EFC Series fan coil controller

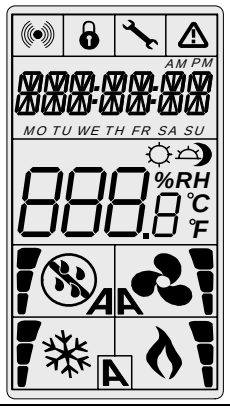
Features: TFL24 TFL25

- Used to program/configure the EFC Fan Coil controller
- Attractive modern look with large LCD and backlight
- Icons driven information and 1 line of text information
- 3 wire or RJ45 Ethernet cable between thermostat & EFC
- Programmable analog & digital outputs
- Selectable fan speed contacts
- Selectable Fahrenheit or Celsius scale
- Occupancy sensor (programmable)
- Multi level lockable access menu
- Selectable internal or external temperature sensor
- Programmable proportional control band & dead band
- Change over by contact or external temperature sensor available
- Anti-freeze protection
- BACnet® MS/TP @ 9600, 19200, 38400, 76800bps
- Selectable MAC Address by dip switch on the EFCB
- Selectable device instance via technician menu

Technical Data

	TFL24	TFL25
Electrical connection	3 wire cable	RJ45 (Ethernet cable)
Power supply	From EFC	
Power consumption	1 VA	
Setpoint range	10ºC to 40ºC [50ºF to 104ºF]	
Display resolution	±0.1ºC [0.2ºF]	
Control accuracy	Temperature: ±0.5ºC [0.9ºF] @ 22ºC [71.6ºF] typical calibrated	
Proportional band	0.5ºC to 5ºC [1ºF to 10ºF] adjustable	
Operating temperature	0ºC to 50ºC [32ºF to 122ºF]	
Storage temperature	-30ºC to 50ºC [-22ºF to 122ºF]	
Relative humidity	5 to 95 % non condensing	
Housing degree of protection	IP 30 (EN 60529)	
Weight	120 g. [0.25 lb]	
Note	The TFL2x can only work with the EFC. All the inputs/outputs are located on the EFC except for the temperature sensor built-in the TFL2x.	

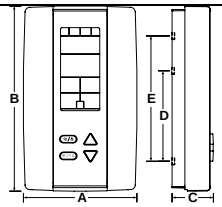
Interface



Display Symbols

A	***Cooling ON 100% output A: Automatic***		***Menu set-up Lock ON***
A	***Heating ON 100% output A: Automatic***		***Programming mode (Technician setting)***
A	***Fan ON 3rd speed activated A: Automatic***		***Energy saving mode ON***
°C or °F	***ºC: Celsius scale ºF: Fahrenheit scale***		***Communication Status***
	Alarm		

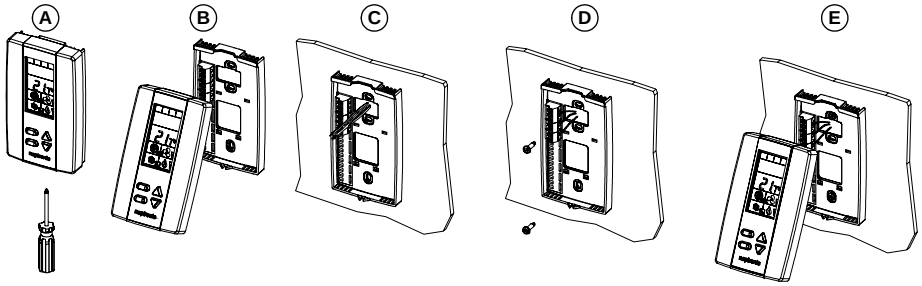
Dimensions



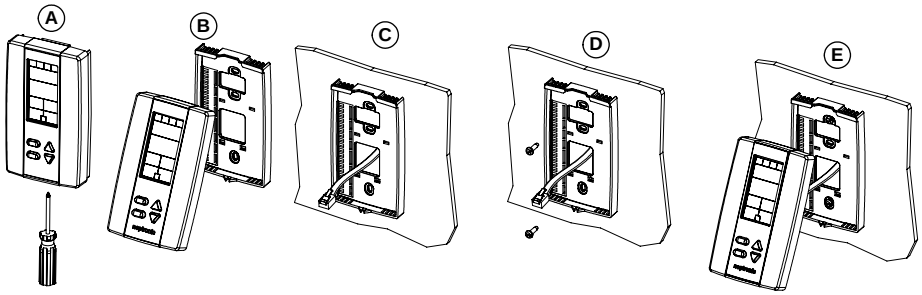
Dimension	Imperial (in)	Metric (mm)
A	2.85	73
B	4.85	123
C	1.00	24
D	2.36	60
E	3.27	83

Mounting Instructions

TFL24:



TFL25:



CAUTION: Risk of malfunction. Remove power prior to separate thermostat cover (control module) from its base.

A. Remove the screw (captive) holding the base and the front cover of the thermostat.
B. Lift the front cover of the thermostat to separate it from the base.
C. Pull the cable through the base hole.
D. Secure the base to the wall using wall anchors and screws (supplied). Make the appropriate connections.
E. Mount the control module on the base and secure using the screw (from step A).

Settings on PC Board & Connections

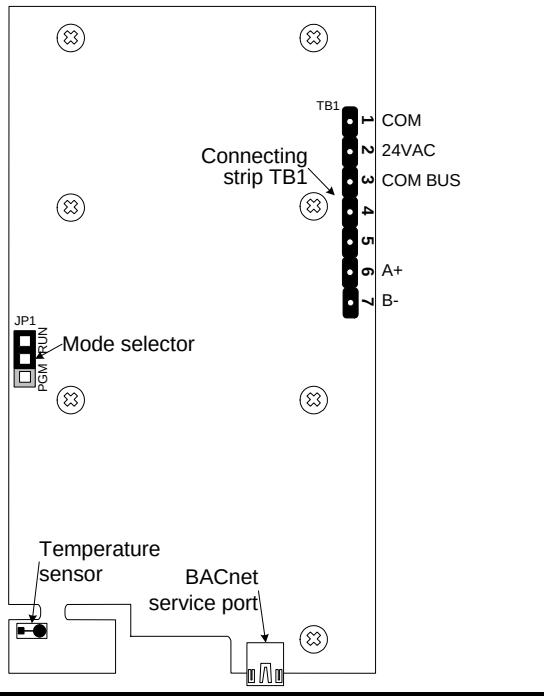
Mode Selection (JP1)

Jumper (JP1) on RUN:
Thermostat is in **Operation Mode**.
Thermostat must be set in this mode to operate properly.
If not locked, setpoint and control mode (Heating & Cooling ON, Cooling only ON or Heating only ON) can be modified by end user.

