ground fault, the ground potential of the area where this pedestal has been placed will elevate relative to the ground potential of the telephone network. During a ground fault, the GPR at this location can be several thousand volts relative to remote ground potential.

All standard high-voltage precautions should be taken when performing work on this pedestal.

The TeleLite ZOI 3-Slot Swing-Out Shelf Pedestal has been specially designed for placement inside the ZOI of a substation. See Figure 1, below.

### 2.1.1 Features

- TeleLite 3-slot Swing-Out Shelf with fuse, optional input power terminals, and access to alarm contacts.
- Pass-through hole in backboard to pass cabling
- Fiber take-up spools
- Four pre-mounted wood screws to mount a 4-slot, 200 mechanics “Westell-type” network termination housing


**Figure 1**
**TeleLite ZOI CFJ Pedestal**
**Model #7220PZ/27**

### 2.1.2 Safety Features

- The plywood backboard is painted with flame retardant, bright red paint to signal the presence of a hazard to technicians.
- The metal rail has been fully insulated to 20kV. The insulation ends at the base of the pedestal, well below the red plywood backboard
- There are no grounding facilities provided with this TeleLite ZOI 3-Slot Swing-Out Shelf Pedestal
- The plywood backboard is secured to the rail of the pedestal using non-metallic means.
- 66-type punch block is provided with a red cover, signaling a potential hazard.
- ZOI warning labels have been affixed to the backboard.

## 2.2 TeleLite System Introduction

TeleLite provides electrical isolation between two points on a telecom landline. Its purpose is to increase electrical isolation between the CO (Central Office) side and Station side. The increase in electrical isolation is achieved by using a fiber optic link. The Station side unit is located either inside or outside the building. The CO side must be located far enough from the Station side so that the GPR does not increase above 17kV with respect to the CO.

The TeleLite system is divided into two parts: the CO side unit and the Station side unit. Each unit is composed of one shelf. Each shelf has three slots for line cards and features an integrated Access interface for 48 Vdc. For information about the integrated Access interface, see Chapter 4. The shelf backplane does not provide for any telecom connection since all connections (except local power) will be made directly to the RJ-11/RJ-45 connectors, located on the front panel of each card.

### 2.2.1 300 V Point and the Zone Of Influence

The 300 V point is defined by the electrical parameters of the substation. This is the point where the Ground Potential Rise of the site is reduced to 300 V or less. Refer to Figure 2.

The pedestal can be installed inside or outside of the Zone Of Influence of a substation.

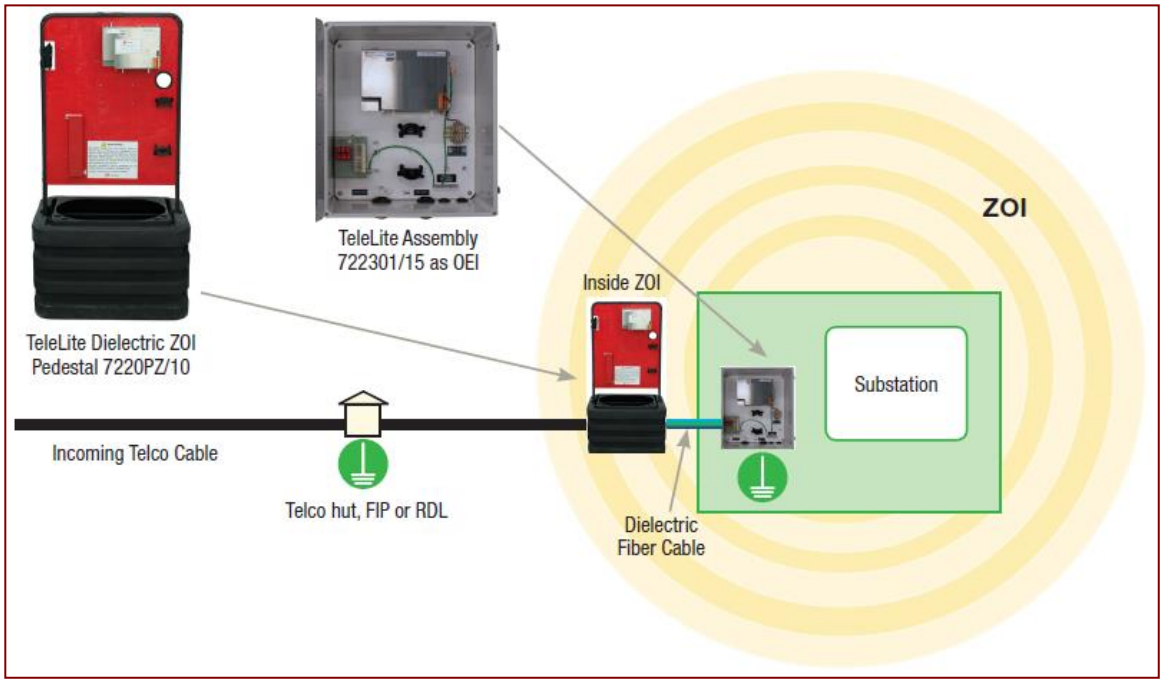



**Figure 2: Installation Inside GPR Contour of a substation**

CAUTION

To ensure safety of personnel, Positron recommends following these guidelines:

If the splicing of the dedicated cable to the general use cable is started or accomplished early in the designed work sequence, a safety hazard will exist. That safety hazard will then require the use of a rubber mat and rubber safety gloves for the remaining installation work to protect personnel against Ground Potential Rise and/or transients.

