



Model
TFC54F3Y1

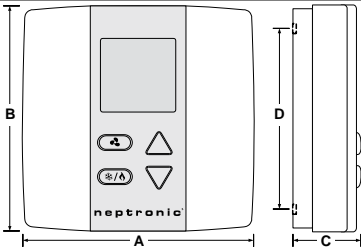
Features

- Selectable 2 pipe or 4 pipe system
- Selectable Control mode
- Selectable Fan speed contact: 1, 2, or 3-speed
- Selectable proportional control band and dead band
- Programmable Night Set Back Override
- Changeover by contact or external temperature sensor
- Selectable internal or external temperature sensor
- Multi level lockable access menu and setpoint
- Selectable Fahrenheit or Celsius scale












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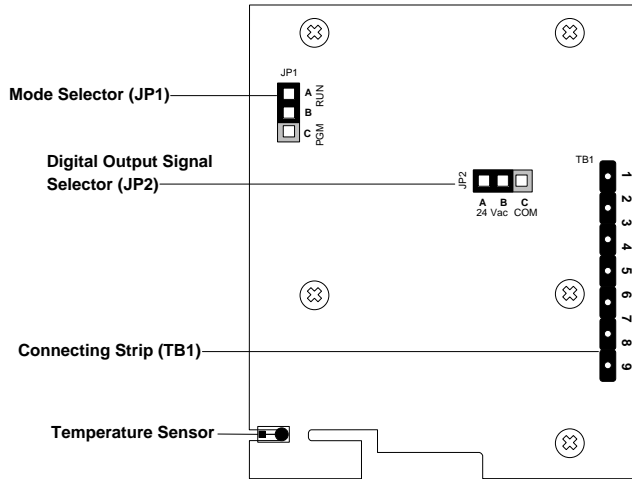
Technical Specifications

Description	TFC54F3Y1
Outputs	2 TRIAC outputs 3 Digital outputs (fan)
Contact rating	Resistive load: rated load: 1.0 Amp/24 Vac/Vdc Inductive load: rated load: 0.3 Amp/24 Vac/Vdc Maximum switching capacity: 30 VA/24 W
TRIAC rating	0.3 Amp @ 24 Vac (8 VA)
Power supply	22 to 26 Vac 50/60Hz
Power consumption	1 VA max
Setpoint range	10°C to 35°C [50°F to 95°F]
Display resolution	±0.1°C [0.2°F]
Control accuracy	Temperature: ±0.5°C [0.9°F] @ 22°C [71.6°F] typical calibrated
Proportional band	0.5°C to 5.0°C [1°F to 10°F] adjustable
External sensor thermistor	Type G, 0°C [32°F] = 29.49 kΩ, 25°C [77°F] = 10 kΩ, 50°C [122°F] = 3.893 kΩ
Electrical connection	0.8 mm ² [18 AWG] minimum
Operating temperature	0°C to 50°C [32°F to 122°F]
Storage temperature	-30°C to 50°C [-22°F to 122°F]
Relative Humidity	5 to 95% non condensing
Degree of protection of housing	IP 30 (EN 60529)
Weight	80 g. [0.18 lb]
Dimensions: A = 3.00" 78mm B = 3.00" 78mm C = 1.00" 24mm D = 2.36" 60mm	

Interface

		Cooling ON A: Automatic		Menu set-up Lock ON
		Heating ON A: Automatic		Programming Mode (Technician setting)
		Fan ON A: Automatic		Minimum/Maximum setpoints
		°C: Celsius scale °F: Fahrenheit scale		Energy saving mode ON

Wiring

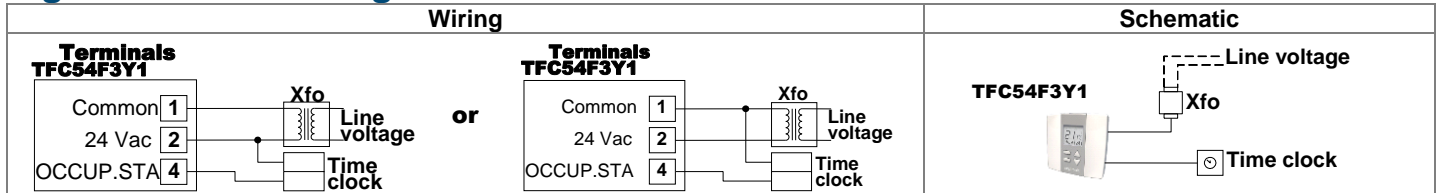


We strongly recommend that all Neptronic products be wired to a separate grounded transformer and that transformer shall service only Neptronic products. This precaution will prevent interference with, and/or possible damage to incompatible equipment.

