Signal conditioning *& Communication*

Product catalog

PERFORMANCE MADE SMARTER

TEMPERATURE | I.S. INTERFACES | COMMUNICATION INTERFACES | MULTIFUNCTIONAL | ISOLATION | DISPLAY

PR electronics

Intrinsically safe isolation barriers and backplanes with full SIL assessment

We deliver the safest signals by validating our products against the toughest safety standards. Through our commitment to innovation, we have made pioneering achievements in developing I.S. interfaces with full SIL assessment that are both efficient and cost-effective.

Our comprehensive range of analog and digital intrinsically safe isolation barriers offers multifunctional inputs and outputs, making PR an easy-to-implement site standard. Our backplanes further simplify large installations and provide seamless integration to standard DCS systems.

I.S. interfaces

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
– SIL2 / SIL3 Full Assessment and certified acc. to IEC 61508

B

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.
- The PR 4501 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.
- In the 1-channel version the status relay can be used as a simple limit switch.
- I.S. splitter application - 1 input and 2 outputs.
- In the dual channel version the 9106B can be implemented in a SIL3 loop.

Advanced features

- The PR 4501 detachable display and the green and red front LEDs indicate operation status for each channel.
- A tag number can be defined 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.

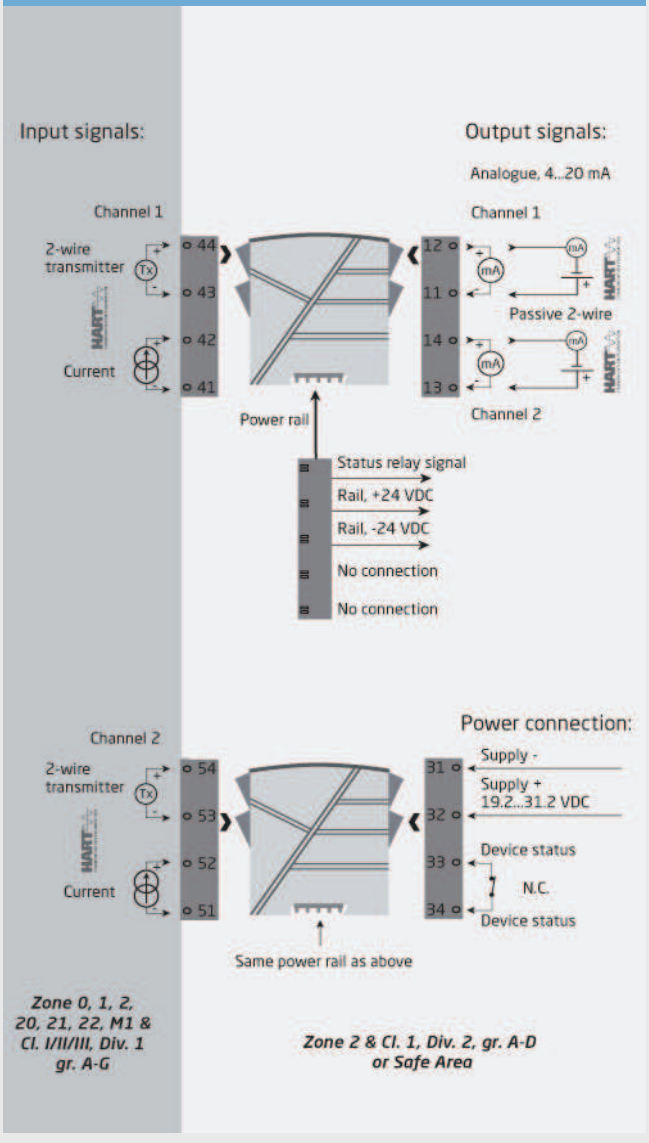
Technical characteristics

- 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.

Connections



Order:

Type	Barrier version		Unit channels	
9106B	Uo = 28 V	: 1	Single	: A
	Uo = 25.6 V	: 2	Double	: B

Environmental Conditions

Specifications range	-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 & measurement / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD)	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511	109 x 23.5 x 116 / 131 mm
Weight approx.	250 g
Weight incl. 4501 / 4511 (approx.)	265 g / 350 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

Common specifications

Supply voltage	19.2...31.2 VDC
Fuse	1.25 A SB / 250 VAC
Max. power consumption	≤ 3 W (2 channels)
Max. internal power dissipation	≤ 2 W (2 channels)
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
SMART bi-directional communication frequency range	0.5...7.5 kHz
Signal / noise ratio	> 60 dB
Response time (0...90%, 100...10%)	< 5 ms
Accuracy	Better than 0.1% of selected 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 NE 21, A criterion, burst	< ±1% of span

Input specifications

Current input: Measurement range	3,5...23 mA
2-wire transmitter supply 9106B1x (Uo = 28 VDC)	>16 V / 20 mA
2-wire transmitter supply 9106B2x (Uo = 25.6 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 (max.)	20 mA/600 Ω/12 VDC
Load stability, current output	≤0.01% of span / 100 Ω
Current limit	≤ 28 mA
Effect of external 2-wire supply voltage variation	< 0.005% of span / V
Max. load resistance [Ω]	(Vsupply - 3.5) / 0.023 A
Max. external 2-wire supply	26 VDC
Status relay output terminal 33-34: 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, status relay	110 VDC / 125 VAC
Max. current, status relay	0.3 ADC / 0.5 AAC
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

Approvals

EMC	EN 61326-1
LVD	EN 61010-1
ATEX	DEKRA 11ATEX0244 X
IECEx	DEK 11.0084X
FM	0003044327-C
INMETRO	NCC 12.1302 X
UL	UL 61010-1
GOST R	Yes
GOST Ex	Yes
DNV Marine	Stand. f. Certific. No. 2.4
SIL	SIL 2 certified & fully assessed acc. to IEC 61508

B

HART® transparent driver

9107B

– 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

B

Application

- 9107B is a 1- or 2-channel isolated 1:1 driver barrier for intrinsic safety applications.
- Operation and drive control of I/P converters, valves and indicators mounted in the hazardous area.
- Operation of HART® devices is possible as the unit transmits HART® communication signals bi-directionally.
- 9107B can be mounted in the safe area or in zone 2 / Cl. 1, div. 2 and transmit signals to zone 0, 1, 2 and zone 20, 21, 22 including mining / Class I/II/III, Div. 1, Gr. A-G.
- The PR 4501 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 4501 detachable display 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.

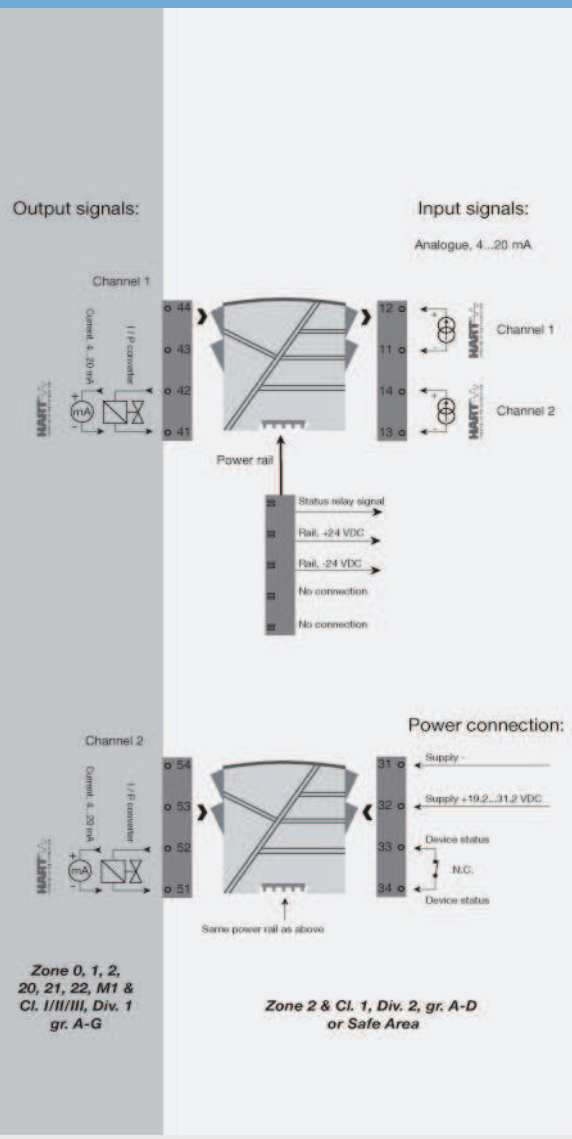
Technical characteristics

- 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.

