Warning!

Line voltage exists on this unit, only qualified personnel should attempt to troubleshoot the controller.
Use extreme caution when taking measurements.

Additional ideas for troubleshooting.

1. Do you have a spare controller or firing circuit that you could swap? Or do you have multiple zones and could swap loads between controllers? If the problem stays with the load (i.e. does not follow the controller) then the problem is not the controller.
2. If your load can handle full line voltage, connect the two heavy wires from Line 1 and Load 1 together and the two heavy wires from Line 2 and Load 2 together. This removes the controller and puts full line voltage to the load.

You are now ready to start the troubleshooting questions. Click on the correct answer for each question, you may use the BACK link to see the previous screen. Click HERE to start.

Remove all power from the system.
Visually inspect the firing circuit. Do you see any obvious damage?
NO YES BACK

Turn the power on and run the system.
Looking at the Command Indicator on the controller; is the LED on at least part of the time?
NO YES BACK

Is there voltage to the load?

NO YES BACK

With an AC Voltmeter, measure across the Line 1 and Line 2 terminals, across the Line 1 and Line 2 terminals and then across the Line 3 and Line 1 terminals.
Are the readings equal to your line voltage (± 3Vac)?

No Yes Back

With a DC Voltmeter, measure across the COM and CW pins of the black 8 pin connector.

Click here if the reading is less than 9Vdc

Click here if the reading is 9-11Vdc

Click here if the reading is greater than 11Vdc

BACK

Are you using a current command into the black 8 pin connector? (Like 4/20mA or 12/20mA).

No Yes Back

With the command at 100%, the DC voltage on the black 8 pin connector (with CCW being common and +5/MA being positive), should be about 6Vdc (a positive reading). As you vary the command from 0% to 100%, the LED flashing should vary.

Are both of the above OK?

NO YES BACK

With the command at 100%, measure the DC voltage on the black 8 pin connector as follows:
Use CCW as common for all readings in this step.

Follow directions for command that you are using.
0/10V command - W being positive, should be about 10Vdc (a positive reading).
0/5V command - +5/MA being positive, should be about 5Vdc (a positive reading).
Potentiometer command - W/10 being positive, should be about 10Vdc (a positive reading).

As you vary the command from 0% to 100%, the LED flashing should vary.
Are both of the above OK?
NO YES BACK

Remove power from the system and follow the directions for your frame size to locate the two transformer fuse holders.

For 85 to 175 Amp controllers: The fuse holders have round, screw-off caps and are located on the same side of the controller as the Line and Load lugs.

Make certain that the smaller end of the fuse is inserted into the holder first and that the non-tapered end of the fuse is inserted into the screw-off cap. Measure across the fuses with an Ohmmeter, they should measure less than 5 ohms.

For 240 to 425 Amp Controllers: The fuse holders have round, screw-off caps. With the controller mounted with the Line and Load lugs up, the fuse holders are located on the lower right-side panel. Make certain that the smaller end of the fuse is inserted into the holder first and that the non-tapered end of the fuse is inserted into the screw-off cap. Measure across the fuses with an Ohmmeter, they should measure less than 5 ohms.

For 500 Amp and larger controllers: The fuses are mounted in two single-pole fuseblocks, they are located under the lid. Do not remove the fuses, measure across the fuses with an Ohmmeter, they should measure less than 5 ohms.

Are you certain that the fuses are installed correctly and that they measure less than 5 ohms?

NO YES BACK

With power still off; remove the two thumbscrews that hold the black 8 pin connector in place and remove/open the lid.
Make sure that the firing circuit is not touching anything metallic (you can disconnect the black 8 pin connector from the firing circuit if the wiring does not allow the lid to open).
On the firing circuit, opposite of the black 8 pin connector, locate the yellow and violet wires at one end of a 12 pin, high voltage connector. If possible, connect an AC voltmeter across the yellow and violet wires, otherwise you will have to hold the voltmeter across the wires.
Turn power on, and note the measurement.
Is the AC voltage between 20Vac and 36Vac?

NO YES BACK

Does the LED blinking vary as you vary the command signal?

NO YES BACK

Are you using a current command into the black 8 pin connector? (Like 4/20mA or 12/20mA).

No Yes Back

With the command at 100%, the DC voltage on the black 8 pin connector (with CCW being common and +5/MA being positive), should be about 6Vdc (a positive reading). As you vary the command from 0% to 100%, the LED flashing should vary.

Are both of the above OK?