Jumpers

Jumpers	Description
JP1	Mode Selection A&B = RUN: Thermostat is in Operation Mode (See Operation Mode on page 7). B&C = PGM: Thermostat is in Programming Mode (See Programming Mode on page 3).
JP2	Digital Output Signal Selector A&B = Internal: Digital output signal is linked to internal 24 Vac (same as thermostat). B&C = External: Digital output signal is linked to external 24 Vac (different than thermostat).

Night Set Back Wiring



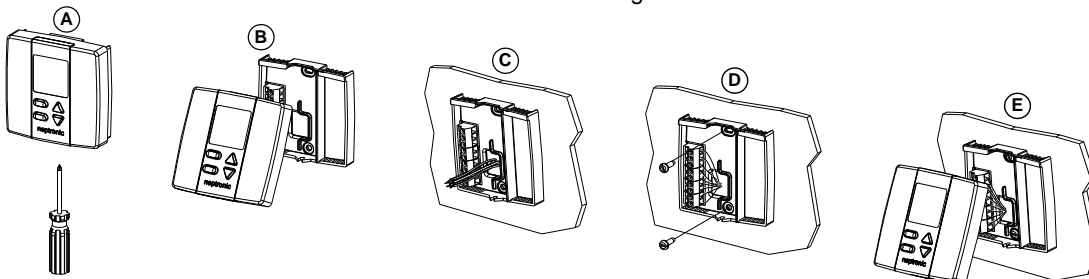
Terminal Description

Terminals	2 Pipe			4 Pipe			
	1-Speed Fan	2-Speed Fan	3-Speed Fan	1-Speed Fan	2-Speed Fan	3-Speed Fan	
TB1	1	Common (power input)					
	2	24 Vac (power input)					
	3	Change over temperature sensor or contact			External temperature sensor		
	4	Night Set Back input					
	5	Cool/Heat			Heat		
	6	Reheat			Cool		
	7	-	-	High	-	-	High
	8	-	High	Medium	-	High	Medium
	9	1 speed	Low	Low	1 speed	Low	Low

Mounting Instructions

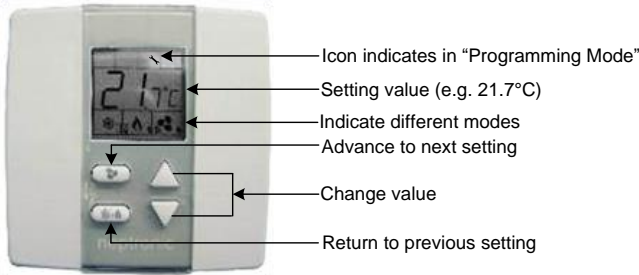
CAUTION: Remove power to avoid a risk of malfunction.

- Remove the captive screw that's holding the base and the front cover of the thermostat.
- Lift the front cover of the thermostat to separate it from the base.
- Pull wire through the hole in the base.
- Secure the base to the wall using wall anchors and screws (supplied). Make the appropriate connections.
- Mount the control module on the base and secure using the screw.











Programming Mode

i The Mode Selector jumper JP1 must be set to the PGM position (Programming Mode). Refer to Wiring on page 2. To exit, set the jumper back to the RUN position (Operation Mode). Changes are saved as soon as they are made.




