

TROVIS 5578-E Heating and District Heating Controller



Application

Control of up to three control circuits



Fig. 1: TROVIS 5578-E Heating and District Heating Controller

- Control of a primary heat exchanger or boiler with up to two mixing heating circuit and one non-mixing heating circuit (both outdoor-temperature-compensated) and control of DHW heating in the secondary circuit
- Outdoor-temperature-compensated buffer tank control with up to two mixing heating circuits and continuous-flow hot water module
- Control of two outdoor-temperature-compensated heating circuits and a DHW heating with three valves in the primary circuit
- Control of three outdoor-temperature-compensated heating circuits with three valves in the primary circuit

- Applications with up to six control circuits are possible using optional TROVIS I/O expansion modules (linked by device bus).
- 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
- 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 panels to override operating mode and rated room temperature for each heating circuit
- 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.
- Heating characteristics optionally based on the gradient or based on four points; variable return temperature limitation
- Adaptation: Automatic adaptation of the heating characteristic (room temperature sensor required)
- 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
- Outputs AA1 to AA4 configurable (0 to 10 V signal to issue a control signal or request for re-

- quired signal, PWM signal for pump speed control)
- Updatable flash memory in controller (operating system)
- Configuration and parameter settings in TROVIS-VIEW
- Alarms and setting changes including time stamp shown in tables
- Graphical display of operating values of the past 14 days at 1-minute intervals

Design and principle of operation

The heating controller is adapted to the specific system by setting the appropriate system code number. Additional sensors and/or functions which are not part of the system's basic configuration can be selected in the function blocks. The switch positions $\diamond$ and entry of the key number allow access to the corresponding levels. For trained personnel, the configuration levels used to set function blocks are indicated by 'CO' and the parameter levels are indicated by 'PA'. Data is retrieved and entered at the heating controller using a rotary pushbutton.

Data input is facilitated by icons and plain text displayed on the LCD.

The rotary switch is used to set the operating mode and the key parameters required for individual circuits.

M-Bus interface

A maximum of three meters conforming to EN 13757 can be connected for data transfer. In addition, heat meters are available for flow rate and/or capacity limitation for each control circuit. Various limits can be adjusted for the following operating modes in control circuit RK1:

- Heating control only
- Heating control together with DHW heating
- DHW heating only

Outdoor-temperature-compensated flow rate or capacity limitation can also be implemented.

RS-485 interfaces

TROVIS 5578-1113 is fitted with a galvanically isolated RS-485 interface that is suitable for the following connection options:

- Device bus communication for connection of up to 32 bus devices
- Modbus RTU communication with a control system

- Modbus RTU communication for connection of a SAM MOBILE Gateway to access the SAM DISTRICT ENERGY web portal
- Multiplex mode (Modbus TCP/IP access to the bus devices connected to the RS-485 interface that can also be operate using device bus communication)

TROVIS 5578-1114 is fitted with two galvanically isolated RS-485 interfaces for separate Modbus RTU and device bus communication.

Ethernet interface

- Modbus-TCP/IP communication with a control system
- Communication the SAM DISTRICT ENERGY web portal without the use of a communication gateway: the MAC address of the heating controller is used to register it (specified on the controller housing, starting with **00:E0:99:Fx:xx:xx**). For reasons of data security, the heating controller must be registered in the web portal within six hours after the controller has been started. Restarting the heating controller resets this time and allows the controller to be registered after a timeout.

Bluetooth® interface

The TROVIS 55Pro app (Android/iOS) is available for changing parameter settings, saving configurations, firmware updates etc.

Installation

- Panel mounting: Two adjustable fixing clamps attached to the controller are used to mount it.
- Wall mounting: The base of the housing is screwed to the wall.
- Rail mounting: The base of the housing is pushed onto a rail.

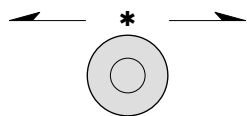
Operating controls

The operating controls are located in the front panel of the heating controller.

The rotary pushbutton is used to select readings, parameters and function blocks.