Connections



Order:

Type	Unit channels
9107B	Single : A Double : B

Environmental Conditions

Specifications range	-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 & measurement / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD)	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511	109 x 23.5 x 116 / 131 mm
Weight approx.	250 g
Weight incl. 4501 / 4511 (approx.)	265 g / 350 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

Common specifications

Supply voltage	19.2...31.2 VDC
Fuse	1.25 A SB / 250 VAC
Max. power consumption	≤ 2 W (2 channels)
Max. internal power dissipation	≤ 2 W (2 channels)
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
HART bi-directional communication frequency range	0.5...7.5 kHz
Signal / noise ratio	> 60 dB
Response time (0...90%, 100...10%)	< 5 ms
Accuracy	Better than 0.1% of selected 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 NE 21, 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 (max.)	20 mA/725 Ω/14.5 VDC
Load stability, current output	≤0.01% of span / 100 Ω
Current limit	≤ 28 mA
Status relay output terminal 33-34: 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, status relay	110 VDC / 125 VAC
Max. current, status relay	0.3 ADC / 0.5 AAC
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

Approvals

EMC	EN 61326-1
LVD	EN 61010-1
ATEX	DEKRA 11ATEX0247 X
IECEx	DEK 11.0088X
FM	0003044327-C
INMETRO	NCC 12.1300 X
UL	UL 61010-1
GOST R	Yes
GOST Ex	Yes
DNV Marine	Stand. f. Certific. No. 2.4
SIL	SIL 2 certified & fully assessed acc. to IEC 61508

PERFORMANCE MADE SMARTER

Temperature / mA converter

9113B

– Input for RTD, TC and mA
– Active / passive mA output
– 1 or 2 channels
– Can be supplied separately or installed on power rail, PR type 9400
– SIL 2-certified via Full Assessment

B

Advanced features

- Configuration and monitoring by way of detachable display front (PR 4501); process calibration and signal simulation.
- Copying of the configuration from one device to others of the same type via the display front.
- TC inputs can use either the internal CJC or a terminal with a built-in Pt100 sensor (PR 5910Ex, channel 1 / PR 5913Ex, channel 2) for higher accuracy.
- The device automatically detects whether it must supply an active or a passive current signal.
- Advanced monitoring of internal communication and stored data.
- SIL 2 functionality is optional and must be activated in a menu point.

Application

- The device can be mounted in the safe area and in zone 2 / cl. 1 div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including M1 / Class I/II/III, Div. 1, Gr. A-G.
- Conversion and scaling of temperature (Pt, Ni and TC) and active current signals.
- The 9113 has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.

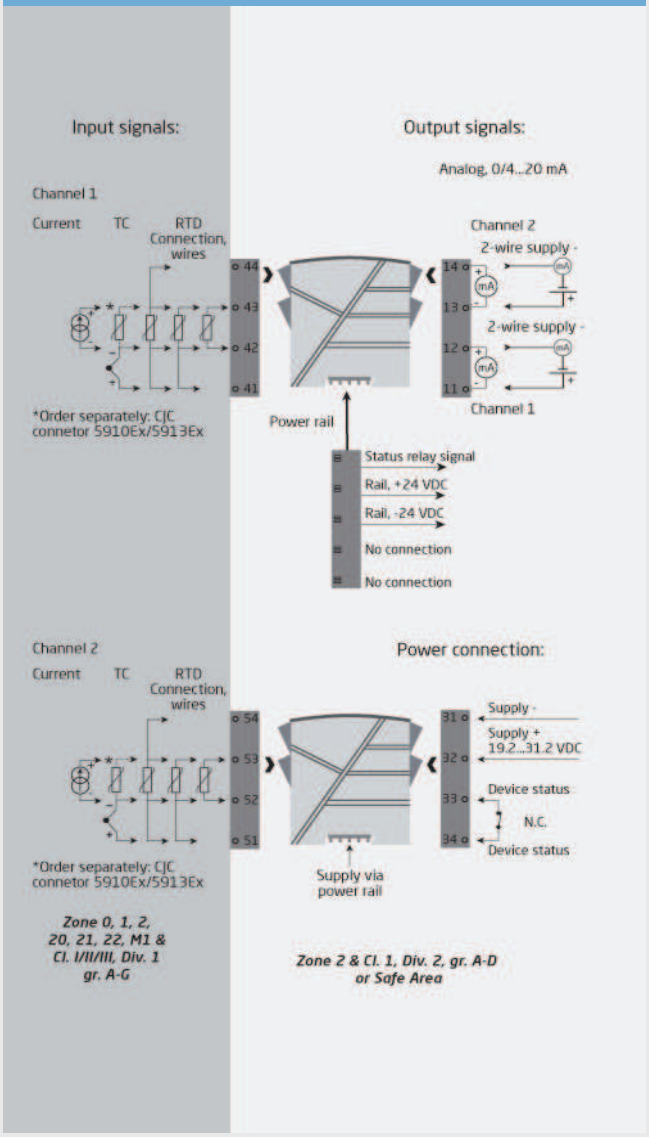
Technical characteristics

- 1 green and 2 red front LEDs indicate operation status and malfunction.
- 2.6 kVAC galvanic isolation between input, output and supply.

Mounting

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

Connections



Order:

Type	Unit channels
9113B	Single : A Double : B

Environmental Conditions

Specifications range..... -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 & measurement / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511..... 109 x 23.5 x 116 / 131 mm
Weight approx..... 250 g
Weight incl. 4501 / 4511 (approx.)..... 265 g / 350 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

Common specifications

Supply voltage..... 19.2...31.2 VDC
Fuse..... 400 mA SB / 250 VAC
Max. power consumption..... ≤ 3.5 W (2 channels)
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
Communications interface..... Communication enabler 4511 / Programming front 4501
Signal / noise ratio..... Min. 60 dB (0...100 kHz)
Average response time incl. delay: Temperature input..... ≤ 1 s
mA input..... ≤ 0.4 s
Accuracy..... Better than 0.1% of selected range
EMC immunity influence..... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1% of span

Input specifications

RTD input..... Pt10, Pt20, Pt50, Pt100, Pt200, Pt250, Pt300, Pt400, Pt500, Pt1000, Ni50, Ni100, Ni120, Ni1000
Cable resistance per wire (max.), RTD..... 50 Ω
Sensor current, RTD..... Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD..... < 0.002 Ω / Ω
Sensor error detection, RTD..... Programmable ON / OFF
TC input: Thermocouple type..... B, E, J, K, L, N, R, S, T, U, W3, W5, LR
Cold junction compensation (CJC) via ext. sensor in connector 5910..... 20...28°C ≤ ±1°C, -20...20°C / 28...70°C ≤ 2°C
CJC via internally mounted sensor..... ±(2.0°C + 0.4°C * Δt)
Δt =..... Internal temperature-ambient temperature
Sensor error detection, TC..... Programmable ON or OFF (only wire breakage)
Sensor error current: When detecting / else..... Nom. 2 µA / 0 µA
Current input: Measurement range..... 0...20 mA
Current input: Programmable measurement ranges..... 0...20 and 4...20 mA
Input resistance, current input..... Nom. 20 Ω + PTC 50 Ω
Sensor error detection, current input..... Programmable ON / OFF

Output specifications

Current output: Signal range..... 0...20 mA
Programmable current ranges..... 0...20 / 4...20 / 20...0 and 20...4 mA
Load (max.)..... 20 mA/600 Ω/12 VDC
Load stability, current output..... ≤0.01% of span / 100 Ω
Sensor error indication, current output..... 0 / 3.5 / 23 mA / none
NAMUR NE 43 Upscale/Downscale..... 23 mA / 3.5 mA
Output limitation, on 4...20 and 20...4 mA signals..... 3.8...20.5 mA
Output limitation, on 0...20 and 20...0 mA signals..... 0...20.5 mA
Current limit..... ≤ 28 mA
2-wire 4…20 mA output: External 2-wire supply range..... 3.5...26 VDC
Signal range..... 4…20 mA
Max. load resistance [Ω]..... (Vsupply - 3.5) / 0.023 A
Load stability, 4…20 mA output..... ≤ 0.01% of span / 100 Ω
Effect of external 2-wire supply voltage variation..... < 0.005% of span / V
Max. voltage, status relay..... 110 VDC / 125 VAC
Max. current, status relay..... 0.3 ADC / 0.5 AAC
Max. AC power, status relay..... 62.5 VA / 32 W
*of span..... = of the currently selected measurement range

