Line voltage wiring

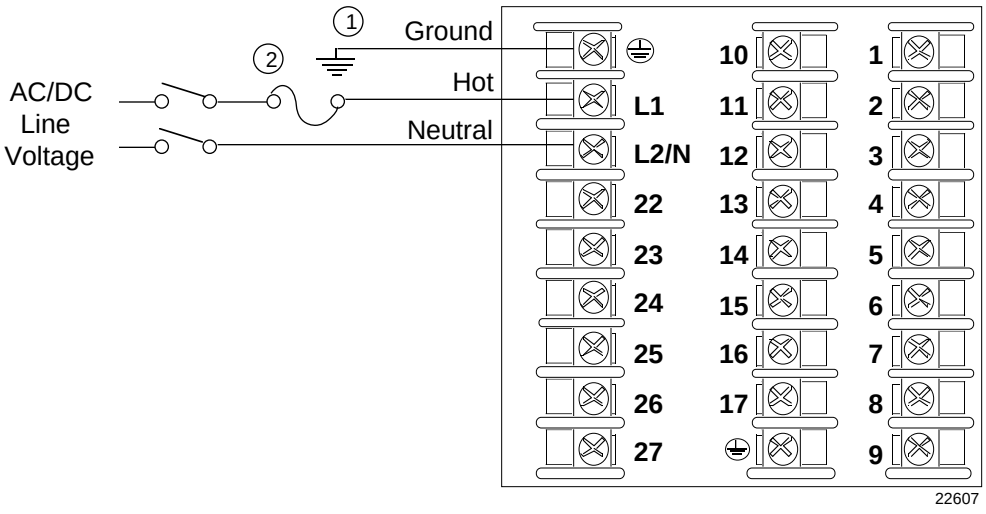
This equipment is suitable for connection to 90-264 Vac or 24 Vac/dc, 50/60 Hz, power supply mains. It is the user's responsibility to provide a switch and non-time delay (North America), quick-acting, high breaking capacity, Type F, (Europe) 1/2 A, 250 V fuse(s) or circuit-breaker for 90-264 V; or 1 A, 125 V fuse or circuit breaker for 24 Vac/dc operation, as part of the installation. The switch or circuit-breaker should be located close to the controller, *within easy reach of the operator*. The switch or circuit-breaker should be marked as the disconnecting device for the controller (4 mm^2).

CAUTION **Applying 90-264 Vac to a controller rated for 24 Vac/dc will severely damage the controller and is a fire and smoke hazard.**

When applying power to multiple instruments, make sure that sufficient current is supplied. Otherwise, the instruments may not start up normally due to the voltage drop caused by the in-rush current.

Figure 2-5 shows the wiring connections for line voltage.

Figure 2-5 Line Voltage Wiring



(1) PROTECTIVE BONDING (grounding) of this controller and the enclosure in which it is installed, shall be in accordance with National and local electrical codes. To minimize electrical noise and transients that may adversly affect the system, supplementary bonding of the controller enclosure to a local ground, using a No. 12 (4 mm^2) copper conductor, is recommended.

(2) Provide a switch and non-time delay (North America), quick-acting, high breaking capacity, Type F, (Europe) 1/2 A, 250 V fuse(s) or circuit-breaker for 90-264 V; or 1 A, 125 V fuse or circuit breaker for 24 Vac/dc operation, as part of the installation.

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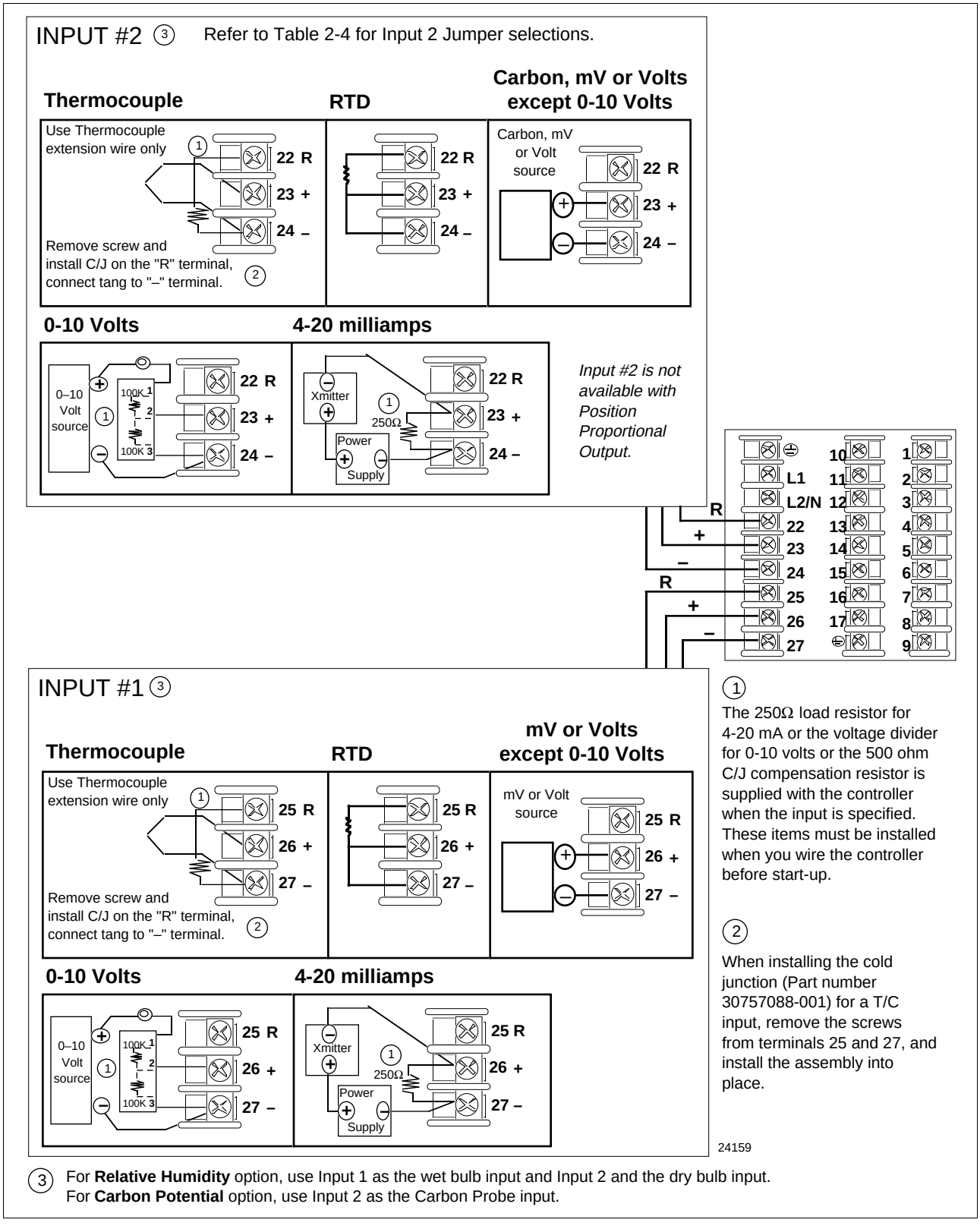
Input #1/Input #2 connections

Figure 2-6 shows the wiring connections for Input #1 and Input #2.

