

RWL11X2 GREENHOUSE CONTROLLER

Installation Manual

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Installation Overview

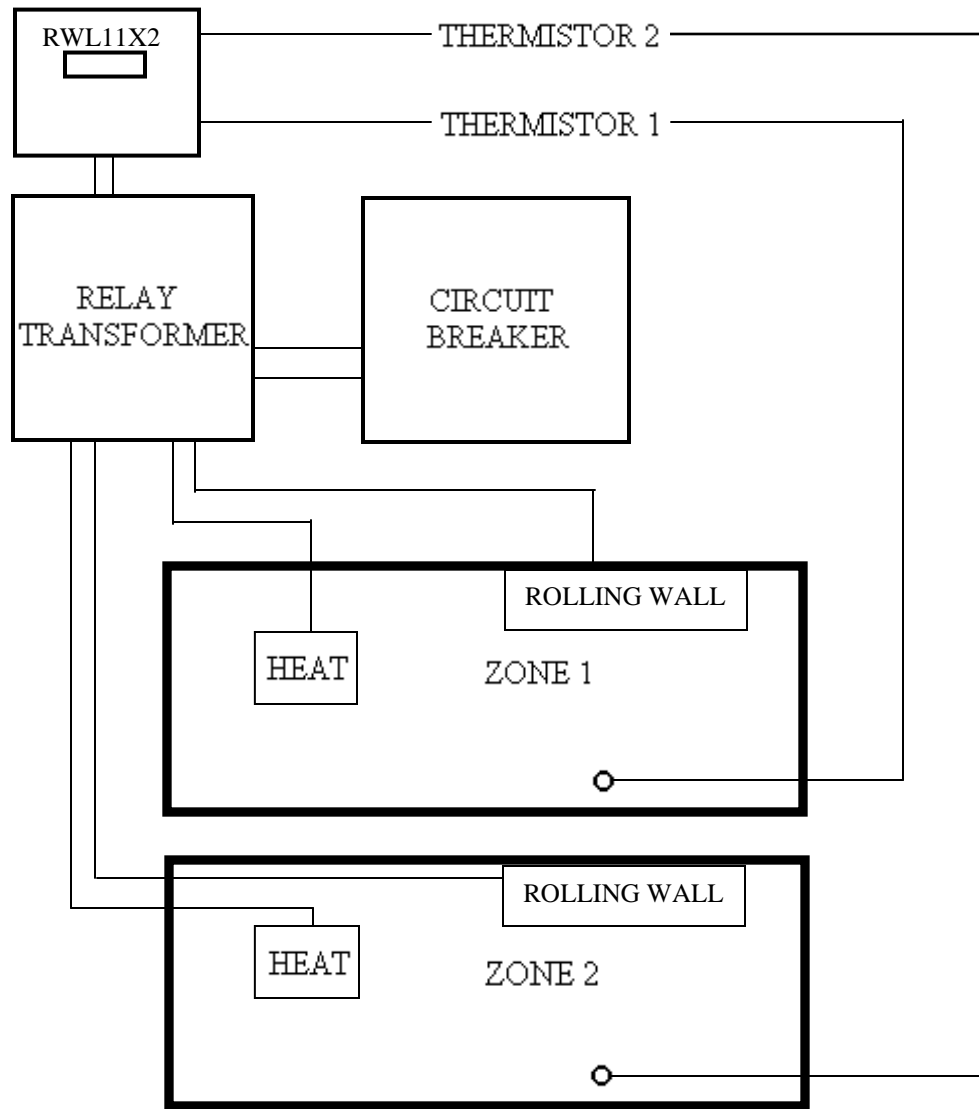


Figure 1

A typical installation consists of a circuit breaker box, relay/transformer box, and a RWL11X2. The circuit breaker box provides overload protection. The relay/transformer box switches line power to the appliances. The RWL11X2 also senses temperature and provides control signals.



BE SURE ALL POWER IS OFF BEFORE INSTALLATION!

INSTALLATION SHOULD BE DONE BY A LICENSED ELECTRICIAN.

BE SURE ALL WIRING AND EQUIPMENT IS INSTALLED ACCORDING TO LOCAL ELECTRICAL CODES.

THE RWL11X2 IS A LOW VOLTAGE DEVICE. LIMITED TO 24V AC CONTROL VOLTAGES.

CAUTION: The RWL11X2 is designed to be reliable but as with all equipment, failures do occur. Therefore, in situations where loss could result from the failure of the RWL11X2, separate backup thermostat or alarm systems should be installed.

The reliability and performance of the RWL11X2 can be compromised by locating the controller in direct sunlight or in direct water spray.

PLACEMENT AND MOUNTING

Mount the RWL11X2 in an easy-access location. Usually close to the breaker box and relay box. Protect it from direct sunlight for better reliability and readability. Moisture can cause corrosion and premature failure, so avoid direct water and have all wires enter and leave through liquid-tight connectors, waterproof conduit, or seal the wires with silicone sealant.

WARNING:

Some sealants release acetic acid while curing. Be sure sealant is completely cured (up to 3 days) before closing control box to avoid corrosion damage. All openings for wiring should be in the bottom of the box when mounted.

To mount the RWL11X2, remove the front cover and unplug ribbon cable from the relay board. Insert the 4 self-drilling screws provided with the RWL11X2 through the 4 screw-hole knockouts and fasten the box to the wall. Cover the screw heads with plastic cups provided. After all wiring is complete and any sealant cured, reattach the ribbon cable and screw on the front cover.

As an alternative, you can mount the RWL11X2 with drywall screws placed through the corner holes of the box.