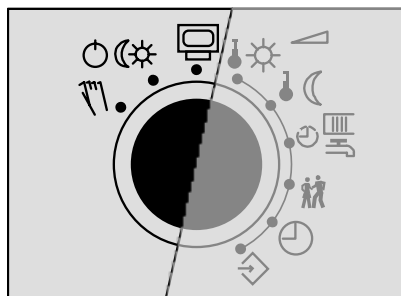
The rotary switch is used to set the operating mode and the key parameters for each control circuit.

Rotary pushbutton

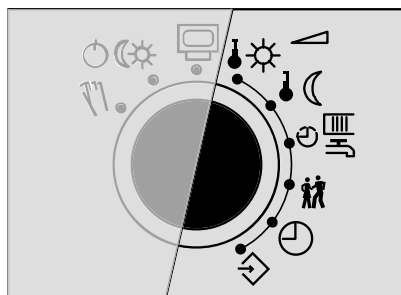


- Turn
Select readings, parameters and function blocks.
- * Press
Confirm adjusted selection or settings.

Rotary switch



- ☐ Operating level
- ☉ ☼ Operating modes
- ☼ ☉ Manual level



- ☼ ☉ Day set point (rated room temperature)
- ☼ ☉ Night set point (reduced room temperature)
- ☼ ☉ Times-of-use for heating/DHW
- ☼ ☉ Special time-of-use
- ☼ ☉ Time/date
- ☼ ☉ Settings (parameter and configuration level)

Electrical connection

The controller consists of the housing containing the electronics and a separate terminal board 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.