Symbols used in this Manual

Icon	Description	Icon	Description	Icon	Description	Icon	Description
	Temperature		Heating		Cooling		Fan
	TRIAC Output 2		Pipe		Night Set Back		Time


Setpoint and User Control

1. "TST" (Internal Temperature Sensor Offset)

	Range:	10°C to 40°C	[50°F to 104°F]
	Offset:	Max. ± 5°C	[± 9°F]
	Increment:	0.1°C	[0.2°F]


Compare the displayed temperature reading with a known value from a thermometer or other temperature sensing device. To offset or calibrate the sensor, use the arrow buttons to set the desired temperature reading. This is useful for thermostats installed in areas where the temperature read is slightly different than the room's actual temperature. For example, a thermostat placed right under the air diffuser.

2. "STP" (Minimum User Setpoint)

	Default:	15°C	[59°F]
	Range:	10°C to 35°C	[50°F to 95°F]
	Increment:	0.5°C	[1.0°F]


In Operation mode, you cannot decrease the setpoint to less than the value set as the minimum user point. The minimum value is restricted by the maximum value set at Step 3. In other words, the value that is set as the minimum cannot be greater than the maximum value. The **MIN** symbol is also displayed.


3. "STP" (Maximum User Setpoint)

	Default:	30°C	[86°F]
	Range:	10°C to 35°C	[50°F to 95°F]
	Increment:	0.5°C	[1.0°F]

In Operation mode, you cannot increase the setpoint to more than the value set as the maximum user point. The maximum value is restricted by the minimum value set at Step 2. In other words, the value that is set as the maximum cannot be less than the minimum value. The **MAX** symbol is also displayed.

4. "LOC, STP" (User Setpoint Locked)

	Default:	Unlocked
	Range:	Unlocked, Locked

If set to **Unlocked**, the user setpoint option is not locked and the user can adjust the desired temperature setpoint. If set to **locked**, the user setpoint option is locked and the user cannot set the desired temperature setpoint. A lock symbol  appears to indicate that the setpoint is locked.



5. "22°C" (User Setpoint)



Default:	22°C	[72°F]
Range:	10°C to 35°C	[50°F to 95°F]
Increment:	0.5°C	[1.0°F]

Set the desired temperature setpoint within the defined range. If the setpoint option was locked at Step 4, a lock symbol is displayed. The setpoint value is restricted by the minimum at Step 2 and maximum at Step 3 values. In other words, the setpoint should be within the minimum and maximum setpoint range.

6. "CTL, AUT" (Temperature Control Mode)



Default:	Aut (Automatic Cooling and Heating)	
Range:	Aut (Automatic Cooling and Heating), on (Heating Only), on (Cooling Only), on (Cooling or Heating)	

Select the control mode that you want to authorize to the user. To authorize all the available modes, select **Aut** (Automatic Mode). The cooling and heating symbols are also displayed. The selection made at this step determines the options available via the Control Mode (see page 7).

7. "OFF, ENA" (Enable On Off Control Mode)



Default:	EnA (Enable)	
Range:	EnA (Enable), diS (Disable)	

If set to **EnA**, the user can set the unit to "Off" via the Control Mode (see page 7). If set to **diS**, the user cannot set the unit to "Off".

Pipe System Selection

8. "PNO, 4P" (Number of Pipes)



Default:	4P (4 pipes)	
Range:	2P (2 pipes), 4P (4 pipes)	

Select the number of pipes that you want to use.

If you select the 4 pipes option, Steps 9 to 14 will not be available.

9. "COC, NC" (Changeover Mode Selection)



Default:	nc (Normally Cool)	
Range:	nc (Normally Cool), nh (Normally Heat), tS (External Sensor)	

Select the change over mode option.

- *nc (Normally Cool). If selected, the thermostat activates heating mode on closing the contact.*
- *nh (Normally Heat). If selected, the thermostat activates cooling mode on closing the contact.*
- *tS (External Sensor). If selected, the thermostat activates heating mode if the temperature read by the external sensor is above the change over setpoint temperature, and cooling mode if the temperature read by the external sensor is below the change over setpoint temperature. (See Step 10)*

If you select nc or nh, Steps 10 and 11 will not be available.

