5 YEAR WARRANTY

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Section 1 - Introduction

The CNI-CB120/240 series Industrial Controller Panel is ideal for light industrial use and applications requiring temperature measurement and control. The CNI-CB120/240 features both a Thermocouple and an M-12 Female input connection. The CNI-CB120/240 can be configured by the user for use with a thermocouple, RTD, Voltage or Current signal. These controllers are factory configured and calibrated for Thermocouples. It is important that the user read this manual and additional manuals outlined in Section 2.2 completely and follow all safety precautions in all manuals before operating your unit.

WARNING:

- This unit contains 120V or 240V which can cause injury or death within the enclosure. Installation and troubleshooting of input, output, and internal circuitry should be performed by qualified personnel only.
- Hazardous voltages are present on the internal circuitry of the Temperature Controller.
- Disconnect power before attempting any inspection or work on the inside of unit.
- Be sure the branch circuit or main disconnect switch is open or electrical input circuit fuses are removed before attempting any inspection or work on the inside of unit.
- This control box is designed for inside, dry use only. To avoid the risk of shock or fire DO NOT expose this box to excessive moisture (ie wash down) or rain. It is not NEMA rated.

1.1 Precautions

- Follow all safety precautions and operating instructions outlined in this manual.
- Keep unit out of reach of all children.
- Do not operate in flammable or explosive environments.
- Never operate with a power cord that is not properly rated for use with your unit.
- Remove and or disconnect main power cord before attempting any maintenance or fuse replacement.
- Do not connect and or operate this unit to a non-grounded, non-polarized outlet or power source.
- This product is not designed for use in human, medical, nuclear, or other safety critical applications.
- This product is not for use in damp or wet environments. Do not operate controller in an area where it can get wet or sprayed.
- Do not plug the equipment into a receptacle with wet hands. Ensure hands are dry before handling the electrical cord and connecting to power.

NOTE:

There are no user serviceable parts inside your device. Attempting to repair or service your unit may void your warranty.

1.2 Safety Warnings and IEC Symbols

This device is marked with international safety and hazard symbols in accordance with EN61010-1. It is important to read and follow all precautions and instructions in this manual before operating or commissioning this device as it contains important information relating to safety and EMC. Failure to follow all safety precautions may result in injury and or damage to your controller. Use of this device in a manor not specified by the manufacturer may impair protection devices and safety features provided by the unit.

IEC symbols	Description
	Caution, refer to accompanying documentation
	EU's Waste Electrical and Electronic Equipment Compliance

Figure 1-1. IEC Symbols

Section 2 – Hardware

2.1 Unpacking and Inspection

Remove the packing slip and verify that you have received everything listed. Inspect the container and equipment for signs of damage as soon as you receive the shipment. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent. The carrier will not honor damage claims unless all shipping material is saved for inspection. After examining and removing the contents, save the packing material and carton in the event reshipment is necessary.

If you have any questions about the shipment, please call our Customer Service Department at:

1-800-622-2378 or 203-359-1660.

We can also be reached on the Internet at omega.com e-mail: info@omega.com

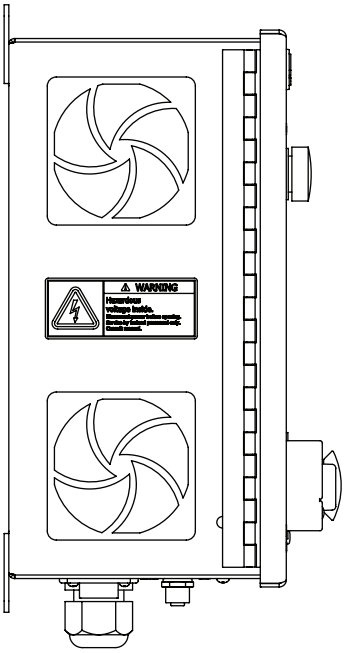
2.2 Included Items

The following items are supplied with your unit:

- CNI-CB120 –or– CNI-CB240 series Industrial Controller Panel (1 each)
- SC-GG-K-30-36 Spool Cap K-Type Thermocouple (1 each)
- Spare 100 mA control fuse (1 each)
- Spare 25 Amp output fuse (1 each)
- Spare 1 Amp SSR fuse (1 each)
- This Users Guide and CNI Controller Manual #M3355 (1 each),
- Quick Start Manual #MQS3355 (1 each)
- Communications Manual #M-3629 (1 each) with Ethernet models only

Section 2.3 CNi-CB120 and CNi-CB240 Labels

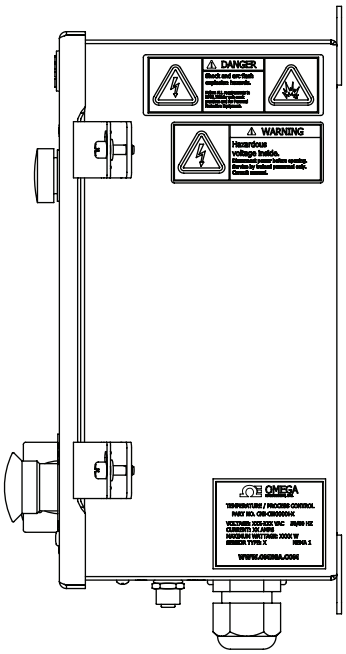
Figure 2-1. CNi-CB120 & CNi-CB240 Labels



View

Figure 2-2. CNi-CB120 & CNi-CB240 Labels

Left



Right View

Section 2.4 CNi-CB120 and CNi-CB240 Mounting Dimensions

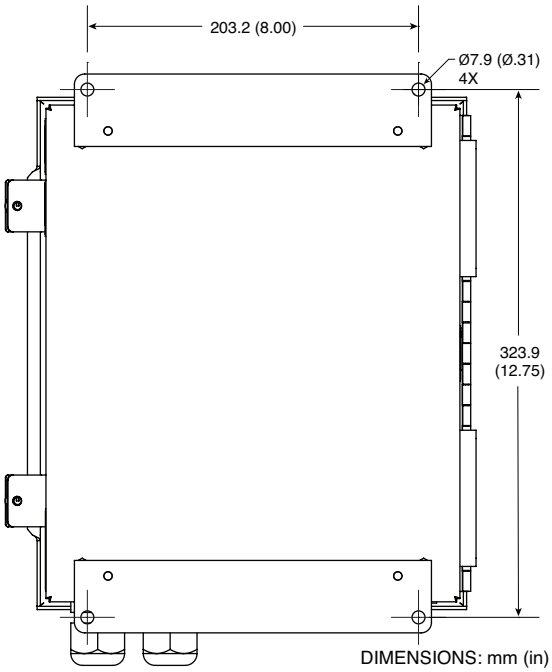


Figure 2-3. CNi-CB120 & CNi-CB240 Mounting Dimensions (Rear View)

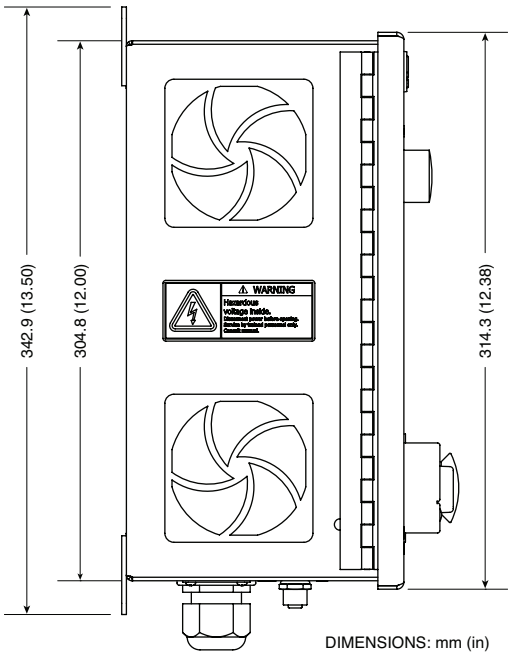


Figure 2-4. CNi-CB120 & CNi-CB240 Mounting Dimensions (Side View)

