DATA SHEET

T 5576 EN
TROVIS 5576 Heating and District Heating Controller

CE EAC

Application
Control of up to two control circuits

– Control of a primary heat exchanger or boiler with one mixing heating circuit and one non-mixing heating circuit (both outdoor-temperature-compensated) and control of DHW heating in the secondary circuit

– Control of one outdoor-temperature-compensated heating circuit and a DHW heating with two valves in the primary circuit

– Control of two outdoor-temperature-compensated heating circuits with two valves in the primary circuit

– To control systems with larger numbers of control circuits, several controllers can be linked using a device bus.

Special features
• Rotary switch for direct access to the operating modes and key parameters of the control circuits

• Intuitive data retrieval and input by pressing and turning the pushbutton

• Illuminated display

• 365-day time switch with up to four time schedules and automatic summer time/winter time changeover; up to three times-of-use per day (input in steps of 15 minutes)

• Room panel connected to individual heating circuits to override operating mode and rated room temperature

• Demand-driven control by set point demand by subsequent controllers over a device bus or using 0 to 10 V signal. The primary circuit controls the maximum flow temperature demand plus adjustable boost.

• Applications with solar hot water system available

• Instantaneous heating systems with water flow sensor configurable

• Heating characteristics optionally based on the gradient or based on four points; variable return flow temperature limitation

• Adaptation: automatic adaptation of the heating characteristic (room temperature sensor required)

Fig. 1: *TROVIS 5576 Heating and District Heating Controller*

• Optimization: calculation of the best possible activation and deactivation times for the heating (room temperature sensor required)

• Drying of jointless floors function with adjustable parameter settings

• Data logging function:
  – Operating data can be saved internally and/or saved to a data logging module
  – Data can be displayed in the data log viewer on a computer

• Three-step, on/off or continuous-action control circuit outputs (0 to 10 V) configurable with PID control algorithm

Communication

- Communication interface RS-232 for Modbus communication
- Configuration and parameterization either using memory module or online using USB converter 3 and the TROVIS-VIEW software
- Updatable flash memory in controller (operating system)

Options

- RS-232 to RS-485 cable converter for communication with the bus
- Meter bus plug-in module for communication with up to six heat meters

Design and principle of operation

The TROVIS 5576 Heating and District Heating Controller is adapted to the specific system by setting the appropriate system code number. To select the code number, refer to the system schematics described in the associated mounting and operating instructions. Additional sensors and/or functions which are not part of the system's basic configuration may be selected over function blocks.

Press the changeover key ⇔ to access the different levels. For trained staff, the configuration levels used to set function blocks are indicated by "CO" and the parameter levels are indicated by "PA". For example, a clear distinction is made between two heating circuit levels, a domestic hot water level and a communication level.

Modbus communication

Using the RS-232 interface (Modbus RTU interface, jack at the side), the TROVIS 5576 Heating Controller can communicate with a control system. In combination with a suitable software for process visualization and communication, a complete control system can be implemented.

M-bus interface

A maximum of six meters conforming to EN 1434-3 can be connected for data transfer. In addition, heat meters for each control circuit are available for flow rate and/or capacity limitation. Various limits can be adjusted for the different operating modes "Heating control only", "Heating control with DHW heating" and "DHW heating only" in control circuit RK1. Outdoor-temperature-compensated flow rate or capacity limitation can also be implemented.

Mounting

For wall mounting, the base of the housing is screwed to the wall.

Two adjustable fixing clamps attached to the controller are used for panel mounting.

For rail mounting, the base of the housing is pushed onto the rail.

After wiring the controller, place the controller housing onto the terminal board and fasten it with two screws.

