

## OSS-VAV

### Features:

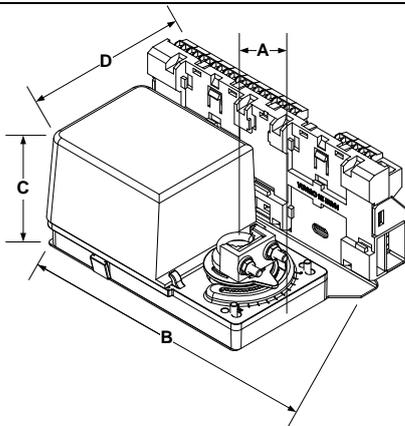
- Quality “non strip” terminals
- 24 Vac thermal fuse
- Selectable analog and digital output
- Precise temperature control with programmable PI function
- Selectable Fahrenheit or Celsius scale
- No occupancy override
- Multi level lockable access menu
- Lockable setpoint
- Change over by contact or external temperature sensor
- On board differential pressure sensor
- Pressure sensor air flow program available
- Selectable proportional control band and dead band
- Anti-freeze protection
- BACnet<sup>®</sup> MS/TP @ 9600, 19200, 38400, 76800 bps
- Selectable device instance via technician menu
- Selectable MAC Address by dipswitches



### Technical Data

<b>OSS VAV</b>	
<b>Torque</b>	70 in.lb. [8 Nm]
<b>Power consumption</b>	10 VA max
<b>Running time through 90°</b>	95 seconds ±10%
<b>Power supply</b>	22 to 26 Vac 50/60 Hz
<b>Inputs</b>	2 thermistor inputs
	2 digital inputs
	Differential pressure sensor 0-1.0" WC
<b>Outputs</b>	2 analog outputs (0-10 Vdc), 20 mA max. rated
	2 triacs output 24 Vac, 500 mA max. fused / triac
<b>Communication</b>	BACnet <sup>®</sup> MS/TP @ 9600, 19200, 38400 or 76800 bps
<b>Communication connection</b>	24 AWG twisted-shield cable (Belden 9841 or equivalent)
<b>Electrical connection</b>	0.8 mm <sup>2</sup> [18 AWG] minimum
<b>Operating temperature</b>	0°C to 50°C [32°F to 122°F]
<b>Storage temperature</b>	-30°C to 50°C [-22°F to 122°F]
<b>Relative Humidity</b>	5 to 95% non condensing
<b>Weight</b>	1.8 kg. [4 lb]

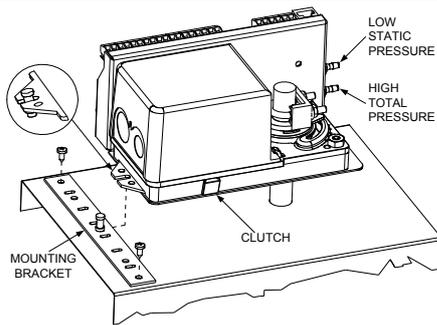
### Dimensions



Dimension	Imperial (in)	Metric (mm)
<b>A</b>	1.50	38
<b>B</b>	7.2	183
<b>C</b>	3.2	82
<b>D</b>	5.1	128
<b>Tubing ID*</b>	1/8	3.175

\*On pressure independent models

## Installation



The OSS-VAV has to be installed on the cold duct.

1. Manually close the damper blades and positioned the actuator at 0° or 90°.
2. Slide the actuator onto the shaft.
3. Tighten the nuts on the “U” bolt to the shaft with an 8mm wrench to a torque of 60 in.lb. [6.7 Nm].
4. Slide the mounting bracket under the actuator. Ensure free movement of the slot at the base of the actuator. The bracket pin must be placed in the mid distance of the slot.
5. Fix the bracket to the ductwork with #8 self-tapping screws.

## Terminal Description

### Low Voltage Supply (TB1)

- 1- Common
- 2- Common
- 3- 24 Vac Input
- 4- 24 Vac Input

### Triac Output (TB2)

- 1- Triac 24 Vac input for TO1/TO2
- 2- Triac Output 1 (TO1)
- 3- Common
- 4- Triac Output 2 (TO2)

### Digital Input (TB3)

- 1- Digital Input 1 (DI1)
- 2- Common (DI1 & DI2)
- 3- Digital Input 2 (DI2)

### Analog Output (TB4)

- 1- Analog Output 1 (AO1) – To Slave (AI1)
- 2- Common (AO1 & AO2)
- 3- Analog Output 2 (AO2)

### Analog Input (TB5)

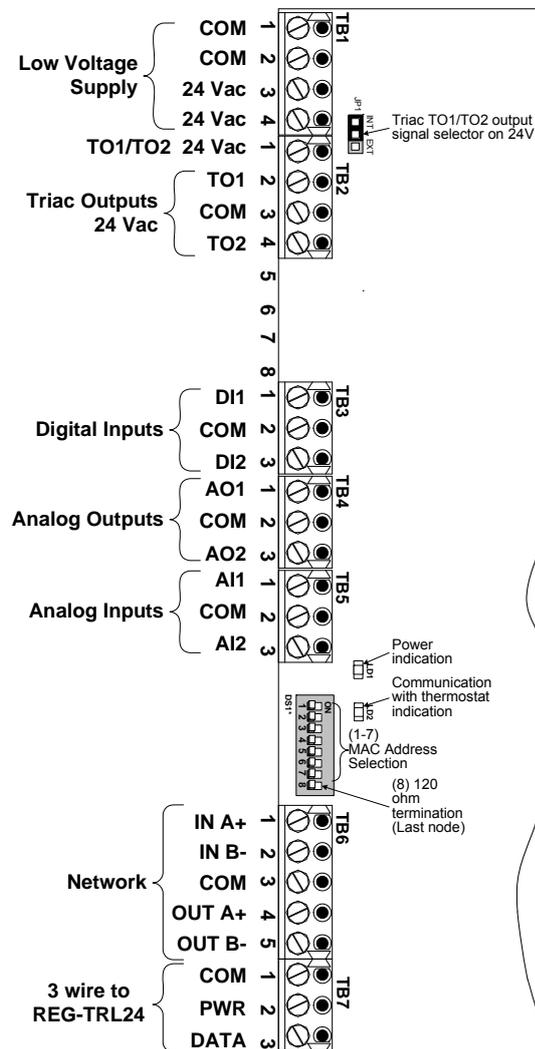
- 1- Analog Input 1 (AI1) – From Slave (AO2)
- 2- Common (AI1 & AI2)
- 3- Analog Input 2 (AI2)

### Network (TB6)

- 1- Input (IN A+)
- 2- Input (IN B+)
- 3- Common
- 4- Output (A+)
- 5- Output (B-)

### Thermostat Connection (TB7)

- 1- Common
- 2- Power
- 3- Data



## BACnet® MAC address dipswitches

MSTP/MAC address for communication, are selectable in binary logic by dipswitches.