Additionally, as a safety issue, it is recommended that the installation be done on a clear day with no lightning activity.

**Table 1: Single 3-Slot Swing-Out Shelf (7220PZ/27) Physical Specifications**

| Parameter | Specification |
|---|---|
| Height of base | 38.1 cm (15”) |
| Width of base | 63.5 cm (25”) |
| Depth of base | 45.7 cm (18”) |
| Height of cover | 87.6 cm (34 1/2”) |
| Width of cover | 59.7 cm (23 1/2”) |
| Depth of cover | 45.1 cm (17 3/4”) |
| Weight | 27.2 kg (60 lbs.) |

# Chapter 3

## Installation of Model #7220PZ/27 TeleLite 3-Slot Swing-out Shelf ZOI CFJ Pedestal

# 3.0 Installation of Model #7220PZ/27 TeleLite ZOI CFJ Pedestal

## 3.1 Installation

This ZOI CFJ TeleLite pedestal has been specially designed for placement inside the ZOI of a substation.

### 3.1.1 Pedestal Physical Installation

1) Verify that you have the following customer-provided tools and hardware required to install the shelf:
   i. 7/16" hex head wrench
   ii. Cable clamps and mounting hardware for routing cables exterior to the shelf (quantity determined by the cable lengths)
2) Cut the packing straps holding the unit to the pallet.
3) Unpack the unit and remove any packing material.
4) Remove any other loose items and set aside for later use.
5) Remove the pedestal cover using a hex-head wrench to open the cover and set the cover aside. Install the pedestal in the ground following the pedestal's manufacturer-supplied documentation (See Appendix B),
6) Insert any required cards into the shelf.
7) Route the fiber optic cables using the fiber management system.
8) Route the CO cabling as required.
9) Once the work inside the pedestal has been completed, replace the cover and tighten the hex-head fasteners.


Do NOT ground this pedestal if it has been placed inside the Zone of Influence of a Substation. This pedestal may be installed outside the ZOI, but shall remain ungrounded nonetheless. Since the red backboard and warning labels indicate that there may be a hazard, technicians should approach the pedestal assuming a high-voltage hazard is present.

This approach to safety will prevent technicians from making an error in judgement as regarding the presence of a high-voltage hazard, or lack thereof.

### 3.1.2 Serving CO Cable and Dielectric Fiber Optic Cable


The serving cable to the CO unit must be routed and installed according to local regulation. DO **NOT** GROUND THE CABLE SHIELD AT THIS ZONE OF INFLUENCE PEDESTAL.

Only use an all-dielectric fiber and non-conducting conduit between the CO (CFJ) and Station side (OEI) unit and follow local regulations.

## 3.2 TeleLite ZOI 3-Slot Shelf Pedestal, Model #7220PZ/27 Overview

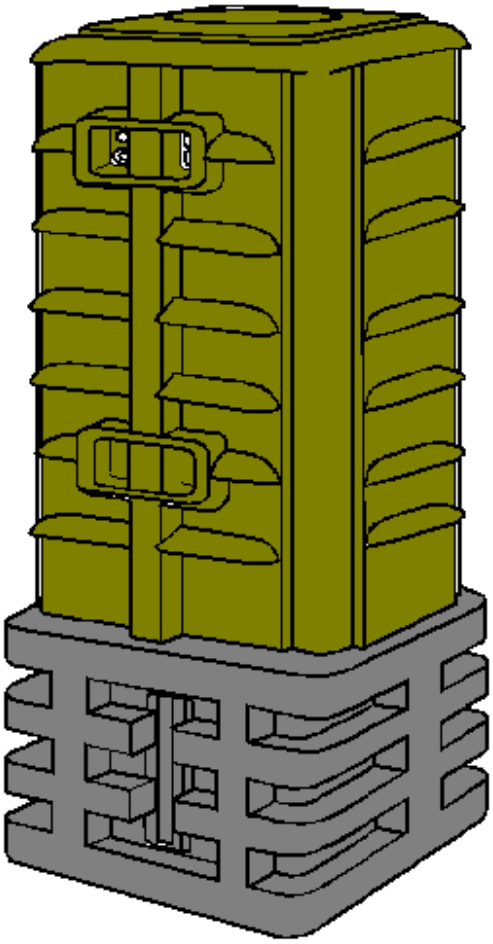
This document covers the description, application and installation of the AT&T specific, TeleLite 7220PZ/27 ZOI 3-Slot Swing-Out Shelf Pedestal.

The TeleLite ZOI 3-Slot Shelf Pedestal, Model #7220PZ/27, is designed for use in any buried plant environment. It is manufactured of green linear low-density polyethylene plastic. See Figure 3, below.

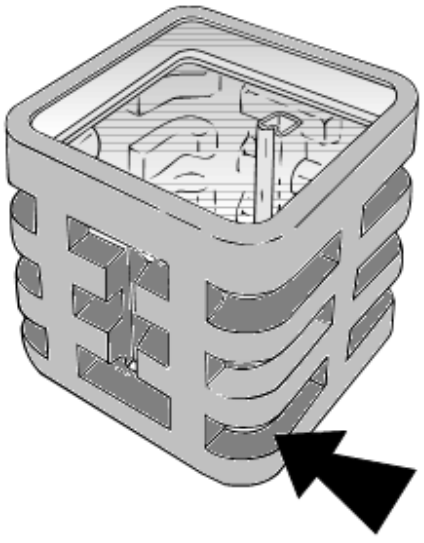
The 7220PZ/27 pedestal is vented on all for sides to provide maximum heat dissipation for active electronics.

