

Standalone Power Supply Unit 120 V ac to 48 V dc, 7885-2 & 7885-3

Description and Installation



DOCUMENT CONTROL INFORMATION

Document Part Number: 7885-24-02, Rev 4
Document Issue Number: 4
Publication Date: January 07, 2003
Document ID: (o02j2000.fm)

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1. The Standalone Power Supply Unit and Battery Unit

The Standalone Power Supply Unit and its Battery Unit, models 7885-2 and 7885-3, are described in one document because together they form a fully functional uninterruptible power supply. They are always sold together, as a pair.

The Standalone Power Supply Unit, model 7885-2, converts 120 V ac, 60 Hz to 48 V dc, and may be configured for an output that is either floating or referenced to station ground. This large capacity supply can be used to power a fully loaded Three, Five or Eight-card Shelf.

The Battery Unit, model 7885-3, holds two maintenance-free backup batteries, as does the Power Supply Unit, model 7885-2. When the 7885-2 is connected to the 7885-3, the 7885-2 provides 5.7 ampere-hours of battery charge at 48 V dc. The 7885-2 alone cannot provide battery backup.

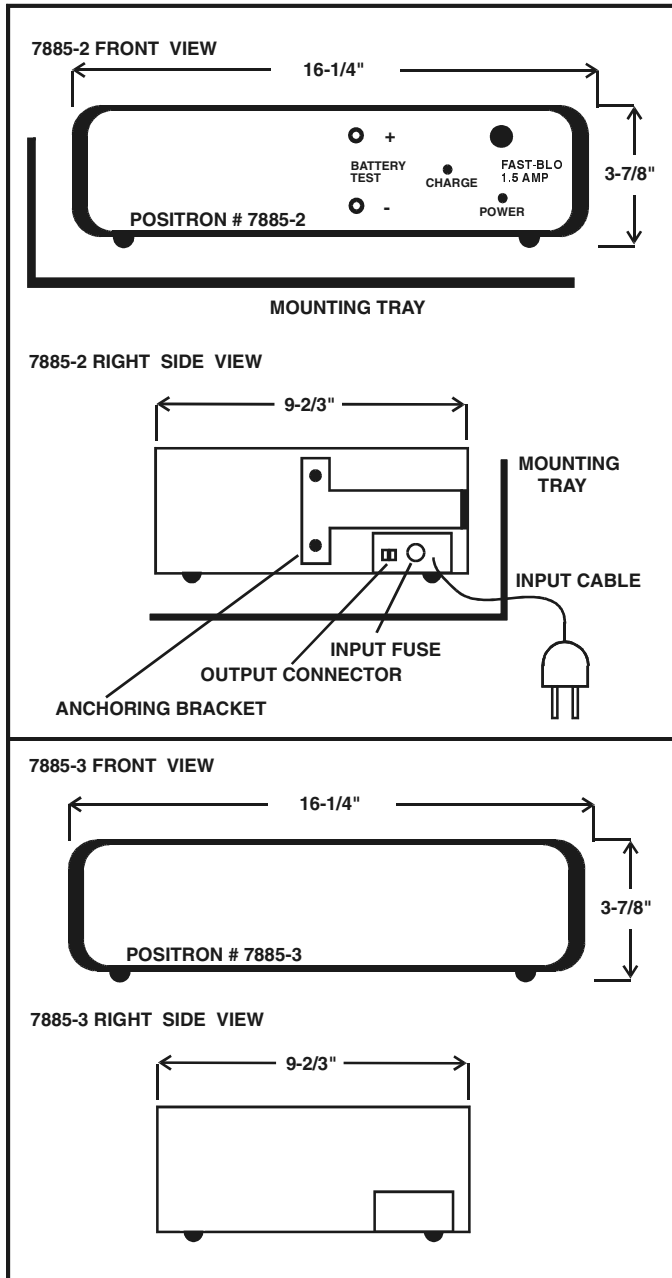
The installation kit consists of the Standalone Power Supply Unit and its Battery Unit, in durable, metal enclosures. The kit contains connecting cables, and mounting hardware.