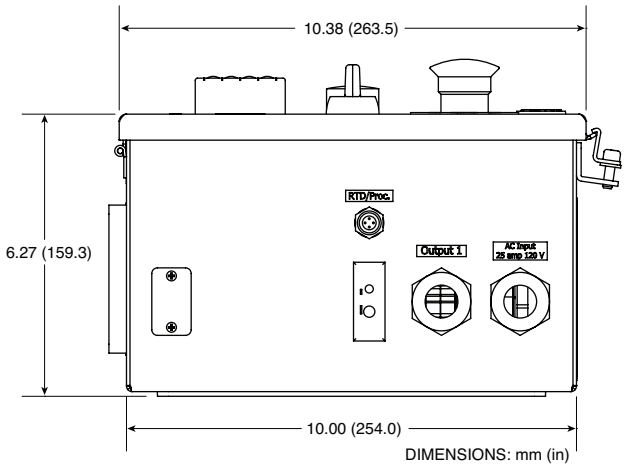


Figure 2-5. CNi-CB120 & CNi-CB240 Mounting Dimensions (Bottom View)

Section 2.5 CNi-CB120 Components

1. (Omegamation No. CNI16D43)
2. Indicator lamp, main power on
3. Emergeny stop switch
4. On/off switch

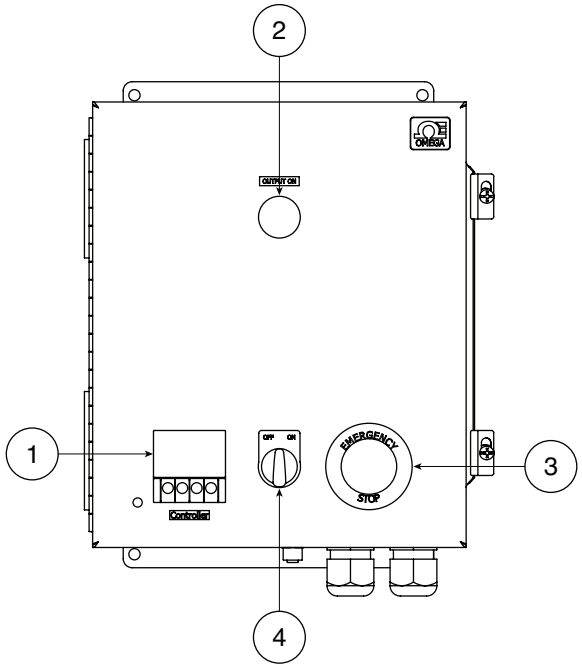


Figure 2-6. CNi-CB120 Components Front View (Closed)

5. Cooling fan
6. Heat sink (Omegamation no. FHS-2)
7. Solid state relay, 25A continuous (Omegamation no. SSRL240DC25)
8. Contractor 1 pole, 30 amp (Omegamation no. C25CNB130A)
9. Fuse block, din rail mount, 25A (Omegamation no. ASK-4-1)
10. Fuse block, din rail mount, 1A (Omegamation no. ASK-2S)

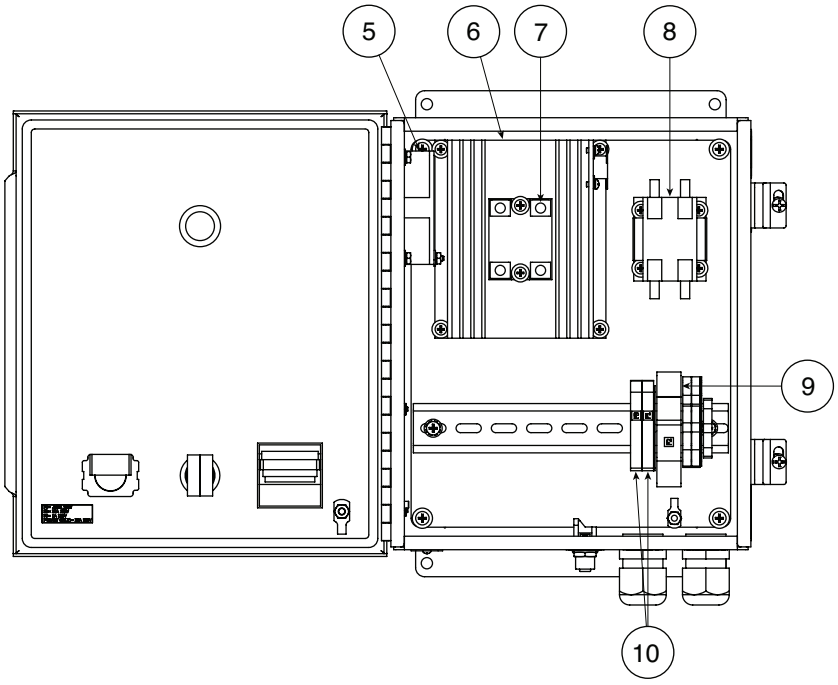
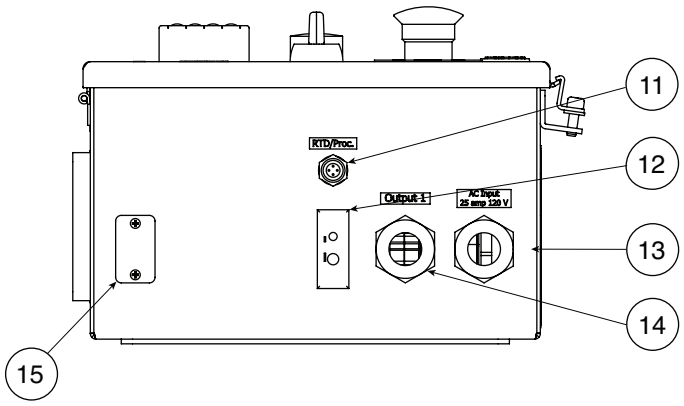


Figure 2-7. CNi-CB120 Components Front View (Open)

Figure 2-8. CNi-CB120

11. RTD/Process input, M12
12. TC input (Omegamation no. UPJ-*-F
13. Power in
14. Power out
15. Ethernet connection (optional)



Components Bottom View

Section 2.6 CNi-CB240 Components

1. (Omegamation no. CNI16D43)
2. Indicator lamp, main power on
3. Emergeny stop switch
4. On/off switch

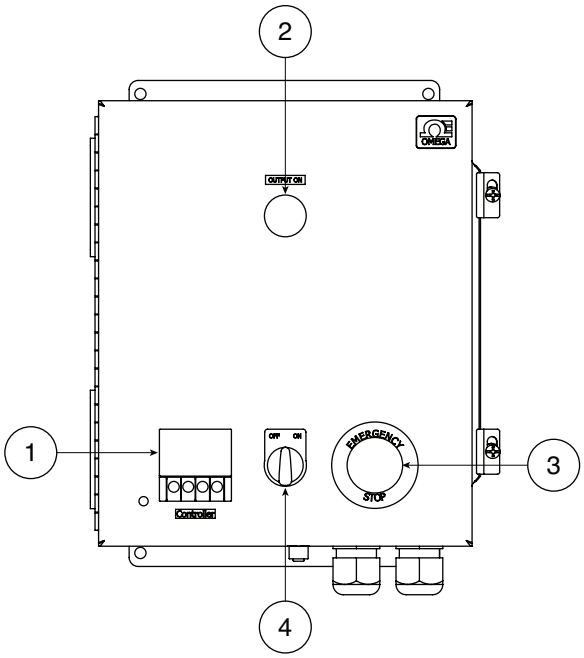


Figure 2-9. CNi-CB240 Components Bottom Front View (Closed)

