

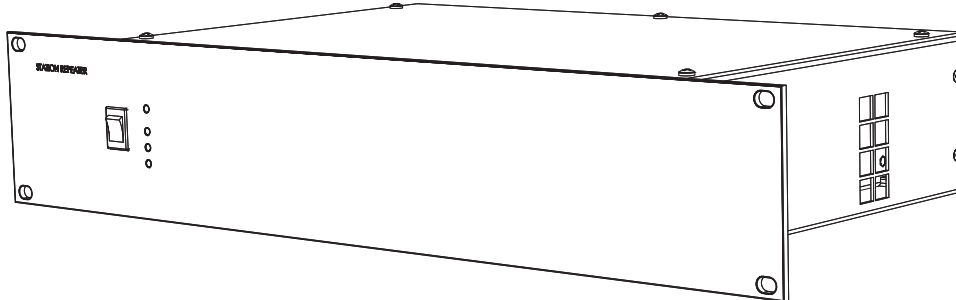
ETC® Setup Guide

Paradigm Rack Mount Repeater Installation



Paradigm Rack Mount Repeater

The Paradigm rack mount repeater can contain a single or dual repeater. Installation procedures for the single or dual repeater unit are identical.



The Paradigm repeater is designed for use with a Paradigm control system to supply LinkPower for up to 62 Paradigm control stations on the topology-free and polarity-independent LinkPower control network.

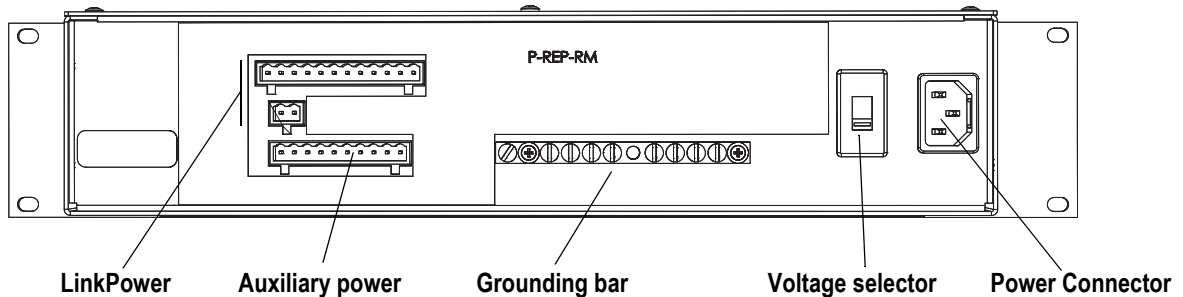
Install in Rack

Install Unit in Equipment Rack

- Step 1: Locate the included rack mounting hardware kit including the mounting screws and washers.
- Step 2: Use the hardware provided to mount the unit to the mounting rails in your equipment rack.

Power and Control Wiring

Rear Panel View



The rack mount enclosure is provided with wiring connections on the rear of the unit. Required terminations include:

- Single phase 115 VAC, 230 VAC, or 240 VAC power input on an IDC connector.
- A LinkPower (Belden 8471 or approved equal) station communication bus. LinkPower is based on serial LonWorks®, and includes one pair of wires (data+ and data-). The total combined length of a LinkPower wire run cannot exceed 1,640 feet (500m), with a maximum distance of 1,313 feet (400m) between any two devices.
- Auxiliary power uses two 16 AWG (1.5mm²) stranded wires for 24 Vdc auxiliary power to the control station(s). Auxiliary power is topology-free. Maximum auxiliary voltage runs are dependant by the wire gauge and the distribution of auxiliary load determined by installation. The auxiliary



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supply is capable is of 36W (1.5A at 24Vdc).

Terminate LinkPower (LON®) Control Wiring



Note: *All low voltage control cables must run in separate conduit from power wires.*

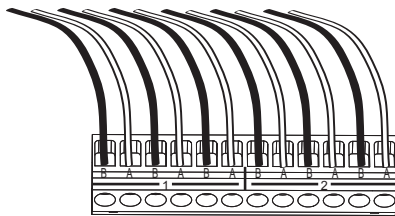
Unison control stations communicate with the Paradigm architectural control processor using the LinkConnect station communication bus from the architectural control processor to the stations. LinkConnect is based on Echelon® LonWorks® with LinkPower.

Throughout this document, LinkConnect is referred to by the protocol it uses, LinkPower.