All cables and wires are brought up into the base from underneath. Cables and wires feeding the pedestal must be contained and protected in PVC conduits to be isolated from the local ground potential.

This pedestal is intentionally designed to be placed inside the Zone of Influence of an electric supply location. As such, this pedestal cannot be grounded. All equipment on the backboard, including the network termination equipment and the TeleLite shelf float at remote ground potential. The cable shield of the incoming copper cable must be isolated from any metallic elements of the pedestal.



**TeleLite ZOI 3-Slot Swing-out Shelf Pedestal**



**When sunk, the rib-type cavities provide anchor stability**

**Figure 3**

## 3.3 Opening the TeleLite ZOI 3-Card Swing-Out Shelf Pedestal

The upper cover is also equipped with vents and a locking mechanism to secure the cover to the internal mounting hardware.

The removable upper cover has handles for lifting the cover upward for removal. The upper cover is also equipped with vents and a locking mechanism to secure the cover to the internal mounting hardware.

## 3.4 Self-Lock Cover Operating Instructions

Insert either a 7/16” nut driver, or a 216 tool, into the lock head and turn left or right 1/4 turn. While holding the lock in this position, lift up on the hand-hole of the opposite side of the cover. The cover will unlatch. While holding the cover up, remove the lock tool, grab the hand-hole position on the lock side and lift the cover off. Do not use the lock tool to raise the cover. (See Figure 4)

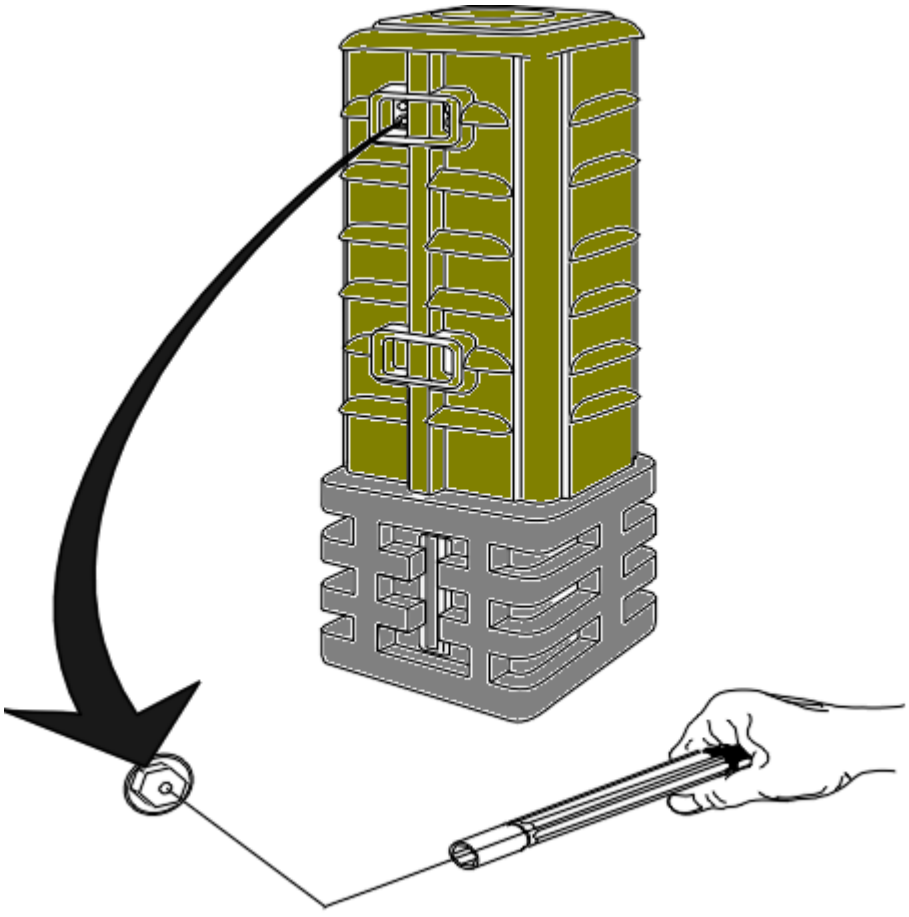


**Figure 4: Unlocking the pedestal cover for removal**

## 3.5 Replacing the Self-Locking Pedestal Cover

To replace the cover, lift the cover by the hand-hole positions and guide the channel in the cover down over the insulated metal mainframe, and let the cover drop when within 4” to 6” from the base of the pedestal.

The Self-Locking mechanism will latch the cover to the base. (See Figure 5)