Figure 2-6 Input #1/Input #2 Connections

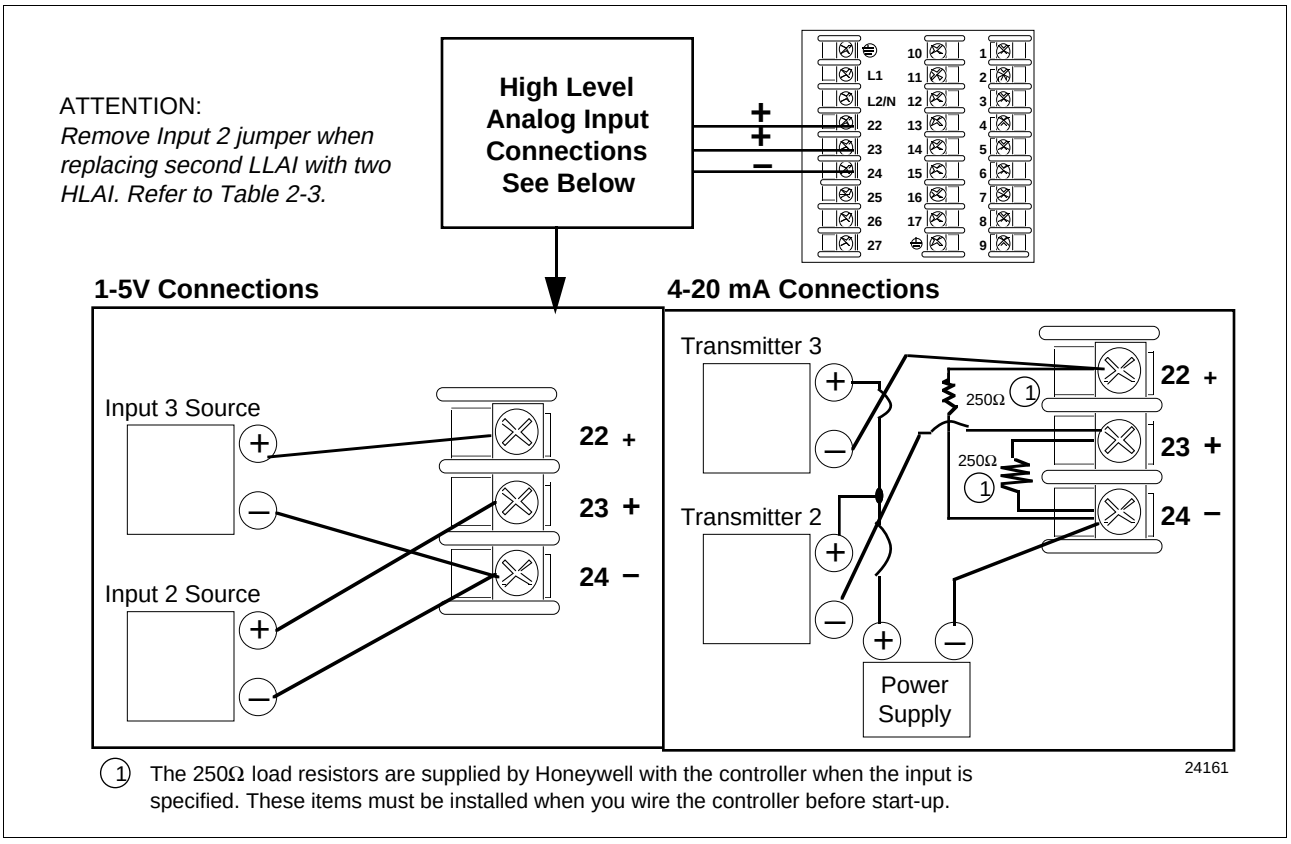


③ For **Relative Humidity** option, use Input 1 as the wet bulb input and Input 2 and the dry bulb input.
For **Carbon Potential** option, use Input 2 as the Carbon Probe input.

Two HLAI replace second LLAI connections

Figure 2-7 shows the wiring connections for replacing the second LLAI with two HLAI.

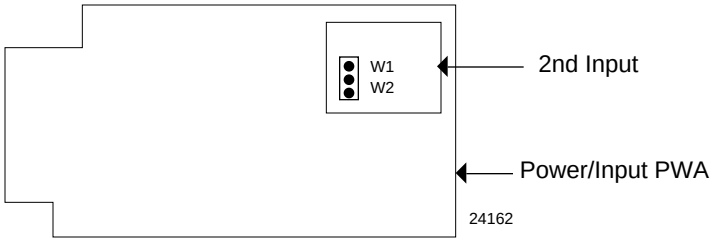
Figure 2-7 Two HLAI Replace 2nd LLAI Connections (Future)



Input 2 jumper

Table 2-4 shows the location of the second input jumper and the input types available for each jumper position.

Table 2-4 Input 2 Jumper Selections

Jumper Location			
Jumper Position	W1	W2	None (remove jumper)
Input Types Available	Slidewire, 4-20 mA, 0-20 mA, 1-5V, 0-5V	Thermocouple, RTD, mV, Radiamatic, Carbon, Oxygen	Two HLAI replace LLAI

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Time proportional output

There are three types of Time Proportional outputs available on the UDC 3300.