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
ATEX..... KEMA 07ATEX0148 X
IECEx..... KEM 09.0052X
FM..... 3038279-C
INMETRO..... NCC 12.1310 X
UL..... UL 61010-1
GOST R..... Yes
GOST Ex..... Yes
DNV Marine..... Stand. f. Certific. No. 2.4
SIL..... SIL 2 certified & fully assessed acc. to IEC 61508

B

Universal converter

9116B

– Input for RTD, TC, Ohm, potentiometer, mA and V
– Supply for 2-wire transmitters
– Active / passive mA output and relay output
– Can be supplied separately or installed on power rail, PR type 9400
– SIL 2-certified via Full Assessment

B

Advanced features

- Configuration and monitoring by way of detachable display front (PR 4501); process calibration, signal and relay simulation.
- Advanced relay configuration, e.g. setpoint, window, delay, sensor error indication and power monitoring.
- Copying of the configuration from one device to others of the same type via PR4501.
- Reduced Uo Ex data < 8.3 V for active input signals.
- TC inputs with internal CJC or external CJC for higher accuracy.
- The device automatically detects whether it must supply an active or a passive current signal.

Application

- 9116B can be mounted in the safe area and in zone 2 / cl. 1 div. 2 and receive signals from zone 0, 1, 2 and zone 20, 21, 22 including M1 / Class I/II/III, Div. 1, Gr. A-G.
- Conversion and scaling of temperature, voltage, potentiometer and linear resistance signals.
- Power supply and signal isolator for 2-wire transmitters.
- Monitoring of error events and cable breakage via the individual status relay and/or a collective electronic signal via the power rail.
- The 9116 has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.

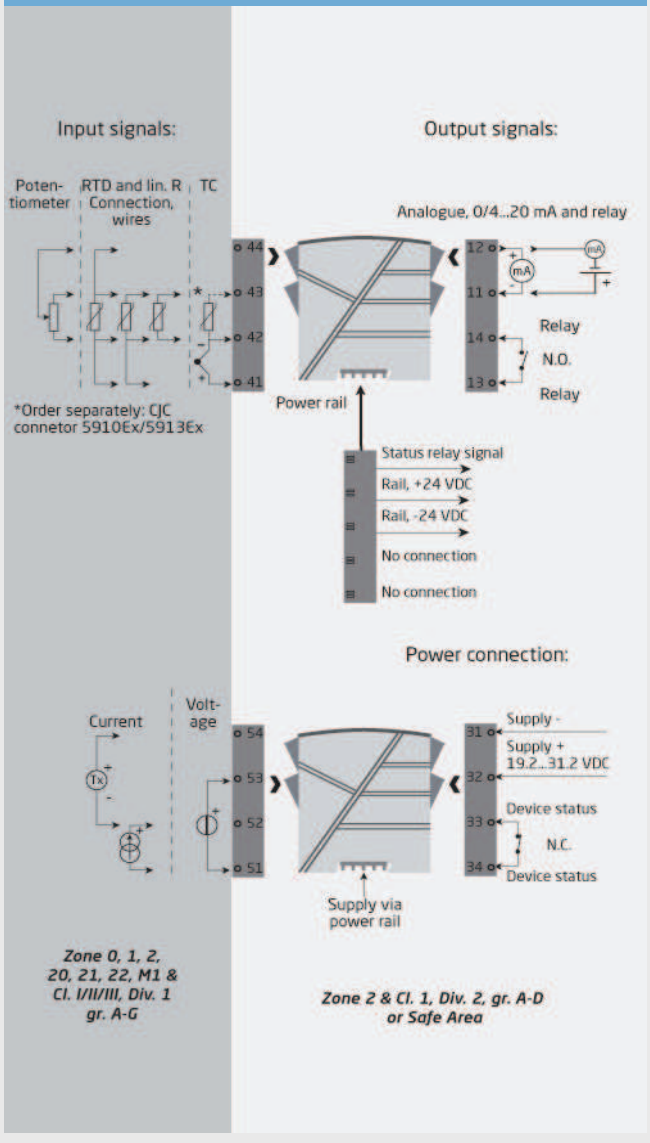
Technical characteristics

- 1 green and 1 red front LED indicate operation status and malfunction. 1 yellow LED indicates relay status.
- 2.6 kVAC galvanic isolation between input, output and supply.

Mounting

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

Connections



Order:

Type	Max. loop voltage	
9116B	Uo 28 VDC	: 1
	Uo 21.4 VDC	: 2

Environmental Conditions

Specifications range	-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 & measurement / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD)	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511	109 x 23.5 x 116 / 131 mm
Weight approx.	185 g
Weight incl. 4501 / 4511 (approx.)	200 g / 285 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

Common specifications

Supply voltage	19.2...31.2 VDC
Fuse	1.25 A SB / 250 VAC
Max. power consumption	≤ 3.5 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
Communications interface	Communication enabler 4511 / Programming front 4501
Signal / noise ratio	Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%): Temperature input (programmable)	1...60 s
mA / V input (programmable)	0.4...60 s
Accuracy	Better than 0.1% of selected range
Auxiliary supplies for 9116B1: 2-wire supply (terminal 54...52)	28...16.5 VDC / 0...20 mA
Auxiliary supplies for 9116B2: 2-wire supply (terminal 54...52)	22...16.5 VDC / 0...20 mA

Input specifications

RTD input	Pt10, Pt20, Pt50, Pt100, Pt200, Pt250, Pt300, Pt400, Pt500, Pt1000, Ni50, Ni100, Ni120, Ni1000
Cable resistance per wire (max.), RTD	50 Ω
Sensor current, RTD	Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD	< 0.002 Ω / Ω
Sensor error detection, RTD	Programmable ON / OFF
Short circuit detection, RTD	Yes
TC input: Thermocouple type	B, E, J, K, L, N, R, S, T, U, W3, W5, LR
Cold junction compensation (CJC) via ext. sensor in connector 5910	20...28°C ≤ ±1°C, -20...20°C / 28...70°C ≤ 2°C
CJC via internally mounted sensor	±(2.0°C + 0.4°C * Δt)
Δt =	Internal temperature-ambient temperature
Sensor error detection, TC	Programmable ON or OFF (only wire breakage)
Current input: Measurement range	0...20 mA
Current input: Programmable measurement ranges	0...20 and 4...20 mA
Input resistance, current input	Nom. 20 Ω + PTC 50 Ω
Sensor error detection, current input	Loop break 4...20 mA
Voltage input: Measurement range	0...10 VDC
Programmable measurement ranges, VDC	0/0.2...1, 0/1...5, 0/2...10 VDC
Input resistance, voltage input	Nom. >10 MΩ

Output specifications

Current output: Signal range	0...20 mA
Programmable current ranges	0...20 / 4...20 / 20...0 and 20...4 mA
Load (max.)	20 mA/600 Ω/12 VDC
Load stability, current output	≤0.01% of span / 100 Ω
Sensor error indication, current output	0 / 3.5 / 23 mA / none
NAMUR NE 43 Upscale/Downscale	23 mA / 3.5 mA
Output limitation, on 4...20 and 20...4 mA signals	3.8...20.5 mA
Output limitation, on 0...20 and 20...0 mA signals	0...20.5 mA
Current limit	≤ 28 mA
2-wire 4…20 mA output: External 2-wire supply range	3.5...26 VDC
Signal range	4…20 mA
Max. load resistance [Ω]	(Vsupply - 3.5) / 0.023 A
Load stability, 4…20 mA output	≤ 0.01% of span / 100 Ω
Effect of external 2-wire supply voltage variation	< 0.005% of span / V
Relay output: Relay functions	Setpoint, Window, Sensor error, Power and Off
Hysteresis, in % of span/display range	0.1...25 / 1...25
ON and OFF delay	0...3600 s
Sensor error reaction	Break / Make / Hold
Max. voltage	250 VAC / 30 VDC
Max. current	2 AAC / 2 ADC
Max. AC power	500 VA / 60 W
Max. voltage, status relay	110 VDC / 125 VAC
Max. current, status relay	0.3 ADC / 0.5 AAC
Max. AC power, status relay	62.5 VA / 32 W
*of span	= of the currently selected measurement range