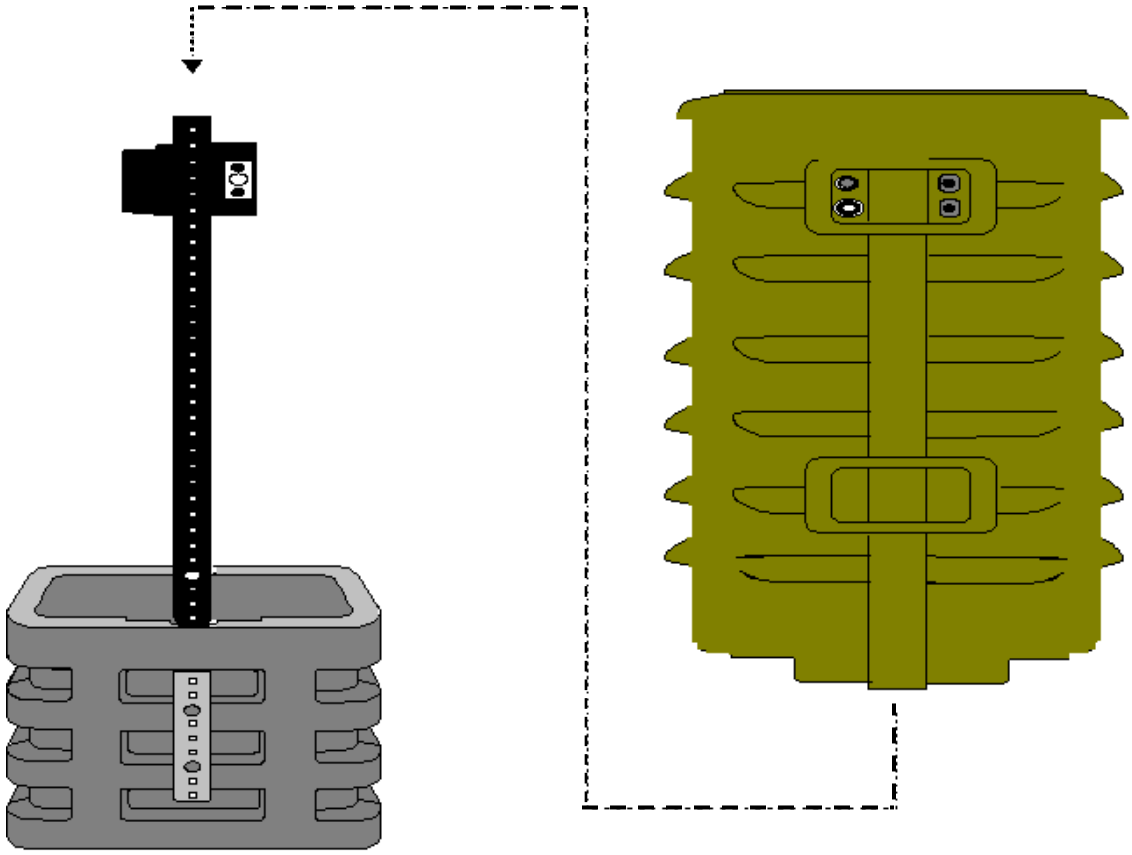


**Figure 5**

## 3.6. Pedestal Base and Insulated Backboard Mounting Rail

The base of the TeleLite ZOI 3-Slot Shelf Pedestal, Model #7220PZ/27, is designed with rib type cavities that allow dirt to fill into cavities when placed. This provides anchor stability in most soil conditions (See Figure 6).

