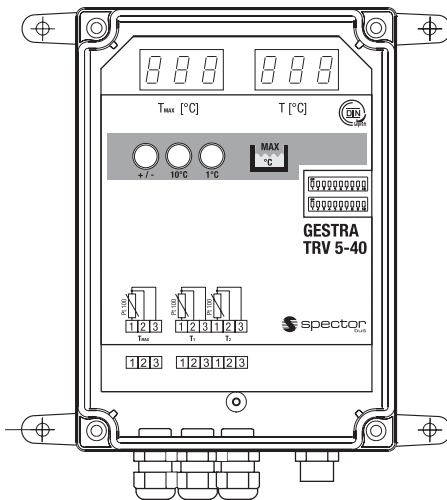# GESTRA®

Temperature Transmitter
TRV 5-40

TRV 5-40

Description

The temperature transmitter TRV 5-40 is designed for the connection of three temperature sensors TRG 5-6x (platinum resistance thermometer Pt 100 to EN 60751). The temperatures measured by the temperature sensors are converted by the temperature transmitter TRV 5-40 and sent to the CAN bus in the form of a data telegram.

The data are transferred via CAN bus, using the CANopen protocol.

The temperature transmitter TRV 5-40 can be used as:

■ safety temperature monitor / limiter in conjunction with a temperature sensor type TRG 5-6x and the control unit NRS 1-40.1 / NRS 1-40.2 and

■ temperature monitor & limiter in conjunction with one or two temperature sensors TRG 5-6x and the control unit TRS 5-40 or any other equipment that is approved for this application.

The equipment combination can be used for monitoring, limiting or control purposes in steam plants and (pressurised) hot water installations according to TRD and EN 12952 and EN 12953.

Function

The temperature transmitter TRV 5-40 consists of the safety part for temperature limiting and the part for temperature monitoring & control.

The safety part is connected with the temperature sensor. The temperature sensor detects the temperature and sends the measured values to the safety part of the temperature transmitter, where the measured values are recorded redundantly and monitored.

The adjustable **temperature limit** T_{MAX} (°C), the **actual temperature** and system malfunctions are **indicated** by the temperature transmitter. The temperature sensing element on the electronic insert monitors continuously the temperature inside the transmitter housing. An automatic self-testing routine checks every 10 seconds the safety and reliability of the functions of the temperature sensor and the detection of the measured values.

The actual temperatures, the exceeding of the adjusted temperature limit T_{MAX} (°C), the result of the periodic self test and the temperature inside the transmitter housing are sent as a data telegram via CAN bus to the control equipment NRS 1-40.1 / NRS 1-40.2.

Regardless of the safety part two additional temperature sensors TRG 5-6x can be used for temperature monitoring & control in order to measure further actual temperature values. These readings are also sent as data telegrams via CAN bus and will be evaluated e. g. by the control unit TRS 5-40.

CAN bus

All devices (level, conductivity, temperature) are interconnected via CAN bus to DIN ISO 11898. The CANopen protocol is used for the data exchange between the equipment groups. All devices have an electronic address – the node ID. The four-core bus cable serves as power supply and data highway for high-speed data exchange.

The temperature transmitter TRV 5-40 has already been configured at our works for operation with other GESTRA components and can be used straight away.

Design

The temperature transmitter TRV 5-40 is designed for wall mounting.

Screw the four fixing lugs supplied with the transmitter into the housing. You can now attach the equipment to the wall without having to open the housing cover.

External dimensions: 130 x 180 x 60 mm.

Technical Data

Type approval
TÜV. SWB/SHWS. 03–413
EG BAF-MUC 03 07 103881 004
DIN registry no. STW (STB) 117 906

Input/Output
CAN bus interface with current supply 18 – 36 V DC, short circuit protected

Temperature sensors
TRG 5-63
1x Pt 100 to EN 60751

TRG 5-64
2x Pt 100 to EN 60751

TRG 5-65, TRG 5-66
1x Pt 100 to EN 60751

TRG 5-67
1x Pt 100 to EN 60751

TRG 5-68
2x Pt 100 to EN 60751

Temperature limit T_{MAX} (°C) (cut-off temperature)
Min. adjustable limit value: 20 °C
Max. adjustable limit value: 650 °C

Indicators and adjustors
1 Red three-digit, seven-segment LED display for **indicating limit values**
1 Green three-digit, seven-segment LED display for **indicating the actual value**
3 Pushbuttons for limit settings
5 LEDs for internal status messages
1 Code switch with 10 poles for setting the node ID and baud rate
1 Code switch with 10 poles for configuring the system

Internal self-checking routine
Every 10 seconds

Fault response time
30 sec.

Power consumption
2 W

Fuse
Electronic thermal fuse T_{MAX} 85 °C, hysteresis –2K

Protection
IP 65 to EN 60529

Max. admissible ambient temperature
70 °C

Housing
Material: polycarbonate

P. T. O.

Temperature Transmitter
TRV 5-40

Technical Data – continued –

Cable entry / Wiring
For connecting the temperature sensor:
Cable glands with integrated cable clamp, 3 x M 16,
1 three-pole and 1 six-pole screw-type terminal strip,
conductor size 1.5 mm²

For CAN bus connection:
M 12 sensor connector, 5 poles, A coded
M 12 sensor jack, 5 poles, A coded

Weight
Approx. 0.7 kg

Important Notes

Note that screened multi-core twisted-pair control cable
is required for the BUS line, e. g. UNITRONIC® BUS CAN
2 x 2 x … mm² or RE-2YCYV-fl 2 x 2 x … mm².

