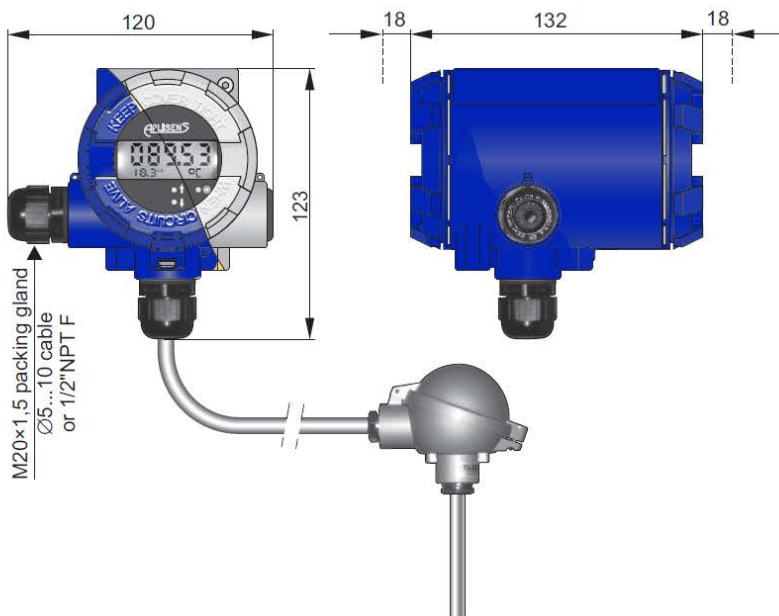


Smart temperature transmitter LI-24ALW



- ✓ Output signal 4...20mA with Hart protocol
- ✓ Galvanic insulation (In, Out)
- ✓ Programmable sensor type
- ✓ Programmable measuring range
- ✓ Thermoresistance line compensation
- ✓ Compensation of thermocouple cold junction
- ✓ Autodiagnostic system
- ✓ Intrinsic safety certificate (ATEX, IECEx)
- ✓ Explosion proof certificate (ATEX, IECEx)
- ✓ Safety version SIL2/SIL3



LI-24ALW with remote mounted temperature sensor



LI-24ALW with direct mounted temperature sensor

Application and function

The temperature transmitter LI-24ALW is applicable to converting resistance of temperature or voltage of thermocouple sensor to standard current signal 4-20mA. The transmitter has two separate channels enabling measurement of temperature difference, average, average with redundancy, max. or min. temperature. Transmitter has compensation of ambient temperature influence and compensation of thermocouple cold junction using internal/external (Pt100) sensor or constant temperature. Most of parameters such as: sensor type, measuring range, current alarm signal when electric circuit is broken, output characteristic correction, user characteristic (60 points) are programmed using PC with HART/USB converter and RAPORT 2 configuration software. Upon request the temperature transmitter parameters like measuring range, type of sensor can be set. Their values are printed on label. Transmitter LI-24/ALW is designed for field use. LI-24ALW can be used with temperature sensors mounted directly in transmitter's casing or with external sensors connected with cable.

