

TeleLite™

3-slot Swing-Out Shelf (model 720013) Description and Installation Guide

925W720117-02E



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Chapter 1

General Information

1.1 Publication Information

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TeleLite 3-slot Swing-Out Shelf (model 720013)

Description and Installation Guide

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Disclaimer Notice

Although Positron Inc. has made every effort to ensure the accuracy of the information contained herein, this document is subject to change without notice.

1.2 About this Guide

This guide introduces you to the TeleLite 3-slot Swing-Out Shelf (model 720013) and how to install it. This guide was designed to be read from beginning to end.

1.2.1 Related Documentation

To order any manuals, please contact your customer service representative.

1.2.2 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

1.3 Service and Support

Table 1: Positron Contact Information

| | |
|--------------------------------------|--|
| General information: | Positron Inc. 5101 Buchan Street, Suite 220 Montreal, Quebec, Canada H4P 2R9 US and Canada: 1-888-577-5254 International: 1-514-345-2220 Fax: 514-345-2271 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 |

1.3.1 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.

1.3.2 Customer Training

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

1.3.3 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.

1.4 TeleLite 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. 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.

1.4.1 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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1.4.2 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.

Chapter 2

Overview

2.1 TeleLite System Introduction

TeleLite provides electrical isolation between the CO (Central Office) side, referred to as CFJ (Copper Fiber Junction) Interface and the Station side, referred to as an OEI (Optical Equipment Interface). 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 300 V 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. 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.

The communications link between the CO side unit and the Station side unit supports two types of fibers, single-mode or multi-mode, depending on the customer installation.

NOTE

The appropriate fiber type (multi-mode or single-mode) must be used for each line card.

WARNING



When installed within the ZOI (Zone of Influence) in a CFJ, the shelf **MUST NOT** be grounded to the local ground and the installation **MUST** use a non-metallic enclosure.

2.2 The Integrated Access Interface

The integrated access connector into the 720013 shelf provides:

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

NOTE

The recommended power supply is -48 Vdc, 2 A.

2.2.1 Fuse and Alarm Contact

The access connector on the Station side and on the CO side (if provisioned) has 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 provisions for an external alarm indication.

2.2.2 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. In its closed 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.

2.2.3 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.

2.2.4 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.