Attention

The Standalone Power Supply Unit and its Battery Unit are intended to provide a shelf with uninterruptible 48 V dc, either floating or referenced to station ground. Teleline equipment having conflicting requirements cannot be used with this supply. For further information, refer to Table 3 and Table 4.

For a view of the Standalone Power Supply Unit and its Battery Unit, refer to Figure 1.

Figure 1 Models 7885-2 & 3



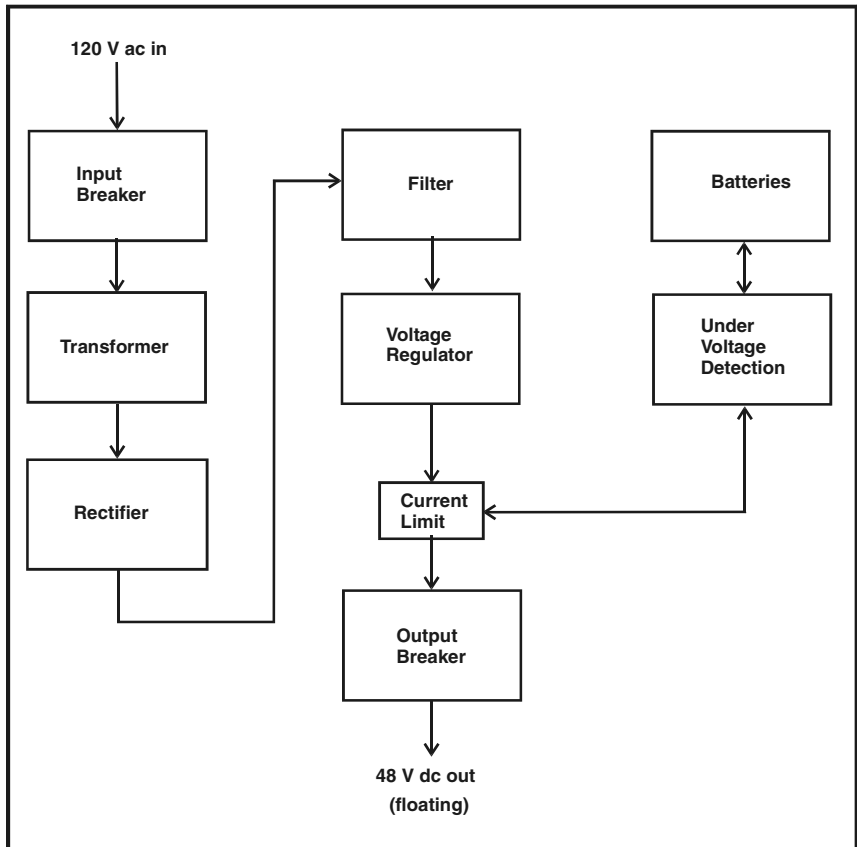
The features of the unit (comprised of the power supply and battery units) include the following:

- The unit may be used with both the old and new generation Three, Five or Eight-card Teleline Shelf.
- The unit provides floating 48 V dc at up to 1.3 A from a standard 120 V ac source. When wiring to a shelf, the supply output may be left floating or referenced to station ground.
- The unit uses standard full wave rectification, filtering, and voltage regulation to perform the AC to DC conversion.
- When model 7885-2 and 7885-3 are connected together, they provide 5.7 ampere-hours of charge at 48 V dc. The batteries are kept charged by the power supply while it is operating from the AC source.
- A fuse provides overcurrent protection at the input, while a second at the output provides short circuit protection.
- A green “Power ON” LED located on the front panel indicates the presence of 48 V dc output.
- A red “CHARGE” LED located on the front panel indicates that the batteries are undercharged.
- A pair of battery test jacks permit an easy assessment of batteries status.

2. Hardware Description

For the block diagram of model 7885-2, refer to Figure 2.

Figure 2 Block Diagram



The following is a description of the elements of the Standalone Power Supply Unit block diagram.

Input Breaker

The Input Breaker circuit on the right side panel of the 7885-2 is a 1 A circuit breaker providing standard input protection.

Transformer

The Transformer provides 1500 V isolation while stepping down the voltage for the regulator.