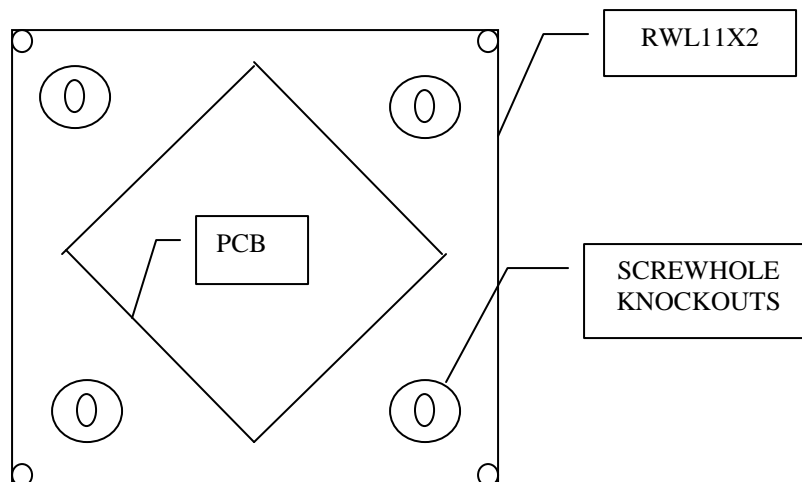


Figure 2

RWL11X2

OUTPUT SPECIFICATIONS

OUTPUT	CONTACT TYPE	VOLTAGE RATING	CURRENT RATING
HEAT	DRY CONTACT OR SOURCE 24V AC	24V AC	2A RESISTIVE LOAD
OPEN CLOSE TIMER	SOURCE 24V AC	24V AC	2A RESISTIVE LOAD
ALARM	DRY CONTACT	24V AC	2A RESISTIVE LOAD

All open, close, and timer outputs, source 24V AC to drive a relay or contactor. The RWL11X2's drive relays are rated at 2A when driving a resistance load. For reliability snubber circuits are on each output. For even greater reliability, load currents on the RWL11X2's relays should be less than 1A (less than 24 VA per output).

OUTPUT CONFIGURATION

Each 24 VAC output has a contact that is common to 24VAC input line 2 (24L2) and a contact that is 24VAC line 1 switched through a relay.

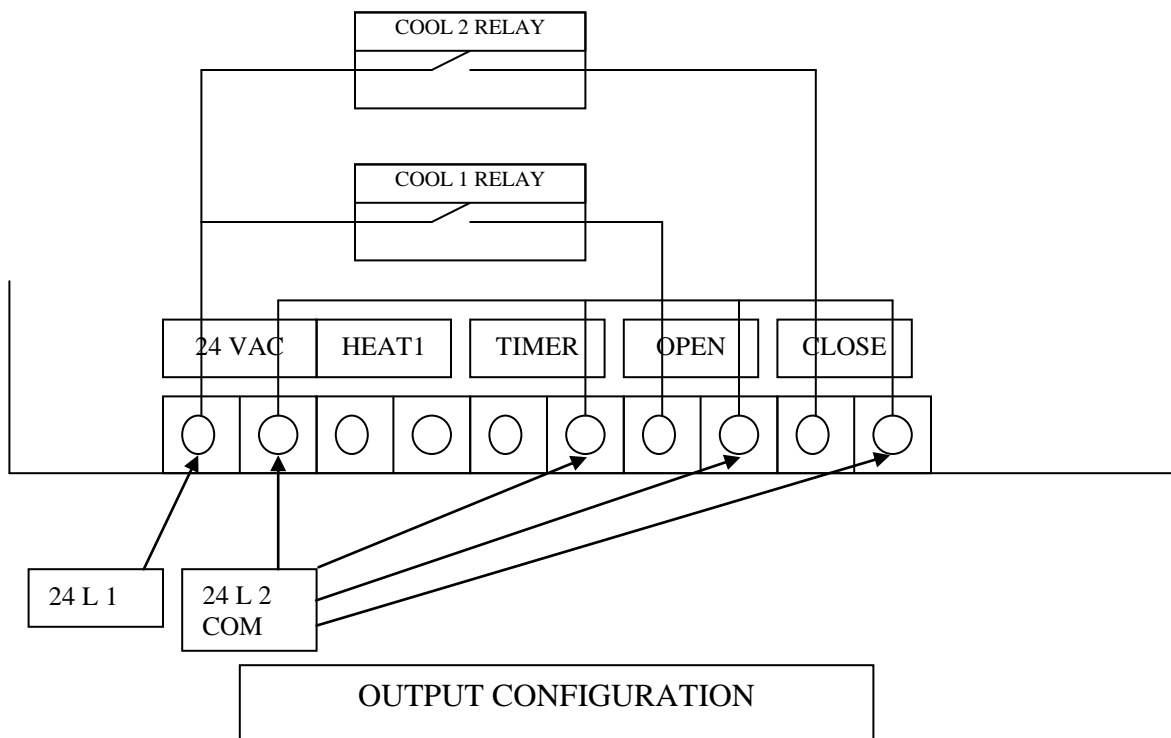
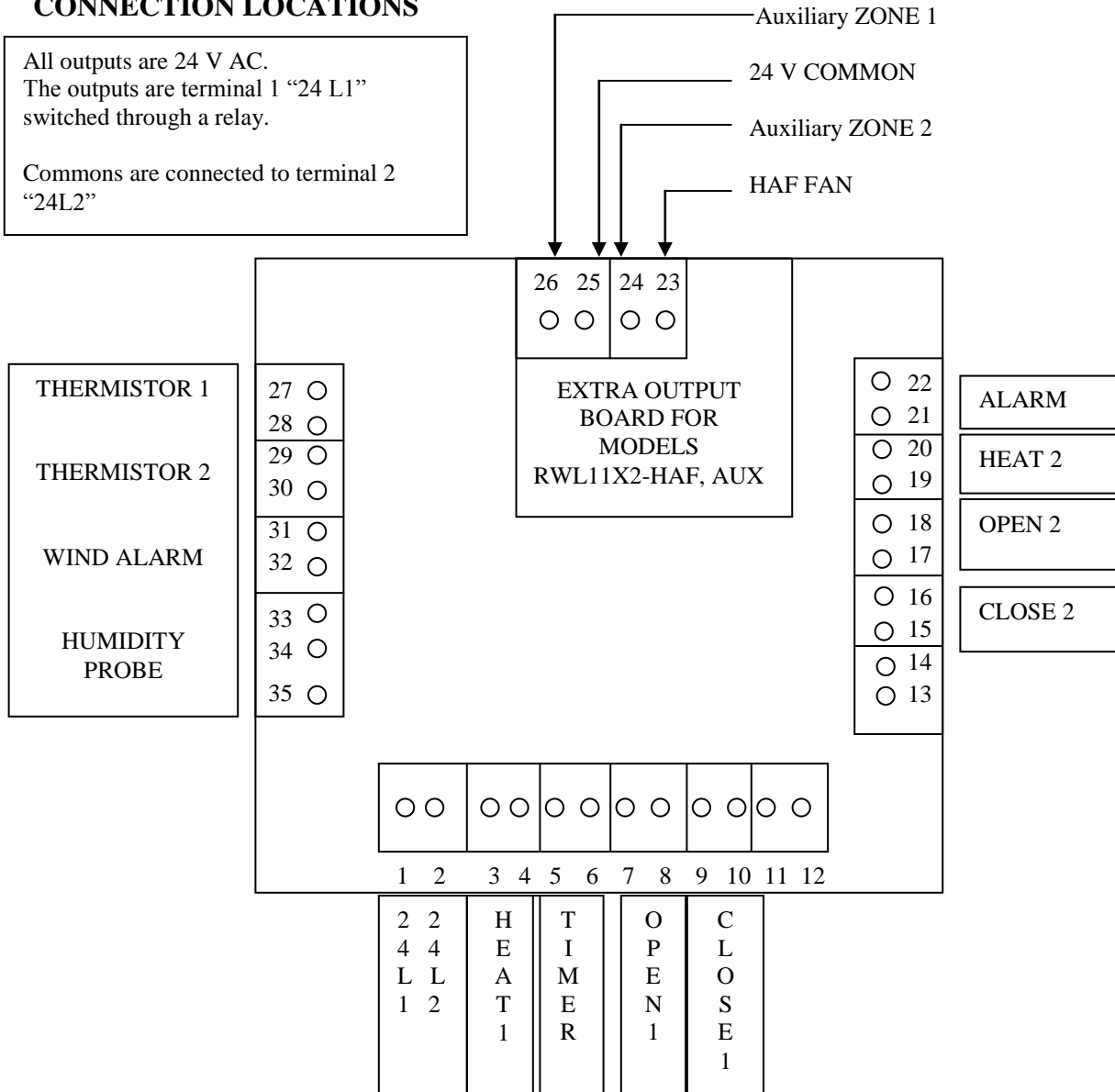


