1. General instructions

Warning!
Protection against electric shock
For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

Caution!
Be sure to take protective measures against electrostatic discharge (ESD) when handling the devices!

Caution!
Only trained and qualified personnel should install the SensoTrans® DMS A 20220 standard transmitters. Do not connect the device to power supply before it is professionally installed. Do not change the measuring range during operation.
Observe the national codes and regulations during installation and selection of cables and lines.
Be sure to install a two-pole circuit breaker between device and mains supply.

Information on explosion protection:

The device is category 3 electrical apparatus for use in Zone 2.
The device must be installed in a housing with IP 54 protection according to EN 60529. The specified limits for mechanical or thermal loads must be observed. Only devices designed for operation in the hazardous areas of Zone 2 may be connected.

2. Application

The universal SensoTrans® DMS A 20220 strain gauge transmitters provide connection possibilities for all standard strain gauge force transducers and strain gauge load cells in full bridge configuration.

3. Configuration

Input sensitivity: 2 mV/V
Zero point: Factory setting 0 µV/V (adjustable using teach-in function)
Output signal: 4-20 mA
Strain gauge supply: Internal

Teach-in function:
The "teach-in function" allows saving the currently measured value as zero point (tare). This does not affect the input sensitivity. To activate the teach-in function, press the button on the device front. To do so, you can use a screwdriver (blade width max. 2.5 mm). The front cover provides a corresponding opening.

Caution!
Only use a screwdriver that is safely isolated from the voltage applied to the input.

Hit the front button once. The yellow LED will repeatedly flash briefly (timeout: 30 sec). To save the currently measured value as zero point: Press front button for 3 sec. The yellow LED will light up once.

4. Mounting, electrical connection

The transmitters are snapped onto a TS 35 standard rail and are laterally fixed by suitable end brackets. See dimension drawing for terminal assignments. Conductor cross-section: 0.2 mm² ... 2.5 mm² (AWG 24-14).

CE In compliance with the EU directives
2004/108/EC "Electromagnetic Compatibility" and
2006/95/EC "Low Voltage Directive".
"ATEX directive" 94/9/EC pending

5. Technical data

Strain gauge input data

Input	2 mV/V
Bridge resistance	200 Ω ... 10 kΩ
Zero adjustment	Within input range
Supply current (int. supply)	0 ... 5 mA
Line monitoring	for short circuits or open circuits
Input error limits	± (2 µV/V ± 0.1 % meas.val.) for spans ≥ 0.5 mV/V
Temperature coefficient at the input	50 ppm/K of configured sensitivity (average TC in permitted operating temp range, reference temp 23 °C)
Overload capacity	5 V across all inputs

Output data

Output	4 ... 20 mA,
Control range	– 1.25 % ... approx. 102.5 % of span for 4 ... 20 mA output
Resolution	16 bits
Load Current output	≤ 10 V (≤ 500 Ω at 20 mA)
Output error limits Current output	± (10 µA + 0.05 % meas.val.)
Residual ripple	< 10 mV_{rms}
Temperature coefficient at the output	50 ppm/K full scale (average TC in permitted operating temp range, reference temp 23 °C)
Error signaling	Output: 4 ... 20 mA: Current ≤ 3.6 mA or ≥ 21 mA (see table on back for more data)

Transmission behavior

Characteristic	Rising / falling linearly
Measuring rate	Approx. 3/s
Response time t_{99}	300 ms

Power supply

24 V DC power supply unit	24 V DC (– 20 %, + 25 %), approx. 0.8 W

Isolation

Test voltage	2.5 kV, 50 Hz: Power supply against input against output
Working voltage (basic insulation)	Up to 300 V AC/DC across all circuits with overvoltage category II and pollution degree 2. For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
Protection against electric shock	Protective separation to EN 61140 by reinforced insulation according to EN 61010-1. Working voltage up to 300 V AC/DC across all circuits with overvoltage category II and pollution degree 2. For applications with high working voltages, ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.