5. Cooling fan
6. Heat sink (Omegamation no. FHS-2)
7. Solid state relay, 25A Continuous (Omegamation no. SSRL240DC25)
8. Contractor, 1 pole, 30 amp (Omegamation no. C25CNB130A)
9. Fuse block, din rail mount, 25A (Omegamation no. ASK-4-1)
10. Fuse block, din rail mount, 1 A (Omegamation no. ASK-2S)

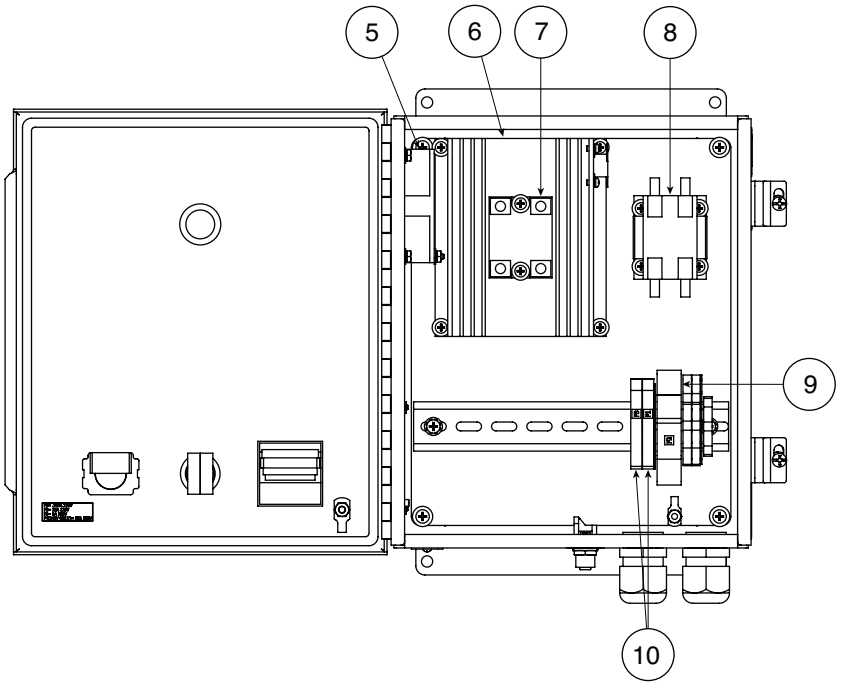


Figure 2-10. CNi-CB240 Components Front View (Open)

11. RTD/Process input, M12
12. TC input (Omegamation no. UPJ-*-F
13. Power in
14. Power out
15. Ethernet connection (optional)

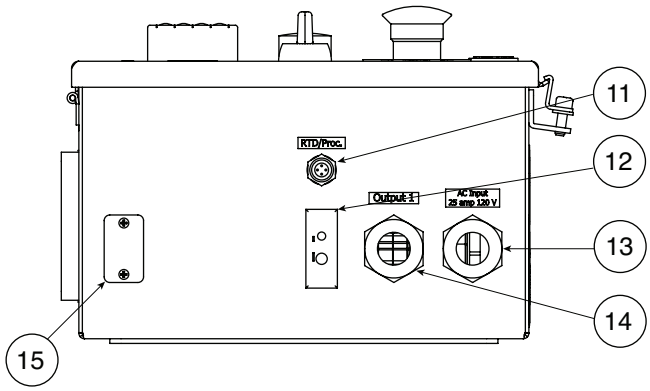


Figure 2-11. CNi-CB240 Components Bottom View

Section 3 - Installation and Wiring

Section 3.1 Connections

WARNING:

Installation and troubleshooting of input, output, and internal circuitry should be performed by qualified personnel only

NOTE:

It is very imp ortant to read and understand the controller manual before attempting to apply power to this control box. The controller has been preconfigured for thermocouple operation. Should the user desire to use another input such as RTD or Process using the M-12 connector provided, the user will need to remove the thermocouple wires and connect the wires from the M-12 connector on the back of the CNI Controller. The user will also need to reconfigure the input settings to configure the controller for the correct input type (RTD or Process (Voltage or Current) input). See the Controller Manual #M3355 for additional instructions. An example of a 4 wire RTD connection has been given later in this manual.

The CNI-CB120 is designed to operate using standard 120V, 60Hz.

The CNI-CB240 is designed to operate using standard 240V, 60Hz.

1) Attach properly sized input power cable thru bottom input cable gland, and assemble to labeled input fuse block. (DO NOT CONNECT POWER IF CHANGING INPUT TYPES).
2) If using a thermocouple, plug the thermocouple into the jack provided on the bottom of the unit.
3) If using RTD or Process Control, the user will need to rewire the input connections on the back of the back of the controller. MAKE SURE THE POWER IS NOT CONNECTED! (see Section 2.4.1 below for an example of converting it for 4 wire RTD input)
4) Attach properly sized output power cable thru bottom output cable gland, and assemble to labeled output fuse block.
5) The fuses have been preinstalled. Caution must be taken when replacing fuses because high voltage may be present at various locations within control box.
6) After all of the connections have been made AND THE DOOR IS SECURED, the user may turn the unit on. Turning on the power switch will turn the controller on. The outputs will be off at this point. The user can now program the controller for RTD or Process inputs if needed.
7) The set points can now be adjusted for each output.
8) When the set points are adjusted, pressing the down arrow twice will return the controller to run mode and it will begin to control.

NOTE:

IT IS VERY IMPORTANT TO READ AND UNDERSTAND THE CONTROLLER MANUALS BEFORE OPERATING THE CONTROL BOX.

The CNI Temperature/Process Controller has a lot of functionality. The menu structure in the quick start manual gives the user an easy understanding of how to move thru the settings in the controller. Some of the functions are not enabled for this controller.

Section 3.1.1 Rewiring for 4 Wire 100 Ohm RTD Input

WARNING:

Shock hazard, Disconnect the power cable from the power source before rewiring.

