

**Overview of product**

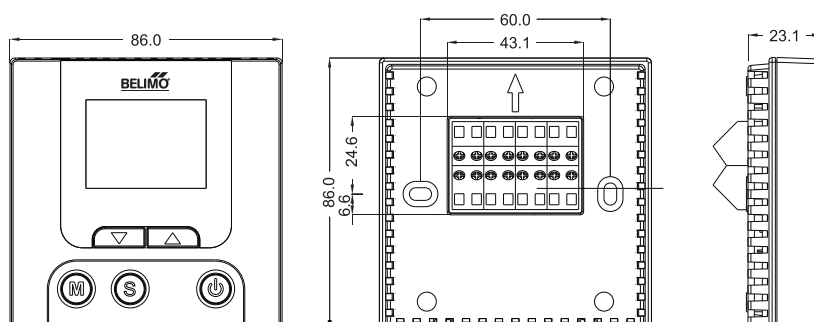
LCD temperature controller EXT-T24-D201 provides the foundation for modern single room concepts.

**Features**

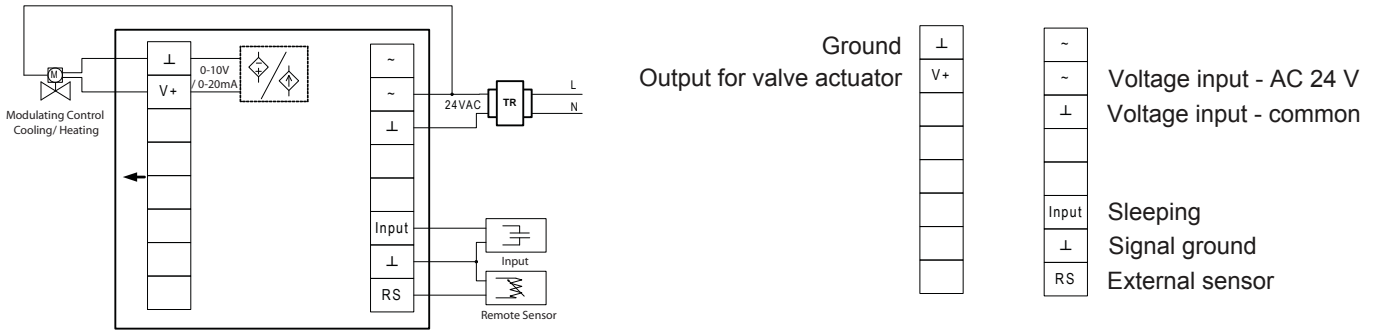
- LCD with green backlight
- Suits 2-pipe system
- Proportional output, DC 2...10V or 0-20mA (600Ω)
- Adjustable P-band, I-time and setpoint range
- Sleeping mode available
- Last status memory function
- Low temperature protection
- External sensor included


**Technical data**

Norminal voltage	AC 24V 50/60Hz (±10%, AC 21.6V...29.7V)
Power consumption	<1W@AC 24V
Output(s)	DC 2...10V or 0...20mA (600Ω)
Built-in sensor	NTC thermistor, 10kΩ@25°C
External sensor	NTC thermistor, probe type 10k@25°C
Temperature range	Display : 0...99.5°C Setpoint : 0...99.5°C, 0.5K per step
Mode	On / Off / Sleeping Cooling / Heating
Proportional band	1K...20K adjustable, 0.5K per step (factory default 2K)
Integral time	10...300 seconds adjustable, 10s per step (factory default 90 seconds)
Display offset	±20K adjustable, 0.1 per step (factory default 0)
Heating setpoint Cooling setpoint	0...99.5°C adjustable, 0.5°C per step (factory default 35°C) 0...99.5°C adjustable, 0.5°C per step (factory default 5°C)
Sleeping mode setpoint range	Cooling : 0...99.5°C (factory default 28°C) Heating : 0...99.5°C (factory default 7°C)
Low temperature protection	When thermostat is switched off and ambient temperature < 5°C, thermostat automatically starts in heating mode until ambient temperature rise to 7°C.
Connection	Screw terminals, maximum 1.0mm <sup>2</sup> or 18 AWG
Ambient humidity	Max. 90% RH, non-condensing
Body material	PC + ABS retardant material
Weight	225g
Dimensions (LxWxH)	86 x 86 x 23mm
Mounting	Wall mounted, holes separate 60mm vertically, 2x screws provided
Degree of protection	IP20
Agency approval	CE mark compliant to EMC Directive

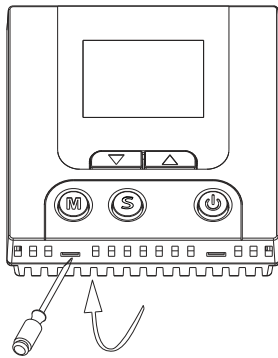
**Dimensions**


**Wiring diagram**

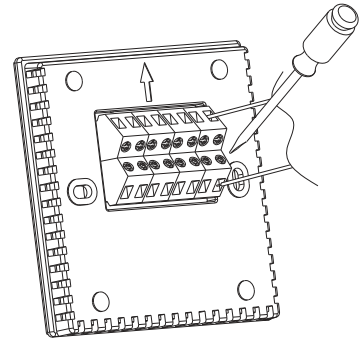


**Installation**

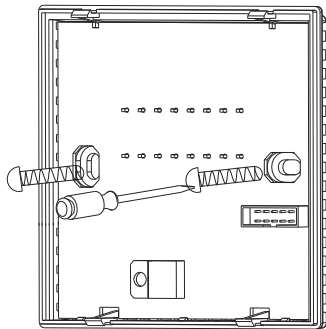
1. Open the back panel with screwdriver.