Operation

Data is retrieved and entered at the controller using a rotary pushbutton. This process is facilitated by icons displayed on the LCD. The three rotary switches are used to set the operating mode (left) and the parameters required for each circuit (right) as illustrated in Fig. 3.
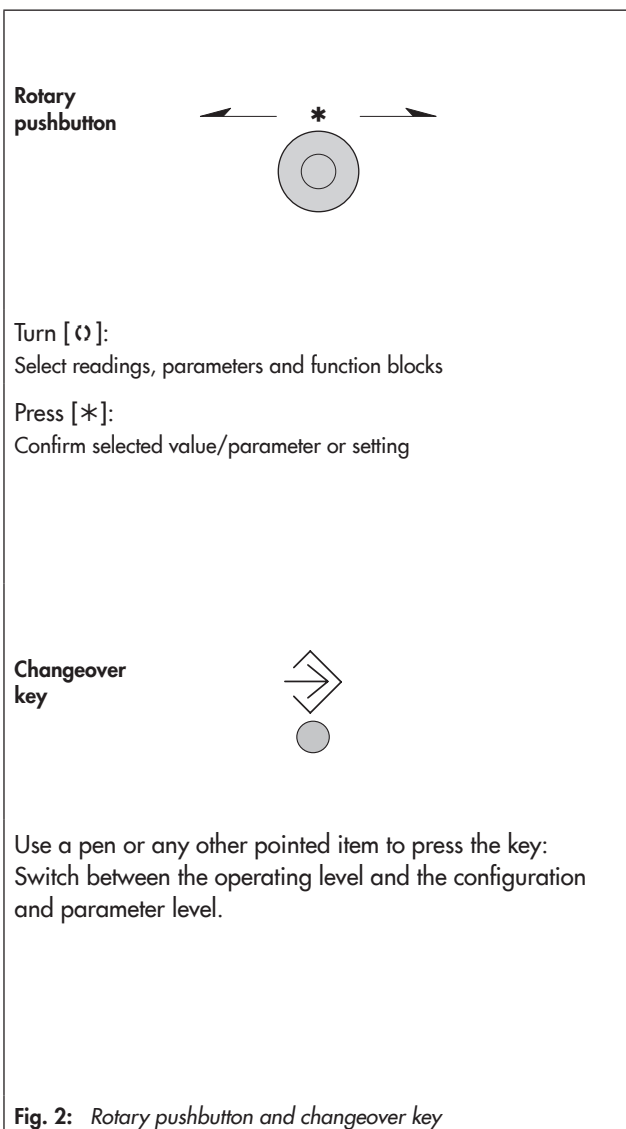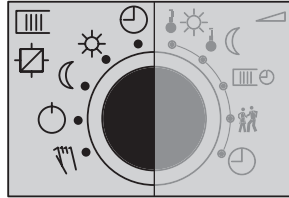

Rotary pushbutton

Turn [↻]:
Select readings, parameters and function blocks

Press [✱]:
Confirm selected value/parameter or setting

Changeover key

Use a pen or any other pointed item to press the key: Switch between the operating level and the configuration and parameter level.
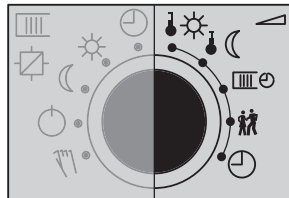
Fig. 2: *Rotary pushbutton and changeover key*

Operating modes

⊕ Time-controlled operation

☼ Day mode

☾ Night mode

⊖ Control operation deactivated, frost protection only

🖐 Manual operation:
Correction value adjusted in percent and pump activated/deactivated by pressing and turning the rotary pushbutton

**Parameters
Heating circuit**

🌡☼ Day set point

🌡☾ Night set point

▥⊕ Times-of-use for heating

🕺 Party mode: setting of special times-of-use in steps of 15 minutes. Timer starts working immediately after it is set.

⊕ Controller clock: setting of time, date and year

**Parameters
DHW circuit**
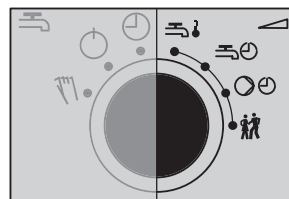
🚰🌡 DHW temperature

🚰⊕ Times-of-use for DHW

◎⊕ Times-of-use for DHW circulation pump

🕺 Party mode: setting of special times-of-use (one-off charging) in steps of 15 minutes.
Timer starts working immediately after it is set.

Fig. 3: *Switch positions and their meaning*

Electrical connection

The controller consists of the housing containing the electronics and a separate base for electrical connection. Two wires with a cross-section of max. 1.5 mm² can be connected to each terminal. The sensor connection lines must be installed separately from the lines carrying the power supply.