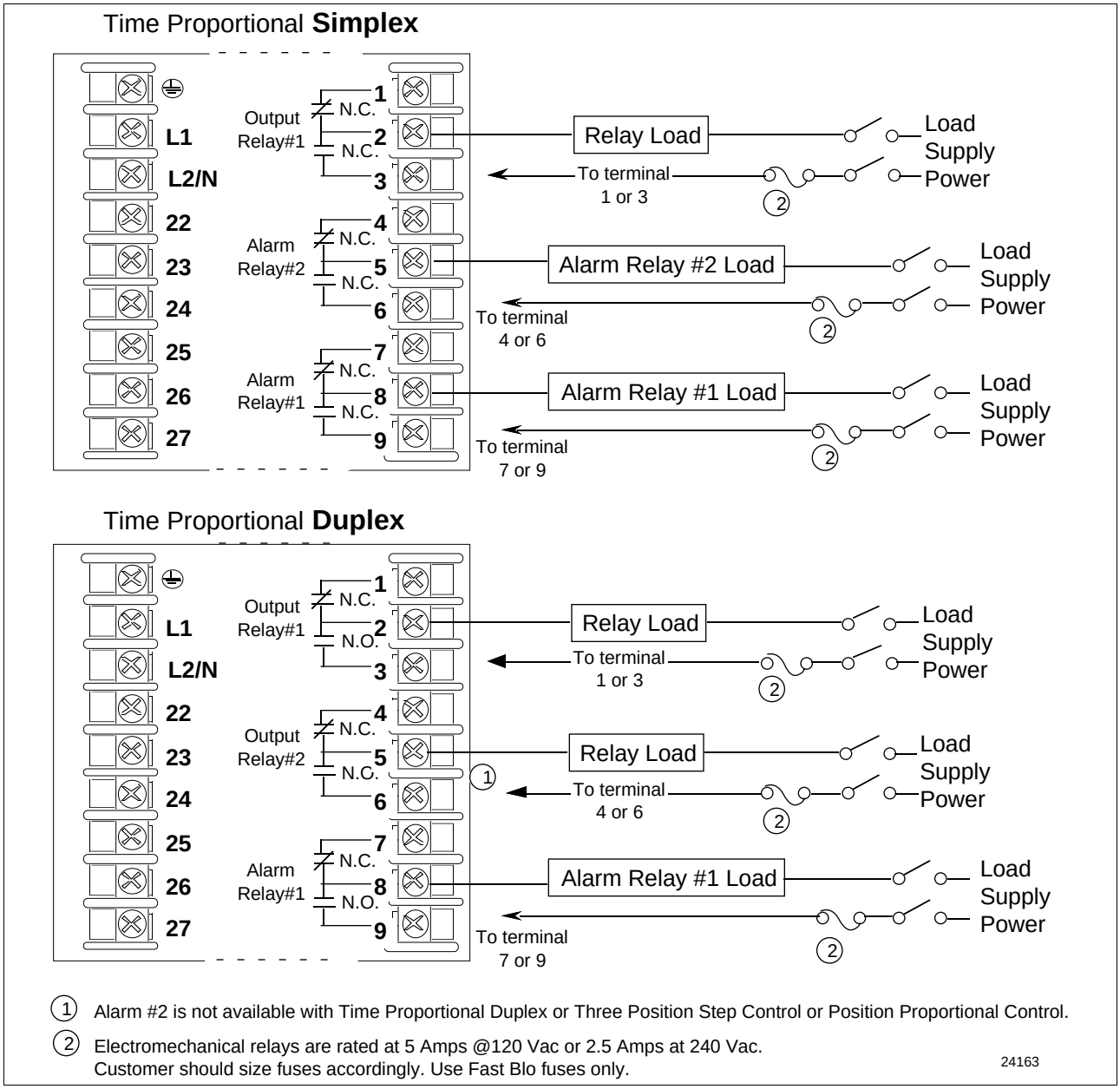
- Electromechanical Relay Output (**Model DC330X-EE-XXX**)–Figure 2-8
- Solid State Relay Output (**Model DC330X-AA(SS)-XXX**)–Figures 2-9
- Open Collector Output (**Model DC330X-TT-XXX**)–Figure 2-11

The Alarm wiring connections are the same for all three outputs.

For Control and Alarm Relay Contact information, see Tables 2-7 and 2-8.

Figure 2-8 shows the Output and Alarm wiring connections for models with Electromechanical Relay Output.

Figure 2-8 **Electromechanical Relay Output**—Model DC330X-EE-XXX



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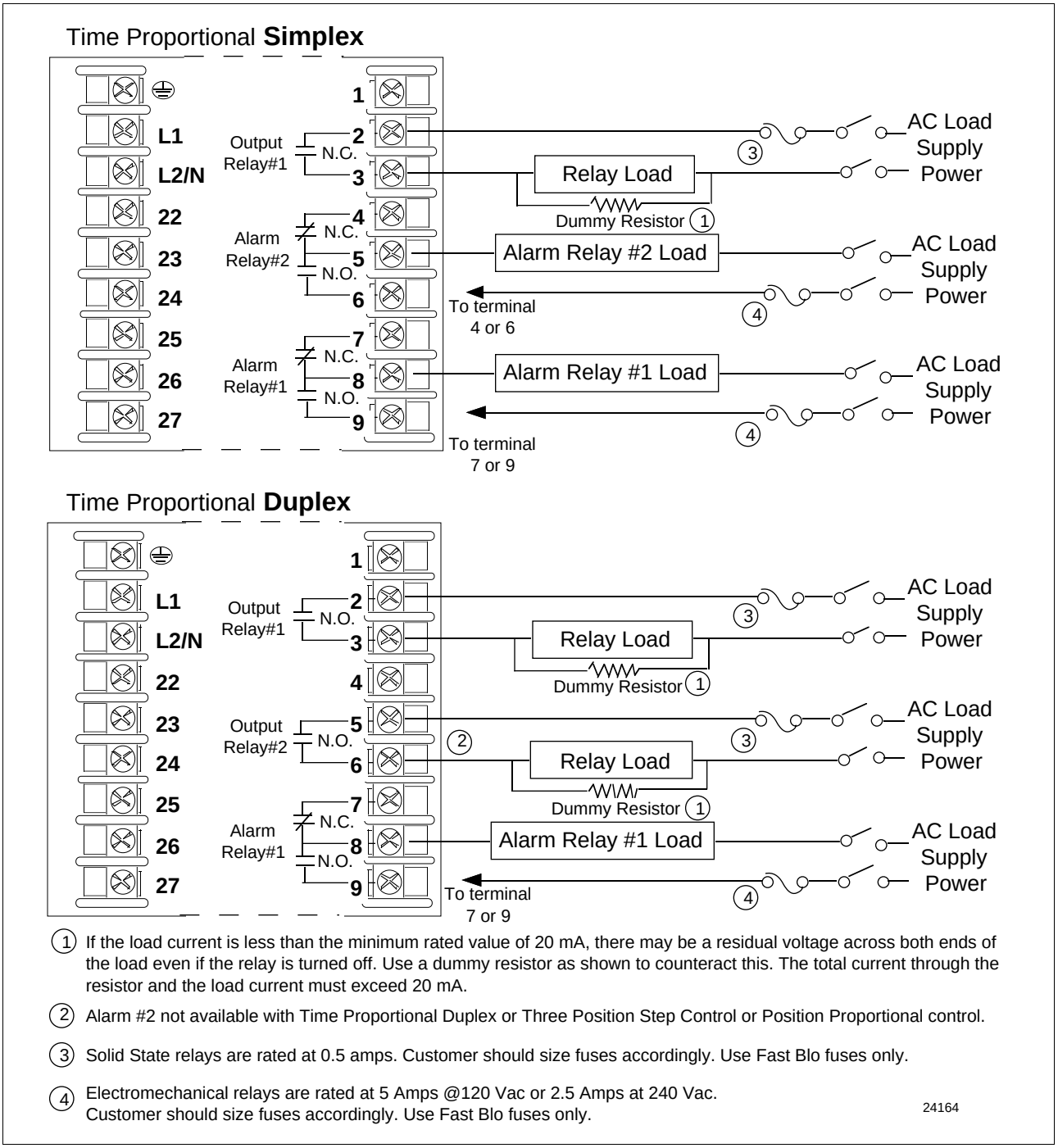
Time proportional output, continued

