



ThermoB.FC21T.WiFi, 230V output, TRIAC

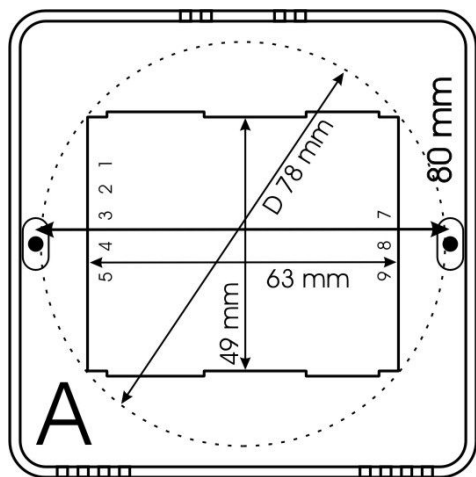
ELECTRONIC THERMOSTAT WITH WiFi for fan coil and underfloor heating control INSTALLER GUIDE

System type		Outputs			Fan start		Sensor NTC.2	Zones / circuits
		1 R1	2 R2	Fan 230 V TRIAC	time	NTC.2		
1	Conventional , 2-pipe	Valve Heating/ Cooling	-	4 speeds	Yes	Yes	fan start/stop	1
2	4-pipe system	Heating valve	Valve Cooling	4 speeds	Yes	Yes	fan start/stop	1
3	Fan coil + underfloor heating	Valve fan coil	Valve underfloor r heating	4 speeds	Yes	-	Underfloor heating: start/stop	2
		Valve underfloor heating	-		-	Yes	Fan: start/stop	
		Option: underfloor heating off during cooling						

Table 1

Features:

FC.21T W	
LCD with 4 buttons	2- or 4-pipe systems, 1 or 2 zones
Built-in room temperature sensor	Additional temperature sensor NTC.2
Power supply 170-230V / AC / 50Hz (SELV)	Power consumption <2VA
1 or 2 relay outputs, 4A Max switched 230V	Fan output – 1 output, 0.8A, 230V, TRIAC voltage control
WiFi control for models with “W”, Internet service hosted in the EU, mobile app	
Dimensions	
front panel: 90x90x17mm	recessed section: 62x51x23.5mm
Protection rating IP20	Operating conditions, -5T45, RH80%
Measured temperature -10° .. +45° / 0.5°C	Set temperature range +12°C .. +40°C / 0.5°C
Panel mounting or installation in a D80 wall box	mounting centers 80mm ±1 or 60mm ±3
Current time, synchronized over the Internet	Clock continues running during a power outage: no
WiFi network, WEP/WPA-PSK/WPA2-PSK	2.4 GHz/802.11b/g/n
Transport and storage -20T60, RH90%	
Two user interfaces: Basic and Advanced: - Basic: simple operation with 1 set temperature, on/off and fan speed selection - ADVANCED – full functionality with 2 temperature settings, a weekly schedule, on/off control and fan speed selection	
Automatic fan speed control using PID with adjustable P and I Overall fan start/stop control using hysteresis Zone 2 (underfloor heating) control using hysteresis or TPI Combined input: sensor 2 + “open window”	

INSTALLATION

The device can be mounted on the panel of an existing fan coil or in a wall box for recessed installation, D80mm.

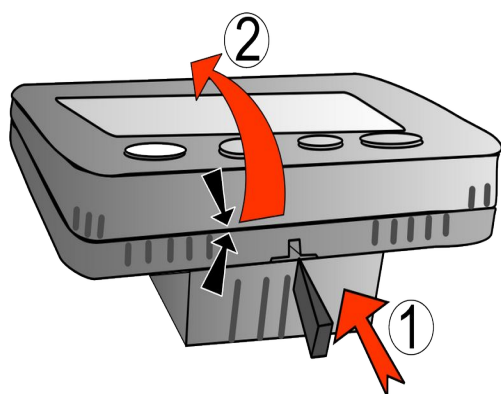
Mounting dimensions are shown in Figure 1.

Use fasteners with a shank diameter of up to 3.5mm.
The correct mounting orientation is marked "A".

Outputs 1-5 and 7-9 are numbered in the direction shown.

Figure 1

To access the mounting holes, open the device by separating the front panel from the rear section.



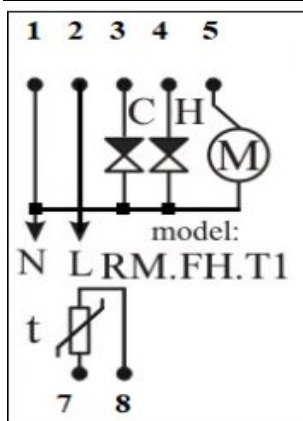
- Gently press the tip of a flathead screwdriver into the slot shown, in direction (1), on the underside of the front panel, Figure 2.
- At the same time, separate the upper edge of the panel in direction (2).
- The two sections are connected by a cable. If necessary, unplug the connector from the front-panel side.

