



SAT-3 Installation Setup Guide

Date: 4 February 2016
Issue: 2
Applies to: SAT-3 room temperature controller, part number 201-000-146


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1. Quick Start Guide

1.1. General

Refer to the User's operating instruction booklet for everyday operation of the SAT-3. The system may include only one SAT-3.

In the following instructions, to navigate the settings of the SAT-3 thermostat press 




or . To adjust a setting press  or .

1.1.1. Installation Settings

Apply power to the system.


The SAT-3 is configured by default to operate with standard Temperzone air-conditioners and in most cases no adjustment is necessary. If required, refer to section 2.1 on page 3 for details of the installation settings and how they may be adjusted.

1.1.2. Clock Setting

Hold down the  or  key for 3 seconds to start adjusting the clock. The clock symbol  will start to flash as well as the presently selected day of the week. Set the day of the week and time using the keys detailed in section 1.1. When the day and time are set correctly, leave the SAT-3 for 15 seconds to return to normal operation.



1.2. Fan Setup

Activate fan setup mode by holding down  and  together for 3 seconds.



When fan setup mode is active the symbol  on the display flashes on and off.

1. Adjust the low fan control voltage to a suitable low level while monitoring the airflow.
2. Adjust the high fan control voltage to a suitable high level while monitoring the airflow.

When adjustment is complete press  to exit fan setup mode.

Setting	Display	Range	Notes
Low level fan control voltage	 SET Lo	2.0 to 8.0 Default 5.0	Steps of 0.333 e.g. 2.0, 2.3, 2.7, 3.0, etc.
High level fan control voltage	 SET Hi	4.0 to 10.0 Default 8.0	Steps of 0.333 e.g. 4.0, 4.3, 4.7, 5.0, etc.

1.3. Air-Conditioner Commissioning



Activate commissioning mode by holding down  and  together for 3 seconds.


Test the cooling cycle and (if installed) heating cycle operation of the air-conditioner.


Refer to section 2.3 on page 6 for full details of Commissioning mode.











2. Detailed SAT-3 Configuration

2.1. Installation Settings

To activate installer mode hold down  and  together for 3 seconds. When the unit is in installer mode the symbol **i** will be shown.

To confirm and save the new setting(s) press . The thermostat will return to normal operation and the new settings will apply.

To cancel changes to the settings at any time press . Any changes made will be discarded and the thermostat will return to normal operation using the old settings.




Setting	Display	Range	Notes
Minimum setpoint temperature	i SET Ct	5.0°C to Ht	Steps of 0.5°C
Maximum setpoint temperature	i SET Ht	Ct to 50.0°C	Steps of 0.5°C
Temperature differential	i td	0.5 to 1.5°C	Steps of 0.5°C
Indoor fan type	i Ft	1 or 3	Single- or three-speed fan Default 3-speed
Enable/disable Heating mode	i 	On or off	Default on
Enable/disable Cooling mode	i 	On or off	Default on
Enable/disable Cool/Heat (auto) mode	i  	On or off	Default on (see note 1)
Enable/disable Fan Only mode	i 	On or off	Default on
Enable/disable Dry mode	i 	On or off	Default off (see note 2)
Enable/disable Quiet mode	i 	On or off	Default on
Enable/disable Sleep mode	i 	On or off	Default on
Enable/disable Economy mode	i 	On or off	Default on
12 or 24 hour clock	i tC	12 or 24 hours	Default 24 hours
Number of stages	i St	1 or 2	Default 1
Room temperature sensor	i rt	1, 2, 3 or 4	Default 1 (internal, see note 3)
Zone 1 temperature sensor calibration	i  OF	-4.0 to +4.0°C	Steps of 0.1°C, default 0 (see note 4)










Zone 2 temperature sensor calibration	i	②	OF	-4.0 to +4.0°C	N/A see note 6
Zone 3 temperature sensor calibration	i	③	OF	-4.0 to +4.0°C	N/A see note 6
Zone 4 temperature sensor calibration	i	④	OF	-4.0 to +4.0°C	N/A see note 6
Zone 5 temperature sensor calibration	i	⑤	OF	-4.0 to +4.0°C	N/A see note 6
Zone 6 temperature sensor calibration	i	⑥	OF	-4.0 to +4.0°C	N/A see note 6
Enable/disable zone control	i	ZONE	En	On or off	Default off. Must be off to function correctly without zone control board.
Maximum difference of zone setpoint from zone 1 set point	i	ZONE	SP	2.0 to 10.0°C	N/A see note 6
Minimum number of zones that must be on	i	ZONE	nn	0, 1 or 2	N/A see note 6
Zone 1 Size	i	①		1 to 5	N/A see note 6
Zone 2 Size	i	②		0 to 5	N/A see note 6
Zone 3 Size	i	③		0 to 5	N/A see note 6
Zone 4 Size	i	④		0 to 5	N/A see note 6
Zone 5 Size	i	⑤		0 to 5	N/A see note 6
Zone 6 Size	i	⑥		0 to 5	N/A see note 6
Programmable timer function	i		tF	1 or 2	Default 1 (standard, see note 5)
Set display backlight duration	i		bd	0 to 59 s	Default 30s
Set display backlight intensity	l		bL	0 to 10	Default 10
Set modbus device address	i		Ad	1 to 99	Default 8 Other settings will not function correctly.
Set RS485 baud rate	i		br	1 to 4	1:4800 2: 9600 3:14400 Default 4: 19200
Zone controlled auto mode dead band	i		Ab	0 to 10.0°C	N/A see note 6