Preassembled control cables (with connector and
coupler) for connecting the equipment are available as acces-
sories.

The baud rate (data transfer rate) dictates the cable length
between the bus nodes and the total power consumption of
the sensor dictates the conductor size.

Cable length	Number of pairs and conductor size [mm²]
125 m	2 x 2 x 0.34
250 m	2 x 2 x 0.5
335 m	2 x 2 x 0.75

Other cable length see "Installation Instructions".
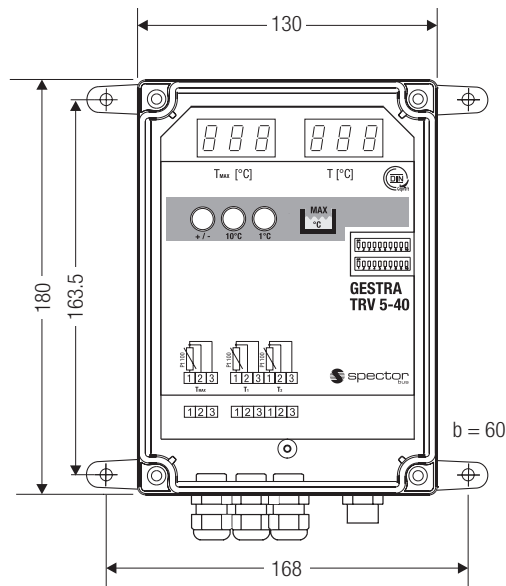
Order and Enquiry Specification
GESTRA Temperature transmitter TRV 5-40.

ATEX (Atmosphère Explosible)

According to the European Directive 2014/34/EU the equip-
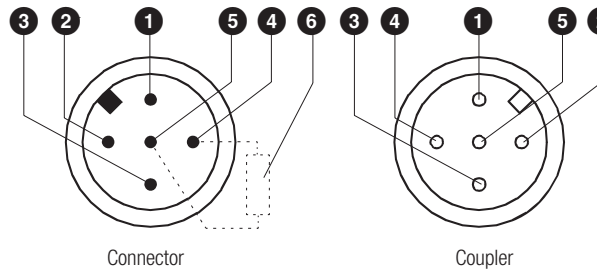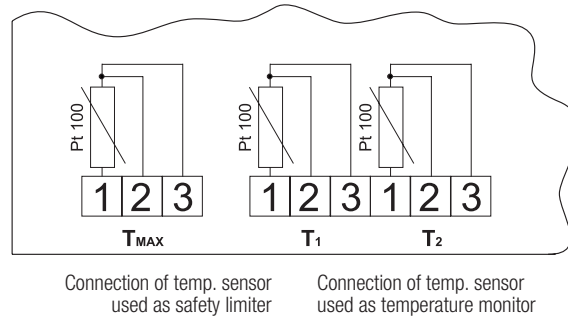ment must **not** be used in explosion risk areas.

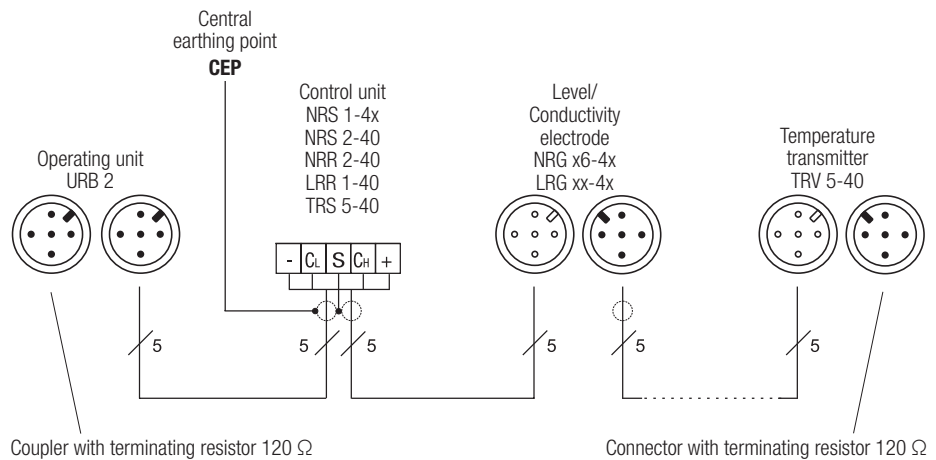Supply in accordance with our general terms of business.

Dimensions

TRV 5-40

Wiring Diagram

Connection of temp. sensor used as safety limiter

Connection of temp. sensor used as temperature monitor

Connector

Coupler

Key
1. Screen
2. Voltage supply 24 V DC+
3. Voltage supply 24 V DC–
4. CAN data line C_H
5. CAN data line C_L
6. Terminating resistor 120 Ω

Central earthing point **CEP**

Operating unit URB 2

Control unit
NRS 1-4x
NRS 2-40
NRR 2-40
LRR 1-40
TRS 5-40

Level/Conductivity electrode
NRG x6-4x
LRG xx-4x

Temperature transmitter TRV 5-40

Coupler with terminating resistor 120 Ω

Connector with terminating resistor 120 Ω