

E2 Controller



E2 RX HOTKEYS

- [F1] + [A]** TD3 Summary
- [F1] + [B]** Case Control Summary
- [F1] + [C]** Condenser Summary
- [F1] + [S]** Suction Summary
- [F1] + [U]** Circuit Summary

E2 BX HOTKEYS

- [F1] + [A]** AHU Summary
- [F1] + [B]** Lighting Summary
- [F1] + [C]** ARTC/RTU Summary
- [F1] + [Z]** AHU Zone Summary

E2 COMMON HOTKEYS

- [F1] + [D]** Global Data Status
- [F1] + [E]** Expanded Info
- [F1] + [G]** Graph Current Value
- [F1] + [I]** Input Definitions
- [F1] + [J]** Time Sched Summary
- [F1] + [K]** Sensor Ctrl Summary
- [F1] + [O]** Output Definitions
- [F1] + [P]** Power Monitoring
- [F1] + [Q]** Log Current Value
- [F1] + [X]** Notepad

E2 SYSTEM HOTKEYS

- [F1] + [A]** Add/Delete Application
- [F1] + [B]** Toggle Full Options
- [F1] + [M]** Modem Setup
- [F1] + [N]** Network Status
- [F1] + [I]** TCP/IP Setup
- [F1] + [V]** Firmware Version
- [F1] + [W]** Configured Apps
- [F1] + [?]** Hotkeys List

Log In to E2

- Press **[Log In]**
- Enter the username in **USER** field and press **[Enter]**
- Enter the password in **PASS** field and press **[Enter]**

Log Out of E2

- Press **[Log Out]**

View Status of Application

- Press the **[Menu]** key
- Press **[1]**, **[2]**, **[3]**, or **[4]** for a summary of most common applications, or press **[5]** and select application type from menu.
- Use arrows to highlight application name, and press **[Enter]** to view the status screen.

Alarm View and Actions

- Press **[Alarm]**
- Use the arrow keys to highlight a single alarm, and:
 - [F1] [A]** to acknowledge the alarm.
 - [F2] [A]** to reset the alarm.
 - [F3] [A]** to clear the alarm.
 - [F4]** for expanded info
 - [F1] [B]** acknowledges all alarms.
 - [F2] [B]** resets all alarms.
 - [F3] [B]** clear all alarms.

Manual Defrost

- Press **[F1] + [U]** (Circuit Summary).
- Highlight circuit and press **[Enter]**.
- Press **[Enter]** for **Actions** Menu and select **[5]**.
- Press **[Enter]** until **Bypass Commands** field reads **"Defrost"**.
- Press **[Enter]** to begin defrost.

View Graph or Log from Status Screen

- Use arrow keys to highlight value with the cursor.
- Press **[Enter]** for **Actions** Menu.
- Select **[1]** for a graph view, or **[2]** for a log view.

Check Board Status

- Press the **[Menu]** key.
- Press **[2]**, **[2]**, **[1]** to view the **Online Status** screen.

Add/Delete Application

- Press the **[Menu]** key.
- Press **[A]**.
- To add an application:
 - Press **[F4]** in the **Type** field and select an application type.
 - Enter a number in the **"How many?"** field.
 - Press **[Enter]** to add the applications.
- To delete an application:
 - Press **[F4]** in the **Type** field and select an application type.
 - Highlight the application to delete and press **[Enter]**.
 - Confirm by pressing **[Y]**.

Add/Delete IO Boards

- Press the **[Menu]** key.
 - Press **[7]**, **[7]**, **[1]**
 - Change the number of devices to the correct setting.
- Note: Entering a lower number always deletes the highest numbered boards first.**

Setting Sensor Offset

- Press **[F1] + [I]**.
- Use the arrow keys to highlight the input.
- Press **[F3]** - **Offset**.

Using the E2 Online Help System

Screen Help

From any status or summary screen, press **[?]** to view an extended screen description.

Property Help

From any setup screen, highlight a setup field and press **[?]** to view info about the property.

Menu Help

From any menu, press **[?]** to view a menu description.

General Help

Hold down **[SH]** and press **[?]** to view troubleshooting info and other general help topics.

