COMMERCIAL TRAINING TOOLBOX TIPS

How to test system cooling and heating on M1-5 though M1-8 controller.

1 of 2 pages

IMC Two-stage Thermostat Simulation Test

The IMC simulates two-stage thermostat inputs to check unit operation. In the test mode, thermostat inputs and zone sensor control are ignored by the M1-8.

1. Move the MODE DIP "SHIFT" to ON. Make sure the decimal point is to the right of the readout.

2. Move the MODE DIP "UNIT TEST" to "ON" (see figure 54). For a few seconds only a decimal point will be displayed. Then a "c01" will be displayed simulating a thermostat input.
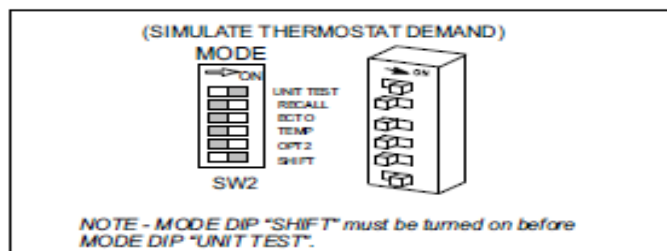

Figure 54. Mode Dip Switch Setting

NOTE - MODE DIP "SHIFT" must be turned on before MODE DIP "UNIT TEST".

3. Use the pushbutton to toggle the readout downward from "c01" To "s01". A double push will toggle the readout upward from "S01" To "c01". Table 34 shows test inputs on two-stage units (ECTO 5.04 set to 1 or 2). Table 35 shows test inputs for three-stage units (ECTO 5.04 set to 3).

NOTE - when a cooling stage is de-energized, all lower stages are de-energized simultaneously.

Table 34. Testing Inputs (Two-stage)

Read-out	Input Energized	Thermostat Input Simulation	Function
co 1	co 1.	Y1 & G	1st Stage Cooling
c 10	c 1.0	Y2 & G	1st & 2nd Stage Cooling
c 11	c 1.1.	Y1, Y2, & G	1st & 2nd Stage Cooling
h0 1	h0 1.	W1	1st Stage Heating
h 10	h 1.0	W2	Gas & Electric - 1st & 2nd Stage Heating
			Heat Pump - Em. Heat
h 11	h 1.1.	W1 & W2	1st & 2nd Stage Heating
50 1	50 1.	SMOKE	Unit Off (Default)

Table 35. Testing Inputs (Three-stage)

Readout	Input Energized	Thermostat Input Simulation	Function
co 1	co 1.	Y1 & G	1st Stage Cooling
c 10	c 1.0	Y2 & G	1st & 2nd Stage Cooling
c 11	c 1.1	Y1, Y2, & G	1st, 2nd & 3rd Stage Cooling
h0 1	h0 1.	W1	1st Stage Heating
h 10	h 1.0	W2	Gas & Electric - 1st & 2nd Stage Heating
			Heat Pump - Em. Heat
h 11	h 1.1.	W1 & W2	1st & 2nd Stage Heating
50 1	50 1.	SMOKE	Unit Off (Default)

4. Press and hold the pushbutton to turn "ON" an output. A decimal indicates the output is energized. Press and hold the pushbutton until the decimal disappears. This indicates the output is turned "OFF" (see figure 55).
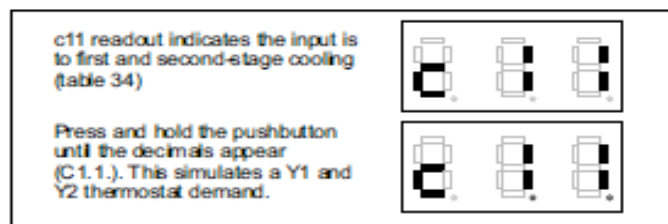
Example: To check compressor operation:

1. Set MODE DIP to "SHIFT". Set MODE DIP to "UNIT TEST".

2. With a short push, toggle pushbutton until "c11" is indicated.

3. Press pushbutton until decimals appear; all compressors will be energized.

NOTE - Units may have more than one compressor per stage of cooling. Refer to unit wiring schematic to determine which compressors are energized by first- and second-stage cooling demands.

Turning off the MODE DIP "UNIT TEST" and MODE DIP "SHIFT" returns unit to normal operation and resets all delays except blower off delays used with compressor operation.

Reset power to digital temperature control modules once tests are complete. This will reset any alarms which may have been caused by testing.

c11 readout indicates the input is to first and second-stage cooling (table 34)

Press and hold the pushbutton until the decimals appear (C1.1.). This simulates a Y1 and Y2 thermostat demand.

Below are the steps to test blower and condenser fan operation. Please note these only test operation and do not follow the sequence during a normal cooling call.

Check unit functions as follows.

1. Move the MODE DIP "UNIT TEST" to ON (see figure 48). The readout will display "0" indicating a blower output (see figure 49).

(IMC BOARD OUTPUTS)

MODE
UNIT TEST
RECALL
ECTO
TEMP
OPT2
SHIFT
SW2
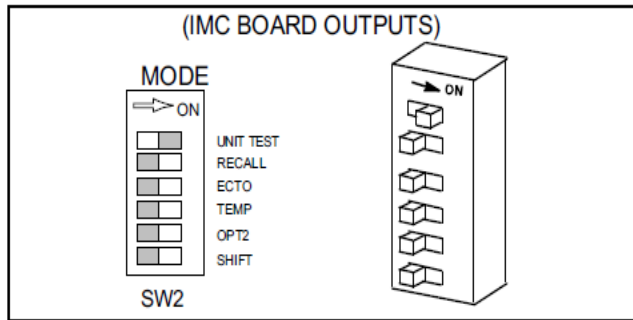
IMC MANUAL OUTPUT TEST

The IMC board provides analog and digital test outputs to check operation of the unit functions shown in table 33. See the Modulating Gas Valve section to test operation.

Table 33. Testing Outputs

Read-out	Output Energized	Function	Output
0	.0	Blower	K3
1	.1	Fan 1 [1]	K10
2	.2	Fan 2 [1]	K68
3	.3	Fan 3 [1]	K149
4	.4	Fan 4 [1]	K150
5	.5	Fan 5 [1]	K152
6	.6	Fan 6 [1]	K153
7	.7	Reversing Valve 1	L1
8	.8	Reversing Valve 2	L2
9	.9	Service Relay	SR
10	1.0	Reheat Solenoid	L14
11	1.1	Reheat Solenoid	L30
12	1.2	Exhaust Fan Stg. 1 / VFD Enable	K65
13	1.3	Exhaust Fan Stg. 2	(TB18-5)
14*	1.4	VAV A01 [2]	(TB18-11)
15*	1.5	VAV A02 [3]	(TB18-12)
16	1.6	GP Relay Out	(TB22-5)
17*	1.7	GP AO1	(TB22-11)
18*	1.8	GP AO2	(TB22-12)

*Analog outputs
[1] Fans which are controlled by a low ambient pressure switch will not be energized.
[2] Supply VFD speed or CAVB damper control.
[3] Exhaust fan VFD speed control

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