Approvals

EMC	EN 61326-1
LVD	EN 61010-1
ATEX	KEMA 10ATEX0053 X
IECEx	KEM 10.0022X
FM	3038267-C
INMETRO	NCC 12.1309 X
UL	UL 61010-1
GOST R	Yes
GOST Ex	Yes
DNV Marine	Stand. f. Certific. No. 2.4
SIL	SIL 2 certified & fully assessed acc. to IEC 61508

B

Pulse isolator

9202B

– Interface for NAMUR sensors and switches
– Extended self-diagnostics and detection of cable fault
– 1 or 2 channels
– Can be supplied separately or installed on power rail, PR type 9400
– SIL 2-certified via Full Assessment

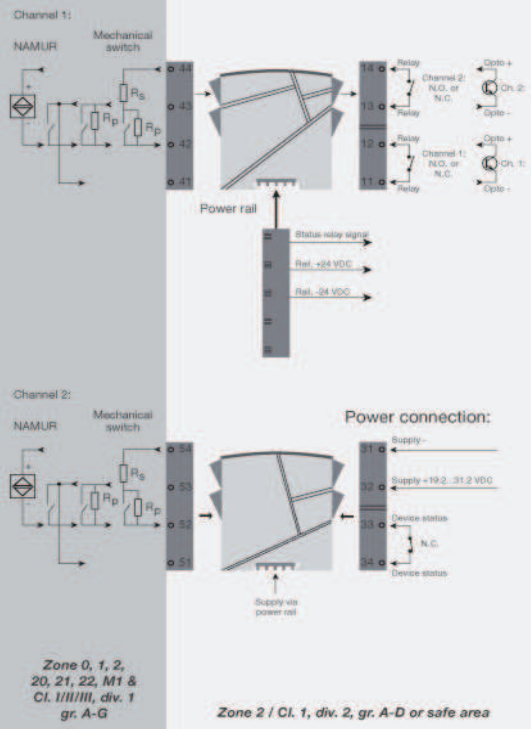
Advanced features
- Configuration and monitoring by way of detachable display front (PR 4501).
- Selection of direct or inverted function for each channel via PR 4501.
- Advanced monitoring of internal communication and stored data.
- Optional redundant supply via power rail and/ or separate supply.
- SIL 2 functionality is optional and must be activated in a menu point.

Application
- 9202B 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.
- Pulse isolator for transmission of signals to the safe area from NAMUR sensors and mechanical switches installed in the hazardous area.
- Monitoring of error events and cable breakage via the individual status relay and/or a collective electronic signal via the power rail.
- The 9202B has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.

Technical characteristics
- 1 green and 2 yellow/red front LEDs indicate operation status and malfunction.
- 2.6 kVAC galvanic isolation between input, output and supply.

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

Connections



Order:

Type	Switch		Channels	
9202B	Opto	: 1	Single	: A
	Relay N.O.	: 2	Double	: B
	Relay N.C.	: 3		

Environmental Conditions

Specifications range	-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 & measurement / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD)	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511	109 x 23.5 x 116 / 131 mm
Weight approx.	170 g
Weight incl. 4501 / 4511 (approx.)	185 g / 270 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 : 2007
Vibration, continuous, IEC 60068-2-64	Test Fh, 1 g, 3...100 Hz

Common specifications

Supply voltage	19.2...31.2 VDC
Fuse	400 mA SB / 250 VAC
Max. power consumption	≤ 3 W (2 channels)
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
Output 1 to output 2	1.5 kVAC / 150 VAC reinforced isolation
Status relay to supply	1.5 kVAC / 150 VAC reinforced isolation
Communications interface	Communication enabler 4511 / Programming front 4501
Response time for cable fault	< 200 ms
Auxiliary supplies: NAMUR supply	8 VDC / 8 mA

Input specifications

Sensor types	NAMUR according to EN 60947-5-6 / mechanical contact
Frequency range	0...5 kHz
Min. pulse length	> 0.1 ms
Input resistance	Nom. 1 kΩ
Trig level, signal	< 1.2 mA, > 2.1 mA
Trig level, cable fault	< 0.1 mA, > 6.5 mA

Output specifications

Relay output: Max. switching frequency	20 Hz
Max. voltage	250 VAC / 30 VDC
Max. current	2 AAC / 2 ADC
Max. AC power	500 VA / 60 W
Max. voltage, status relay	110 VDC / 125 VAC
Max. current, status relay	0.3 ADC / 0.5 AAC
Max. AC power, status relay	62.5 VA / 32 W
Opto, NPN outputs: Max. switching frequency	5 kHz
Min. pulse length, NPN output	> 0.1 ms
Max. load, current / voltage	80 mA / 30 VDC
Voltage drop at 80 mA	< 2.5 VDC

Approvals

EMC	EN 61326-1
LVD	EN 61010-1
ATEX	KEMA 07ATEX0146 X
IECEx	KEM 06.0039X
FM	3034430-C
INMETRO	NCC 12.1307 X
UL	UL 61010-1
GOST R	Yes
GOST Ex	Yes
DNV Marine	Stand. f. Certific. No. 2.4
SIL	SIL 2 certified & fully assessed acc. to IEC 61508

B

PERFORMANCE MADE SMARTER

Solenoid / alarm driver

9203B

– Universal Ex driver for solenoids, acoustic alarms and LEDs
– Extended self-diagnostics
– 1 or 2 channels
– Can be supplied separately or installed on power rail, PR 9400
– SIL 2-certified via Full Assessment

B

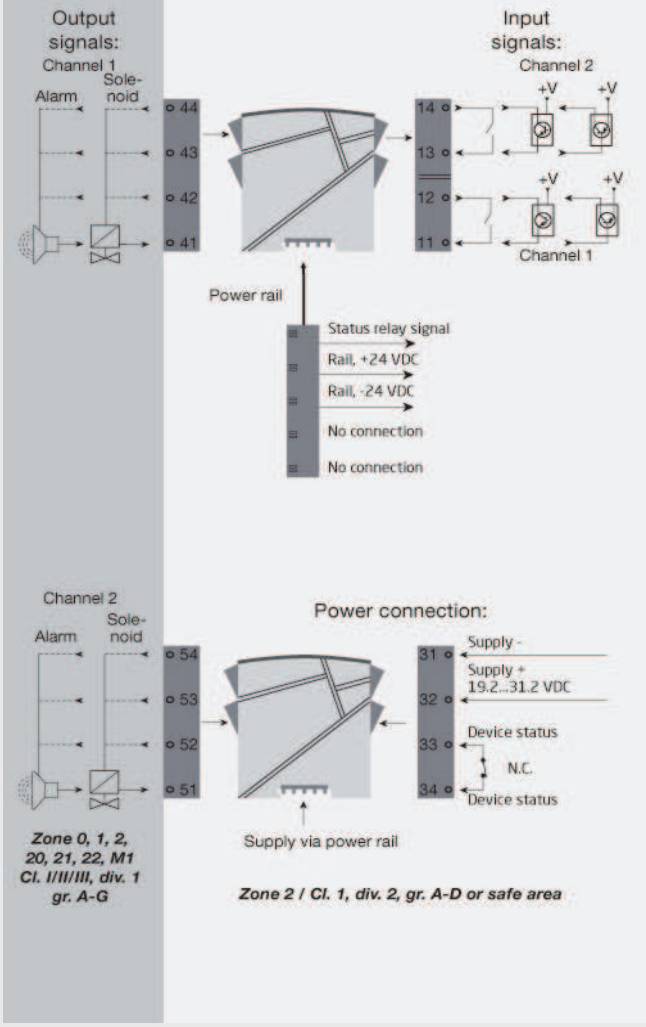
Advanced features
- Universal I.S. driver for the control of solenoids etc. with various I.S. data by way of three built-in I.S. barriers.
- Two hardware versions make it possible to choose either Low (35 mA) or High (60 mA) current output.
- Configuration and monitoring by way of detachable display front (PR 4501).
- Selection of direct or inverted function for each channel via PR 4501 and the possibility of reducing the output current to the hazardous area to suit the application.
- Optional monitoring of the output current to the hazardous area by way of PR 4501.
- Optional redundant supply via power rail and/or separate supply.