If you do not change device instance in programme mode, it will be automatically modified according to the MAC address.

(8) 120 ohm termination (Last node)

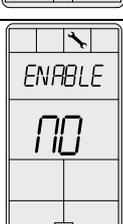
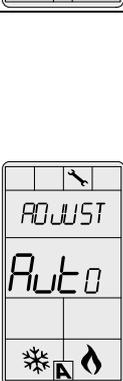
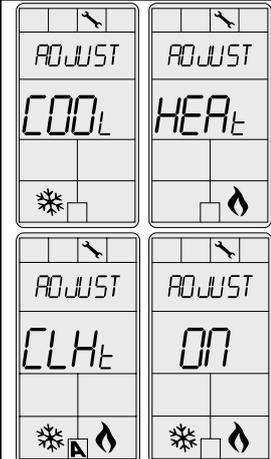


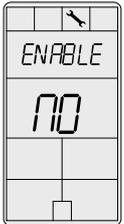
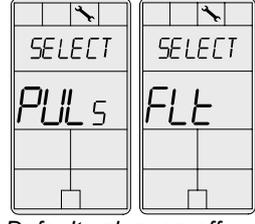
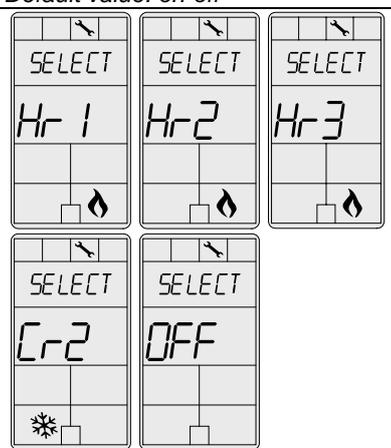
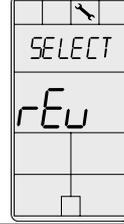
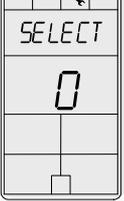
(1-7) MAC Address Selection

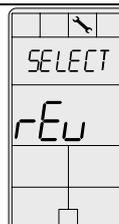
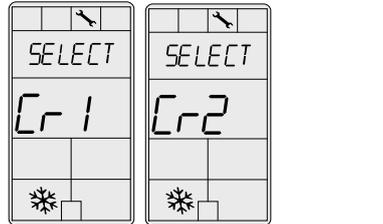
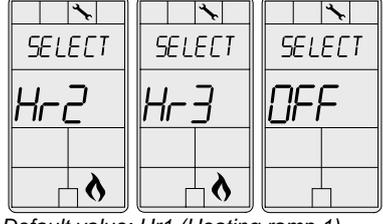
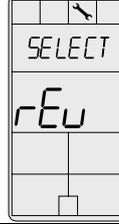
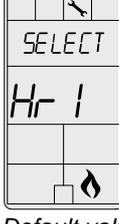
MAC Address	B0 B1 B2 B3 B4 B5 B6							Default Device Instance
	DS.1	DS.2	DS.3	DS.4	DS.5	DS.6	DS.7	
0	OFF	OFF	OFF	OFF	OFF	OFF	OFF	136000
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	136001
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	136002
3	ON	ON	OFF	OFF	OFF	OFF	OFF	136003
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	136004
...	...	...	...	...	...	...	...	...
126	OFF	ON	ON	ON	ON	ON	ON	136126
127	ON	ON	ON	ON	ON	ON	ON	136127

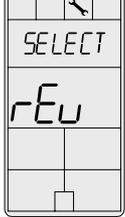
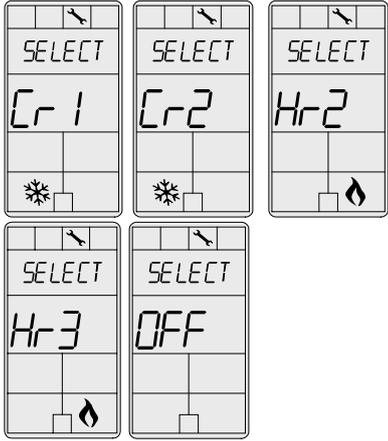
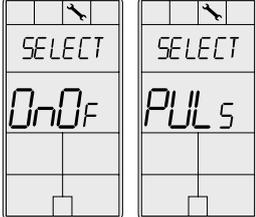
## Programming Mode

When in this mode the  symbol is displayed. Press on button  to advance to the next program function, press on button  to return to previous function and press on the arrow buttons  or  to change values. You can exit the programming mode at any time, changed values are automatically recorded.

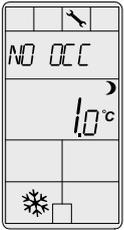
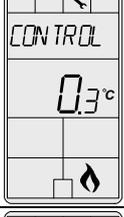
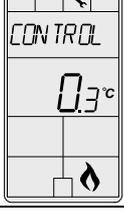
Step	Display	Description	Values
1		<b>Internal temperature sensor calibration:</b> Display scrolls "INSIDE TEMPER SENSOR OFFSET" and temperature read by internal temperature sensor. You can adjust the calibration of the sensor by comparison with a known thermometer. For example if thermostat has been installed in an area where temperature is slightly different than the typical room temperature (thermostat placed right under the air diffuser).	Range : 10 to 40°C [50 to 104°F] (max. offset ± 5°C) Increment: 0.1°C [0.2°F]
2		<b>Minimum setpoint:</b> Display scrolls "ADJUST MINIMUM USER SETPNT" and the minimum setpoint temperature. Select the desired minimum setpoint temperature.  The minimum value is restricted by the maximum value (step #3).	Minimum range: 10 to 40°C [50 to 104°F] Increment: 0.5°C [1°F]  <i>Default value: 18°C [64°F]</i>
3		<b>Maximum setpoint:</b> Display scrolls "ADJUST MAXIMUM USER SETPNT" and the maximum setpoint temperature. Please select the desired maximum setpoint temperature.  The maximum value is restricted by the minimum value (step #2).	Maximum range: 10 to 40°C [50 to 104°F] Increment: 0.5°C [1°F]  <i>Default value: 24°C [77°F]</i>
4		<b>Locking the setpoint:</b> Display scrolls "USER SETPNT LOCKED" and the status of the function. You can lock or unlock the setpoint adjustment by end user. If locked, "YES" and lock symbol will appear.	 <i>Default value: Unlocked (NO)</i>
5		<b>Adjust internal setpoint:</b> Display scrolls "ADJUST INTERN SETPNT" and the setpoint temperature. Select the desired setpoint temperature; which should be within the listed temperature range. Lock symbol will appear if the setpoint was locked at the previous step.  Setpoint value is restricted by the minimum and maximum value (step #2 & 3).	Setpoint range: 10 to 40°C [50 to 104°F] Increment: 0.5°C [1°F]  <i>Default value: 22°C [72°F]</i>
6		<b>Adjust the control mode:</b> Display scrolls "ADJUST TEMPER CONTROL MODE". Cooling and heating symbols are also displayed.  Select which control mode to authorize: Automatic, cooling or heating, heating only or cooling only.  If you want to authorize all modes, choose Automatic mode.  ON mode will the user allow to switch between heat & cool mode.  If you want to authorize only Automatic mode, select CLHt mode.	  <i>Default value: Automatic cooling and heating</i>

