

DCP 700 Digital Control Programmer

Changing the Temperature Unit or Input Type

Changing the Temperature Unit

The unit can be changed to °F or °C on DCPs with thermocouple or RTD type inputs as follows:

Preparation

1. Remove power from the DCP.
2. Pull the latches, one on either side of the bezel, forward. Pull on the bezel, alternating sides, until the bezel starts to come away from the case. Slide the chassis out of the case slowly until you see the connector on the CPU board (third from front).
3. Locate the two vertical pins on the EEPROM-protect-connector which is located to the left of the battery on the top right side of the CPU board. Wrap a piece of wire around the pins to short them together and be sure the wire doesn't contact any other components or the case.
4. Slide the chassis back into the case and push in the latches.
5. Open the plug-in module door and move the memory protect switch lever to the far right position (M.E.). Close the module door.
6. Apply power to the DCP and follow steps in Table 9-1.

TABLE 9-1—Steps to Change the Temperature Unit

Step	Action	Comment
1	Press <input type="button" value="▼"/> and while pressing, press <input type="button" value="RESET"/> .	"ADJUST" appears in the upper display, "0" appears in the SP display, and the NUM LED lights.
2	Press <input type="button" value="4"/> , <input type="button" value="ENTER"/> .	"4" appears in SP display until <input type="button" value="ENTER"/> is pressed; then "PASSWORD" appears in the upper display, and "0" in the SP display.
3	Press <input type="button" value="2"/> , <input type="button" value="2"/> , <input type="button" value="5"/> , <input type="button" value="5"/> .	"2255" appears in the SP display.
4	Press <input type="button" value="ENTER"/> four times.	"PV-TYPE1" appears in the upper display, and a code appears in the display to identify the input type for CH 1.
5	Depending on the units you want, select a code from the °F Code or °C Code column in Table 9-2 and key it in.	The new code appears in the SP display.
6	Press <input type="button" value="ENTER"/> .	"PV-TYPE2" appears in the upper display, and a code (0 if the DCP doesn't have a CH 2) appears in the SP display to identify the input type for CH 2.
7	If you are not going to change CH 2 go to Step 9; otherwise go to Step 8.	
8	Depending on the units you want, select a code from the °F Code or °C Code column in Table 9-2 and key it in.	The new code appears in the SP display.
9	Press <input type="button" value="ENTER"/> .	Displays show the RESET condition.
10	Refer to the Preparation steps and repeat steps as required to remove the piece of wire from around the EEPROM-protect-connector pins.	
11	Perform a General Reset — See Page 4-14	This General Reset clears data from the Random Access Memory including the programming, configuration and tuning data. Configuration and tuning data revert to the initial values listed in Tables 5-2 and 6-1, respectively.
12	Enter new programs and related data with the new unit.	

TABLE 9-2—Unit Codes and Ranges

Input Type	°F Code	°F Range	°C Code	°C Range
T	20	- 300 to 700	1	- 200 to 300
J	21	0 to 1600	2	0 to 800
E	22	0 to 1800	3	0 to 800
K	23	0 to 2400	4	0 to 1200
S	24	0 to 3100	6	0 to 1600
R	25	0 to 3100	7	0 to 1600
B	26	0 to 3300	8	0 to 1800
W5W26	27	0 to 4200	9	0 to 2300
Ni/Ni Moly	28	0 to 2500	11	0 to 1300
RTD	29	- 300 to 900	15	- 200 to 200

NOTE: The °F range is calibrated as a °C range — See the Calibration section in this manual

Changing the Input Type

Change thermocouple, millivolt or current input types as follows:

1. Complete steps 1 through 5 in Preparation procedure on Page 9-1.
2. In Table 9-3, locate the present input type of your DCP combined with the input you want to change to; then procure any parts listed and follow the procedure required.

TABLE 9-3 Types of Input you can change from and to

Type of Input on Your DCP	Types of Inputs You Can Change to	Parts to Procure	Procedure Required
Thermocouple	Any Type	2.5 ohm 1/4W Resistor	Procedure B in Table 9-6
	E	Thermocouple-Ni-NiMoly	None
Ni-NiMoly	Any thermocouple type other than Ni-Ni Moly or millivolt	None	Procedure B in Table 9-6
	Ni-NiMoly	Thermocouple-Type E	None
K	Any thermocouple type other than Type E or millivolt	None	Procedure B in Table 9-6
	K	Thermocouple-Types J and W5W26	None
J	Any thermocouple type other than Types J and W5W26 or millivolt	None	Procedure B in Table 9-6
	J	Thermocouple-Types K and W5W26	None
W5W26	Any thermocouple type other than Types K and W5W26 or millivolt	None	Procedure B in Table 9-6
	W5W26	Thermocouple-Types K and J	None
R	Any thermocouple type other than Types K and J or millivolt	None	Procedure B in Table 9-6
	R	Thermocouple-Types B and S	None
B	Any thermocouple type other than Types B and S or millivolt	None	Procedure B in Table 9-6
	B	Thermocouple-Types R and S	None
S	Any thermocouple type other than Types R and S or millivolt	None	Procedure B in Table 9-6
	S	Thermocouple-Types R and B	None
T	Any thermocouple type other than Types R and B or millivolt	None	Procedure B in Table 9-6
	T	Any thermocouple type	None
Current	Millivolt	None	Procedure B in Table 9-6
	Volts	2.49K ohm, 1/4W Resistor*	Procedure B in Table 9-6
	Any Thermocouple	None	procedure B in Table 9-6
Millivolt	Current	2.5 ohm, 1/4W Resistor	Procedure B in Table 9-6
	Thermocouple Types R, B and S	None	Procedure A in Table 9-4
	Any thermocouple type other than Types R, B, and S	None	Procedure B in Table 9-6
Volts	Current	2.5 ohm, 1/4W Resistor	Procedure B in Table 9-6