Changing Setpoints and Configuration

To Enter Setup Mode:

- Navigate to the status screen of the application you wish to change, and press **[F5]** - **SETUP**.

Navigating the Setup View:

- Press **[F1]** and **[F2]** to move forward and backward through the setup screens.
- Hold down **[F1]** and press **[1]** - **[2]** to jump to a specific screen tab.

Entering Config Values:

Highlight the value using the arrow keys, and:

- For text or numbers, enter the desired value (s).
- For **Yes/No** fields, press **[Y]** for Yes and **[N]** for No,
- For multiple-choice fields, press **[F4]**, highlight and value and press **[Enter]**.

For Technical Support:

Call: 833-409-7505 or
Email: ColdChain.TechnicalServices@copeland.com

Scan the QR code for the latest technical documentation and updates.



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Voltages on I/O Network and COM Ports

COM A, B, and D (REFLECS) and I/O Network (Einstein and E2)	2.3VDC - 2.6DC from the center terminal to either of the outer terminals on the network and plug
COM C (REFLECS, older style PIB board, P/N 537-3210, no yellow or red LEDs above COM ports)	Pin 7 to 8: -9VDC Pin 7 to 9: 0VDC Pin 7 to 10: +9VDC
COM C (REFLECS, newer style PIB board, P/N 537-3211, yellow & red LEDs above COM ports)	Pin 7 to 8: -4VDC Pin 7 to 9: 0VDC Pin 7 to 10: +6VDC

I/O Board Powering

Board Type	Transformer Type
16AI, 8RO/8ROSMT, 4AO, 8DO, MultiFlex 16 and ESR	24VAC, center-tapped
8IO, ARTC, ESR8, TD3, all MultiFlex boards except the 16 and MultiFlex ESR	24VAC, non-centertapped

Recommended Network Wire

Controller Network Type	Recommended Wire
I/O network (Einstein and E2) and REFLECS COM A, B, and D	Belden #8641
REFLECS COM C	Belden #8771
Echelon networks (Einstein and E2)	P/N 135-2300 (non-plenum) and P/N 135-2301 (plenum)

Checking I/O Board Online Status

Controller Type	Instructions
REFLECS	Log in and from Main Menu press 7, 7, 1 . The board numbers will be displayed along with status - "1" if the board is online, and "-" if the board is offline.
Einstein	Log in and press F8, Y, 4, 3 . Controller status will read "Online" or "Offline."
E2	Log in and press the Menu key. Press 7, 7, 1 . Controller status will read "Online" or "Offline."

Offset & Gain for Linear Sensors

Offset = Minimum Value to be Read - Minimum Sensor Voltage
Gain = Maximum Value to be Read / (Maximum Sensor Voltage + Offset)
 For all Copeland controllers, Offset is entered in units of mV. To calculate Gain, Offset must be in Volts. **1V = 1000 mV**

Example: For a linear Refrigerant Level Transducer that can relay 1 to 5V and will read a minimum value of 0 and a maximum value of 100.
 Offset = 0 - 1V = -1V which is entered as -1000 mV for an Copeland controller
 Gain = 100 / (5V + -1V) = 25

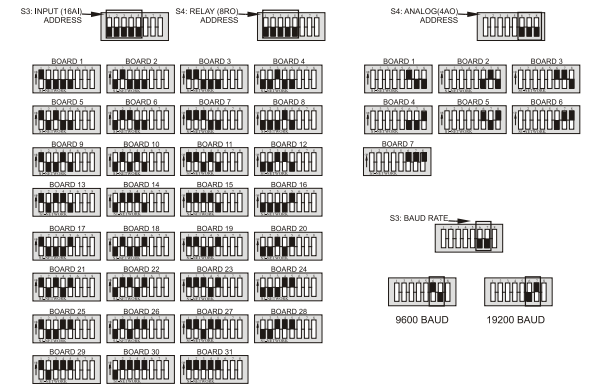
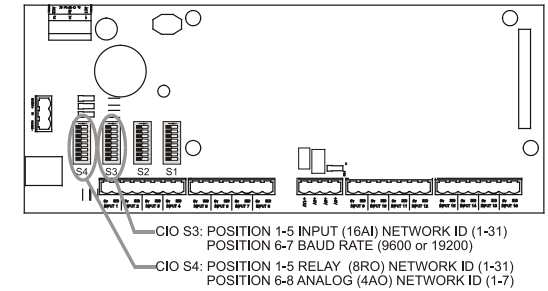
Pressure Temperature Chart

