



HAI UPB™ Three-Phase Repeater Installation and Operating Instructions



For the following Model:

39A00-3 HAI UPB™ Three-Phase Repeater (TPR)

READ THESE INSTRUCTIONS BEFORE INSTALLING DEVICE

Important Notes Prior To Installation

1. This HAI UPB™ Three-Phase Repeater is intended for installation in accordance with the National Electrical Code and all other local codes and regulations.
2. Installation must only be preformed by a qualified electrician.
3. This product is for indoor use only.
4. Be sure that all power has been disconnected by turning off the main breaker panel.
5. This product must be installed in a suitable junction box or equivalent enclosure.
6. Connect only copper or copper clad wire to this device.
7. Retain these instructions for reference.

HAI UPB™ Three-Phase Repeater (TPR)

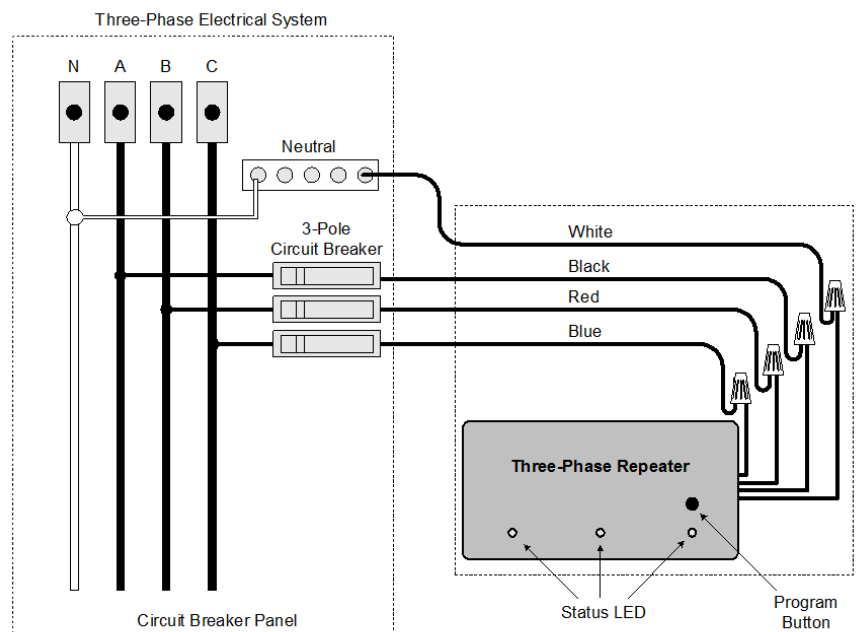
The HAI UPB™ Three-Phase Repeater (TPR) is a small electronic device that enables communication between devices using the Universal Powerline Bus (UPB™) method of communication (such as HLC devices) on a three-phase 120/208VAC delta-wye, 60Hz powerline. The main purpose of the TPR is to transfer UPB™ multi-packet messages transmitted on one phase (leg) of the electrical system and strongly repeating them on to the other phases (legs) to ensure proper communication.

UPB™ communication was designed to work on a single phase powerline. In a three-phase environment, the signals will not directly jump across all three phases of a 120/208V electrical system. The TPR is designed to take any UPB™ multi-packet generated signal on a single phase and repeat them onto all three phases of the powerline.

INSTALLATION INSTRUCTIONS

Note: The TPR works best when installed as close to the main circuit breaker panel as possible.

1. Turn off the power at the main breaker panel.
2. Install the TPR into a suitable junction box or equivalent enclosure.
3. Run wires from a three-pole circuit breaker to the workbox for Phase A, Phase B, Phase C, and Neutral (see illustration).
4. Use wire nuts to connect the black wire of the TPR to Phase A, and the red wire to Phase B, and the blue wire to Phase C. Connect the white wire of the TPR to Neutral. Check that there are no bare wires protruding and cover the wire nuts with insulating tape if necessary.
5. Check all wiring and connections, and turn on the main breaker.
6. All three status LED indicators will light up if all of the connections are proper.



HAI UPB™ THREE-PHASE REPEATER WIRING DIAGRAM

CONFIGURATION

Although the TPR will operate without any configuration, HAI recommends that you use the UPB™ UPStart configuration software to add the TPR to the UPB network with a Unit ID. Once added to the network, UPStart can then be used to adjust the receive sensitivity of the TPR and perform communication tests between other devices to insure proper system signal strength.

Adding the TPR to the UPStart Network

The TPR is added in to a network just like most other UPB™ devices. Select **Device → Add Device**, place the TPR into Setup Mode, and then click the **Next** button. To place the TPR into Setup Mode, press the Program Button 5 times. To exit Setup Mode, press the Program Button twice. While in Setup Mode, the LED indicators will blink blue. Once the TPR is added to the network, it may be assigned a Room and Device Name that is used for identification purposes.

Performing Communication Tests

It is important that the communication of your UPB™ network be tested to insure proper system signal strength. UPStart has a Repeater Communication Test that will test how well each device communicates with the TPR and how well the TPR communicates with all devices. The Repeater Communication Test will show a record of the signal strength, noise level, and phase at all devices.

Adjusting the Receive Sensitivity

If powerline noise is severe it may sometimes cause UPB™ communication to become unreliable. The TPR has an adjustable receive sensitivity which may be set to LOW or HIGH via UPStart. The low setting will help block the noise from affecting the reception.

Additionally, the TPR has a manual programmable (push-button) method to adjust its receive sensitivity. Press and hold the Program Button for 5 seconds and then release it. The LED indicators will blink red to indicate the current receive sensitivity setting (once for LOW or twice for HIGH). To adjust the receive sensitivity to LOW, single-tap the Program Button. To adjust the receive sensitivity to HIGH, double-tap the Program Button. Press and hold the Program Button for 5 seconds to set the new receive sensitivity. When the Program Button is released, the LED indicators will turn back to blue.

Once the Receive Sensitivity has been changed, the Repeater Communication Test should be repeated to insure proper system signal strength and communication.

OTHER THINGS YOU SHOULD KNOW

Multi-Packets

The Three-Phase Repeater is designed to automatically repeat all multi-packet messaging transmissions which it receives in order to enable UPB™ communication on an entire three-phase network. A multi-packet message transmits the same basic information more than once back-to-back. All HLC devices (and most other UPB™ devices) are pre-configured to use 2-time multi-packet messaging. If any of your devices are configured to use uni-packet (Gen 1) transmissions, then the TPR will not repeat them.

UPStart and the TPR

UPStart normally uses uni-packet transmissions to communicate to UPB™ devices however, once the TPR is added to the network, it will automatically switch to using multi-packet transmissions. UPStart indicates that it has switched to two-time multi-packets by displaying TX=2 in the status bar. Next to this indication, UPStart will also display which phase (A, B, or C) the PIM is plugged into.

UPStart has a Network Discovery function that can quickly discover which Unit IDs are in use. In a three-phase electrical environment, UPStart must use the TPR to gain access to this information for all three phases.

Status LED Indications

The TPR has a blue/red status LED indicator for each phase of the powerline. When the TPR is transmitting on the powerline, it will turn the LED red. When it is receiving on the powerline, it will turn the LED purple. When nothing is happening on the powerline, the LED will stay blue.

Multiple Three-Phase Repeaters

HAI does not recommend installing more than one Three-Phase Repeater on a single electrical system.