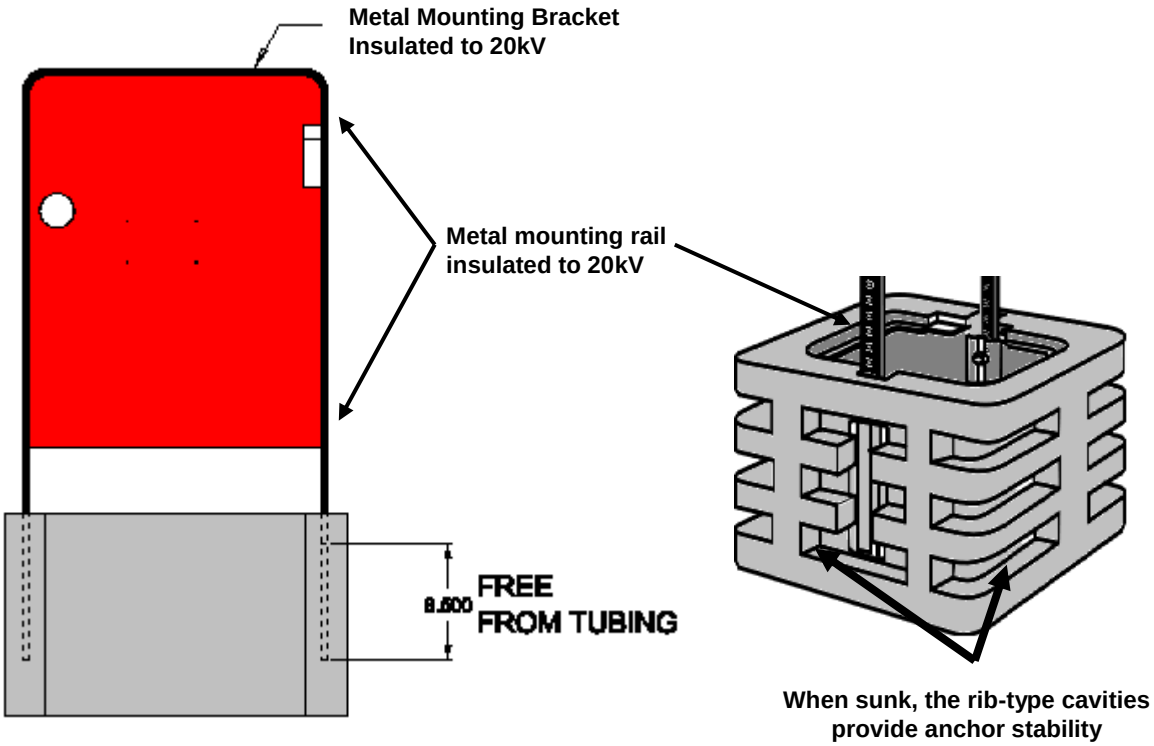
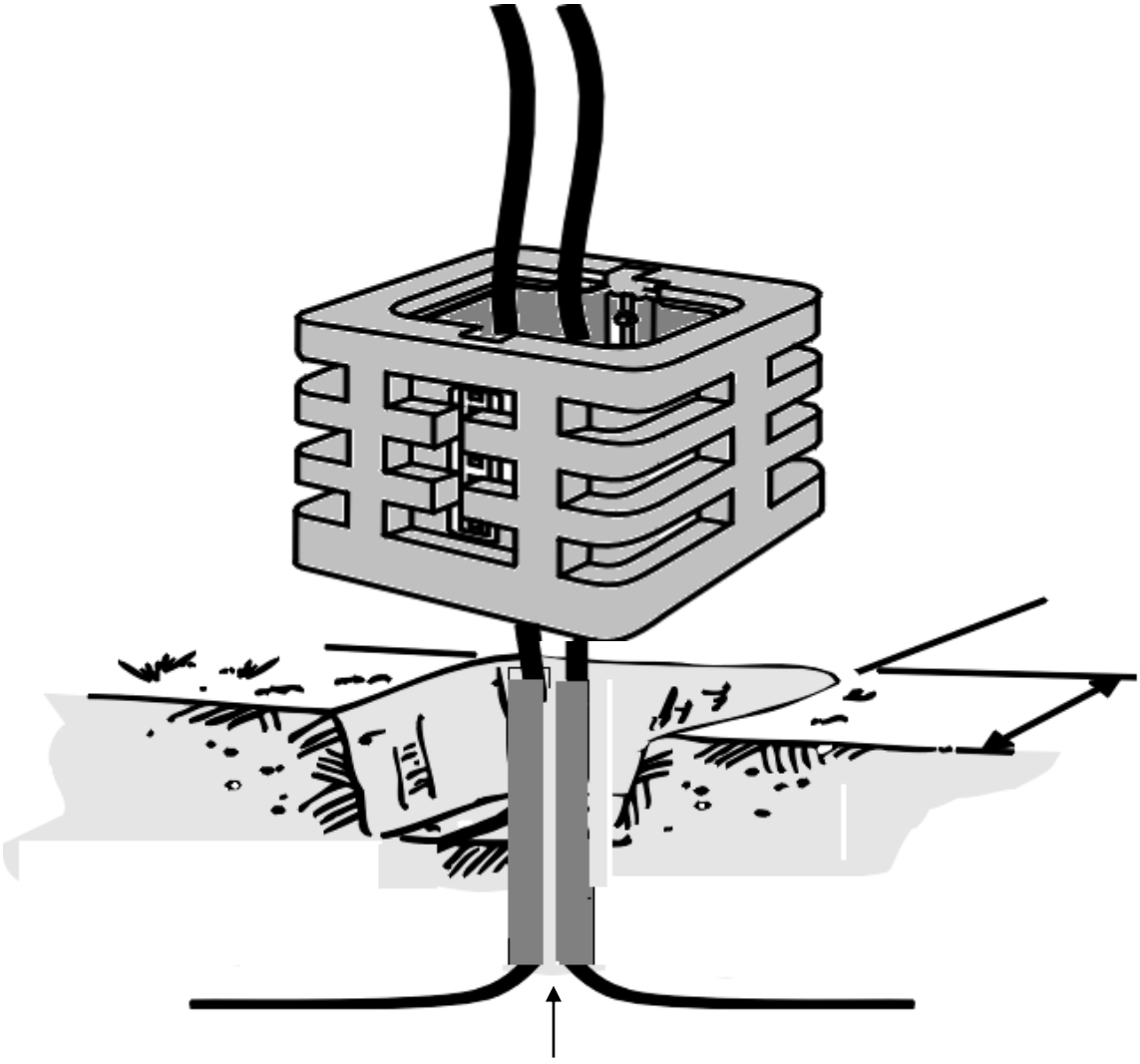



**Figure 6: High-voltage insulation of metal mounting bracket stops at grade level. Metal mounting stakes bolt to the below-grade remainder of the metal bracket. The metal mounting bracket floats at the ground potential where the pedestal is to be located. The metal rail in insulated to 20kV.**

## 3.7 Copper Cabling to the Pedestal

All cables and wires are brought up into the base from underneath. Cables and wires feeding the pedestal must be contained and protected in PVC conduits to be isolated from the local ground potential.



Copper cabling must be fed to the TeleLite ZOI Pedestal using PVC conduit to isolate the cable from local ground potentials. **Do not ground the cable shied inside the ZOI!**

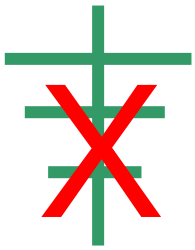
This shown as a conceptual rendering. PVC conduits should be applied per IEEE 487.

**Figure 7**

## 3.8 No Ground Connection Facilities


This equipment must **NOT** be grounded as this provides a path for dangerous voltages to enter.

There is **no** ground bar, and **nor** shall there be any **ground bars** installed on the pedestal or the red backboard.



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Additionally, as a safety issue, it is recommended that the installation be done on a clear day with no lightning activity.