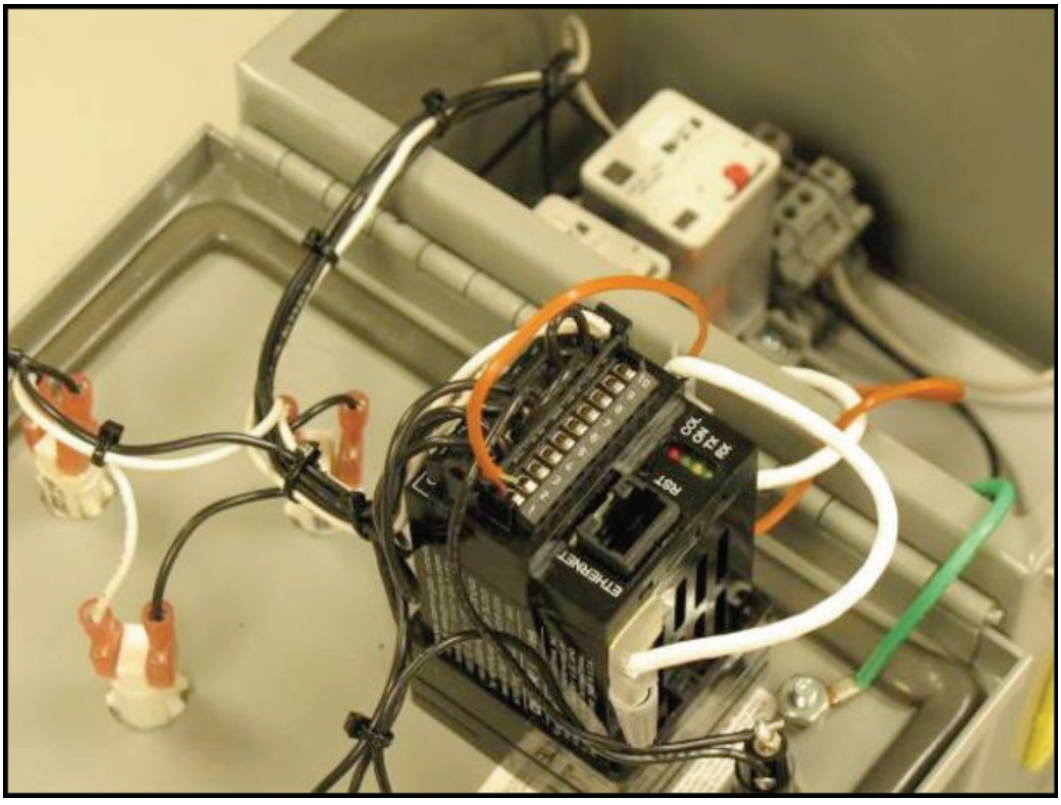


Figure 3-1. From The Factory

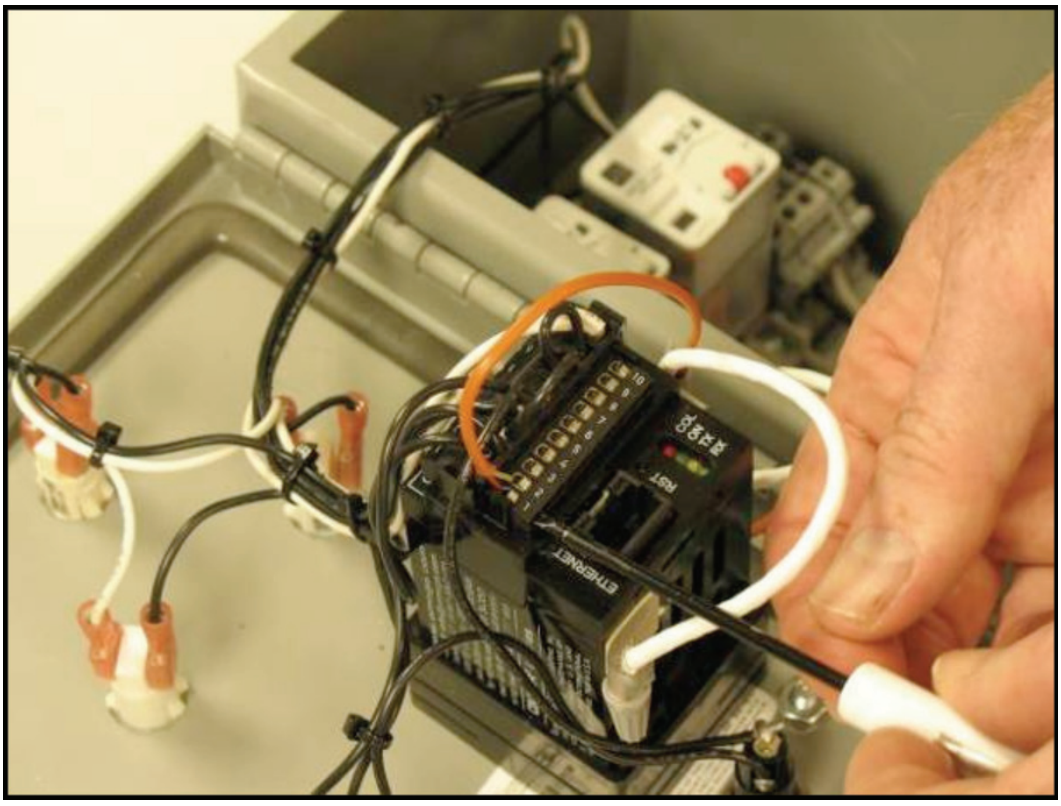


Figure 3-2. Remove The Thermocouple Wire From 1 and 2

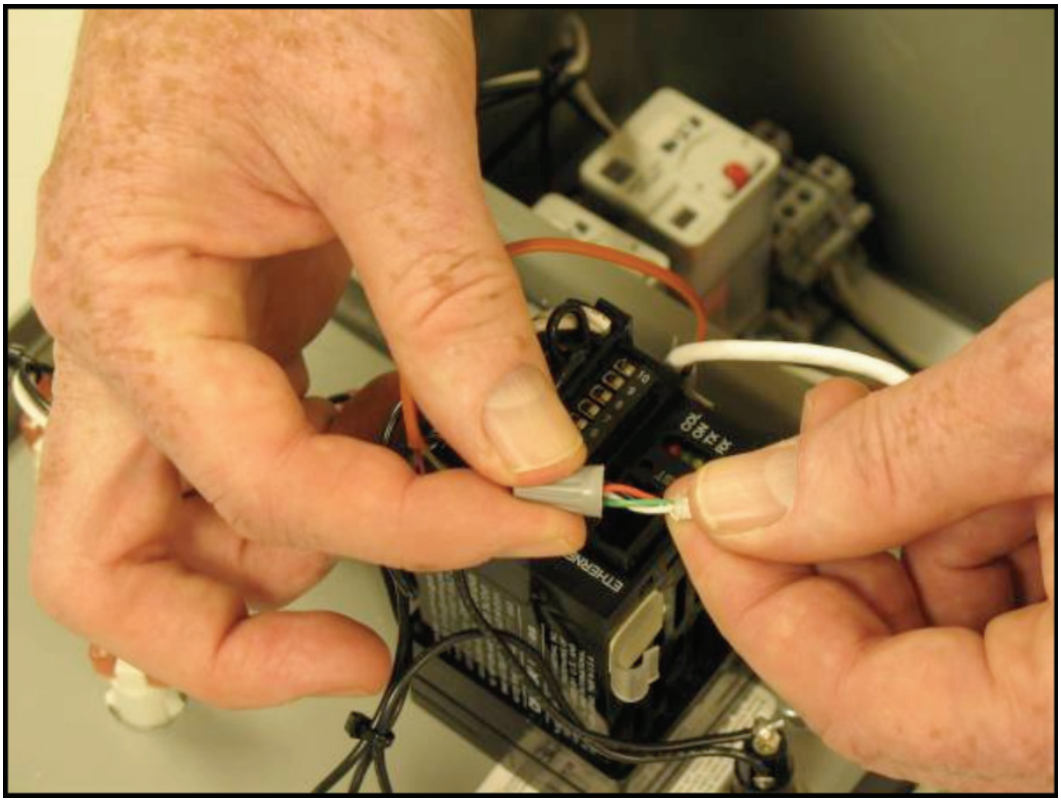


Figure 3-3. Unclip the M12 Connector Wire

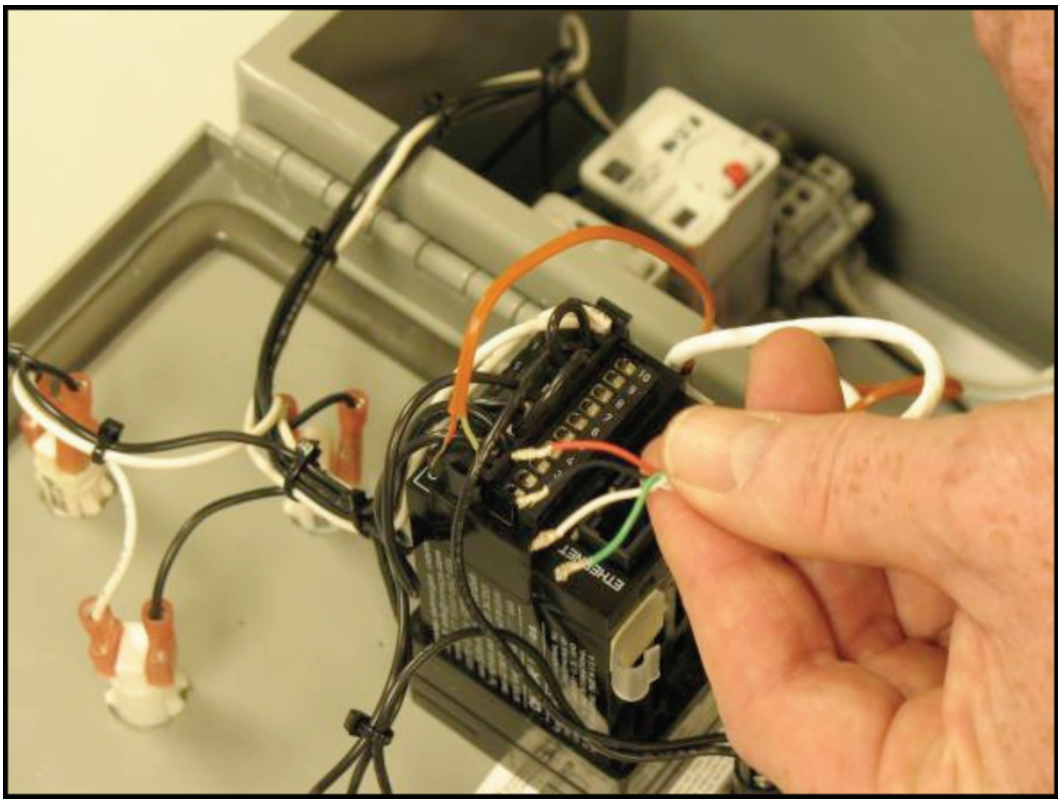


Figure 3-4. Remove Wire Nut

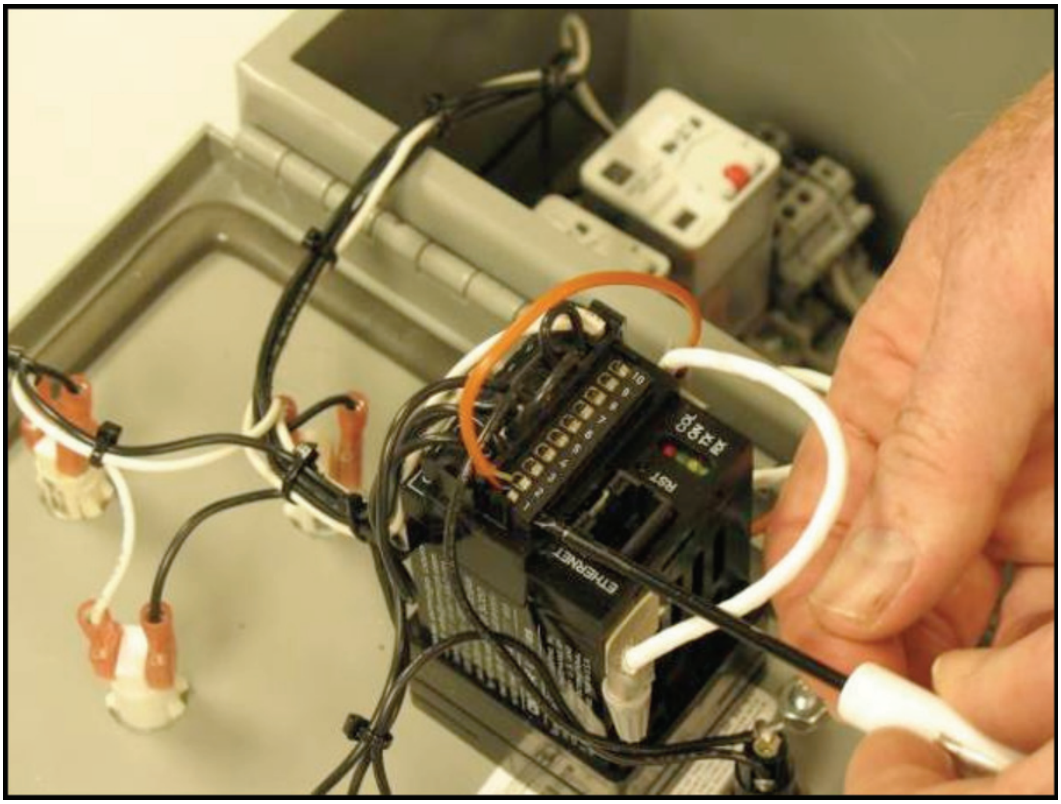


Figure 3-5. Install Wires Per Wiring Diagram

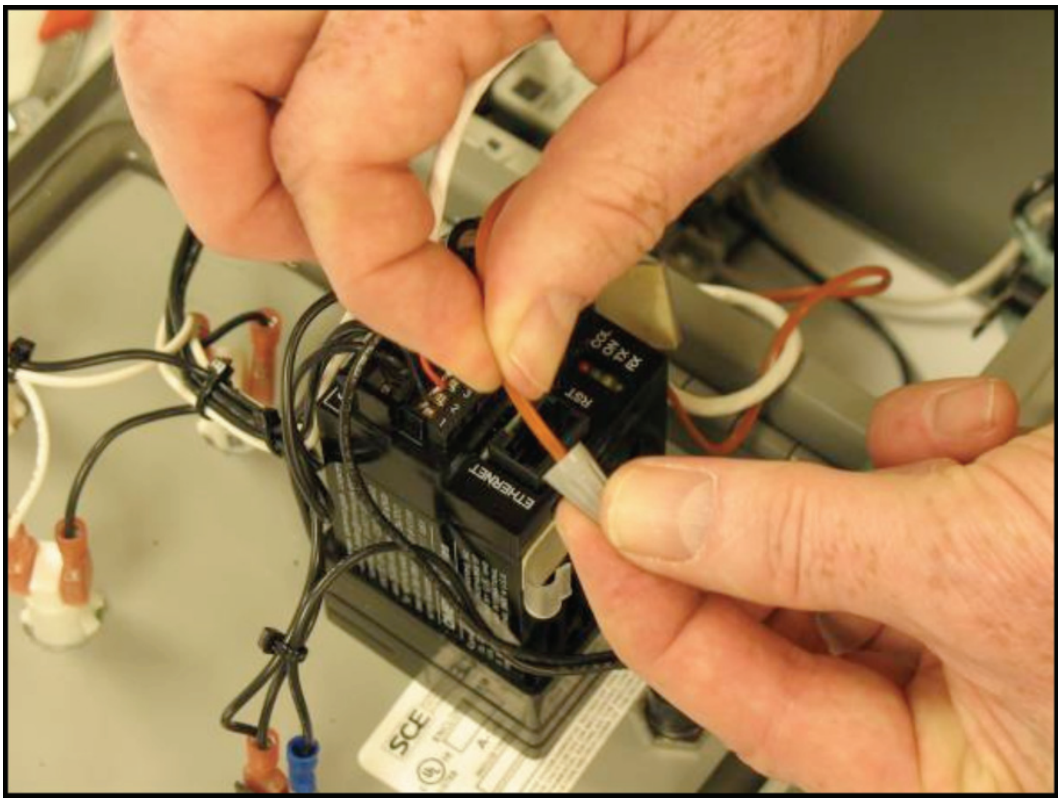


Figure 3-6. Place Wire Nut on T/C Wire

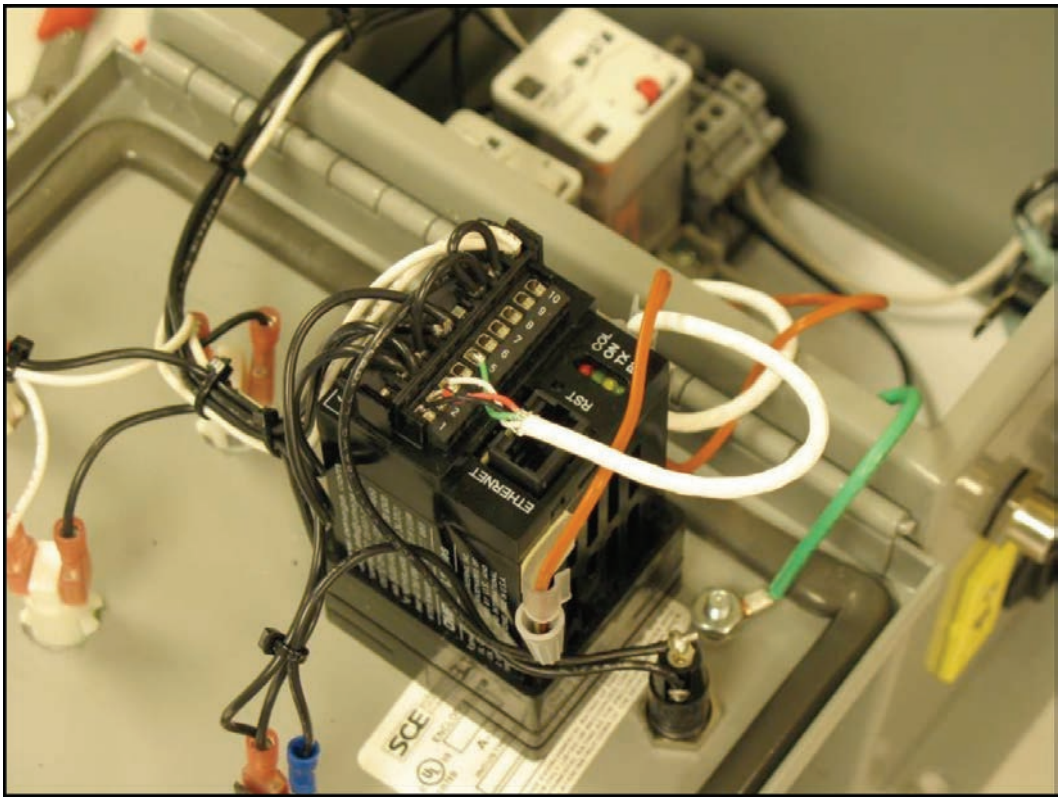


Figure 3-7. Place Wire Into Clip To Secure It. Close Box And Secure Box Cover Screws.

Section 3.1.2 Programming the Controller For 4 Wire 100 Ohm RTD