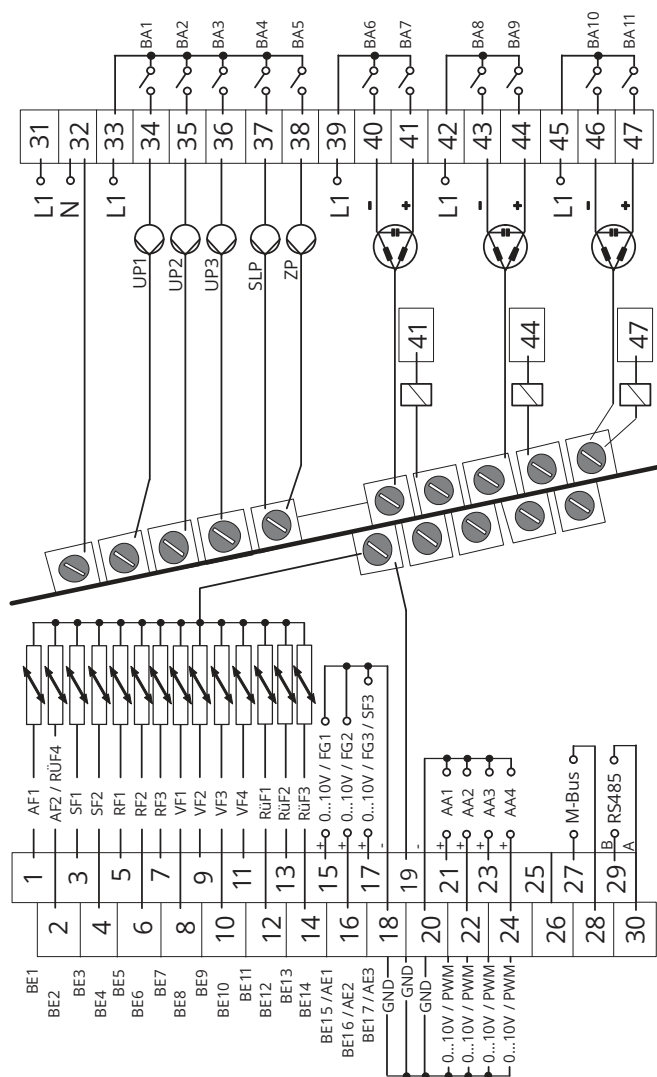


Fig. 2: Electrical connection · TROVIS 5578-1113

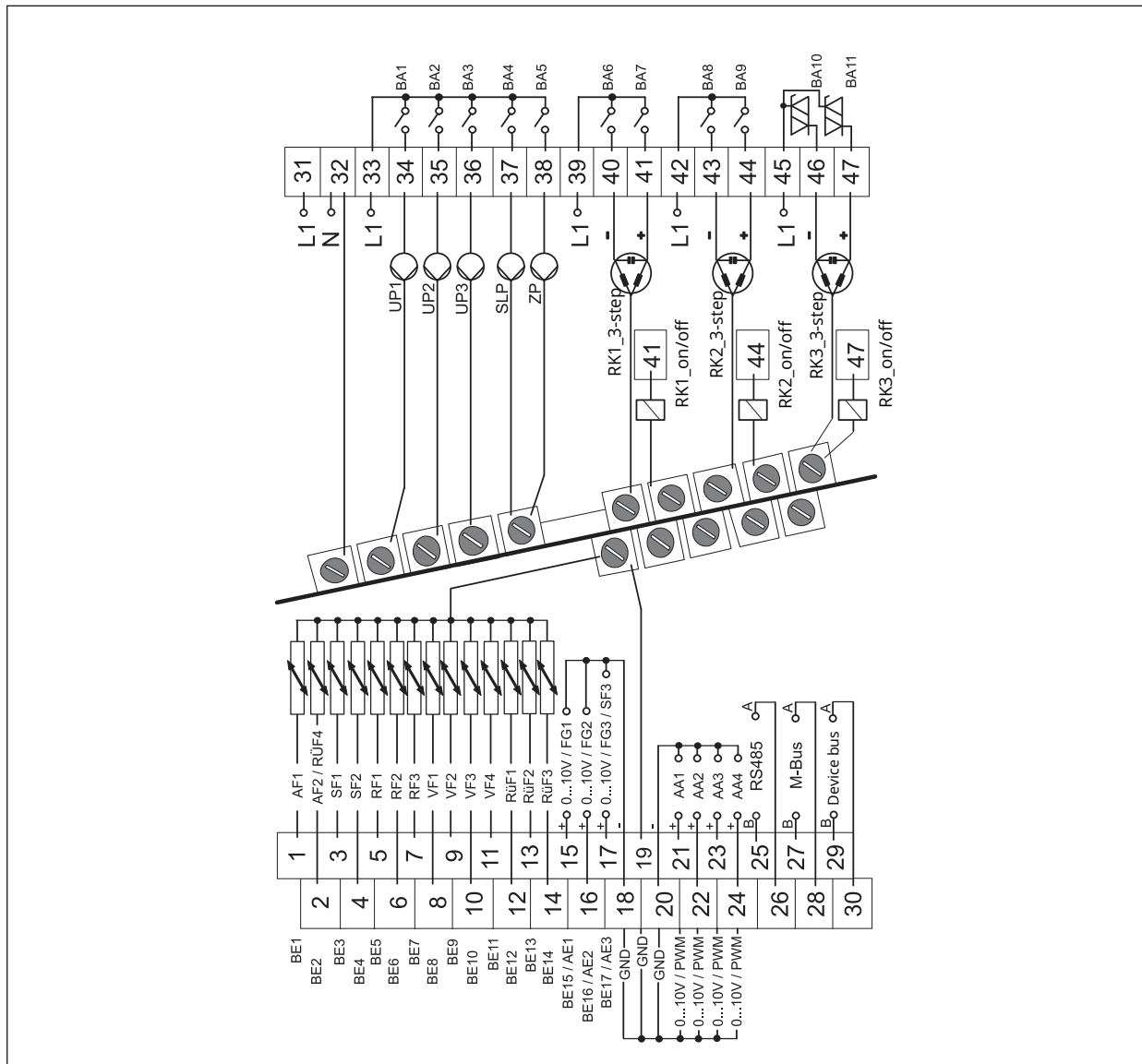


Fig. 3: *Electrical connection · TROVIS 5578-1114*

Abbreviations

AA	Analog output
AE	Analog input
AF	Outdoor sensor
BA	Binary output
BE	Binary input
FG	Potentiometer
PWM	Pulse width modulation
RF	Room sensor
RK	Control circuit
RüF	Return sensor
SF	Storage tank sensor
SLP	Storage tank charging pump
UP	Circulation pump (heating)
VF	Flow sensor
ZP	Circulation pump (DHW)