# Chapter 4

## TeleLite 3-Slot Swing-Out Shelf
## Model # 720013

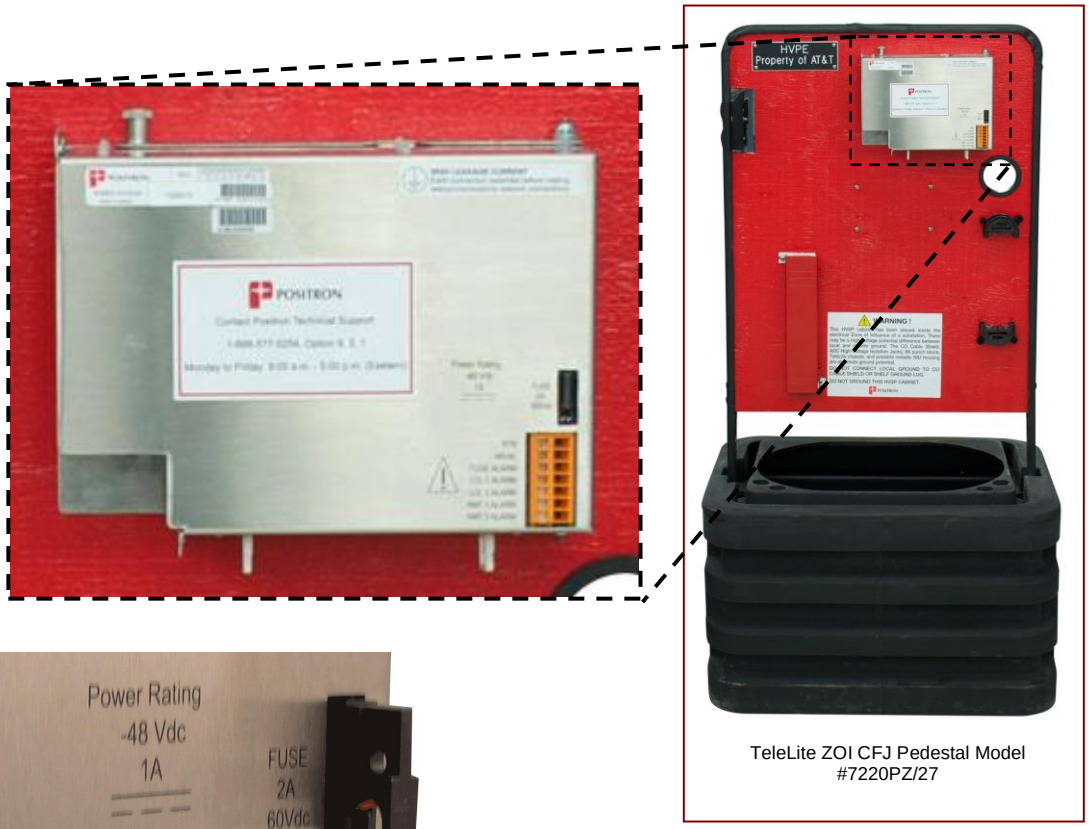
## 4.0 TeleLite 3-Slot Swing-Out Shelf, Model # 720013

TeleLite 3-Slot Swing-Out Shelf, Model # 720013 is a stainless steel housing that will accommodate:

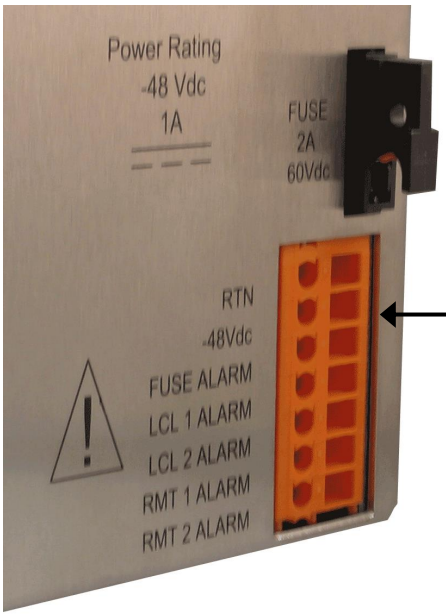
- 3 TeleLite Single, Dual, or Quad Optical Plug-in Cards
- 1 or 2 TeleLite Single, Dual, or Quad Optical Plug-in Cards plus a TeleLite Plug-in Power Supply

Power can be provided either to the shelf's backplane using a plug-in TeleLite Plug-in Power Supply Model # 721123, or via feeding a local source of -48Vdc in directly via the Power and Alarm Port mounted on the side of the shelf, below the shelf's 2A fuse. See Section 4.1.

**Typically, power in a ZOI CFJ is best sourced via the copper span power or sealing current, depending on the communication circuits to be installed.**




TeleLite ZOI CFJ Pedestal Model #7220PZ/27




TeleLite 3-Slot Swing-Out Shelf side Power and Alarm Port showing -48Vdc and "RTN" screw terminals.

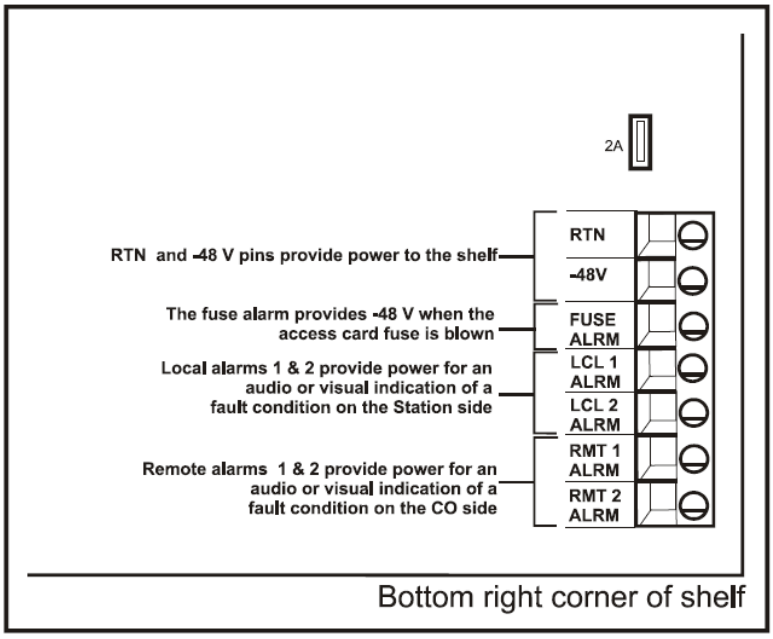
Alarm contacts are used when the shelf is used **only** as an OEI (Station-side) connections.

