2.6 Output Wiring

ATTENTION

The recorder is available with several options and multiple output algorithms. Output terminal use depends on which output algorithm and options are used. The wiring diagrams in this subsection show how to wire the terminals. To see which terminals are used for what output function, refer to Table 2-11. This table applies to all control types. Each pen channel is configured separately, and each can use a different output algorithm. (The output algorithm is set with the control set up group "OUTALG" parameter.)

Table 2-11 Output Terminal Use for Output Algorithm and Option Combinations

OUTALG value	Terminal Function		
	Current Out (TB5)	Relay 1 (TB4)	Relay 2 (TB3)
NONE	auxilary output*	alarm 1	alarm 2 or timer*
RLY	auxilary output*	control	alarm 2 or timer*
RLYD	auxilary output*	control 1 (heat)	control 2 (cool)
CUR	control	alarm 1	alarm 2 or timer*
CurT	control (cool)	control (heat)	alarm 2 or timer*
Tcur	control (heat)	control (cool)	alarm 2 or timer*

* option

2.6.1 Discrete Outputs

Introduction

Each pen channel in the recorder models having display and keypad can be equipped with two optional discrete outputs. These outputs can be used for control or alarming, depending on the configuration as described in *Section 4 – Configuration, Startup, and Operation of Recorder with Display.*

Three types of discrete outputs are available:

- electromechanical relay
- solid state relay
- open collector output

ATTENTION

The electromechanical relays on the printed circuit assembly (PCA) for each pen channel can be wired for Normally Open (NO) and Normally Closed (NC) operation.

ATTENTION

The DR4300 is available as a limit controller. In a limit controller each pen channel's printed circuit assembly Relay 1 (TB4 terminals 3 and 2 for NO contacts, and 2 and 1 for NC contacts) is used for limit control. When the recorder detects that the input has exceeded the limit (or fallen below the limit, depending on configuration), the controller goes to the limit state: Relay 1 is de-energized.

Insulation of output wires

The insulation of wires connected to the relay output terminals shall be rated for the highest voltage involved. Extra Low Voltage (ELV) wiring (input, current output, and low voltage control/alarm circuits) shall be separated from HAZARDOUS LIVE (>30 Vac, 42.4 Vpeak or 60 Vdc) wiring per Table 2-5.

Procedure

Follow the procedure in Table 2-12 to wire the discrete outputs.

Refer to Figure 2-13 for wiring electromechanical and solid state relays.

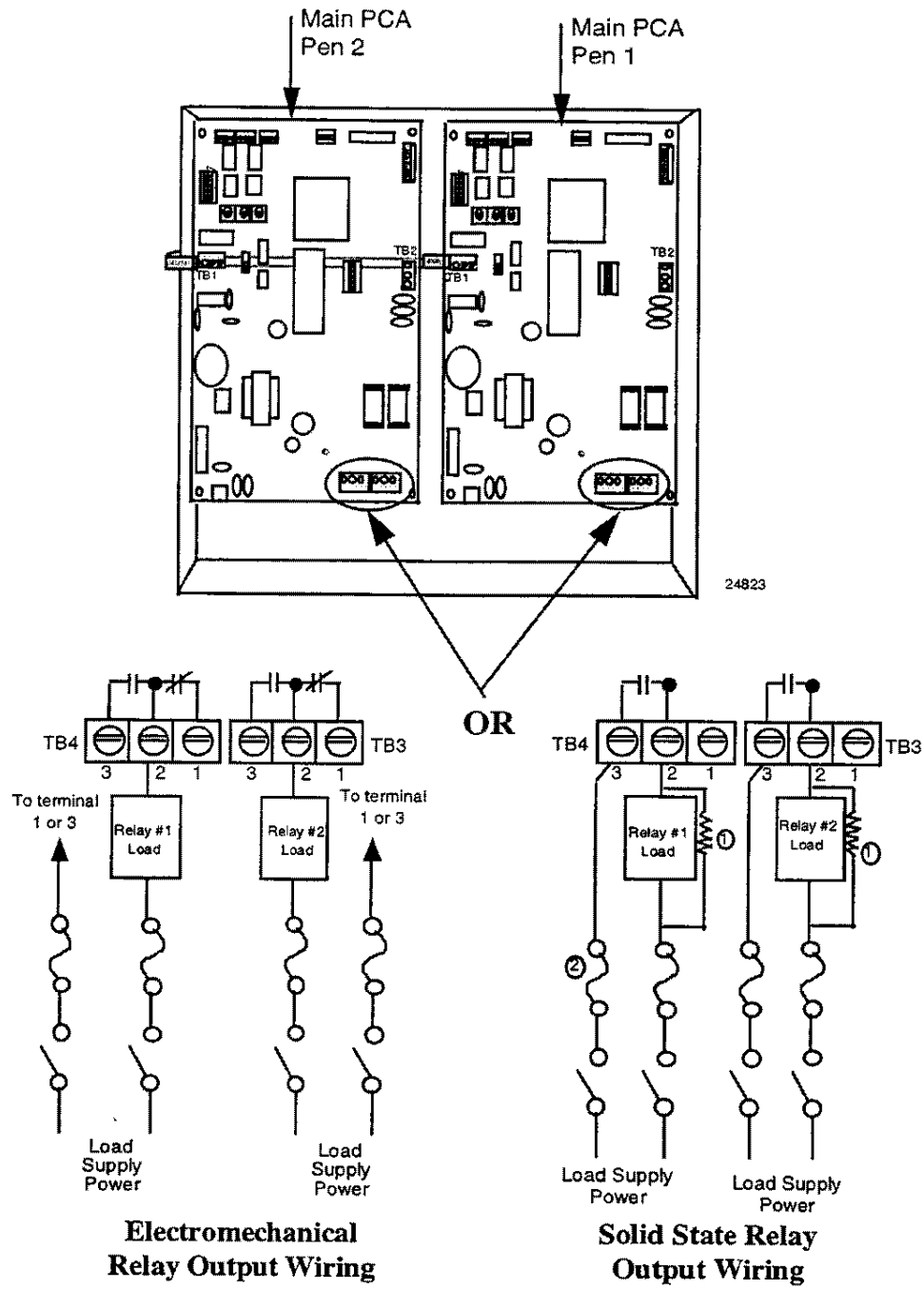
Refer to Figure 2-14 for wiring open collector outputs.