Technical data

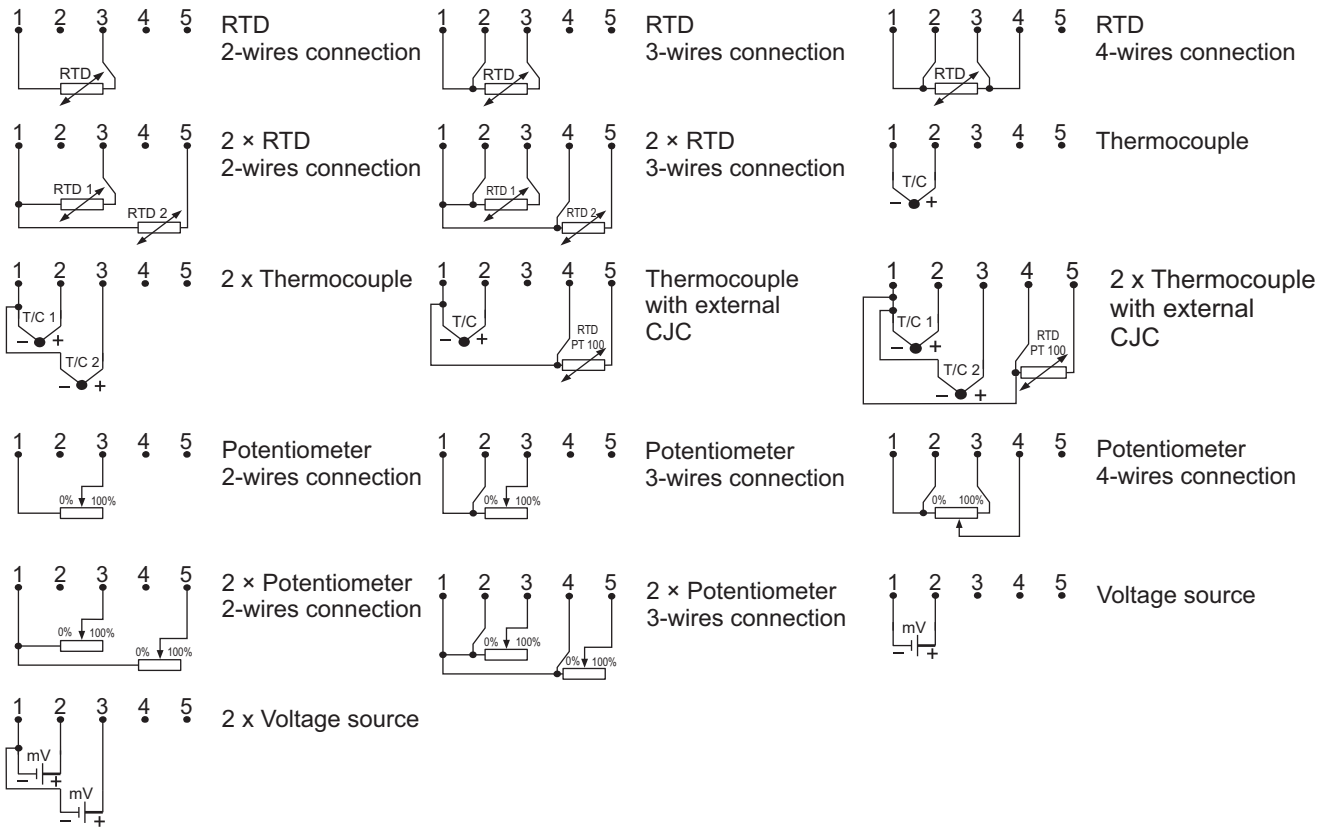
| | |
|-------------------------------|--|
| Input signal | Resistance: Pt100, Ni100 Voltage: K, J, S, B, N, T, R, E |
| Limit process | -10mV < E < 100mV or -100mV < E < 1000mV 0Ω < R < 400Ω or 0Ω < R < 2000Ω |
| Min. measuring range | 10mV or 10Ω or 10K |
| Output signal | 4 - 20 mA + Hart 13,5*...55 VDC Exia: 13,5*...30 VDC Exd: 13,5*...45 VDC |
| Power supply | Safety, Safety Exd: 12,5...36 VDC Safety Exia: 12,5...30 VDC |
| Max. wires resistance | *- with display illumination switched on +3V, display backlight can be switched on only during production 500Ω |
| Alarm signal | 3,75mA / 21,5mA (NORMAL) or 3,6 mA / 21 mA (NAMUR NE89) or setting by user 0,42mA |
| Sensor current | Safety: 0,25mA |
| Galvanic insulation | Optoelectrical |
| Accuracy | acc. to below table |
| Time constant | 0,3s |
| Additional electronic damping | 0..30s |
| Ambient temperature | -40...+176°F Exia: -40...+176°F Exd: -40...+167°F Safety: -40...+185°F Safety Exia, Safety Exd: -40...+167°F |

LI-24ALW/Safety can be programmed only with HART protocol. Local buttons allows only to change display settings.

