

Signal Input and Output Wiring

Terminal configurations are factory-assigned according to the circuit cards installed in each individual Controller. Customer I/O terminals are illustrated in Figure 2-5. Make a list of all input and output connections then double-check it for accuracy; a mistake could be costly and time-consuming to correct.

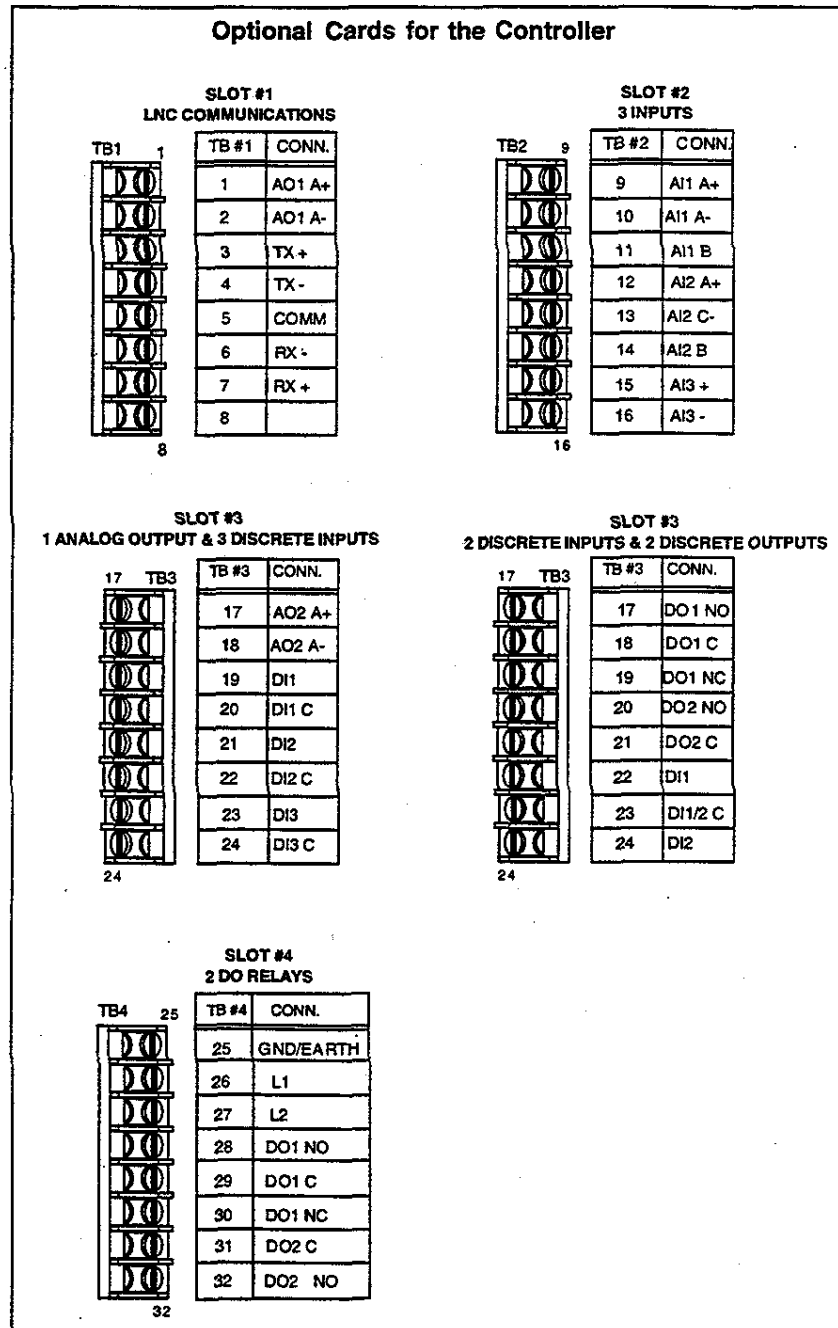


Figure 2-5 Terminal Connections

Analog Input Signal Connections

See Table 1-3 for acceptable voltage and current signal inputs. Connect current and voltage inputs to the appropriately labeled terminals (Figure 2-6).