Application
- 9203B can be mounted in the safe area or in zone 2 / 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.
- I.S. driver for the control of ON / OFF solenoids, acoustic alarms and LEDs mounted in the hazardous area.
- The 9203B is controlled by an NPN/PNP signal or a switch signal.
- Monitoring of internal error events via the individual status relay and/or a collective electronic signal via the power rail.
- The 9203B has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.

Technical characteristics
- 1 green and 2 yellow/red front LEDs indicate operation status and malfunction.
- 2.6 kVAC galvanic isolation between input, output and supply.

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

Connections



Order:

Type	Ex barrier [Ex ia]		Channels	
9203B	Low current	: 1	Single Double	: A : B
	High current	: 2	Single	: A

Environmental Conditions

Specifications range..... -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 & measurement / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501 / 4511..... 109 x 23.5 x 116 / 131 mm
Weight approx..... 170 g
Weight incl. 4501 / 4511 (approx.)..... 185 g / 270 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

Common specifications

Supply voltage..... 19.2...31.2 VDC
Fuse..... 1.25 A SB / 250 VAC
Max. power consumption..... ≤ 3.5 W (2 channels)
Isolation voltage, test /working:
Input to any..... 2.6 kVAC / 300 VAC reinforced isolation
Output 1 to output 2..... 1.5 kVAC / 150 VAC reinforced isolation
Status relay to supply..... 1.5 kVAC / 150 VAC reinforced isolation
Communications interface..... Communication enabler 4511 / Programming front 4501
EMC immunity influence..... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1% of span

Input specifications

Trig level LOW, NPN+switch..... ≤ 2.0 VDC
Trig level HIGH, NPN+switch..... ≥ 4.0 VDC
Max. external voltage, NPN+switch..... 28 VDC
Input impedance, NPN+switch..... 3.5 kΩ
Trig level LOW, PNP..... ≤ 8.0 VDC
Trig level HIGH, PNP..... ≥ 10.0 VDC
Max. external voltage, PNP..... 28 VDC
Input impedance, PNP..... 3.5 kΩ

Output specifications

Output ripple..... < 40 mVRMS
Max. voltage, status relay..... 110 VDC / 125 VAC
Max. current, status relay..... 0.3 ADC / 0.5 AAC
Max. AC power, status relay..... 62.5 VA / 32 W

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
ATEX..... KEMA 07ATEX0147 X
IECEx..... KEM 09.0001X
FM..... 3035277-C
INMETRO..... NCC 12.1306 X
UL..... UL 61010-1
GOST R..... Yes
GOST Ex..... Yes
DNV Marine..... Stand. f. Certific. No. 2.4
SIL..... SIL 2 certified & fully assessed acc. to IEC 61508

B

System 9000 backplane

7908

- Provides safe, easy wiring between the backplane and non I.S. automation systems using standard prefabricated I/O cables
- Direct, Redundant and Duplicate signalling - including HART I/O
- Robust, compact high-end design solution for 8 system 9000 units
- Digital output and LEDs indicate backplane system status

Application

- The 7908 backplane is a compact and robust solution that enables a safe and easy connection of PR system 9000 IS device signals into standard automation systems.
- Standard automation system cables and connectors are used to link the backplane to the I/O cards.
- The backplane can be used for Direct, Redundant, Duplicate signalling including HART I/O System connectivity (HART MUX).
- The system 9000 devices isolate and convert AI, AO, DI and DO signals coming from, or going to the I.S. classified area, and routes those signals to a system automation I/O card.
- The system 9000 units maintain a SIL2 level of functional safety, even when mounted in the backplane solution.oop.

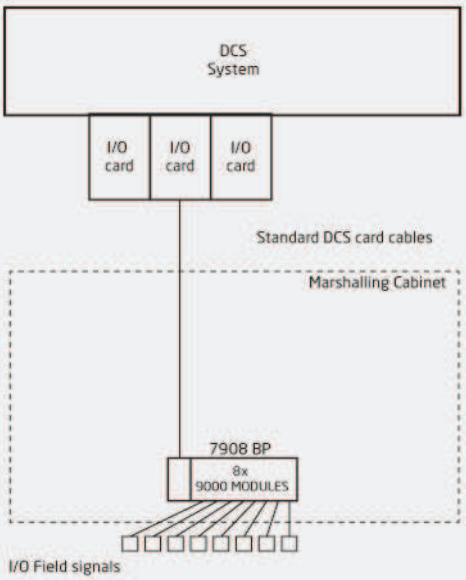
Technical characteristics

- Robust, compact high-end design that holds 8 system 9000 units.
- Digital output indicates status of the 9000 devices and primary/back-up power supplies.
- Flexible 24 VDC supply voltage and redundant power supply connection solution.

Mounting / installation / programming

- Flexible horizontal/vertical panel or wall mounting in the Safe or Zone 2 / Div 2 areas.
- System 9000 devices easily snap ON and OFF using piano keys, and devices can be hot-swapped.
- Tag number and ID labels are easily mounted and read by using the dedicated piano key spacer.
- Wide temperature operation range: -20...+60°C.
- Backplane selection guide can be found at www.prelectronics.com/backplane

Connections



Order:

7908	8 module backplane

Environmental Conditions

Specifications range	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	< 95% RH (non-cond.)
Installation in	Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD)	144 x 247 x 141 mm
Wire size	2.5 mm^2 / AWG 12
Wire size	(Supply 1 / 2 and status relay connectors)

Common specifications

Supply voltage	20...31.2 VDC (24 DC nom.)
Max. power consumption	≤ 30 W
Replaceable fuses	Fuse F1 & F2: 1.6 A SB, 250 V, type TR5
Isolation voltage, test / working	500 VAC / 50 VAC
Isolation voltage, test / working	(Basic isolation between supply 1 & 2 and status relay)

Output specifications

Max. voltage, status relay	32 V (Zone 2 / Div. 2 area)
Max. voltage, status relay	42 V (Safe area)
Max. current, status relay	100 mA (Zone 2 / Div. 2 area)
Max. current, status relay	100 mA (Safe area)

Approvals

EMC	EN 61326-1
UL	UL 508
ATEX	DEKRA 13ATEX0136X
IECEx	DEK 13.0044X
FM	0003049918-C

System 9000 backplane

7916

- Provides safe, easy wiring between the backplane and non I.S. automation systems using standard prefabricated I/O cables
- Direct, Redundant and Duplicate signalling - including HART I/O
- Robust, compact high-end design solution for 16 system 9000 units
- Digital output and LEDs indicate backplane system status

Application

- The 7916 backplane is a compact and robust solution that enables a safe and easy connection of PR system 9000 IS device signals into standard automation systems.
- Standard automation system cables and connectors are used to link the backplane to the I/O cards.
- The backplane can be used for Direct, Redundant, Duplicate signalling including HART I/O System connectivity (HART MUX).
- The system 9000 devices isolate and convert AI, AO, DI and DO signals coming from, or going to the I.S. classified area, and routes those signals to a system automation I/O card.
- The system 9000 units maintain a SIL2 level of functional safety, even when mounted in the backplane solution.oop.

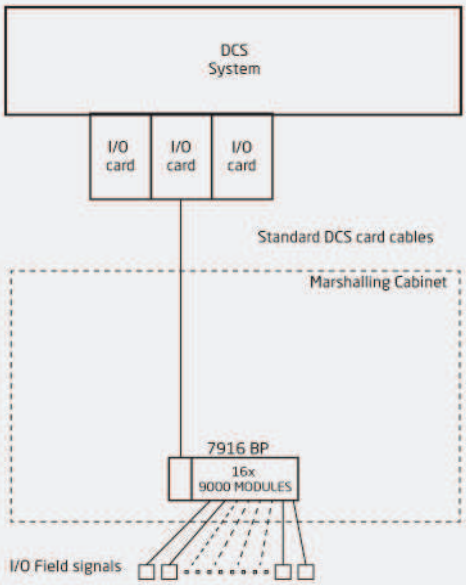
Technical characteristics

- Robust, compact high-end design that holds 16 system 9000 units.
- Digital output indicates status of the 9000 devices and primary/back-up power supplies.
- Flexible 24 VDC supply voltage and redundant power supply connection solution.

