

## ST-TOUCH-P

## Touch Screen Thermostat

Operation	Programmable
Measurement range	0 to 50°C
Set point range	5-35°C / 0.5°C per step
Accuracy	±1°C
Output contacts	Heating 20A resistive
Supply	85 to 240Vac 50/60Hz <2W
Wiring	1.5mm <sup>2</sup> to 2.5mm <sup>2</sup>
Dimensions	110 x 86 x 13mm (when flush mounted)
Ambient:	
Temperature	0 to 50°C
RH	<90% non-condensing
Protection	IP30



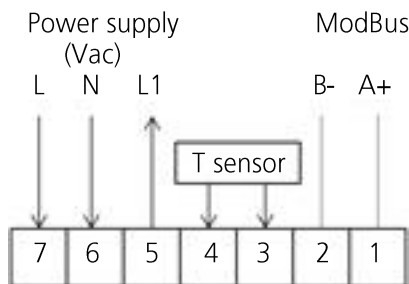
The products referred to in this data sheet meet the requirements of EU Directive 2004/108/EC & 2006/95/EC

## Installation & Connections:



Antistatic precautions must be observed when handling these modules. The PCB contains circuitry that can be damaged by static discharge.









1. The ST-TOUCH should only be installed by a competent, suitably trained technician, experienced in installation with hazardous voltages. (>50Vac & <1000Vac or >75Vdc & 1500Vdc)
2. Ensure that all power is disconnected before carrying out any work on the ST-TOUCH.
3. Maximum cable is 1.5mm<sup>2</sup>, care must be taken not to over tighten terminals.



## Installer Options:

- Power: Press black power icon on the touchscreen (P).
- Switch between Manual Control and Time Control by pressing "Menu" (M). Time Control mode follows the programmed schedule, whereas Manual Control overrides the programmed temperature settings with an adjusted set temperature.
- Adjust set temperature by pressing up and down (↑), (↓). When both Timed Mode and Manual Mode icons are on, the manual mode lasts until the next scheduled time period begins.
- Lock/unlock screen: Hold "Set" icon (S) for 3 seconds until display shows "loc".
- Scheduling: When device is powered on, press and hold "Menu" (M) for 3 seconds to enter scheduling menu. Press up and down (↑), (↓) to adjust the time in 15min steps. Press "Menu" (M) to set the temperature. Use up and down (↑), (↓) icons to set temperature. Jump to next time period by pressing "Menu" (M). Repeat this for every time period. Save and exit by pressing power button (P).

## Installer Options (continued):

Periods	Icon	Default time	Default temperature
Weekdays	1 	06:00	22°C
	2 	08:00	
	3 	11:30	
	4 	12:30	
	5 	17:00	
	6 	22:00	
Holiday	1 	08:00	
	2 	23:00	



Wake up, Period 1



Leave (am), Period 2



Return (am), Period 3



Leave (pm), Period 4



Return (pm), Period 5



Sleep, Period 6



Ley - LOC

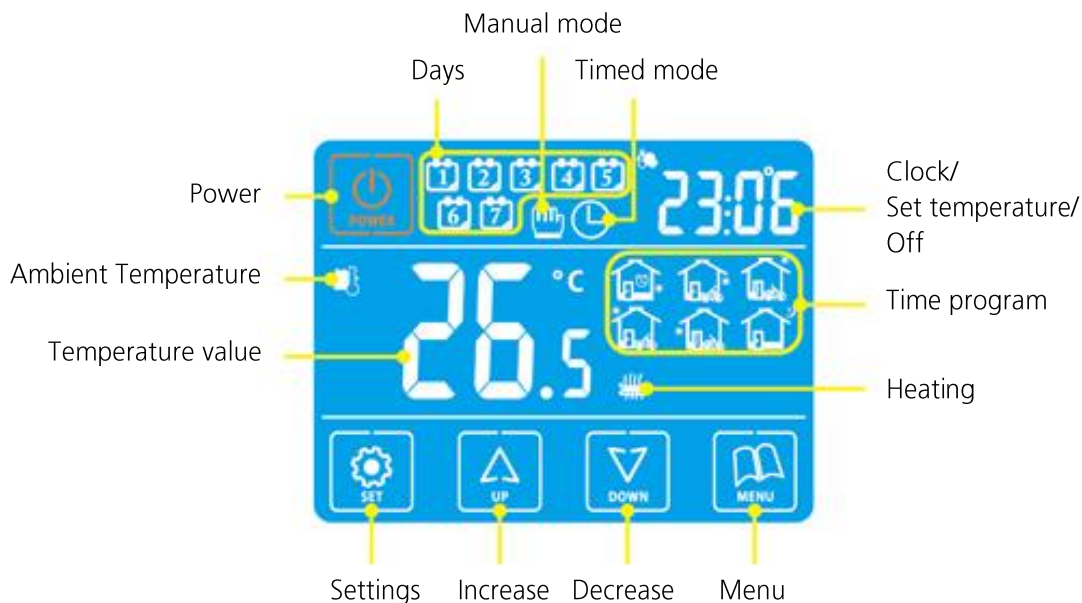
The advanced settings menu (1-16) can be entered by pressing the "Menu" icon (M) first and then holding the power button (P) together for 3 seconds. Press "Menu" (M) after each section to switch to the next one. Adjust each value by pressing up and down (↑, ↓). Press power (P) to save and exit.