Room panel

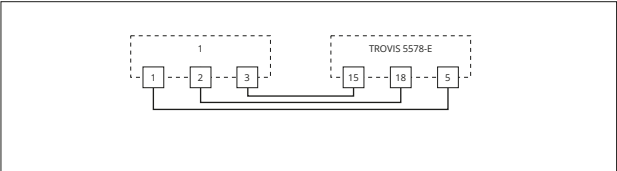


Fig. 4: Wiring of a room panel for RK1

1 Type 5257-5(x) Room Panel; Type 5244 no longer available.

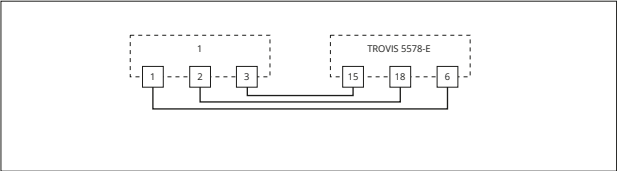


Fig. 5: Wiring of a room panel for RK2

1 Type 5257-5(x) Room Panel; Type 5244 no longer available.

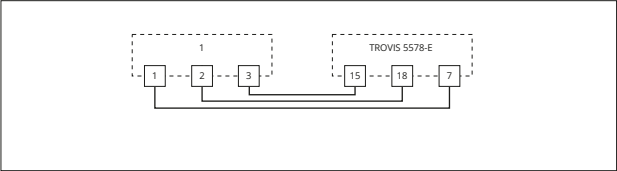


Fig. 6: Wiring of a room panel for RK3

1 Type 5257-5(x) Room Panel; Type 5244 no longer available.

Water flow sensor

WSS		Extension cable	TROVIS 5578-E
GND	BK	— BN —	— 20
Signal	GN	— GN —	— 17
5 V	WH	— WH —	— 24 (21, 22, 23)

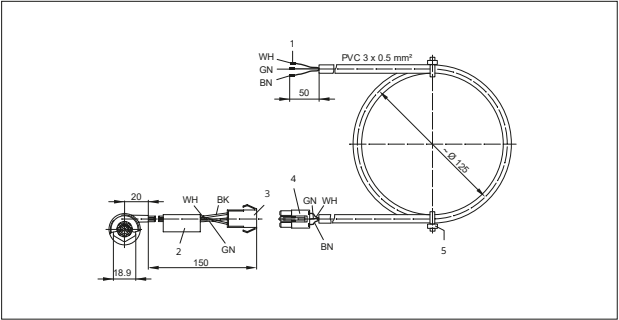


Fig. 7: Extension cable for water flow sensor

- WH White
- GN Green
- BN Brown
- BK Black
- 1 Wire end ferrule
- 2 Nameplate
- 3 Bushing
- 4 Connector
- 5 Cable tie

Table 1: Permissible conductor cross-section for terminals

Cable	Conductor cross-section
Single-wire	0.33 to 2 mm ²
Multi-wire	0.33 to 2 mm ²

Length of insulation to be stripped off the conductor ends: 6 mm

Technical data

Table 2: *Technical data*

Inputs		14x Pt1000, PTC or Ni1000 sensor inputs, alternatively configurable for binary alarms 3x 0 to 10 V inputs Input 17 configurable for a pulse signal (3 to 800 pulses/h) of a heat meter for capacity limitation in RK1
Outputs		3x three-step signal, alternatively 3x on/off signal 5578-1113: Relay outputs, rating max. 250 V AC, 2 A 5578-1114: RK1, RK2: relay outputs, rating max. 250 V AC, 2 A; RK3: TRIAC output, rating max. 250 V AC, 0.12 A 5x pump output: Relay outputs, rating max. 250 V AC, 2 A All outputs are relay outputs with varistor suppression 4x 0 to 10 V or PWM signal, configurable, to issue a control signal or for pump speed control Load >5 kΩ
Interfaces		
		Ethernet interface for Modbus-TCP/IP communication and connection to SAM DISTRICT ENERGY using an Internet router Alternative access using optional external gateways M-Bus interface (mini master) for up to three M-Bus units, protocol according to EN 13757 (formerly EN 1434-3)
	TROVIS 5578-1113	Galvanically isolated RS-485 interface for Modbus-RTU and device bus communication. Data format Modbus RTU: 8N1 Bluetooth® 4.1
	TROVIS 5578-1114	Galvanically isolated RS-485 interface for Modbus-RTU communication RS-485 interface for device bus communication Data format Modbus RTU: 8N1 Bluetooth® 5.0
Supply voltage		165 to 250 V
Power line frequency		48 to 62 Hz
Power consumption		Max. 12 VA, typical: 4.1 VA
Permissible ambient temperature range		
	Operation	0 to 55 °C
	Transportation and storage	-10 to +60 °C
Degree of protection		IP40 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 60664-1
Noise immunity		According to EN 61000-6-1
Noise emission		According to EN 61000-6-3
Conformity		
Weight		Approx. 0.5 kg

