

Temperature Transmitter TRV 5-60

System description

The TRV 5-60 temperature transmitter is designed for the connection of a TRG 5-6x temperature sensor (platinum resistance thermometer Pt100 to EN 60751), to enable the redundant acquisition and monitoring of its measured values. The measured temperature and any system malfunctions that occur are displayed directly on the TRV 5-60 temperature transmitter, and made available via the CAN bus as a converted data telegram.

The temperature transmitter can be used as:

- A safety temperature limiter/monitor, in combination with a TRG 5-6x temperature sensor and URS 60 / URS 61 safety control units.

Safety temperature limiters or monitors switch off the heating when the maximum admissible temperature is reached. Method of operation type 2.BKP (+JV, with external lock) to EN 60730-1.

Visualisation and operation take place via the URB 60 or SPECTORcontrol operating unit.

Combinations of these units can be used as monitors or limiters in pressurised steam and hot-water plants.

In combination with the URS 60 / URS 61 safety control unit, the TRV 5-60 temperature transmitter is suitable for safety functions up to SIL 3.

It is an element of a safety circuit up to SIL 3 as per EN 61508 in the SPECTORconnect system, and can transmit alarm notifications.

Function

A TRG 5-6x temperature sensor is assigned to the TRV 5-60 temperature transmitter, and its readings are recorded and monitored redundantly.

The actual temperature is displayed on the temperature transmitter itself, as are any system malfunctions that occur.

The temperature in the transmitter housing is continually monitored by a temperature sensor on the PCB.

Behaviour in the event of alarms (limit values)

The alarm status is displayed on the TRV 5-60 and transferred to the URS 6x safety control unit via CAN bus. After the delay time, the safety control unit shuts off the connected safety circuit. The safety control unit does not lock automatically during this process.

The following error messages:

- Sensor malfunction
- Communication failure

provoke an undelayed break in the safety circuit.

Automatic self-test

An automatic self-test periodically monitors the safety and function of the temperature sensor and measured value acquisition.

The data are transferred to the URS 60 / URS 61 safety control unit in the form of a Black Channel data telegram via the CANopen protocol using a CAN bus to ISO 11898, and saved there.

Technical data

Supply voltage

- 24 V DC +/- 20 %

Power consumption

- max. 7 VA

Current input

- max. 0.3 A

Internal fuse

- T2A

Safety cutout at excessive ambient temperature

- The cutout at excessive ambient temperatures takes place at Tamb. > 75 °C

Input/output

- Interface for CAN bus to ISO 11898, CANopen, insulated
- M12 CAN bus connector, 5-pole; A-coded
- M12 CAN bus socket, 5-pole, A-coded

Measuring range and adjustable limit value AL.Hi in °C (cutout temperature)

- Measuring range: 0 °C to 700 °C
- Minimum limit value: 20 °C
- Maximum limit value: 650 °C
- Reset hysteresis: -2 K

Indicators and controls

- 1 x 4-digit green 7-segment display for showing actual values and status information
- 1 x red LED for displaying the alarm or error state
- 1 x green LED for displaying normal operation
- 1 x rotary knob IP65 with button for menu navigation and test function

Protection class

- III Safety Extra Low Voltage

IP rating to EN 60529

- IP 65

Admissible ambient conditions

- Ambient temperature: 0 °C - 70 °C
- Storage temperature: - 40 °C - 80 °C
- Transport temperature: - 40 °C - 80 °C
- Air humidity: 10 % - 95 % non-condensing

Housing

- Housing material: Cast aluminium, powder-coated
- Housing attachment: using the supplied mounting bracket

Temperature Transmitter

TRV 5-60

Terminals and cable entries

- 1 x 3-pole spring-loaded terminal for connecting a Pt100 temperature sensor
- Cross-section: 0.2 to 1.5 mm²
- 1 x M16 cable gland with integrated strain relief for cable diameters 5 to 9 mm

Weight

- Approx. 1.0 kg

Applicable directives:

The TRV 5-60 temperature transmitter has been tested and approved for use in the scope governed by the following directives and standards:

- Directive 2014/68/EU EU Pressure Equipment Directive - Pressure equipment with a safety function
- Directive 2014/35/EU Low Voltage Directive
- Directive 2014/30/EU EMC Directive
- Directive 2011/65/EU RoHS II Directive

Notes for planning

A shielded, multi-core, twisted-pair control cable, e.g. UNITRONIC® BUS CAN 2 x 2 x ...mm² or RE-2YCYV-fl 2 x 2 x ...mm² must be used as the bus line.

