

Installation and Operations Manual

DP 240e SERIES Power Unit



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DESCRIPTION

The DP240e Power Supply series is a compact unit designed to service a wide range of customer equipment requiring 48vdc. The DP240e comes equipped with 250 watts of rectifier power. The distribution is provided on the right side of the unit. Commercial power is applied to the left side of the unit. The DP240e is capable of being mounted on a wall, 19 or 23 inch rack.

The DP240e also is available with several different battery configuration options. The first configuration option comes without a battery. The second configuration option comes with an internal battery. The third configuration, allows the addition of external battery packs to be connected to either unit. Hold up time after loss of commercial power can range up to 8 hours depending on the system load and battery capacity.

Indication of an AC or battery failure is provided locally, with front panel LED indicators, and remotely, through the provision of Form C relay contacts.

TECHNICAL SPECIFICATIONS

Electrical Specifications

Input

Voltage	120 +10/-15% VAC
Frequency	50-60 Hz

Output

Voltage	42-56VDC
Current	4.5 amps

Mechanical Dimensions

DP240e-0

Width	19.00 Inches
Depth	5.00 Inches
Height	7.00 Inches
Weight	9lb

DP240e -8

Width	19.00 Inches
Depth	5.00 Inches
Height	14.00 Inches
Weight	32lb

Environmental

Temperature

Operating	0 C to +40 C
Storage	-20 C to +50 C

Humidity

0-95% non-condensing

Thermal

190 Btu/hr

SAFETY INFORMATION

Always insure that the person assigned to the job can perform the job safely.

Always lift all equipment properly.

Always disconnect commercial power and remove the battery fuse before working on the unit.

Always replace the batteries with batteries of the same type and style.

DO NOT work on this equipment during an electrical storm.

DO NOT work in locations where there is condensing moisture or standing water.

INSTALLATION INSTRUCTIONS

GENERAL

The installation section of this manual will provide all the necessary information for room requirements, proper inspection, and installation; as well as instructions on checking and bringing the DP240e on line for use.

Inspection

The equipment has been fully tested and inspected prior to shipment. Although the unit has been packed in accordance with good commercial practices, it does not preclude damage in transit.

The following actions should be taken on receipt of the equipment:

- Visually inspect the shipping container for damage. If damaged, request that the carrier inspect the shipment.
- Unpack the inner container from the shipping container and remove the unit from the packaging. Inspect the unit for visible damage.

If a claim for damages is to be made, it should be filed promptly with the transportation company. In addition, notify SEI Corporation within two days of delivery. SEI Corporation will advise the customer of any further procedures that may be required, including an RMA number in the event that the unit has to be returned to the factory for repair.

Make sure the following items are included inside the package:

- One DP240e Power Supply Unit.
- One AC Power Cord.
- One warranty card.
- One Installation and Operations Manual.
- Mounting Instructions.

Room Requirements

Electrical Requirements

- All units are shipped from the factory for use with 120 VAC. In the event that operations at 240 VAC is required please notify the factory.
- Each unit requires a separate NEMA 5-15R receptacle with a maximum of six units per 20 amp service.
- A standard 7 foot 6 inch power cord with a molded NEMA 5-15 plug is supplied with each unit.

Environmental Requirements

A clean dry room environment should be picked for the installation of the DP240e. The DP240e will produce 190 Btu's of heat when fully loaded and running at maximum capacity

Mounting Instructions

- When mounting the DP240e keep in mind the weight range of the unit is between 9lb and 32lb depending on the model.
- The DP240e is designed to mount to a rack or wall without further requirements for additional mounting kits. For wall mounting a user supplied 3/4 inch plywood backboard or equivalent is required. DP240e should be fastened to the backboard using number ten wood screws for each unit. A number 27 drill should be used to provide a pilot hole for the screws. All of the screws should be tightened with a torque of 30 in/lb minimum and 34 in/lb maximum.
- Whether the unit is to be rack or wall mounted it should be mounted vertically in a clean dry area where the ambient temperature does not exceed 40°C (104° F)
- It is important that ventilation for the unit be provided. Leave adequate space above and below the unit so that unrestricted airflow is allowed to the unit. It is suggested that 5 inches of space be allocated around the top of the unit.
- The DP240e is supplied with mounting angles suitable for 19" standard, racks or wall mounting. Optional 23" angles for wider racks are available.
- The mounting slots on each rack adapter are spaced in conformance with EIA standard RS-310-B

START UP AND CHECKOUT

Power On Checkout.

