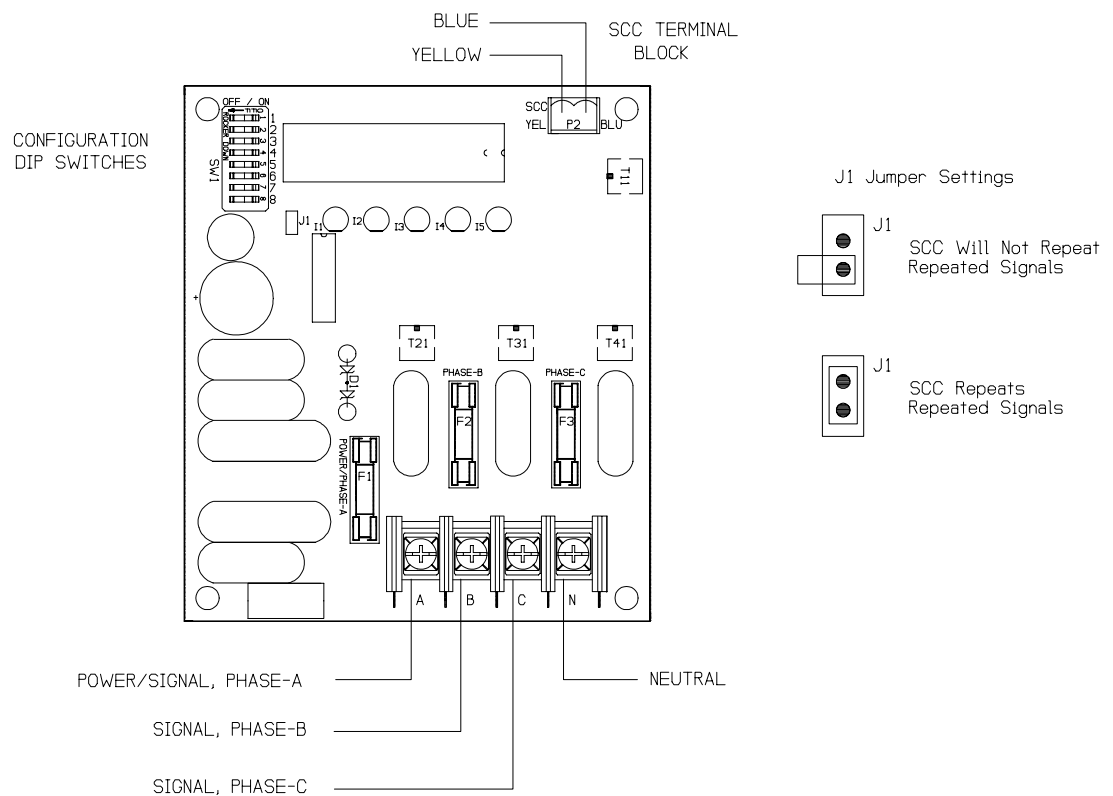


CR134

PCC 120/208 VAC Coupler-Repeater

THE CR134 is a coupler-repeater designed to receive A10 or X-10 Powerline Control Component signals (as low as 25mv) from any phase of a 120/208 VAC 3-phase power distribution system and retransmit them onto all three phases, when it is detected on one phase or Signal Carrying Conductor (SCC) lines. In doing so, it effectively amplifies the signal for all connected phases, and also creates signal appropriate for 208v receivers. In addition to SCC connections, the CR134 has **special signal processing functions** to better operate in complex coupling situations (described in detail in the "Installation" section). The CR134 is also capable of receiving and retransmitting **Dim and Bright signals** nearly simultaneously. Although designed for use on all 3 phases, it can be wired to just 1 or 2 phases, if desired. Its signal output is approximately 6 volts peak to peak @ 5 ohms, on all 3 phases. Actual output is dependent on facility impedance. This unit is not intended for 120/240v, 120/240/208 high leg delta, or 277/480v systems.



BEFORE YOU BEGIN...

READ ALL INSTRUCTIONS

Make sure your installation will conform to all applicable electrical codes and requirements.

TEST FOR SIGNAL STRENGTH AND INTERFERENCE...

using the appropriate test equipment. It is necessary to test the installation in the actual operating environment. The amount and types of line loads may reduce the signal strength and/or electrical interference may degrade the signal. To insure a fully functional system, special coupling devices may be required to allow signal to be distributed to all phases and zero-crossings in multi-phase and multi-transformer power distribution systems.

IF YOU HAVE ANY QUESTIONS...

Consult your nearest Engineered System Center (ESC) for technical assistance. Other than the fuses, there are no field repairable assemblies on this unit. It is covered by a two year limited warranty. Should service be required, please contact the ESC from where it was purchased.

INSTALLATION

CAUTION! Make all connections with the **POWER OFF** to avoid injury to the installer or damage to the device. Tools required are those commonly used in basic electrical work.

1. Remove the CR134 from its packaging. Do not discard packaging or instructions until the installation is complete and operational.
2. Determine the proper location for the CR134 (usually near the main breaker panel) and install a 4-11/16" x 4-11/16" electrical box according to local and national electrical codes.
3. Mount the electrical box in such a manner to allow the CR134 to hinge open and the LED's to be easily seen.
4. Prepare the required breakers as determined by local and national electrical codes. Although dedicated circuit breakers make the installation easier, the CR134 may share breakers with other equipment. Additional wire is usually required (not included).
5. If not already done, strip 3/8" of insulation from the ends of the conductors. With the breakers off, make the connections to the terminal block as shown in the diagram on page 1.
6. If Signal Carrying Conductor (SCC) input is used, unplug the SCC plug from the terminal block and connect the blue and yellow SCC wires to the plug, according to the legend on the printed circuit board next to the terminal block. Plug it back in after making connections.