Jumper (JP1) on PGM:
Thermostat is set in **Programming Mode**.
Refer to the following section about all settings description

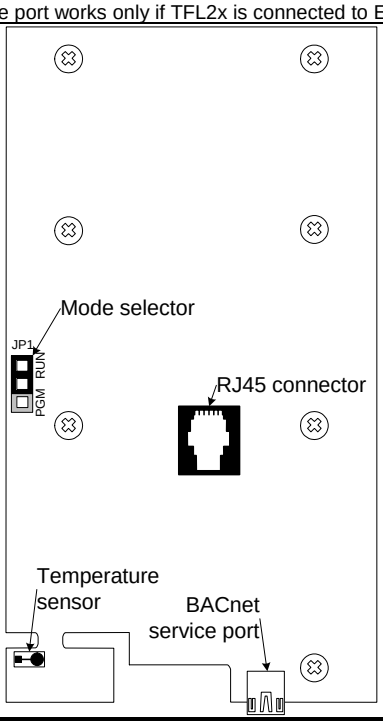
TFL24 – 3 wire cable (TB1 #1, 2 & 3)

Connect TB1 #6 (A+) & #7 (B-) to EFCB for BACnet service port to work



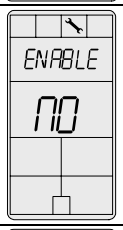
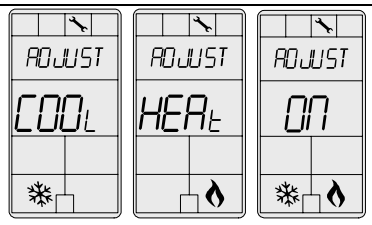
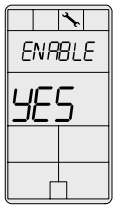
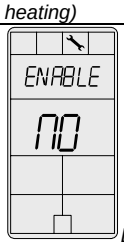
TFL25 – RJ45 Ethernet cable

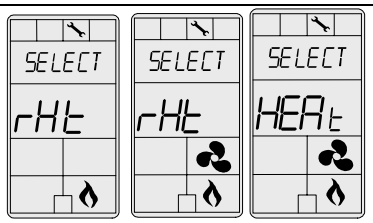
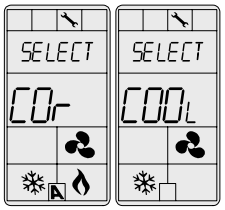
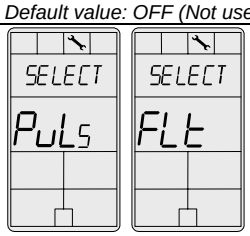
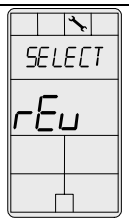
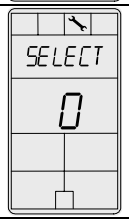
BACnet service port works only if TFL2x is connected to EFCB

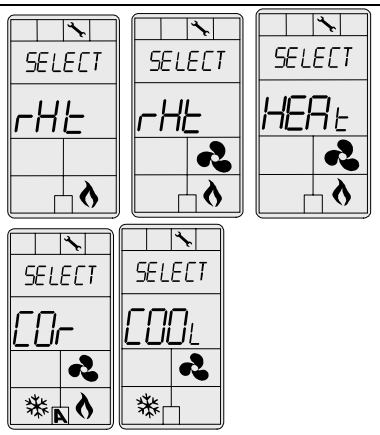
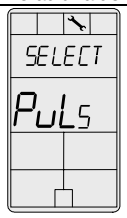
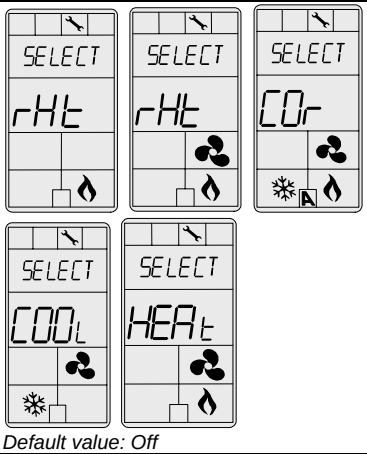


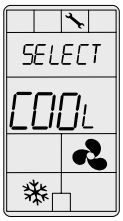
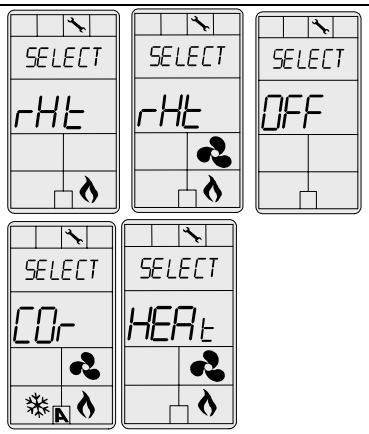
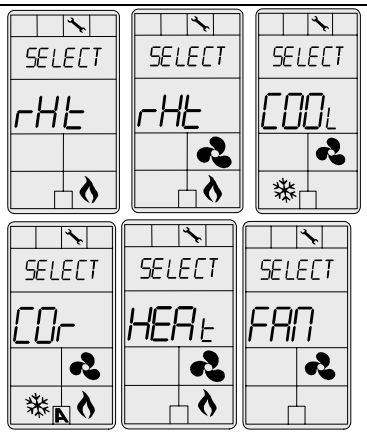
Programming Mode

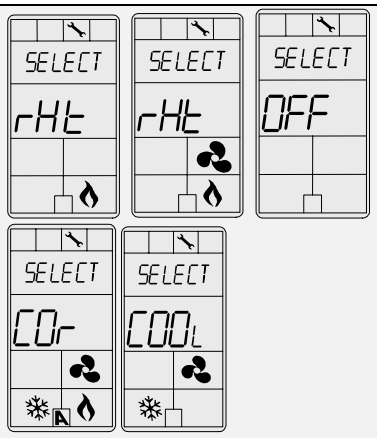
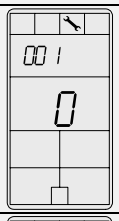
When in this mode the 🔧 symbol is displayed. Press on ⟲ to advance to the next program function, press on button ❄/🔥 to return to the previous function and press on button △ or ▽ to change values. You can exit the programming mode at any time; changed values will automatically be recorded.

