PT1000 Temperature Sensor

For easier retrofits of Copeland products into stores with PT1000 refrigeration control products, Copeland supplies the PT1000 Temp Sensor Adapter (*P/N 535-2704*).

This adapter allows Copeland 16AI and MultiFlex input boards to read the values of the PT1000. As a result, stores with PT1000 control products may replace them with Copeland controllers and I/O boards without the need for replacing and rewiring existing temperature sensors in the store.



Figure 1: PT1000 Temp Sensor Adapter

Wiring Instructions

- 1. Disconnect all temperature sensor leads from the PT1000 control boards.
- Each PT1000 Temp Sensor Adapter has four pairs of screw terminals for connection to up to four PT1000 temperature sensors.

Wire the leads of each sensor to the matching points on the adapter as shown in Figure 2.

- 3. Connect one of the two +5VDC terminals on the adapter to a +5V power output on the MultiFlex (located at the bottom of the MultiFlex board) or 16AI (located on the right-hand side of the board). The two terminals are tied together, so you will only need to connect one terminal to the +5V power source. You may use the second terminal to "daisychain" multiple adapters to the same +5V power source (see *Figure 3*). DO NOT GROUND EITHER OF THE +5V TERMINALS
- 4. Plug the PT1000 Temp Sensor Adapter into an 8-pin connector on the input board, as shown in *Figure 1*.
- 5. For every input point that has a PT1000 temperature sensor attached to it, locate the corresponding input type dip switch. Input type dip switches are located in switch banks S1 and S2 for all Copeland input board types. S1 switches 1-8 correspond to points 1 through 8 on the board, while S2 switches 1-8 correspond to points 9 through 16 on the board.
 - For 16AI boards, each point with a PT1000 sensor connected to it must have its input dip switch set to the OFF (down) position.
 - For MultiFlex boards, each point with a PT1000 sensor connected to it must have its input dip switch set to the OFF (left) position.

Repeat steps 1 through 5 for each group of four PT1000 temp sensors you wish to set up.



Figure 2: Temp Sensor Wiring



Figure 3: Power Wiring



Configuration Setup Using E2 Version Below 2.84 (Range of -46°C to 173°C)

Note that this setup is only for use with MultiFlex boards.

Once the PT1000 Temp Sensor Adapter and the PT1000 sensors are properly connected, you must set up each input point as a standard temperature sensor type. You must also configure the MultiFlex board to convert the PT1000 to a standard ECT temperature sensor.

MultiFlex Setup with HHT (Hand-held Terminal)

- 1. Press the down arrow three times from the Home (F1 screen):
 - SELECT:→3 1= STATUS 2= STATUS-ENG UN 3= INPUT CONFIG
- 2. Press the left/right arrow to select 3 = INPUT CONFIG. Press 3 (the corresponding number will appear next to the arrow).
- 3. Press the down arrow twice to access the Input Configuration screen:
 - I01: → PT1000-STDF I02: TEMP-DF I03: TEMP-DF I04: TEMP-DF

4. Press the left/right arrow (and use the · and - keys on the HHT to scroll options) and select **PT1000-STDF (°F)** or **PT1000-STDC (°C)**.

Note: Do not select PT1000-DF or PT1000-DC.

5. Press the down arrow through the input sensor selections to access the Filtering screen:

Note that filtering can also be configured in the E2 and is recommended.

01-04	FILTER:→O
05-08	FILTER: O
09-12	FILTER: O
13-16	FILTER: O

6. Press the left/right arrow to add a filter value of the recommended 15-20 seconds (32 max) on the correct set of inputs. The filtering will reduce the effect of small changes.

Note that if the MultiFlex board is replaced, the settings will have to be re-entered.

Temperature Sensor Point Setup in E2

- 1. Log in using a username/password that allows configuration changes (usually level 3 or above).
- 2. Press Menu, 7 System Configuration, and 1 Input Definitions to navigate to the Input Status screen, or press Alt + I keys to go directly to the screen.
- 3. Use the arrow keys to highlight the row that corresponds to a board and point you wish to set up as a PT1000 sensor and press Enter.