Rectifier

The Rectifier fully rectifies the AC input voltage.

Filter

The Filter is made of a big electrolytic capacitor that filters the 60 Hz input to provide a DC voltage to the regulator.

Voltage Regulator

The Voltage Regulator takes the filtered voltage from the input and gives out 48 V dc to the output.

Current Limit

The Current Limit circuit is a linear current limit circuit that drops the output voltage as the current increases past the limit value.

Output Breaker

The Output Breaker circuit on the front panel is rated at 2 A and provides short circuit protection to the power supply.

Batteries

Each Battery is a 12 V, maintenance-free Dryfit type. They require no more than 24 hours to reach full charge, and can hold 5.7 ampere-hours of charge. This corresponds to 570 mA over a 10-hour discharge period. Since the four batteries are connected in series, this current is available at 48 V dc.

Under Voltage Detection

The Under Voltage Detection circuit monitors the batteries and lights a LED when the voltage approaches the minimum specified voltage of the power supply.

3. Technical Specifications

For a listing of the unit's electrical specifications, refer to Table 1. For a listing of the unit's physical specifications, refer to Table 2.

Table 1 Electrical Specifications (measured at 77°F or 25°C, 50% R.H.)

| Parameter | Specifications |
|--------------------------|-------------------------------------------------------|
| Battery | GS Battery 12V, 5.7 A-h P/N PE12V7F1 or equivalent |
| Input station voltage | 104 to 127 V ac |
| Input power at full load | 160 VA |
| Nominal output voltage | 48 V dc |
| Maximum output current | 1.3 A |
| Output ripple voltage | 400 mV _{pp} |
| Regulation, line | <7.0% |
| Regulation, load | <8.0% |
| Input/output isolation | 1500 V @ 60 Hz for 1 minute |

Table 2 Physical Specifications

| Parameter | Specifications |
|-----------------------------|--------------------------------|
| Operating temperature range | +32°F to +122°F (0°C to +50°C) |
| Height | 3.9" (9.9 cm) |
| Width | 16.3" (41.4 cm) |
| Depth | 9.7" (24.6 cm) |
| Weight (7885-2) | 21 lbs (9.5 kg) approx. |
| Weight (7885-3) | 15 lbs (7.0 kg) approx. |

4. Installation

This installation procedure assumes that the Three, Five or Eight-card Shelf being used has already been mounted as per its installation instructions. For further information, refer to the Description and Installation documentation for the Three-card Shelf, model 751127, part number 924-010186-001, Five-card Shelf, model 751112/1, part number 924-010199-001, or Eight-card Shelf, model 751109/13, part number 924-010040-001.

Caution

Stand on a thick rubber mat and wear rubber gloves during the installation procedure. It is preferable to perform these procedures on a clear dry day when a Ground Potential Rise (GPR) or transients are less likely to occur.

1. Verify that you are not using any equipment which is incompatible with the Standalone Power Supply Unit. For lists of equipment that are compatible with the unit, models 7885-2 & 3, refer to Table 3 and Table 4. All other equipment is not compatible with this unit.
2. Verify that you have the following customer supplied tools and hardware which are required to install the unit:
 - Cable from station batteries
 - Center punch
 - Electric drill with a 5/32" diameter bit
 - 7/16" hex wrench
 - Phillips screwdriver
 - Cable clamps and mounting hardware for routing cables exterior to the shelf (quantity determined by the cable lengths involved).

Table 3 Case 1: List of Compatible Equipment

| Supply Configured for Floating 48 V dc (i.e., Connected Between -48V and RU GEN) | |
|-----------------------------------------------------------------------------------------|-------------------------------|
| Plug-in Two-wire AC Data Card | 7501-72 |
| Two-wire T1 Carrier Card | 7501-06A |
| Four-Wire T1 Carrier Card | 751329 |
| DC Trip/DC Pilot Wire Cards (variations B and C only) | 7501-15B, C |
| OPX Trunk Card (variation B only) | 7501-16B |
| Four -Wire AC Data Card | 7501-24 |
| Expandable Telephone Card (configured for -24 V only) | 751321 & 751321/A, 751321C |
| Two-wire HDSL card | 751340 |
| ADSL Card (configured for -24V only) | 751321B |
| Advanced Telephone Card (configured for -24 V only) | 751317 |
| Line Test Card | 751366 |
| -24 V dc Plug-In Power Supplies | 751313, 751316, 751324 |
| All -24 V dc Standalone Power Supplies | 7715-2, 7715-3, 7856-3 |
| ISDN Card (-24V configuration only) | 751333A |
| Four-wire HDSL Card | 751339 |