°F	°C	R-22	R-134A	R-404A	R-407A Vapor	R-407A Liquid	R-410A	MP-39	R-507	R-744 CO ₂
-80	-62.2	20.2								
-75	-59.4	18.5								
-70	-56.7	16.6								
-65	-53.9	14.4								
-60	-51.1	12.0	21.6							79.9
-55	-48.3	9.2	20.2							91.1
-50	-45.6	6.2	18.6	0.0	9.0	0.8	4.9	18.5	0.9	103.4
-45	-42.8	2.7	16.7	2.0	5.7	1.7	7.6	16.5	3.0	116.6
-40	-40	0.5	14.7	5.5	2.0	3.9	10.7	14.5	5.5	131.0
-35	-37.2	2.6	12.3	9.1	1.0	6.45	14.0	12.0	8.1	146.5
-30	-34.4	4.9	9.7	10.8	3.3	9.2	17.7	9.0	11.1	163.1
-28	-33.3	5.9	8.5	12.0	4.2	10.4	19.3	8.3	12.4	170.1
-26	-32.2	6.9	7.3	13.2	5.2	11.6	20.9	7.0	13.7	177.3
-24	-31.1	7.9	5.0	14.5	6.3	12.9	22.6	6.0	15.0	184.7
-22	-30.0	9.0	4.8	15.8	7.4	14.2	24.4	4.5	16.4	192.4
-20	-28.9	10.2	3.6	17.1	8.5	15.6	26.2	3.5	17.8	200.2
-18	-27.8	11.3	2.5	18.5	9.7	17.0	28.1	2.0	19.3	208.3
-16	-26.7	12.5	1.4	20.0	10.9	18.5	30.0	0.5	20.9	216.5
-14	-25.6	13.8	0.2	21.5	12.2	20.0	32.0	0.4	22.5	225.0
-12	-24.4	15.1	0.9	23.0	13.5	21.6	34.1	1.4	24.1	233.8
-10	-23.3	16.5	2.0	24.6	14.9	23.2	36.3	2.2	25.8	242.7
-8	-22.2	17.9	2.9	26.3	16.3	24.9	38.5	3.1	27.6	251.9
-6	-21.1	19.3	3.8	28.0	17.8	26.6	40.8	3.9	29.4	261.3
-4	-20.0	20.8	4.7	29.8	19.3	28.4	43.2	4.8	31.3	271.0
-2	-18.9	22.4	5.6	31.6	20.9	30.3	45.7	5.7	33.2	280.9
0	-17.8	24.0	6.5	33.5	22.5	32.2	48.2	6.7	35.2	291.0
2	-16.7	25.6	7.6	35.5	24.2	34.2	50.8	7.7	37.3	301.5
4	-15.6	27.3	8.7	37.4	26.0	36.3	53.5	8.8	39.4	312.1
6	-14.4	29.1	9.8	39.4	27.8	38.4	56.3	9.9	41.6	323.1
8	-13.3	30.9	10.9	41.6	29.7	40.6	59.2	11.0	43.8	334.2
10	-12.2	32.8	12	43.7	31.6	42.8	62.2	12.2	46.2	345.7
12	-11.1	34.7	13.3	46.0	33.6	45.1	65.2	13.4	48.5	357.4
14	-10.0	36.7	14.6	48.3	35.7	47.5	68.4	14.6	51.0	369.5
16	-8.9	38.7	15.8	50.7	37.8	50.0	71.6	15.9	53.5	381.8
18	-7.8	40.9	17.4	53.1	40.0	52.5	74.9	17.2	56.1	394.3
20	-6.7	43.0	18.4	55.6	42.3	55.1	78.4	18.6	58.8	407.2
22	-5.6	45.3	19.9	58.2	44.7	57.8	81.9	20.0	61.5	420.4
24	-4.4	47.6	21.5	61.9	47.1	60.6	85.5	21.5	64.3	433.8
26	-3.3	49.9	23.0	63.6	49.6	63.4	89.2	23.0	67.2	447.6
28	-2.2	52.4	24.6	66.5	52.2	66.3	93.1	24.6	70.2	461.7