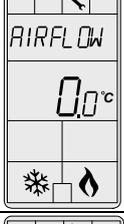
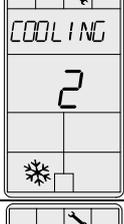
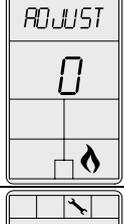
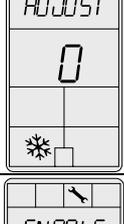
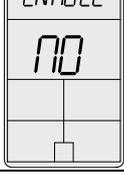
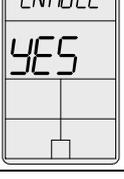
Step	Display	Description	Values
7		<b>Set On/Off function enable or disable:</b> Display scrolls "ENABLE ON OFF CONTROL MODE". Select Yes or No to enable or disable user control mode adjustment.	 <i>Default value: Enable (YES)</i>
8		<b>Set TO1 output signal:</b> Display scrolls "SELECT TO1 OUTPUT SIGNAL". Select the desired signal output for TO1 output, either <b>OnOf</b> (On-Off), <b>PULs</b> (Pulse) or <b>FLt</b> (Floating).	 <i>Default value: on-off</i>
9		<b>Set TO1 signal ramp:</b> Display scrolls "SELECT TO1 SIGNAL RAMP". Select the desired ramp for TO1 from the options provided:  Hr1: Heating ramp 1, Hr2: Heating ramp 2, Hr3: Heating ramp 3, Cr1: Cooling ramp 1, Cr2: Cooling ramp 2, OFF.  If "PULs" was selected at step #8, you can only choose Hr1, Hr2 or Hr3.  <b>If you selected OnOf at step #8, go directly to step #12.</b>  <b>If you selected PULs at step #8, go directly to step #14.</b> <b>If you selected OFF, go directly to Step#15.</b>	 <i>Default value: Cr1 (Cooling ramp 1)</i>
10		<b>Set TO1 floating time:</b> (If "FLt" was selected at step #8) Display scroll "SET FLOATING TIME IN SECONDS" and the floating time value (in seconds).  Please select desired value of the floating time signal.	Range: 15 to 250 sec. Increment: 5 sec.  <i>Default value: 100 sec.</i>
11		<b>Set TO1 direction:</b> (If "FLt" was selected at step #8) Display scrolls "SELECT FLOATING DIRECT REVERSE" and the selected rotation direction. Select the desired direction, either: dIr: Direct "clockwise" (0 to 90°) or rEv: Reverse "counter clockwise" (90 to 0°)  <b>Go directly to step #20.</b>	 <i>Default value: dIr (direct)</i>
12		<b>Set TO1 on-off closing level:</b> (If "OnOf" was selected at step #8) Display scrolls "SELECT TO1 CLOSE PERCENT" and the value of the closing level of the TO1 output.  Select the percentage at which you want TO1 to close: at x% of the demand of the ramp that you selected at step # 9.	Range: 15 to 80 Increment: 1%  <i>Default value: 40 (40% of the demand)</i>
13		<b>Set TO1 on-off opening level:</b> (If "OnOf" was selected at step #8) Display scrolls "SELECT TO1 OPEN PERCENT" and the value of the opening level of the TO1 output.  Select the percentage at which you want TO1 to open: at x% of the demand of the ramp that you selected at step # 9.	Range: 0 to TO1 closing- 4% Increment: 1%  <i>Default value: 0 (0% of the demand)</i>

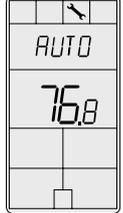
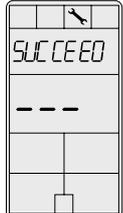
Step	Display	Description	Values
14		<p><b>Set TO1 direction:</b> Display scrolls "SELECT TO1 DIRECT REVERSE".</p> <p>Select the desired direction you want for TO1 output, either: dir (normally open) or rEv (normally close)</p>	 <p>Default value: dir (direct)</p>
15		<p><b>Set TO2 output signal:</b> Display scrolls "SELECT TO2 OUTPUT SIGNAL".</p> <p>Select the desired signal output for TO2 output from the options provided: OnOf, PULs</p>	 <p>Default value: on-off</p>
16		<p><b>Set TO2 signal ramp:</b> Display scrolls "SELECT TO2 SIGNAL RAMP".</p> <p>Select the desired ramp for TO2 from the options provided:</p> <p>Hr1: Heating ramp 1, Hr2: Heating ramp 2, Hr3: Heating ramp 3, Cr1: Cooling ramp 1, Cr2: Cooling ramp 2, OFF.</p> <p>If "PULs" was selected at step #15, you can only choose Hr1, Hr2 or Hr3.</p> <p><b>If you selected pulse signal at step #15, go directly to step #19.</b></p> <p><b>If you selected OFF, go directly to step #20.</b></p>	  <p>Default value: Hr1 (Heating ramp 1)</p>
17		<p><b>Set TO2 on-off closing level:</b> (If "OnOf" was selected at step #15) Display scrolls "SELECT TO2 CLOSE PERCENT" and the value of the closing level of the TO2 output.</p> <p>Please select the percentage at which you want TO2 to close: x% of the demand of the ramp that you selected at step #16.</p>	<p>Range: 15 to 80 Increment: 1%</p> <p>Default value: 40 (40% of the demand)</p>
18		<p><b>Set TO2 on-off opening level:</b> (If "OnOf" has been selected at step #15) Display scrolls "SELECT TO2 OPEN PERCENT" and the value of the opening level of the TO2 output.</p> <p>Select the percentage at which you want TO2 to open: at x% of the demand of the ramp that you selected at step #16.</p>	<p>Range: 0 to TO2 closing- 4% Increment: 1%</p> <p>Default value: 0 (0% of the demand)</p>
19		<p><b>Set TO2 direction:</b> Display scrolls "SELECT TO2 DIRECT REVERSE".</p> <p>Select the desired direction you want for TO2 output, either: dir (normally open) or rEv (normally close)</p>	 <p>Default value: direct (dir)</p>
20		<p><b>Set motor signal ramp:</b> Display scrolls "SELECT MOTOR SIGNAL RAMP". Select which ramp you want for the motor from the options provided:</p> <p>Hr1: Heating ramp 1, Cr1: Cooling ramp 1,</p>	 <p>Default value: Cr1 (Cooling ramp 1)</p>