Step	Display	Description	Values
1		**Internal temperature sensor calibration:** Display scrolls "*INSIDE TEMPER SENSOR OFFSET*" and shows the 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 : 5 to 45ºC [41 to 113ºF] Increment: 0.1ºC [0.2ºF] (max. offset ± 5 ºC) (Factory calibrated)
2		**Minimum setpoint:** Display scrolls "*ADJUST MINIMUM USER SETPNT*" and shows 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 40ºC [50 to 104ºF] Increment: 0.5ºC [1ºF] *Default value: 15ºC [59ºF]*
3		**Maximum setpoint** Display scrolls "*ADJUST MAXIMUM USER SETPNT*" and shows the maximum setpoint temperature. Select the desired maximum setpoint temperature. The maximum value is restricted by the minimum value (step #2).	Maximum range 10 to 40ºC [50 to 104ºF] Increment: 0.5ºC [1ºF] *Default value: 30ºC [86ºF]*
4		**Locking the setpoint :** Display scrolls "*USER SETPNT LOCKED*" and shows the selected value. You can lock or unlock the setpoint adjustment by end user. If locked the lock symbol will appear.	 *Default value: NO (Unlocked)*
5		**Adjust setpoint:** Display scrolls "*ADJUST INTERN SETPNT*" and shows the temperature setpoint. Select the desired setpoint. It should be within the 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 40ºC [50 to 104ºF] Increment: 0.5ºC [1ºF] *Default value: 22ºC [72ºF]*
6		**Adjust the control mode:** Display scrolls "*ADJUST TEMPER CONTROL MODE*". Select which control mode you want to authorize: Automatic (Auto), cooling or heating (ON), *heating only (HEAt), cooling only (COOL).* *If you want to authorize this all modes, choose Automatic mode.*	 *Default value: Aut (Automatic cooling and heating)*
7		**Set On/Off function enable or disable:** Display scrolls "*ENABLE ON OFF CONTROL MODE*. You can enable (YES) or disable (NO) the Off mode adjustment by end user.	 *Default value: YES (Enable)*

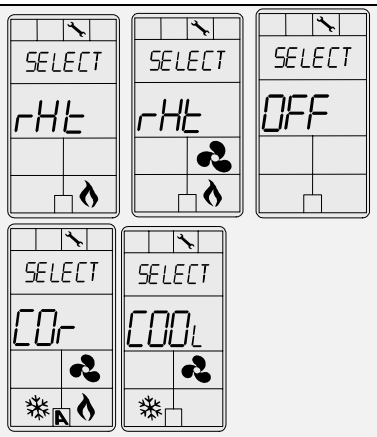
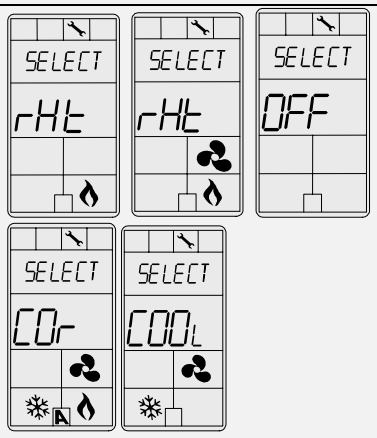
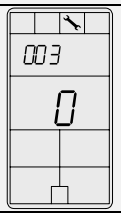
Step	Display	Description	Values
8		**Set TO1 signal ramp:** Display scrolls "*SELECT TO1 SIGNAL RAMP*" and shows the selected ramp. Select the desired ramp for TO1 from the options provided: OFF, COr, HEAt,COOL, rHt (reheat without fan), rHt (reheat with fan) *Note: The symbol indicates that the fan outputs will be activated according to the demand.* **If you selected "OFF", go directly to step #14.**	  *Default value: OFF (Not used)*
9		**Set TO1 output signal:** Display scrolls "*SELECT TO1 OUTPUT SIGNAL*". Select the desired signal output for to1 output from the options provided: OnOf, PuLs (pulse) or FLt (floating) signal output. *Notes:* • *If "**FLt**" (floating) is selected, the same ramp will be used for TO2. TO1 will be set to close and TO2 open.* • *"**PULS**" available only if you choose Heating or Reheat (with or without fan) at step #8.* **If you selected on/off signal, go to step #12.** **If you selected pulse signal, go to step #14.**	 *Default value: OnOF (On/Off)*
10		**Set floating time:** (If "**FLt**" was selected at step #9) Display scrolls "*SET FLOATING TIME IN SECONDS*" and shows the floating time value (in seconds). Select desired value for the floating time signal.	Range: 15 to 250 sec. Increment: 5 sec. *Default value: 100 sec.*
11		**Set motor direction:** Select the desired direction for the motor, either: Direct "clockwise" (0 to 90º) or Reverse "counter clockwise" (90 to 0º) **Go to step #18.**	 *Default value: dir (Direct)*
12		**Set TO1 on-off closing level:** (If "**OnOf**" was selected at step #9) Display scrolls "*SELECT TO1 CLOSE PERCENT*" and shows the value of the close position of the TO1 output. Select the percentage at which you want TO1 to close: x% of demand of the ramp selected at step #8.	Range: 15 to 80 Increment: 1 % *Default value: 25 (25% of the demand)*
13		**Set TO1 on-off opening level:** (If "**OnOf**" was selected at step #9) Display scrolls *"SELECT TO1 OPEN PERCENT"* and shows 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 # 8.	Range: 0 to TO1 closing- 4% Increment: 1% *Default value: 0 (0% of the demand)*

Step	Display	Description	Values
14		**Set TO2 signal ramp:** Display scrolls "*SELECT TO2 SIGNAL RAMP*" and shows the selected ramp. Select the desired ramp for TO2 from the options provided: OFF, COr, HEAt,COOL, rHt (reheat without fan), rHt (reheat with fan) *Note: The ✣ symbol indicates that the fan outputs will be activated according to the demand.* **If you selected "OFF", go directly to step #18.**	 *Default value: Off*
15		**Set TO2 output signal:** Display scrolls "*SELECT TO2 OUTPUT SIGNAL*" and shows the current setting Select the desired signal output for TO2 output, either: on/off or pulse signal output. Note: "**PuLs**" is available only if you choose Heating or Reheat (with or without fan) at step #14. **If you selected pulse signal, go to step #18.**	 *Default value: On (On-Off)*
16		**Set TO2 on-off closing level:** (If "**OnOF**" was selected at step #15) Display scrolls "*SELECT TO2 CLOSE PERCENT*" and shows the value of the close position of the TO2 output. Select the percentage at which you want TO2 to close: x% of demand of the ramp selected at step #14.	Range: 15 to 80 Increment: 1 % *Default value: 50 (50% of the demand)*
17		**Set TO2 on-off opening level:** (If "**OnOf**" was selected at step #8) Display scrolls *"SELECT TO2 OPEN PERCENT"* and shows the value of the opening level of the TO2 output. Select the percentage at which you want TO2 to open: at x% of the demand of the ramp that you selected at step # 14.	Range: 0 to TO1 closing- 4% Increment: 1% *Default value: 25 (25% of the demand)*
18		**Set TO3 signal ramp:** Display scrolls "*SELECT TO3 SIGNAL RAMP*" and shows the selected ramp. Select the desired ramp for TO3 from the options provided: OFF, COr, HEAt,COOL, rHt (reheat without fan), rHt (reheat with fan) *Note: The ✣ symbol indicates that the fan outputs will be activated according to the demand.* **If you selected "OFF", go directly to step #22.**	 *Default value: Off*
19		**Set TO3 output signal:** Display scrolls "*SELECT TO3 OUTPUT SIGNAL*" Select the desired signal output for TO3 output, either: on/off or pulse signal output. Note: "**PuLs**" is available only if you choose Heating or Reheat (with or without fan) at step #18. **If you selected pulse signal, go directly to step #22.**	 *Default value: On (On-Off)*