Pre-wired control cables (with plug and coupling) are available as accessories in various lengths.

The baud rate (transfer rate) is determined by the cable length between the bus terminal devices, and the wire cross-section is determined by the overall power input of the measuring sensors.

0.2 A at 24 V is required per sensor. With five sensors, there is therefore a voltage drop of approx. 8 V per 100 m when using cables of 0.5 mm². In this case, the system is operating at its limits.

With five or more sensors and a cable length of ≥ 100 m, the wire cross-section needs to be doubled to 1.0 mm².

At larger distances of > 100 m, the 24 V DC supply can also be connected on site.

Please note our terms of sale and delivery.

How to order:

Temperature transmitter

| | |
|--------------|--------------------|
| Type: | Stock code: |
| ■ TRV 5-60 | 2696040 |

Additional modules:

| | | |
|--|---------|----|
| ■ Temperature sensor Pt100 to EN60751: | | |
| - TRG 5-63 | 26711.. | xx |
| - TRG 5-64 | 26714.. | xx |
| - TRG 5-65 | 26716.. | xx |
| - TRG 5-66 | 26717.. | xx |
| - TRG 5-67 | 26718.. | xx |
| - TRG 5-68 | 26719.. | xx |

The last digits xx stand for the length on delivery, and must be stated at the time of ordering from Gestra.

- Safety control unit URS 60
- Safety control unit URS 61
- Visual display and operating unit URB 60 or SPECTORcontrol

Dimensions

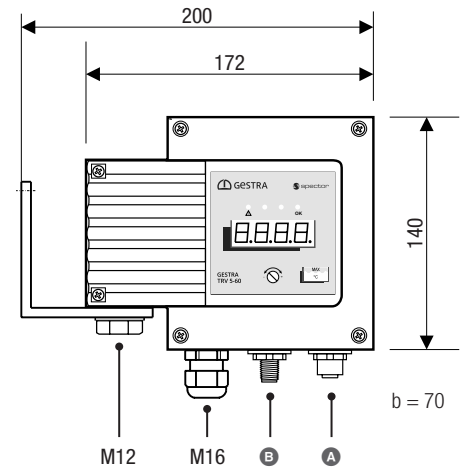


Fig. 1

Electrical connection

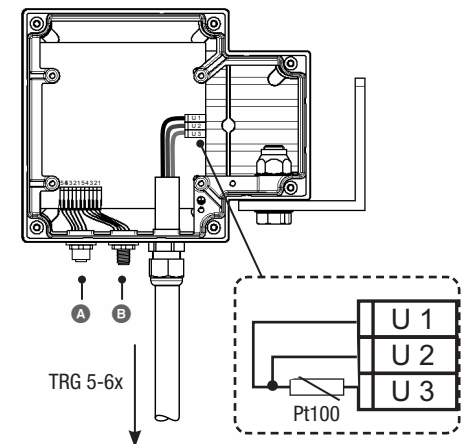


Fig. 2

- A M12 CAN bus socket, 5-pole, A-coded
- B M12 CAN bus connector, 5-pole, A-coded

Wiring diagram of CAN bus system

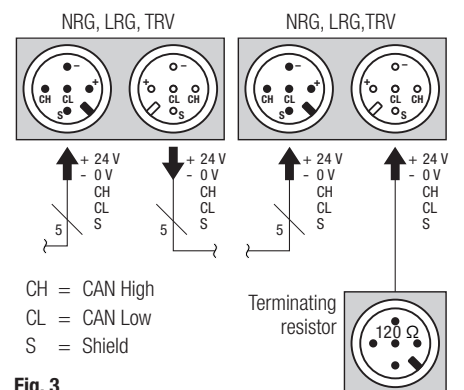


Fig. 3

GESTRA AG

Münchener Strasse 77, 28215 Bremen, Germany
 Tel. +49 421 3503-0, Fax +49 421 3503-393
 e-mail info@de.gestra.com, Web www.gestra.com