Figure 2-9 shows the Output and Alarm wiring connections for models with Solid State Relay Output (**Model DC330X-AA-XX** or **DC330X-SS-XX**).

For Control and Alarm Relay Contact information, see Tables 2-7 and 2-8.

Figure 2-9 **Solid State Relay Output**—Model DC330X-AA-XX or DC330X-SS-XX



(1) If the load current is less than the minimum rated value of 20 mA, there may be a residual voltage across both ends of the load even if the relay is turned off. Use a dummy resistor as shown to counteract this. The total current through the resistor and the load current must exceed 20 mA.

(2) Alarm #2 not available with Time Proportional Duplex or Three Position Step Control or Position Proportional control.

(3) Solid State relays are rated at 0.5 amps. Customer should size fuses accordingly. Use Fast Blo fuses only.

(4) Electromechanical relays are rated at 5 Amps @120 Vac or 2.5 Amps at 240 Vac. Customer should size fuses accordingly. Use Fast Blo fuses only.

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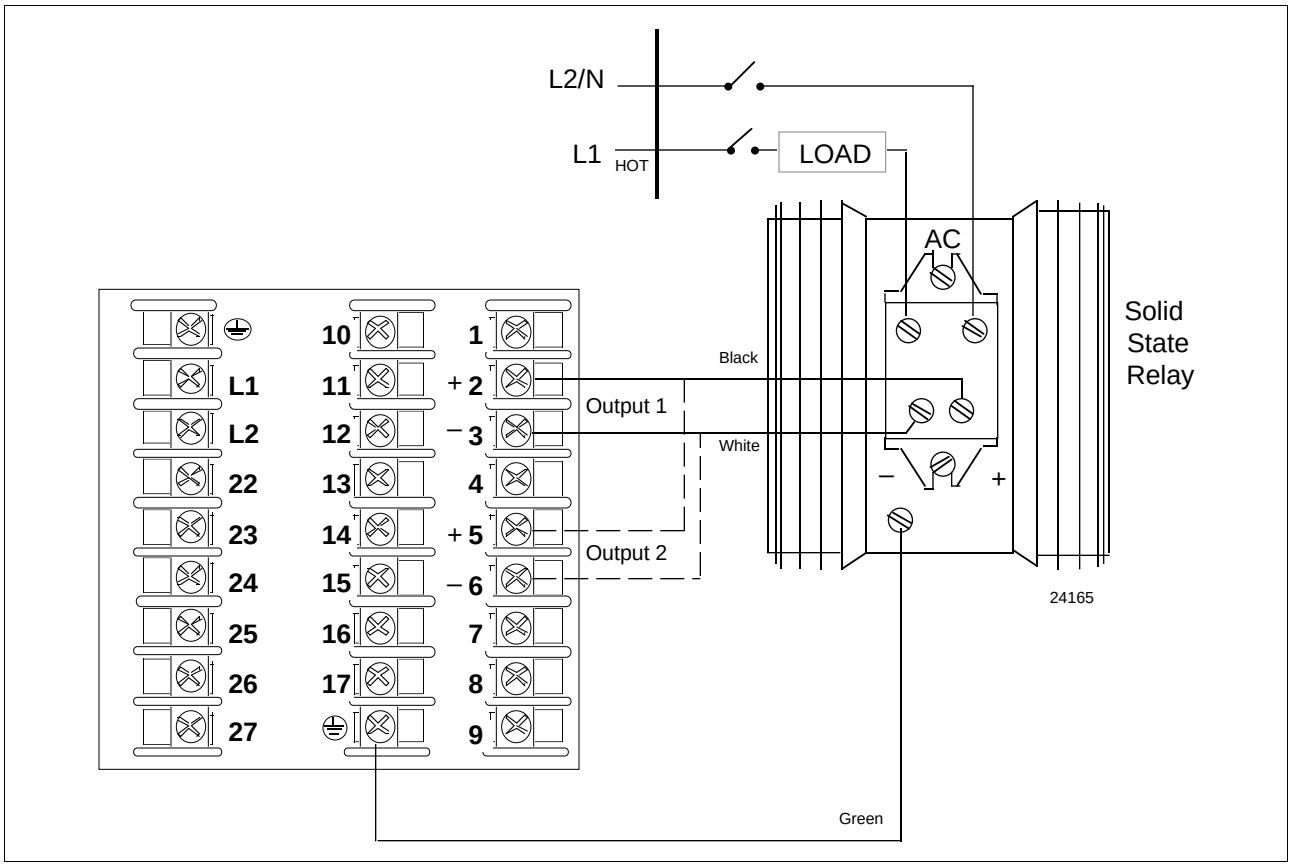
Time proportional output, continued

Figure 2-10 shows the wiring connections for the external 10-amp Solid State Relay output (**Model DC330X-SS-XX**).