- Once the unit is properly mounted, you may begin the checkout procedure. First, insure that all the equipment to be powered by the unit is installed.
- Attach the supplied AC power cord to the left side of the DP240e.
- Plug in the DP240e power cord into the commercial AC outlet made available for this unit.
- You should see one of two LED conditions depending on whether or not there are internal batteries in the unit: If no internal batteries are present, the DP240e should display a solid green LED on the Power Output Status. If the DP240Ee has internal batteries, the unit should display a flashing green Battery Charge Status LED and a solid green Battery Test Status LED.
- Connect the user equipment to the DP240e output connector located on the right side of the unit.
- Verify that the connected equipment's power indicators are now on.
- The DP240e and connected equipment should now be functioning properly.

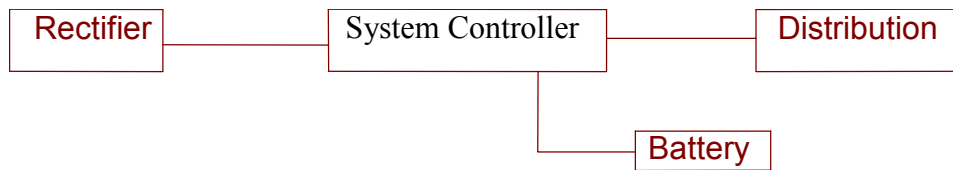
THEORY OF OPERATION

Theory of Operation

The following will provide you with an outline of operations and a list of modules found in the DP240e.

Modules

- Rectifier
- System Controller
- Battery Modules (optional)
- Distribution and Connectors



Functional Block Diagram DP240e
Figure 1

Rectifier

The DP240e rectifier provides up to 250 watts of power for the user equipment. AC Power is applied to the unit on the left side. Power is input through the chassis IEC connector. From there it is taken to the input of the rectifiers. A fuse located at the left side of each rectifier protects their input. The output of the rectifier is located on the right side of the unit and is distributed through two 25 pair connectors, as well as four 6-pin modular connectors.

System Controller

The System Controller has the following functions:

- Distribution of the DC power
- Local and Remote Alarms
- Low Voltage Disconnect Function
- Automatic and manual battery test
- Battery charge and test status indicators (Power Output OK for DP240e-0)

DC Power Distribution

The System Controller, which is mounted inside of the upper power unit, takes power from the rectifier and distributes it to the battery modules and distribution board.

Local Alarms And LED Indicators

There are two LED indicators on the front of the unit; Battery Charge Status and Battery Test Status (All models except DP240e-0). The functions of these indicators are as follows:

Battery Charge Status: Constant Green – Fully Charged Flashing Green – Charging Constant Red – On Battery Fast Flash Red- Adjust supply	Manual Battery Test Switch –Push to Test
Battery Test Status: Constant Green – Battery Good Fast Flash Red – Wait, Then Test Slow Flash Red – Replace Battery	<i>NOTE:</i> The Manual Battery Test switch is disabled when the battery is charging. Also, to prevent unnecessary battery discharge, the Manual Battery Test is disabled for 5 minutes following a Battery Test. In both cases, the <i>Wait, Then Test</i> indication is displayed.

Low Voltage Disconnect Function

The low voltage disconnect function will disconnect the battery when the voltage drops below a preset limit (42.0V). This is done to prevent deep discharge of the batteries which can adversely affect battery life. Both internal and external batteries are disconnected.

External Connectors

- The DP240e provides two ISDN distribution output modules on the right side of the unit. Each Distribution Module provides a 25 pair Amphenol connector, as well as two 6-pin modular connectors as outputs. Each of the circuits on 25-pin connector is protected from overloads with a 0.5 Amp, re-settable thermal fuse (PTC), and the 6-pin connectors with 0.9 Amp PTC. The PTC resets upon removal of the overload.

