

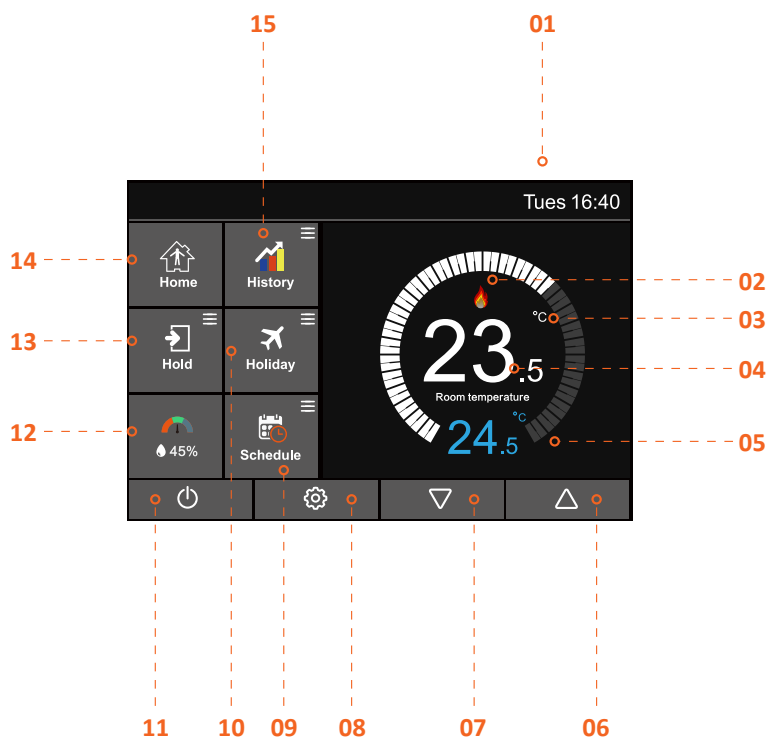
User Guide



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LCD Main Display






Overview

- 01** Day Indicator and Clock.
- 02** Displayed “heating flame” when heat is required.
- 03** °C or °F display.
- 04** Room temperature display.
- 05** Setting temperature display.
- 06** Increase the Setting Temperature / Next Page in Setup and Feature Settings.
- 07** Decrease the Setting Temperature / Previous Page in Setup and Feature Settings.
- 08** Menu button / Setup.
- 09** Schedule: Programmable operation.
- 10** Holiday: Programmable operation.
- 11** Power - ON/OFF.
- 12** Air Humidity:
 - If humidity value less than 30%, the pointer will be in the Red area
 - If humidity value is between 30% and 60%, the pointer will be in the Green area
 - If humidity value is more than 60%, the pointer will be in the Grey area
- 13** Hold: Temperature Hold / Timer Function.
- 14** Home/Away: Allows a preset set-back temperature while away from the premises.
- 15** History: Shows the running time, the room temperature and the room humidity.

Getting Started - General

When the thermostat has been installed and powered on for the first time, you must set the Language, Time Zone, Date/Time and the Daylight Saving Time.



Whenever the use of the icons   is mentioned in this user guide, you can also swipe navigate  on the main display.

- 01** Set the **language** to be used on the thermostat display, see page 11.
- 02** Set the **time zone** in which the thermostat is located, see page 11.
- 03** Set the current **date** and **time**, see page 11.
- 04** Set the region you are in, to ensure correct use of **daylight saving time**, see page 11.
- 05** The T60 is now ready for basic use in thermostat mode and will control your heating system according to the set temperature. If you want to program a heating schedule, instructions are given in the section titled **Schedule** on page 9.

The T60 series is versatile with several functions, options and settings. Read this user guide and learn more.

Mode Selection

The T60 can either be used as a Thermostat (default) or a Time-clock.

Thermostat Mode – The thermostat can be fully programmed with predetermined times/periods and individual temperatures. The T60 provides three basic schedules with different program options.

Time-Clock Mode – The thermostat allows only a time-clock setting to switch the heating ON or OFF. This mode ignores any set temperature.


To change between the two modes, see page 17, submenu “**12. Work Mode Selection**”.