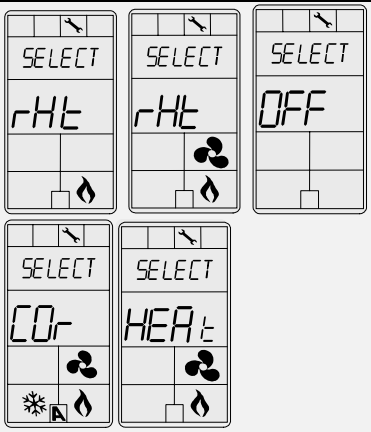
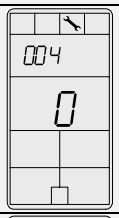
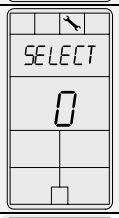
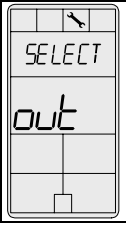
Step	Display	Description	Values
20		**Set TO3 on-off closing level:** (If "**OnOF**" was selected at step #19) Display scrolls "*SELECT TO3 CLOSE PERCENT*" and shows the value of the close position of the TO3 output. Select the percentage at which you want TO3 to close: x% of demand of the ramp selected at step #18.	Range: 15 to 80 Increment: 1 % *Default value: 80 (80% of the demand)*
21		**Set TO3 on-off opening level:** (If "**OnOF**" was selected at step #19) Display scrolls *"SELECT TO3 OPEN PERCENT"* and shows the value of the opening level of the TO3 output. Select the percentage at which you want TO3 to open: at x% of the demand of the ramp that you selected at step # 18.	Range: 0 to TO1 closing- 4% Increment: 1% *Default value: 50 (50% of the demand)*
22		**Set AO1 analog signal ramp:** Display scrolls "*SELECT AO1 ANALOG RAMP*" and shows the selected ramp. Select the desired ramp for AO1 from the options provided: OFF, COr, HEAt, COOL, rHt (without fan) or rHt (with fan). *Note: The symbol indicates that the fan outputs will be activated according to the demand.* **If you selected "OFF", go directly to step #25.**	 *Default value: COOL (Cooling ramp)*
23		**Minimum voltage of AO1 output:** This menu will only be available if the signal ramp for AO1 is no set to OFF. Display scrolls "*AO1 OUTPUT MIN VDC*" and shows the value of the minimum position of the AO1 ramp. Please select the desired value of the minimum position of the AO1 ramp. (This is the "zero" value) The minimum value is restricted by the maximum value (step #24).	Range: 0.0 to 10.0 Volt Increment: 0.1 Volt *Default value: 0.0 Volt*
24		**Maximum voltage of AO1 output:** This menu will only be available if the signal ramp for AO1 is no set to OFF. Display scrolls "*AO1 OUTPUT MAX VDC*" and the value of the maximum position of the AO1 ramp. Please select the desired value of the minimum position of the AO1 ramp. (This is the "span" value) The maximum value is restricted by the minimum value (step #23).	Range: 0.0 to 10.0 Volt Increment: 0.1 Volt *Default value: 10.0 Volt*
25		**Set AO2 analog signal ramp:** Display scrolls "*SELECT AO2 ANALOG RAMP*" and shows the selected ramp. Select the desired ramp for AO2 from the options provided. OFF, COr, HEAt, COOL, rHt (without fan) or rHt (with fan). *Note: The symbol indicates that the fan outputs will be activated according to the demand.* **If you selected "OFF", go directly to step #28.**	 *Default value: OFF*

Step	Display	Description	Values
26		**Minimum voltage of AO2 output:** This menu will only be available if the signal ramp for AO2 is not set to OFF. Display scrolls "*AO2 OUTPUT MIN VOC*" and shows the value of the minimum position for the AO2 ramp. Select the desired value of the minimum position of the AO2 ramp. (This is the "zero" value) The minimum value is restricted by the maximum value (step #27).	Range: 0.0 to 10.0 Volt Increment: 0.1 Volt *Default value: 0.0 Volt*
27		**Maximum voltage of AO2 output:** This menu will only be available if the signal ramp for AO2 is not set to OFF. Display scrolls "*AO2 OUTPUT MAX VOC*" and shows the value of the maximum position of the AO2 ramp. Select the desired value of the minimum position of the AO2 ramp. (This is the "span" value) The maximum value is restricted by the minimum value (step #26).	Range: 0.0 to 10.0 Volt Increment: 0.1 Volt *Default value: 10.0 Volt*
28*		**Set DO1 digital output ramp:** Display scrolls "*SELECT DO1 SIGNAL RAMP*" and shows the selected ramp. Select the desired ramp for on DO1 from the options provided: OFF, COr, HEAt, COOL, rHt (without fan) or rHt (with fan). *Note: The symbol indicates that the fan outputs will be activated according to the demand.* **If you selected "OFF", go directly to step #32.**	 *Default value: Ht (Heating ramp)*
29*		**Set DO1 closing delay:** Display scrolls "*DO1 CLOSE DELAY MINUTES*" and shows the programmed closing delay for the DO1 output. This is the delay (in minutes) before the output is activated.	Range: 0 to 15 min Increment: 1 min *Default value: 0 min*
30*		**Set DO1 closing level:** Display scrolls "*SELECT DO1 CLOSE PERCENT*" and shows the value of the close position of the DO1 output. Select the percentage of the demand at which you want DO1 to close based on the demand of the selected ramp at step #28.	Range: 15 to 80% Increment: 1 % *Default value: 25 (25% of the demand)*
31*		**Set DO1 opening level:** Display scrolls "*SELECT DO1 OPEN PERCENT*" and shows the value of the open position of the DO1 output. Select the percentage of the demand at which you want DO1 to open based on the demand of the selected ramp at step #28.	Range: 0 to **d1c** - 4% Increment: 1 % *Default value: 0 (0% of the demand)*

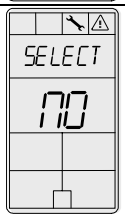
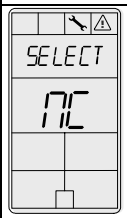
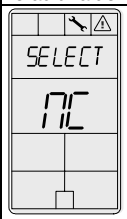
**Only on selected models*