Figure 3

CONNECTION LOCATIONS

All outputs are 24 V AC.
The outputs are terminal 1 “24 L1”
switched through a relay.

Commons are connected to terminal 2
“24L2”



TERMINAL	DESCRIPTION
1	24VAC L1
2	24VAC L2 COM
3	HEAT 1 OUT
4	HEAT 1 COM
5	TIMER OUT
6	TIMER COM
7	OPEN 1 OUT
8	OPEN 1 COM
9	CLOSE 1 OUT
10	CLOSE 1 COM
11	NOT USED
12	NOT USED

TERMINAL	DESCRIPTION
13	NOT USED
14	NOT USED
15	CLOSE 2 OUT
16	CLOSE 2 COM
17	OPEN 2 OUT
18	OPEN 2 COM
19	HEAT 2 OUT
20	HEAT 2 COM
21	ALARM
22	ALARM
23	HAF OUT
24	Auxiliary ZONE 2

TERMINAL	DESCRIPTION
25	COM
26	Auxiliary ZONE 1
27	THERMISTOR 1
28	THERMISTOR 1
29	THERMISTOR 2
30	THERMISTOR 2
31	WIND ALARM
32	WIND ALARM
33	HUM. IN
34	HUM. POWER
35	HUM. GROUND

Figure 4

HEAT OUTPUTS

The heat outputs can be configured as a dry contact like a thermostat or to source 24V AC to drive a relay. Open/closed contacts is the factory setting.

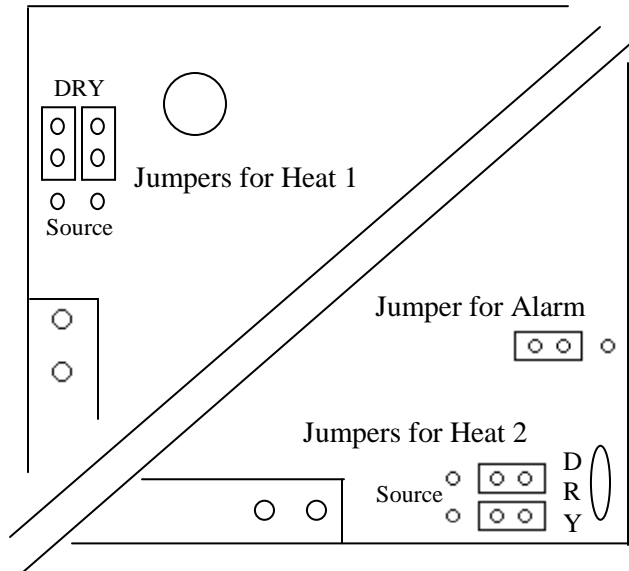


Figure 5

Jumpers shown for Heat 1 and Heat 2 are configured as OPEN/CLOSED contacts.