10-20-10	I 🔹 😚 🔟	1	-+) RX- II	-400 Unit 3 NPUT STATUS	E FUL	L	10:44:55 <mark>*Alarm*</mark>
Type 16AI 16AI 16AI	Board 01 01 01	Point 01 02 03	Type A D A	Application	Associa	tion	Value NONE OFF NONE
16AI 16AI 16AI	01 01 01	04 05 06					
16AI 16AI 16AI	01 01 01	07 08 09					
16AI 16AI 16AI	01 01 01	10 11 12					
16AI 16AI 16AI	01 01 01	13 14 15					
1681	81	16					
Press L	OOK UP to	choose appl	ication	1			
F1: \$	SETUP	F2: DEL/MOD	F	3: OFFSET	F4: LOOK L	IP .	

- 4. **Press F1 SETUP**. (If the board and point was undefined previously, you will be prompted to specify whether the datatype input is analog or digital. **Select 1 ANALOG**.)
- 5. In the Analog Input setup screen, highlight the **Sensor Type** field and press **F4 LOOK UP**. Locate and highlight **Temperature** from the Output List Selection menu and press **F1 SELECT** or Enter.

11-23-10 🔹 🥝 🔟	(<u>-+</u>) RX−4 ANA	00 ILOG	Unit 3 💼 INPUT NAMES FULL	15:41:36 <mark>*Alarm*</mark>
	Board/Point # Point Name Sensor Type Select Eng. Unit Default on Open Default on Short	::	1. 1 .AI.03.01.01 Temperature DF NONE NONE	
	Default Other Change Delta		NONE 0.18	
	Multi. Factor Sensor Offset		1.0 0	
Modify Sensor Pro Modify	perties ? None			
OCCUPANCY OUTPUT				L.
Scroll using Next	/Prev keys Senso	r T	ype Select	FF- 0010FI

6. In the Usage Setup box, set the values of Logging Use and Control Use fields to Average by pressing F4 - LOOK UP:

11-02-10 🌢 🧑 團		-+) RX-400 I Analog	Init 3 INPUT	dan dan	FULL	INS	13:41:10 *ALABM*
		Analog L	og Setu	р			
Prop	erty:	.AI.03.	81.81	OUTPUT:			
r ^u sa	ige Setup						
	Logging Us Control Us	e : e :	Avera Avera	qe ge			
L	eraging Setup						
	Average Vi	ndow :	0:0	0:15			
L ^L O <u>C</u>	lging Setup						
	Logging Ch Logging Gr	ange Delta: oup Cell :	BASE I	0 LOG			
Enter State: Us	e Next/Prev	keys Log	ging Dat	ta Use S	election.		
				, F4: I	LOOK UP	F5:	CANCEL

7. In the **Averaging Setup** box, change the **Average Window** field value to at least 15 seconds. Note to enter the value in HHH:MM:SS time format (use values in the 15-25 second range).

10-19-10 🔶	💷 📑 RX-400 Unit 3 🗟 ANALOG INPUT	12:16:46 <mark>*Alarm*</mark>
	Analog Log Setup	
	Property: .AI.03.01.01 :OUTPUT	
	_Usage Setup	
	Logging Use : Average Control Use : Average	
	_Averaging Setup	
	Average Window : 0:00:15	
	Logging Setup	
	Logging Group Cell : BASE LOG	
Enter HHH:M	M:SS : 0:00:00 to 18:00:00 Average Window Select.	
		F5: CANCEL

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8. Press the Back key twice to save the changes you entered and return to the Input Status screen.

Configuration Setup Using E2 Version 2.84 and Above (Range of -92°C to 196°C)

Setup is optional for the MultiFlex boards, but to view the PT1000 in Engineering Units in the HHT, select PT1000-DF or PT1000-DC for inputs with PT1000 sensors. Do Not select PT1000-STDF or PT1000-STDC as described in Steps 1-4 on page 3.