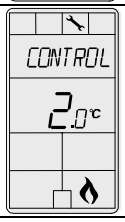
Step	Display	Description	Values
32*		**Set DO2 digital output ramp**: Display scrolls "SELECT DO2 SIGNAL RAMP" and shows the selected ramp. Select the desired ramp for on DO2 from the options provided: OFF, COr, HEAt, COOL, rHt (without fan) or rHt (with fan). *Note: The symbol indicates that the fan outputs will be activated according to the demand.* **If you selected "OFF", go to step #36.**	 *Default value: Ht (Heating ramp)*
33*		**Set DO2 closing delay:** Display scrolls "DO2 CLOSE DELAY MINUTES" and shows the programmed closing delay for the DO2 output. **MIN** symbol is also displayed. This is the delay (in minutes) before the output is activated.	Range: 0 to 15 min Increment: 1 min *Default value: 0 min*
34*		**Set DO2 closing level:** Display scrolls "SELECT DO2 CLOSE PERCENT" and the value of the close position of the DO2 output. Select the percentage of the demand at which you want DO2 to close based on the demand of the selected ramp at step #32.	Range: 15 to 80% Increment: 1 % *Default value: 50 (50% of the demand)*
35*		**Set DO2 opening level:** Display scrolls "SELECT DO2 OPEN PERCENT" and the value of the open position of the DO2 output. Select the percentage of the demand at which you want DO2 to open based on the demand of the selected ramp at step #32.	Range: 0 to **d2c** - 4% Increment: 1 % *Default value: 25 (25% of the demand)*
36*		**Set DO3 digital output ramp**: Display scrolls "SELECT DO3 SIGNAL RAMP" and the selected ramp. Select which ramp you want for on DO3. OFF, COr, HEAt, COOL, rHt (without fan) or rHt (with fan). *Note: The symbol indicates that the fan outputs will be activated according to the demand.* **If you selected "OFF", go directly to step #40.**	 *Default value: Ht (Heating ramp)*
37*		**Set DO3 closing delay:** Display scrolls "DO3 CLOSE DELAY MINUTES" and programmed closing delay for the DO3 output. This is the delay (in minutes) before the output is activated.	Range: 0 to 15 min Increment: 1 min *Default value: 0 min*

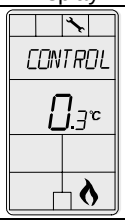
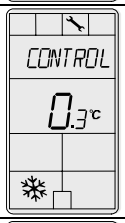
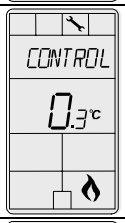
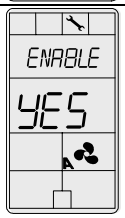
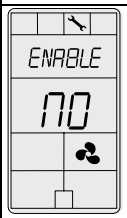
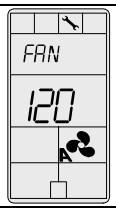
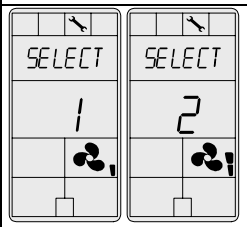
**Only on selected models*

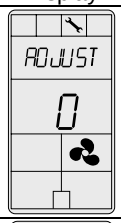
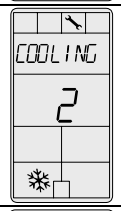
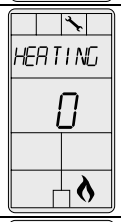
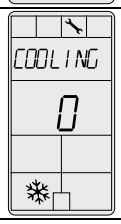
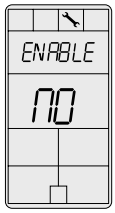
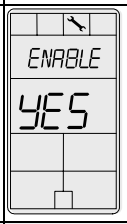
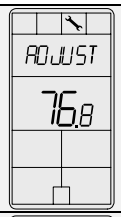
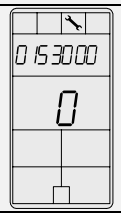
Step	Display	Description	Values
38*		**Set DO3 closing level:** Display scrolls "SELECT DO3 CLOSE PERCENT" and the value of the close position of the DO3 output. Select the percentage of the demand at which you want DO3 to close based on the demand of the selected ramp at step #36.	Range: 15 to 80% Increment: 1 % *Default value: 80 (80% of the demand)*
39*		**Set DO3 opening level:** Display scrolls "SELECT DO3 OPEN PERCENT" and the value of the open position of the DO3 output. Select the percentage of the demand at which you want DO3 to open based on the demand of the selected ramp at step #36.	Range: 0 to **d3c** - 4% Increment: 1 % *Default value: 50 (50% of the demand)*
40*		**Set DO4 digital output ramp:** Display scrolls "SELECT DO4 SIGNAL RAMP" and the selected ramp. Select which ramp you want for on DO4. OFF, COr, HEAt, COOL, rHt (without fan) or rHt (with fan). *Note: The symbol indicates that the fan outputs will be activated according to the demand.* **If you selected "OFF", go directly to step #44.**	 *Default value: COOL (Cooling ramp)*
41*		**Set DO4 closing delay:** Display scrolls "DO4 CLOSE DELAY MINUTES" and programmed closing delay for the DO4 output. This is the delay (in minutes) before the output is activated.	Range: 0 to 15 min Increment: 1 min *Default value: 0 min*
42*		**Set DO4 closing level:** Display scrolls "SELECT DO4 CLOSE PERCENT" and the value of the close position of the DO4 output. Select the percentage of the demand at which you want DO4 to close based on the demand of the selected ramp at step #40.	Range: 15 to 80% Increment: 1 % *Default value: 20 (20% of the demand)*
43*		**Set DO4 opening level:** Display scrolls "SELECT DO4 OPEN PERCENT" and the value of the open position of the DO4 output. Select the percentage of the demand at which you want DO4 to open based on the demand of the selected ramp at step #40.	Range: 0 to **d4c** - 4% Increment: 1 % *Default value: 0 (0% of the demand)*
44		**Internal or external temperature sensor selection:** Display scrolls "SELECT TEMPER SENSOR". Please select internal (in) or external sensor (out). **If you selected "In", proceed to step #46.** **If you selected Out, proceed to step #45.**	 *Default value: In (Internal temperature sensor)*

**Only on selected models*

Step	Display	Description	Values
45		**External temperature sensor calibration (AI1):** This option is only available if the temperature sensor (step 44) is set to **Out**. Display scrolls "*EXTERNAL TEMPER SENSOR OFFSET*" and the temperature read by the external temperature sensor (if connected). You can adjust the calibration of the external sensor by comparison with a known thermometer. If the sensor is not connected or short circuited, the display shows "**---**".	Range: 5 to 45ºC [41 to 113.0ºF] (max. offset ± 5 ºC) Increment: 0.1ºC [0.2ºF]
46		**Change over mode selection (AI2):** Display scrolls "*SELECT CH OVER INPUT SIGNAL*". Select the change over mode: normally cool, normally heat or external sensor. If normally cool "**NoCL**" is selected, heating mode will be activated upon closing of AI2 contact. If normally heat "**NoHt**" is selected, cooling mode will be activated upon closing of AI2 contact. If external sensor "**SEnS**" is selected, heating mode will be activated when temperature read by the external sensor is above the change over setpoint temperature and cooling mode will be activated when the temperature read by external sensor is below, see step #47. If "**SEnS**" is not selected, go directly to step #48.	  *Default value: SEns (External sensor)*
47		**Change over setpoint temperature:** (If "**SEnS**" was selected at step #46) Display scrolls "*CH OVER SETPNT TEMPER*" and the change over setpoint temperature. Select the change over setpoint temperature. *Note: Heating mode will be activated when temperature read by the external sensor is above the change over setpoint temperature "**tCo**", and cooling mode will be activated when temperature read by the external sensor is under "**tCo**".*	Range: 10 to 40ºC [50 to 104ºF] Increment: 0.5ºC [1ºF] *Default value: 24ºC [82ºF]*
48		**Flow switch (DI1):** Display scrolls "*SELECT FLOW SW CONTACT*" and the selected setting. Please select normally close "**NC**" or normally open "**NO**". The ⚠ symbol will come on in operation mode if the contact input changes state.	 *Default value: NO (Normally open)*
49		**Dirty filter (DI2):** Display scrolls "*SELECT DIRTY FILTER CONTACT*" and the selected setting. Please select normally close "**NC**" or normally open "**NO**". The ⚠ symbol will come on in operation mode if the contact input changes state.	 *Default value: NO (Normally open)*
50		**Occupancy or Night Set Back (DI3):** Display scrolls "*SELECT NSB OR OCC CONTACT*" and the selected setting. Moon ☽ symbol is also displayed. Select normally close "**NC**", normally open "**NO**" or "**OFF**". *Note: If "**OFF**" is selected, DI3 can still be used through BACnet.* **If you selected "OFF", go directly to step #57.** **If you selected "nSb.o or nSb.c", go directly to step #53.**	    *Default value: OCC.o* *(Occupancy Normally open)*
51		**Minimum no occupancy delay (DI3):** Display scrolls "*OCC MINIMUM TIME IN MINUTES*" and shows the selected delay value (in minutes). Moon ☽ symbol is also displayed. Input the desired delay for the thermostat before going into "no occupancy" mode.	Range: 0 to 240 min Increment: 1 min *Default value: 30 min*