**Figure 9**

## 4.1 The Integrated Access Interface

The integrated access connector into the 720013 shelf provides:

- Electrical connection between the backplane and the local -48 Vdc
- Fuse and alarm contact
- Protection against polarity reversal and transient




### 4.1.1 Fuse and Alarm Contact

The access connector on the Station side and on the CO side (if provisioned) have Return and -48 V pins to provide power to the shelf. It also has a fuse alarm pin that provides -48 V when the access interface fuse is blown. This enables external alarm indications. These features are only available when used as an OEI (Station-side).

### 4.1.3 Local Alarm 1 and Local Alarm 2

If any circuit card on the Station side shelf experiences a fault condition, the local alarm relay contact (normally open) between pins (local alarm 1 and local alarm 2) will close, allowing current to flow through an externally provided circuit. This mechanism can be used to provision an audio or visual indication of a fault condition.

### 4.1.4 Remote Alarm 1 and Remote Alarm 2 (optional function)

If any circuit on the CO side shelf experiences a fault condition, this indication is communicated over the fiber to the Station side shelf access connector. The remote alarm contact between pins (remote alarm 1 and remote alarm 2) will close, allowing current to flow through an externally provided circuit. This mechanism can be used to provision an audio or visual indication of a fault condition.

NOTE

**The local and remote alarm pins on the Shelf Access Connector CO side (if provisioned) are not used since the equipment is located at the mid span, where typically there is no equipment to monitor alarms.**

### 4.1.2 Swing-Out Bracket

The 3-slot Swing-Out Shelf features a built-in swing-out bracket. This allows the shelf to swing out to provide easy access to the face plates of the cards for easy LED status assessment and the RJ and fiber connectors. See Figure 10.

In its open position, the shelf allows easy access to the faceplates of the cards. This concept allows for a minimal depth of 11 cm, (4.3") while maintaining a small footprint of 22.9 cm x 19 cm (9" x 7.5"). When in the closed position, the shelf is locked by a spring-loaded stainless steel lifting pin.

- To disengage the shelf so it can swing out, lift the locking pin.

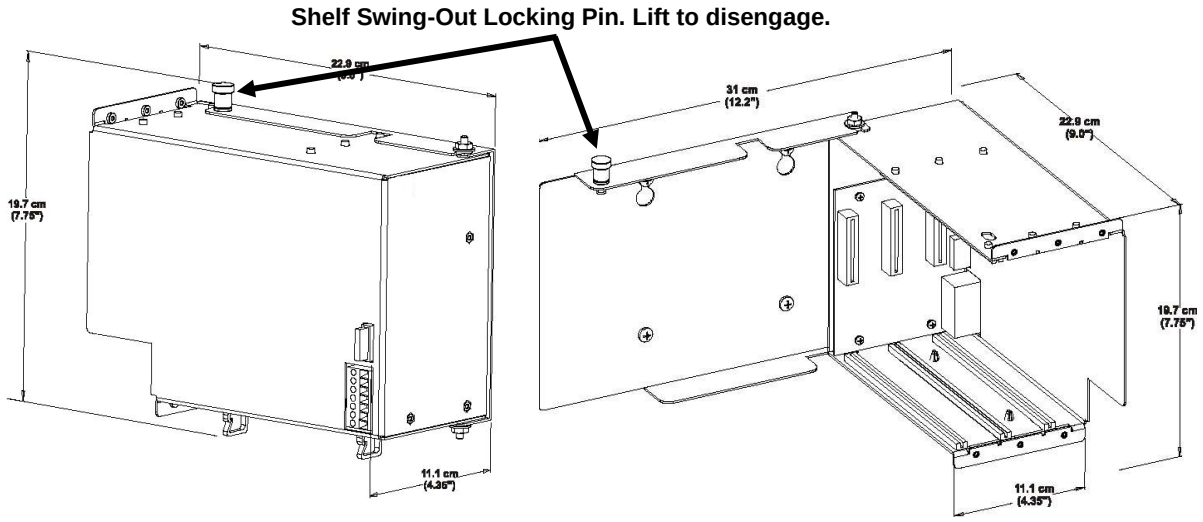



**Figure 10**

NOTE

The power to the integrated Access interface is polarity sensitive. No damage is incurred, but the system does not work if the input power polarity is reversed.

CAUTION

For continued protection against risk of fire, replace fuses only with the same type and rating as originally supplied with the product.

# Chapter 5

# Positron Products, Warranty and Support

## 5.0 Positron Products and Services

Positron engineers and manufactures high voltage isolation products to protect personnel and telecommunications circuits in high voltage areas that are susceptible to the effects of Ground Potential Rise (GPR).

