

Повторители тока 9106А, 9107А

Технические характеристики

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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.
- Failure rates for 9106A correspond to Performance Level "d" according to ISO-13849.

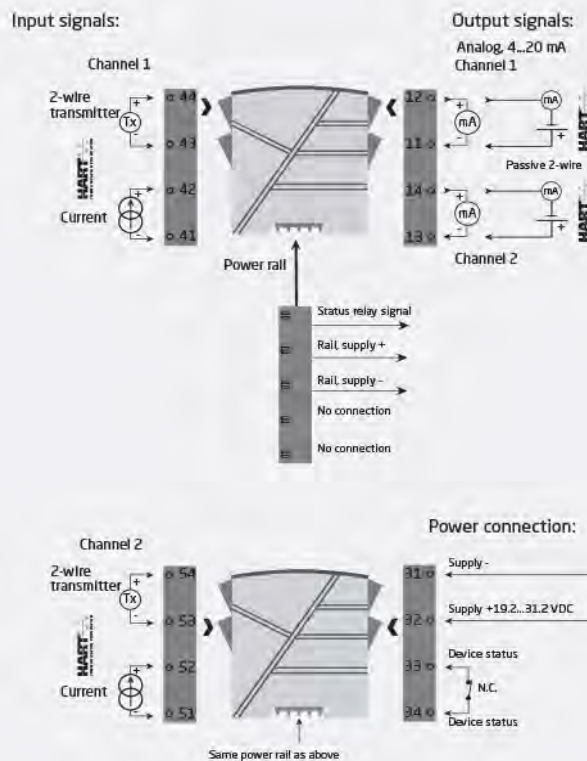
Technical characteristics

- 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
9106A	U ₀ = 27.5 V : 1	Single : A	ATEX, IECEx, FM, : -
	U ₀ = 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 ² 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 / 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.....	EAEU KZ 7500361.01.01.08756
DNV Marine.....	TAA00000JD
ClassNK.....	TA24034M
SIL.....	SIL 2 / SIL 3 certified & fully assessed acc. to IEC 61508



HART transparent driver

9107A

- 24 VDC supply via power rail or connectors
- Fast response time
- High active output load 725 Ohm / 20 mA
- Output line fault detection via status relay
- SIL2 certified via Full Assessment according to IEC 61508



Application

- 9107A is a 1- or 2-channel isolated 1:1 driver.
- Operation and drive control of I/P converters, valves and indicators.
- Operation of HART devices is possible as the unit transmits HART communication signals bi-directionally.
- 9107A can be mounted in the safe area or in zone 2 / Class I, Division 2, Groups A, B, C, D.
- The PR 4500 displays the process value for each channel and can be used to define high and low limits for detection of loop current level. If these limits are exceeded, the status relay will activate.
- Dual channel versions can be used for signal splitter applications - 1 in and 2 out.

Advanced features

- The PR 4500 detachable displays and the green and red front LEDs indicate operation status for each channel.
- A tag number can be defined for each channel.
- Output line fault detection.
- In the 1-channel version the status relay can be used as a simple limit switch.
- Failure rates for 9107 correspond to Performance Level "d" according to ISO-13849.

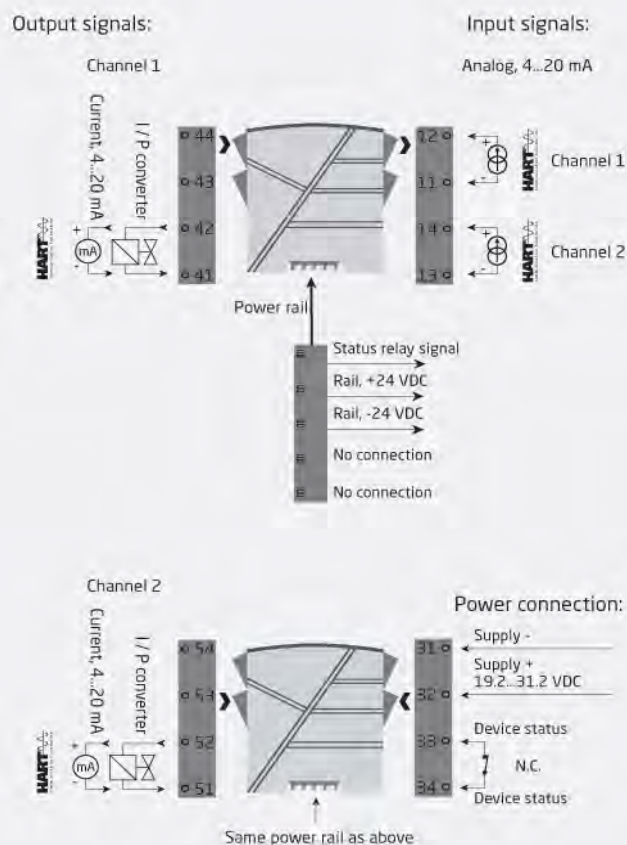
Technical characteristics

- High galvanic isolation of 2.6 kVAC.
- High accuracy better than 0.1%.
- Continuous check of vital stored data for safety reasons.

Mounting

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

Applications



Order

Type	Unit channels	I.S. / Ex approvals
9107A	Single : A	ATEX, IECEx, FM, : -
	Double : B	INMETRO, CCC, EAC-Ex, UKEX : -U9
		UL 913, ATEX, IECEx, FM, : -KC5
		INMETRO, CCC, EAC-Ex, UKEX

Example: 9107AB**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 ² 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.....	≤ 1.0 W / ≤ 1.8 W (1 ch. / 2 ch.)
Max. power dissipation, 1 / 2 ch.....	≤ 1.0 W / ≤ 1.8 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
HART 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
Sensor error detection: Loop break 4...20 mA.....	< 1 mA
Input voltage drop, supplied unit.....	< 2 V @ 23 mA
Input voltage drop, non-supplied unit.....	< 4 V @ 23 mA

Output specifications

Current output	
Signal range.....	3.5...23 mA
Load (@ current output).....	≤ 725 Ω
Load stability.....	≤ 0.01% of span / 100 Ω
Current limit.....	≤ 28 mA
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 Ex.....	TR-CU 012/2011
EAC LVD.....	TR-CU 004/2011

Approvals

ATEX.....	DEKRA 11ATEX0247 X
IECEx.....	DEK 11.0088X
UKEX.....	DEKRA 21UKEX0173X
c FM us.....	FM16US0465X / FM16CA0213X
INMETRO.....	DEKRA 23.0004X
c UL us, UL 61010-1.....	E314307
c UL us, UL 913.....	E233311 (only 9107xx-U9)
CCC.....	2020322304003422
KCs.....	21_AV4BO_0172X (only 9107Ax-KCs)
EAC Ex.....	EAEU KZ 7500361.01.01.08756
DNV Marine.....	TAA00000JD
ClassNK.....	TA24034M
SIL.....	SIL 2 certified & fully assessed acc. to IEC 61508

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