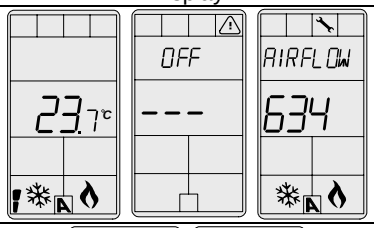
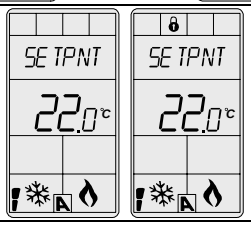
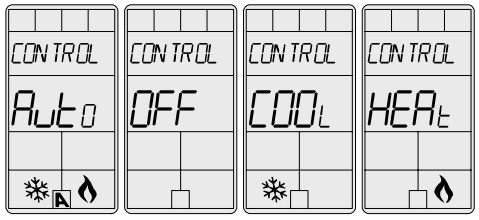
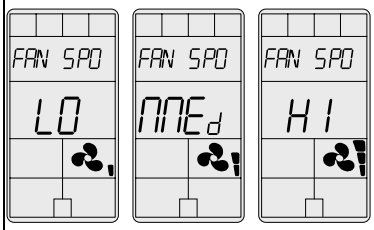
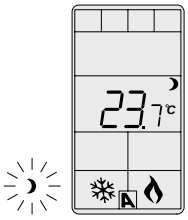
Step	Display	Description	Values
52		**Maximum occupancy override delay (DI3):** Display scrolls "*NO OCC DELAY OVERIDE MINUTES*" and shows the selected delay value (in minutes). Moon ☽ symbol is also displayed. Input the maximum delay available to the user. When in no occupancy mode, the user can press the button to override. Each time he press it, the override delay will increase by 15 min until it reaches the value set here. **Go directly to step #55.**	Range: 0 to 180 min Increment: 15 min *Default value: 120 min*
53		**Night Set Back Mode:** Display scrolls "*NSB MODE*" and shows the selected mode of operation. If you select "**OFF**" the thermostat outputs/control will be off while in night set back. If you select "**StP**" the thermostat outputs/control will be active based on the cooling and heating night set back setpoints programmed at step #55 & #56. **If you selected "OFF", go directly to step #57.**	
54		**Night Set Back override delay (DI3):** Display scrolls "*NSB DELAY OVERIDE MINUTES*" and shows the selected delay value (in minutes). Moon ☽ symbol is also displayed. Input the override delay.	Range: 0 to 180 min Increment: 15 min *Default value: 120 min*
55		**Night set back or no occupancy heating setpoint:** Display scrolls "*NSB OR NO OCC HEATING SETPNT*" and shows the selected setpoint. Moon ☽ symbol is also displayed. Select the desired heating setpoint temperature. This value is restricted by the cooling value (step #56).	Setpoint range: 10 to 40ºC [50 to 104ºF] Increment: 0.5ºC [1ºF] *Default value: 16ºC [61ºF]*
56		**Night set back or no occupancy cooling setpoint:** Display scrolls "*NSB OR NO OCC COOLING SETPNT*" and the selected setpoint. Moon ☽ symbol is also displayed. Select the desired cooling setpoint temperature. This value is restricted by the heating value (step #55).	Setpoint range: 10 to 40ºC [50 to 104ºF] Increment: 0.5ºC [1ºF] *Default value: 28ºC [82ºF]*
57		**Proportional band for change over:** Display scrolls "*CONTROL RAMP CH OVER*" and the value of the change over proportional band, change over symbols is also displayed. Select the desired value for the change over proportional band.	Proportional band range: 0.5 to 5.0ºC [1 to 10ºF] Increment: 0.5ºC [1ºF] *Default value: 2.0ºC [4ºF]*
58		**Dead band for change over:** Display scrolls "*CONTROL DEAD BAND CH OVER*" and the value of the change over dead band, change over symbols are also displayed. Select the desired value for the change over dead band.	Dead band range: 0.0 to 5.0ºC [0.6 to 10.0ºF] Increment: 0.1ºC [0.2ºF] *Default value: 0.3ºC [0.6ºF]*
59		**Proportional band for heating:** Display scrolls "*CONTROL RAMP HEATING*" and the value of the heating proportional band, heating symbol is also displayed. Select the desired value for heating proportional band.	Proportional band range: 0.5 to 5.0ºC [1 to 10ºF] Increment: 0.5ºC [1ºF] *Default value: 2.0ºC [4ºF]*