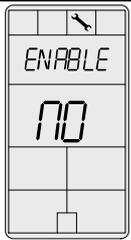
21		<p><b>Set motor direction:</b> Display scrolls "SELECT MOTOR DIRECT REVERSE".</p> <p>Select the desired direction you want for the motor, either: dir "clockwise" (0 to 90°) or rEv "counter clockwise" (90 to 0°)</p>	 <p>Default value: direct (dir)</p>
22		<p><b>Set motor 2 (slave) direction:</b> Display scrolls "SELECT MOTOR 2 DIRECT REVERSE".</p> <p>Select the desired direction you want for the slave motor, either: dir. "clockwise" (0 to 90°) or rEv. "counter clockwise" (90 to 0°)</p>	 <p>Default value: direct (dir)</p>
23		<p><b>Set pressure sensor 2 origin:</b> Display scrolls "SELECT PRESSUR 2".</p> <p>Select the desired origin for pressure sensor 2, either: LOC: second pressure sensor on hot duct Tot: second pressure sensor on supply duct</p>	 <p>Default value: Loc</p>
24		<p><b>Set AO2 analog signal ramp:</b> Display scrolls "SELECT AO2 ANALOG RAMP".</p> <p>Select the desired ramp for analog signal on AO2 from the options provided:</p> <p>Hr1: Heating ramp 1, Hr2: Heating ramp 2, Hr3: Heating ramp 3, Cr1: Cooling ramp 1, Cr2: Cooling ramp 2, OFF.</p> <p>If "OFF" is selected, go to step #29.</p>	 <p>Default value: Hr1 (Heating ramp 1)</p>
25		<p><b>Set AO2 output signal:</b> (Only if "OFF" hasn't been selected at step #24) Display shows "SELECT AO2 OUTPUT SIGNAL".</p> <p>You can choose: Analog On-Off Pulse</p> <p>If you have selected on/off or pulse signal, go directly to step #28.</p>	 <p>Default value: ANLg (Analog)</p>
26		<p><b>Minimum voltage of AO2 output:</b> (Only if "ANLg" has been selected at step #25) Display scrolls "MIN VOC ANALOG AO2 OUTPUT" and the value of the minimum voltage for the AO2 output.</p> <p>Select the desired value for the minimum voltage of AO2 output. (This is the "zero" value)</p> <p>The minimum value is restricted by the maximum value (step #27).</p>	<p>Range: 0.0 to 10.0 Volt Increment: 0.1 Volt Default value: 0 Volt</p>
27		<p><b>Maximum voltage of AO2 output:</b> (Only if "ANLg" has been selected at step #25) Display scrolls "MAX VOC ANALOG AO2 OUTPUT" and the value of the maximum voltage for the AO2 output.</p> <p>Select the desired value for the maximum voltage of AO2 output. (This is the "span" value)</p> <p>The maximum value is restricted by the minimum value (step #26).</p>	<p>Range: 0.0 to 10.0 Volt Increment: 0.1 Volt Default value: 10.0 Volt</p>

28		<p><b>Set AO2 direction:</b> Display scrolls "SELECT AO2 DIRECT REVERSE".</p> <p>Select the desired direction you want for AO2 output, either: dir (0 to 10Vdc) or rEv (10 to 0 Vdc)</p>	<p>Default value: direct (dir)</p>
29		<p><b>Set AI2 input signal:</b> Display scrolls "SELECT AI2 INPUT SIGNAL".</p> <p>Select the desired signal for AI2 input from the options provided:</p> <ul style="list-style-type: none"> <li>• OFF (input not used), External temperature function:</li> <li>• EtS (external temperature sensor 10K<math>\Omega</math>),</li> </ul>	<p>Default value: OFF</p>
30		<p><b>External temperature sensor Calibration:</b> (If "EtS" was selected at step #29)</p> <p>Display scrolls "EXTERN TEMPER SENSOR OFFSET" and the temperature read by the external temperature sensor (if connected on the selected input).</p> <p>If the sensor is not connected or short circuited, the display shows "Error". You can adjust the calibration of the external sensor by comparing with a known thermometer.</p>	<p>Range: -30 to 90°C [-22 to 194.0°F] (max. offset <math>\pm</math> 5°C) Increment: 0.1°C [0.2°F]</p>
31		<p><b>Control temperature selection</b></p> <p>The screen displays « SELECT TEMPER SENSOR »</p> <p>Select <b>itS</b> for the internal temperature sensor or <b>EtS</b> for the external temperature sensor or <b>CtS</b> for the remote temperature sensor or <b>AvEr</b> so that the control temperature is equal to the internal and external sensors' mean temperature.</p>	<p>Default: itS (internal Temp. sensor)</p>
32		<p><b>Set DI1 input signal:</b> Display scrolls "SELECT DI1 CONTACT". Moon <math>\curvearrowright</math> symbol is also displayed.</p> <p>Select the desired setting from the options provided:</p> <ul style="list-style-type: none"> <li>• OCC.o (Occupancy, normally open) contact</li> <li>• OCC.c (Occupancy, normally close) contact.</li> </ul>	<p>Default value: Occupancy Normally open (Occ.o)</p>
33		<p><b>Minimum occupancy time</b> (If « OCC.o or OCC.c » has been selected at step # 26)</p> <p>The screen displays « OCC MINIMUM TIME IN MINUTES » and the minimum occupancy time.</p>	<p>Plage : 0 à 240 min. Incrément : 1 min.</p> <p>Valeur par défaut : 30 min</p>
34		<p><b>No occupancy override time :</b></p> <p>Display scrolls "NO OCC DELAY OVERRIDE MINUTES" and the override time in minute. NSB <math>\curvearrowright</math> symbol is also displayed.</p> <p>Select the desired derogation time; if none is desired select "0".</p>	<p>Range: 0 to 180 min. Increment: 15 min. Default value: 120 min.</p>
35		<p><b>No occupancy dead bands offset (heating):</b></p> <p>Display scrolls "NO OCC HEATING OFFSET" and the offset value in °C or °F. Moon <math>\curvearrowright</math> and heating symbols are also displayed.</p> <p>Please select the desired offset for the heating dead bands when the system is in no occupancy.</p>	<p>Range: 0.0 to 5.0°C [0.0 to 10.0°F] Increment: 0.1°C [0.2°F] Default value: 1.0°C [2°F]</p>