Table 4 Case 2: List of Compatible Equipment

| Supply Configured for -48 V dc w.r.t. Station Ground (i.e., Connected Between -48 V and Ground) | |
|-------------------------------------------------------------------------------------------------|-------------------------------|
| Two-wire T1 Carrier Card | 7501-06A |
| Four-Wire T1 Carrier Card | 751329 |
| DC Trip/DC Pilot Wire Card (variation B only) | 7501-15B |
| OPX Card (variations B and C only) | 7501-16B, C |
| Four-Wire AC Data Card | 7501-24 |
| Two-Wire AC Data Card | 7501-72 |
| Expandable Telephone Card (configured for -24 V or 48 V) | 751321 & 751321/A, 751321C |
| Line Test Card | 751366 |
| -24 V dc Plug-In Power Supplies | 751313, 751316, 751324 |
| All -24 V dc Standalone Power Supplies | 7715-2, 7715-3, 7856-3 |
| ISDN Card (configured for -24 V and -48 V only) | 751333A |
| Four-wire HDSL Card | 751339 |
| Two-wire HDSL Card | 751340 |
| ADSL Card (configured for -24 V or -48 V) | 751321B |
| Advanced Telephone Card (configured for -24 V or -48 V) | 751317 |

3. Unpack the Standalone Power Supply Unit and its installation hardware from its box.
4. Check the contents of your Standalone Power Supply Unit kit. For a listing of the items included in the kit, refer to Table 5.

Table 5 Model 7885-2 & 3 Kit Contents

| Items Included | Qty | Part Number |
|---------------------------------------|------------|--------------------|
| Standalone Power Supply Unit | 1 | 244-040028-401 |
| Description and Installation document | 1 | 7885-24-02 |
| Battery backup case assembly | 1 | 244-040029-401 |
| Battery backup connection assembly | 1 | 7885-03-02 |
| Kit for power supply | 1 | 241-010196-401 |
| Power supply cable | 1 | 207-010087-401 |
| Phillips screws #10 (32 x 3/8") | 2 | 724-020001-029 |
| Hex screws with washers #14A | 3 | 724-990000-011 |
| Lock washers #10 | 2 | 738-990010-005 |
| Flat washers #10 | 2 | 738-990110-005 |
| Angle brackets | 2 | 7856-02-07 |
| Mounting platform | 1 | 7856-02-09 |

5. Confirm that the unit is a Standalone Power Supply Unit by identifying the model number of the power supply and of the battery unit on their respective faceplates.
6. Model 7885-2 is shipped with one lead of the battery pack disconnected, and therefore requires installation first.
 - ▶ Open the power supply enclosure.
 - ▶ Connect the loose wire to the battery terminal.
 - ▶ Replace the power supply enclosure.

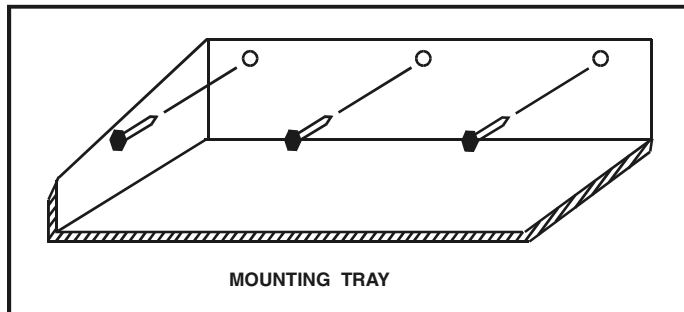
4.1 Mechanical Installation

The Standalone Power Supply Unit can be installed on a self-supporting wall-mounted tray, or directly on the Teline shelf.