Figure 2

Reassemble in reverse order: engage the upper edges first, then press the lower edges together until the two sections lock. Remember to reconnect the connector!

CONNECTION:

Electrical wiring: see Diagram 1



	System type	Terminal				
		1	2	3 R1	4 R2	5 230V, adjustable
1	Conventional	N	L	valve	-	Fan
2	4-pipe system	N	L	Heating valve	Cooling valve	Fan
3	Fan coil + underfloor heating	N	L	Valve fan coil	Underflo or heating valve	Fan
4	Fan coil + underfloor heating	N	L	Underfloor heating valve	-	Fan

Diagram 1

- Power supply: 230V/AC/50Hz - NTC.2 sensor: terminals 7 and 8

* conductor cross-section 0.5 - 1.5mm²

* connect the other valve terminals together to neutral "N"

Parameters

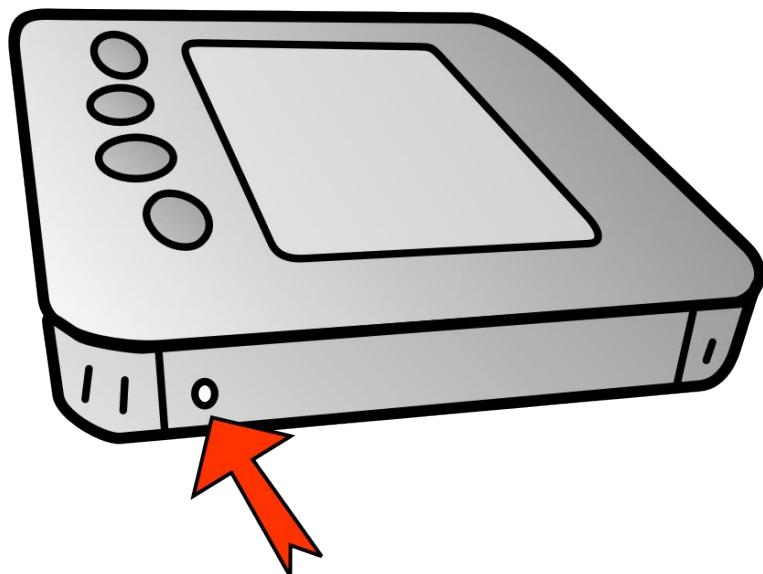
Number	Description	Step	Factory value
PR.01.	Hysteresis [0°C~3.0°C]; at 0, underfloor heating uses TPI. For fan coil only, the minimum hysteresis is 0.5°.	0.5°	0.5°
PR.02.	Frost protection [-9°C ~ +12°C]. Operation starts when T.Room < PR02; "--" disables the function. [-9°C~12.0°C]	1°	0°
PR.03.	Functionality and Heating/Cooling selection = 0: <i>ADVANCED</i> -----4-pipe system----- Automatic heating/cooling selection and [PR20 > 0] - Heating: T.Room ≤ T.COMF - 0.5°C. - Cooling: T.Room ≥ T.COMF + 0.5°C -----2-/4-pipe system----- Manual heating/cooling selection and [PR20 = 0] - When T.ECON < T.COMF: Heating - When T.ECON > T.COMF: Cooling - Cooling: T.ECON > T.COMF * The [PR20] value is ignored. =1: <i>Advanced, Heating</i> - Operation using T.ECON and T.COMF, AUTO , MAN =2: <i>Advanced, Cooling</i> - Operation using T.ECON and T.COMF, AUTO , MAN =3: <i>BASIC, heating</i> - Operation using T.COMF only =4: <i>BASIC, cooling</i> - Operation using T.COMF only =5: <i>BASIC, locked in heating mode</i> =6: <i>BASIC, locked in cooling mode</i> * At 5 and 6, heating/cooling selection is locked.	1	3
PR.04.	Pause / Not used		
PR.05.	Time zone [-12~ +12] in 1h steps	1h	2
PR.06.	Room temperature calibration [-5°~ +5°C]	0.5°	0°
PR.07.	PIN lock; 0: no lock; = 1: access to parameters requires the PIN >1: PIN required for parameter access; with an even PIN, temperature, on/off and fan controls remain available; with an odd PIN, the buttons are locked. At 0, all controls remain available.	1	0
PR.08.	MAN mode duration [0 ~ 4h]; at 0, MAN does not end automatically.	1h	1h
PR.09.	Minimum set temperature in cooling [12°~40°]	0.5°	15°
PR.10.	Maximum set temperature in cooling [12°~40°]	0.5°	40°
PR.11.	Minimum set temperature in heating [12°~40°]	0.5°	15°
PR.12.	Maximum set temperature in heating [12°~40°]	0.5°	40°
PR.13.	2-/4-pipe system and 1 or 2 zones (with underfloor heating) selection	1	13
Legend: VF.H&C = fan coil valve, heating or cooling demand VF.H = fan coil valve, heating demand (4-pipe system) VF.C = fan coil valve, cooling demand (4-pipe system) P1 = fan at speed 1, active during heating and cooling P1_COOL = fan at speed 1, active during cooling only UFH = underfloor heating output (zone 2) H & C = zone 2 (underfloor circuit) operates during heating and cooling HEAT = zone 2 (underfloor circuit) operates during heating only			