Now that the controller wiring has been properly connected for 4 wire,100 OHM usage the controller input needs to be set up to allow the controller to operate correctly. This is easily accomplished in the example below. Referencing the Menu diagram at the bottom right of page 2 of the Quick Start Manual the user will see the input portion below.

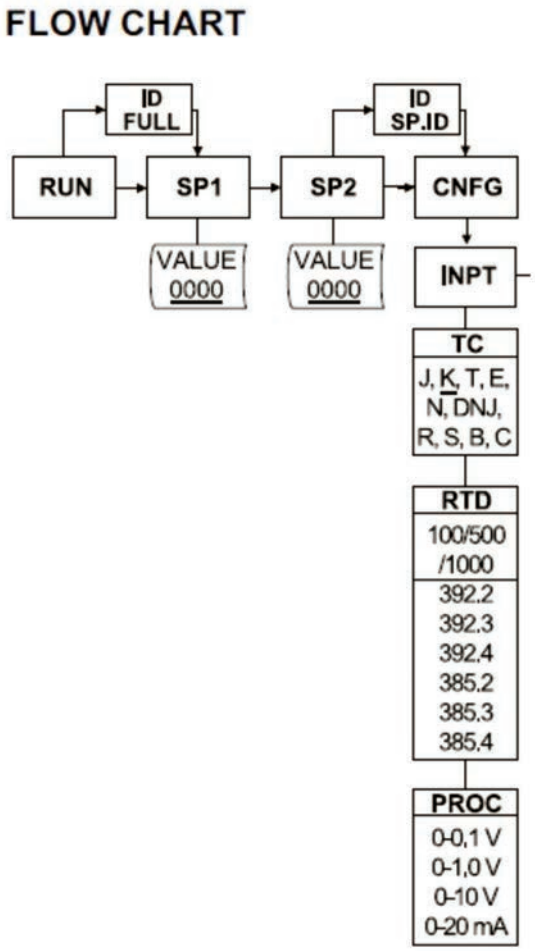


Figure 3-8. Flow Chart

The following steps will set the controller for 4 wire RTD.

1) From the RUN screen press the menu button (far left button). SP1 is displayed
2) Press the menu button again. SP2 is displayed.
3) Press the Menu button again and CNFG is displayed.
4) Press the enter button (far right) and INPT is displayed. This is where the inputs for the controller are changed and stored.
5) Press the menu Button and TC is displayed. Press the menu button and next RTD is displayed. Press the enter button to choose this option.

6) Use the down arrow to select the correct type RTD curve. Most RTD's are 385 or European curve. The period 2, 3, or 4 stands for how many wire RTD it is. So in this case we use 385.4 since we are connecting a 4 wire RTD. (Consult the RTD manufacture if you are unsure which type RTD you have.)

7) Press enter to save the change.

8) Next RDG is displayed. Press the down arrow 2 times and this will exit the menu system and return you to RUN mode.

9) You should now be reading the correct temperature on the face is the unit.