Jumper for Alarm is showing a normally open configuration.

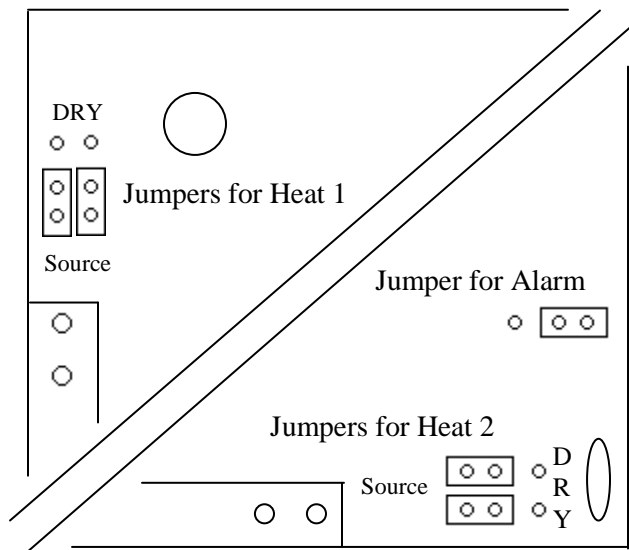


Figure 6

Jumpers shown for Heat 1 and Heat 2 are configured to SOURCE 24V AC.

Jumper for Alarm is showing a normally closed configuration.

HEAT OUTPUTS cont.

When controlling more than one heater from one heat output, configure the output to source 24V AC to drive a relay(s) to keep the control loops separate.

Also, when controlling a line voltage heater, configure the heat output to source 24V AC to drive a relay of sufficient capacity to run the heater.

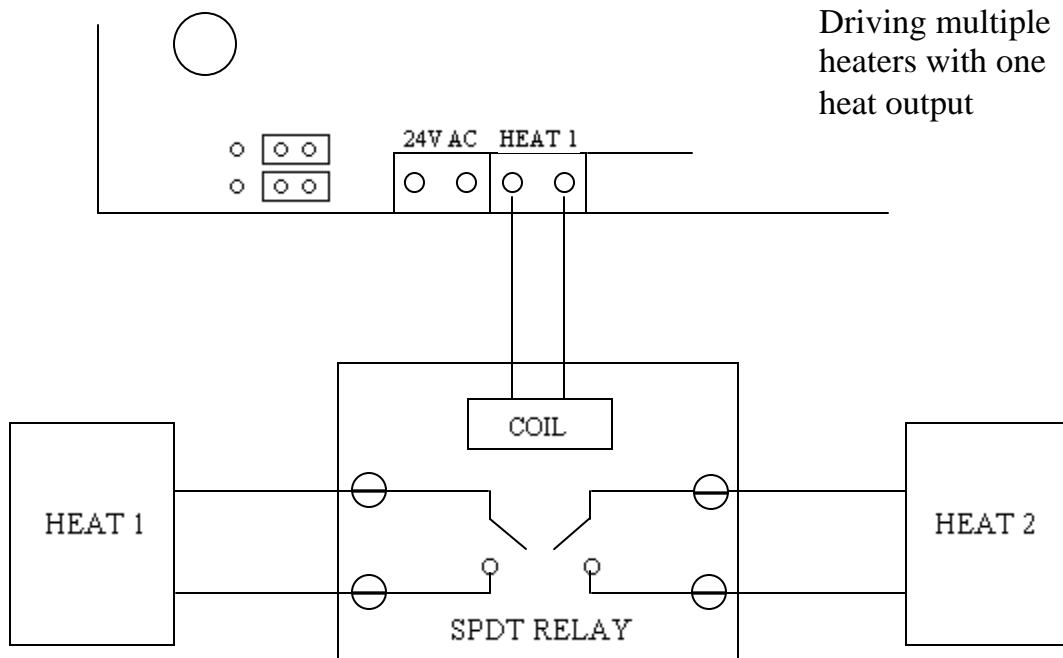


Figure 7

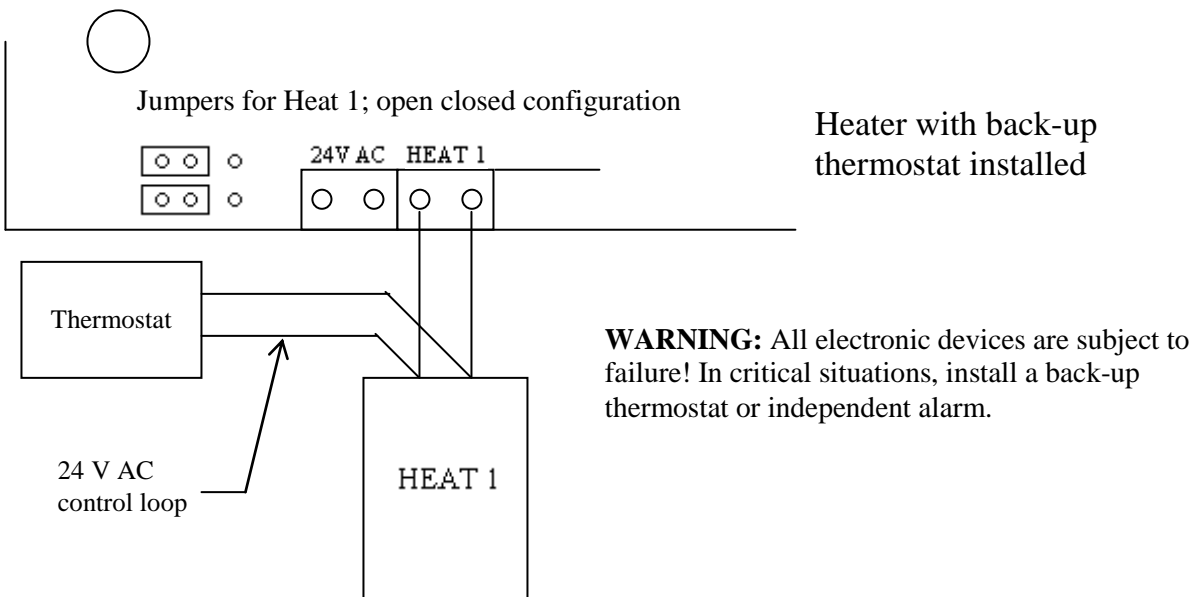


Figure 8

TIMER OUTPUT

The timer output sources 24V AC to drive a solenoid or relay(s). The solenoid should have a coil with less than a 24VA load.