CAUTION

Safety isolation exceeding the safe working level of 30 V RMS (42.4V peak) is not provided between analog inputs. If the working voltage of any analog input exceeds this level, use suitable wire gauge and insulation on all analog inputs, and use proper safety precautions when handling all analog input wiring.

When required, current shunts are mounted on these terminals. Use Part No. 074477 for 4-20 mA input conversion to 1-5V.

REFERENCE

For current inputs, shunt resistors are not provided. Use 250-ohm resistor with 0.1% tolerance.

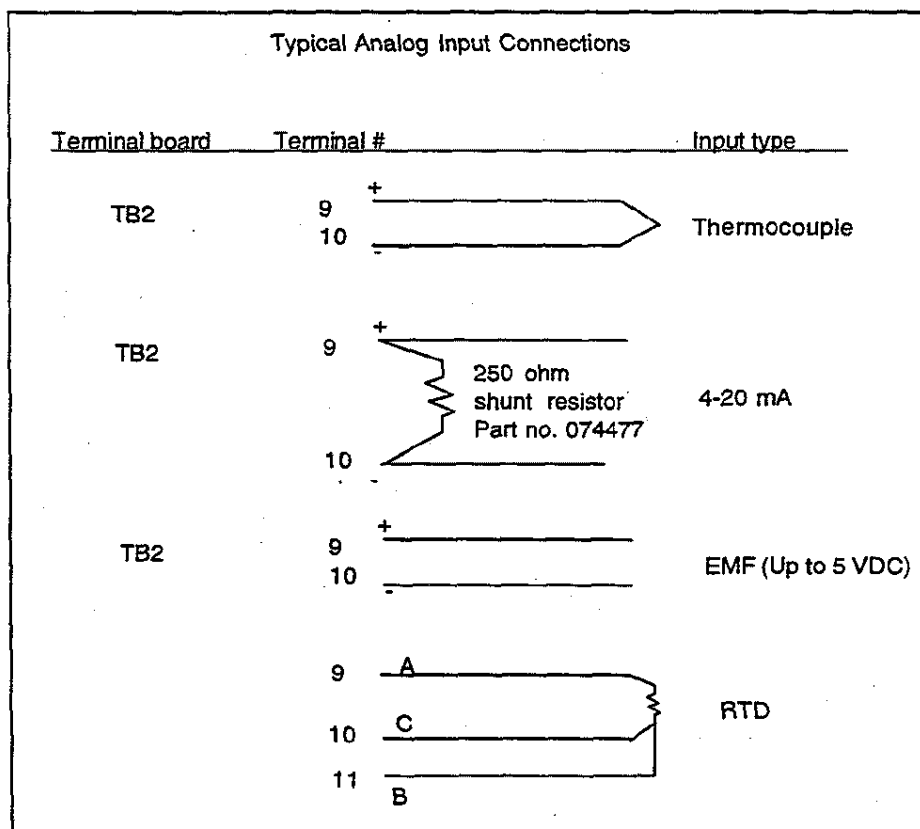


Figure 2-6 Typical Analog Input Connections

Thermocouple Inputs

Connect thermocouple input leads to the (+) and (-) terminals for analog inputs in card slot #2 (Figure 2-6). Use the correct type of extension leadwire for the particular type of thermocouple. Thermocouples may be grounded or ungrounded, since each point is isolated.

RTD Inputs

See Figure 2-6. The A and B leads must be equal in resistance; the C lead resistance is not critical.