36		<p><b>No occupancy dead bands offset (cooling):</b> Display scrolls "NO OCC COOLING OFFSET" and the offset value in °C or °F. Moon ☾. Cooling symbols are also displayed.</p> <p>Please select the desired offset for the cooling dead bands when the system is in no occupancy.</p>	<p>Range: 0.0 to 5.0°C [0.0 to 10.0°F] Increment: 0.1°C [0.2°F] Default value: 1.0°C [2°F]</p>
37		<p><b>Proportional band of heating ramp1:</b> Display scrolls "CONTROL RAMP 1 HEATING" and the value of the heating ramp1 proportional band, heating symbol is also displayed.</p> <p>Select the desired value for heating ramp1 proportional band.</p>	<p>Proportional band range : 0.5 to 5.0°C [1 to 10°F] Increment: 0.5°C [1°F] Default value: 2.0°C [4°F]</p>
38		<p><b>Proportional band of heating ramp2:</b> Display scrolls "CONTROL RAMP 2 HEATING" and the value of the heating ramp2 proportional band, heating symbol is also displayed.</p> <p>Select the desired value for heating ramp2 proportional band.</p>	<p>Proportional band range : 0.5 to 5.0°C [1 to 10°F] Increment: 0.5°C [1°F] Default value: 2.0°C [4°F]</p>
39		<p><b>Proportional band of heating ramp3:</b> Display scrolls "CONTROL RAMP 3 HEATING" and the value of the heating ramp3 proportional band, heating symbol is also displayed.</p> <p>Select the desired value for heating ramp3 proportional band.</p>	<p>Proportional band range : 0.5 to 5.0°C [1 to 10°F] Increment: 0.5°C [1°F] Default value: 2.0°C [4°F]</p>
40		<p><b>Proportional band of cooling ramp1:</b> Display scrolls "CONTROL RAMP 1 COOLING" and the value of the cooling ramp1 proportional band, cooling symbol is also displayed.</p> <p>Select the desired value for cooling ramp1 proportional band.</p>	<p>Proportional band range : 0.5 to 5.0°C [1 to 10°F] Increment: 0.5°C [1°F] Default value: 2.0°C [4°F]</p>
41		<p><b>Proportional band of cooling ramp2:</b> Display scrolls "CONTROL RAMP 2 COOLING" and the value of the cooling ramp2 proportional band, cooling symbol is also displayed.</p> <p>Select the desired value for cooling ramp2 proportional band.</p>	<p>Proportional band range : 0.5 to 5.0°C [1 to 10°F] Increment: 0.5°C [1°F] Default value: 2.0°C [4°F]</p>
42		<p><b>Dead band of heating ramp1:</b> Display scrolls "CONTROL DEAD BAND 1 HEATING" and the value of the heating ramp1 dead band, heating symbol is also displayed.</p> <p>Select the desired value for heating ramp1 dead band.</p>	<p>Dead band range : 0 to 5.0°C [0 to 10.0°F] Increment: 0.1°C [0.2°F] Default value: 0.3°C [0.6°F]</p>
43		<p><b>Dead band of heating ramp2:</b> Display scrolls "CONTROL DEAD BAND 2 HEATING" and the value of the heating ramp2 dead band, heating symbol is also displayed.</p> <p>Select the desired value for heating ramp2 dead band.</p>	<p>Dead band range : 0 to 5.0°C [0 to 10.0°F] Increment: 0.1°C [0.2°F] Default value: 0.3°C [0.6°F]</p>

44		<p><b>Dead band of heating ramp3:</b> Display scrolls "CONTROL DEAD BAND 3 HEATING" and the value of the heating ramp3 dead band, heating symbol is also displayed.</p> <p>Select the desired value for heating ramp3 dead band.</p>	<p>Dead band range : 0 to 5.0°C [0 to 10.0°F] Increment: 0.1°C [0.2°F] Default value: 0.3°C [0.6°F]</p>
45		<p><b>Dead band in cooling ramp1:</b> Display scrolls "CONTROL DEAD BAND 1 COOLING" and the value of the cooling ramp1 dead band, cooling symbol is also displayed.</p> <p>Select the desired value for cooling ramp1 dead band.</p>	<p>Dead band range : 0 to 5.0°C [0 to 10.0°F] Increment: 0.1°C [0.2°F] Default value: 0.3°C [0.6°F]</p>
46		<p><b>Dead band in cooling ramp2:</b> Display scrolls "CONTROL DEAD BAND 2 COOLING" and the value of the cooling ramp2 dead band, cooling symbol is also displayed.</p> <p>Select the desired value for cooling ramp2 dead band.</p>	<p>Dead band range : 0 to 5.0°C [0 to 10.0°F] Increment: 0.1°C [0.2°F] Default value: 0.3°C [0.6°F]</p>
47		<p><b>Dead band for Air flow mixing:</b> Display scrolls "AIRFLOW DEAD BAND MIX" and the value of the air flow mixing dead band, cooling symbol is also displayed. The value is restricted by the lowest value of the HR1 or CR1 dead band.</p>	<p>Dead band range : 0.0 to 0.2°C [0.0 to 0.4°F] Increment: 0.1°C [0.2°F] Default value: 0.0°C [0.0°F]</p>
48		<p><b>Anti-cycling delay cooling contact (protection for compressor):</b> Display scrolls "COOLING ANTI CYCLE MINUTES" and the value (in minutes) of the delay to activate / reactivate cooling contact.</p> <p>Select the desired value for the delay cooling contact.</p>	<p>Range: 0 to 15 min. Increment: 1 min. Default value: 2 min.</p>
49		<p><b>Integration time factor setting for heating:</b> Display scrolls "HEATING INTGRAL TIME IN SECONDS" and the time in seconds for the integration factor compensation, heating symbol is also displayed.</p> <p>Select the desired value of the integration factor compensation.</p>	<p>Range: 0 to 250 seconds Increment: 5 seconds Default value: 0 seconds</p>
50		<p><b>Integration time factor setting for cooling:</b> Display scrolls "COOLING INTGRAL TIME IN SECONDS" and the time in seconds for the integration factor compensation, cooling symbol is also displayed.</p> <p>Select the desired value of the integration factor compensation.</p>	<p>Range: 0 to 250 seconds Increment: 5 seconds Default value: 0 seconds</p>
51		<p><b>Enable or disable anti-freeze protection:</b> Display scrolls "ENABLE ANTI FREEZE PROTECT".</p> <p>You can enable or disable the Anti-freeze function.</p> <p>When enabled, if temperature drops to 4°C [39°F], heat will start even if thermostat is in OFF mode. Heat will stop when temperature reaches 5°C [41°F].</p>	 <p>Default value: Disable (NO)</p>