Refer to Table 2-11 to see the output function of each terminal with the available output algorithms and options.

Table 2-12 Relay Output Wiring - 1 or 2 Pen Models

Step	Action
ATTENTION To avoid damaging the recorder, be sure that you install the power wires into the correct screw terminals as shown in Figure 2-7, Figure 2-8, or Figure 2-9.	
1	Turn off the power to the recorder.
2	Open the recorder door. Loosen the captive screw in the chart plate and swing the plate out.
3	Locate terminal blocks TB3* and TB4* on the bottom right edge of the printed circuit assembly (PCA) for pen 1 or pen 2.
4	Run the output wires through the appropriate conduit hole (see Figure 2-5 and Figure 2-6). DO NOT bundle them with input wires.
5	Strip 1/4-inch maximum of insulation from the end of each wire and form end to fit under a screw connection.
6	Insert the wires under the appropriate screws for the applicable relay output as shown in the figures. Tighten the screws to secure the wires.

*TB3 is output 2.
TB4 is output 1.



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 Solid State relays are rated at 0.5 Amps. Size fuses accordingly.

Figure 2-13 Relay Output Wiring

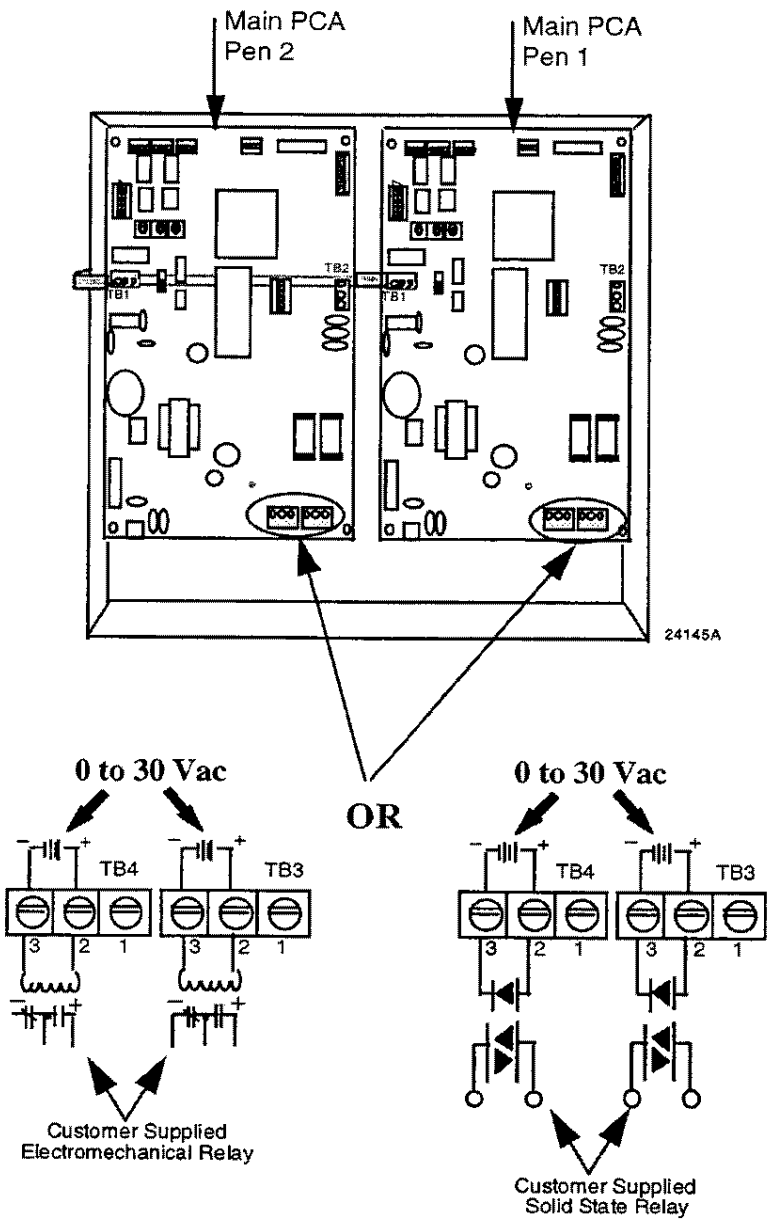


Figure 2-14 Open Collector Output Wiring

2.6.2 Current Output

Introduction

4 to 20 mA current outputs are optionally available for each pen channel in the recorder models having display and keypad.

Insulation of output wires