ATTENTION

In the same controller avoid:

- Both a thermocouple input tied to ground and an RTD input tied to ground. The thermocouple measurement would be incorrect.
 - A thermocouple at a common mode voltage and an RTD tied to ground. The common mode voltage would be connected to the ground.
 - A thermocouple at a common mode voltage and an RTD that is ungrounded. The common mode voltage would be placed on the RTD.
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Discrete Output Signal Connections

Connect discrete output loads to the terminals for discrete outputs in card slot #3 or #4 as shown in Figure 2-7 . See Table 1-3 for output signal specifications (switch characteristics) for output circuit card modules.

CAUTION

Safety isolation exceeding the safe working level of 30 V RMS (42.4V peak) is not provided between discrete outputs. If the working voltage of any discrete output exceeds this level, use suitable wire gauge and insulation on all discrete outputs, and use proper safety precautions when handling all discrete output wiring.

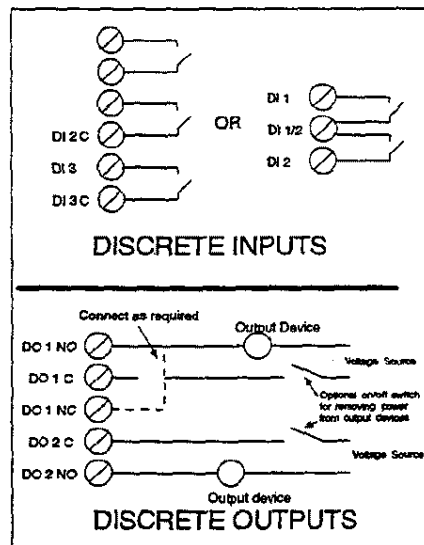


Figure 2-7 Discrete I/O Connections

We recommend you provide the AC or DC voltage supply with an on-off switch in the circuit supplying power to the field output devices (Figure 2-7). This will enable removal of output power while the Controller and input devices remain operational during troubleshooting.

Discrete Input Signal Connections

See the labels on the side of the Controller to determine card types. Connect discrete (switch-type) inputs to the terminals for discrete inputs in card slot #3 (Figure 2-5). Connect input switches and power commons as shown in Figure 2-7 .

Analog Output Connections Error! Bookmark not defined.

See the terminal labels on the side of the Controller for analog output card terminal designations. Connect analog output leads to the appropriate terminals for analog outputs in card slot #1 or #3. Analog outputs may be current or voltage types. Maximum load resistance for current outputs is 800 ohms. Minimum load resistance for voltage outputs is 1000 ohms

PAT output connections

Motor Position (PAT) type outputs require two analog inputs, two discrete outputs and one analog output (Figure 2-8). See Figure 5-1 for PAT feedback configuration.

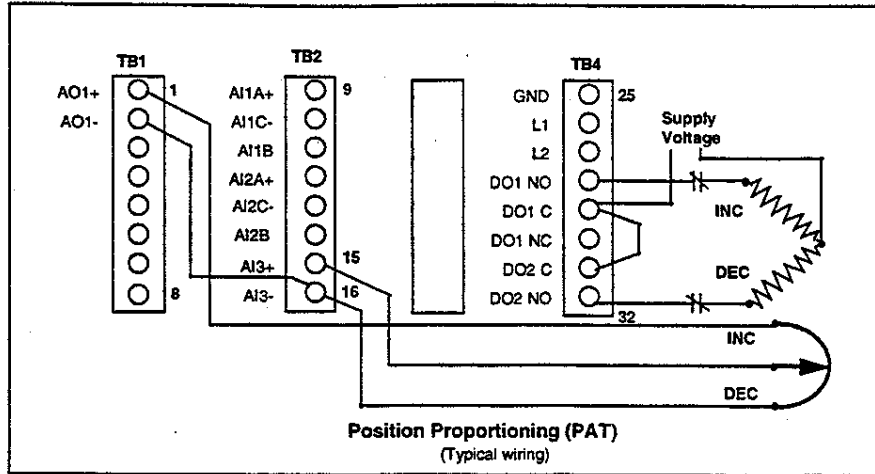


Figure 2-8 PAT Typical Wiring

DIAT connections

Motor Direction Control DIAT requires two discrete outputs (Figure 2-9).