52		<p><b>Auto bauds rate:</b> Display scrolls "AUTO BAUDS RATE". You can enable or disable the Auto bauds rate function.</p> <p>When enabled, the controller automatically detects the baud rate of the system and coordinates it and you cannot change the bauds rate value yourself. If disable, you must select yourself the right bauds rate at step #52.</p>	 <p>Default value: Enable (YES)</p>
53		<p><b>Auto bauds, current baud:</b> Display scrolls "AUTO COMPORT BAUDS RATE" and the detected baud rate.</p> <p><b>Go to step #53.</b></p>	<p>Range: 9600, 19200, 38400, 76800</p>
54		<p><b>Communication bauds rate:</b> Display scrolls "ADJUST COMPORT BAUDS RATE" and the value of the baud rate in kbps.</p> <p>Select the desired communication bauds from the options provided: 9.6, 19.2, 38.4, 76.8.</p>	<p>Range: 9600, 19200, 38400, 76800 Default value: 76.8 kbps</p>
55		<p><b>MAC address:</b> If the dipswitches of DS1 are all off, you can change the MAC address by pressing the up and down arrow.</p>	<p>Range: 0 to 254 Default value: 0</p>
56		<p><b>Copy config:</b> Display shows "COPY CONFIG".</p> <p>Select "YES" if you want to copy the configuration you did to this device to others on the network.</p> <p><b>If you have selected NO, go directly to step #58.</b></p>	
57		<p><b>Select "start" address:</b> Display shows "SELECT BEGIN ADDRESS". Select the first address you want to copy to.</p> <p>For example if you select MAC address 1 here and 54 in the next step, all the devices from 1 to 54 will receive the configuration of the current device.</p>	<p>Range: 0-254 Default value: 0</p>
58		<p><b>Select "end" address:</b> Display shows "SELECT END ADDRESS".</p> <p>Select the last address you want to copy to. You cannot copy on more than 64 addresses at once.</p>	<p>Range: begin address + 63 Default value: begin address</p>
59		<p><b>Copy config result:</b> Display shows "COPY CONFIG SUCCEED" if everything went ok.</p> <p>If not, you will be able to scroll the addresses and see the error message associated with each address.</p> <p>See the Annex section for the complete list of error messages.</p>	 <p>Error message example: Program Mode Error for address 7</p>

60		<p><b>Communication device instance:</b> Display scrolls "ADJUST DEVICE INSTANC 0136000". To change the device, select "YES" and go to next step. If the device instance is not changed in programming mode (step #55), it will be automatically modified according to the MAC address selected by the dip switch on the controller.</p> <p><b>If you do not want to change the device, go directly to step #1.</b></p>	 <p><i>Default value: NO</i></p>
61		<p><b>Communication device instance (cont'd):</b> Display scrolls the device address value. You can modify the device address by increasing or decreasing the blinking digit with "Δ" or "∇" buttons. To modify the next digit, on right, press (★), to return to the previous digit press (←).  <b>Each device must have a unique device instance on a network.</b></p>	<p>Range: 0 to 4194302 Increment: 1 digit <i>Default value: 0153000</i></p>

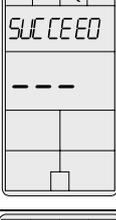
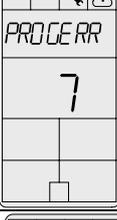
### Air Flow & BACnet Program Mode (Available when in Operation Mode; JP1 set on RUN)

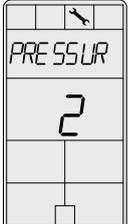
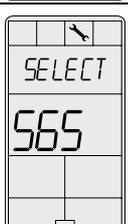
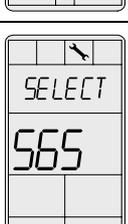
Push on both (★) and (←) buttons for 5 seconds to access the user air flow program mode.

Step	Display	Description	Values
F1		<p><b>Password:</b> Display scrolls "ENTER PASSWORD" and 000. You have 1 minute to enter the password using the arrow buttons Δ and ∇ increase or decrease the value, one digit at a time. Press (★) to move to the next digit and press (←) to move one digit to the left.  When the password is correct press on (★). If you make a mistake, the screen displays "Error" and the thermostat returns to normal operation mode. You will need to repeat this step.</p>	<p>Password: <b>637</b></p>

Once the password is entered and you are in the balancing mode, this symbol  is displayed. Press on the (★) button to advance to the next program function, press on the (←) button to return to previous step and press on the Δ or ∇ button to change value. The system will exit the menus and return to normal function if you navigate through the entire menu or if no button is pressed for 5 minutes, changed values will automatically be saved.

Step	Display	Description	Values
F2		<p><b>Auto bauds rate:</b> Display scrolls "AUTO BAUDS RATE". You can enable or disable the Auto bauds rate function.  When enabled, the controller automatically detects the baud rate of the system and coordinates it and you cannot change the bauds rate value yourself. If disable, you must select yourself the right bauds rate at step #F4.</p>	 <p><i>Default value: Enable (YES)</i></p>
F3		<p><b>Auto bauds, current baud:</b> Display scrolls "AUTO COMPORT BAUDS RATE" and the detected baud rate.  <b>Go to step #F5.</b></p>	<p>Range: 9600, 19200, 38400, 76800</p>
F4		<p><b>Communication bauds rate:</b> Display scrolls "ADJUST COMPORT BAUDS RATE" and the value of the baud rate in kbps. Select the desired communication bauds from the options provided: 9.6, 19.2, 38.4, 76.8.</p>	<p>Range: 9600, 19200, 38400, 76800 <i>Default value: 76.8 kbps</i></p>

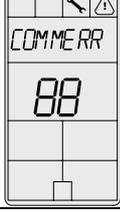
Step	Display	Description	Values
F5		<b>MAC address:</b> If the dipswitches of DS1 are all off, you can change the MAC address by pressing the up and down arrow.	Range: 0 to 254  Default value: 0
F6		<b>Copy config:</b> Display shows "COPY CONFIG". Select "YES" if you want to copy the configuration you did to this device to others on the network.  <b>If you have selected NO, go directly to step #F10.</b>	
F7		<b>Select "start" address:</b> Display shows "SELECT BEGIN ADDRESS". Select the first address you want to copy to.  For example if you select MAC address 1 here and 54 in the next step, all the devices from 1 to 54 will receive the configuration of the current device.	Range: 0-254  Default value: 0
F8		<b>Select "end" address:</b> Display shows "SELECT END ADDRESS". Select the last address you want to copy to. You cannot copy on more than 64 addresses at once.	Range: begin address + 63  Default value: begin address
F9		<b>Copy config result:</b> Display shows "COPY CONFIG SUCCEED" if everything went ok.  If not, you will be able to scroll the addresses and see the error message associated with each address.  See the Annex section for the complete list of error messages.	 Error message example: Program Mode Error for address 7
F10		<b>Communication device instance:</b> Display scrolls "ADJUST DEVICE INSTANC 0136000". To change the device, select "YES" and go to next step. If the device instance is not changed in programming mode (step #56 & 57 or F10 & F11), it will be automatically modified according to the MAC address selected by the dip switch on the controller.  <b>If you do not want to change the device, go directly to step #F12.</b>	 Default value: NO
F11		<b>Communication device instance (cont'd):</b> Display scrolls the device address value. You can modify the device address by increasing or decreasing the blinking digit with "Δ" or "∇" buttons. To modify the next digit, on right, press  , to return to the previous digit press  .	Range: 0 to 4194302 Increment: 1 digit  Default value: 0136000
F12		<b>Internal temperature sensor calibration:</b> Display scrolls "INSIDE TEMPER SENSOR OFFSET" and temperature read by internal temperature sensor. You can adjust the calibration of the sensor by comparison with a known thermometer. For example if thermostat is installed in an area where temperature is slightly different than the typical room temperature (thermostat placed right under the air diffuser).	Range: 10 to 40°C [50 to 104°F] (max. offset ± 5°C) Increment: 0.1°C [0.2°F]