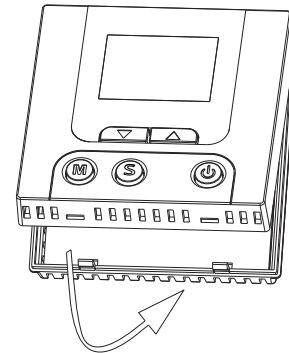
2. Connect the wires per the wiring diagram.



3. Secure the base with the screws provided.




4. Reattach the front panel.



**Setup menu**

1. On/ Off	Press “⏻” buttons to turn on; press “⏻” again to turn off.
2. Setpoint	Press “⊕” button to display the set point, press “⬇️” to reduce the setpoint, press “⬆️” to increase the setpoint, the setpoint step is 0.5°C, the setpoint will be confirmed automatically after 5 seconds.
3. Mode	With thermostat on, press “Ⓜ️” to change the working mode – Cooling “❄️”, Heating “❇️”.
4. Sleep mode	Press “Ⓜ️” button for 3 seconds till “⌚” display, there is a number of count down in the center of LCD. Use “⬆️” or “⬇️” to adjust the desired sleep time: the max. = 48 hours; thermostat will return to the working status after 5 seconds, “⌚” is flashing to start counting down. The setpoint should be replaced by the sleep setpoint.
5. Exit setup menu	When thermostat get into Sleep function, “⌚” will flash, press “⬆️” or “⬇️” to quit.
6. Keypad lock	Press “⬆️” and “⬇️” for 10 seconds till to “🔒” display to activate, under this function, any keypad is locked. Press “⬆️” and “⬇️” for 10 seconds till “🔒” disappear to quit the function.

**Parameter setting**

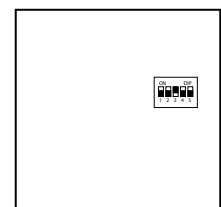
With thermostat off, press “” for 10 seconds to enter menu to set the parameters. It will confirm itself 20 seconds later after setting and return to Off state.

**Parameter table**

	Description	Default	Range	Step
1	Power on status (0: Off; 1: On; 2: Last status)	2	0 - 2	
2	N/A			
3	N/A			
4	Sensor selection (0: Internal; 1: External)	1	0 - 1	
5	Temperature format (0: Celsius; 1: Fahrenheit)	0	0 - 1	0.1
6	Temperature calibration	0	-20.0 - +20.0	0.1
7	Minimum setpoint	5°C/41°F	0 - 99.5	0.5
8	Maximum setpoint	35°C/96°F	0 - 99.5	0.5
9	N/A			
10	Heating & Auto sleep setpoint	7°C/45°F	0 - 99.5	0.5
11	Cooling sleep setpoint	28°C/82°F	0 - 99.5	0.5
12	N/A			
13	Input Signal Mode 0: Invalid 1: N/A 2: thermostat will be sleep without input signal 3: thermostat will be Off without input signal	0	0 - 3	
14	Heating integral time	90 sec.	10 - 300 sec.	10 sec.
15	Cooling integral time	90 sec.	10 - 300 sec.	10 sec.
16	Valve mode (0: Modulation ; 1: On/Off)	0	0 - 1	
17	Valve status as turn off (0: Close; 1:Hold; 2: Open )	0	0 - 2	
18	Valve Modulation direction(0:10V Open; 1:10V Close)	0	0 - 1	
19	Valve Modulation minimum signal	4 Bit	0-128Bit(5V/10mA)	0.04V/Bit(0.08mA/Bit)
20	Valve Modulation proportional	2	1 - 20	0.5
21-27	N/A			

**Switch**

There is a 5-pole DIP switch on PCB. The meaning is below:



Location	Pole	Default value
1	N/A	N/A
2	Valve Modulation 0 - 20mA	Off
3	Valve Modulation 2 - 10VDC	On
4	N/A	N/A
5	N/A	N/A

**External sensor**

The probe type sensor is included in the EXT-T24-D201 temperature controller.


**Sensor specifications**

Sensing Element	NTC Thermistor, 10 kΩ@25°C, See Table 1 for Characteristics
Range	-40°C...105°C
Maximum Length of Connecting Wires	1.5 m
Ambient / Storage Temperature Limits	-10°C...40°C (avoid air corrosion or sunlight)
Ambient / Storage Humidity	≤75% RH
Dimensions	See Fig. 1: Dimensions in mm

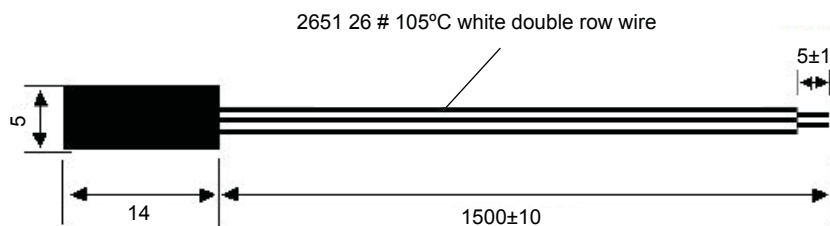


Fig. 1

**Table 1 - Resistance versus Temperature**

Temperature °C	Resistance Ω	Temperature °C	Resistance Ω	Temperature °C	Resistance Ω	Temperature °C	Resistance Ω
0	32116	11	18892	21	11939	31	7716
1	30570	12	18026	22	11418	32	7396
2	29105	13	17204	23	10921	33	7090
3	26399	14	16423	24	10418	34	6798
4	26399	15	15681	25	10000	35	6520
5	25150	16	14976	26	9571	36	6255
6	23965	17	14306	27	9164	37	6002
7	22842	18	13669	28	8775	38	5760
8	21776	19	13063	29	8405	39	5529
9	20764	20	12487	30	8052	40	5309
10	19783						