

1. General Information

Warning!
Protection against electric shock
For applications with high working voltages, you should 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!
Installation of the SensoTrans® DMS P 32200 strain gage transmitters must be performed by trained and qualified personnel only. Do not connect the device to power supply before it is professionally installed. Do not change the measurement range during operation! Be sure to observe the national codes and regulations during installation and selection of cables and lines. A two-pole circuit breaker must be installed between device and mains supply.

2. Application

The universal SensoTrans® DMS P 32200 strain gage transmitters provide connection possibilities for all standard strain gage force transducers and strain gage load cells in full bridge configuration. The output signal is adjustable to 0 / 4 ... 20 mA or 0 ... 5 / 10 V. The calibrated range selection is performed using DIP and rotary coding switches. Alternatively, the devices can be configured via an IrDA interface located in the upper part of the unit. The device provides a broad-range power supply and galvanic 3-port isolation.

3. Configuration

Set the DIP and rotary coding switches according to the table on the housing. An example is shown on the back.
Input sensitivity:
Adjust the input sensitivity in mV/V using the DIP1, DIP2, and DIP3 switches and the "Sensitivity" rotary coding switch.
Zero point:
Adjust the zero offset (tare) in mV/V using the DIP4, DIP5, and DIP6 switches and the "Zero" rotary coding switch.
Output signals:
Adjust the output signal using the DIP7, DIP8 switches.

Caution! Important notice!
After completion of configuration you must cover the switches with the included self-adhesive polyimide tape. For information on configuration via IrDA interface, please refer to the instruction manual for the Paraly® 111 software.

4. Mounting, Electrical Connection


The transmitters are snapped onto TS 35 standard rails and are later-ally 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 89/336/EEC "Electromagnetic Compatibility" and 73/23/EEC "Low-Voltage Directive"

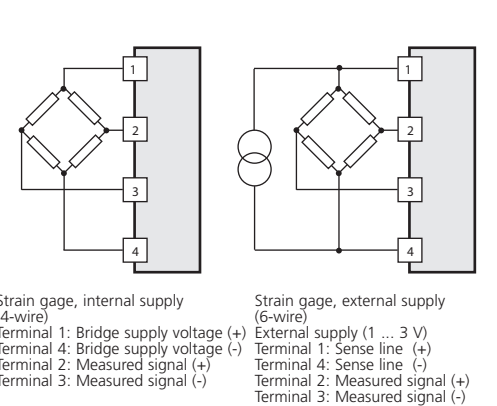
5. Functional safety according to IEC/EN 61508
The Professional Series P32xxxP0/1x devices can be used for monitoring safety-relevant points of measurement up to SIL2 (or SIL3 in the case of redundant configuration). The safety-relevant characteristics and further information concerning functional safety are to be taken from the Safety Manual.

6. Specifications

Strain gage input data	
Input	-7.5 mV/V ... 7.5 mV/V
Bridge resistance	200 Ω ... 10 kΩ
Zero adjustment	Within input range
Supply current (int. supply)	0 ... 5 mA
Supply voltage (external supply)	1 ... 3 V 1 ... 2.8 V for T > 55 °C
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	5 V across all inputs
Output data	
Outputs	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V or 0 ... 5 V, calibrated selection
Control range	0 % to approx. 102.5% of span for 0 ... 20 mA, 0 ... 10 V or 0 ... 5 V output -1.25 % ... approx. 102.5 % of span for 4 ... 20 mA output
Resolution	16 bits
Load	
Current output	≤ 500 Ω
Voltage output	≥ 10 kΩ
Load (SIL)	
Current output	50 ... 500 Ω
Voltage output	≥ 10 kΩ
Output error limits	
Current output	± (10 µA + 0.05 % meas.val.)
Voltage output	± (5 mV + 0.05 % meas.val.)
Residual ripple	
Current output	< 10 mV _{rms} (for 500 Ω load)
Voltage output	< 10 mV _{rms} (for 10 kΩ load)
Temperature coefficient at the output	50 ppm/K of end value (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 or more data)
Transmission behavior	
Characteristic	Rising / falling linearly, via IrDA: curve defined by interpolation points or polynomials
Measurement rate	Approx. 3/s
Response time t ₉₉	300 ms