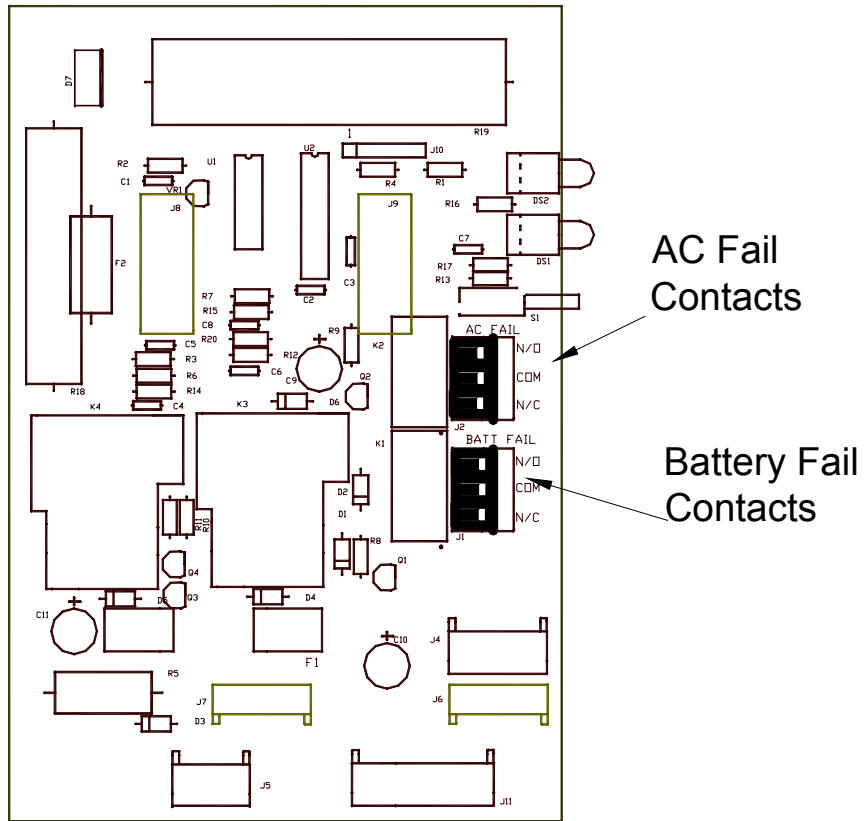
- AC power enters through a standard IEC connector. This connector is located on the left side wall, and plugs into the DP240e from the left. The mating connector should be an IEC female connector three-conductor power cord.
- External Batteries are connected through a two pin locking connector. Two of these connectors are located on the right side wall. The mating cable should have male pins inside of a male housing.
- External Alarm connection access is provided through an opening in the side panel. Both the 25 pair Amphenol connector, and the two 6-pin modular connectors require male cables to connect to the unit.

Remote Alarm Contacts

The DP240e includes external alarm contacts to provide the ability to remotely monitor the status of the unit. These alarms will indicate either an AC Fail or a Battery Test Fail condition. Both normally open and normally closed contacts are provided to suite the user's external monitoring circuitry. The alarm contacts have a 2 Amp rating. The NO and NC contacts will change state when an alarm condition occurs. The connector state pin-outs are printed on the System Controller Card.

Alarm Access and Connection

The alarm connectors are located on the front edge of the System Controller Card. To access these connectors, remove the front panel, remove the square plastic plug, located on the right side panel (Figure 1). A 1/2in rubber grommet (not supplied) may be inserted into the opening to prevent chafing of the wire insulation. The user-supplied wire is fed through this opening to the alarm connectors (Figure 2). The ends of the wires should be stripped back 1/8in, and inserted into the metal contacts. A small screwdriver is needed to tighten the contacts against the inserted wires.



Alarm Contact Location on System Controller

Figure 2

REPAIR AND MAINTENANCE

Repair and Maintenance

The DP240e power supply has been engineered to operate unattended and with low maintenance overhead for extended periods of time. Although the electronics within the DP240e require no routine maintenance, the output voltage should be measured periodically and re-adjusted as needed.

Tools and Test Equipment

No special tools other than those normally contained in an electronic technicians toolkit are required to service the DP240e. To check the system voltage and reset as necessary, it is recommended that a quality digital voltmeter (DVM) be used.

Rectifier - Output Voltage Adjustment

It is essential that the final output voltage adjustment should only be done with a fully charged battery. Ensure that all battery packs, both internal and external are properly connected. Do not perform power supply adjustment if there has been a recent power failure or if the Battery Charge Status led is flashing. The rectifier should only be adjusted with the nominal system load connected.

Adjustment Procedure

Connect a DVM to one of the external battery connectors. Measure the voltage; it should be between 54.0 and 55.5 volts. If the measured voltage is outside of this range, perform the following steps:

- Loosen the front panel mounting screws and remove the front panel.
- Locate the blue potentiometer in the center of the right edge of the rectifier.
- While monitoring the voltage at the external battery connector, adjust the potentiometer to achieve a reading of 54.8VDC.
- Replace the front panel and re-tighten the mounting screws

TROUBLESHOOTING

Troubleshooting

The attached guide is intended to provide help with any problems you may run into. (Please note that this is not a complete list of problems).