Mounting / installation / programming

- Flexible horizontal/vertical panel or wall mounting in the Safe or Zone 2 / Div 2 areas.
- System 9000 devices easily snap ON and OFF using piano keys, and devices can be hot-swapped.
- Tag number and ID labels are easily mounted and read by using the dedicated piano key spacer.
- Wide temperature operation range: -20...+60°C.
- Backplane selection guide can be found at www.prelectronics.com/backplane

Connections



Order:

7916	16 module backplane

Environmental Conditions

Specifications range	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	< 95% RH (non-cond.)
Installation in	Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD)	144 x 443 x 141 mm
Wire size	2.5 mm^2 / AWG 12
Wire size	(Supply 1 / 2 and status relay connectors)

Common specifications

Supply voltage	20...31.2 VDC (24 DC nom.)
Max. power consumption	≤ 60 W
Replaceable fuses	Fuse F1 & F2: 3.15 A SB, 250 V, type TR5
Isolation voltage, test / working	500 VAC / 50 VAC
Isolation voltage, test / working	(Basic isolation between supply 1 & 2 and status relay)

Output specifications

Max. voltage, status relay	32 V (Zone 2 / Div. 2 area)
Max. voltage, status relay	42 V (Safe area)
Max. current, status relay	100 mA (Zone 2 / Div. 2 area)
Max. current, status relay	100 mA (Safe area)

Approvals

EMC	EN 61326-1
UL	UL 508
ATEX	DEKRA 13ATEX0136X
IECEx	DEK 13.0044X
FM	0003049918-C

System 9000 backplane

7932

- Provides safe, easy wiring between the backplane and non I.S. automation systems using standard prefabricated I/O cables
- Direct, Redundant and Duplicate signalling - including HART I/O
- Robust, compact high-end design solution for 32 system 9000 units
- Digital output and LEDs indicate backplane system status

B

Application

- The 7932 backplane is a compact and robust solution that enables a safe and easy connection of PR system 9000 IS device signals into standard automation systems.
- Standard automation system cables and connectors are used to link the backplane to the I/O cards.
- The backplane can be used for Direct, Redundant, Duplicate signalling including HART I/O System connectivity (HART MUX).
- The system 9000 devices isolate and convert AI, AO, DI and DO signals coming from, or going to the I.S. classified area, and routes those signals to a system automation I/O card.
- The system 9000 units maintain a SIL2 level of functional safety, even when mounted in the backplane solution.oop.

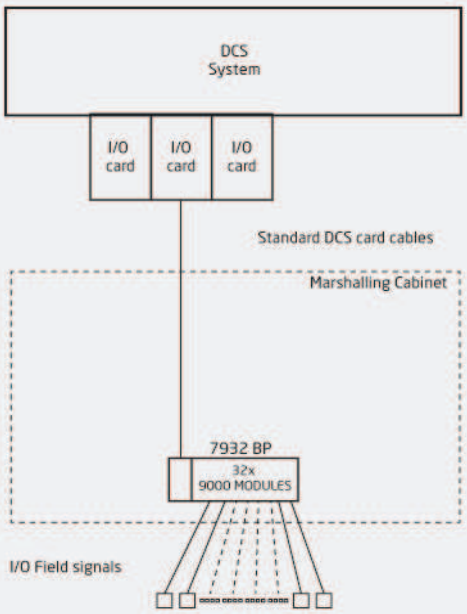
Technical characteristics

- Robust, compact high-end design that holds 32 system 9000 units.
- Digital output indicates status of the 9000 devices and primary/back-up power supplies.
- Flexible 24 VDC supply voltage and redundant power supply connection solution.

Mounting / installation / programming

- Flexible horizontal/vertical panel or wall mounting in the Safe or Zone 2 / Div 2 areas.
- System 9000 devices easily snap ON and OFF using piano keys, and devices can be hot-swapped.
- Tag number and ID labels are easily mounted and read by using the dedicated piano key spacer.
- Wide temperature operation range: -20...+60°C.
- Backplane selection guide can be found at www.prelectronics.com/backplane

Connections



Order:

7932	32 module backplane

Environmental Conditions

Specifications range	-20°C to +60°C
Storage temperature	-40°C to +85°C
Relative humidity	< 95% RH (non-cond.)
Installation in	Pollution degree 2 & measurement / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD)	144 x 835 x 141 mm
Wire size	2.5 mm^2 / AWG 12
Wire size	(Supply 1 / 2 and status relay connectors)

Common specifications

Supply voltage	20...31.2 VDC (24 DC nom.)
Max. power consumption	≤ 120 W
Replaceable fuses	Fuse F1 & F2: 6.2 A SB, 250 V, type TR5
Isolation voltage, test / working	500 VAC / 50 VAC
Isolation voltage, test / working	(Basic isolation between supply 1 & 2 and status relay)

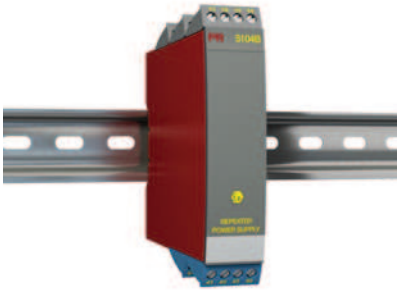
Output specifications

Max. voltage, status relay	32 V (Zone 2 / Div. 2 area)
Max. voltage, status relay	42 V (Safe area)
Max. current, status relay	100 mA (Zone 2 / Div. 2 area)
Max. current, status relay	100 mA (Safe area)

Approvals

EMC	EN 61326-1
UL	UL 508
ATEX	DEKRA 13ATEX0136X
IECEx	DEK 13.0044X
FM	0003049918-C

PERFORMANCE MADE SMARTER



Ex repeater / power supply

5104B

– 1- or 2-channel version
– 3- / 5-port 3.75 kVAC galvanic isolation
– Loop supply > 17.1 V in hazardous area
– 20 programmable measurement ranges
– Universal supply by AC or DC

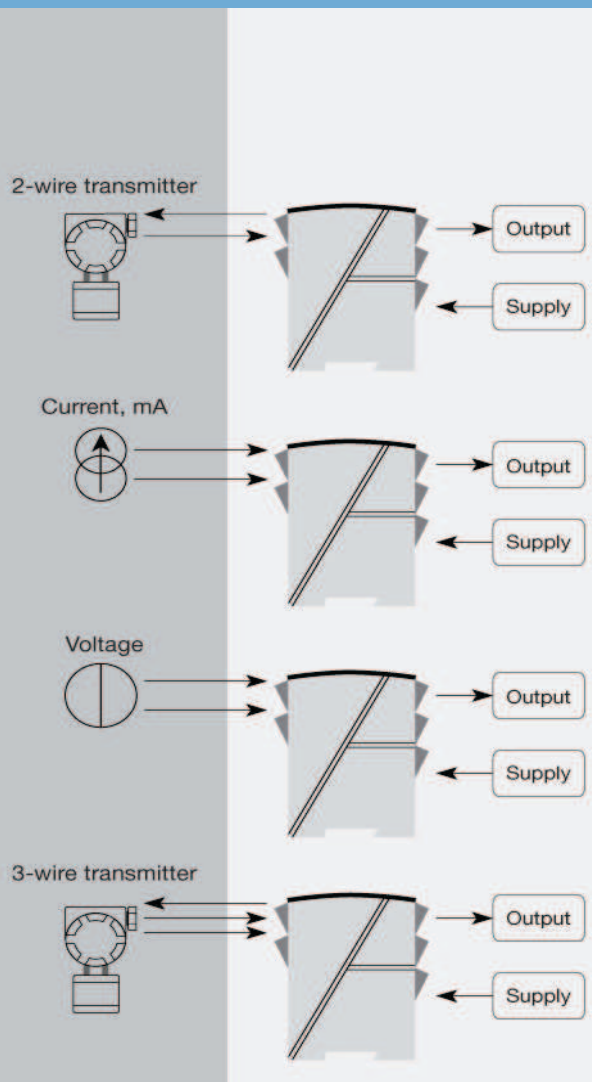
B

Application
- Supply voltage and safety barrier for 2-wire transmitters mounted in a hazardous area.
- Safety barrier for analog current / voltage signals from a hazardous area.
- 1 : 1 or signal conversion of analog current / voltage signals.