Section 3.2: Wiring Schematics

3.2.1 CNi-CB120 Wiring

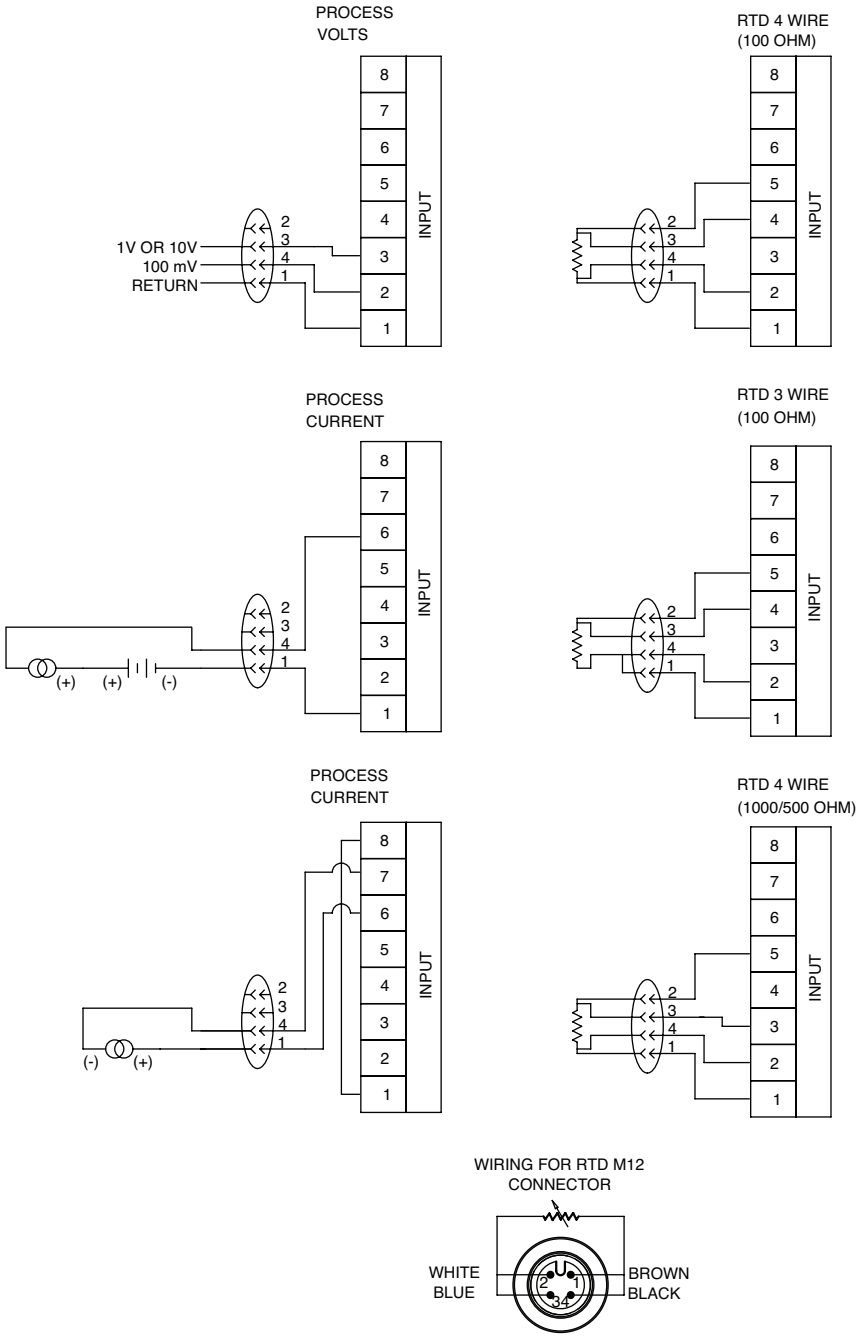


Figure 3-9. CNi-CB120 Output Wiring

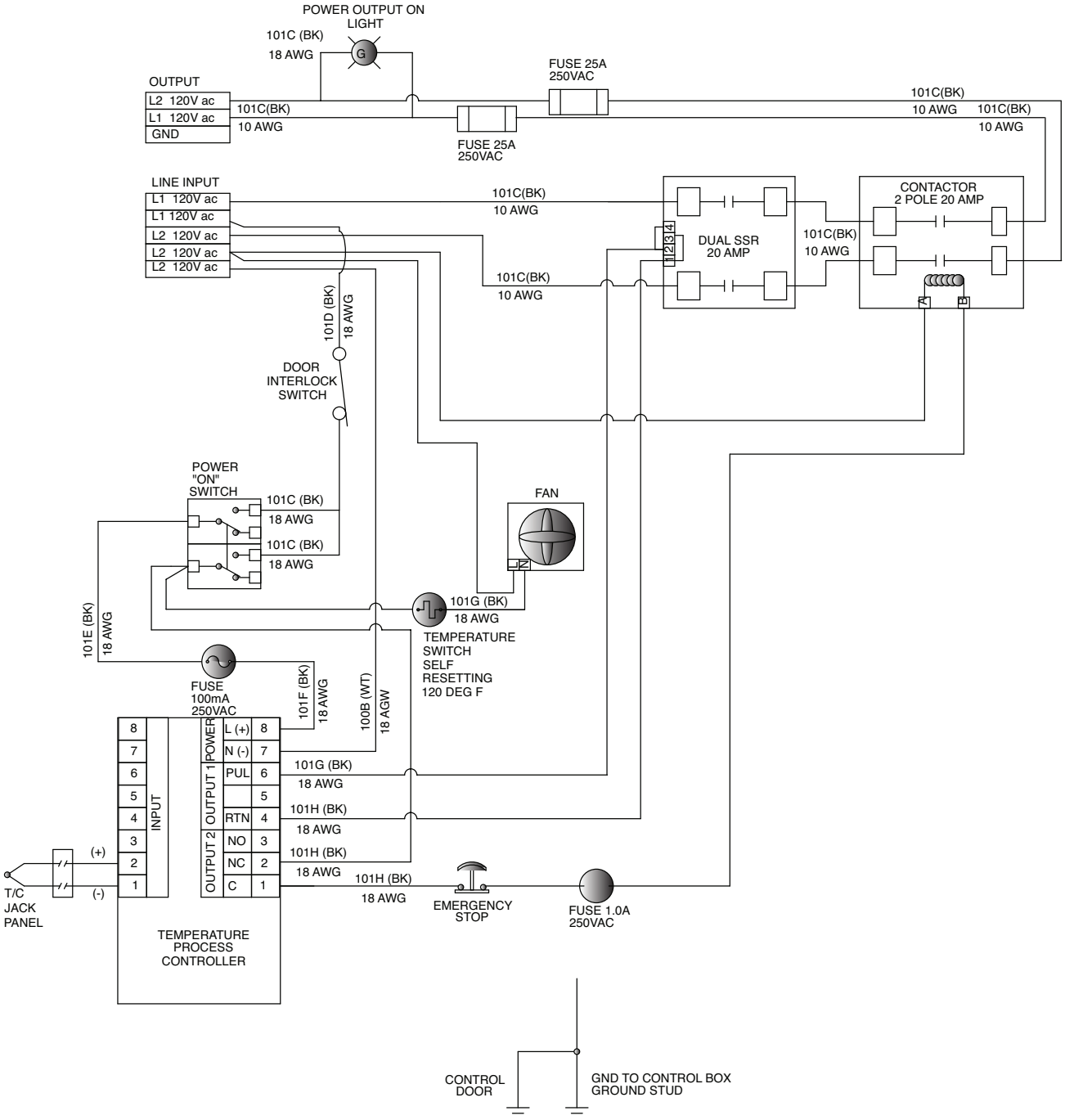


Figure 3-10. CNi-CB120 Internal Wiring

3.2.2 CNi-CB240 Wiring

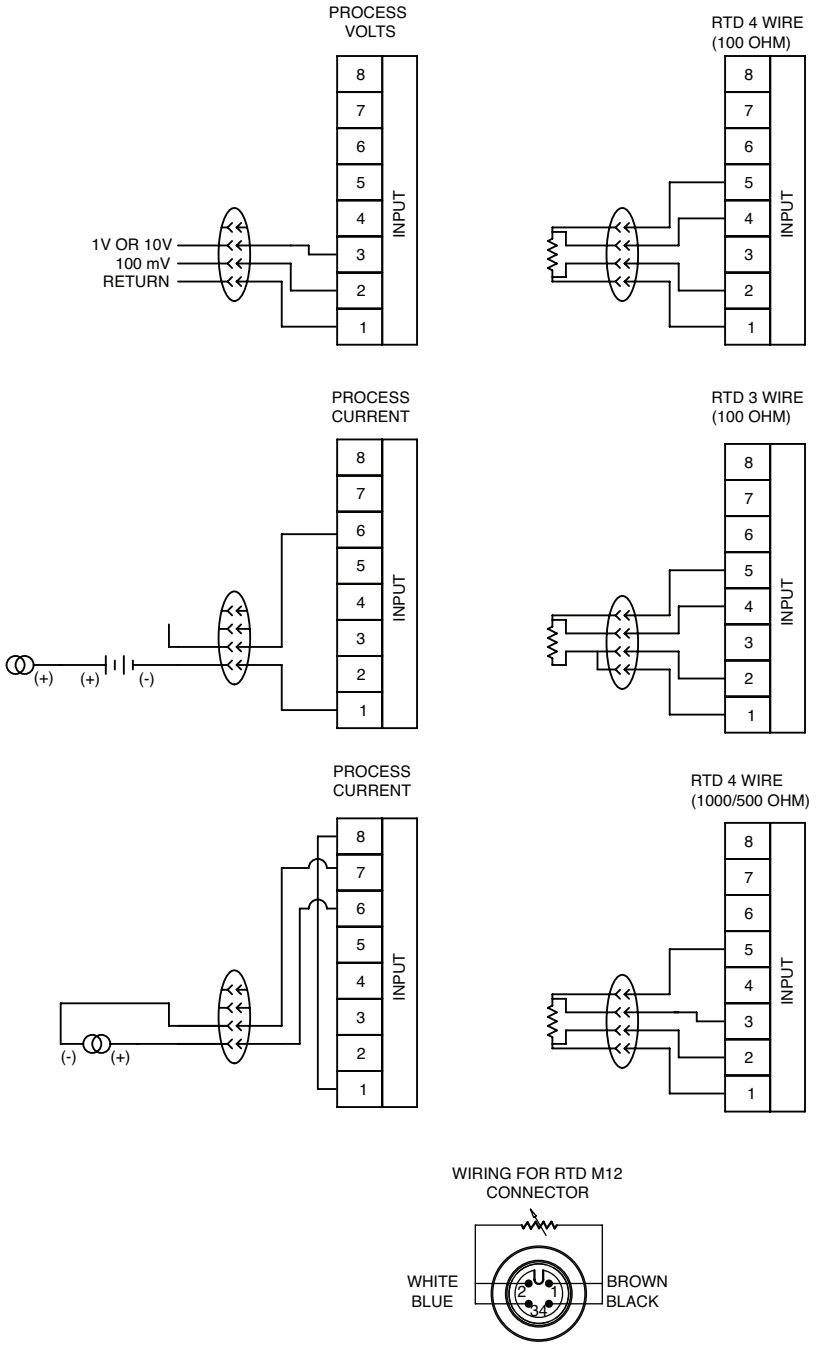


Figure 3-11. CNi-CB240 Output Wiring

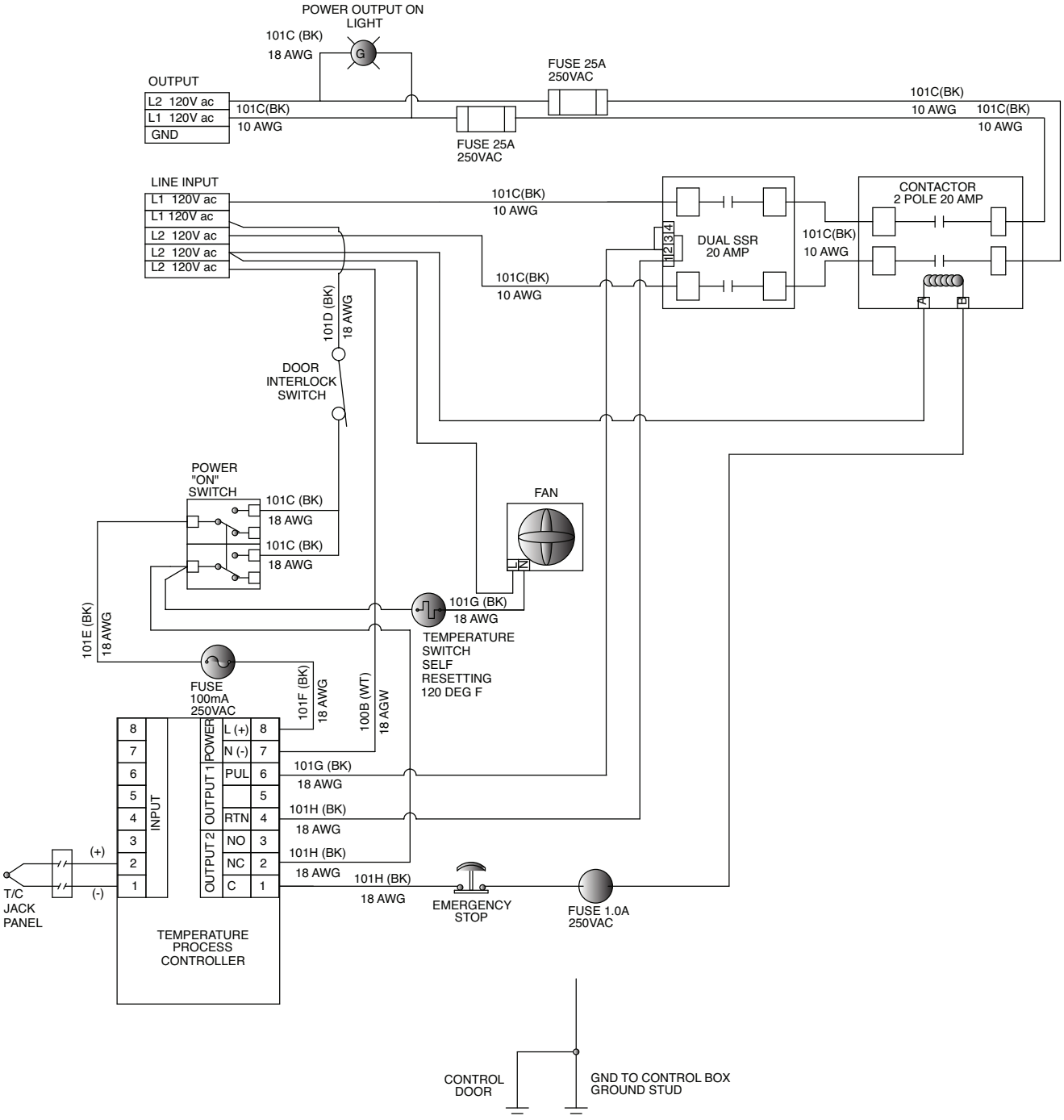


Figure 3-12. CNi-CB240 Internal Wiring

Section 4 - Spare Parts

The following parts are used in the CNI-CB120:

Item	Omega PN	Omega Catalog Page URL
30 A Contactor, Single Pole	C25CNB130A	http://www.omega.com/Auto/pdf/C25.pdf
Solid State Relay	SSRL240DC25	http://www.omega.com/Temperature/pdf/SSRL240_660.pdf
Controller Fuse, 100 mA, Fast Acting, 5 x 20 mm	CB-0051	
Output Fuse, 25 A, Fast Acting	CB-0032	
Relay Fuse, 1 A, Fast Acting, 5 x 20 mm	BB-0303	

The following parts are used in the CNI-CB240:

Item	Omega PN	Omega Catalog Page URL
30 A Contactor, Double Pole	C25BNB230B	http://www.omega.com/Auto/pdf/C25.pdf
Solid State Relay, Double Pole	SSRLDUAL240DC25	http://www.omega.com/Temperature/pdf/SSRDUAL240.pdf
Controller Fuse, 100 mA, Fast Acting, 5 x 20 mm	CB-0051	
Output Fuse, 25 A, Fast Acting	CB-0032	
Relay Fuse, 1 A, Fast Acting, 5 x 20 mm	BB-0303	

Section 5 - Specifications

CNi-CB120

Control:	One 120 Vac input that powers one 25 Amp SSR controlled output
Rating:	120 Vac, 60Hz, 25 Amps (2400 Watts resistive load)
Dimensions:	305 H x 254 W x 152 mm D (12 H x 10 W x 6″ D)
Weight:	14 lbs.
Operating Temperature:	0 to 55° (32 to 151°F)
Controller Fuse:	100 mA 250 Vac
Output Fuses:	25 Amps 250 Vac
Contactor Fuse:	1 Amp 250 Vac

For Indoor use only

CNi-CB240:

Control:	One 240 Vac input that powers one 25 Amp SSR controlled output
Rating:	240 Vac, 60 Hz, 20 Amps (4800 Watts resistive load)
Dimensions:	305 H x 254 W x 152 mm D (12 H x 10 W x 6″ D)
Weight:	14 lbs
Operating Temperature:	0 to 55°C (32 to 151°F)
Controller Fuse:	100 mA 250 Vac
Output Fuses:	25 Amps 250 Vac
Contactor Fuse:	1 Amp 250 Vac

For Indoor use only

NOTES:

MADE IN USA

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **61 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **five (5) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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HEATERS

- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL

- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments

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