Figure 2-10 **10-amp Solid State Relay Output**—Model DC330X-SS-XX



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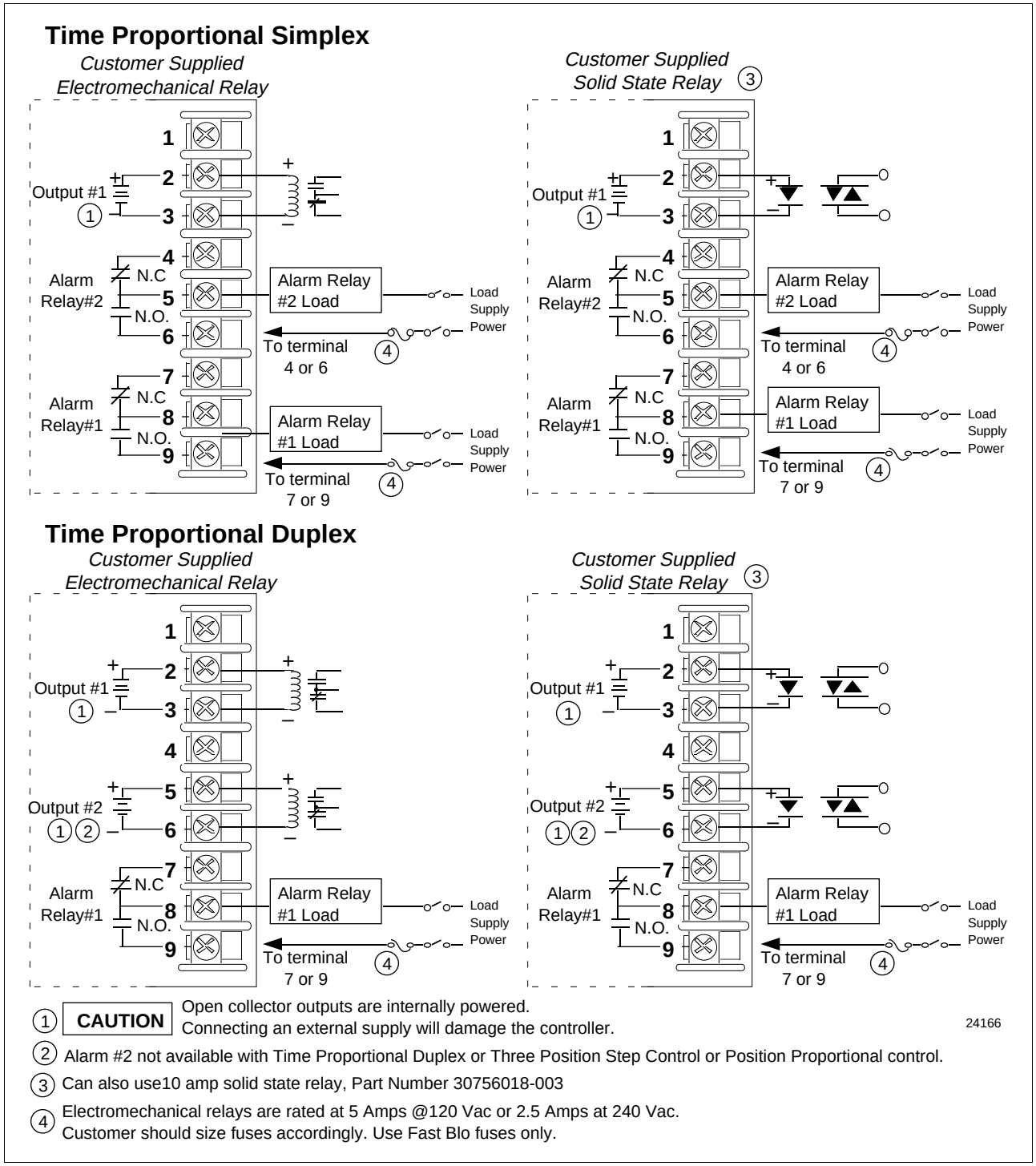
Time proportional output, continued

Figure 2-11 shows the Output and Alarm wiring connections for models with Open Collector Output (**DC330X-TT-XXX**)

For Control and Alarm Relay Contact information, see Tables 2-7 and 2-8.

Figure 2-11 **Open Collector Output**—Model DC330X-TT-XXX



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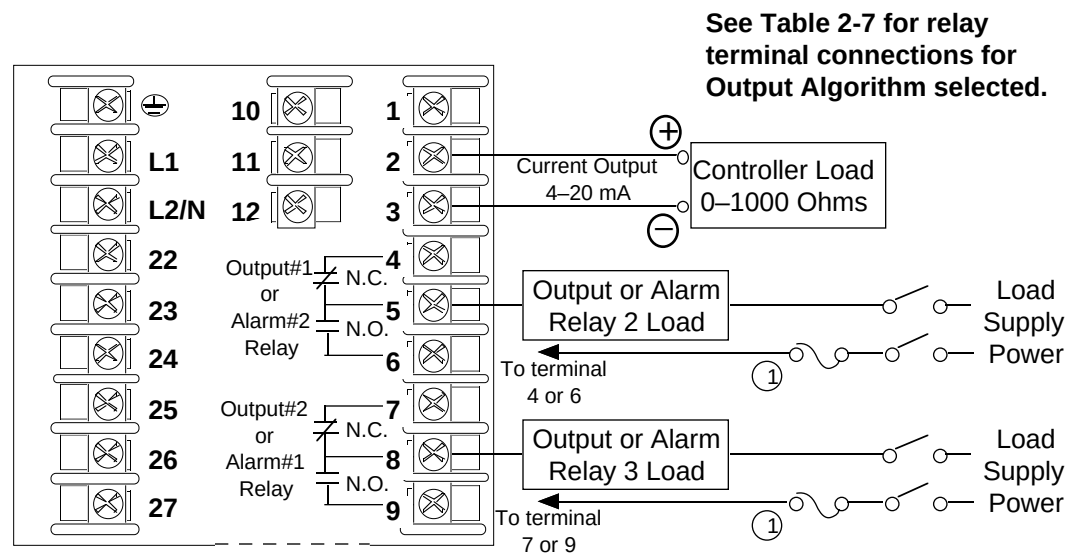
Current output/ universal output connections

Figure 2-12 shows the Output and Alarm wiring connections for models with Current Output (**Model DC330X-KE-XXX**). See Table 2-5 for wiring restrictions.

For Control and Alarm Relay Contact information, see Tables 2-7 and 2-8.

Figure 2-12 Current Output Current /Time Duplex, Time/Current Duplex, Position Proportional, or Three Position Step Control



For Duplex Current Output use Auxiliary Output for Output 2 (cool) (see Figure 2-14).

ATTENTION:
All current outputs are isolated from each other, case ground, and all inputs.

(1) Electromechanical relays are rated at 5 Amps @120 Vac or 2.5 Amps at 240 Vac. Customer should size fuses accordingly. Use Fast Blo fuses only.