4.1.1 Wall Mount

The installation of the Standalone Power Supply Unit on a wall mounted tray is illustrated below.

Figure 3 Model 7885-2 & 3 Installation



1. Using the mounting tray as a template, position it against the desired location (above the shelf) and drill three, $5/32$ " diameter holes into the 1" plywood surface.
2. Fasten the tray to the wall using the three, #14A screws and washers provided.

7885-2 & 7885-3

12 Standalone Power Supply Unit 120 V dc to -24 V dc

3. Place model 7885-2 on top of the tray and align the holes on the left side of the power supply enclosure with those on the left side of the mounting tray. Use the two, 1/2" bolts and washers to attach the two parts together.
4. Model 7885-3 may be stacked on top of the model 7885-2.

4.1.2 Teleline Shelf Mount

1. Place the Power Supply Unit (model 7885-2) on top of the Teleline shelf.
2. Stack the Battery Unit (model 7885-3) on top of the Power Supply Unit.

4.2 Electrical Installation

Caution

The station and Central Office (CO) cables should be kept at least six inches apart upon wiring in order to prevent an electric arc between the two in the event of damage to, or degradation of, their insulation.

1. Connect the Standalone Power Supply Unit, model 7885-2 to the Battery unit, model 7885-3, with the cable provided. The cable mates to connectors on the rear of each unit.
2. Using a digital voltmeter, test the output of the Power Supply Unit to verify the presence of 48 V dc, making sure that the polarity is correct. If you read 0, 12 or 36 volts, there may be a polarity reversal of one or more batteries. If there is a polarity reversal, do not plug in the Power Supply Unit until the polarity reversal has been corrected. For further assistance contact the Positron Technical Customer Support department.
3. Connect the power supply output to the shelf. For a Five or Eight-card Shelf, this may be accomplished via the Station side cable or by using a separate power cable. For a Three-card Shelf, the only entry is through the Station side cable. The table below lists the Power Supply Unit output connections.

Table 6 Power Supply Unit Output Connections

| Power Supply Output | Shelf Terminal Designation |
|-----------------------------------------------------|----------------------------|
| Configured for floating output: | |
| 0 V dc (black) | RU GEN |
| 48 V dc (white) | -48 V dc |
| Configured for output referenced to station ground: | |
| 0 V dc (black) | GND |
| -48 V dc (white) | -48 V dc |

4. Connect the terminated end of the output power cable to the mating connector on the right side of the Standalone Power Supply Unit (7885-2).
5. Ensure that there are no excess wires dangling into the isolation gap between the Station and CO side circuits. Then close and secure the shelf cover with the captive screws.
6. Route the standard AC cable and plug it to a 120 V ac outlet.
7. Verify the installation by making sure that you obtain 48 V dc in the shelf.
8. Test the battery backup after 24 hours of continuous operation of the power Supply Unit from the AC source.
 - ▶ Disconnect the AC source from the power supply while it is under load from one or more 48 V dc isolator cards. Wait 10 minutes, then measure the voltage at the “BATTERY TEST” terminals. If the voltage is lower than 46 V, the batteries are defective and must be replaced. When the red BATT LED is on, the battery voltage is insufficient to power a shelf.

4.3 Battery Replacement Procedure

Replacement of the battery will be necessary after its rated service life has expired. Its rated service life is at least five years. It is to be replaced with a GS battery 12V, 5.7 A-h. P/N PE12V7F1 unit or equivalent. For a view of the Power Supply Unit's component layout, refer to Figure 4.

To replace the battery for models 7885-2 and 7885-3

1. Disconnect the power supply from the shelf.
2. Remove the metal enclosure by loosening the two faceplate screws and sliding the chassis out.
3. Remove the metal plate holding the batteries to the chassis.
4. Disconnect the batteries and dispose of them in a government approved waste site.

