User Manual

[1]TZT-100 Multi-function
Thermostat

Please take time to read and understand these instructions. Doing so will assist you to benefit from the many features offered in this premium product.

If properly installed, your thermostat will provide years of trouble- free control of the air temperature within your living or working environment.

The TZT-100 thermostat has been designed and built by Smart Temp Australia P/L, to be an attractive, highly reliable and an easy to use thermostat. The TZT-100 model is a modified version of a standard Smart Temp product. It has been configured specifically to Oasis Heat Pumps requirements for use on Oasis Heat and Chill Heat Pumps

Care has been taken in the preparation of this manual. However, Oasis takes no responsibility for errors or omissions in this document. It is the responsibility of the user to ensure this thermostat and the equipment connected to it, is operating to their specifications, and in a safe manner.

Due to ongoing product improvement Smart Temp Pty. Ltd., Oasis. reserve the right to change the specifications of this thermostat (or its components) without notice. . Any such changes may impact upon the operational detail described in this manual. The user should ensure they are reading documentation which relates to the version of thermostat they have.

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Table of Contents

This TZT-100 thermostat is able to be used as a residential programmable thermostat, a commercial programmable thermostat or as a simple to use manual thermostat. Your installer will have set these modes to best suit your individual needs.

For clarity, this user manual is broken into the following main sections.

Commercial Programmable Mode.

Allows programming of 1 “Start” and 1 “Stop” time and temperature per day.

Manual Mode. *(See page 18 of this manual).*

Use the MODE button to switch On and Off. No time-related programming available.

Common Functions - All modes.

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Commercial Programmable Mode

On /Off and Mode Selection

Tap the **"MODE"** button to cycle the thermostat through the available modes: "Heat" only, "Cool" only, Auto-changeover (Shown by both "Heat" & "Cool" in the LCD), Emergency Heat (if fitted), and "OFF". If the fan mode is set to "Fan On", when you select "OFF" mode the fan mode will automatically change to "Auto Fan" to prevent the fan from running unexpectedly while the unit is OFF. (Note – Not all modes may be active on your thermostat).

Setting the Clock

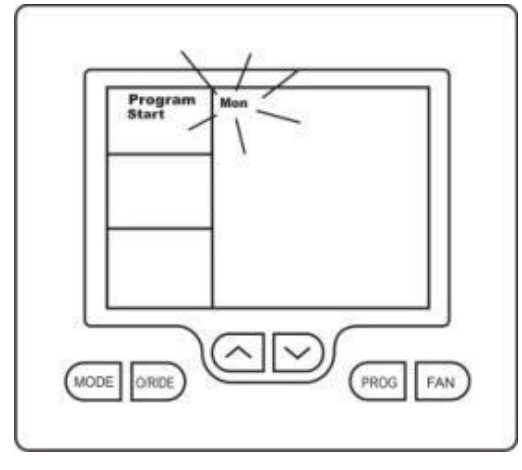
The thermostat is fitted with a real time clock. This clock is used by the thermostat for the programming functions as described below.

It is essential that the clock time and day are set accurately if you require your programmed events to start on time.

To set the clock, tap the **"PROG"** button. The LCD will show the hours digit flashing. Use the up (▬) or down (▬) button to adjust the hours to the correct time (note the AM / PM symbol). Tap the **"PROG"** button again and now the minutes digits will flash. Adjust this value using the up (▬) or down (▬) button to show the correct minute. Tap the **"PROG"** button again and now the weekday flashes, again use the up (▬) or down (▬) button to set this value to the correct day of the week. Tap the **"PROG"** button again to exit the clock set function.