10. "TCO" (Changeover Temperature Setpoint)



Default:	24°C	[75°F]
Range:	10°C to 40°C	[50°F to 104°F]
Increment:	0.5°C	[1.0°F]

This option appears only if you have selected **tS** at Step 9. Set the desired changeover temperature setpoint. Note that the heating mode activates when the temperature read by the external sensor is above the changeover setpoint and cooling mode activates when the temperature read by the external sensor is below the changeover setpoint.

11. "COS" (Changeover Temperature Sensor Calibration)



Range:	10°C to 40°C	[50°F to 104°F]
Offset:	Max. ± 5°C	[± 9°F]
Increment:	0.1°C	[0.2°F]

Set the desired changeover temperature reading with a known value from a thermometer or other temperature sensing device.

- *Display [0°C or 32°F]. Indicates that the resistance will be infinite.*
- *Display [50°C or 122°F]. Indicates that the resistance will be short circuited.*



Outputs

12. "LHT, OFF" (Local Reheat Signal)



Default: OFF (no signal selected)
 Range: OFF (no signal selected), on (heating only), on (heating and fan), PuL (Pulse, heating only), PuL (Pulse, heating and fan output)

This option appears only if you have selected 2 pipes option at Step 8. Select the desired signal output for TO2.

If you select OFF, Steps 13 to 16 will not be available.

OFF (no signal selected)



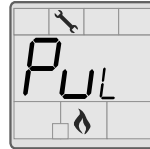
on (heating only)



on (heating and fan)



Pulse (heating only)



Pulse (heating and fan output)



13. "PB.L" (Proportional Band for Local Reheat)



Default: 2°C [4°F]
 Range: 0.5°C to 5.0°C [1.0°F to 10.0°F]
 Increment: 0.5°C [1.0°F]

Select the desired value for the local reheat proportional band. The heating \heartsuit symbol is also displayed.

14. "DB.L" (Deadband for Local Reheat)



Default: 0.3°C [0.6°F]
 Range: 0.3°C to 5.0°C [0.6°F to 10.0°F]
 Increment: 0.1°C [0.2°F]

Select the desired value for the local reheat dead band. The heating \heartsuit symbol is also displayed.

Temperature Control Source Settings

15. "T5, IN" (Temperature Sensor Selection)



Default: in (Internal Temperature Sensor)
 Range: in (Internal Temperature Sensor), out (External Temperature Sensor)

This option appears only if you have selected 4 pipes option at Step 8. Select the desired temperature sensor.

If you select in, Step 16 will not be available.

16. "T52" (External Temperature Sensor Calibration)



Range: 10°C to 40°C [50°F to 104°F]
 Offset: Max. \pm 5°C [\pm 9°F]
 Increment: 0.1°C [0.2°F]

Set the desired external temperature reading with a known value from a thermometer or other temperature sensing device.

- Display [0°C or 32°F]. Indicates that the resistance will be infinite.
- Display [50°C or 122°F]. Indicates that the resistance will be short circuited.

Proportional and Deadband Settings

17. "PB.1" (Proportional Band 1 Heating)



Default: 2.0°C [4°F]
 Range: 0.5°C to 5.0°C [1°F to 10°F]
 Increment: 0.5°C [1°F]

Select the desired proportional band value of the heating ramp 1. The heating \heartsuit symbol is also displayed.

18. "PB.1" (Proportional Band 1 Cooling)




Default: 2.0°C [4°F]
 Range: 0.5°C to 5.0°C [1°F to 10°F]
 Increment: 0.5°C [1°F]

Select the desired proportional band value of the cooling ramp 1. The cooling \heartsuit symbol is also displayed.

19. "DB.1" (Dead Band 1 Heating)




Default: 0.3°C [0.6°F]
 Range: 0.3°C to 5.0°C [0.6°F to 10.0°F]
 Increment: 0.1°C [0.2°F]

Select the desired dead band value of the heating ramp 1. The heating  symbol is also displayed.

20. "DB.1" (Dead Band 1 Cooling)



Default: 0.3°C [0.6°F]
 Range: 0.3°C to 5.0°C [0.6°F to 10.0°F]
 Increment: 0.1°C [0.2°F]


Select the desired dead band value of the cooling ramp 1. The cooling  symbol is also displayed.