Nr.	Display	Description	Values
1	Adj	Temperature offset	-9 - +9°C
2	Sen	Sensor selection: Internal, external (optional) or both *	IN or OU or AL
3	Lit	Temperature limit of the external sensor *	+5 - +60°C
4	Dif	Switching differential (dead band)	0.5 - 5°C
5	Prg	Number of working days (6 time periods) and holiday days (2 time periods) per week	5+2, 6+1, 7 or off
6	Rle	Passive linkage and main output (water floor heating only)	00=forward 01=reverse
7	Dly	Dry contact function output delay (water floor system only)	0-5min
8	Hit	Limitation maximum set temperature	35°C - 60°C
9	Lig	Backlight settings	On or off
10	Lt	Timer backlight	10, 15, 20, 25, 30 sec.
11	Pe	Enable/disable key buzzer	On or Off
12	Lp	Enable/disable de-frost function	On or Off
13	Tp	De-frost temperature	+5°C - 12°C
14	Sf	Start-up status: When power on thermostat is on (On), when power is on thermostat is off (Off) or memorise On/Off status before disruption of power supply (SF)	On or Off or SF
15	Cf	Temperature unit: Celsius or Fahrenheit	°C or °F
16	Fac	Recover factory settings (--)	- or --

## Installer Options (continued):

\* The build-in temperature sensor measures room temperature, the external is for underfloor heating. If;

1. Just the internal sensor is used (IN), the heating control is normal (setpoint compared to room temperature  $\pm$  differential) causes heating relay to switch on or off
2. Just the external sensor is used (OU), the heating control is in underfloor heating mode, and setpoint compared to floor temperature  $\pm$  differential causes heating relay to switch on or off
3. If both sensors are enabled (AL), the heating control is normal (setpoint compared to room temperature  $\pm$  differential) causes heating relay to switch on or off plus the underfloor heating is switched off if the floor temperature rises above the value set in advanced setting 3 (Lit).



Screen	Cause	Solution
Er2	External sensor error	check if correct thermistor element is connected check if correct sensor input (internal or external) is selected in the advanced setting menu (nr. 2)

## ModBus:

Baud rate: 9600bps, 8Bit, Parity: None, Stop Bits: 1

How to set the ModBus address:

- The device has to be in ON mode. To enable the ID-value setting menu press "Set" (S) first and then "Menu" (M) simultaneously. Switch to "On" by pressing up and down (↑), (↓). Safe by pressing the "Power" (P) icon.
- Press down first (↑), (↓) then "Set" (S) until the ID text on the screen is flashing. Set the ID value from 1-99 by pressing up and down (↑), (↓).

For configuration via the software "ModBus Poll", Sontay provides preconfigured templates (ModBus Poll Template ST-TOUCH-P.zip) to download at [www.sontay.com](http://www.sontay.com) and free to use.



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## ModBus (continued):

Register Type	Register Address	Description	Details	Data Format	R/W
Input Coil	00001	Device ON/OFF	0 = OFF, 1 = ON	uINT16	R/W
Input Coil	00002	Parental Lock	0 = OFF, 1 = ON	uINT16	R/W
Input Coil	00003	Frost Protection Enable	0 = OFF, 1 = ON	uINT16	R/W
Input Coil	00004	Backlight	0 = OFF, 1 = ON	uINT16	R/W
Input Coil	00005	Key Buzzer	0 = OFF, 1 = ON	uINT16	R/W
Input Coil	00006	Linked Switch Action	0 = Forward, 1 = Reverse	uINT16	R/W
Input Coil	00007	Temperature Units	0 = °C, 1 = °F	uINT16	R/W

Register Type	Register Address	Description	Details	Data Format	R/W
Input Status	10001	Live Switched Output	0 = OFF, 1 = ON	uINT16	R/W
Input Status	10002	Linked Switch	0 = OFF, 1 = ON	uINT16	R/W
Input Status	10003	Sensor Fault	0 = OFF, 1 = ON	uINT16	R/W

Register Type	Register Address	Description	Details	Data Format	R/W
Holding Register	40001	Temperature Setpoint	Dependent on: Maximum limit value (see 400030) Minimum limit value (see 400033) ModBus value is scaled by x10 Example: ModBus value of 220 = 22.0°C	sINT16	R/W
Holding Register	40002	Year	00 to 99	sINT16	R/W
Holding Register	40003	Month	1 to 12	sINT16	R/W
Holding Register	40004	Day	1 to 31	sINT16	R/W
Holding Register	40005	Weekday	1 to 7	sINT16	R/W
Holding Register	40006	Hour	0 to 23	sINT16	R/W