Programming Your 2 Daily Events

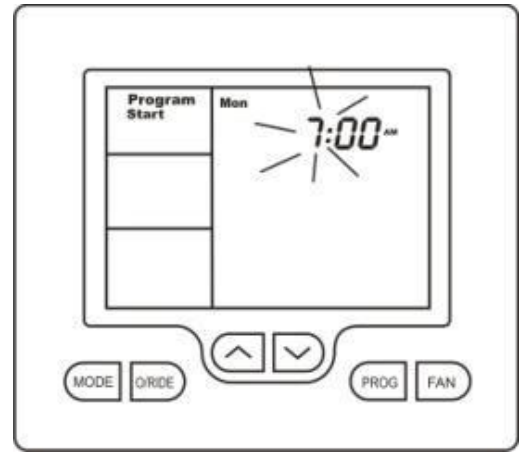
Commercial programming of the thermostat has been designed to be an extremely simple and logical process. The thermostat permits you to program a START time for the air conditioning system, then a Stop time for each day of the week. When the thermostat is displaying "START" in the LCD, it will maintain whatever set point has been chosen. When the thermostat is displaying "STOP" in the LCD it will be OFF (or it will maintain an energy efficient overnight temperature if set by the installer).



<u>To enter the program mode</u>:

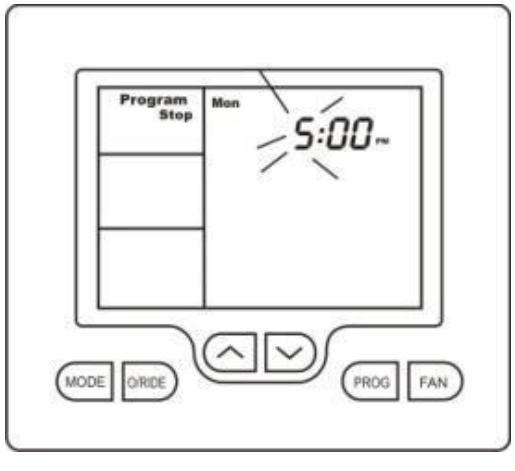
Press and hold the **"PROG"** button for 3 seconds. The display will change to show the Day "Monday" flashing. Using the up (▬) or down (▬) buttons adjust the day to the day you wish to start programming an event or to the day you wish to edit an existing event.

Tap the **“PROG”** button to advance to the next step, The LCD will show the word “START” with the hour’s digit flashes. Using the up (−) or down (−) buttons adjust the hours value to the time you wish the building Air Conditioning system to start.



Tap the **“PROG”** button again, now the minute’s digits flashes. Using the up (−) or down (−) buttons set the minute to the time you wish the building air conditioning system to “START” for the currently selected day.

Tap the **“PROG”** button to advance to the next step, The LCD will show the word “STOP” with the hour’s digit flashes. Using the up (−) or down (−) buttons adjust the hours to the time you wish the building air conditioning system to “STOP” for the currently selected day.

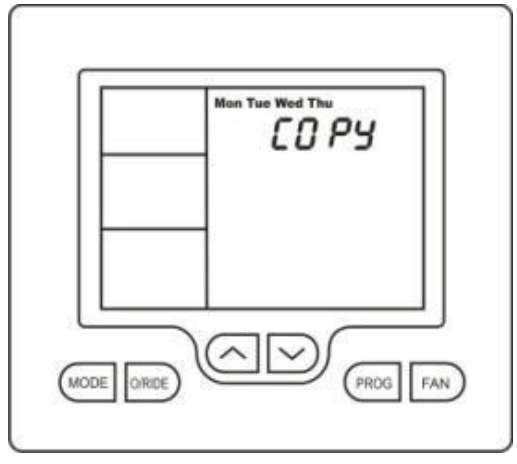


Tap the **“PROG”** button again, now the minute’s digits flashes. Using the up (−) or down (−) buttons set the minute to the time you wish the building air conditioning system to “STOP” for the currently selected day. The LCD will now show the word “COPY”.

You now have TWO options

Option 1 - Continue programming as above.
Simply continue to tap the **"PROG"** Button as you have been previously to advance to the next day, "Tuesday" in this example "START" then "STOP" times, then Wednesday, Thursday etc, following the same simple steps previously explained….