MODE 1 - THERMOSTAT MODE / Operation of Main Display



Home/Away Mode








- 01** The Home/Away Mode is a shortcut button to easily change to a preset temperature when leaving the premises. The range is +7°C to +35°C, default is +7°C.
- 02** In Away Mode, the thermostat will only turn the heating ON, if/when the room temperature drops below the set Away temperature. This is configured in  the Setup menu. If the heating is turned on, the flame symbol will be displayed.



Hold Mode (Timer Function)

The Temperature Hold function allows you to manually override the current operating program and set a different temperature for a desired period.

- 01** Press the button “Hold”.
- 02** Press the first column of “Hold Temp”, use the icons   to set the desired hold temperature. The temperature range is +5°C to +45°C.
- 03** Press the second/third columns of Hours/Minutes, use the icons   to set the desired hold time.
- 04** Press the icon  to save and return to main display, or press the “Cancel” to delete the setting.

The indication “Hold **°C, Left **:.” is displayed on top of the screen. The time will count down the duration and then revert to the normal program.



Air Humidity


- i** Shows the indoor air humidity. When tapping on the icon, the display will simultaneously show the temperature and humidity.

The given value can be calibrated in the Setup. Go to page 16 in this user guide for the procedure.



History








The thermostat can show the running time (hours), the room temperature (°C) and the room humidity (%) for the latest seven days.

- 01 Press the button “History”.
- 02 Select/tap on information boxes of your choice.
- 03 Press the icon  to return to main display.



Holiday Mode

The T60 will maintain the set temperature “**Holiday Temp**” for the duration of the holiday and will then automatically return to the program mode on your return.

- 01 Press the button “Holiday” and switch the mode  to .
- 02 For Holiday Start, press the column of Year / Month / Day. Use the icons  to set the Year / Month / Day values under Holiday Start.
- 03 For Holiday End, press the column of Year / Month / Day. Use the icons  to set the Year / Month / Day values under Holiday End.
- 04 Press the icon  to save and return to main display.




The indication “**Holiday until **/** **:.***” is displayed on top of the screen.




Schedule

- 01 Press the button “Schedule” and select one of the four different options: **Weekday/Weekend, 7 Days, 24 Hours** or **None**.







For example: setting an option to a 7 Days mode.

- 02 Press the icon  in the front of 7 Days, and it will turn to .
- 03 Press the icon  to save and return to main display.

- 04** Press the “Schedule” again on the main display and enter the setting interface. On the edit page, Monday to Sunday can now be selected.
- 05** Press “Monday” and select a time period: **Morning / Day / Evening / Night**. Each time period has  options, On/Off.

In the program of Monday:

Morning

- 01** Press the first column of ‘Time’, use the icons  to set desired “Hour”. Press the second column of ‘Time’, use the icons  to set desired “Minute”. Press the third column of ‘Temperature’, use the icons  to set desired room temperature.

For example: The setting time is **08 (Hour): 00 (Minute)**

For example: The setting temperature is **21°C**

Day

- 02** The same as Program Morning procedures.
- For example:** The setting time is **09 (Hour): 30 (Minute)**
- For example:** The setting temperature is **16°C**

Evening

- 03** The same as Program Morning procedures.
- For example:** The setting time is **16 (Hour): 30 (Minute)**
- For example:** The setting temperature is **22°C**

Night

- 04** The same as Program Morning procedures.
- For example:** The setting time is **23 (Hour): 00 (Minute)**
- For example:** The setting temperature is **17°C**

Four Time Periods - Four Temperatures




08:00-09:29 - During this time period the temperature will remain at 21°C

09:30-16:29 - During this time period the temperature will remain at 16°C

16:30-22:59 - During this time period the temperature will remain at 22°C

23:00-07:59 - During this time period the temperature will remain at 17°C





If you want to change to another Schedule option:

- 01** Press the icon  Setup.
- 02** Browse  to the “Schedule” menu and press on it for submenu. Make your new choice of one of the four options: **Weekday/Weekend, 7 Days, 24 Hours** or **None**.

Setup







Language



- 01** Press the icon  Setup.
- 02** Browse   to the “Language” menu and press on it for submenu.
- 03** Select your desired language.
- 04** Press the icon  twice to save and return to main display.






Date and Time

To set the Date and Time, follow these steps:


- 01** Press the icon  Setup.
- 02** Browse   to the “Date & Time” menu and press on  to enter the submenu.
- 03** Press on the submenu “**01. Time Zone Selection**” to select the time zone you desire. The options are **UTC -12** to **+12 hour**.