NO YES BACK

With the command at 100%, measure the DC voltage on the black 8 pin connector as follows:
Use CCW as common for all readings in this step.

Follow directions for command that you are using.
0/10V command - W being positive, should be about 10Vdc (a positive reading).
0/5V command - +5/MA being positive, should be about 5Vdc (a positive reading).
Potentiometer command - W/10 being positive, should be about 10Vdc (a positive reading).

As you vary the command from 0% to 100%, the LED flashing should vary.
Are both of the above OK?
NO YES BACK

With power still off; remove the two thumbscrews that hold the black 8 pin connector in place and remove/open the lid.
Make sure that the firing circuit is not touching anything metallic (you can disconnect the black 8 pin connector from the firing circuit if the wiring does not allow the lid to open).
On the firing circuit, opposite of the black 8 pin connector, locate the yellow and violet wires at one end of a 12 pin, high voltage connector. If possible, connect an AC voltmeter across the yellow and violet wires, otherwise you will have to hold the voltmeter across the wires.
Turn power on, and note the measurement.
Is the AC voltage between 20Vac and 36Vac?

NO YES BACK

Set the command to 100%.
Are the DC voltages between the Line 1 and Load 1 terminals and between the Line 2 and Load 2 terminals less than 2 volts?
NO YES BACK

Is there voltage to the load?

NO YES BACK

Set the command to 100%.
Are the DC voltages between the Line 1 and Load 1 terminals and between the Line 2 and Load 2 terminals less than 2 volts?
NO YES BACK

Is the output what you expected?

NO YES BACK

Are you using a current command into the black 8 pin connector? (Like 4/20mA or 12/20mA).

NO YES BACK

With the command at 100%, the DC voltage on the black 8 pin connector (with CCW being common and +5/MA being positive), should be about 6Vdc (a positive reading). As you vary the command from 0% to 100%, the LED flashing should vary.

Are both of the above OK?

NO YES BACK

With the command at 100%, measure the DC voltage on the black 8 pin connector as follows:
Use CCW as common for all readings in this step.

Follow directions for command that you are using.
0/10V command - W being positive, should be about 10Vdc (a positive reading).
0/5V command - +5/MA being positive, should be about 5Vdc (a positive reading).
Potentiometer command - W/10 being positive, should be about 10Vdc (a positive reading).

As you vary the command from 0% to 100%, the LED flashing should vary.
Are both of the above OK?
NO YES BACK

Set the command to 100%.
Are the DC voltages between the Line 1 and Load 1 terminals and between the Line 2 and Load 2 terminals less than 2 volts?
NO YES BACK

With the command at 0% (off), are the AC voltages between the Line 1 and Load 1 terminals and between the Line 2 and Load 2 terminals equal to the line voltage (± 3Vac)?

NO YES BACK

With the command at 0% (off), the LED should be OFF and not blinking and the load voltage should be 0Vac.
With the command at 100%, the LED should be ON and not blinking and the load voltage should be equal to the line voltage (± 3Vac).
Are both of the above statements true?

NO YES BACK

1. With the command at 0% (off), turn the ZERO pot. CW until the LED just starts to blink, then turn the ZERO pot. CCW until the LED just stops blinking and is off.
2. With the command at 100%, turn the SPAN pot. CCW until the LED just starts to blink, then turn the SPAN pot. CW until the LED just stops blinking and is on.
3. There is some interaction between the ZERO and SPAN pots. so you must repeat the above steps until no further adjustment is needed.

BACK

With the power off, remove the two thumbscrews that hold the black 8 pin connector in place and remove/open the lid.
Make sure that the firing circuit is not touching anything metallic (you can disconnect the black 8 pin connector from the firing circuit if the wiring does not allow the lid to open).
On the firing circuit, opposite of the black 8 pin connector, locate a 12 pin, high voltage connector. Carefully, remove the 12 pin connector from the firing circuit.
Turn power on; are the DC voltages between the Line 1 and Load 1 terminals and between the Line 2 and Load 2 terminals less than 2 volts?

NO YES BACK

With power still off; remove the two thumbscrews that hold the black 8 pin connector in place and remove/open the lid.
Make sure that the firing circuit is not touching anything metallic (you can disconnect the black 8 pin connector from the firing circuit if the wiring does not allow the lid to open).
On the firing circuit, opposite of the black 8 pin connector, locate a 12 pin, high voltage connector. Carefully, remove the 12 pin connector from the firing circuit.
Turn power on; are the AC voltages between the Line 1 and Load 1 terminals and between the Line 2 and Load 2 terminals equal to the line voltage (± 3Vac)?