OR



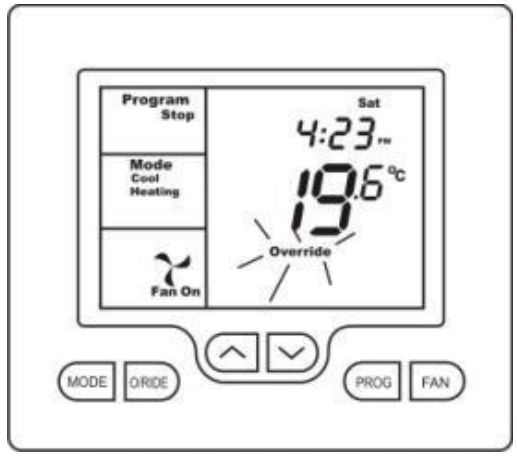
Option 2 – "Copy" Program
To copy the values you have just set to other days of the week tap the up (▲) or down (▼) buttons to "Tag" each additional day you wish to copy the currently set days program to. When you have finished "Tagging" the days you desire press the **"PROG"** button to initiate the copy process. The word "Copy" will flash briefly to confirm the copy process and your current days values will be copied to the days selected. Normal programming will resume at the next day to be programmed.

Please Note *– Your thermostat's programs may be controlled from a Building Management System (BMS) thereby overriding any program you may have entered, as described above. If the BMS is controlling the thermostat the word "Start" or "Stop" will flash in the LCD to indicate the thermostat program is under BMS control.*

After Hours Run Timer

For convenience, the installer may have set the after-hours run function. This function permits you to temporarily turn the thermostat back on for an installer pre-set period of time if the "Stop" program is running, at the conclusion of which the thermostat will automatically turn back off again.

To activate the after-hours run timer, simply tap the **"O/RIDE"** button. (Or, the optional "After Hours" run button on the remote room temperature sensor.) The LCD will show the word "Override" flashing in the LCD.



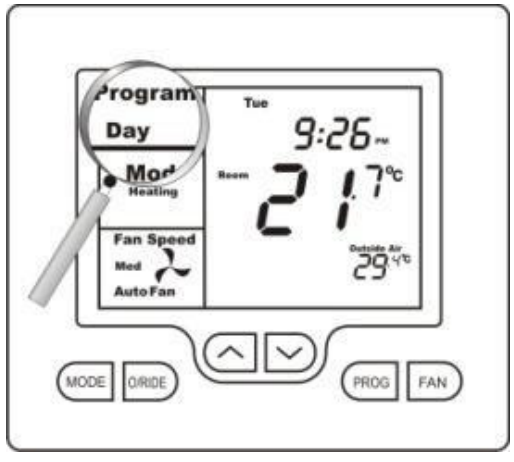
You can cancel any unexpired portion of the timer period by tapping the **"O/RIDE"** button again. The word "Override" will vanish from the screen.

To Review the Set Temperature:

Simply tap the up (▲) or down (▼) button to first turn the LCD backlight on, then again to display the currently set temperature.

Your Installer may have set a default "Start" event temperature that will be used at the commencement of each day; this will override any previous day's temperature adjustments.

Manual Mode



ON / OFF and Mode Selection

Tap the **"MODE"** button to cycle through all the available modes: "Heat"-only, "Cool"-only, Auto-changeover (Both "Heat" & "Cool" show in the LCD at the same time), Emergency Heat (if fitted), and "OFF". If the fan mode is set to "Fan On", when you select "OFF" mode, the fan mode will automatically change to "Auto Fan" to prevent the fan from running unexpectedly while the unit is OFF. (Note – Not all modes may be active on your thermostat).

Setting the Fan Function

Detail of the thermostat's fan control functions can be found on page 26 of this manual.

Setting the Clock

The thermostat has a real time clock. In Manual mode, this clock has no function other than to display the time. The clock display can be disabled by the installer if desired.

To set the clock, press and hold the **"PROG"** button for 3 seconds. The LCD will show the hours digit(s) flashing. Use the up (▬) or down (▬) button to adjust the hours to the correct time (note the AM / PM symbol). Tap the **"PROG"** button and now the minutes digits will flash. Adjust this value using the up (▬) or down (▬) button to show the correct minute.