ALARM OUTPUT

The alarm is an open/closed contact. When the RWL11X2 is powered and operating properly, the contacts are CLOSED. The contacts OPEN when power is lost or when the high or low alarm is triggered. The alarm output can be configured for either normally open or normally closed by changing the jumper for the alarm output. See **Figure 5** and **Figure 6** for jumper placement.

THERMISTOR

The thermistor is the temperature sensor. The RWL11X2 has two thermistor inputs labeled TH1 and TH2. In 1-zone mode, the readings are averaged and displayed. In the 2-zone mode, Heat 1, Cool 1, and Cool 2 work to keep TH1 at the correct temperature. Also, Heat 2, Cool 3, and Cool 4 work together to keep TH2 at the desired temperature.

The thermistors should be slightly above the plant height. To ensure proper readings, it should not be in direct sunlight or where it will be sprayed with water. It is generally placed closer to the cool air inlet and further from the heat. In 1 zone mode separate the thermistors across the width of the greenhouse to give the best average temperature. See **Figure 9** below.

The thermistors come with 24' leads and can be connected directly to the two terminals for TH1 and to the two terminals for TH2. There is no special orientation to the thermistor leads.

Should you need to extend the leads of the thermistor, use the 3M Scotchlock™ sealed connectors provided. Use only wire size of 22-14 AWG to ensure proper connection. A faulty connection will cause erroneous temperature readings. Up to 300' of wire can be added without affecting the temperature reading.

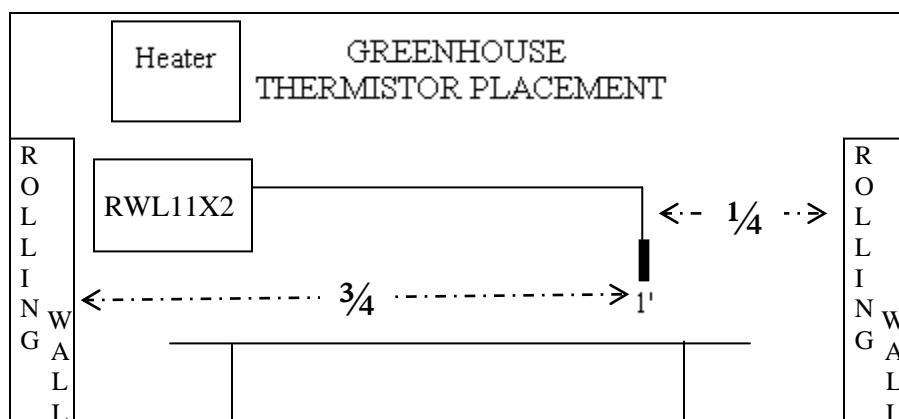


Figure 9

Proportional Outputs

Each proportional output has an open and close signal to drive relays or contactors. It is best to use double-throw relays to ensure the power has been removed from the close contacts before energizing the open contact.