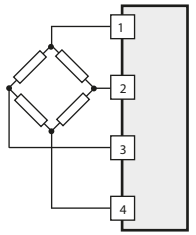
Standards and approvals

EMC	Product standard EN 61326 Emitted interference: Class B Immunity to interference*: Industry EMC requirements for devices with safety-related functions IEC 61326-3: * Slight deviations are possible while there is interference
c UL us (pending)	Standards: UL 508 and CAN/CSA 22.2 No. 14-95
Explosion protection (pending)	ATEX Zone 2 (EN 60079-15) Class 1, Div 2 / Zone 2 (UL 1604)

Further data

Ambient temperature during operation during storage	 0 ... +55 °C (mounted in row) 0 ... +65 °C (spacing ≥ 6 mm) –25 ... + 85 °C
Ambient conditions	Stationary application, weather-protected Relative air humidity 5 ... 95 %, no condensation Barometric pressure: 70 ... 106 kPa Water or wind-driven precipitation (rain, snow, hail) excluded
Ingress protection	Terminal IP 20, housing IP 40
Mounting	For 35 mm top-hat rail (EN 50022)
Weight	Approx. 60 g

6. Input wiring



Strain gauge, internal supply (4-wire)
Terminal 1: Bridge supply voltage (+)
Terminal 4: Bridge supply voltage (–)
Terminal 2: Measured signal (+)
Terminal 3: Measured signal (–)

7. LEDs and error signaling on device

Note: Green and red LEDs flash momentarily at device startup.

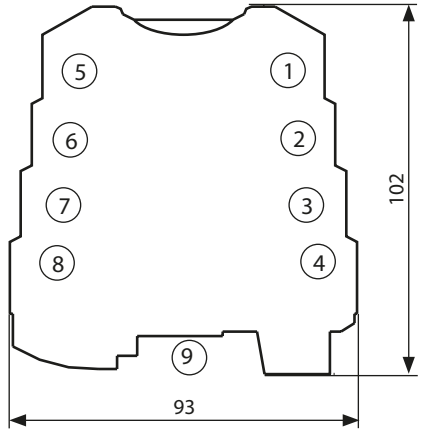
Green: Supply voltage provided

Yellow: The identified connection type is signaled once at the start
1-time blinking corresponds to internal supply

Red: Error status; LED blinking indicates error number

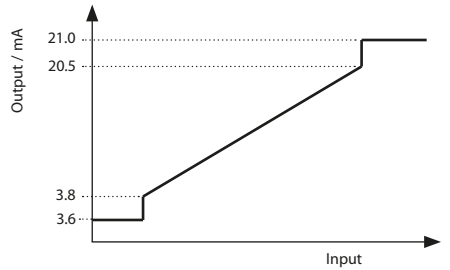
No.	Error	Output [mA] 4 ... 20
1	Value below range limit	3.6
2	Value above range limit	21
3	Sensor short circuit	21
4	Sensor open	21
5	Pot/Strain gauge: resistance error	21
6	– not connected for A 20220 –	
7	Identification of connection	21
8	Switch misadjusted	21
9	Parameter error	21
10	Device error	3.6

8. Dimension drawing and control elements



1	Input 1 +	5	Output +
2	Input 2 +	6	Output –
3	Input 3 –	7	Power supply
4	Input 4 –	8	Power supply
		9	24 V DC power supply via DIN rail bus connector

9. Response of output current (4 ... 20 mA) to out-of-range conditions



10. Order information

Type	Order No.
Strain gauge transmitter, adjustable	A 20220 P0-0002

Accessories	Order No.
DIN-rail bus connector: power supply bridging for 2 A 20220 P0 devices each	ZU 0628
IsoPower® A 20900 current supply 24 V DC, 1 A A 20900 H4 current supply	A 20900 H4
DIN-rail bus connector: tapping of supply voltage, routing to ZU 0628	ZU 0678
Power terminal block For connecting the supply voltage to the ZU 0628 DIN-rail bus connector	ZU 0677

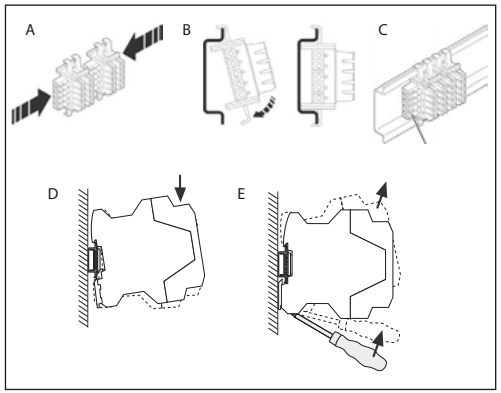


Fig.: A Mounting ZU 0628 DIN-rail bus connectors in a row
B Snapping the bus connectors onto a DIN rail
C Bus connectors on a DIN rail
D Snapping a transmitter onto a DIN rail
E Removing a transmitter from a DIN rail

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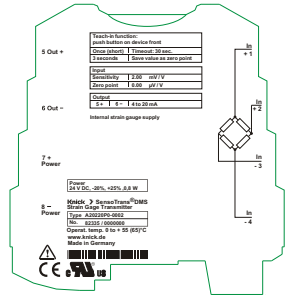
SensoTrans® DMS A 20220P0-0002

Strain Gauge Transmitter



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