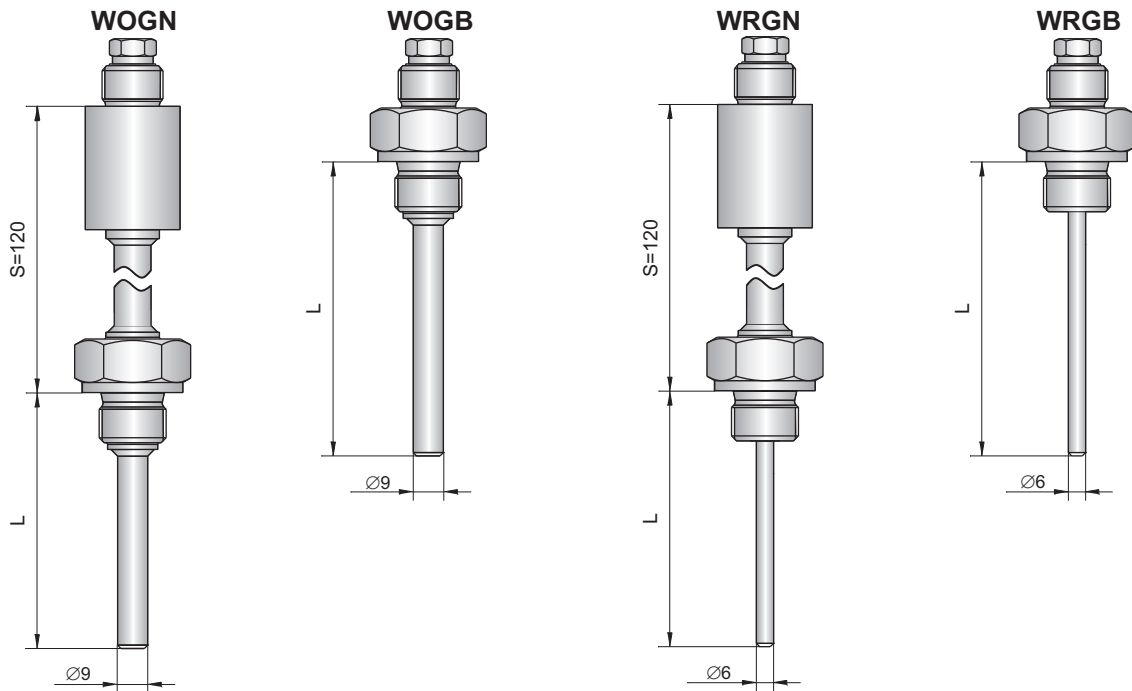
Type of input signals and metrological parameters

| RTD sensors | | | Thermocouples | | |
|---|----------------------------|-----------------|-----------------------------|--|-----------------|
| Thermal resistance sensors | 2, 3 or 4 wires connection | | Input impedance | >10MΩ | |
| Sensor current | ~250 μA | | Maximum wires resistance | 500 Ω (wires + thermocouple) | |
| Maximum wires resistance | 25 Ω | | Cold junctions compensation | Internal sensor, external sensor Pt100, constant value | |
| Sensor type | Basic range (FSO) | Min. range span | Sensor type | Basic range (FSO) | Min. range span |
| | °F | K | | °F | K |
| Pt100 | -328+1562 | 10 | B | 932+3308 | 50 |
| Pt200 | -328+1562 | 10 | E | -238+1832 | 50 |
| Pt500 | -328+1562 | 10 | J | -346+2192 | 50 |
| Pt1000 | -328+511 | 10 | K | -238+2501 | 50 |
| Ni100 | -76+356 | 10 | N | -238+3214 | 50 |
| Cu100 | -58+356 | 10 | R | 122+3214 | 50 |
| | | | S | 122+3214 | 50 |
| | | | T | -238+752 | 50 |
| Resistance (resistor, potentiometer) | | | Czujnik wewnętrzny CJC | -13+167 | - |
| | | | Voltage | | |
| | Ω | Ω | | mV | mV |
| Measuring range No.1 | 0+400 | 10 | Measuring range No.1 | -10+100 | 10 |
| Measuring range No. 2 | 0+2000 | 10 | Measuring range No. 2 | -100+1000 | 10 |

Electrical diagrams



Direct mounted sensors



| Sensor type | Standard dimensions of sensor | | | Sensor material | Available process connection |
|-------------|-------------------------------|--------------------|-------|-----------------|------------------------------|
| | Ø[mm] | L[mm] | S[mm] | | |
| WOGN | 9 | 100, 160, 250, 400 | 120 | 316ss | M20x1,5; G1/2"; 1/2"NPT |
| WOGB | 9 | 100, 160, 250, 400 | - | 316ss | M20x1,5; G1/2"; 1/2"NPT |
| WRGN | 6 | 100, 160, 250, 400 | 120 | 316ss | M20x1,5; G1/2" |
| WRGB | 6 | 100, 160, 250, 400 | - | 316ss | M20x1,5; G1/2" |