Tap the **"PROG"** button and now the week day flashes. Use the up (−) or down (−) button to set this value to the correct day of the week. Tap the **"PROG"** button again to exit the clock set function or simply wait 30 seconds to auto exit this screen and return to the main operating display.

Your clock is now set.

Setting Your Desired Temperature

Press and hold the up (−) or down (−) buttons for 3 seconds. The thermostat display will change to show the word "SET", and the active set point for the current mode. (Heating or Cooling) as you hold the up (−) or down (−) buttons the current set point will change accordingly.

If Auto mode is selected (Indicated by both "Heat" & "Cool" showing on the display at the same time); after adjusting the "Heat" set point, wait without touching a button for 3 seconds. The thermostat display will change to show "Cool", "SET" and your current cooling set temperature. If desired change this value with the up (−) or down (−) buttons. Wait for another 3 seconds for the thermostat to automatically exit this temperature setting screen. Your new set temperatures will be maintained.

Switching Between Day and Night Set Points

If the function is set by your installer, the thermostat will keep two sets of temperatures in its memory. Typically one set is for daytime set point temperatures, and the other for the night settings.

The thermostat provides a quick and simple way to change between your day and night time set temperatures. Simply tap the **"PROG"** button. The display will change, showing "Day" or "Night" in the top left hand corner as you switch between modes.

Set the "Day" set temperature(s), separately from the "Night". Each are set as described on the previous page.

To Review the Set Temperature:

Simply tap the up (▬) or down (▬) button to first turn the LCD backlight to again to display the currently set temperature.

Common Functions

The Buttons Explained – ON/Off and Mode Selection etc

MODE

Tap this button to cycle the thermostat through the available modes: “Heat” only, “Cool” only, Auto-changeover (Indicated by the words; “Heat” and “Cool” being visible on the display at the same time), Emergency Heat (if fitted), and “OFF”. When setting the thermostat to “OFF” mode, the fan mode will automatically change to “Auto Fan” mode so the fan does not unexpectedly continue to run.
(Note – Not all modes may be active on your thermostat.)

O/RIDE (Override)

Commercial Programmable Mode:

This button initiates the after-hours run timer. When activated, the thermostat will temporarily replace the “Stop” program temperatures with the “Start” program temperatures for an installer-defined pre set period.

Residential Programmable Mode:

The “**O/RIDE”** button is used to override the current “event” time scheduling, and to hold the currently set temperature indefinitely. This set temperature will be maintained until released by tapping the “**O/RIDE”** button again. “Hold” will be displayed in the LCD to confirm this function is active.

□ (Up)

Use this button to increase the desired room temperature for “Heating” or “Cooling” modes, or to increase a “value” in programming modes. Also used to force an override of the pre-programmed temperatures and temporarily replace them with a new higher set temperature.

□ (Down)

Use this button to decrease the desired room temperature for “Heating” or “Cooling” modes, or to decrease a “value” in programming modes. Also used to force an override of the pre-programmed temperatures and temporarily replace them with a new lower set temperature.

PROG (Program)

<u>In Residential or Commercial Programmable mode:</u>

Tap the **“PROG”** button to begin setting the clock. Press and hold the **“PROG”** button for 3 seconds to begin programming your daily events.

<u>In Manual mode:</u>

Tap the **“PROG”** button to switch between “Day” & “Night” modes. Press and hold the **“PROG”** button for 3 seconds to begin setting the clock.

Control Modes:

Heat-only Mode - The thermostat will turn on the Heating when the room temperature falls below the Heat set point temperature. In Heat-only mode the thermostat will NOT bring on the Cooling regardless of the room temperature and the Cooling set point temperature. In Heat-only mode, only the word "**Heat**" will be displayed in the LCD. When your thermostat is calling for heat, the word "**Heating**" will be displayed.

If the word "Heat" is flashing, the thermostat is performing an Anti-Rapid-Cycle safety **delay prior to restarting the heating cycle.**

E. Heat Mode - The thermostat will only use your emergency heating device to maintain your desired heating temperature. This method of heating can be quite expensive therefore Emergency Heat mode is not recommended unless it is essential. When your air conditioning system is heating using emergency heat, the word "**E.Heat**" in the LCD will change to the word "**E.Heating**".