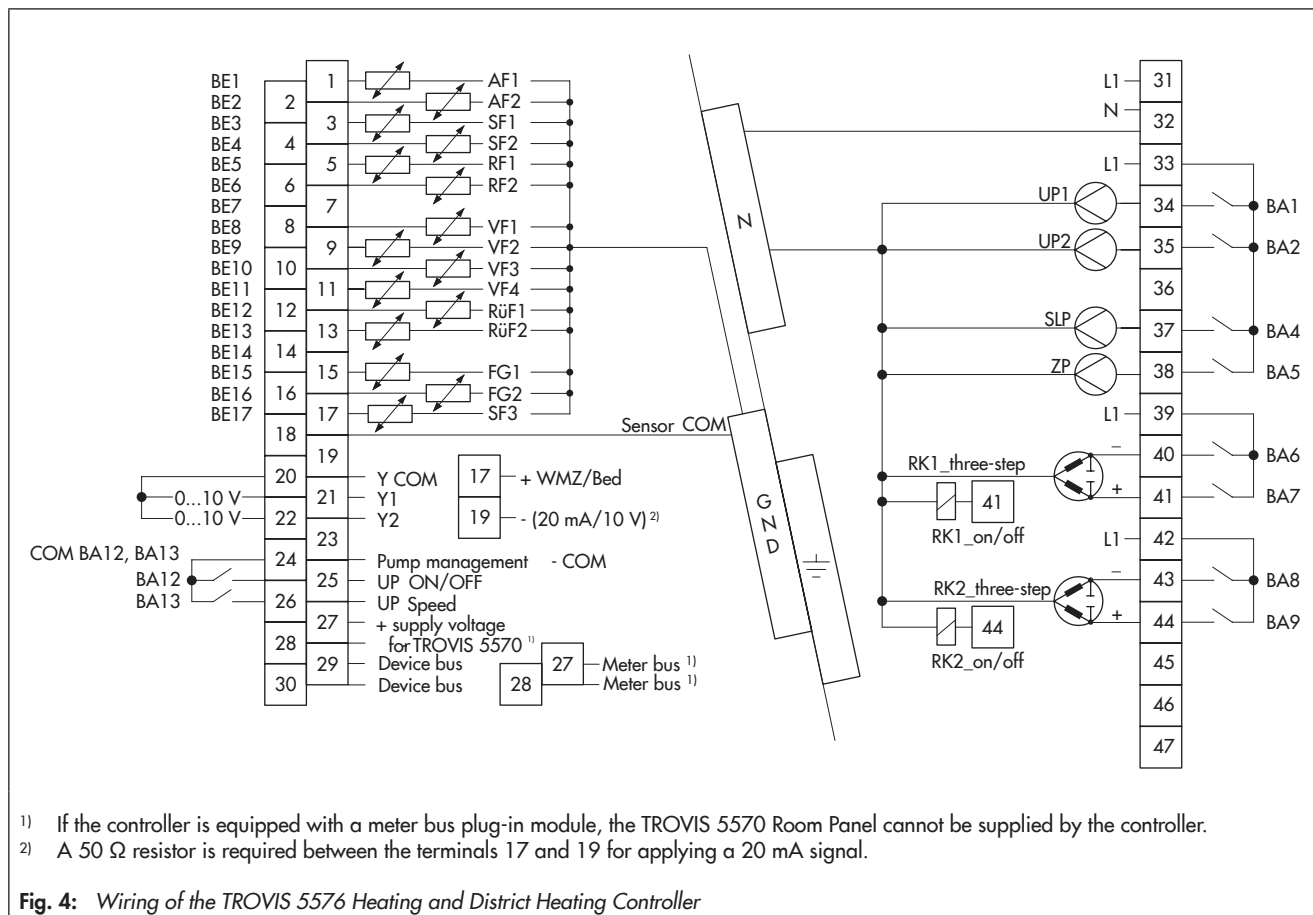| BE1 | 1 | AF1 | | L1 | 31 |
BE2	2	AF2		N	32
BE3	3	SF1			
BE4	4	SF2		L1	33
BE5	5	RF1	UP1	34	BA1
BE6	6	RF2	UP2	35	BA2
BE7	7			36	
BE8	8	VF1			
BE9	9	VF2	SLP	37	BA4
BE10	10	VF3	ZP	38	BA5
BE11	11	VF4			
BE12	12	RüF1		L1	39
BE13	13	RüF2	RK1_three-step	40	BA6
BE14	14			41	BA7
BE15	15	FG1	RK1_on/off		
BE16	16	FG2		L1	42
BE17	17	SF3	RK2_three-step	43	BA8
	18	Sensor COM		44	BA9

Sensor COM

	19				
	20	Y COM	17 + WMZ/Bed		45
0...10 V	21	Y1			46
0...10 V	22	Y2	19 - (20 mA/10 V) [2]		47
	23				
COM BA12, BA13	24	Pump management - COM			
BA12	25	UP ON/OFF			
BA13	26	UP Speed			
	27	+ supply voltage for TROVIS 5570 [1]			
	28				
	29	Device bus	27 Meter bus [1]		
	30	Device bus	28 Meter bus [1]		

[1] If the controller is equipped with a meter bus plug-in module, the TROVIS 5570 Room Panel cannot be supplied by the controller.
[2] A 50 Ω resistor is required between the terminals 17 and 19 for applying a 20 mA signal.