Technical characteristics
- The 20 factory-calibrated measurement ranges in the 5104B can be selected by the internal DIP-switches without the need for recalibration. Special measurement ranges can be delivered.
- PR5104B is based on microprocessor technology for gain and offset. The analog signal is transmitted at a response time of less than 25 ms.
- Inputs, outputs, and supply are floating and galvanically separated.
- The output can be connected either as an active current / voltage transmitter or as a 2-wire transmitter.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. By way of the 2-channel version up to 84 channels per meter can be mounted.
- NB: 5104B is recommended as I.S. barrier for 5331D, 5333D, 5334B, 5343B, 6331B, 6333B, and 6334B.

Connections



Order:

Type	Input	Output	Channels
5104B	0...20 mA : A	Special : 0	Single : A
	4...20 mA : B	0...20 mA : 1	Double : B
	0...10 V : E	4...20 mA : 2	
	2...10 V : F	0...1 V : 4	
	Special : X	0.2...1 V : 5	
		0...10 V : 6	
		2...10 V : 7	

Environmental Conditions

Specifications range..... -20°C to +60°C
Calibration temperature..... 20...28°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 130 mm
DIN rail type..... DIN 46277
Weight approx..... 225 g
Wire size..... 1 x 2.5 mm^2 stranded wire
Screw terminal torque..... 0.5 Nm

Common specifications

Supply voltage, universal..... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse..... 400 mA SB / 250 VAC
Max. power consumption..... ≤ 3 W (2 channels)
Internal consumption..... ≤ 2 W (2 channels)
Isolation voltage, test / working..... 3.75 kVAC / 250 VAC
Auxiliary supply: 2-wire supply (pin 44...42 and 54...52)..... 28...17.1 VDC / 0...20 mA
Signal / noise ratio..... Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%)..... < 25 ms
Accuracy..... Better than 0.1% of selected range
EMC immunity influence..... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1% of span

Input specifications

Max. offset..... 20% of max. value
Current input: Measurement range..... 0...20 mA
Min. measurement range (span), current input..... 16 mA
Input resistance, current input..... Nom. 10 Ω + PTC 10 Ω
Voltage input: Measurement range..... 0...10 VDC
Min. measurement range (span), voltage input..... 8 VDC
Input resistance, voltage input..... > 2 MΩ

Output specifications

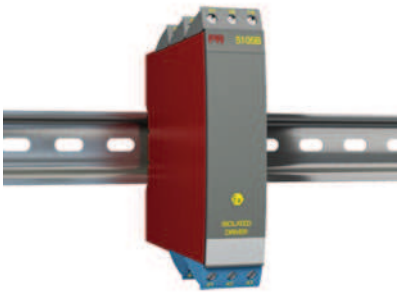
Max. offset..... 20% of max. value
Current output: Signal range..... 0...20 mA
Min. signal range..... 16 mA
Load (max.)..... 20 mA/600 Ω/12 VDC
Load stability, current output..... ≤0.01% of span / 100 Ω
Current limit..... ≤ 28 mA
External loop supply..... 29 VDC
Effect of external 2-wire supply voltage variation..... < 0.005% of span / V
Voltage output: signal range..... 0...1 VDC / 0...10 VDC
Voltage output, min. signal range..... 0.8 VDC / 8 VDC
Load (min.)..... 500 kΩ
*of span..... = of the presently selected range

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
PELV/SELV..... IEC 364-4-41 and EN 60742
ATEX..... DEMKO 99ATEX126013
UL..... UL 913, UL 508
GOST R..... Yes
GOST Ex..... Yes
DNV Marine..... Stand. f. Certific. No. 2.4

B

PERFORMANCE MADE SMARTER



Ex-isolated driver

5105B

- 1- or 2-channel version
- 3- / 5-port 3.75 kVAC galvanic isolation
- Driver for Ex / I.S. area
- 20 programmable measurement ranges
- Universal supply by AC or DC

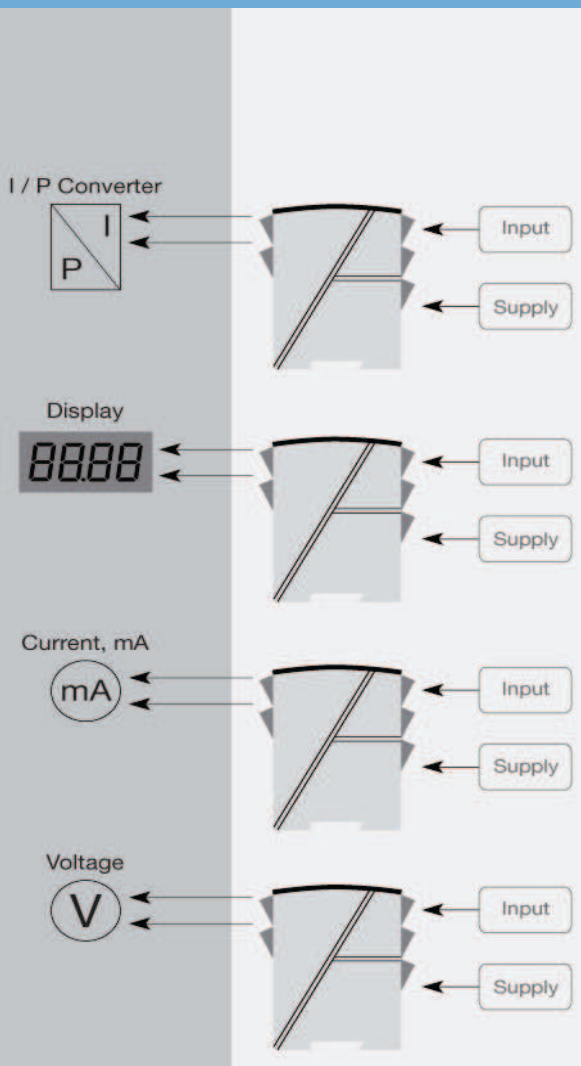
B

Application
- Safety barrier for current signals transmitted to I/P converters and displays mounted in hazardous area.
- Safety barrier for analog current / voltage signals transmitted to hazardous area.
- 1 : 1 or signal conversion of analog current / voltage signals.

Technical characteristics
- The 20 factory-calibrated measurement ranges in the 5105B can be selected by the internal DIP-switches without the need for a recalibration. Special measurement ranges can be delivered.
- PR5105B is based on microprocessor technology for gain and offset. The analog signal is transmitted at a response time of less than 25 ms.
- Inputs, outputs, and supply are floating and galvanically separated.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. By way of the 2-channel version up to 84 channels per meter can be mounted.

Connections



Order:

Type	Input		Output		Channels	
5105B	0...20 mA	: A	Special	: 0	Single	: A
	4...20 mA	: B	0...20 mA	: 1	Double	: B
	0...10 V	: E	4...20 mA	: 2		
	2...10 V	: F	0...1 V	: 4		
	Special	: X	0.2...1 V	: 5		
			0...10 V	: 6		
			2...10 V	: 7		

Environmental Conditions

Specifications range..... -20°C to +60°C
Calibration temperature..... 20...28°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 130 mm
Weight approx..... 225 g
DIN rail type..... DIN 46277
Wire size..... 1 x 2.5 mm^2 stranded wire
Screw terminal torque..... 0.5 Nm

Common specifications

Supply voltage, universal..... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse..... 400 mA SB / 250 VAC
Max. power consumption..... ≤ 2 W (2 channels)
Internal consumption..... ≤ 2 W (2 channels)
Isolation voltage, test / working..... 3.75 kVAC / 250 VAC
Signal / noise ratio..... Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%)..... < 25 ms
Accuracy..... Better than 0.1% of selected range
EMC immunity influence..... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1% of span

Input specifications

Max. offset..... 20% of max. value
Current input: Measurement range..... 0...20 mA
Min. measurement range (span), current input..... 16 mA
Input resistance, current input..... Nom. 10 Ω + PTC 10 Ω
Voltage input: Measurement range..... 0...10 VDC
Min. measurement range (span), voltage input..... 8 VDC
Input resistance, voltage input..... > 2 MΩ