Positron is the leader in isolation technology with its Teleline wireline products and TeleLite optical fiber wireline isolation/protection product families. Positron provides total flexibility in product configuration – from standalone units protecting a single circuit to high-capacity, multi-shelf HVI preconfigured systems.

Positron also provides a wide range of consulting, analysis and training services for communications companies and electrical utilities.

Full details and contact information are available at www.PositronPower.com

## 5.1 Service and Support

**General information:**

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E-mail: info@positronpower.com
Website: www.positronpower.com

**Customer Service and Repairs:**

US and Canada: 1-888-577-5254

International: +1-514-345-2220

E-mail: customerservice@positronpower.com

## 5.2 Technical Customer Support

Positron is committed to providing excellent ongoing technical support to its customers. A team of specialists is always available for telephone consultations or for on-site visits to assist in the maintenance and troubleshooting of Positron equipment.

For pricing information or assistance in the planning, configuration and implementation of the installation of equipment, contact Technical Customer Service.

## 5.3 Customer Training

Full customer training courses on High Voltage Interface (HVI) are also available. For more information, contact Positron.

## 5.4 Repair Service

All warranty repairs are performed at no cost. Positron reserves the right to repair or replace any equipment that has been found to be defective.

For information about out-of-warranty repairs, contact Positron's Repair Department. Due to the varied nature of repairs, no specific turnaround can be guaranteed, but average turnaround time is 20 working days from date of receipt. In emergency situations, special arrangements can be made. All repaired items are warranted for a period of 90 days.

Before returning any items to Positron for repair, warranty repair or replacement, call the Repair department to obtain a Return Material Authorization (RMA) number. Parts returned without RMA numbers cannot be accepted. The RMA number must always be clearly marked on all boxes, crates, and shipping documents. Bulk repairs (more than five items) will require additional processing time, so please take this into consideration when requesting an RMA number.

To accelerate the repair process, whenever possible, include a report detailing the reason for return with the unit(s). Also, please include the name and phone number of a person who can be contacted should our Repair department need further information.

When packing items being returned for repair, please ensure they are properly packed to avoid further damage. TeleLite plug-in cards should never be shipped while installed in a shelf; this will cause damage that can extend the repair period.

## 5.5 Warranty

Subject to the provisions of this paragraph, Positron warrants that the equipment shall perform in accordance with Positron's specifications. The warranty remains valid for one (1) year from the date of shipment unless otherwise stipulated in the contract. The warranty fully covers workmanship, materials and labor. Positron shall, at its sole discretion, repair or replace the problem unit.

Freight costs to ship defective equipment to Positron are borne by the Customer, with return of replaced or repaired equipment to be at Positron's expense.

## 5.6 Limitation of Liability

Subject to anything to the contrary contained herein, Positron's sole obligation and liability and the customer's sole remedy for Positron's negligence, breach of warranty, breach of contract or for any other liability in any way connected with or arising out of, the equipment or any services performed by Positron shall be as follows:

- In all situations involving performance or non-performance of the equipment or any component thereof, the customer's sole remedy shall be, at Positron's option, the repair or replacement of the equipment or said component.
- For any other claim in any other way related to the subject matter of any order under, the customer shall be entitled to recover actual and direct damages; provided that Positron's liability for damages for any cause whatsoever, and regardless of the form of the action, whether in contract or in tort (including negligence), shall be limited to the value of the order.

Positron shall not be obligated to repair or replace any item of the equipment which has been repaired by others, abused or improperly handled, improperly stored, altered or used with third party material or equipment, which material, or equipment may be defective, of poor quality or incompatible with the equipment supplied by Positron, and Positron shall not be obligated to repair or replace any component of the equipment which has not been installed according to Positron specifications.

IN NO EVENT SHALL POSITRON BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL, PUNITIVE, EXEMPLARY OR SIMILAR OR ADDITIONAL DAMAGES INCURRED OR SUFFERED INCLUDING LOSS OF PROFITS, LOSS OF REVENUES, LOSS OF DATA, LOSS OF BUSINESS INFORMATION, LOSS OF GOODWILL, LOSS OF EXPECTED SAVINGS OR BUSINESS INTERRUPTION ARISING OUT OF OR IN CONNECTION WITH THE EQUIPMENT, A PURCHASE ORDER SUPPLIES, MAINTENANCE SERVICES OR OTHER SERVICES FURNISHED HEREUNDER, EVEN IF POSITRON HAS BEEN ADVISED OR IS AWARE OF THE POSSIBILITY OF SUCH DAMAGES.

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## 5.7 Cancellation and Rescheduling Charges

Should the customer cancel, prior to shipment, any part of an order, the customer agrees to pay to Positron cancellation charges, not as a penalty, which shall total all expenses, including labor expenses, incurred by Positron prior to said cancellation. Equipment that has been specially developed for the customer's specific applications shall not be subject to cancellation. Cancellation or rescheduling is not permissible after shipment of the System.

# Appendix A

## Acronyms

| | |
|---|---|
| **ALRM** | Alarm |
| **CFJ** | Copper Fiber Junction |
| **CO** | Central Office |
| **CPE** | Customer Premises Equipment |
| **ESD** | Electro Static Discharge |
| **GPR** | Ground Potential Rise |
| **HVI** | High Voltage Interface |
| **LCL** | Local |
| **LED** | Light Emitting Diode |
| **OEI** | Optical Electrical Interface |
| **RMT RTN** | Remote Return |
| **ZOI** | Zone of Influence |