


Voltages on I/O Network and COM Ports	
COM A, B, and D (REFLECS) and I/O Network (Einstein and E2)	2.3VDC - 2.6VDC from the center terminal to either of the outer terminals on the network 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-center-tapped

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  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 Emerson 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 Emerson controller Gain = 100 / (5V + -1V) = 25	



Download Emerson's PT Pro by scanning with your smartphone or visiting EmersonClimate.com/mobileapp for additional refrigerants.

Email: ColdChain.TechnicalServices@Emerson.com
1065 Big Shanty Rd NW Ste 100
Kennesaw, GA 30144, USA

Phone: 770-425-2724
800-829-2724
Fax: 770-425-9319

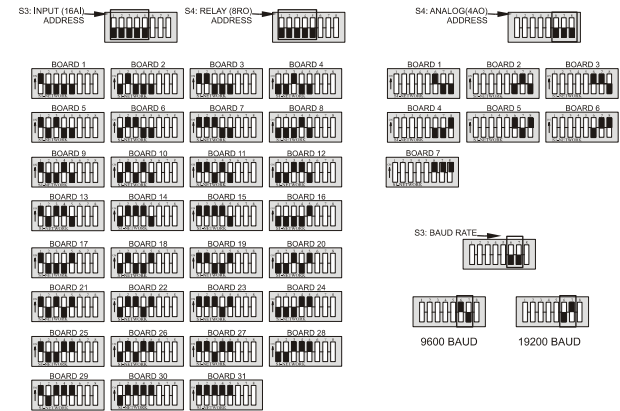
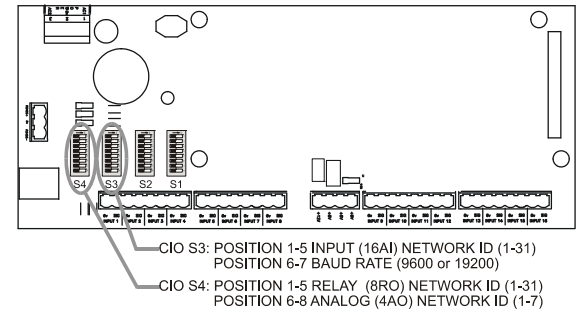