SCC JUMPER SELECTION (J1):

There is one two pin header on the board for an additional operation of the SCC lines. This header will allow the user to select if the CR134 will be allowed to repeat known repeated signals seen on the SCC lines. If the pins of the two pin header are **shorted** with a jumper shunt, the CR134 **will** repeat repeated signals on the power line phases if repeated signals are seen on the SCC lines. If the pins are **open** on this header, then the CR134 **will not** repeat repeated signals on the power lines if they are seen on the SCC lines. If DIP switch #2 (below) is ON, this header must be shorted.

DIP SWITCH SETTINGS:

A bank of eight dip-switches is located in the top left corner of the circuit board. Each of these dip-switches configure the Coupler Repeater to act in various ways according to the application. The default condition for all switches is OFF.

Following is a list of the switches and capabilities they change in the operation of the Coupler Repeater.

- Switch 1. **ON:** SCC signals will take precedence over any incoming power line signal.
OFF: The first received signal from any phase or the SCC lines will take precedence over the others that may come in shortly after.
- Switch 2. **ON:** CR134 will receive signals at 30°.
OFF: CR134 will receive signals at 0°.
- Switch 3. **ON:** CR134 will ignore previously repeated signals on the three phase connections only. The SCC lines are unaffected by this switch.
OFF: CR134 will repeat both original and previously repeated signals. The SCC lines are still unaffected by this switch.
- Switch 4. **ON:** Split / single phase system is selected.
OFF: A three phase system with neutral is selected.
- Switch 5. **ON:** Standard X-10 or ACT Extended Code is valid.
OFF: Standard X-10, or X-10 extended code is valid.
- Switch 6. **ON:** Phase output transmission is disabled. SCC is unaffected.
OFF: CR134 will retransmit received signals on its 3 phases.
- Switch 7. **ON:** CR134 will only retransmit received signals at 0° only.
OFF: CR134 will retransmit received signals at 0° and 30°.
- Switch 8. **ON:** The receive window will be wider than normal.
OFF: The receive window will be normal.

CHECKOUT

1. Check terminal connections to be sure they are tight and no bare conductors are exposed. Affix the CR board back onto the cover if removed, and hinge the CR134 into place on the 4-11/16" x 4-11/16" electrical box and fasten with screws. Turn the circuit breaker(s) on. The green (*Power*) LED should light. After a moment, the first red (*Ready*) LED should light.
2. Using an appropriate test transmitter or any PCC transmitter on the electrical system, transmit a PCC signal. The third red (*Receive*) LED will flash followed immediately by the second red (*Transmit*) LED which will also flash.
3. If the appropriate LEDs do not flash in response to a remotely transmitted signal, confirm that the signal reaching the CR134 has a strength of no less than 25mv.
4. The last red (*Error*) LED will light whenever the CR134 receives a corrupted signal and will remain on until it receives a valid signal. If this LED lights often, it is an indication of electrical interference on the distribution system. Appropriate filtering will usually be required.

Any questions about installation should be directed to the ESC from whom the unit was purchased.

EXPLANATION OF FEATURES

Priority SCC

Enabling priority SCC will allow SCC signals to take priority over any other signals that are being received up to the last bit of the code. When a Priority SCC "interrupt" occurs, the READY LED will flash off and on quickly.

Receive at 0° or 30°

The CR134 can receive at 0° or it can receive at 30°. When the CR134 is setup to receive at 30° it will not be able to ignore repeated signal.

** Special Precaution when receiving at 30°: Do not have the Ignore SCC Repeated Signal Option enabled. Having this feature enabled while receiving at 30° will cause the CR134 to not detect SCC signals.*

Repeat Repeated Signal/ Ignore Repeated Signal

When Repeat Repeated option is enabled, the CR134 will repeat all signals including signals from another repeater.

When the Ignore Repeated Signal option is enabled, the CR134 will repeat all signals except signals from another repeater.

**Special Precaution. Do not have the Ignore SCC Repeated Signal option enabled unless the Ignore Repeated Signal is also enabled or the CR134 will not detect SCC signals. Note, however that the opposite is possible; the Ignore SCC Repeated Signal can be disabled while the Ignore Repeated Signal option is enabled, allowing SCC repeated code to be repeated while not allowing repeated signals on the power phases to be repeated.*

Three Phase/Split Phase Operation

The CR134 can operate in a Three Phase System or Split Phase System.

X-10 Extended Code/ ACT Extended Code

The CR134 can accept either ACT extended code or X-10 extended code but not both at the same time.

Repeat on ALL Active Phases/Repeat on SCC line only

The CR134 can be configured to repeat on all active phases including SCC or it can be configured to repeat on SCC only. When the CR134 is configured to repeat on SCC only, the TRANSMIT led will flicker when repeating.

Repeat at 0° and 30°/Repeat at 0° only

The CR134 can be configured to repeat at 0° and 30° or it can be configured to repeat at only 0°.

Window Normal/Window Sensitive

The CR134 can be configured to receive normally or receive sensitive. It is not suggested to use the CR134 in sensitive mode because it will be more susceptible to noise. However, in occasions where the sine wave is shifted, the "window sensitive" mode may help to improve the CR134 reception.

Smart SCC

Smart SCC is an option that is always enabled. When the CR134 receives signal on the SCC line and repeats it, the signal will not be repeated back onto the SCC line. When the CR134 is repeating signal received from the SCC line, the RECEIVE led will flicker.