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Table 2-5 Universal Output Wiring Functionality and Restrictions for Figure 2-12

Controller with Two Current Outputs and Two Relay Outputs SINGLE LOOP OR CASCADE CONTROL OUTPUT					
Output Type	**Current**	**Auxiliary**	**Relay #1**	**Relay #2**	**Relay #3**
Time Simplex	Not used	Not used	N/A	Output 1	Alarm 1
Current	Output 1	Not used	N/A	Alarm 2	Alarm 1
Position (not available on Cascade Control)	Not used	Not used	N/A	Output 1	Output 2
Time Duplex or TPSC	Not used	Not used	N/A	Output 1	Output 2
Current Duplex 100%	Output 1	Not used	N/A	Alarm 2	Alarm 1
Current Duplex 50%	Output 1	Output 2	N/A	Alarm 2	Alarm 1
Current/Time or Time/Current	Output 1 or 2	Not used	N/A	Output 1 or 2	Alarm 1

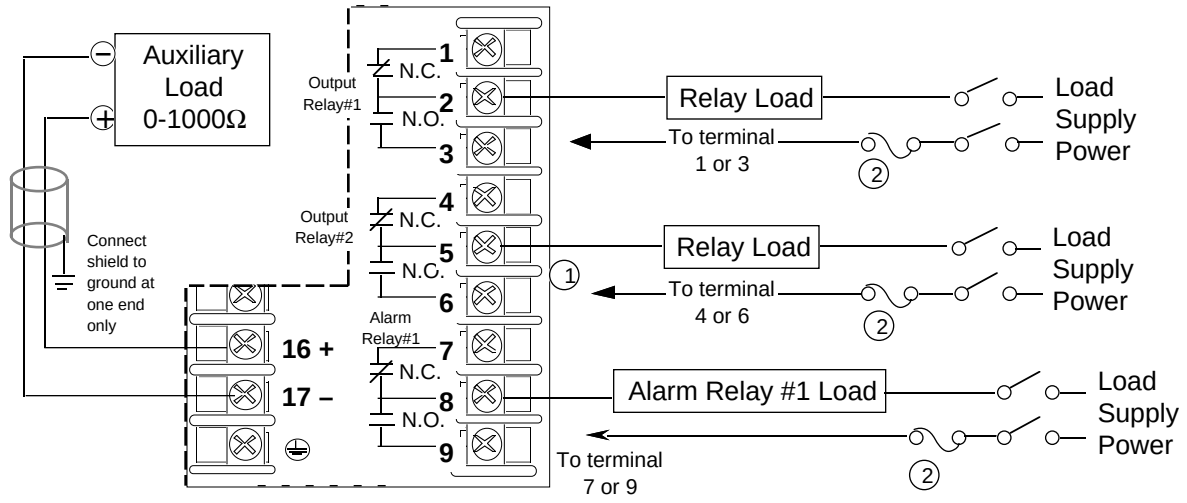
Continued on next page

Current output/ universal output connections, continued

Figure 2-13 shows the Output and Alarm wiring connections for models with a Current Output (Auxiliary Output) and three Relay Outputs (**Model DC330X-EE-2XX**). See Table 2-6 for wiring restrictions.

For Control and Alarm Relay Contact information, see Tables 2-7 and 2-8.

Figure 2-13 Auxiliary Output and Three Relay Outputs



1 Alarm #2 is not available with Time Proportional Duplex or Three Position Step Control or Position Proportional Control.

2 Electromechanical relays are rated at 5 Amps @120 Vac or 2.5 Amps at 240 Vac. Customer should size fuses accordingly. Use Fast Blo fuses only.

All current outputs are isolated from each other, case ground, and all inputs. 24160

Table 2-6 Universal Output Wiring Functionality and Restrictions for Figure 2-13

Controller with One Current Output (Auxiliary Output) and Three Relay Outputs **SINGLE LOOP OR CASCADE CONTROL OUTPUT**					
Output Type	**Current**	**Auxiliary**	**Relay #1**	**Relay #2**	**Relay #3**
Time Simplex	N/A	Not used	Output 1	Alarm 2	Alarm 1
Current	N/A	Output 1	Not used	Alarm 2	Alarm 1
Position (not available on Cascade Control)	N/A	Not used	Output 1	Output 2	Alarm 1
Time Duplex or TPSC	N/A	Not used	Output 1	Output 2	Alarm 1
Current Duplex 100%	N/A	Output	N/A	Alarm 2	Alarm 1
Current Duplex 50% (N/A)	N/A	N/A	N/A	N/A	N/A
Current/Time or Time/Current	N/A	Output 1 or 2	Output 1 or 2	Alarm 2	Alarm 1

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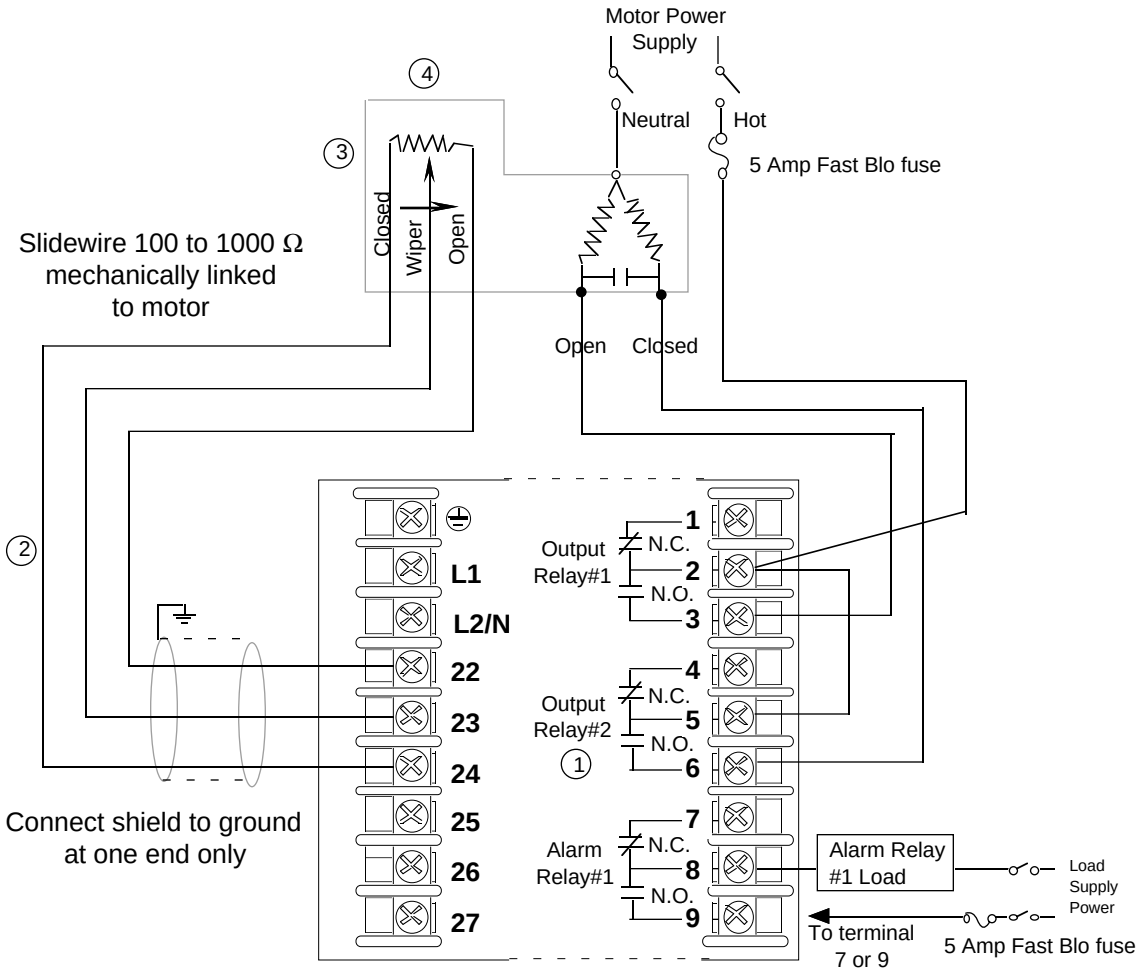
Position proportional output connections