Cool-only Mode - The thermostat will turn on the Cooling when the water temperature rises above the Cool set point. In Cool-only mode the thermostat will NOT bring on the Heating regardless of the water temperature and Heating set point temperature. In Cool-only mode, only the word "**Cool**" will be displayed in the LCD. When your heat pump system is cooling, the word "**Cooling**" will be displayed.

If the word "Cool" is flashing, the thermostat is performing an Anti-Rapid-Cycle safety delay prior to restarting the Cooling.

Auto-changeover Mode - The thermostat will turn on the Heating if the water temperature falls below the Heat Set point temperature. Likewise it will commence Cooling if the water temperature rises above the Cool Set point. This is the recommended mode as it provides automatic control of the heat pump system to maintain the desired water temperature. Auto-changeover mode is indicated by both words “Heat” & “Cool” showing in the LCD at the same time.

If “Heat” or “Cool” is flashing; the thermostat is performing an Anti-Rapid-Cycle safety delay prior to restarting the air conditioning system.

Padlock Symbol.

Whenever this symbol is shown, a control limit has been reached, or a button, or other function has been locked out.

Spanner Symbol.

If you see a spanner ICON flashing on your LCD, the installer has left your thermostat in "Commissioning mode" Although your thermostat will operate your heating and cooling system whilst in "commissioning mode", all active safety and energy conservations delays have been disabled. It is therefore HIGHLY recommended that you contact your installer and request that the installer mode be disabled.

Satellite Symbol

This indicates that your thermostat is receiving or sending information to another "communicating" controller, or a Building Management System. Information received from the building supervisory control system may change the function (mode or set temperature) of the thermostat. This is normal and no cause for concern.

The intent of this communications is to permit the centralised control of building functions which can include building climate control. To achieve this the BMS must be able to override thermostat settings made by the user. This ability is especially useful when a large facility has a number of heat pumps.

TEXT “Locked”:

The temperature of the outside air can initiate, or prevent certain functions within the thermostat from operating. If this happens, the word “LOCKED” appears. These functions automatically “unlock” once the outside air temperature becomes favourable.

TEXT “FAULT”

The TZT-100 has been “requested” to shut down the heating, cooling or heat pump system as a response from an external command. This request may have come from a sensor fitted to the heat pump system, a sensor monitoring supply power or a multitude of safety interlocks that can be used. To clear this fault a service call to your service person may be necessary.

Remote Temperature Sensors:

Your thermostat is fitted with an accurate and reliable temperature sensor used to measure the water temperature. There may be occasions where the thermostat cannot be placed in an ideal location for water temperature measurement; therefore the installer may have fitted “remote temperature sensor(s)”. These sensors will then report the water temperature from the remote temperature location back to the thermostat where this temperature will be displayed on the LCD.

If your thermostat is used in a commercial location, your water temperature sensor may be fitted with a button which activates the “After Hours” run function. Consult your installer if you require this feature or have questions about its use.

Troubleshooting

Symptom	Suspected Fault	Suggested remedy
Temperature display seems inaccurate	Sensor location needs to be checked	Make sure sensor is in correct position
	Position of sensor in titanium pocket	Make sure sensor is at the bottom of the titanium pocket
	Sensor calibration may be incorrect	Call your installer, Smart Temp or Oasis, for information on how to calibrate the air temperature sensor
	A remote temperature sensor may be in use.	The temperature is NOT being measured at the thermostat location. The remote location may have a different temperature.
"Locked" appears on LCD. Heating or Cooling will not operate.	This is not a fault. Outside air temp too high to permit heating Outside air temp too low to permit cooling.	Heating and/or cooling disabled to conserve energy. The heating or cooling function can be disabled when the outside temperature is warm or cool enough to not warrant the use of the heat pump
Controller has no display	Check main fuse	Reset Circuit breaker Call an approved service agent.
	Faulty Wiring	Call an approved service agent.
Heat Pump System seems to run all the time	Heating and/or cooling temperatures set to an un-achievable value.	Set a lower heat temperature and/or a higher cooling temperature. Review manual on setting temperatures
	Heat-Cool System set to Heat Pump Mode	Installer setting Incorrect – call for service
Spanner Symbol in the LCD flashes all the time	Installer has left the thermostat in "Commissioning mode"	Contact your installer and request "Commissioning mode" be disabled.