Pressure-Temperature Chart

°F	°C	R-22	R-134a	R-404A	R-407A Vapor	R-407A Liquid	R-410A	MP-39	R-507	R-744 CO2
-80.0	-62.2	20.2								
-75.0	-59.4	18.5								
-70.0	-56.7	16.6								
-65.0	-53.9	14.4								
-60.0	-51.1	12.0	21.6							79.9
-55.0	-48.3	9.2	20.2							91.1
-50.0	-45.6	6.2	18.6	0.0	9.0	0.8	4.9	18.5	0.9	103.4
-45.0	-42.8	2.7	16.7	2.0	5.7	1.7	7.6	16.5	3.0	116.6
-40.0	-40.0	0.5	14.7	5.5	2.0	3.9	10.7	14.5	5.5	131.0
-35.0	-37.2	2.6	12.3	9.1	1.0	6.45	14.0	12.0	8.1	146.5
-30.0	-34.4	4.9	9.7	10.8	3.3	9.2	17.7	9.0	11.1	163.1
-28.0	-33.3	5.9	8.5	12.0	4.2	10.4	19.3	8.3	12.4	170.1
-26.0	-32.2	6.9	7.3	13.2	5.2	11.6	20.9	7.0	13.7	177.3
-24.0	-31.1	7.9	5.0	14.5	6.3	12.9	22.6	6.0	15.0	184.7
-22.0	-30.0	9.0	4.8	15.8	7.4	14.2	24.4	4.5	16.4	192.4
-20.0	-28.9	10.2	3.6	17.1	8.5	15.6	26.2	3.5	17.8	200.2
-18.0	-27.8	11.3	2.5	18.5	9.7	17.0	28.1	2.0	19.3	208.3
-16.0	-26.7	12.5	1.4	20.0	10.9	18.5	30.0	0.5	20.9	216.5
-14.0	-25.6	13.8	0.2	21.5	12.2	20.0	32.0	0.4	22.5	225.0
-12.0	-24.4	15.1	0.9	23.0	13.5	21.6	34.1	1.4	24.1	233.8
-10.0	-23.3	16.5	2.0	24.6	14.9	23.2	36.3	2.2	25.8	242.7
-8.0	-22.2	17.9	2.9	26.3	16.3	24.9	38.5	3.1	27.6	251.9
-6.0	-21.1	19.3	3.8	28.0	17.8	26.6	40.8	3.9	29.4	261.3
-4.0	-20.0	20.8	4.7	29.8	19.3	28.4	43.2	4.8	31.3	271.0
-2.0	-18.9	22.4	5.6	31.6	20.9	30.3	45.7	5.7	33.2	280.9
0.0	-17.8	24.0	6.5	33.5	22.5	32.2	48.2	6.7	35.2	291.0
2.0	-16.7	25.6	7.6	35.5	24.2	34.2	50.8	7.7	37.3	301.5
4.0	-15.6	27.3	8.7	37.4	26.0	36.3	53.5	8.8	39.4	312.1
6.0	-14.4	29.1	9.8	39.4	27.8	38.4	56.3	9.9	41.6	323.1
8.0	-13.3	30.9	10.9	41.6	29.7	40.6	59.2	11.0	43.8	334.2
10.0	-12.2	32.8	12.0	43.7	31.6	42.8	62.2	12.2	46.2	345.7
12.0	-11.1	34.7	13.3	46.0	33.6	45.1	65.2	13.4	48.5	357.4
14.0	-10.0	36.7	14.6	48.3	35.7	47.5	68.4	14.6	51.0	369.5
16.0	-8.9	38.7	15.8	50.7	37.8	50.0	71.6	15.9	53.5	381.8
18.0	-7.8	40.9	17.4	53.1	40.0	52.5	74.9	17.2	56.1	394.3
20.0	-6.7	43.0	18.4	55.6	42.3	55.1	78.4	18.6	58.8	407.2
22.0	-5.6	45.3	19.9	58.2	44.7	57.8	81.9	20.0	61.5	420.4
24.0	-4.4	47.6	21.5	61.9	47.1	60.6	85.5	21.5	64.3	433.8
26.0	-3.3	49.9	23.0	63.6	49.6	63.4	89.2	23.0	67.2	447.6
28.0	-2.2	52.4	24.6	66.5	52.2	66.3	93.1	24.6	70.2	461.7
30.0	-1.1	54.9	26.1	69.4	54.8	69.3	97.0	26.2	73.3	476.1
35.0	1.7	61.4	30.4	77.0	61.9	77.2	107.3	30.5	81.2	513.4
40.0	4.4	68.5	35.0	85.1	69.4	85.6	118.4	35.0	89.8	552.9
45.0	7.2	76.0	40.0	92.6	77.5	94.7	130.2	40.0	98.8	594.5
50.0	10.0	84.0	45.4	99.2	86.1	104.2	142.6	45.3	108.6	638.3
55.0	12.8	92.6	51.2	115.0	95.4	114.4	155.9	66.5	118.8	684.4
60.0	15.6	101.6	57.4	125.0	105.02	125.2	170.1	70.0	129.7	733.1
65.0	18.3	111.2	64.0	136.5	115.8	136.7	185.2	77.5	141.3	784.2
70.0	21.1	121.4	71.1	148.0	127.0	148.8	201.1	85.0	153.6	838.1
75.0	23.9	132.2	78.6	161.0	138.9	161.8	217.9	93.5	166.6	894.9
80.0	26.7	143.6	86.7	174.0	151.6	175.3	235.8	102.0	180.3	954.9
85.0	29.4	155.7	95.2	188.0	165.1	189.7	254.6	111.0	200.7	1018
90.0	32.2	168.4	104.3	203.0	179.3	204.8	274.5	121.0	210.2	**
95.0	35.0	181.8	113.9	218.5	194.5	220.9	295.5	131.0	226.6	**
100.0	37.8	195.9	124.1	235.0	210.4	237.6	317.6	142.0	243.5	**
105.0	40.6	210.8	134.9	252.5	227.4	255.4	340.9	153.5	261.8	**
110.0	43.3	226.4	146.3	271.0	245.2	273.9	365.4	165.0	280.6	**
115.0	46.1	242.7	158.4	290.0	264.1	293.5	391.2	177.5	300.7	**
120.0	48.9	259.9	171.1	311.0	284.0	314.0	418.3	191.0	321.9	**
125.0	51.7	277.9	184.5	332.0	305.0	335.5	446.9	204.5	340.3	**
130.0	54.4	296.8	198.7	354.0	327.1	357.9	476.8	219.0	367.8	**
135.0	57.2	316.6	213.5	378.0	350.5	381.5	508.4	234.0	392.6	**
140.0	60.0	337.3	229.2	402.0	375.1	406.2	541.4	250.0	418.7	**
145.0	62.8	358.9	245.6	418.0	401.0	431.9	576.3	266.0	446.2	**