Fig. 4: *Wiring of the TROVIS 5576 Heating and District Heating Controller*

Legend:

AF	Outdoor sensor		BE	Binary input
FG	Potentiometer		BA	Binary output
RF	Room sensor		RK	Control circuit
RüF	Return flow sensor		UP	Circulation pump (heating)
SF	Storage tank sensor		SLP	Storage tank charging pump
VF	Flow sensor		WMZ	Heat meter

Room panel

For RK1:

Type 5257-5(x) Room Panel [1]   TROVIS 5576

| 1 | 2 | 3 | | 15 | 18 | 5 |

For RK2:

Type 5257-5(x) Room Panel [1]   TROVIS 5576

| 1 | 2 | 3 | | 16 | 18 | 6 |

[1]   Type 5244 no longer available

Fig. 5: *Wiring of a room panel for RK1 or RK2*
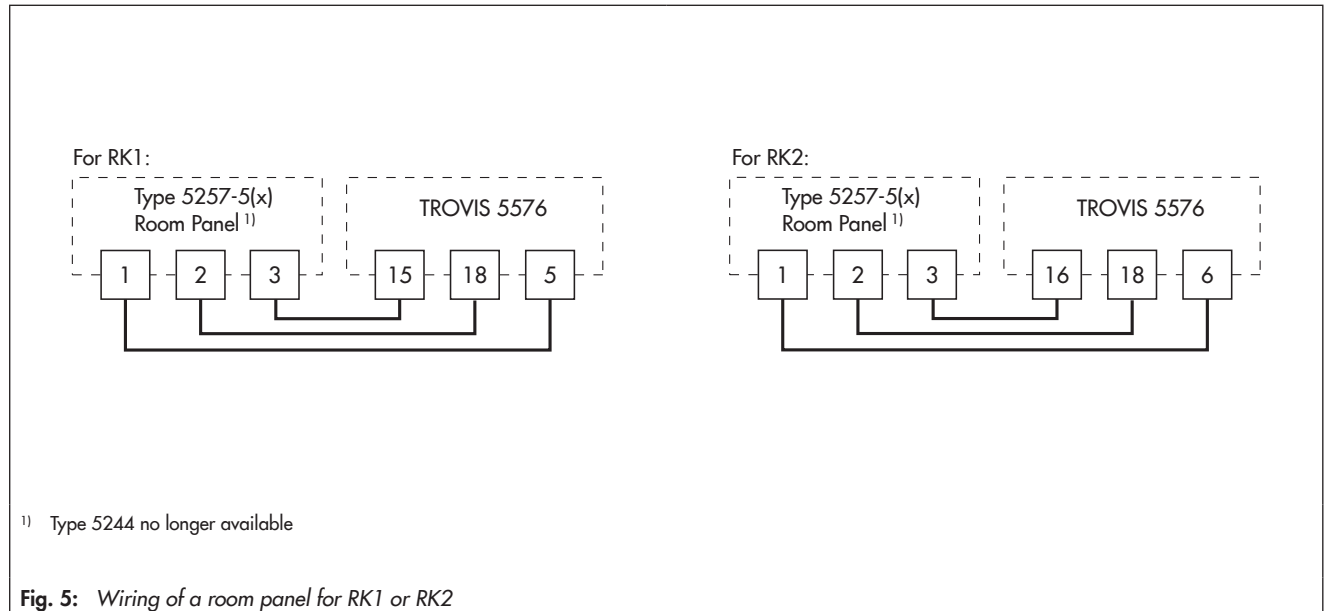
Water flow sensor

A 4.7 kΩ resistor is essential for the water flow sensor to function.