Dimensions

Panel cut-out: 138 x 92

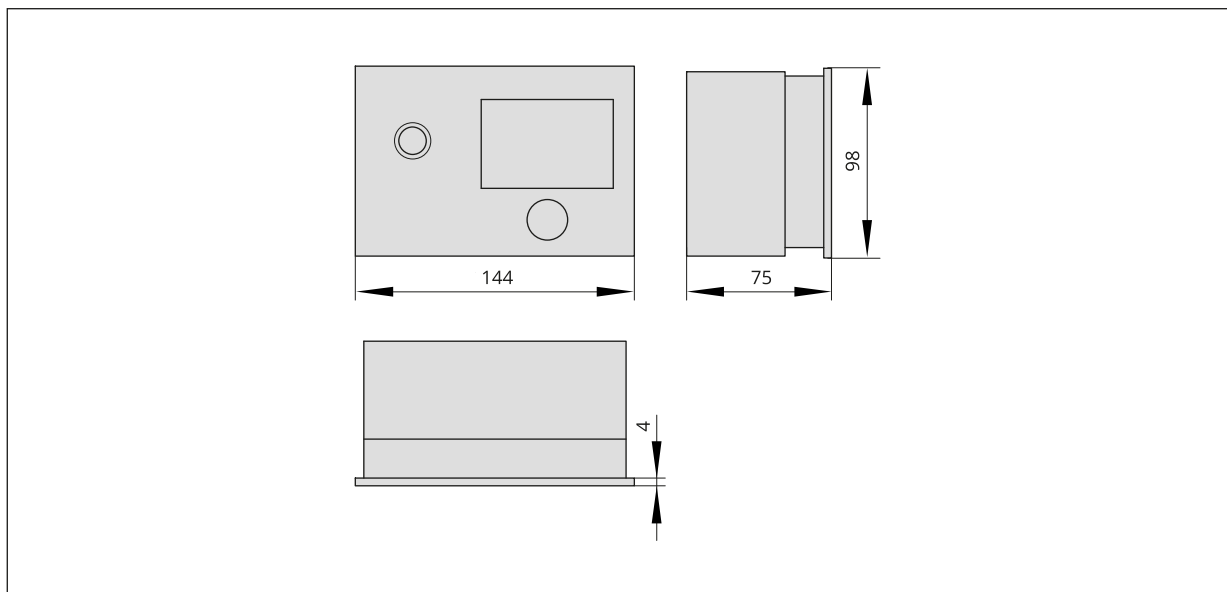


Fig. 8: Dimensions in mm · Heating and district heating controller

Accessories

Table 3: *Accessories*

Surge arrester SA 5000	Order no. 1400-9868
TROVIS I/O (expansion module)	Order no. 1000062999
▶ SAM MOBILE+ Gateway	Type 5656
TROVIS-VIEW software (free of charge)	▶ www.samsongroup.com > DOWNLOADS > Software & Drivers > TROVIS-VIEW
SAM DISTRICT ENERGY	▶ www.samsongroup.com > PRODUCTS > Digital solutions > SAM DISTRICT ENERGY ▶ EB 6901
Water flow sensor with extension cable	Order no. 1400-9246
Sensors and room panels	▶ www.samsongroup.com > PRODUCTS > Sensors and Thermostats ▶ T 5200 (Information Sheet: Temperature Sensors and Thermostats)

Ordering text

TROVIS 5578-E Heating and District Heating Controller

Associated mounting and operating instructions

- TROVIS 5578-E ► EB 5578-E
- TROVIS-VIEW ► EB 6661