Termination is available for LinkPower (LON) data runs using Belden 8471 cable (or approved equal) plus one 14 AWG ESD drain wire and two 16 AWG wires for auxiliary power. LinkPower wiring is topology-free and polarity independent, you can install your LinkPower data runs in any desired combination of bus, star, loop, and home run. The total combined length of LinkPower wire run cannot exceed 1,640 feet (500m), with a maximum distance of 1,313 feet (400m) between any two un-repeated communicating devices.

To terminate LinkPower:

- Step 1: Pull Belden 8471 (or approved equal) control wiring into the equipment rack.
- Step 2: Strip 3/16" (4.8mm) of insulation from the ends of each wire pair.
- Step 3: Remove the LinkPower connector (labeled LON) from the rear of the repeater.



Notice the LinkPower/LON connector is labeled to indicate that the connector is split between two LON segments. This is effective only when a Paradigm dual station repeater module (P-DREP) is used. With the standard Paradigm station repeater module (P-REP) all six station home runs connect to the single LON control segment.

- Step 4: Loosen the terminal screws for the wire pairs you are terminating.
- Step 5: Insert each white (typical) wire from the pairs into a "A" terminal on the connector and tighten the screw(s) firmly to secure the wire into the terminal.
- Step 6: Insert each black (typical) wire from the pairs into a "B" terminal on the connector and tighten the screw(s) firmly to secure the wire into the terminal.
- Step 7: The 14 AWG ground wire can terminate to the ground bus located inside the enclosure.
- Step 8: Replace the connector on the repeater.



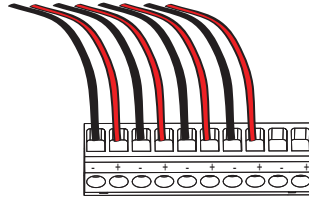
Note: *When using a Paradigm rack mount station repeater module (P-REP) or Paradigm dual station repeater module (P-DREP), terminate the affected LON segment(s) and associated auxiliary power wiring to the rack mount repeater.*

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Terminate Auxiliary Power

Auxiliary power is required when you are installing powered Unison control stations. ETC recommends using two 16 AWG stranded wires for 24 Vdc auxiliary power to the control station(s). Auxiliary power is topology-free. Maximum auxiliary voltage runs are dependant by the wire gauge and the distribution of auxiliary load determined by installation. The auxiliary supply is capable of providing 36W (1.5A at 24Vdc).



The auxiliary power connector (labeled Aux Power) provides termination for up to 20 wires in the ten position pluggable connector. Each terminal allows up to two 16 AWG wire and provides 24 Vdc power to Unison control stations.

To terminate auxiliary power:

- Step 1: Pull auxiliary control power wiring (typically 16 AWG red / black wire pair) into the equipment rack.
- Step 2: Strip 3/16" (4.8mm) of insulation from the ends of each wire pair.
- Step 3: Remove the auxiliary power connector from the I/O board.
- Step 4: Loosen the terminal screws for the auxiliary wire pairs you are terminating.
- Step 5: Insert the black (typical) auxiliary power wire from the pair into a "-" terminal on the connector and tighten the screw(s) to secure the wire into the terminal.
- Step 6: Insert the red (typical) auxiliary power wire from the pair into a "+" terminal on the connectors and tighten the screw(s) to secure the wire into the terminal.
- Step 7: Replace the connector on the I/O board.

Final Installation

- Step 1: Supply power to the unit.
- Step 2: Check status indicators for faults.

Status Indicators

When power is applied to the Station Repeater Module, the LEDs located on the front panel illuminate, indicating the status of the auxiliary power, LinkPower control network, and connected stations.

The Aux Power and LinkPower LEDs indicate in green when the Paradigm station power module is connected properly and auxiliary power and LinkPower are present. When there is an unbalance in LinkPower the fault indicators illuminate. This condition typically means that the station wiring has a fault, however it could mean a connected device is having an issue. A qualified technician should inspect the system wire and terminations first, then proceed to disconnecting devices to pinpoint the fault and correct it. The power supply will update the fault indicators automatically when the fault condition is cleared.

- If the NET A line has a fault (is shorted or has leakage to ground), the Fault + LED lights.
- If the NET B line has a fault (is shorted or has leakage to ground), the Fault - LED lights.
- If neither fault LED is illuminated the data connections are properly installed and the stations are receiving the data and power required for operation.