Press the icon  or  to enable or disable the Time Sync function.

- 04** Press the icon  to save and return to the submenu.
- 05** Press on the submenu “**02. Date & Time Setting**” for setting:





For Date, press the columns of **Year / Month / Day**, use the icons   for the desired setting

For Time, press the columns of **Hour / Minute**, use the icons   for the desired setting.






- 06** Press the icon  to save and return to the submenu.
- 07** Press on the submenu “**03. Daylight Saving Time (DST)**” for setting:

Press the icon  or  to enable or disable the function.




There are three options: **Europe /USA & Canada / Australia & New Zealand**

- 08** Press the icon  in the front of your choice and it will turn to 
- 09** Press the icon  to save and return to the submenu.
- 10** Press the icon  again to return to the setup menu.








Backlight Setting



- 01** Press the icon  Setup.
- 02** Browse   to the “Backlight” menu and press on it for submenu.
- 03** Use the icons   to adjust to the desired brightness.


Ambient Light Dimming: When this function is enabled, the light sensor will detect when to dim the back-light if the ambient light levels drop. If you turn the room lights off, the back-light will dim so the T60 does not light up the room.

- 04** Ambient Light Dimming is in  Mode:
Automatic adjustment of the backlight brightness.
- 05** Ambient Light Dimming is in  Mode:
Manual adjustment of the backlight brightness.
- 06** Press the icon  twice to save and return to main display.

Standby Screen


- 01** Press the icon  Setup.
- 02** Browse   to the “Standby Screen” menu and press on it for submenu.
- 03** Enable the standby screen by changing mode  to mode 
- 04** There are five choices, **Default / Clock / Turn of Screen / Logo / Logo + Clock**, to display on the screen after the standby time. Press the icon  in the front of your choice and it will turn to 
- 05** There are three choices, **3 Min / 10 Min / Just Night**, to control the standby screen

time. For example, setting the standby time for 10 minutes: press the icon  in the front of “10 Min” and it will turn to 



06 Press the icon  twice to save and return to main display.




Screen Lock


01 Press the icon  Setup.


02 Browse  to the “Screen Lock” menu and press on it for submenu.


03 **Option**  Inactive PIN code or **Option**  Active PIN code

For example, set your personal pin code to **5209**


Press the first column, use the icons  to set to **5**

Press the second column, use the icons  to set to **2**

Press the third column, use the icons  to set to **0**

Press the fourth column, use the icons  to set to **9**

04 Network Settings. No function/access, future feature.


05 Press the icon  twice to save and return to main display.



The setting will be effective after the thermostat has been in stand-by mode.

To unlock the thermostat, enter your four digit PIN code. If you forget your PIN code, the Master PIN is: **8657**.



Feature Settings

01 Press the icon  Setup.

02 Browse  to the “Feature Setting” menu and press on  to enter the submenu.


 *When in a submenu, press the icon  at anytime to save and return to main menu.*

03 Press on the submenu “**01. Temperature Format**” and select between **°C** (Celsius) or **°F** (Fahrenheit).

04 Press on the submenu “**02. Temperature Limit**” for setting the limitation range.


Press the first column, use the icons   to adjust min. temp. between 5-44°C.
Press the second column, use the icons   to adjust max. temp. between 6-45°C.



05 Press on the submenu **“03. Switch Diff”** for selection and setting.

 This function allows you to adjust the switching differential of the thermostat. The system defaults to 0.5°C, meaning that when the temperature is set to 20°C, the heating will start at 19.5°C and stop at 20°C. If the value is set to 1°C, the heating will start at 19°C and stop at 20°C.


The switching differential is settable between 0.5°C - 3.0°C .

06 Press on the submenu **“04. Output Delay”** for selection and setting.

 To prevent rapid switching, an output delay can be entered. This can be set from 0-15 minutes. The default is 0, meaning no delay. This function helps to prevent system “short cycling”.



07 Press on the submenu **“05. Away Temperature”** to adjust the preset temperature while you are away from the house. The default is +7°C. To change/set the temperature, use the icons   for other temperature values. The range is 7-35°C

08 Press on the submenu **“06. Frost Protection”** for selection and setting.


 **The thermostat automatically enter the Frost Protection Mode when the room temperature drops below the set frost protection temperature.** The range is 7-17°C. The default is +7°C and is suitable for most applications.