N	Output R1	Output R2	FAN WHILE PAUSED	FAN SPEED	ZONE 2 (underfloor)	2/4 pipes
0	VF.H&C	--	stop	4	--	2
1	VF.H&C	--	P1	4	--	2
2	VF.H&C	UFH	stop	4	H & C	2
3	VF.H&C	UFH	P1	4	H & C	2
4	VF.H	VF.C	stop	4	--	4
5	VF.H	VF.C	P1	4	--	4
6	VF.H&C	UFH	stop	4	HEAT	2
7	VF.H&C	UFH	P1	4	HEAT	2
8	UFH	--	stop	4	H & C	2
9	UFH	--	P1	4	H & C	2
10	UFH	--	stop	4	HEAT	2
11	UFH	--	P1	4	HEAT	2
12	VF.H&C	--	P1_COOL	4	--	2
13	VF.H&C	UFH	P1_COOL	4	H & C	2
14	VF.H	VF.C	P1_COOL	4	--	4
15	VF.H&C	UFH	P1_COOL	4	HEAT	2
16	UFH	--	P1_COOL	4	H & C	2
17	UFH	--	P1_COOL	4	HEAT	2
PR.14.	Sensor 2 / NTC.2 input function				1	0
= 0: NTC.2 not used The fan starts after delay [PR18]. = 1: NTC.2 – fan coil fluid temperature - Controls fan start/stop * Cooling; on when T.NTC.2 < [PR16] * Heating; on when T.NTC.2 > [PR15] “Open window” function – sensor circuit opened = 2: NTC.2 monitors zone 2 temperature - Controls zone 2 start/stop - The fan starts after delay [PR18].			* In cooling, when: T.NTC.2 < [PR16] = zone 2 stops * In heating, when: T.NTC.2 > [PR15] = zone 2 stops = 3: NTC.2 sensor replaces NTC.1 = 4: Heating/cooling changeover - Fan start/stop based on fluid temperature -T.NTC.2 < [PR16] = cooling -T.NTC.2 > [PR15] = heating = 5: Sensor 2 = external start/stop, “open window” - The fan starts after [PR18] min.			
PR.15.	NTC.2 temperature threshold for enabling heating; switches to heating mode when [PR14]=4 [+20°C~+70°C]				1°C	45°
PR.16.	NTC.2 temperature threshold for enabling cooling; switches to cooling mode when [PR14]=4 [+5°C~+30°C]				1°C	16°
PR.17.	Hysteresis for automatic fan speed changes in AUTO [0.5°C~3.0°C] – “PID P”				0.5°	0.5°
PR.18.	Fan start delay when timed delay control is used (PR14 = 0 or 2); * In cooling – drying time; * Also used as the delay for automatic fan speed changes (in Fan.AUTO) [0 ~ 20 min] * Minimum time between fan speed changes is 90 sec in “Fan.AUTO”, “PID I”.				1 min	1
PR.19.	Displays the temperature measured by the NTC.2 sensor					