Caution

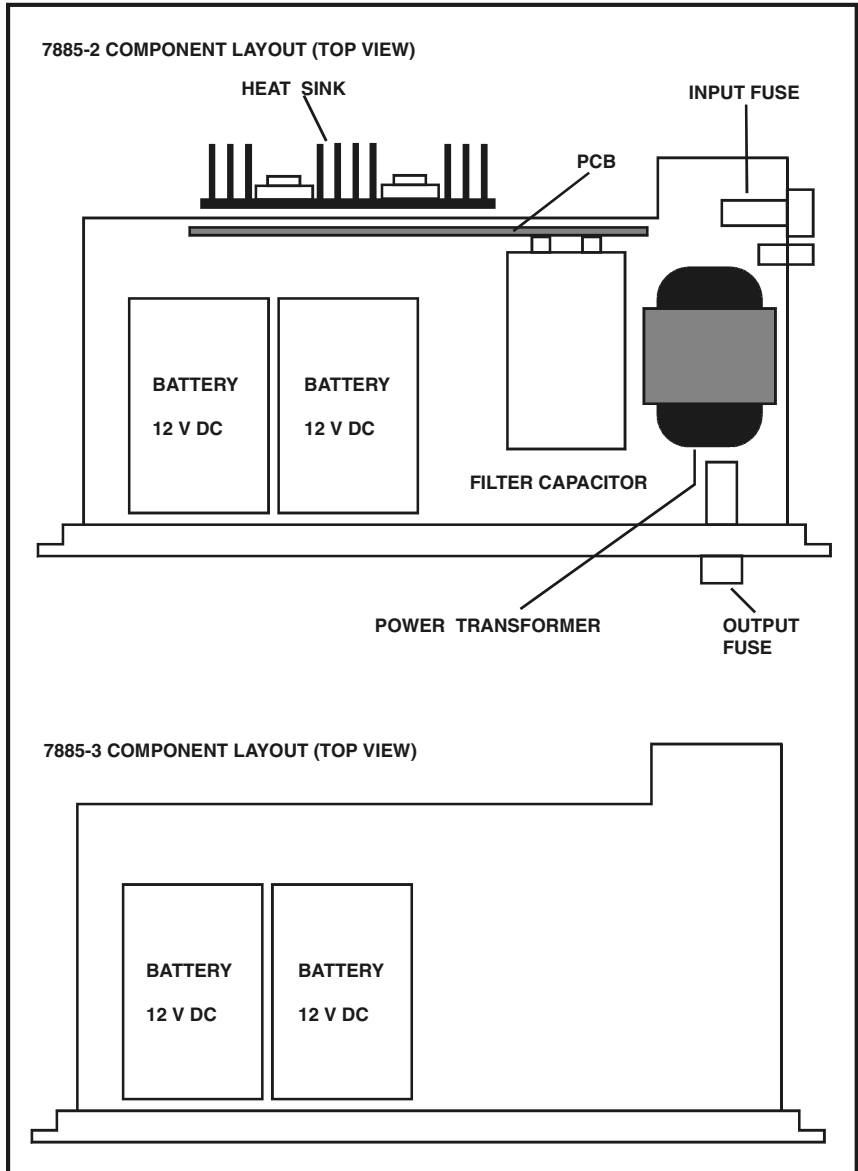
The batteries contain toxic lead and corrosive acid, and as they are user-replaceable, should only be disposed of in government approved waste sites.

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5. Position the new batteries and reconnect the leads (red to “+” of the battery on right side, black to “-” of the battery on left side).
 6. Reconnect the batteries to each other using the lead (“+” for battery on left side, “-” for battery on right side).
 7. Refasten the metal plate.
 8. Close and secure the cover.

Note

Blown fuses and dead batteries are the only components intended for replacement by customer maintenance personnel. Contact Positron should any other servicing be required.

Figure 4 7885-2 & 3 Component Layout



5. Service and Support

Technical Customer Support

Positron is committed to providing excellent ongoing technical support to its customers. A team of specialists is always available at our Technical Support Center in Montreal for either telephone consultations or on-site visits, to assist Field Technical personnel in the maintenance and troubleshooting of Positron equipment. During normal business hours, (8:30 a.m to 5:00 p.m. EST), any one of our Technical Customer Support (TCS) staff may be reached by dialing 1-888-577-5254 from anywhere in the continental United States or from Canada. Customers outside North America should dial 1-514-345-2200. Staff may also be contacted via fax at 514-345-2271 or e-mail at powerdivision@positron.qc.ca.