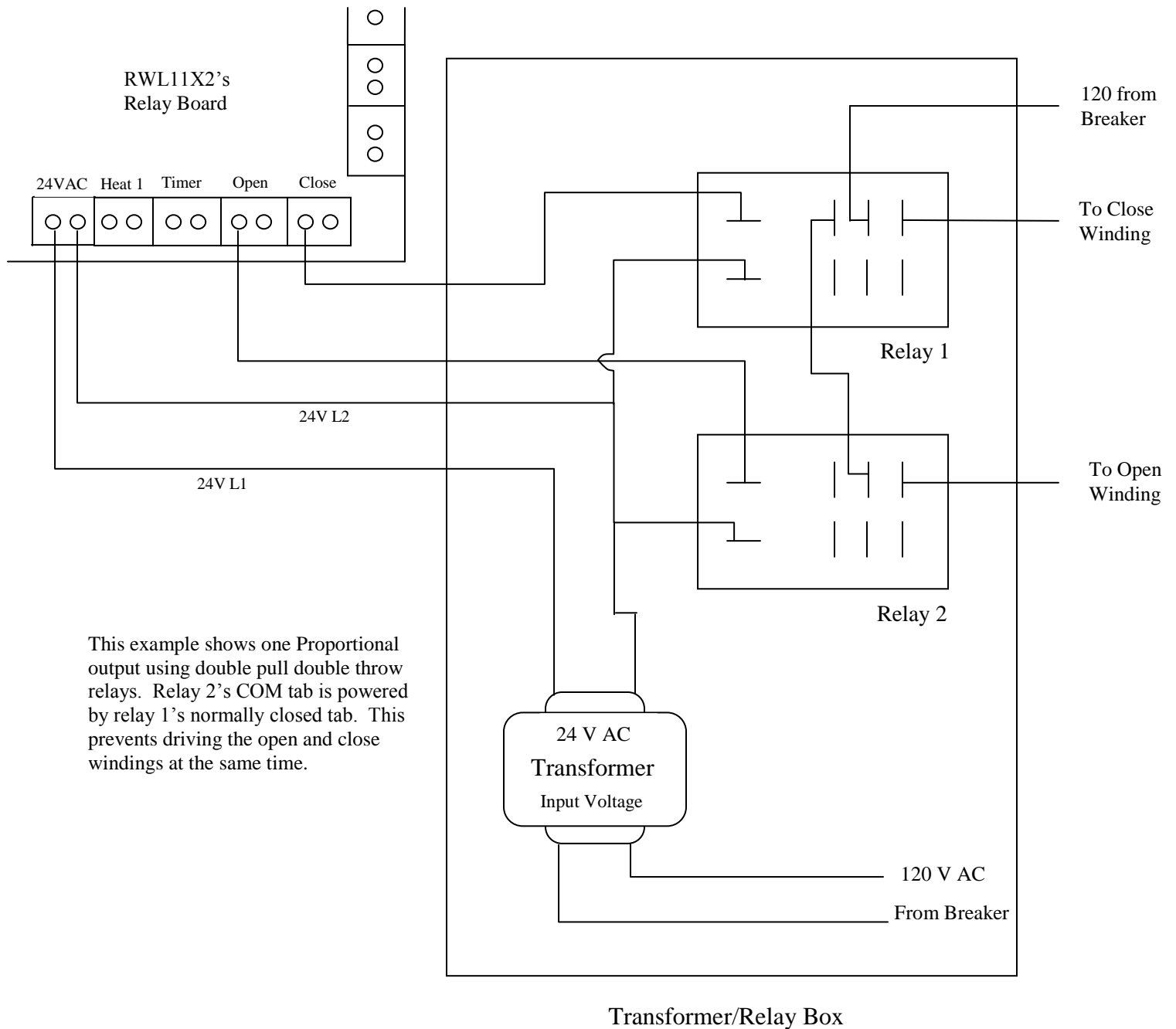


Figure 10

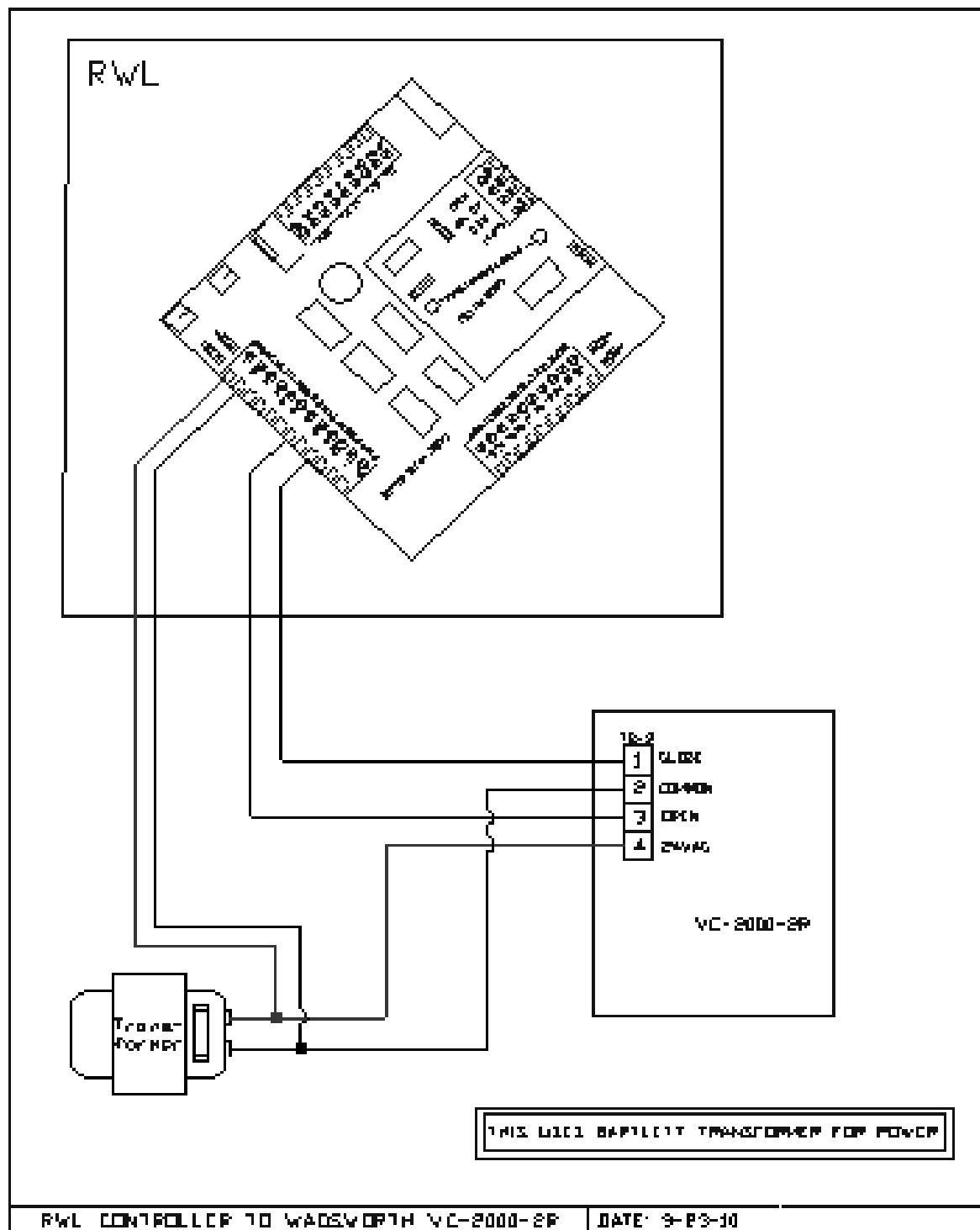


Figure 11

