PERFORMANCE MADE SMARTER

HART transparent repeater

9106B

- 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
- SIL3 Full Assessment and certified acc. to IEC 61508

Application

- 9106B is a 1- or 2-channel isolated 1:1 repeater barrier for intrinsic safety applications.
- 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.
- 9106B can be mounted in the safe area or in zone 2 / Cl. 1, div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including mining / Class I/II/III, Div. 1, Gr. A-G.
- 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 9106BxBx can be used as a splitter with the following output configuration: • When using 9106BxBx 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), 9106BxBx 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 PR 4500 detachable display 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.

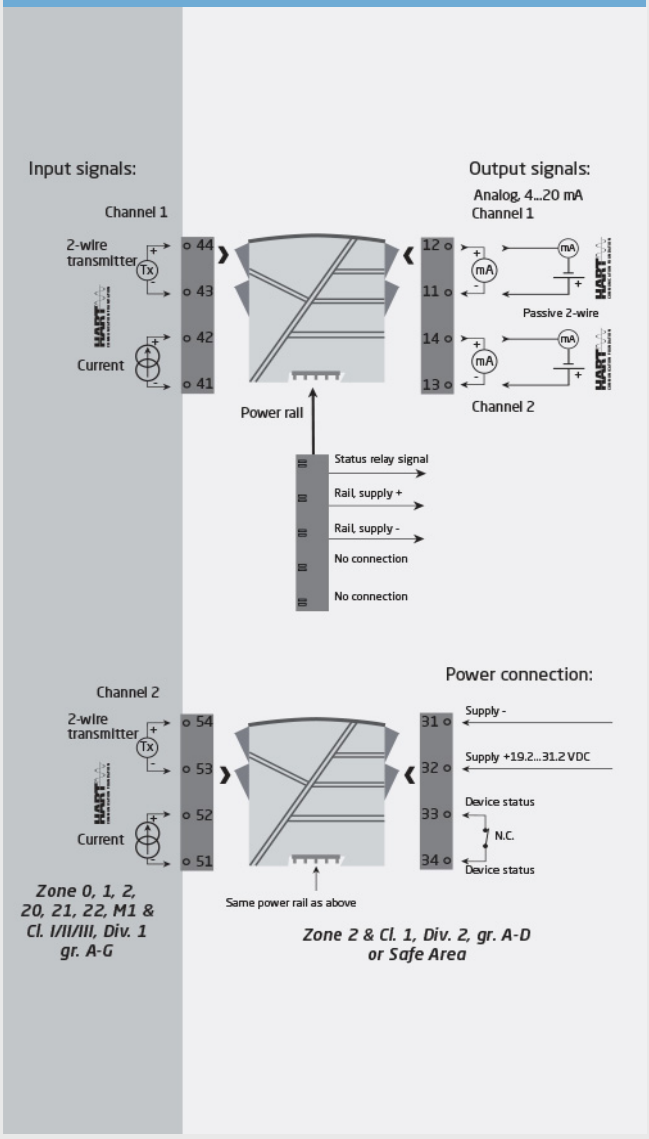
Technical characteristics

- 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 neighboring units.

Applications



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Order

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

Example: 9106B2B

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 9106B1x (Uo = 27.5 VDC)	>16 V / 20 mA
2-wire transmitter supply 9106B2x (Uo = 25.3 VDC)	>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 Ex	TR-CU 012/2011
EAC LVD	TR-CU 004/2011

Approvals

ATEX	DEKRA 11ATEX0244 X
IECEx	DEK 11.0084X
UKEX	DEKRA 21UKEX0171X
UKEX	DEKRA 23UKEX0107X
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_0167X / 21_AV4BO_0168X (only 9106Bxx-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