Temperature Sensor Point Setup in E2

- 1. Log in using a username/password that allows configuration changes (usually level 3 or above).
- 2. Press Menu, 7 System Configuration, and 1 Input Definitions to navigate to the Input Status screen, or press Alt + I keys to go directly to the screen.
- 3. Use the arrow keys to highlight the row that corresponds to a board and point you wish to set up as a PT1000 sensor and press Enter.

10-20-10	• 😚 🔟		E RX-400 Unit 3 INPUT STATUS	FULL	10:44:55 *Alarm*
Туре	Board	Point	Type Application	Association	Value
16AI	01	01	A		NONE
16AI	01	02	D		OFF
16AI	01	03	A		NONE
16AI	01	04			
16AI	01	05			
16AI	01	06			
16AI	01	07			
16AI	01	08			
16AI	01	09			
16AI	01	10			
16AI	01	11			
16AI	01	12			
16AI	01	13			
16AI	01	14			
16AI	01	15			
16AI	01	16			
Press L	OOK UP to	choose app	olication		
F1: 5	ETUP	F2: DEL/M	OD 🔶 F3: OFFSET 🔶	F4: LOOK UP	

4. Press F1 - SETUP. (If the board and point was undefined previously, you will be prompted to specify whether the datatype input is analog or digital. Select 1 - ANALOG.) In the Analog Input setup screen, highlight the Sensor Type field and press F4 - LOOK UP. Locate and highlight PT1000 from the Output List Selection menu and press F1 - SELECT or Enter.

10-19-10 🌲 📧	<mark>- +</mark>) RX-400 Analo	Unit 3 🖄 G INPUT	10:32:41 *Alarm*
Modify Sensor Prope Modify ?	Board/Point # : Point Name : Sensor Type : Select Eng. Units: Default on Open : Default on Short : Default Other : Sensor Offset : None	1. 1 .AI.03.01.01 PT1000 DF NONE NONE NONE NONE	
OUTPUT :	:	:	L
Scroll using Next/P	rev keys Sensor	Type Select	
F1: SET ALARMS F2:	SET LOGGING	F4: LOOK UP	F5: CANCEL

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- Highlight the Output field at the bottom of the Analog Input setup screen, press F2: SET LOGGING to display the Analog Log Setup screen.
- 6. In the Usage Setup box, set the values of Logging Use and Control Use fields to Average by pressing F4 LOOK UP:

11-62-16 🌢 🧑 📖	-+) RX-400 ANALO	0 Unit 3 👘 DG INPUT	FULL	INS	13:41:10 *ALARM*
	Analog	Log Setup			
Property:	.AI.03	3.01.01 :OUTPUT	r i		
__ Usage Setup					
Logging Control	Use Use	: Average : Average			
Averaging Set	up	: 0:00:15			
-Logging Setup Logging Logging) Change Delta Group Cell	a: 0 : Base log			
Fotor State: Ilco Nevt/Pro	nn bonc IIr	nnine Data lica	Salaction	 	
		F4:	LOOK UP	- F5:	CANCEL

7. In the Averaging Setup box, change the Average Window field value to at least 15 seconds.

Note to enter the value in HHH:MM:SS time format (use values in the 15-25 second range).

10-19-10 🔶	📧 🖬 RX-400 Unit 3 🖄 ANALOG INPUT	12:16:46 <mark>*Alarm*</mark>
	Analog Log Setup	
	Property: .AI.03.01.01 :OUTPUT	
	_r Usage Setup	
	Logging Use : Average Control Use : Average	
	Averaging Setup	
	Average Window : 0:00:15	
	Logging Setup	
	Logging Group Cell : BASE LOG	
Enter HHH:M	M:SS : 0:00:00 to 18:00:00 Average Window Select.	
		F5: CANCEL

8. Press the Back key twice to save the changes you entered and return to the Input Status screen.

Visit our website at copeland.com/en-us/products/controls-monitoring-systems for the latest technical documentation and updates. For Technical Support call 833-409-7505 or email ColdChain.TechnicalServices@Copeland.com



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