Fan Settings

21. "FAN, DIS" (Fan Speed Automatic Mode)




Default: dis (disabled)
 Range: Ena (enabled), or Dis (disabled)

Display switches between "FAN" and "ena". 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 #23.**

22. "FTO" (Fan Auto Timeout Contact)




Default: 0 minutes
 Range: 0 to 15 minutes
 Increment: 1 minute

Select the desired value for the automatic shutoff delay when there is no demand. The fan  and **MIN** symbols are also displayed.

23. "FAN, SPD" (Fan Speed Contact)



Default: 3 (High Speed)
 Range: 1 (Low Speed), 2 (Medium Speed), 3 (High Speed)


Select the desired fan speed. The fan  symbol is also displayed.

Other Settings

24. "NOC" (Delay Cooling Contact)



Default: 0 minutes
 Range: 0 to 15 minutes
 Increment: 1 minute


This option appears only if you have selected 4 pipes option at Step 8. Set the desired delay to activate the cooling contact. The cooling  and **MIN** symbols are also displayed.

Night Set Back (NSB) Settings

25. "NSB" (Night Set Back Derogation)



Default: 120 minutes
 Range: OFF or 0 to 180 minutes
 Increment: 15 minutes



When in Night Set Back (NSB) Mode, the user can override Night Set Back (NSB) Mode (see page 7) for the duration of this delay. If you select OFF, the thermostat is in power off mode when the NSB is activated. The moon  and **MIN** symbol are also displayed.

If you select OFF, Steps 26 and 27 will not be available.

26. "STP" (NSB Heating Setpoint)



Default: 16°C [61°F]
 Range: 10°C to 35°C [50°F to 95°F]
 Increment: 0.5°C [1°F]

Set the heating setpoint that will be used when the system is in Night Set Back (NSB) Mode (see page 7). The heating setpoint value is restricted by the cooling setpoint value at Step 27. The moon  and heating  symbols are also displayed.



27. "STP" (NSB Cooling Setpoint)



Default:	28°C	[82°F]
Range:	10°C to 35°C	[50°F to 95°F]
Increment:	0.5°C	[1°F]

Set the cooling setpoint that will be used when the system is in Night Set Back (NSB) Mode (see page 7). The cooling setpoint value is restricted by the heating setpoint value at Step 26. The moon ☾ and cooling * symbols are also displayed.

Operation Mode

The Mode Selector Jumper JP1 must be set to RUN position (Operation Mode). Refer to Wiring on page 2.

Power Up

Upon power up, the LCD illuminates and all segments appear for 2 seconds.

LCD Backlight

Pressing the Up △ and Down ▽ arrow keys illuminates the LCD for 8 seconds.

Default Display

The thermostat automatically displays the temperature reading. To toggle the temperature scale between °C and °F, press both the Up △ and Down ▽ arrow keys for 3 seconds.

Temperature Setpoint Display and Adjustment

To display the setpoint, press the Up △ or Down ▽ arrow keys twice. The setpoint appears for 5 seconds. To adjust the setpoint, press the arrow keys while the setpoint is displayed. If the setpoint adjustment has been locked (Step 4), the lock 🔒 symbol appears.

Night Set Back (NSB) Mode

When the thermostat enters NSB Mode (the ☾ symbol appears), it uses the NSB setpoints defined at Steps 26 and 27. Press any key to override NSB for the delay defined at Step 25. The ☾ symbol flashes to indicate that the NSB mode is overridden (during this time the standard setpoints are used). If the ☾ symbol does not flash, it indicates that the derogation period is finished or the NSB derogation has been locked in Programming mode.

Control Mode

To access the Control Mode, press the key. The Control Mode appears for 5 seconds. Press the key to scroll through the following control modes. These options can vary depending on the options selected at Steps 6 and 7.

- Auto (Automatic Cooling or Heating)
- Cooling and Heating OFF
- Cooling only (on, with cooling * symbol)
- Heating only (on, with heating h symbol)

Fan Speed Selection Mode

To access the Fan Speed selection mode, press the key. The mode appears for 5 seconds.

- Low speed
- Medium speed
- High speed



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