30	-1.1	54.9	26.1	69.4	54.8	69.3	97.0	26.2	73.3	476.1
35	1.7	61.4	30.4	77.0	61.9	77.2	107.3	30.5	81.2	513.4
40	4.4	68.5	35.0	85.1	69.4	85.6	118.4	35.0	89.8	552.9
45	7.2	76.0	40.0	92.6	77.5	94.7	130.2	40.0	98.8	594.5
50	10.0	84.0	45.4	99.2	86.1	104.2	142.6	45.3	108.6	638.3
55	12.8	92.6	51.2	115.0	95.4	114.4	155.9	51.2	118.8	684.4
60	15.6	101.6	57.4	125.0	105.02	125.2	170.1	57.4	129.7	733.1
65	18.3	111.2	64.0	136.5	115.8	136.7	185.2	64.0	141.3	784.2
70	21.1	121.4	71.1	148.0	127.0	148.8	201.1	71.1	153.6	838.1
75	23.9	132.2	78.6	161.0	138.9	161.8	217.9	78.6	166.6	894.9
80	26.7	143.6	86.7	174.0	151.6	175.3	235.8	86.7	180.3	954.9
85	29.4	155.7	95.2	188.0	165.1	189.7	254.6	95.2	194.7	1018
90	32.2	168.4	104.3	203.0	179.3	204.8	274.5	104.3	210.2	**
95	35.0	181.8	113.9	218.5	194.5	220.9	295.5	113.9	226.6	**
100	37.8	195.9	124.1	235.0	210.4	237.6	317.6	124.1	243.5	**
105	40.6	210.8	134.9	252.5	227.4	255.4	340.9	134.9	261.8	**
110	43.3	226.4	146.3	271.0	245.2	273.9	365.4	146.3	280.6	**
115	46.1	242.7	158.4	290.0	264.1	293.5	391.2	158.4	300.7	**
120	48.9	259.9	171.1	311.0	284.0	314.0	418.3	171.1	321.9	**
125	51.7	277.9	184.5	332.0	305.0	335.5	446.9	184.5	340.3	**
130	54.4	296.8	198.7	354.0	327.1	357.9	476.8	198.7	367.8	**
135	57.2	316.6	213.5	378.0	350.5	381.5	508.4	213.5	392.6	**
140	60.0	337.3	229.2	402.0	375.1	406.2	541.4	229.2	418.7	**
145	62.8	358.9	245.6	418.0	401.0	431.9	576.3	245.6	446.2	**

Vapor Pressure = psig Vapor
 Blue Pressures = psig Liquid

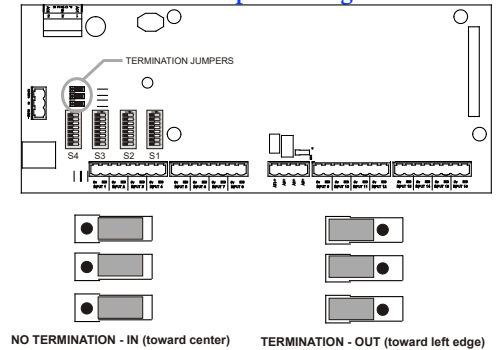
Red Pressure = in. Hg Vacuum
 ** = Exceeds critical temperature

MultiFlex I/O Board Numbering and Baud Rate



Note: Cycle power to make dip switch change effective.

MultiFlex Termination Jumper Settings



IO Networks should be wired in a single daisy chain from the controller to each device on the network, with no star configurations.

Terminate each end of the daisy chain by setting the termination jumpers to the "TERMINATION" position. Set all other devices to the "NO TERMINATION" position.

MultiFlex Sensor Input Dip Switch Settings