*Plus one or two 249K ohm, 1/4W resistors

TABLE 9-4—Procedure A

Step	Action	Comment
1	Press <input type="button" value="▼"/> and while pressing, press <input type="button" value="RESET"/> .	"ADJUST" appears in the upper display, "0" appears in the SP display, and the NUM LED lights.
2	Press <input type="button" value="4"/> , <input type="button" value="ENTER"/> .	"4" appears in SP display until <input type="button" value="ENTER"/> is pressed; then, "PASSWORD" appears in the upper display, and "0" in the SP display.
3	Press <input type="button" value="2"/> , <input type="button" value="2"/> , <input type="button" value="5"/> , <input type="button" value="5"/> .	"2255" appears in the SP display.
4	Press <input type="button" value="ENTER"/> four times.	"PV-TYPE1" appears in the upper display, and a code appears in the SP display to identify the input type for CH 1.
5	Depending on the input type and units you are changing to, select a code from Table 9-5 and key it in.	The new code appears in the SP display.
6	Press <input type="button" value="ENTER"/> .	"PV-TYPE2" appears in the upper display, and a code (0 if your DCP doesn't have a CH 2) appears in the SP display to identify the input type for CH 2.
7	If you are not going to change CH 2, go to Step 9; otherwise go to Step 8.	
8	Depending on the input type and unit you are changing to, select a code from Table 9-5 and key it in.	The new code appears in the SP display.
9	Press <input type="button" value="ENTER"/> .	Displays show the RESET condition.
10	Refer to the Preparation procedure and repeat steps as required to remove the piece of wire from around the EEPROM-protect-connector pins.	
11	Enter new programs and related data with the input type.	

TABLE 9-5—Input Type Codes

Input Type	°F Code	°F Range	°C Code	°C Range
T	20	- 300 to 700	1	- 200 to 300
J	21	0 to 1600	2	0 to 800
E	22	0 to 1800	3	0 to 800
K	23	0 to 2400	4	0 to 1200
S	24	0 to 3100	6	0 to 1600
R	25	0 to 3100	7	0 to 1600
B	26	0 to 3300	8	0 to 1800
W5W26	27	0 to 4200	9	0 to 2300
Ni-Ni Moly	28	0 to 2500	11	0 to 1300
Current	19	4 to 20 mA		
Millivolt	19	0 to 10 mV		
Volts	19	1 to 5 Vdc		

Equipment Required for Procedure B

- Wire-wrap tool (Optional. Can use soldering iron.)
- Small soldering iron
- Small wire cutter

Material Required for Procedure B

- Small diameter copper wire to fit wire-wrap tool or small diameter copper wire for soldering connections.
- If soldering iron is to be used, solder and flux
- If changing to current input type, a 2.5 ohm $\pm 1\%$, 1/4W resistor
- If changing to volts input type, a 2.49K ohm $\pm 1\%$, 1/4W resistor and two 249K ohms $\pm 1\%$, 1/4W resistors

TABLE 9-6—Procedure B

Step	Action
1.	Use the instructions in the Service section (Page 10-12) to remove the analog board from the chassis.
2.	Use Figure 9-1 as a guide to locate the connections and resistors listed in Table 9-7 for the input type you are changing to, and change their status (INSTALLED or Removed) as required. <ul style="list-style-type: none"> ■ Remove connections and resistors by cutting at both ends. ■ Install connections by wire wrapping or soldering to the common pin and the pin identified by a W and a number ■ For the Current Input Type, solder the 2.5 ohm resistor in the holes provided for R216 or R258. For Volts input type, solder in a 2.49K ohm resistor. For all other input types in Table 9-7, leave the hole open. ■ For Volts Input Type, solder 249K ohm resistor in the holes provided for R122 (channel 1) and/or R123 (channel 2).
3.	Replace the analog board and push the chassis into the case.
4.	Use Procedure A in Table 9-4 to enter the code for the new input type.
5.	Calibrate the DCP (see Page 8-1)
6.	Refer to the Preparation procedure and repeat steps as required to remove the piece of wire from across the EEPROM-protect-connector.
7.	Enter new programs and related data based on the new input type.