Figure 1: 3-slot Swing-Out Shelf Access Connector

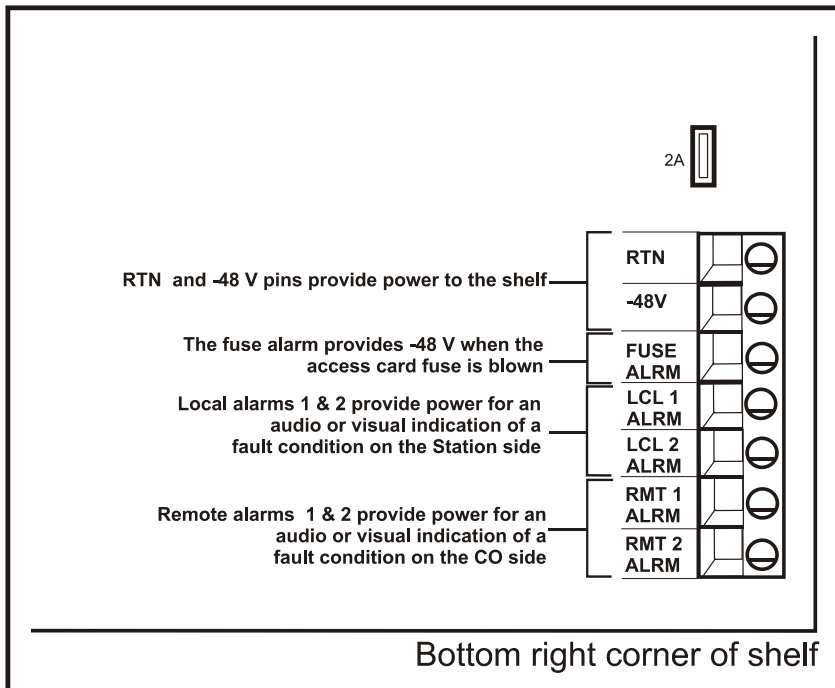


Table 2: Access Connector Pinouts

| Terminal Block | Station Side Function | CO Side Function |
|----------------|---|-------------------------------------|
| RTN | Supplies -48 Vdc Return | Supplies -48 Vdc Return |
| -48 V | Supplies -48 Vdc | Supplies -48 Vdc |
| Fuse Alarm | Provides -48 Vdc when fuse is blown | Provides -48 Vdc when fuse is blown |
| Local Alarm 1 | Normally open relay contact provides dry contact closure for an audio or visual indication of a fault condition on the Station side | Not used |
| Local Alarm 2 | Normally open relay contact provides dry contact closure for an audio or visual indication of a fault condition on the Station side | Not used |
| Remote Alarm 1 | Normally open relay contact provides dry contact closure for an audio or visual indication of a fault condition on the CO side | Not used |
| Remote Alarm 2 | Normally open relay contact provides dry contact closure for an audio or visual indication of a fault condition on the CO side | Not used |

NOTE

The TeleLite integrated Access interface requires a replaceable 2 A fuse. For ordering information, see section 1.3 on page 8.

CAUTION

For continued protection against risk of fire, replace only with same type and rating of fuse.

NOTE

The power to the integrated Access interface is polarity sensitive. If the polarity is wrong, no damage should occur, but the system will not work.

Figure 2: 3-slot Swing-Out Shelf (model 720013) Closed

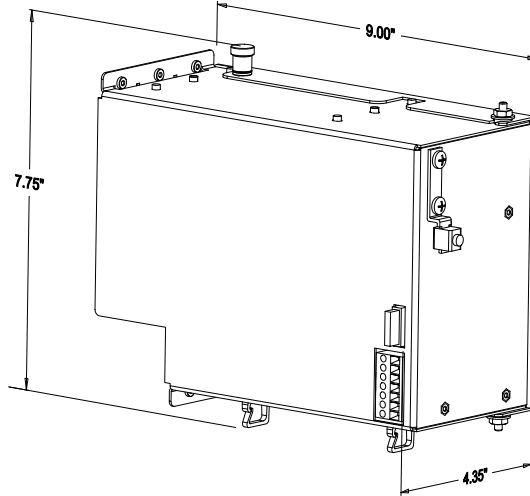
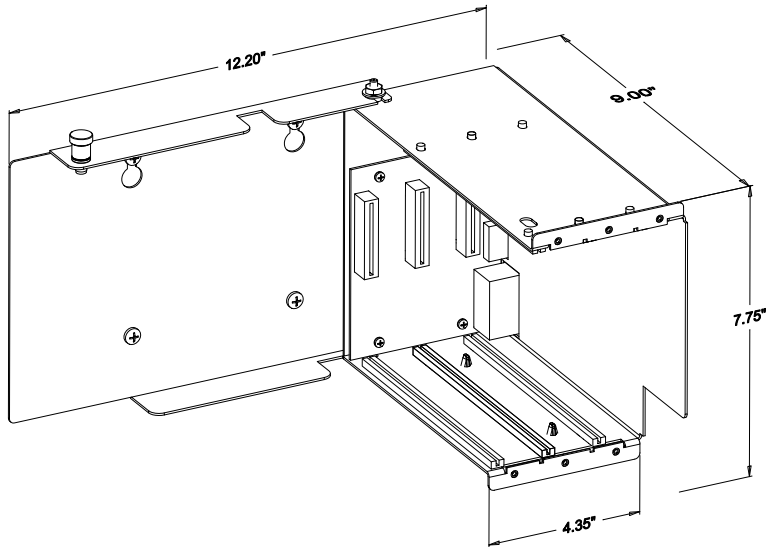


Figure 3: 3-slot Swing-Out Shelf (model 720013) Open



2.3 Specifications

Table 3: Physical Specifications

| Parameter | Specification |
|-----------------|------------------|
| Height | 19.7 cm (7.8") |
| Width (open) | 31 cm (12.2") |
| Depth: (closed) | 11 cm (4.4" in.) |
| Weight: | 1.36 kg (3 lb.) |