PR.20.	Automatic T.ECON setting relative to T.COMF - At 0: freely adjustable - At 0.5 ~ 5: fixed offset from T.COMF * In heating: T.ECON = T.COMF – [PR20] * In cooling: T.ECON = T.COMF + [PR20]	0.5°	0°																																	
PR.21.	Zone 1 / zone 2 temperature difference [0°C~5.0°C] In cooling, activates the corresponding output when: - Zone 1 (fan coil): T.Room > T.Set + [PR21] - Zone 2 (underfloor): T.Room > T.Set In heating, activates the corresponding output when: - Zone 1 (fan coil): T.Room < T.Set - [PR21] - Zone 2 (underfloor): T.Room < T.Set	0.5°	2.0°																																	
PR.22.	Fan output at speed 1 [32% ~ 100%]	2%	40%																																	
PR.23.	Fan output at speed 3 [50% ~ 100%]	2%	85%																																	
** Speeds 2 and 3 are distributed automatically between [PR22] and [PR23].																																				
PR.24.	Ventilation mode while paused.	0	1																																	
	Sets a fan running time and waiting period for forced air circulation to equalize the temperature while paused. The function is active when P1 or P1COOL is selected in [PR13]. <table><tr><td>N</td><td>Fan ON</td><td>Waiting time</td></tr><tr><td>0</td><td colspan="2">NONSTOP, continuous operation</td></tr><tr><td>1</td><td>1,5 min</td><td>30 min.</td></tr><tr><td>2</td><td>3 min</td><td>30 min.</td></tr><tr><td>3</td><td>5 min</td><td>30 min.</td></tr><tr><td>4</td><td>1,5 min</td><td>20 min.</td></tr><tr><td>5</td><td>3 min</td><td>20 min.</td></tr><tr><td>6</td><td>5 min</td><td>20 min.</td></tr><tr><td>7</td><td>1,5 min</td><td>10 min.</td></tr><tr><td>8</td><td>3 min</td><td>10 min.</td></tr><tr><td>9</td><td>5 min</td><td>10 min.</td></tr></table>			N	Fan ON	Waiting time	0	NONSTOP, continuous operation		1	1,5 min	30 min.	2	3 min	30 min.	3	5 min	30 min.	4	1,5 min	20 min.	5	3 min	20 min.	6	5 min	20 min.	7	1,5 min	10 min.	8	3 min	10 min.	9	5 min	10 min.
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8	3 min	10 min.																																		
9	5 min	10 min.																																		
PR.25.	Output signal inversion = 0 : R1 - N.O R2 - N.O = 1 : R1 - N.C (inverted) R2 - N.O = 2 : R1 - N.O R2 - N.C (inverted) = 3 : R1 - N.C (inverted) R2 - N.C (inverted)	1	0																																	
PR.26.	ModBus address (Modbus version)	1-247	1																																	
PR.27.	ModBus baud rate and parity (Modbus version) 4800bps: =0: Non = 4: Odd = 8: Even 9600bps: =1: Non = 5: Odd = 9: Even 19200bps: =2: Non = 6: Odd =10: Even 38400bps: =3: Non = 7: Odd =11: Even	0-11	2																																	
PR.28.	System type and version (calibration)	P2.1t	-																																	
PR.29.	Idle backlight brightness. 0 – completely off [0 ~ 10]	1	1																																	
PR.30.	Warm floor: interval for activating the underfloor circuit while its zone is paused, in minutes; 0 disables the function.	1 min	0																																	

WiFi pairing

To start WiFi pairing, press and hold the concealed button on the right side for 10 sec.



When WiFi pairing starts, the concealed LED flashes rapidly

(visible through the housing).

To continue pairing, follow the additional instructions in the mobile app or download the separate instructions.

Mobile app.



Proxel Connect



WiFi connection setup instructions.
Download using the link or scan the QR code.

https://thermob.eu/downloads/ThermoB_WiFi_setup_EN.pdf



Commissioning

- 1. Check the device version.** Match the model, power supply, sensors and outputs to the supplied wiring diagram. Relay outputs are rated up to 4A.
- 2. Open the service menu.** Hold [M] and button [3] simultaneously for about 3 seconds. If prompted for a PIN, enter the installation's code.
- 3. Set the parameters.** Use [▲]/[▼] to select the parameter number. Press [3] to make the value flash; adjust it with [▲]/[▼] and confirm with [3]. Hold [M] to exit.
- 4. Check the main settings.** BASIC heating: PR03=3. Check the permitted temperatures, frost protection, MAN duration and time zone. Set values to suit the installation; do not rely solely on factory settings.
- 5. Check the system and fan.** Set PR13 to match the pipes, valves and underfloor circuit. Check PR14 for NTC.2, thresholds PR15/PR16 and delay PR18. Check every available fan speed and automatic fan operation.
- 6. Check operation.** Select a temperature that should generate a heating or cooling demand. Observe the valves and fan after the applicable delay. If an underfloor circuit is used, check that its cooling operation matches the selected configuration.
- 7. Check the clock and access.** On the WiFi version, check the app, day, time and schedule. If locking is enabled, check which actions are available to the user and retain the service PIN.
- 8. Hand over the system.** Demonstrate switching on, temperature adjustment, operating modes and temporary overrides. Provide the separate user guide and record the model, restrictions and support telephone number. Record the actual settings below.

Ordering information

The code consists of the base model, WiFi option and housing/display combination, in that order. Enter the designations without spaces or separators.

Code component	Option and designation
Base model	FC21T
WiFi	Yes: W. No: no designation.
Housing and display	White housing with a positive display: no designation. White housing with a negative display: N. Black housing with a positive display: BP. Black housing with a negative display: BN.

A positive display shows dark characters on a light background. A negative display shows light characters on a dark background.

Examples

FC21T — without WiFi, white housing and a positive display.

FC21TWBN — with WiFi, black housing and a negative display.

The WiFi functions described in this guide apply only to the WiFi version.