TABLE 9-7—Connection and Resistor Status

Channel	Connections and Status						Resistor Status	
	1	W10	W11	W13	W14	W15	R216	R122*
	2	W16	W17	W19	W20	W21	R258	R123
Input Type	E	Removed	INSTALLED	Removed	INSTALLED	INSTALLED	Open	Open
	NI-Ni Moly	Removed	INSTALLED	Removed	INSTALLED	INSTALLED	Open	Open
	K	INSTALLED	Removed	Removed	Removed	INSTALLED	Open	Open
	J	INSTALLED	Removed	Removed	Removed	INSTALLED	Open	Open
	W5W26	INSTALLED	Removed	Removed	Removed	INSTALLED	Open	Open
	Current	INSTALLED	Removed	Removed	Removed	INSTALLED	INSTALLED (2.5 Ω)	Removed
	Volts	INSTALLED	Removed	Removed	Removed	INSTALLED	INSTALLED (2.49K Ω)	INSTALLED (249K Ω)†
	R	Removed	Removed	INSTALLED	Removed	Removed	Open	Open
	S	Removed	Removed	INSTALLED	Removed	Removed	Open	Open
	B	Removed	Removed	INSTALLED	Removed	Removed	Open	Open
	Millivolt	Removed	Removed	INSTALLED	Removed	Removed	Open	Open
	T	INSTALLED	Removed	Removed	INSTALLED	Removed	Open	Open

*R122 and R123 are not used on earlier version of the analog board.

†Also, remove jumpers W135 and W136.

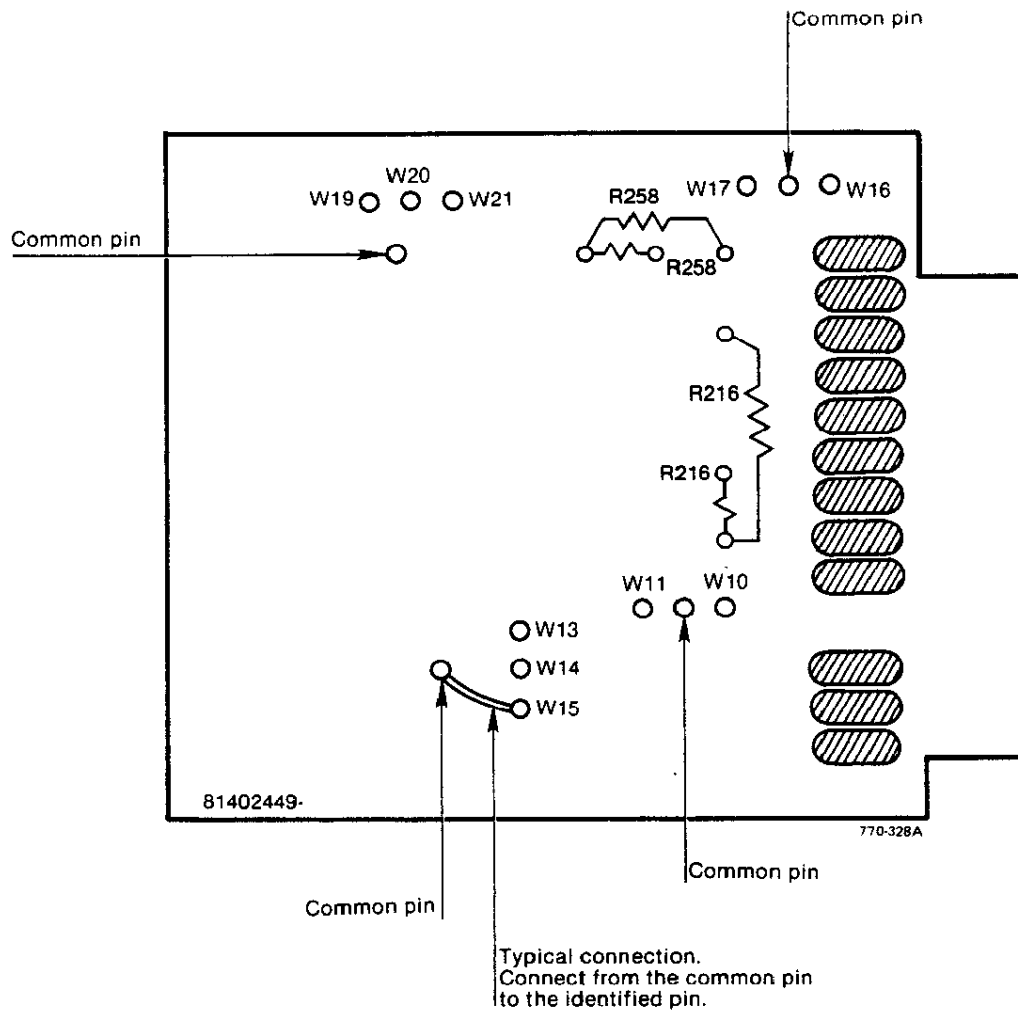


Figure 9-1—Connector locations on the analog board