Step	Display	Description	Values
F13		<b>External temperature sensor calibration:</b> (If "EtS" was selected at step #28) Display scrolls "EXTERNAL TEMPER SENSOR OFFSET" and the temperature read by the external temperature sensor (if connected on the selected input). If the sensor is not connected or short circuited, the display shows "Error". You can adjust the calibration of the external sensor by comparison with a known thermometer.	Range: -30 to 90°C [-22 to 194.0°F] (max. offset ± 5°C) Increment: 0.1°C [0.2°F]
F14		<b>Pressure filter setting:</b> Display scrolls "PRESSUR FILTER TIME IN SECONDS" and the time in seconds for the numeric filter applied to the pressure analog input. Select the desired value for the numeric filter.  This filter stabilizes the reading and slows the system's response time	Range: 1 to 10 seconds Increment: 1 seconds  <i>Default value: 2 seconds</i>
F15		<b>Pressure filter setting:</b> Display scrolls "PRESSUR FILTER 2" and the time in seconds for the numeric filter applied to the pressure analog input 2. Select the desired value for the numeric filter.  This filter stabilizes the reading and slows the system's response time	Range: 1 to 10 seconds Increment: 1 seconds  <i>Default value: 2 seconds</i>
F16		<b>Air flow K factor (cold duct):</b> Display scrolls "SELECT AIRFLOW KFACTOR" and the value of the k factor. $V = k\sqrt{\Delta P}$ when $\Delta P=1$  Select the desired value for k factor for the cold duct.  If in °C, the K factor is in L/s. If in °F, the K factor is in cfm.	Range: 100 to 9995 Increment: 5  <i>Default value: 565 l/s [1195 cfm]</i>
F17		<b>Air flow K factor 2 (hot duct):</b> Display scrolls "SELECT AIRFLOW KFACTOR 2" and the value of the k factor. $V = k\sqrt{\Delta P}$ when $\Delta P=1$  Select the desired value for k factor for the hot duct.  If in °C, the K factor is in L/s. If in °F, the K factor is in cfm.	Range: 100 to 9995 Increment: 5  <i>Default value: 565 l/s [1195 cfm]</i>
F18		<b>Box diameter (cold duct):</b> Display scrolls "VAV BOX DIAMETR MM" (or "IN").  Input the diameter of the VAV box for the cold duct.	Range: 100 to 864 mm [4 to 35 in.] Increment: 1 mm [0.5 in.]  <i>Default value: 254 mm [10.0 in.]</i>
F19		<b>Box diameter 2 (hot duct):</b> Display scrolls "VAV BOX DIAMETR MM 2" (or "IN").  Input the diameter of the VAV box for the hot duct.	Range: 100 to 864 mm [4 to 35 in.] Increment: 1 mm [0.5 in.]  <i>Default value: 254 mm [10.0 in.]</i>
F20		<b>Minimum cooling airflow:</b> Display scrolls "MINIMUM COOLING AIRFLOW" and the value of the minimum airflow in cooling. Select the desired value for the minimum airflow in cooling.  The minimum value is restricted by the maximum value (step #F21).	Range: 0 to maximum cooling airflow - 5 Increment: 5  <i>Default value: 45 L/s [95 cfm]</i>

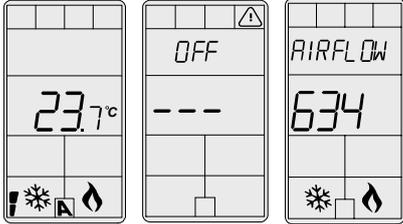
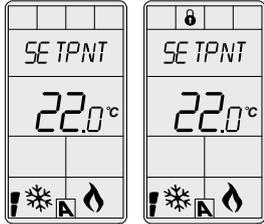
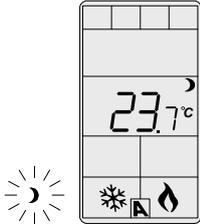
Step	Display	Description	Values
F21		<p><b>Maximum cooling airflow:</b> Display scrolls "MAXIMUM COOLING AIRFLOW" and the value of the maximum airflow in cooling. Select the desired value for the maximum airflow in cooling.</p> <p>The maximum value is restricted by the minimum value (step #F20).</p>	<p>Range: minimum cooling airflow + 5 to k factor Increment: 5</p> <p><i>Default value: 470 L/s [995 cfm]</i></p>
F22		<p><b>Minimum heating airflow:</b> Display scrolls "MINIMUM HEATING AIRFLOW" and the value of the minimum airflow in heating. Select the desired value for the minimum airflow in heating.</p> <p>The minimum value is restricted by the maximum value (step #F23).</p>	<p>Range: 0 to maximum heating airflow - 5 Increment: 5</p> <p><i>Default value: 45 L/s [95 cfm]</i></p>
F23		<p><b>Maximum heating airflow:</b> Display scrolls "MAXIMUM HEATING AIRFLOW" and the value of the maximum airflow in heating. Select the desired value for the maximum airflow in heating.</p> <p>The maximum value is restricted by the minimum value (step #F22).</p>	<p>Range: minimum heating airflow + 5 to k factor Increment: 5</p> <p><i>Default value: 470 L/s [995 cfm]</i></p>
F24		<p><b>Enable or disable airflow balancing:</b> Display scrolls "ENABLE AIRFLOW BALANCE". You can enable or disable the balancing airflow function.</p> <p>If you do not need to balance system, select <b>No</b>. You will leave the balancing menu and return to operation mode. If you want to balance system, select <b>YES</b>. In this case, you will access the min &amp; max airflow calibration menus.</p> <p>The controller will remain in balancing mode until you manually exit the Airflow Program Mode by selecting <b>No</b> and pressing the  button. Changed values will automatically be saved.</p>	 <p><i>Default value: Disable (No)</i></p>
F25		<p><b>Minimum airflow calibration (cold duct):</b> Display scrolls "MINIMUM AIRFLOW" and the value of the minimum airflow detected by the pressure sensor. The thermostat will send a signal to the actuator close the VAV box at minimum airflow. When the value on thermostat is stable, you can adjust the calibration of the sensor by comparing with the reading on a manometer or a balometer. If you can't stabilize the system, you will need to increase the filter value (step #F14).</p>	<p>Range: 0 to k factor (max. offset <math>\pm \frac{1}{2}</math> value) Increment: 1</p>
F26		<p><b>Maximum airflow calibration (cold duct):</b> Display scrolls "MAXIMUM AIRFLOW" and the value of the maximum airflow detected by the pressure sensor. The thermostat will send a signal to the actuator open the VAV box at airflow Kfactor value. When the value on thermostat is stable, you can adjust the calibration of the sensor by comparing with the reading on a manometer or a balometer. This modification will affect the K factor value (step F15). If you can't stabilize the system, you will need to increase the filter value (step #F14). <b>Go back to step #F24.</b></p>	<p>Range: 0 to k factor (max. offset <math>\pm \frac{1}{2}</math> value) Increment: 1</p>
F27		<p><b>Minimum airflow calibration 2 (hot duct):</b> Display scrolls "MINIMUM AIRFLOW 2" and the value of the minimum airflow detected by the pressure sensor. The thermostat will send a signal to the actuator close the VAV box at minimum airflow. When the value on thermostat is stable, you can adjust the calibration of the sensor by comparing with the reading on a manometer or a balometer. If you can't stabilize the system, you will need to increase the filter value (step #F15).</p>	<p>Range: 0 to k factor (max. offset <math>\pm \frac{1}{2}</math> value) Increment: 1</p>