Question - We have just completed installation of the system and we have **no front panel indicators**.

Answer - You will need to check the following:

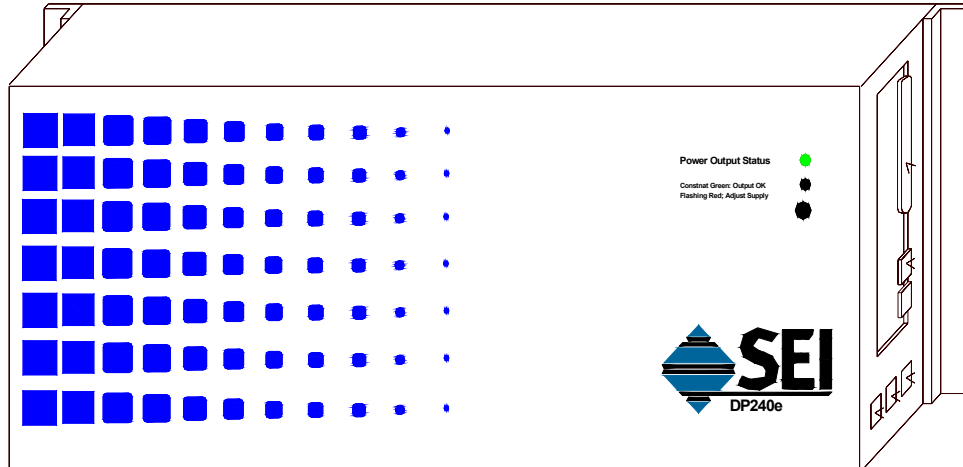
- A. Check the power cord on the left side of the unit.
- B. Check the power cord at the commercial wall outlet.
- C. Check the circuit breaker in the power distribution panel.
- D. Using a voltmeter, check the AC voltage at the wall outlet. This voltage should be between 92 and 132 volts AC.

Question - We have just completed installation of the system and we have a power problem. **There are no indicators on the equipment connected to the power supply**.

Answer - You will need to check the following:

- A. First, verify that the front panel indicators on the DP240e on.
- B. At the distribution module, disconnect the cable. Using a voltmeter, check the output connector. If your voltage is 48 volts or more the power supply is okay.
- C. Plug the cable back into the power supply. Disconnect the cable from the load unit. Measure the voltage at the cable connector. Is it the right polarity and voltage?

If you have a specific question not addressed in this manual, please call 1-800-765-4SEI and ask for technical support.