The insulation of wires connected to the relay output terminals shall be rated for the highest voltage involved. Extra Low Voltage (ELV) wiring (input, current output, and low voltage control/alarm circuits) shall be separated from HAZARDOUS LIVE (>30 Vac, 42.4 Vpeak or 60 Vdc) wiring per Table 2-5.

Procedure

Refer to Figure 2-15 and follow the procedure in Table 2-13 to wire the current outputs.

Refer to Table 2-11 to see the output function of TB5 with the available output algorithms and options.

Table 2-13 Current Output Wiring

Step	Action
ATTENTION To avoid damaging the recorder, be sure that you install the power wires into the correct screw terminals as shown in Figure 2-7, Figure 2-8, or Figure 2-9.	
1	Turn off the power to the recorder.
2	Open the recorder door. Loosen the captive screw in the chart plate and swing the plate out.
3	Locate terminal block TB5 on the printed circuit assembly (PCA) for pen 1 or pen 2. (See Figure 2-15.)
4	Run the output wires through the appropriate conduit hole (see Figure 2-5 and Figure 2-6). Refer to Table 2-5 for acceptable wire bundling.
5	Strip 1/4-inch maximum of insulation from the end of each wire and form end to fit under a screw connection.
6	Insert the wires under the appropriate screws for the applicable relay output as shown in the figure. Tighten the screws to secure the wires.

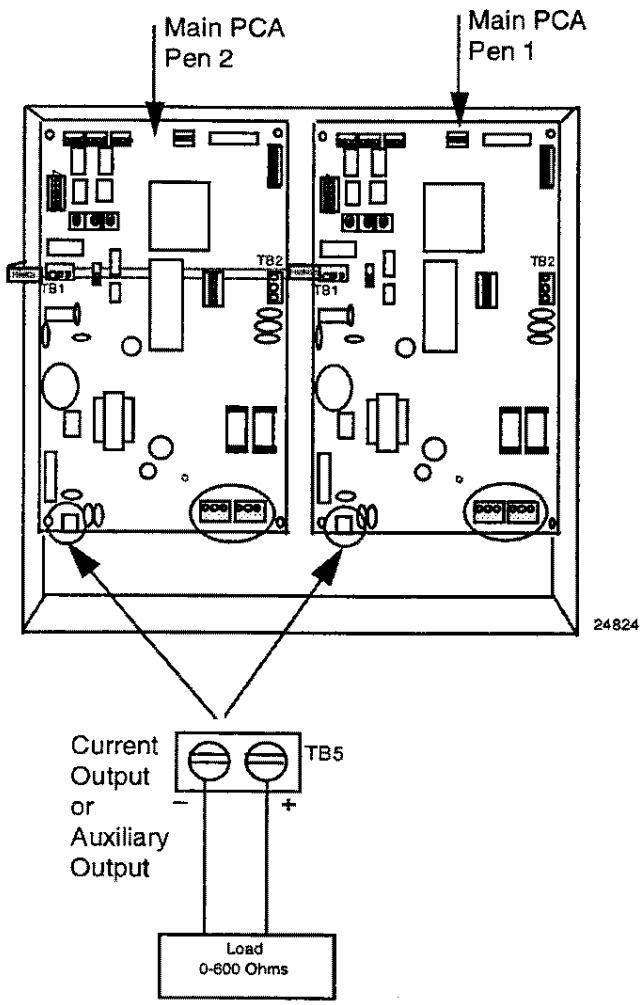


Figure 2-15 Current Output Wiring