Power supply	
Broad-range power supply P32200 / x1	24 V...110 V DC (± 20%), appr. 1.0 W 110 V ... 230 V AC (± 10 %), 48 ... 62 Hz, approx. 2.0 VA
24 V DC power supply unit P32200 / x0	24 V DC (- 20%, + 25 %), appr. 0.8 W
Power supply unit P32200 / x2	110 V ... 230 V AC (± 10 %), 48 ... 62 Hz, approx. 1,8 VA
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, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
Protection against electric shock	Safe Isolation 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, you should ensure there is sufficient spacing or isolation from neighboring devices and protection against electric shocks.
Standards and approvals	
Functional safety (SIL types to IEC/EN 61508)	SIL 2 SIL 3 with redundant configuration
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
	Standards: UL 508 and CAN/CSA 22.2 no. 14-95
KTA	KTA 3503:11/05 (only P32200P0/11 with test certificate, accessory ZU0541)
Other data	
Ambient temperature during operation	0 ... +55 °C (mounted in row) 0 ... +65 °C (spacing ≥ 6 mm)
during storage	-25 ... +85 °C
Ambient conditions	Stationary application, weather-protected Rel. air humidity 5 ... 95 %, no condensation Barometric pressure: 70 ... 106 kPa Water or wind-driven rain, snow, or hail excluded
Protection	Terminal IP 20, housing IP 40
Fastening	For 35 mm top hat rail (EN 50022)
Weight	Approx. 60 g

7. Input Wiring (more via IrDA)



8. LED and Error Signaling on Device

Notice: Green and red LED flash briefly when the device is started.

Green: Supply voltage provided

Yellow: Yellow: The identified connection type is signaled once at the start
1-time blinking corresponds to internal supply
2-time blinking corresponds to external supply
Blinking: IrDA active
Permanent light: IrDA connected

Red: Error status; LED flashing indicates error number

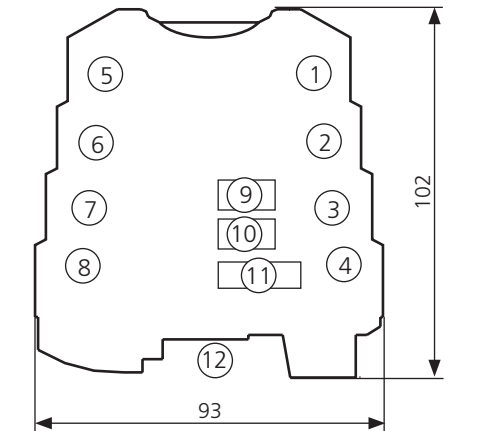
No. Error		Output [mA]		Output [V]	
		4 ... 20	0 ... 20	0 ... 5	0 ... 10
1	Value below range limit*	3.6	0	0	0
2	Value above range limit*	21	21	5.25	10.5
3	Sensor short circuit*	21	21	5.25	10.5
4	Sensor open	21	21	5.25	10.5
5	Pot/strain gage: resistance error	21	21	5.25	10.5
6	Output load error* **	3.6	0	0	0
7	Identification of connection	21	21	5.25	10.5
8	Switch misadjusted	21	21	5.25	10.5
10	Device error, self-locking	21	21	5.25	10.5
	SIL	< 3.6	< 3.6	< 0.1	< 0.1
	Without SIL	3.6	0	0	0

* Self-locking error for P32200P0/1x version only
** Output load error for P32200P0/1x version only

Operation via IrDA interface

DIP switch	Rotary cod- ing switch				Function
All (1 ... 8):	1	2	3	4	
ON	0	0	0	0	IrDA configuration, read / write
OFF	0	0	0	0	IrDA configuration, read only

9. Dimension Drawing and Switching Elements



- 1

Input 1 +
- 2

Input 2 +
- 3

Input 3 -
- 4

Input 4 -
- 5

Output +
- 6

Output -
- 7

Power supply
- 8

Power supply
- 9

Sensitivity (2 rotary coding switches)
- 10

Zero point (2 rotary coding switches)
- 11

DIP switches with the following assignments:
1,2,3: Sensitivity offset
4,5,6: Zero offset
7,8: Output signal selection
Version P32xxxP0/x0 only:
24 VDC power supply via DIN rail bus connector
- 12

10. Typical Configuration

Sensor: Pressure/force sensor,
Nominal sensitivity: 1.5 mV/V
Range: 0 ... 1.5 mV/V
Output signal: 4 - 20 mA

Adjust input sensitivity:
1.5 mV/V
This input sensitivity is composed of:
numerical value = 50, offset = 1 mV/V.