Step	Display	Description	Values
60		**Dead band for heating:** Display scrolls "CONTROL DEAD BAND HEATING" and the value of the heating dead band, heating symbol is also displayed. Select the desired value for the heating dead band.	Dead band range: 0.0 to 5.0ºC [0.6 to 10.0ºF] Increment: 0.1ºC [0.2ºF] *Default value: 0.3ºC [0.6ºF]*
61		**Proportional band for cooling:** Display scrolls "CONTROL RAMP COOLING" and the value of the cooling proportional band, cooling symbol is also displayed. Select the desired value for cooling proportional band.	Proportional band range: 0.5 to 5.0ºC [1 to 10ºF] Increment: 0.5ºC [1ºF] *Default value: 2.0ºC [4ºF]*
62		**Dead band for cooling:** Display scrolls "CONTROL DEAD BAND COOLING" and the value of the cooling dead band, cooling symbol is also displayed. Select the desired value for the cooling dead band.	Dead band range: 0.0 to 5.0ºC [0.6 to 10.0ºF] Increment: 0.1ºC [0.2ºF] *Default value: 0.3ºC [0.6ºF]*
63		**Proportional band for reheat (with or without fan):** Display scrolls "CONTROL RAMP REHEAT" and the value of the reheat proportional band, reheat symbol is also displayed. Select the desired value for reheat proportional band.	Proportional band range: 0.5 to 5.0ºC [1 to 10ºF] Increment: 0.5ºC [1ºF] *Default value: 2.0ºC [4ºF]*
64		**Dead band for reheat (with or without fan):** Display scrolls "CONTROL DEAD BAND REHEAT" and the value of the reheat dead band, reheat symbols is also displayed. Select the desired value for reheat dead band.	Dead band range : 0.0 to 5.0ºC [0.6 to 10.0ºF] Increment: 0.1ºC [0.2ºF] *Default value: 0.3ºC [0.6ºF]*
65		**Set fan speed automatic mode enable or disable:** Display scrolls "ENABLE FAN AUTO MODE" and Fan symbol is also displayed. You can enable or disable the Automatic mode adjustment by end user. If you selected to disable the automatic mode, **go directly to step #67.**	 *Default value: YES (Enable)*
66		**Time out fan contact:** Display scrolls "FAN AUTO TIMEOUT SECONDS" and shows the automatic shutoff delay value (in minutes) when there is no demand. **MIN** and fan symbols are also displayed. Select the desired value for the automatic shutoff delay.	Range: 0 to 255 sec. Increment: 1 sec. *Default value: 120 sec.*
67		**Fan speed contact:** Display scrolls "SELECT FAN SPEED SIGNAL" and shows the speed of the fan. Fan symbol is also displayed. Select which speed contact you want: speed 1, speed 2 or speed 3.	 *Default value: 3 (Hi speed)*

Step	Display	Description	Values
68		**Fan damping factor:** Display scrolls "*ADJUST DAMPING FACTOR SECONDS*" and shows the selected delay value (in seconds). Fan symbol is also displayed. Select the damping factor for the fan.	Range: 0 to 10 sec. Increment: 1 sec. *Default value: 0 sec.*
69		**Anti-cycling delay cooling contact (protection for compressor):** Display scrolls "*COOLING ANTI CYCLE MINUTES*" and shows the value (in minutes) of the delay to activate/reactivate cooling contact. The **MIN** symbol is also displayed. Select the desired value for the delay cooling contact.	Range: 0 to 15 min. Increment: 1 min. *Default value: 2 min.*
70		**Integration time factor for heating:** Display scrolls "*HEATING INTGRAL TIME IN SECONDS*" and shows the time in seconds for the integration factor compensation. Heating symbol is also displayed. Select the desired value for the integration factor compensation.	Range: 0 to 250 seconds Increment: 5 seconds *Default value: 0 seconds*
71		**Integration time factor for cooling:** Display scrolls "*COOLING INTGRAL TIME IN SECONDS*" and shows the time in seconds for the integration factor compensation. Cooling symbol is also displayed. Select the desired value for the integration factor compensation.	Range: 0 to 250 seconds Increment: 5 seconds *Default value: 0 seconds*
72		**Enable or disable anti-freeze protection:** Display scrolls "*ENABLE ANTI FREEZE PROTECT*" and shows the selected setting. You can enable or disable the anti-freeze function. When enabled, if temperature drops to 4ºC [39ºF], heat and reheat will start even if thermostat is in OFF mode. Heat and reheat will stop when temperature reaches 5ºC [41ºF].	 *Default value: NO (disable)*
73[B]		**BACnet bauds rate:** Display shows "*ADJUST COMPORT BAUDS RATES*" and shows the value of the baud rate in kBps. Select the desired bauds for communication: 9.6, 19.2, 38.4, 76.8.	Range: 9600, 19200, 38400, 76800 *Default value: 76.8 kBps*
74[B]		**BACnet MAC address:** Display shows "*ADJUST MSTP MAC ADDRESS*" and shows the value of the MAC address. If dip switches 0 to 7 of DS2 are all in the Off position, then you can change the MAC address by using the "Δ" or "∇" buttons. **Each device must have a unique MAC address on a network.**	Range: 0 to 127 *Default value: 0*
75[B]		**BACnet device instance:** Display shows *"ADJUST DEVICE INSTANC 0 TO 3000"*. To change the device, select *"YES"* and go to next step. If the device instance is not changed in programming mode (step #75 & 76), it will be automatically modified according to the MAC address selected by the dip switch on the EFCB. **If you do not want to change the device, go directly to step #1.**	 *Default value: NO*
76[B]		**BACnet device instance (cont'd):** 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 (°F/°C). **Each device must have a unique device instance on a network.**	Range: 0 to 4194302 Increment: 1 digit *Default value: 0153000*

[B] *Only on BACnet models*

Operation Mode

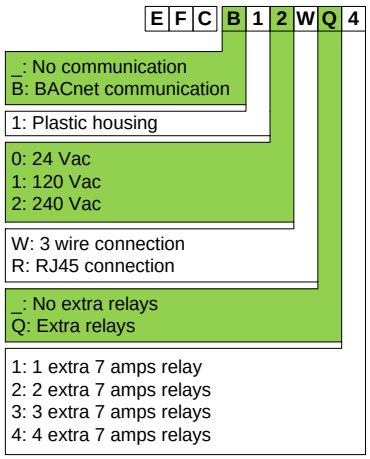
Step	Description	Display
A	At powering up, thermostat will light display and activate all LCD segments for 2 seconds. **Illuminating the LCD** To illuminate the LCD, simply push △ or ▽ buttons. LCD will light for 8 seconds. **Temperature display** In operation mode, thermostat will automatically display temperature read. To change the scale between ºC and ºF, press on both △ and ▽ for 3 seconds.	
B	**Setpoint display and adjustment:** To display the setpoint, press twice on △ or ▽ Setpoint will be displayed for 5 seconds. To adjust setpoint, press on △ or ▽ while the temperature setpoint is displayed. *Note: If setpoint adjustment has been locked, 🔒 symbol will be displayed.*	
C	**Control mode selection:** To change the control mode, press on ❄/🔥. Control mode will be displayed for 5 seconds. You can choose one of the following: ✓ Automatic Cooling or Heating (Aut) ✓ OFF (if not disable in programming mode) ✓ Cooling only (on, with cooling symbol) ✓ Heating only (on, with heating symbol) *Note: These selections can vary according to the choice made on step #6 & 7.*	
D	**Fan speed mode selection:** To change the fan speed mode, press on 🌀. Fan speed mode will be displayed for 5 seconds. You can choose one of the following: ✓ Automatic speed (if not disabled in programming mode) ✓ Low speed ✓ Medium speed ✓ High speed *Notes:* • *These selections can vary according to the choice made in programming steps #65 & 67.* • *If fan speed mode selection has been locked, 🔒 symbol will be displayed.* • *If in No Occupancy mode, the 🌀 button now serves as the override button.*	
E	**Night set back (NSB) or no occupancy override:** 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. If not locked, night set back 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. If not locked, no occupancy mode can be overridden for a period by pressing the 🌀 button. Each time you press the 🌀 button, 15 minutes are added to the override. The ☽ will blink and the remaining time to the override will be displayed in minutes.	