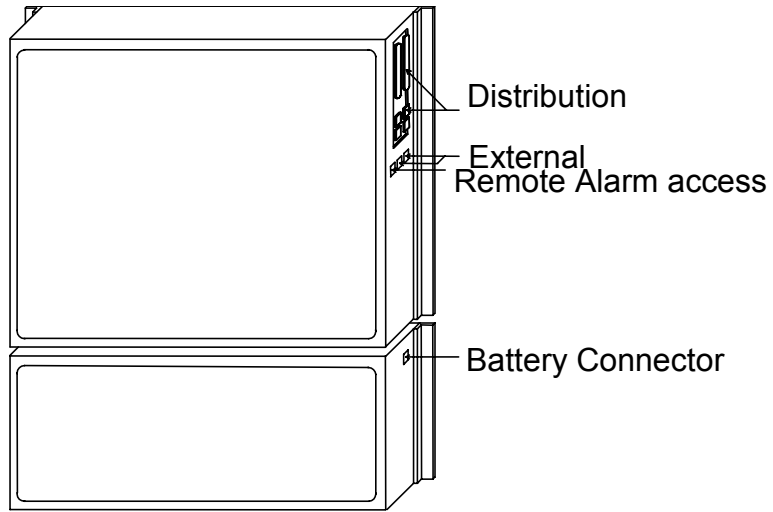
DP240e-48-0

Figure 3

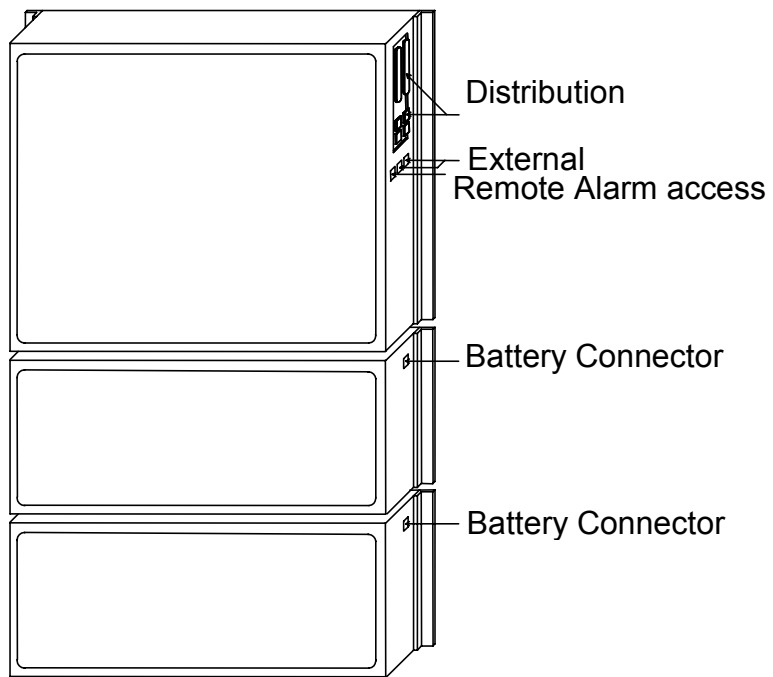


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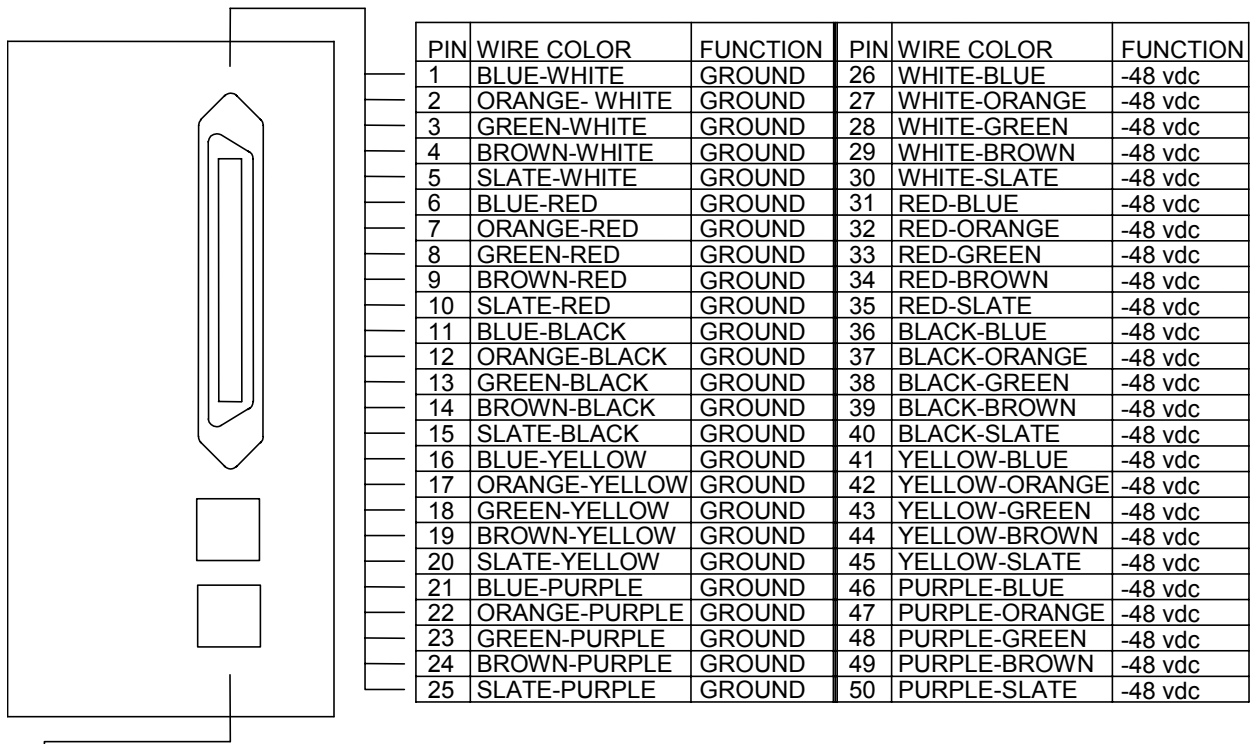
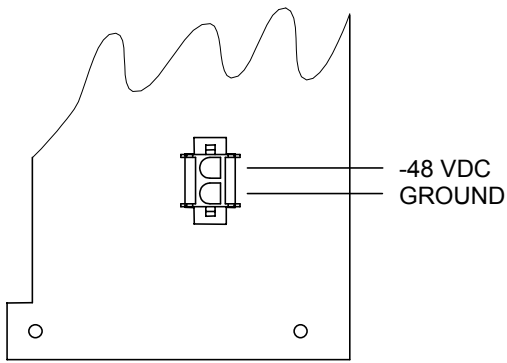
Figure 4



