



# **HART** transparent repeater

# 9106A

- 24 VDC supply via power rail or connectors
- Active and passive mA input
- Active or passive output via the same two terminals
- Splitter function 1 in and 2 out
- SIL2 / SIL3 Full Assessment and certified acc. to IEC 61508































#### Application

- 9106A is a 1- or 2-channel isolated 1:1 repeater.
- The device supplies 2-wire SMART transmitters and can also be used for 2-wire SMART current sources. HART & BRAIN protocols are supported and are transferred bi-directionally.
- 9106A can be mounted in the safe area or in zone 2 / Class I, Division 2, Groups A, B, C, D.
- For duplication/migration purposes, the outputs can be sent to two different DCS/PLC/HMI or any monitoring system.
- In safety applications (SIL loops), the 9106AxBx can be used as a splitter with the following output configuration: • When using 9106AxBx in a SIL2 safety function, channel 1 is used for the safety loop. Channel 2 can be used for any non-safety device. • For higher safety purposes (SIL 3), 9106AxBx can be used as a splitter for SIL 3 loops. Channel 1 and 2 are then connected to the same safety PLC, where channel 2 is used as a redundant diagnostic channel (for more information, consult the FMEDA Report and the Safety Manual).

#### Advanced features

- The detachable displays in the PR 4500 series and the green and red front LEDs indicate operation status for each channel.
- · Monitoring of error events and cable breakage on input via the individual status relay and/or a collective electronic signal via the
- · Suitable for the use in systems up to Performance Level "d" according to ISO-13849.

#### **Technical characteristics**

- High galvanic isolation of 2.6 kVAC.
- Fast response time <5 ms
- · High accuracy better than 0.1%.
- 2-wire transmitter supply >16 V.

#### Mounting

• The devices can be mounted vertically or horizontally without distance between neighbouring units.

# **Applications** Input signals: Output signals: Analog, 4...20 mA Channel 1 2-wire HART Current Status relay signa Rail, supply + Power connection: Channel 2 transmitter Supply +19.2...31.2 VDC HART Same power rail as above

#### Order

| Туре  | Barrier version |     | Unit channels |     | I.S./ Ex approvals                                    |        |  |
|-------|-----------------|-----|---------------|-----|---|--------|--|
| 9106A | Uo = 27.5 V     | :1  |               |     | ATEX, IECEx, FM, :                                    |        |  |
|       | Uo = 25.3 V     | : 2 | Double        | : B | INMETRO, CCC, EAC-Ex, UKEX                            |        |  |
|       |                 |     |               |     | UL913, ATEX, IECEx, FM,<br>INMETRO, CCC, EAC-Ex, UKEX | : -U9  |  |
|       |                 |     |               |     | KCs, ATEX, IECEx, FM,<br>INMETRO, CCC, EAC-Ex, UKEX   | : -KCs |  |

#### Example: 9106A2B

Remember to order short-circuit bridge(s) ST9106-01 when using the 9106 with no load on the output terminals.

| <b>Environmental</b> | Conditions |
|----------------------|------------|
| Environmental        | Conditions |

| Operating temperature   | -20°C to +60°C               |
|-------------------------|------------------------------|
| Storage temperature     | -20°C to +85°C               |
| Calibration temperature | 2028°C                       |
| Relative humidity       | < 95% RH (non-cond.)         |
| Protection degree       | IP20                         |
| Installation in         | Pollution degree 2 & meas. / |
|                         | overvoltage cat. II          |

#### Mechanical specifications

| moonamour opcomounomo         |                     |
|-------------------------------|---------------------|
| Dimensions (HxWxD)            | 109 x 23.5 x 104 mm |
| Dimensions (HxWxD) w/ PR 4500 | 109 x 23.5 x 131 mm |
| Weight approx                 | 250 g               |
| DIN rail type                 |                     |
| Wire size                     |                     |
|                               | stranded wire       |
| Screw terminal torque         | 0.5 Nm              |
| Vibration                     | IEC 60068-2-6       |
| 213.2 Hz                      | ±1 mm               |
| 13.2 100 Hz                   | +0.7 a              |

### **Common specifications**

## Supply

| Supply                           |   |
|----------------------------------|---|
| Supply voltage                   | 19.231.2 VDC                                |
| Fuse                             | 1.25 A SB / 250 VAC                         |
| Max. required power              | $\leq$ 1.1 W / $\leq$ 1.9 W (1 ch. / 2 ch.) |
| Max. power dissipation, 1 / 2 ch | ≤ 0.8 W / ≤ 1.2 W                           |
| Isolation voltage                |   |
| Test /working: Input to any      | 2.6 kVAC / 300 VAC reinforced isolation     |
| Analog output to supply          |   |
|                                  | isolation                                   |