Figure 2-14 shows the Output and Alarm wiring connections for models with Position Proportional Output or Three Position Step Control (**Models DC330X-EE-XXX-X2, DC330X-AA-XXX-X2**).
For Control and Alarm Relay Contact information, see Tables 2-7 and 2-8.

Calibration

Position Proportional Output or *Three Position Step* models must have the output calibrated after installation (see *Section 8—Position Proportional Output Calibration)* to ensure that the displayed output (slidewire position) agrees with the actual final control element position.
Three Position Step models only require that the motor time be entered. Full calibration is not required.

Figure 2-14 Position Proportional Output or Three Position Step—Models DC330X-EE-XXX-X2, DC330X-AA-XXX-X2



(1) Alarm #2 is not available with Position Proportional output or Three Position Step control.
(2) Do not run slidewire cable in the same conduit as AC power.
(3) Electrical noise suppression may be required. *Refer to Section 12.*
(4) Slidewire input is not required for Three Position Step control but can be used for motor position indication.

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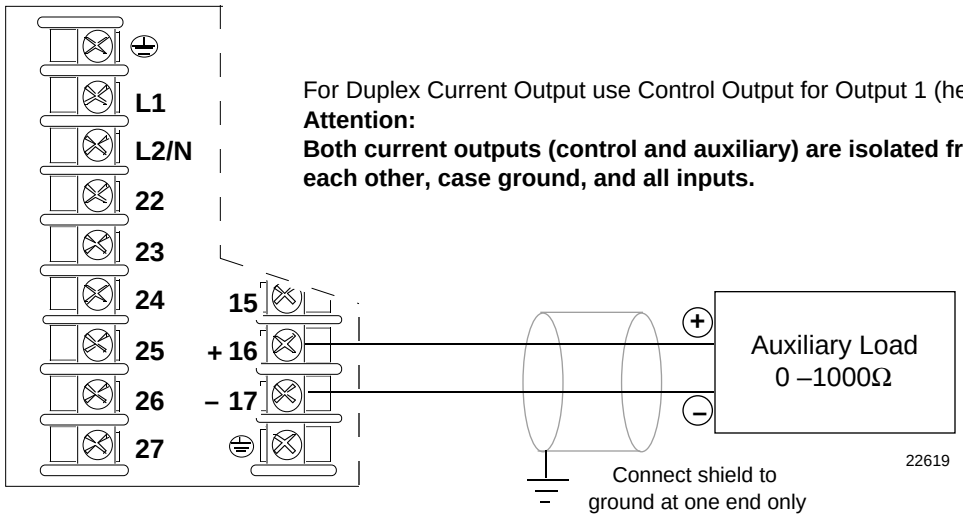
Auxiliary output connections

Figure 2-15 shows the wiring connections for the Auxiliary Output option (**Model DC330X-XX-2XX**).

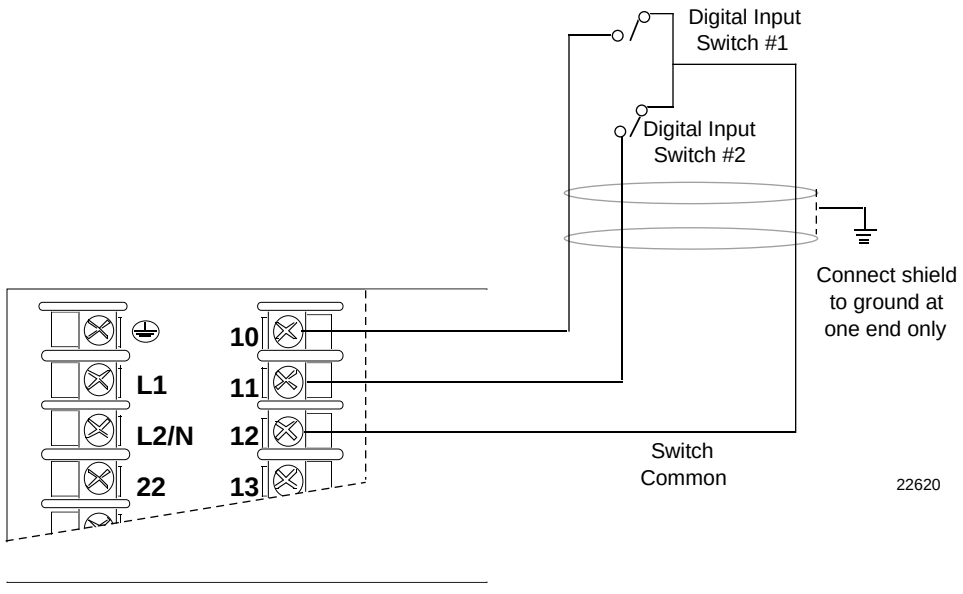
Figure 2-15 Auxiliary Output Connections—Model DC330X-XX-2XX



Digital inputs connections

Figure 2-16 shows the wiring connections for the Digital Inputs option (**Model DC330X-XX-XX3**).