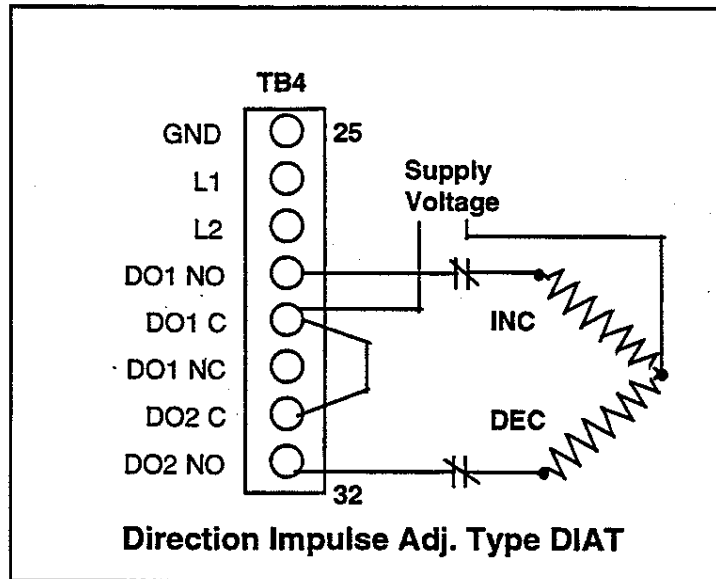


Figure 2-9 DIAT Typical Wiring

DAT connections

DAT output types use any discrete output relay. Up to four DAT type outputs may be assigned to a single loop (Figure 2-10).

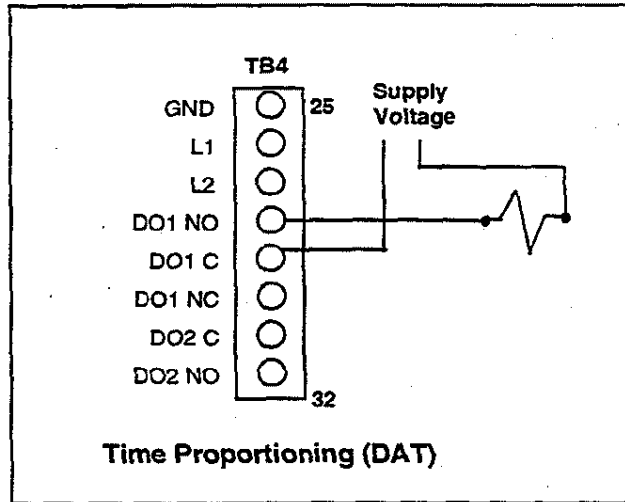


Figure 2-10 DAT Typical Wiring

Communications

The communications network is based on a Honeywell protocol with a Master/Slave relationship. This network is configured around the IEEE RS-422/485 multi-drop standard. The Master is a PC host running any software compatible with Honeywell protocol. A slave can be any instrument equipped with serial communications capability.

All communication equipment supporting the 422/485 (differential drive) must be correctly installed and properly terminated to ensure a reliable network.

Table 2-3 shows the five connections per device.

Table 2-3 Communications Connections

Connection	Meaning
TX+	The positive signal of the transmitter
TX-	The negative signal of the transmitter
Shield	The shield of the communications cable
RX+	The positive signal of the receiver
RX-	The negative signal of the receiver

We recommend using a conduit for each cable, or at least separating them from high voltage lines or magnetic fields.

Table 2-4 shows the communications wiring procedure (Figure 2-11).