Water flow sensor

WH   GN   BN/BK   TROVIS 5576

| 20 | | 17 | | 21 |

4,7 kΩ

WH = White
GN = Green
BN = Brown
BK = Black

Fig. 6: *Wiring of a water flow sensor*

RJ-45 jack

1
2
3
4
5
6
7
8

Device bus
+5V
RD
CTS
DTR
TD
GND
Device bus

Fig. 7: *Assignment of the RJ-45 jack*

Technical data

Inputs		15x configurable inputs for Pt 1000/Pt 100, PTC/Pt 100, NTC/Pt 100, Ni 1000/Pt 100 or Pt 500/Pt 100 temperature sensors and binary inputs
		Input 17 alternatively for flow rate signal from a heat meter or signal for external demand by subsequent controllers
		0/4 to 20 mA with 50 Ω parallel resistor or 0 to 10 V signal for external demand by subsequent controllers or outdoor temperature signal
Outputs		2x three-step signal: rating max. 250 V AC, 2 A
		Alternatively on/off signal: rating max. 250 V AC, 2 A;
		Alternatively 2x continuous-action controller output: 0 to 10 V, load > 5 kΩ;
		Y1 alternatively for outdoor temperature, signal for external demand or pump speed control
		5 x pump output: rating max. 250 V AC, 2 A; all outputs are relay outputs with varistor suppression
		2 x semiconductor relay: rating max. 24 V AC/DC, 50 mA
Interfaces	Device bus	RS-485 interface for up to 32 bus devices (two-wire system, polarity independent, connection to terminals 29/30 as required or together with the two-wire system bus via cable converter 1400-8800)
	System bus	RS-232 interface for point-to-point connection to a computer (Modbus RTU protocol, data format 8N1, RJ-45 connector socket at the side)
		Optional:
		– RS-485 Modbus interface for four-wire bus using a cable converter (1400-7308)
		– RS-485 Modbus interface for two-wire bus using a cable converter (1400-8800)
		– RS-485 interface and surge arrester for two-wire bus using SACO55 (1400-9771)
	Meter bus	Optional:
		Meter bus plug-in module, protocol according to EN 1434-3 (also suitable for retrofitting)
Supply voltage		165 to 250 V, 48 to 62 Hz, max. 5 VA
Permissible ambient temperature range		0 to 40 °C (operation), −10 to +60 °C (storage and transport)
Degree of protection		IP 40 according to EN 60529
Class of protection		II according to EN 61140
Degree of contamination		2 according to EN 61010-1
Overvoltage category		II according to EN 60664
Noise immunity		According to EN 61000-6-1
Noise emission		According to EN 61000-6-3
Conformity		CE · EAC
Weight		Approx. 0.5 kg

Dimensions
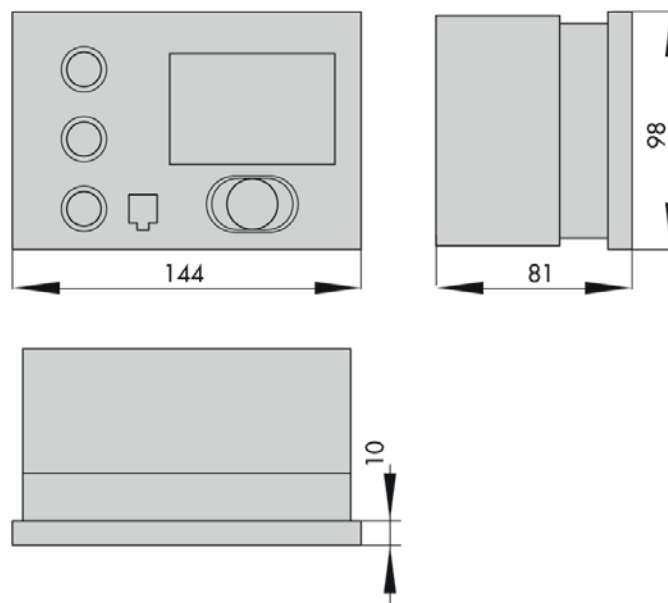
Fig. 8: *Dimensions in mm*

Accessories

Meter bus plug-in module	Order no. 1400-8975
Memory module	Order no. 1400-9379
Mini module	Order no. 1400-7436
Data logging module	Order no. 1400-9378
USB converter 3 together with data log viewer software	Order no. 1400-9377
TROVIS-VIEW software (free of charge)	▶ www.samsongroup.com > SERVICE & SUPPORT > Downloads > TROVIS-VIEW
RS-232 to RS-485 four-wire cable converter	Order no. 1400-7308
RS-232 to RS-485 two-wire cable converter	Order no. 1400-8800
4-port bus hub	Order no. 1400-7140
Surge arrester and converter SACO55	Order no. 1400-9771
SAM HOME Gateway	Type 5660
SAM MOBILE Gateway	Type 5655
SAM-LAN Gateway	Type 5650
Sensors and room panels	▶ T 5200 (Information Sheet: Temperature Sensors and Thermostats)

Ordering text

TROVIS 5576 Heating and District Heating Controller

– Standard

– With meter bus plug-in module

Associated mounting and operating instructions

– For TROVIS 5576   ▶ EB 5576

– For TROVIS-VIEW: ▶ EB 6661

Specifications subject to change without notice   **T 5576 EN**