Table 4: Environmental Specifications

| Parameter | Specification |
|---------------------------|--|
| Operating Temperature | -40°C to 65°C (-40°F to 149°F) |
| Storage Temperature | -40°C to 85°C (-40°F to 185°F) |
| Humidity (non-condensing) | 20 to 80% |
| Altitude | -61 to 3048 m (-200 ft to 10,000 ft) above sea level |

Table 5: Electrical Specifications

| Parameter | Specification |
|-----------------------|--------------------|
| Shelf Voltage Input | -48 Vdc (nominal) |
| Shelf Maximum Current | 1 A |
| Alarm Contact Rating | 62.5VA, 125Vac, 2A |

NOTE

The operating temperature specified above is the maximum ambient temperature with any combination of TeleLite cards in the shelf except for the 721124.


Chapter 3

Installation

3.1 Installation

Installations should conform to local practices for the protection of wire-line communication facilities serving electric supply locations.

The equipment must be installed in a restricted or secure area to prevent tampering.

| | |
|--|--|
|  <p>ATTENTION ELECTROSTATIC SENSITIVE DEVICES HANDLE ONLY AT STATIC SAFE WORKSTATION</p> | <p>ESD Precaution INCORRECT HANDLING MAY VOID WARRANTY</p> <p>These procedures must be followed when handling an electrostatic sensitive device.</p> <ul style="list-style-type: none">• A grounded wrist strap must be worn at all times during installation.• When unpacking, place the antistatic bag containing the device on an electrostatic discharge (ESD) safe surface. An ESD safe surface is a conductive surface connected directly to an earth ground.• When moving, carry the device in an ESD safe container or the antistatic bag, provided with the device. |
|--|--|

3.2 Shelf Mounting

The 3- Position Shelf model 720013, should be installed in a protective environment, on a customer-supplied plywood backboard near the fiber entry. Power, when required, will need to be routed to the shelf. The orientation of the shelf should be as shown in Figure 2 on page 18.

➤ **To install the 3- Position Shelf:**

1. Verify that you have the following customer-provided tools and hardware required to install the shelf:
 - Phillips screwdriver
 - 3/4" or 1" thick plywood backboard and appropriate mounting hardware
 - Cable clamps and mounting hardware for routing cables exterior to the shelf (quantity determined by the cable lengths)
2. Unpack the 3- Position Shelf model 720013 and its hardware from its protective box.
3. To mount the shelf, install the plywood backboard on the wall to provide a secure mounting surface.
4. Place the shelf in position on the backboard and mark the location of the top two keyhole mounting holes.
5. Install the two Phillips screws at the location marked above, but do not tighten them completely, leaving 3 mm (1/8") space.
6. Install the shelf onto the two screws
7. Install the two bottom Phillips screws and tighten them.
8. Tighten the top two screws.

3.3 Serving Fiber

CAUTION



Use an all-dielectric fiber and non-conductive conduit between the CO and Station side and follow local regulations.

3.4 Earthing Connector

CAUTION



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

- The return of the DC supply must be grounded at the source.
- This equipment must be permanently connected to earth using the ground lug on the right side of the shelf
- The field wiring should include a readily-accessible disconnect device. The disconnect device shall disconnect both poles (-48 Vdc and RTN).
- This equipment is connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode is connected.
- This equipment must be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system shall not be earthed elsewhere.
- The DC supply source must be located within the same premises as this equipment.
- There shall be no switching or disconnecting devices in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

WARNING



- When installed within the Zone of Influence (ZOI), the shelf **MUST NOT** be grounded. The ground lug should not be installed to the shelf to avoid inadvertent connection to ground in the future.
- When installed within the ZOI, the shelf and its content might become energized at an unsafe potential. Always use an isolation safety mat and safety gloves when working on the installation.

3.5 Troubleshooting

Before calling customer service, make sure that:

- The fuse is not blown
- 48 Vdc is available on the terminal block (when locally powered)

If these have been verified, the problem may be line-related. Refer to plug-in line card Description and Installation guides.

Appendix A

Acronyms

Acronyms

ALRM

Alarm

CFJ

Copper Fiber Junction

CO

Central Office

ESD

Electro Static Discharge

GPR

Ground Potential Rise

LCL

Local

LED

Light Emitting Diode

OEI

Optical Equipment Interface

RMT

Remote

RTN

Return

ZOI

Zone of Influence