Recycling at end of life

At end of life, please return the thermostat to your Neptronic® local distributor for recycling. If you need to find the nearest Neptronic® authorized distributor, please consult **www.neptronic.com**.

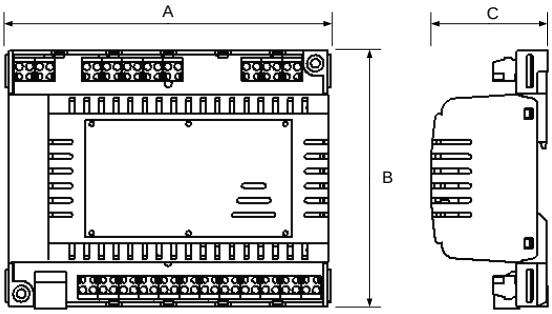
Features:

- Programmable analog & digital outputs
- Selectable fan speed contacts
- Selectable Fahrenheit or Celsius scale
- Occupancy sensor (programmable)
- Selectable internal or external temperature sensor
- Programmable proportional control band & dead band
- Change over by contact or external temperature sensor available
- Anti-freeze protection
- BACnet® MS/TP @ 9600, 19200, 38400, 76800bps
- Selectable MAC Address by dip switch on the EFCB



Technical Data	EFC
Thermostat connection	RJ45 or 3 wire cable (depending on model)
Power supply	24, 120 or 240 Vac (depending on model)
Transformer output	8 VA max. 24 Vac thermal fused.
Relay output	3 relays standard, up to 4 extra relay
Relay rating	7 amps
Operating temperature	0ºC to 50ºC [32ºF to 122ºF]
Storage temperature	-30ºC to 50ºC [-22ºF to 122ºF]
Relative humidity	5 to 95 % non condensing
Weight	635 g. [1.4 lb]

Dimensions



Dimension	Imperial (in)	Metric (mm)
A	6.3	160
B	5	126
C	2.25	57

Terminal Description

TFL Connection (TB5)

1- Common
2- 24 Vdc
3- Communication bus
If RJ45 version, simply connect Ethernet cable.

BACnet Network (TB6)[3]

1- IN A+
2- IN B-
3- OUT A+
4- OUT B-
NOTE: Always avoid T-taps

Analog Outputs, 0-10 Vdc (TB7)

1- Analog Output (AO1)
2- Common (AO1 & AO2)
3- Digital Input 2 (DI2)

Analog Inputs, Fix (TB8)

1- External temperature sensor (AI1)
2- Common (AI1 & AI2)
3- Changeover sensor (AI2)

Analog Inputs, Programmable (TB9)

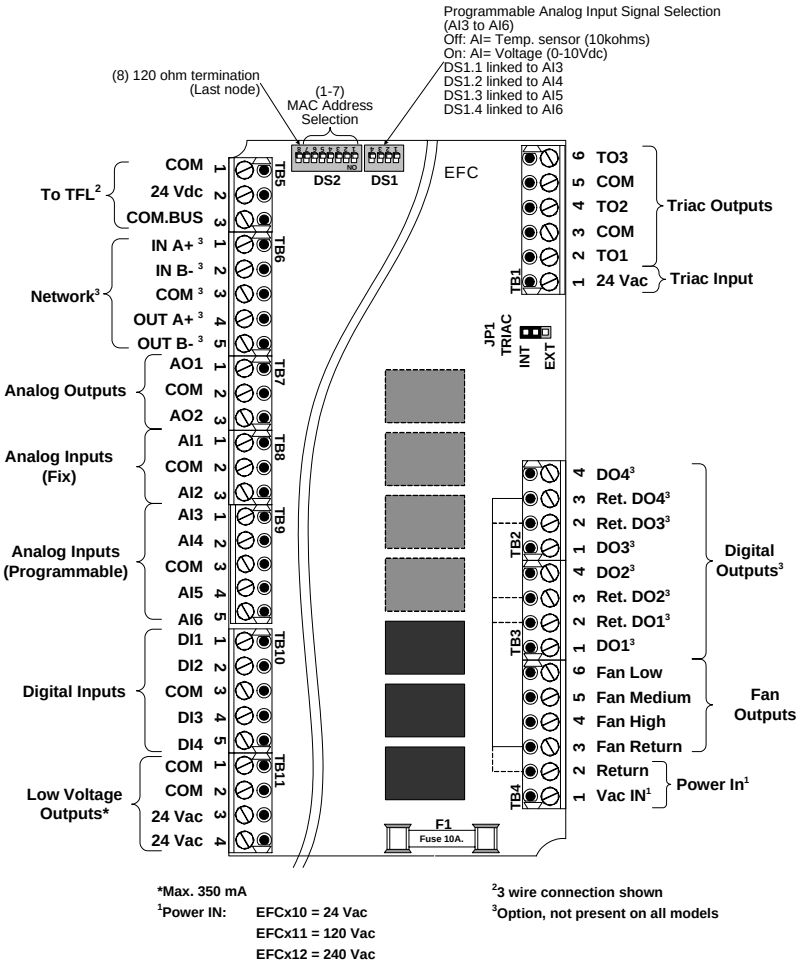
1- Analog Input 3 (AI3)
2- Analog Input 4 (AI4)
3- Common
4- Analog Input 5 (AI5)
5- Analog Input 6 (AI6)

Digital Inputs, Programmable (TB10)

1- Flow Switch (DI1)
2- Dirty Filter (DI2)
3- Common
4- Occ. Sensor (DI3)
5- Readable over BACnet only (DI4)

Low Voltage Outputs (TB11)*

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



*Max. 350 mA
[1]Power IN: EFCx10 = 24 Vac
EFCx11 = 120 Vac
EFCx12 = 240 Vac
[2]3 wire connection shown
[3]Option, not present on all models

Triac (TB1)

1- Triac Input, 24 Vac (JP1)
2- Triac Output 1 (TO1)
3- Common
4- Triac Output 2 (TO2)
5- Common
6- Triac Output 3 (TO3)

Triac Voltage Selection (JP1)

If set on EXT, apply 24Vac on pin 1 & 3 of TB1

Digital Outputs, 7A dry contacts (TB2)[3]

1- Digital Output 3 (DO3)
2- Return DO3
3- Return DO4
4- Digital Output 4 (DO4)

Digital Outputs, 7A dry contacts (TB3)[3]

1- Digital Output 1 (DO1)
2- Return DO1
3- Return DO2
4- Digital Output 2 (DO2)

Power In (TB4)[1]

1- Vac IN
2- Return
NOTE: Make sure to apply corresponding voltage to your model (24 Vac, 120 Vac or 240 Vac).

Fan Outputs, 7A dry contacts (TB4)

3- Return
4- High speed
5- Medium speed
6- Low speed

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