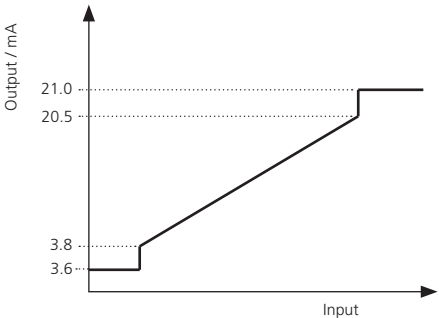
Adjust the numerical value at the coding switches
(see fig. above, pos. 9): 50
Adjust offset 1 mV/V: DIP1 = DIP2 = 0, DIP3= 1

Adjust zero point: 0 mV/V
Adjust the numerical value at the coding switches
(see fig. above, pos. 10): 00
Adjust offset 0 mV/V: DIP4 = 1, DIP5 = 0, DIP6 = 0

Adjust output signal:
4 ... 20 mA: DIP 7 = 0, DIP 8 = 1

Caution!
After completion of configuration you must cover the switches with the included self-adhesive polyimide tape.

11. Behavior of Output Current (4 ... 20 mA) in the Case of Overrange



12. Order Information

Type	Order No.
Strain gage transmitter, adjustable, without SIL	P32200P0/0
Strain gage transmitter, adjustable, with SIL	P32200P0/1
Power supply 110...220 V AC via screw terminals only	2
Power supply Broad-range power supply 24...110 V DC / 110...220 V AC via screw terminals only	1
Power supply 24 V DC via screw terminals or DIN rail bus connector	0

Order code for fixed-range models:

P 32200 P0/
further customer-specific settings
(e.g. cutoff frequency, zero/sensitivity)

- Power supply
2: Power supply 110 ... 230 V AC
1: Broad-range power supply 24 ... 110 V DC / 110 ... 220 V AC via screw terminals only
0: 24 V DC via screw terminals or DIN rail bus connectors

Functional safety (EN 61508)
0: Without
1: SIL 2 (up to SIL 3 in the case of redundant configuration)

Accessories	Order No.
DIN rail bus connector: power supply bridging for 2 P 32xxxP0/x0 devices each	ZU 0628
IsoPower® A 20900 power supply 24 V DC, 1 A A 20900 H4 power supply	A 20900 H4
DIN rail bus connector: tapping of supply voltage, routing to ZU 0628	ZU 0678
Power terminal block Feeding the supply voltage to the DIN rail bus connectors ZU 0628	ZU 0677
Paraly® SW 111 communication software	SW111
Test certificate according to KTA 3507	ZU 0541

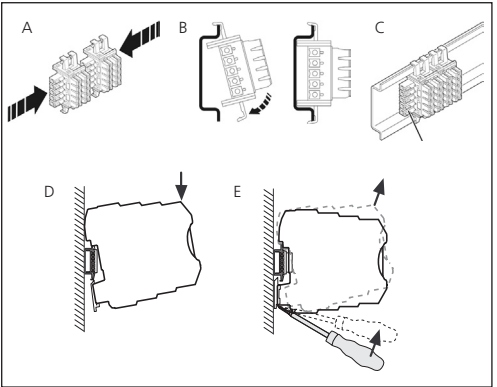
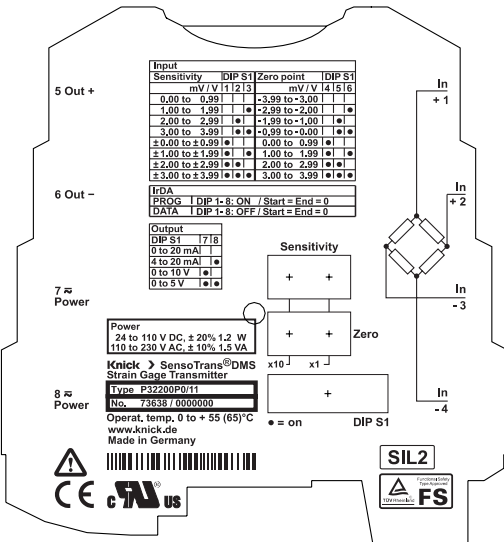


Fig: A Mounting ZU 0628 DIN rail bus connectors in a row
B Snapping the bus connectors onto a DIN rail
C Bus connectors on a DIN rail
D Snapping a transmitter onto a DIN rail
E Removing a transmitter from a DIN rail

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