Optional External Batteries
Model DP240eB-48-8
Figure 5



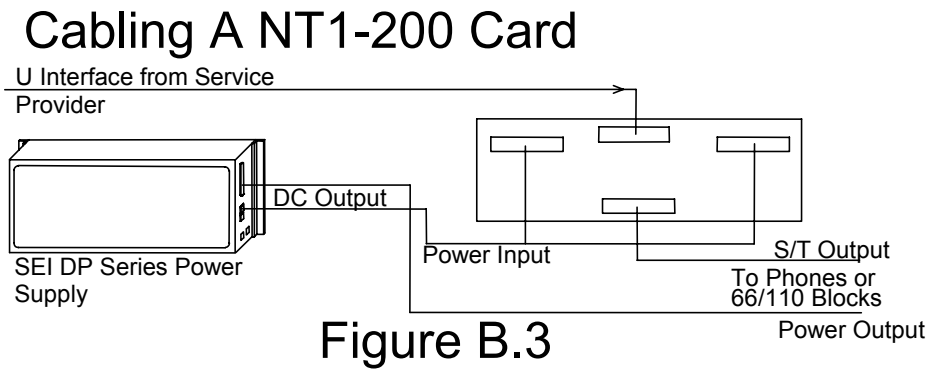
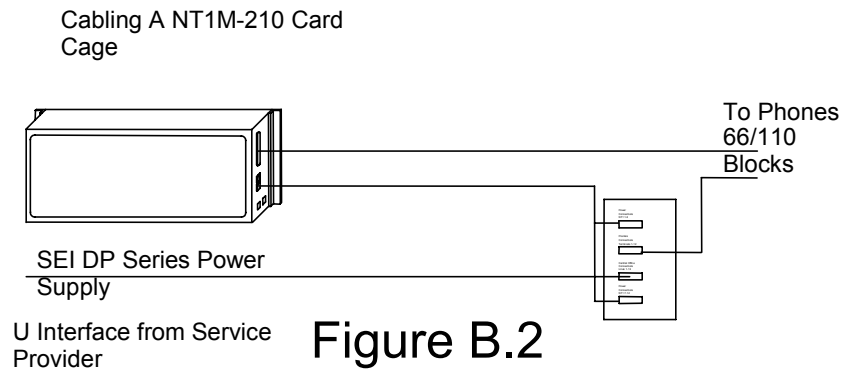
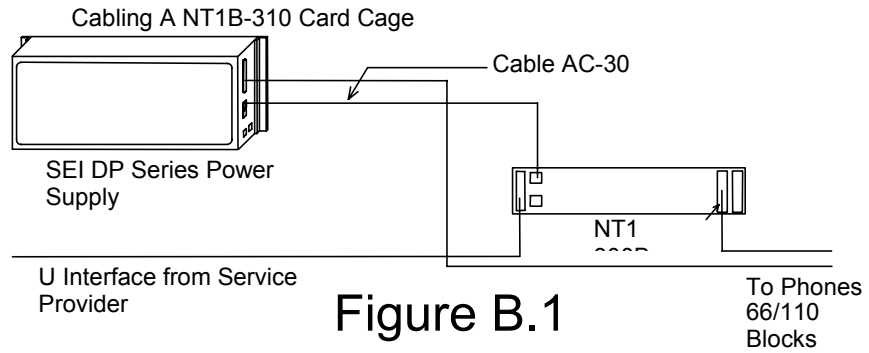
Optional External Batteries
DP240e B-48-24
Figure 6



PIN	FUNCTION
1	INACTIVE
2	GROUND
3	INACTIVE
4	INACTIVE
5	-48 VDC
6	INACTIVE

Distribution Pinouts Appendix A

TYPICAL WIRING USING DP SERIES



Appendix B