Symptom	Suspected Fault	Suggested remedy
E.Heating is shown on LCD without manually selecting it.	This is not a fault.	Your installer has set your TZT-100 to automatically use "Emergency / Auxiliary Heating" if the outside air temperature is very low.
Some buttons do not appear to operate. Padlock is show on LCD.	Key board lock is on. See page 28 for more information on this function.	This is not a fault. Buttons or functions may be locked to prevent unauthorised tampering
Cannot enter "Heat" or "Cool" modes.	Thermostat set for "Heat-only" or "Cool-only" modes	Heating or Cooling mode not available on your air conditioning system.
I cannot set my desired heating or cooling set temperature. Padlock Symbol is flashing	This is not a fault. Your installer has set control limits for the Heating and or Cooling set temperature.	Contact your installer and request these limits to be removed / adjusted.
Outside Air Temp display is showing dashes	Outside air temperature air sensor has failed.	Check wiring and outside air sensor. Replace outside air sensor
	No outside air sensor fitted.	Installer has set "TT" terminal function incorrectly – Call for service.
"Heat" or "Cool" is flashing in the LCD. Heating or cooling has not started.	This is not a fault. Heating or cooling will start shortly.	The TZT-100 is performing an Anti Rapid Cycle delay to conserve energy and to protect the heating, cooling or heat pump system.
The Fan runs on for some time after the heating or cooling stops, even when I turn the thermostat OFF.	This is not a fault. ("Fan On" will be flashing)	The is fitted with a "Fan Purge" function that keeps the fan running for a minimum amount of time after the heating or cooling has stopped. Contact the installer if you wish this function disabled (NOT recommended).
Temperature display in the wrong format – C or F.	The TZT-100 can operate in either Deg C or Deg F mode. This is set by your installer.	Contact your installer, Smart Temp or Oasis for information on changing your display type.

Specifications

Input Voltage	24VAC 50/60 Hz +/- 15%.
Relay rating	24VAC @ 1Amp maximum per relay.
Operating Temperature	0-50°C (32 to 122°F).
Operating RH	0-95% (non condensing).
Storage Temperature	0-65°C (32 to 150°F).
Size	113 x 103 x 23mm.
Display Size	74 x 55mm.
Temperature Sensor(s)	10K NTC type 3.
Memory type	Non volatile – Settings do not require battery backup.
Accuracy	+/- 0.3°C @ 25°C. (77°F)
Stage Delays	Minimum temperature change + time method.
Maximum stages controlled	2 cool & 3 heat (Installer selectable)
Fan Speeds controlled	1 or 3 (Installer selectable)
Timed upstage Delay	5~90 minutes (installer adjustable).
Anti-Rapid Cycle Delay	Installer selectable – “Off”, or “4-minutes”.
Maximum hourly cycles	Unlimited, 30, 10 or 6. (Installer set)

Display resolution	0.1 deg C (0.2F).
Control Range	Off to 45c (113F).
Outside Air temp display range	-8 ~ +60c (17 ~ 140F).
Security	Pin protected Installer menu with keylock. Heat & Cool set control limits. Lithium backup battery for clock functions.
Back light	Blue EL.
Backlight life	3,000 hours to half brightness.
Optimised Start/Stop method	Time-to-Start v Temp Differential method - updating.
Communications Protocol	Modbus RTU 4.8K 9.6K 19.2K No parity 1 data 1 stop. – Contact Oasis for Modbus objects list. “Auto
Fan” speed selection method	Difference between room and set temp.
Approvals	FCC (Part 15) (pending), C-tick.
Battery type	CR 1220 (Backs up clock only)
Battery life	> 5years (10 years Maximum)

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