Status relay to supply...... 1.5 kVAC / 150 VAC reinforced

|                                    | isolation                        |
|------------------------------------|----------------------------------|
| Response time                      |                                  |
| Response time (090%, 10010%)       | < 5 ms                           |
| Programming                        | PR 4500 communication interfaces |
| Signal dynamics, input             | Analog signal chain              |
| Signal dynamics, output            | Analog signal chain              |
| SMART bi-directional communication |                                  |
| frequency range                    | 0.57.5 kHz                       |
| Signal / noise ratio               | > 60 dB                          |
| Accuracy                           | Better than 0.1% of sel. range   |
| mA, absolute accuracy              | ≤ ±16 µA                         |
| mA, temperature coefficient        | ≤ ±1.6 µA / °C                   |
| Effect of supply voltage change    |                                  |
| on output (nom. 24 VDC)            | < ±10 µA                         |
| EMC immunity influence             | < ±0.5% of span                  |

# Input specifications

| •   |               |
|---|---------------|
| Current input                             |               |
| Measurement range                         | 3.523 mA      |
| 2-wire transmitter supply 9106A1x         | >16 V / 20 mA |
| 2-wire transmitter supply 9106A2x         | >15 V / 20 mA |
| Sensor error detection: Loop break 420 mA | < 1 mA        |
| Input voltage drop, supplied unit         | < 4 V @ 23 mA |
| Input voltage drop, non-supplied          | 21/202        |

# **Output specifications**

#### **Current output**

| Signal range            | 3.523 mA                            |
|-------------------------|-------------------------------------|
| Load (@ current output) | ≤ 600 Ω                             |
| Load stability          | $\leq$ 0.01% of span / 100 $\Omega$ |
| Current limit           | ≤ 28 mA                             |

## Passive 2-wire mA output

| Effect of external 2-wire  |                      |
|----------------------------|----------------------|
| supply voltage variation   | < 0.005% of span / V |
| May external 2-wire supply | 26 VDC               |

#### Status relay Relay function.

| relay full cuoi i                     | IV.O.                             |
|---------------------------------------|-----------------------------------|
| Programmable low setpoint             | 029.9 mA                          |
| Programmable high setpoint            | 029.9 mA                          |
| Hysteresis for setpoints              | 0.1 mA                            |
| Max. voltage                          | 125 VAC / 110 VDC                 |
| Max. current                          | 0.5 AAC / 0.3 ADC                 |
| Max. voltage - hazardous installation | 32 VDC / 32 VAC                   |
| Max. current - hazardous installation | 1 ADC / 0.5 AAC                   |
| of span                               | = normal measurement range 420 mA |
|                                       |                                   |

# Observed authority requirements

| EMC     | 2014/30/EU & UK SI 2016/1091 |
|---------|------------------------------|
| LVD     |                              |
| ATEX    | 2014/34/EU & UK SI 2016/1107 |
| RoHS    | 2011/65/EU & UK SI 2012/3032 |
| EAC     | TR-CU 020/2011               |
| EAC LVD | TR-CU 004/2011               |
| EAC Ex  | TR-CU 012/2011               |

| Α | p | p | r | O' | V | а | ls |
|---|---|---|---|----|---|---|----|
|   |   |   |   |    |   |   |    |

| ATEX                | DEKRA 11ATEX0244 X                |
|---------------------|-----------------------------------|
| IECEx               | DEK 11.0084X                      |
| UKEX                | DEKRA 21UKEX0171X                 |
| c FM us             | FM16US0465X /<br>FM16CA0213X      |
| INMETRO             | DEKRA 23.0003X                    |
| c UL us, UL 61010-1 | E314307                           |
| c UL us, UL 913     | E233311 (only 9106xxx-U9)         |
| CCC                 | 2020322309003231                  |
| KCs                 | 21_AV4BO_0169X (only 9106Axx-KCs) |
| EAC Ex              | RU C-DK.HA65.B.00355/19           |
| DNV Marine          | TAA00000JD                        |
| ClassNK             | TA24034M                          |
| SIL                 | SIL 2 / SIL 3 certified & fully   |
|                     | assessed acc. to IEC 61508        |