Option  Inactive function

Option  Active function

Use the icons   for other temperature values.

09 Press on the submenu **“07. Sensor Selection”** for selection and setting.



 You can select which sensor should be used, there are five options:


- Built-in Sensor (default)
- External Sensor (e.g. room sensor)
- Floor Sensor Only (external sensor)
- Built-in & Floor Sensor
- External & Floor Sensor


Note: When you enable “External & Floor Sensor”, the floor sensor is used as a floor limiting sensor and is designed to prevent the floor from overheating.

Note: The External Sensor must not be used for controlling electric underfloor heating. Only designated floor sensors or both (External & Floor Sensor) should be used.

If the optional external- or floor sensor is not supplied by Frenger, an 10 kΩ sensor must be used together with the thermostat.

Press the icon  of which sensor you require.
The icon  shows the selected sensor.

 **Temperature Calibration of the Sensors.** You can calibrate the sensors with $\pm 5^{\circ}\text{C}$ in steps of 0.1°C , in the following way:


10 Press the icon  of which of the sensors you want to calibrate:



The following sensors can be calibrated:

Built in Sensor (Default)
External Sensor
Floor Sensor Only (external sensor)


Select the chosen value, you must then offset the thermostat to reflect the temperature actually measured, air or floor, by pressing the icons

11 Press on the submenu “**08. Humidity Selection**” for selection and setting.

 This option allows you to calibrate the humidity sensor. You should only calibrate the sensor if the reading differs from the actual measured room humidity.

You can calibrate the sensor with $\pm 30\%$ in steps of 1%. Use the icons   for adjusting the value.



12 Press on the submenu “**09. Open Window Function**” for selection and setting.

 Function description: The thermostat turns the heat off for 15 minutes, if it detects that the temperature drops by more than three degrees in less than one minute.


You can enable or disable the this function by selecting:

Option  Inactive function
Option  Active function

13 Press on the submenu **"10. Floor Temperature Limit"** for selection and setting.


The function is available when the floor sensor is enabled. You can set a floor temperature limit between 20-45°C, the default is 28°C. Use the icons   for adjusting the value.


14 Press on the submenu **"11. Optimum Start"** for selection and setting.



 The thermostat features an optimum/adaptive function that automatically changes heating start times, to ensure that the required set point temperature has been reached during a programmed period.

The thermostat collects data and calculates how much earlier the heating system must be turned on/off, to achieve the required set point temperature.


The default rate of change is 10 minutes, the number of minutes for a 1°C temperature rise.


Select/tap "OFF"  if you simply want the heating to start at the beginning of a set point, default function.

Select/tap "ON"  if you want the heating to run with the optimum/adaptive function.

You can select the rate of change between 10 to 90 minutes, in steps of 10 minutes. Use the icons   for adjusting the value.

15 Press on the submenu **"12. Work Mode Selection"** for selection and setting.

 This is where you select if you want the thermostats to work in **Heating Mode** or **Timer Mode**.

 **Note!** Be sure you know how the different modes work. Description of the **Timer Mode** (Mode 2 - Time Clock) on page 20 in the user guide.


To change between the two modes, select 'Heating Mode' or 'Timer Mode' by pressing on one of the dialog boxes.

The thermostat will now automatically restart and enter the desired mode.

16 Press on the submenu **"13. Temperature Bar Setting"** for selection and setting.


Here you can select the mode/image of the scale on the main display. The options are in color (black, no temperature bar) or in white.



Press the icon  of your choice.

17 Press the icon  twice to save and return to main display.






Schedule

01 Press the icon  Setup.

02 Browse   to the “Schedule” menu and press on it for submenu.

There are four options: **Weekday/Weekend, 7 Days, 24 Hours** or **None**.


03 Press the icon  in the front of the desired option, and it will turn to .



04 Press the icon  twice to save and return to main display.







Hold Temp (Timer Function)


The Temperature Hold function allows you to manually override the current operating program and set a different temperature for a desired period.

01 Press the icon  Setup.

02 Browse   to the “Hold Temp” menu and press on it for submenu.





03 Press the first column of “Hold Temp”, use the icons   to set the desired hold temperature. The temperature range is +5°C to +45°C.