WOGN, WOGB - welded sensors; WRGN, WRGB - spring-loaded sensors (to use with additional thermowell)

Ordering code

| Model | Code | Description |
|---------------------------|-------------------------------|--|
| LI-24 | | Smart pressure transmitter |
| Versions | /ALW..... /ALW/Safety..... | With display, output 4-20mA + Hart With display, output 4-20mA + Hart Functional Safety certificate according to PN-EN 61508:2010 parts 1 + 7, PN-EN 61511-1:2017-07 + PN-EN 61511-1:2017/A1:2018-03, PN-EN 62061:2008 + PN-EN 62061:2008/A1:2013-06 + PN-EN 62061:2008/A2:2016-01 |
| Certificates, options* | /SS..... /Exia..... | Stainless steel housing II 2(1)G Ex ia [ia Ga] IIC T4/T5/T6 Gb II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb (with direct sensor) Safety version: II 2(1)G Ex ia [ia Ga] IIC T4 Gb Ex ia [ia Ga] IIC T4/T5/T6 Gb Ex ia IIC T4/T5/T6 Ga/Gb (with direct sensor) IECEX Safety version: Ex ia [ia Ga] IIC T4 Gb |
| | /Exia (Da)..... | II 2(1)G Ex ia [ia Ga] IIC T4 Gb II 1D Ex ia IIC T105°C Da I M1 Ex ia I Ma (with 316ss case) IECEX Ex ia [ia Ga] IIC T4 Gb Ex ia IIC T105°C Da Ex ia I Ma (with 316ss case) |
| | /Exd..... | With remote sensor: II 2(1)G Ex db [ia Ga] IIC T5/T6 Gb II 2(1)D Ex tb [ia Da] IIC T100°C/T85°C Db I M2 Ex db [ia Ma] I Mb (with 316ss case) With direct sensor WO.../WR...: II 2G Ex db IIC T**/T5/T6 Gb II 2D Ex tb IIC T*/T100°C/T85°C Db I M2 Ex db I Mb (with 316ss case) Safety version: II 2G Ex db IIC T**/T5/T6 Gb II 2D Ex tb IIC T*/T100°C/T85°C Db I M2 Ex db I Mb (with 316ss case) With remote sensor: Ex db [ia Ga] IIC T5/T6 Gb Ex tb [ia Da] IIC T100°C/T85°C Db Ex db [ia Ma] I Mb (with 316ss case) With direct sensor WO.../WR...: Ex db IIC T**/T5/T6 Gb Ex tb IIC T*/T100°C/T85°C Db Ex db I Mb (with 316ss case) IECEX Safety version: Ex db IIC T**/T5/T6 Gb Ex tb IIC T*/T100°C/T85°C Db Ex db I Mb (with 316ss case) |
| | /IP67..... /US..... | Protection class IP67 Electrical and sensor connection " NPTF |
| Type of measuring element | /I..... | Type of measuring element according to tables from page IX/7 |
| Measuring set range | /I..... | Measuring range |
| Sensor type (optionally) | /I(none) | Without sensor |
| | /code of direct sensor | Direct mounted sensor according to below table |

Packing gland available on request

| | | |
|--|------------|---|
| Type of sensor | WOGN..... | Sensor with threaded process connection, diameter of sensor 9mm, neck S=120mm, wetted parts 316ss |
| | WOGB..... | Sensor with threaded process connection, diameter of sensor 9mm, 316ss |
| | WRGN..... | Spring loaded sensor with threaded process connection, neck S=120mm, wetted parts 316ss |
| | WRGB..... | Spring loaded sensor with threaded process connection, wetted parts 316ss |
| Special version | /Exia..... | Intrinsic safe version |
| | /Exd..... | Explosion proof version |
| Length of sensor | /L=...mm | Required length of immersion [mm] |
| Neck extension | /S=...mm | Required length of neck [mm] (if different than standard) |
| Process connection | | Thread type |
| Type of measuring element | | Type of measuring element |
| Sensor material | | Sensor material (if different than standard) |
| Connection thread between sensor and transmitter | | Thread between sensor and transmitter |