Figure 2-16 Digital Inputs Connections—Model DC330X-XX-XX3



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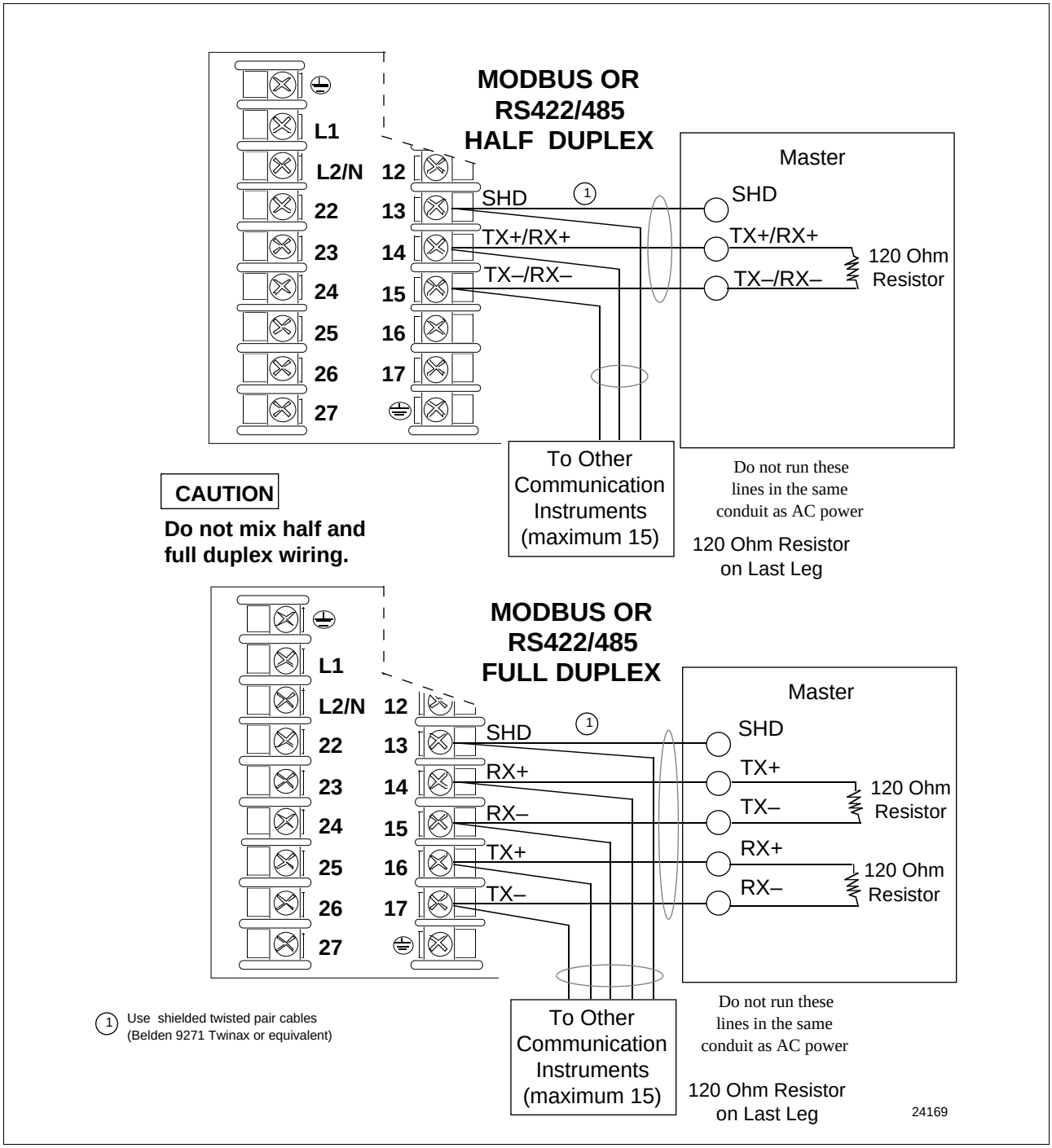
Communications option connections

There are two types of Communications option available:

- RS422/485/MODBUS (**Model DC330X-XX-1XX** or **DC330X-XX-5XX**)—Figure 2-17 (also refer to Document #51-51-25-35)
- DMCS (**Model DC330X-XX-4XX**)—Figure 2-18 (also refer to Document #82-50-10-23)

Figure 2-17 RS422/485/MODBUS Communications Option Connections



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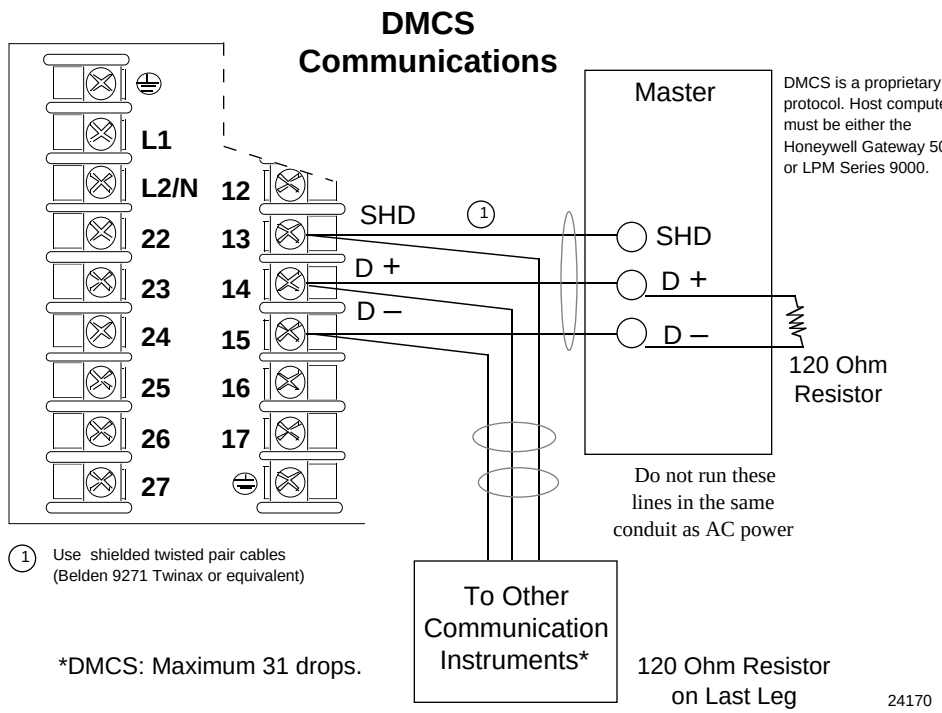
Communications option connections, continued

Figure 2-18 shows the wiring connections for the DMCS Communications option (**Model DC330X-XX-4XX**).

Figure 2-18 DMCS Communications Option Connections



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