Table 2-4 Communications Wiring Procedure

Step	Action
1	Connect the Master's TX signals to each of the RX signals of the Slaves, and all the Slave's TX signals to the Master's RX terminals, plus-to-plus and minus-to-minus.
2	Connect unit to unit in a serial or daisy chain fashion with the Master unit at one end and the last unit at the other as shown in Figure 2-11.
3	Set only the last unit's termination ON. All other slave units must be unterminated. To change a termination setting, see "Setting The Communications Link Termination Jumper" in Section 5.14 for instructions.

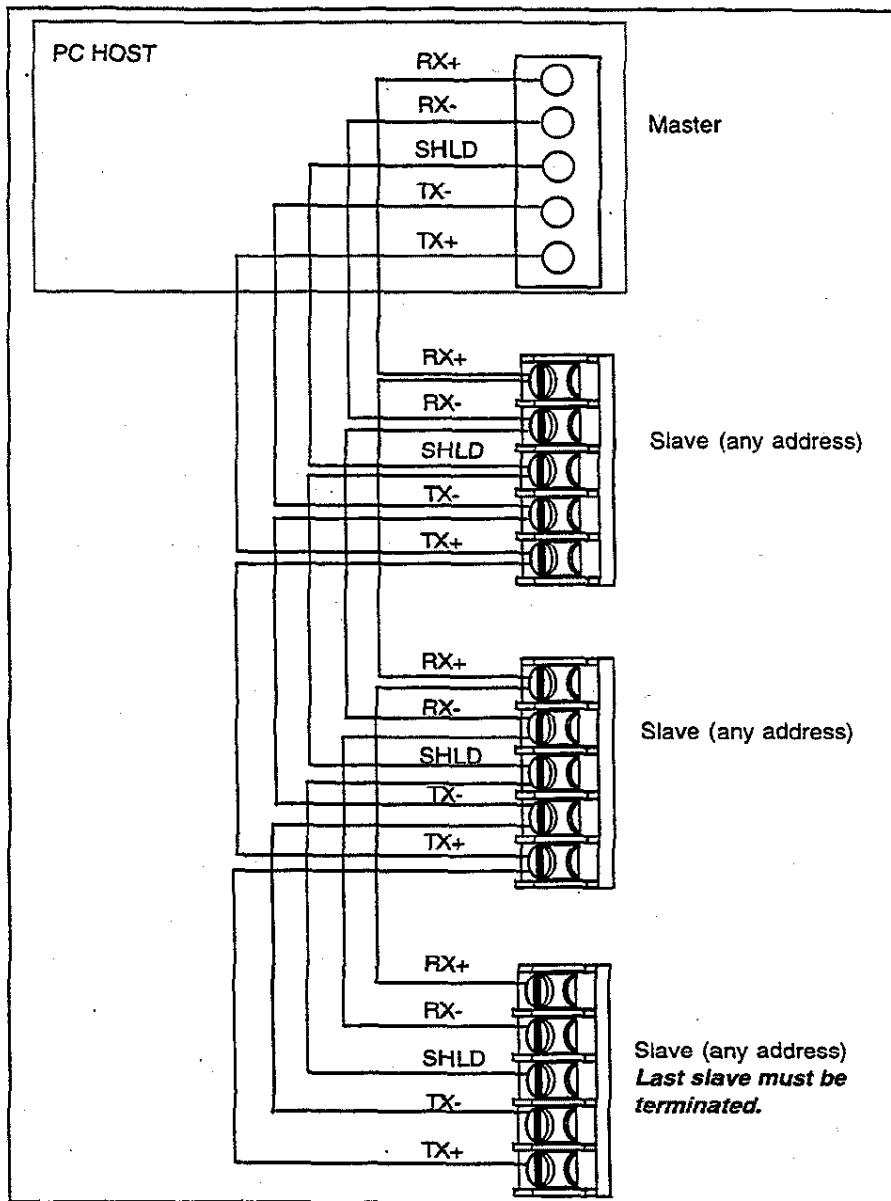


Figure 2-11 Network Data Cable Connections