04 Press the second/third columns of Hours/Minutes, use the icons   to set the desired hold time.




05 Press the icon  to save and return to main display, or press the “Cancel” to delete the setting.

The indication “Hold **°C, Left **:.” is displayed on top of the screen. The time will count down the duration and then revert to the normal program.

System Information

- 01** Press the icon  Setup.
- 02** Browse   to the “System Information” and press on it for submenu.
- 03** The version number and ID number could come in handy in case of a warranty.
- 04** Press the icon  to exit.

Reset To Factory Settings

- 01** Press the icon  Setup.
- 02** Browse   to the “Reset To Factory Settings” and press on it for submenu.
- 03** Press ‘Reset’ for factory settings. The thermostat will now automatically restart.
- 04** The thermostat will now automatically restart.

 **Warning! Upon reset, all current settings on the device will be lost.**

Notes

This image shows a full page of blank handwriting practice paper. It features 20 evenly spaced, horizontal orange lines running across the entire width of the page. The background is a solid light gray color. There are no margins, text, or other markings on the page.

MODE 2 - TIME CLOCK



Setting the Time Clock



To program the time clock times, follow these steps:



01 Press the button “Schedule” on the main display.


02 Press on **Weekday**  or **Weekend** 

Four time periods, **Morning / Day / Evening / Night**, can be selected to set.
Each period has the options   **ON/OFF**.


03 Press the ‘Hour’ column of the **ON** time and use the icons   to set to the desired hours.

04 Press the ‘Minute’ column of the **ON** time and use the icons   to set to the desired minutes.

05 Press the ‘Hour’ column of the **OFF** time and use the icons   to set to the desired hours.

06 Press the ‘Minute’ column of the **OFF** time and use the icons   to set to the desired minutes.

07 Repeat above steps to set the selected time periods.

08 Press the icon  twice to save and return to main display.






Boost Mode

The Boost function allows you to override all operations of the thermostat.

In Boost mode, the heating is constantly activated for a desired length of time. To activate this function, follow these steps:



01 Press the button “Boost” on the main display.

02 Select your desired Boost Mode **ON** or **OFF**.

- 03** Press the 'Hours' column and use the icons   to set the desired Boost time.
- 04** Press the 'Minutes' column and use the icons   to set the desired Boost time.
- 05** Press the icon  to save and return to the main screen.
- 06** The indication **"Boost On Left **:**"** is displayed on top of the screen.
- 07** To cancel Boost Mode, press "Boost" on the main display and then press 'Cancel'.

Notes

[illegible]

Operating voltage / Power supply	85-230VAC, 50/60Hz
Standby power	< 1.0W
Rated Current / Relay	16A resistive load, 230V
Setting range, temperature	5-45°C
Floor limitation, temperature range	20-45°C
On/Off differential	±0.5°C
Humidity sensor, air	0-100%
Operating modes	<p>Three programming modes: Weekday/Weekend (5 + 2) - edit/set 4 time periods per day Seven day programming (7) - edit/set 4 time periods per day 24 hours mode - edit/set 4 time periods</p> <p>Hold/Timer mode: - activate and adjust a boost period of up to 24h, by optional setting range temperature</p> <p>Home/Away mode: - the thermostat will turn on the heating, if the room temperature drops below the set value.</p> <p>Holiday mode: - calendar based and programmable in advance.</p> <p>OFF mode: - frost protection included, by adjustable temperature range</p>
Battery backup	2 months
Appliance and protection class	Class II - IP20
Size, dimensions (H/W/D)	86/96/44 mm
Build-in depth	30 mm
Installation type	Flush, hole pitch 60 mm
Terminals	2.5 mm ² , screw cage clamp
Terminal wire size	max. 2.5 mm ²
Display size	3.5" - Color capacitive touch
Display resolution	480x320 TFT
Optional external floor sensor	NTC (10 kΩ), Class II, 3 meter
Optional external room/air sensor	NTC (10 kΩ), Class II, 3 meter
Max. length sensor cable	50 m, 2 x 1.5 mm ²
 	- Low Voltage Directive 2014/35/EU - EMC Directive 2014/30/EU - RoHS Directive 2011/65/EU - Radio Equipment Directive 2014/53/EU - Electrical Equipment (Safety) Regulations 2016 - Electromagnetic Compatibility Regulations 2016

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