NO YES BACK

Set the command to 100%.
Are the DC voltages between the Line 1 and Load 1 terminals and between the Line 2 and Load 2 terminals less than 2 volts?
NO YES BACK

With the command at 0% (off), are the AC voltages between the Line 1 and Load 1 terminals and between the Line 2 and Load 2 terminals equal to the line voltage (± 3Vac)?

NO YES BACK

With the command at 0% (off), the LED should be OFF and not blinking and the load voltage should be 0Vac.
With the command at 100%, the LED should be ON and not blinking and the load voltage should be equal to the line voltage (± 3Vac).
Are both of the above statements true?

NO YES BACK

1. With the command at 0% (off), turn the ZERO pot. CW until the LED just starts to blink, then turn the ZERO pot. CCW until the LED just stops blinking and is off.
2. With the command at 100%, turn the SPAN pot. CCW until the LED just starts to blink, then turn the SPAN pot. CW until the LED just stops blinking and is on.
3. There is some interaction between the ZERO and SPAN pots. so you must repeat the above steps until no further adjustment is needed.

BACK

With power off, remove the two thumbscrews that hold the black 8 pin connector in place and remove/open the lid.
Make sure that the firing circuit is not touching anything metallic (you can disconnect the black 8 pin connector from the firing circuit if the wiring does not allow the lid to open).
On the firing circuit, opposite of the black 8 pin connector, locate a 12 pin, high voltage connector. Carefully, remove the 12 pin connector from the firing circuit.
Turn power on; are the DC voltages between the Line 1 and Load 1 terminals and between the Line 2 and Load 2 terminals less than 2 volts?

NO YES BACK

With power off, remove the two thumbscrews that hold the black 8 pin connector in place and remove/open the lid.
Make sure that the firing circuit is not touching anything metallic (you can disconnect the black 8 pin connector from the firing circuit if the wiring does not allow the lid to open).
On the firing circuit, opposite of the black 8 pin connector, locate a 12 pin, high voltage connector. Carefully, remove the 12 pin connector from the firing circuit.
Turn power on; are the DC voltages between the Line 1 and Load 1 terminals and between the Line 2 and Load 2 terminals less than 2 volts?

NO YES BACK

It appears that the transformer is not on the correct tap, has failed or that the protective thermostat has tripped.
First, remove power from the system.
Next, double-check that the transformer tap is on the correct voltage for your line.
Finally, check to see if the protective thermostat has tripped. On the firing circuit, opposite of the black 8 pin connector, locate the yellow and violet wires at one end of a 12 pin, high voltage connector (same as in the previous step). Measure across the yellow and violet wires with an Ohmmeter. If the resistance is less than 10 ohms this winding and the thermostat are OK, one of the other transformer windings must be open. If you get an infinite reading, either the transformer winding is open, or the protective thermostat has temporarily opened. The protective thermostat will reset itself after the heatsink temperature drops below 85° C. However, you need to find out why the controller gets so hot. Make certain that the fan (if equipped with a fan) runs when the controller is on and that the ambient temperature in the panel does not exceed 55° C. If you need more help, please call Control Concepts, Inc. at 1-800-765-2799 for further troubleshooting help.

It appears that the SCR has failed. Please call 1-800-765-2799 for spare parts, warranty service or further troubleshooting help.

It appears that either the line or load is not wired correctly. Because of the many different loads that are possible, this troubleshooter can not help you any further. If you need more help after you verify that your load is correct, please call Control Concepts, Inc. at 1-800-765-2799 for further troubleshooting help.

It appears that the command is not wired correctly. Double-check the command source, command polarity and how it is connected to the controller. If you need more help after you verify that your command is correct, please call Control Concepts, Inc. at 1-800-765-2799 for further troubleshooting help.

It appears that the firing circuit has failed. Please call 1-800-765-2799 for spare parts, warranty service or further troubleshooting help.

It appears that power is not getting to the controller or not getting from the controller to the load. Check for open fuses or circuit breakers. Verify that the wiring is correct. If you need more help after you verify that your wiring, fusing and circuit breakers are correct, please call Control Concepts, Inc. at 1-800-765-2799 for further troubleshooting help.

We have not found the answer to your problem with this troubleshooter.
Please call 1-800-765-2799 and we will help you with further troubleshooting.