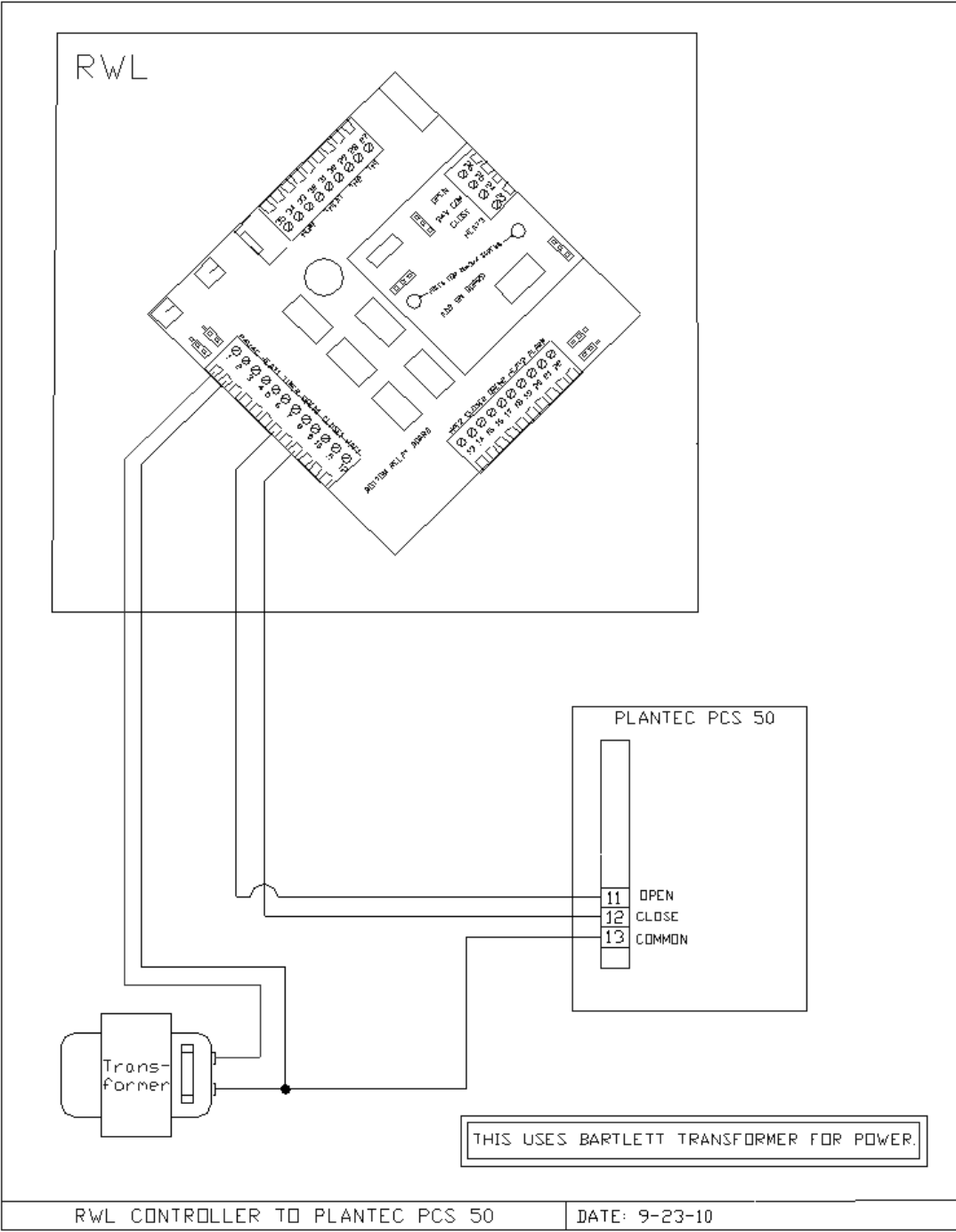


Figure 12

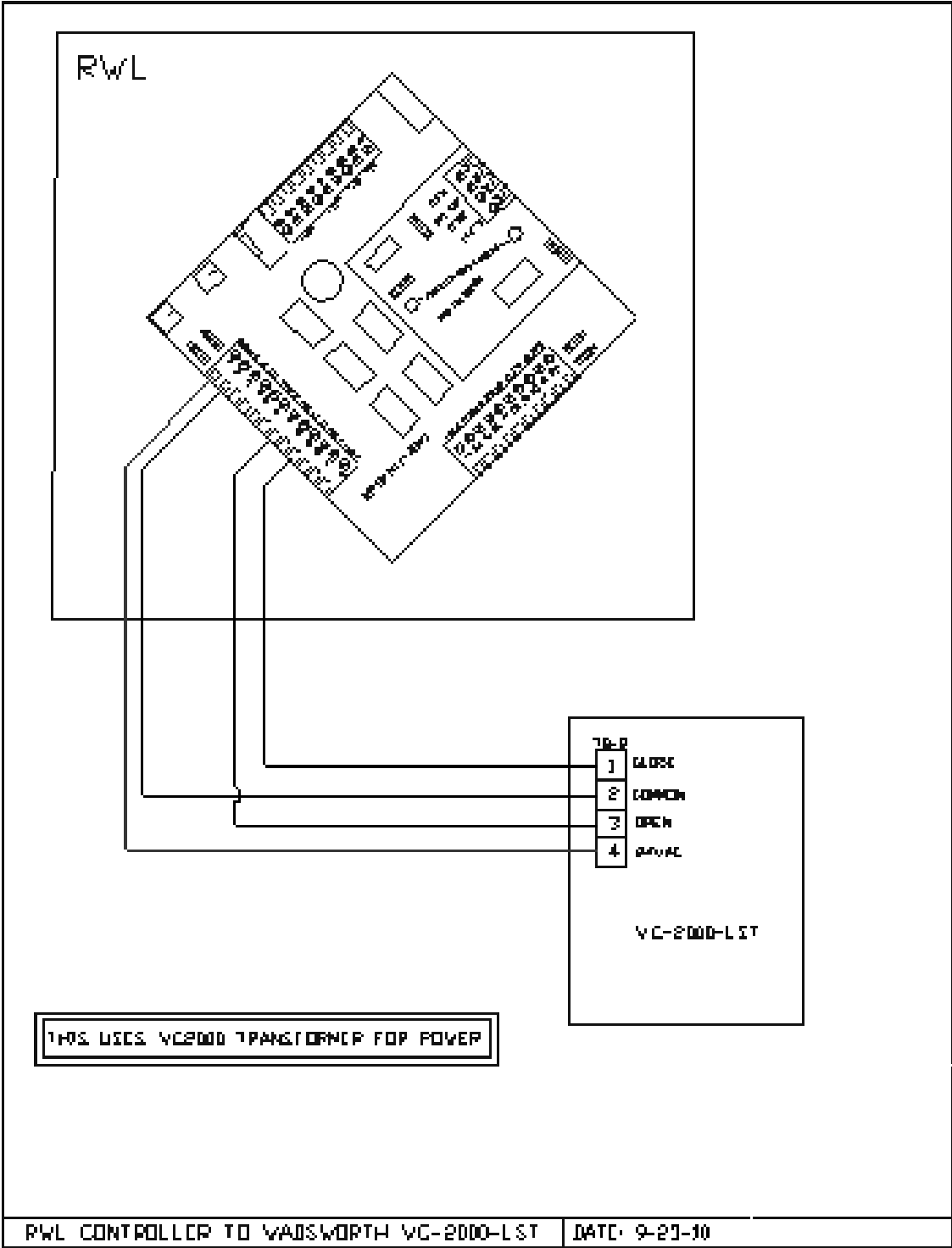


Figure 13

