



## 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 power rail.
- Suitable for the use in systems up to Performance Level "d" according to ISO-13849.

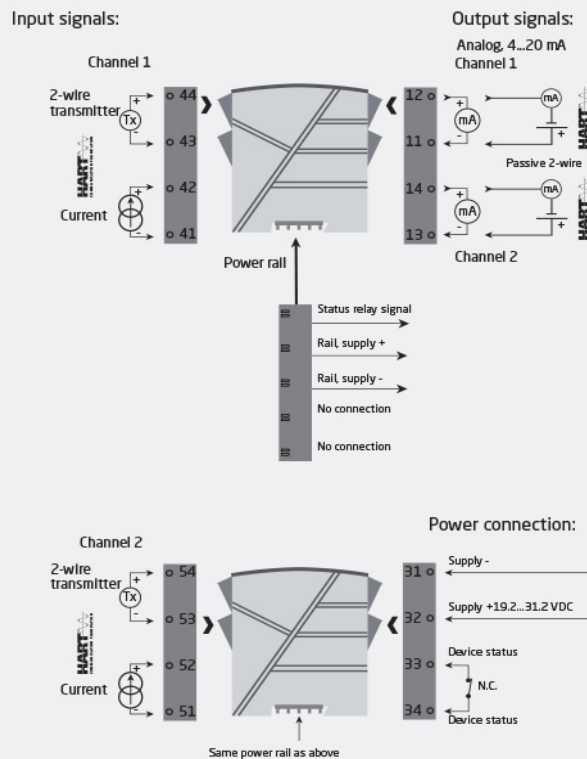
## Technical characteristics

- 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



## Order

| Type         | Barrier version             | Unit channels | I.S. / Ex approvals              |
|--------------|-----------------------------|---------------|----------------------------------|
| <b>9106A</b> | U <sub>o</sub> = 27.5 V : 1 | Single : A    | ATEX, IECEx, FM, : -             |
|              | U <sub>o</sub> = 25.3 V : 2 | Double : B    | INMETRO, CCC, EAC-Ex, UKEX : -U9 |
|              |                             |               | UL913, ATEX, IECEx, FM, : -KC5   |
|              |                             |               | INMETRO, CCC, EAC-Ex, UKEX       |

### Example: 9106A2B

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

## Environmental Conditions

|                              |                                                  |
|------------------------------|--------------------------------------------------|
| Operating temperature.....   | -20°C to +60°C                                   |
| Storage temperature.....     | -20°C to +85°C                                   |
| Calibration temperature..... | 20...28°C                                        |
| Relative humidity.....       | < 95% RH (non-cond.)                             |
| Protection degree.....       | IP20                                             |
| Installation in.....         | Pollution degree 2 & meas. / overvoltage cat. II |

## Mechanical specifications

|                                    |                                                       |
|------------------------------------|-------------------------------------------------------|
| 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.....                 | DIN EN 60715/35 mm                                    |
| Wire size.....                     | 0.13...2.08 mm <sup>2</sup> AWG 26...14 stranded wire |
| Screw terminal torque.....         | 0.5 Nm                                                |
| Vibration.....                     | IEC 60068-2-6                                         |
| 2...13.2 Hz.....                   | ±1 mm                                                 |
| 13.2...100 Hz.....                 | ±0.7 g                                                |

## Common specifications

### Supply

|                                       |                                   |
|---------------------------------------|-----------------------------------|
| Supply voltage.....                   | 19.2...31.2 VDC                   |
| Fuse.....                             | 1.25 A SB / 250 VAC               |
| Max. required power.....              | ≤ 1.1 W / ≤ 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.....     | 2.6 kVAC / 300 VAC reinforced isolation |
| Status relay to supply.....      | 1.5 kVAC / 150 VAC reinforced isolation |

### Response time

|                                                              |                                  |
|--------------------------------------------------------------|----------------------------------|
| Response time (0...90%, 100...10%).....                      | < 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.....      | 0.5...7.5 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                  |
| Extended EMC immunity: NAMUR NE21, A criterion, burst.....   | < ±1% of span                    |

## Input specifications

### Current input

|                                                   |               |
|---------------------------------------------------|---------------|
| Measurement range.....                            | 3.5...23 mA   |
| 2-wire transmitter supply 9106A1x.....            | >16 V / 20 mA |
| 2-wire transmitter supply 9106A2x.....            | >15 V / 20 mA |
| Sensor error detection: Loop break 4...20 mA..... | < 1 mA        |
| Input voltage drop, supplied unit.....            | < 4 V @ 23 mA |
| Input voltage drop, non-supplied unit.....        | < 6 V @ 23 mA |

## Output specifications

### Current output

|                              |                         |
|------------------------------|-------------------------|
| Signal range.....            | 3.5...23 mA             |
| Load (@ current output)..... | ≤ 600 Ω                 |
| Load stability.....          | ≤ 0.01% of span / 100 Ω |
| Current limit.....           | ≤ 28 mA                 |

### Passive 2-wire mA output

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

### Status relay

|                                            |                                      |
|--------------------------------------------|--------------------------------------|
| Relay function.....                        | N.C.                                 |
| Programmable low setpoint.....             | 0...29.9 mA                          |
| Programmable high setpoint.....            | 0...29.9 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 4...20 mA |

## Observed authority requirements

|              |                              |
|--------------|------------------------------|
| EMC.....     | 2014/30/EU & UK SI 2016/1091 |
| LVD.....     | 2014/35/EU & UK SI 2016/1101 |
| 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               |

## Approvals

|                          |                                                               |
|--------------------------|---------------------------------------------------------------|
| 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<br>9106Axx-KCs)                          |
| EAC Ex.....              | RU C-DK.HA65.B.00355/19                                       |
| DNV Marine.....          | TAA00000JD                                                    |
| ClassNK.....             | TA24034M                                                      |
| SIL.....                 | SIL 2 / SIL 3 certified & fully<br>assessed acc. to IEC 61508 |