Notes:

1. Auto cool/heat mode can only be enabled if both cooling and heating mode are also enabled.
2. Dry mode (de-humidification) can only be enabled if cooling mode is also enabled.
3. Room temperature sensor: 1 = internal, 2 = external, 3 = average of internal and external, 4=zone 1 temperature (from modbus – do not use with un-zoned systems).
4. Zone 1 temperature calibration is applied to the room temperature from the selected source described above in note 3.
5. Programmable timer function: 1 = standard, 2 = advanced.
6. Not applicable to systems without zone controller.

2.2. Fan Settings

To activate fan setup mode hold down  and  together for 3 seconds. When Fan Setup Mode is active the symbol  on the display flashes on and off. Settings in Fan Setup Mode are as follows:

Setting	Display	Range	Notes
Low level fan control voltage	 SET Lo	2.0 to 8.0 Default 5.0	Steps of 0.333 e.g. 2.0, 2.3, 2.7, 3.0, etc.
High level fan control voltage	 SET Hi	4.0 to 10.0 Default 8.0	
Additional zone voltage increase	 SET Ad	0 to 950 Default 300	Not applicable to systems without zone controller
Zone 1 balance	 ① bL	10 to 100% Default 100%	
Zone 2 balance	 ② bL	10 to 100% Default 100%	
Zone 3 balance	 ③ bL	10 to 100% Default 100%	
Zone 4 balance	 ④ bL	10 to 100% Default 100%	
Zone 5 balance	 ⑤ bL	10 to 100% Default 100%	
Zone 6 balance	 ⑥ bL	10 to 100% Default 100%	

As the settings are adjusted the unit controller adjusts its operation to allow the settings to be evaluated:

Setting	Unit controller operation
Low level control voltage	The indoor fan operates at the low voltage level selected
High level control voltage	The indoor fan operates at the high voltage level selected

If the **mode** key is pressed or if no key is pressed for 15 minutes the SAT-3 will return to normal operation using the updated settings.

If the **⏻** button is pressed the SAT-3 will discard the updated settings and resume normal operation with the previous settings.

2.3. Commissioning Mode

To activate or de-activate commissioning mode hold down **mode** and **3** together for 3 seconds. When commissioning mode is active the symbol **i** on the display flashes on and off.

Commissioning mode automatically ends after 30 minutes and the thermostat returns to normal operation. Commissioning mode also can be terminated by again pressing **mode**

and **3** together for 3 seconds or by removing and then re-applying power to the thermostat. Operation in commissioning mode is identical to that in normal mode except that safety timer durations are made shorter as follows:

Delay	Normal	Commissioning
Minimum compressor on-time	90 seconds	10 seconds
Minimum compressor off time	90 seconds	20 seconds
Minimum time from compressor-on to next compressor-on	6 minutes	30 seconds
Minimum cooling-to-heating change-over time	10 minutes	1 minute
Minimum heating-to-cooling change-over time	10 minutes	1 minute
Power on delay prior to starting compressor	2 minutes	2 minutes

2.4. Return Air Sensor option

To use a return air sensor with the SAT-3 the return air sensor must be connected to the SAT-3. The SAT-3 provides a socket that accepts a 2 pin JST connector of the standard type that Temperzone uses for its optional temperature sensors.

The SAT-3 must be configured to use the return air sensor. This is done with the Commissioning mode settings - see section 2.3 above. The options for selecting the controlling sensor are:

1 = internal, 2 = external, 3 = average of internal and external, 4=zone 1 temperature (from modbus – do not use with un-zoned systems).

In this case the "external" option refers to the return air sensor plugged in to the SAT-3.

Note:

Return air sensing picks up on the air temperature in the return air duct. When the fan is off this may not be a good indication of the room temperature. For this reason we recommend using fan on mode with return air sensing.

Fresh air introduced up-stream of the return air sensor will affect the temperature reading making it less representative of the room temperature. Take care with the sensor placement so that the temperature is not influenced by a fresh air intake – better to be placed prior to any any fresh air introduction.

3. SAT-3 Fault Indications

The SAT-3 indicates some faults that may be useful during installation. Faults are indicated in the bottom right area of the display.

Wiring changes should only be made with the power disconnected.

Code displayed	Description	Remedy
t1	SAT-3 internal temperature sensor error	The internal temperature sensor of the SAT-3 is damaged. Replace the SAT-3.
t2	SAT-3 external temperature sensor error	Check the external temperature sensor connected to the Sat-3.
t3	No communications between SAT-3 and unit controller	Check the wiring between the unit controller and the SAT-3. Check the SAT-3 baud rate is set at 19200 baud (see section 2.1).