Step	Display	Description	Values
F28		<p><b>Maximum airflow calibration 2 (hot duct):</b></p> <p>Display scrolls "MAXIMUM AIRFLOW 2" and the value of the maximum airflow detected by the pressure sensor.</p> <p>The thermostat will send a signal to the actuator open the VAV box at airflow Kfactor value. When the value on thermostat is stable, you can adjust the calibration of the sensor by comparing with the reading on a manometer or a balometer.</p> <p>This modification will affect the K factor value (step F15).</p> <p>If you can't stabilize the system, you will need to increase the filter value (step #F15).</p> <p><b>Go back to step #F24.</b></p>	<p>Range: 0 to k factor (max. offset <math>\pm \frac{1}{2}</math> value)</p> <p>Increment: 1</p>

## Annex - Error Codes for Copy Config

CC1		<p><b>Succeed:</b></p> <p>If there are problems with the copy, user will be able to scroll through the range of addresses to find out the error codes for each address.</p> <p>In the event that some worked, they will be labelled as "COPY CONFIG SUCCEED" with the address shown underneath.</p>
CC2		<p><b>Program mode error:</b></p> <p>Display shows "COPY CONFIG PROGERR" with the address shown underneath.</p> <p>The target device is in program mode, the copy is not possible.</p>
CC3		<p><b>Device type error:</b></p> <p>Display shows "COPY CONFIG TYPEERR" with the address shown underneath.</p> <p>The target device is not the same type as the source, the copy is not possible.</p> <p>For example trying to copy an EFCBM configuration to an EFC.</p>
CC4		<p><b>Model type error:</b></p> <p>Display shows "COPY CONFIG MODELERR" with the address shown underneath.</p> <p>The target device is not the same model as the source, the copy is not possible.</p> <p>For example trying to copy an EVCBM14WIT2S configuration to an EFC14WIT3S.</p>
CC5		<p><b>Memory error:</b></p> <p>Display shows "COPY CONFIG MEM ERR" with the address shown underneath.</p> <p>The target device is not the same application version (eeprom) as the source, the copy is not possible.</p>
CC6		<p><b>Slave address:</b></p> <p>Display shows "COPY CONFIG SLAVE" with the address shown underneath.</p> <p>The target device is at a slave address. It cannot respond to the master if the copy went ok or not.</p> <p>User should manually check to make sure copy was done correctly or avoid using slave addresses (128-254).</p>
CC7		<p><b>Communication error:</b></p> <p>Display shows "COPY CONFIG COMMERR" with the address shown underneath.</p> <p>No responses were received from the target device (after 3 tries).</p> <p>Either the address doesn't exist (not used) or there is a problem with wiring/noise.</p>

## Operation Mode

Step	Description	Display
A	<p>At powering up, thermostat will light display and activate all LCD segments for 2 seconds.</p> <p><b>Illuminating the LCD.</b> To illuminate the LCD, simply press any of the 4 buttons: LCD will light for 4 seconds.</p> <p><b>Temperature display</b> In operation mode, thermostat will automatically display temperature read. If "OFF", "---" and alarm symbol are displayed, the temperature sensor is not connected or has short circuited.</p> <p>To change the scale between °C and °F, press on  button.</p> <p><b>Air flow display*</b> To display the air flow, press on  button for 5 seconds. The screen displays "AIRFLOW", after you can press on  or  to see the air flow 2, the screen displays "AIRFLOW 2". The values are displayed for 30 seconds.</p>	
B	<p><b>Setpoint display and adjustment:</b></p> <p>To display the setpoint, press twice on  or . Setpoint will be displayed for 3 seconds.</p> <p>To adjust setpoint, press on  or  while the temperature setpoint is displayed.</p> <p><i>Note: If setpoint adjustment has been locked,  symbol will be displayed.</i></p>	
C	<p><b>Night set back (NSB) or no occupancy:</b></p> <p>When thermostat is in night set back or no occupancy mode, moon symbol  is displayed, so setpoint for cooling and/or heating are increased as per the setting made in programming mode.</p> <p>If not locked, night set back or no occupancy can be overridden for a predetermined period by pressing any of the 4 buttons. During the override period the  symbol will flash. If  does not flash, the override period is finished or the night set back or no occupancy override has been locked in programming mode.</p>	
D	<p><b>Control mode selection:</b></p> <p>To verify which control mode is set, press on  button. Control mode will be displayed for 5 seconds.</p> <p>To change control mode, press on  or  while control mode is displayed.</p> <p>Select one of the following:</p> <ul style="list-style-type: none"> <li>✓ Automatic Cooling or Heating</li> <li>✓ Cooling and Heating OFF</li> <li>✓ Cooling only</li> <li>✓ Heating only</li> </ul> <p><i>Note: These selections can vary according to the choice made on steps #6 &amp; #7.</i></p>	