Positron TCS staff are available to provide technical assistance and/or to supervise the installation of Positron equipment. Assistance in the planning, configuration, and implementation of the installation will be provided as requested. Arrangements and pricing information regarding field assistance may be obtained by contacting the Technical Customer Support department. Please contact Positron for scheduling at least four weeks prior to the actual requested visit date.

Customer Training

Positron offers full customer training courses, as requested. Seminars are also available on High Voltage Interface (HVI). For more information, contact a customer representative by dialing 1-888-577-5254 or use our e-mail address, powerdivision@positron.qc.ca.

Warranty

Positron warrants that all equipment shall perform in accordance with Positron's specifications. The warranty remains valid for five (5) years from the date of shipment. The warranty will be honored provided that the equipment has not been abused and provided that the equipment has been installed and used in accordance with Positron's installation instructions and specifications. The warranty fully covers workmanship, materials and labor.

This warranty is in lieu of all other warranties, whether expressed or implied, including warranties of merchantability and fitness for a particular purpose. Positron guarantees that all equipment shall perform in accordance with Positron's specifications. Positron disclaims any warranty that Positron

equipment will meet customer requirements beyond the product specification. Positron disclaims any warranty that operations will be uninterrupted or error free.

Repair Service

Positron Inc. offers repair services by which customers can count on timely and quality repairs, regardless of customer location.

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

For information about out-of-warranty repairs, contact Positron's Repair department at 1-800-661-4911 (from anywhere in the continental United States or from Canada) or dial 514-345-2228. Due to the varied nature of repairs, no one time frame for turnaround can be guaranteed. However, average turnaround time is two weeks from date of receipt. In emergency situations, special arrangements can be made by contacting our Repair department. All repaired items are warranted for a period of 90 days. Bulk repairs (more than five items) will require additional processing time, therefore, please take this into consideration when requesting a Return Material Authorization (RMA) number.

Before returning any items to Positron for repair, warranty repair or replacement, call the Repair department to obtain an RMA number. Parts returned without RMA numbers cannot be accepted. The RMA number must always be clearly marked on all boxes and crates and on all shipping documents.

Items under warranty are to be shipped prepaid to Positron and will be returned prepaid to the customer. Items that are not under warranty are to be shipped prepaid to Positron and will be returned prepaid with freight charges included on the invoice. Positron cannot accept items shipped collect. A purchase order number is required for all repairs.

To accelerate the repair process, whenever possible, customers should include a report detailing the reason for return with the unit(s) being returned. 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 that the item(s) is properly packed to avoid further damage. Teleline Isolator cards should never be shipped while installed in a shelf; this will cause damage and will almost invariably extend the repair period.

Ordering Information

Positron's Teleline equipment can be ordered by telephone, facsimile, or by mail. All orders should be directed to the Positron Inside Sales department. Ordering by telephone, or facsimile will eliminate any delays arising from postal services. However, a hard copy purchase order is required as a confirmation. In addition to the model numbers of the items being ordered, the following information is required:

- Company name, contact name and telephone number
- Purchase order number
- "Ship To" address
- "Bill To" address
- Date required on site

All orders must be followed by a confirming order. Equipment will not be shipped until such confirmation is received.

For a list of our contact information, refer to Table 7.

Table 7 Positron Contact Information

| | |
|----------------------------------------------|-------------------------------------|
| Address | Positron Inc. |
| | 5101 Buchan St. |
| | Montreal, Quebec, Canada |
| | H4P 2R9 |
| Main telephone number | 514-345-2200 |
| Customer Service department telephone number | 514-345-2200, 1-888-577-5254 |
| General e-mail address | powerdivision@positron.qc.ca |
| Customer Service department fax number | 514-345-2271 |
| TCS department toll-free number | 1-888-577-5254 |
| TCS department fax number | 514-345-2271 |
| TCS department e-mail address | scarbonaro@positron.qc.ca |
| Repair department telephone numbers | 514-345-2228 or 1-800-661-4911 |
| Customer representative e-mail address | customerservicepower@positron.qc.ca |