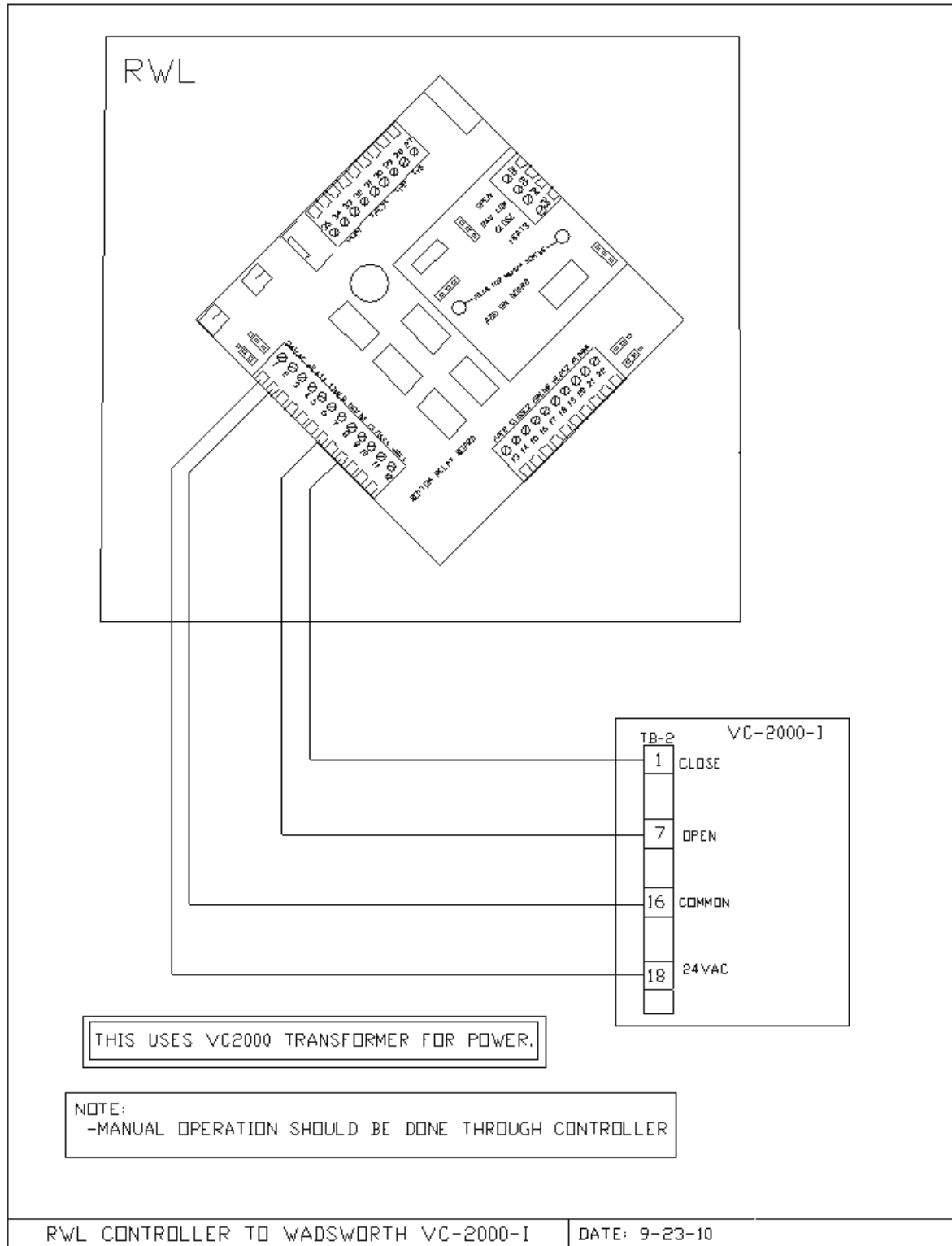


Figure 14

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