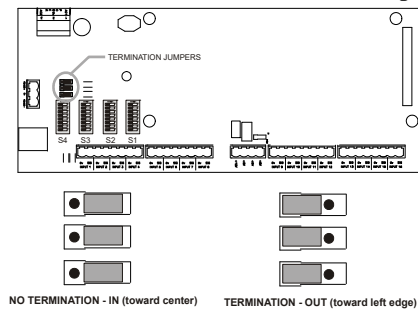
Vapor Pressures - psig Vapor
Blue Pressures - psig Liquid
Red Pressures - in. Hg Vacuum
** = Exceeds critical temperature

MultiFlex I/O Board Numbering and Baud Rate



Note: Cycle power to make dip switch change effective

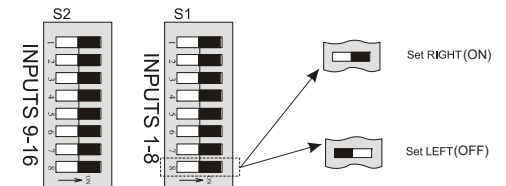
MultiFlex Termination Jumper Settings



I/O 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



E2 RX Hotkeys

- Alt** + **#3** TD3 Summary
- Alt** + **B** Case Control Summary
- Alt** + **C** Condenser Summary
- Alt** + **S** Suction Summary
- Alt** + **U** Circuit Summary

E2 BX Hotkeys

- Alt** + **H** AHU Summary
- Alt** + **L** Lighting Summary
- Alt** + **R** ARTC/RTU Summary
- Alt** + **Z** AHU Zone Summary

E2 Common Hotkeys

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

E2 System Hotkeys

- Alt** + **A** Add/Delete Application
- Alt** + **F** Toggle Full Options
- Alt** + **M** Modem Setup
- Alt** + **N** Network Status
- Alt** + **T** TCP/IP Setup
- Alt** + **V** Firmware Version
- Alt** + **W** Configured Apps
- Alt** + **?** Hotkeys List

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 **Shift** and press **?** to view trouble-shooting info and other general help topics.

Changing Set Points 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 **Ctrl** and press **1** - **0** 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 or **N** for No.
- For multiple-choice fields, press **F4**, highlight a value, and press **Enter**.



EINSTEIN

Quick Reference Card

Log In to E2

- Press **Log In/Out**.
- Enter username in USER field and press **Enter**.
- Enter password in PASS field and press **Enter**.

Log Out of E2

- Press **Log In/Out**.

View Status of Application

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

Alarm View and Actions

- Press **Alarm** to view alarms.
- Use 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** clears all alarms.

Manual Defrost

- Press **Alt** + **U** (Circuit Summary)
- Highlight circuit and press **Enter**.
- Press **Enter** for Actions Menu and select **7**.
- Press **Prev** until Bypass Command 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 the Actions Menu.
- Select **1** for a graph view, or **2** for a log view.

Check Board Status

- Press the **Menu** key.
- Press **7**, **8**, **1** to view the Online Status Screen.

Add/Delete Application

- Press **Menu**.
- Press **6**.
- 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 I/O Boards

- Press **Menu**.
- Press **7**, **7**, **2**.
- 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 **Alt** + **1**.
- Use arrow keys to highlight the input.
- Press **F3** - Offset.