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Holding Register	40007	Minute	0 to 59	sINT16	R/W
Holding Register	40008	Second	0 to 59	sINT16	R/W
Holding Register	40009	First Time Period	<p><b>Period time data format:</b></p> <p><b>The high byte is the hour value (0-24), the low byte is the minute value.</b></p> <p><b>Period temperature data format:</b></p> <p><b>The high byte first, the low byte is second. The value must be higher or equal to the Min temperature limit value [see 40033], and lower or equal to the Max temperature limiting value [see 40030].</b></p> <p><b>Times can be set in 15 minute intervals</b></p> <p><b>See tables for pre-calculated time values.</b></p>	sINT16	R/W
Holding Register	40010	First Time Period temperature		sINT16	R/W
Holding Register	40011	Second Time Period		sINT16	R/W
Holding Register	40012	Second Time Period temperature		sINT16	R/W
Holding Register	40013	Third Time Period		sINT16	R/W
Holding Register	40014	Third Time Period temperature		sINT16	R/W
Holding Register	40015	Fourth Time Period		sINT16	R/W
Holding Register	40016	Fourth Time Period temperature		sINT16	R/W
Holding Register	40017	Fifth Time Period		sINT16	R/W
Holding Register	40018	Fifth Time Period temperature		sINT16	R/W
Holding Register	40019	Sixth Time Period		sINT16	R/W
Holding Register	40020	Sixth Time Period temperature		sINT16	R/W
Holding Register	40021	Holiday First Time Period		sINT16	R/W
Holding Register	40022	Holiday First Time Period Temperature		sINT16	R/W
Holding Register	40023	Holiday Second Time Period		sINT16	R/W
Holding Register	40024	Holiday Second Time Period Temperature		sINT16	R/W
Holding Register	40025	Temperature Offset	10 to 190 in steps of 5, = -9 to +9 Example 1: 100 = 0.0 offset Example 2: 25 = -7.5 offset Example 1: 155 = +5.5 offset	sINT16	R/W
Holding Register	40026	Sensor Selection	0 = Internal, 1 = External, 2 = Both	sINT16	R/W
Holding Register	40027	The temperature limit of the external sensor	35.0°C to 60.0°C. ModBus value is scaled by x10 Example: ModBus value of 350 = 35.0°C	sINT16	R/W
Holding Register	40028	ON/OFF Switching Differential	0.5°C to 5.0°C. ModBus value is scaled by x10 Example: ModBus value of 20 = 2.0°C	sINT16	R/W
Holding Register	40029	Holiday Day Selection	0 = 2 holiday days, 1 = 1 holiday day, 2 = no holiday days	sINT16	R/W



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Holding Register	40030	Maximum temperature limit	30.0°C to 90.0°C. ModBus value is scaled by x10 Example: ModBus value of 300 = 30.0°C	sINT16	R/W
Holding Register	40031	Frost protection temperature	5.0°C to 12.0°C. ModBus value is scaled by x10 Example: ModBus value of 75 = 7.5°C	sINT16	R/W
Holding Register	40032	Control Mode	0 = Manual, 1 = Timed programme, 2 = temporary manual	sINT16	R/W
Holding Register	40033	Minimum temperature limit	5.0°C to 20.0°C. ModBus value is scaled by x10 Example: ModBus value of 175 = 17.5°C	sINT16	R/W
Holding Register	40034	Startup status	0 = OFF, 1 = ON, 2 = Last mode at switch off	sINT16	R/W
Holding Register	40035	Backlight OFF time	10 to 30 seconds in 5 second steps	sINT16	R/W

Register Type	Register Address	Description	Details	Data Format	R/W
Input Register	30001	Displayed Temperature	0.0°C to 50.0°C. ModBus value is scaled by x10 Example: ModBus value of 225 = 22.5°C	sINT16	R

		Hour													
		00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	
Mins	0	0	256	512	768	1024	1280	1536	1792	2048	2304	2560	2816	3072	
	15	15	271	527	783	1039	1295	1551	1807	2063	2319	2575	2831	3087	
	30	30	286	542	798	1054	1310	1566	1822	2078	2334	2590	2846	3102	
	45	45	301	557	813	1069	1325	1581	1837	2093	2349	2605	2861	3117	

		Hour											
		13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00
Mins	0	3328	3584	3840	4096	4352	4608	4864	5120	5376	5632	5888	6144
	15	3343	3599	3855	4111	4367	4623	4879	5135	5391	5647	5903	6159
	30	3358	3614	3870	4126	4382	4638	4894	5150	5406	5662	5918	6174
	45	3373	3629	3885	4141	4397	4653	4909	5165	5421	5677	5933	6189

Whilst every effort has been made to ensure the accuracy of this specification, Sontay cannot accept responsibility for damage, injury, loss or expense from errors or omissions. In the interest of technical improvement, this specification may be altered without notice.