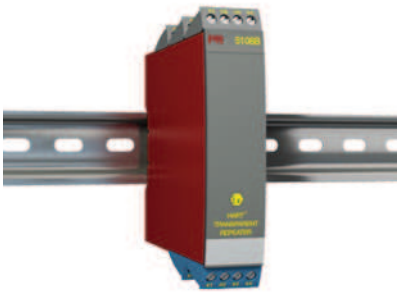
Output specifications

Max. offset..... 20% of max. value
Current output: Signal range..... 0...20 mA
Min. signal range..... 16 mA
Load (max.)..... 20 mA/770 Ω/15.4 VDC
Load stability, current output..... ≤0.01% of span / 100 Ω
Current limit..... ≤ 28 mA
Voltage output: signal range..... 0...1 VDC / 0...10 VDC
Voltage output, min. signal range..... 0.8 VDC / 8 VDC
Load (min.)..... 500 kΩ
*of span..... = of the presently selected range

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
PELV/SELV..... IEC 364-4-41 and EN 60742
ATEX..... DEMKO 99ATEX126014
UL..... UL 913, UL 508
GOST R..... Yes
GOST Ex..... Yes
DNV Marine..... Stand. f. Certific. No. 2.4

B



HART® transparent repeater

5106B

– 3- / 5-port 3.75 kVAC galvanic isolation
– Low response time
– 2-wire supply > 17 V in Ex / I.S. area
– 1- or 2-channel version
– Universal supply by AC or DC

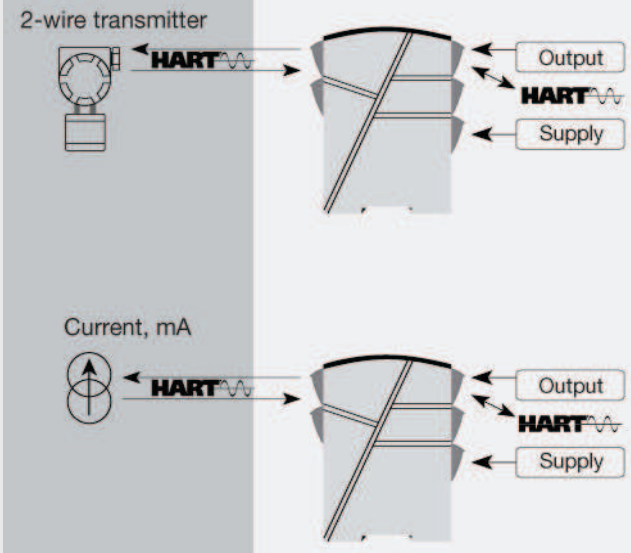
B

Application
- Power supply and Ex / I.S. safety barrier with 2-way HART® communication for 2-wire transmitters installed in the hazardous area.
- Ex / I.S. safety barrier with 2-way HART® communication for supplied current transmitters installed in the hazardous area.
- Signal isolator with low response time on analog current signals from the hazardous area.

Technical characteristics
- PR5106B primarily processes current signals of 4...20 mA.
- PR5106B is based on microprocessor technology for gain and offset. The analog signal is transmitted at a response time of less than 25 ms.
- Inputs, outputs, and supply are floating and galvanically separated.
- The output can be connected either as an active current transmitter or as a 2-wire transmitter.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without distance between neighboring units, up to 84 channels can be mounted per meter.
- PR5106B is recommended as Ex / I.S. safety barrier for 5335D and 6335D.

Connections



Order:

Type	Input	Output	Channels
5106B	4...20 mA : B	4...20 mA : 2 20...4 mA : 9	Single : A Double : B

Environmental Conditions

Specifications range..... -20°C to +60°C
Calibration temperature..... 20...28°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 130 mm
Weight approx..... 245 g
DIN rail type..... DIN 46277
Wire size..... 1 x 2.5 mm^2 stranded wire
Screw terminal torque..... 0.5 Nm

Common specifications

Supply voltage, universal..... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse..... 400 mA SB / 250 VAC
Max. power consumption..... ≤ 3 W (2 channels)
Internal consumption..... ≤ 2 W (2 channels)
Isolation voltage, test / working..... 3.75 kVAC / 250 VAC
Signal / noise ratio..... Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%)..... < 25 ms
Accuracy..... Better than 0.1% of selected range
Effect of supply voltage change..... < ±10 µA
Auxiliary supply: 2-wire supply (pin 44...42 and 54...52)..... 25...17 VDC / 0...20 mA
EMC immunity influence..... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1% of span

Input specifications

Current input: Measurement range..... 4...20 mA
Min. measurement range (span), current input..... 16 mA
Input resistance: Supplied unit..... Nom. 10 Ω
Input resistance: Non-supplied unit..... Rshunt = ∞, Vdrop < 4 V

Output specifications

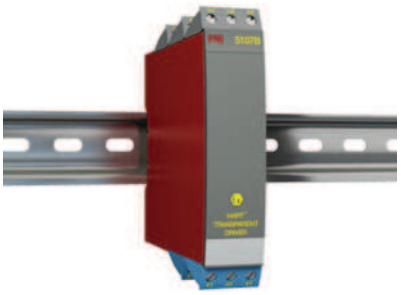
Current output: Signal range..... 4…20 mA
2-wire 4...20 mA output: Signal range..... 4...20 mA
Min. signal range..... 16 mA
Load (max.)..... 20 mA/600 Ω/12 VDC
Load stability, current output..... ≤0.01% of span / 100 Ω
Current limit..... ≤ 28 mA
Max. external 2-wire supply..... 29 VDC
Effect of external 2-wire supply voltage variation..... < 0.005% of span / V
Output ripple..... < 3 mVRMS on HART communication
*of span..... = of the presently selected range

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
PELV/SELV..... IEC 364-4-41 and EN 60742
ATEX..... DEMKO 00ATEX127483
UL..... UL 913, UL 508
GOST R..... Yes
GOST Ex..... Yes

B

PERFORMANCE MADE SMARTER



HART® transparent driver

5107B

– 1- or 2-channel version
– 3- / 5-port 3.75 kVAC galvanic isolation
– < 1.3 V voltage drop on input
– 16 V driving voltage on Ex / I.S. output
– Universal supply by AC or DC

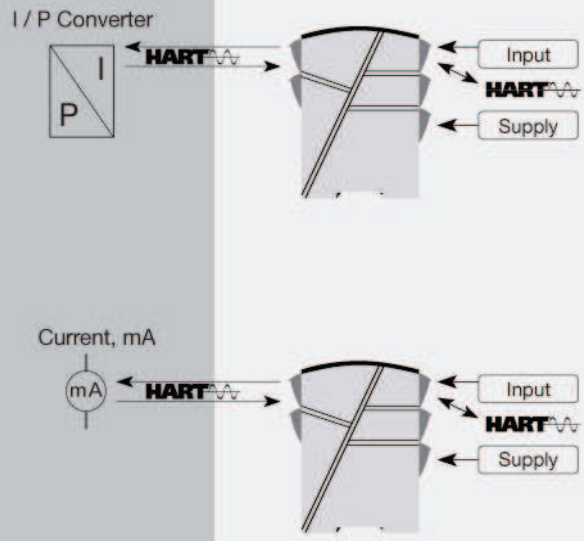
B

Application
- Safety barrier for current signals and 2-way HART® communication transmitted to I/P converters mounted in hazardous area.
- Safety barrier for 2-way HART® communication and analog current signals transmitted to hazardous area.
- Signal isolator with low response time on analog current signals transmitted to hazardous area.

Technical characteristics
- PR's HART® transparent driver primarily processes current signals of 4...20 mA.
- PR5107B is based on microprocessor technology for gain and offset. The analog signal is transmitted at a response time of less than 25 ms.
- Inputs, outputs, and supply are floating and galvanically separated.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without distance between neighboring units, up to 84 channels can be mounted per meter.

Connections



Order:

Type	Input	Output	Channels
5107B	4...20 mA : B	4...20 mA : 2	Single : A
		20...4 mA : 9	Double : B

Environmental Conditions

Specifications range..... -20°C to +60°C
Calibration temperature..... 20...28°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 130 mm
Weight approx..... 260 g
DIN rail type..... DIN 46277
Wire size..... 1 x 2.5 mm^2 stranded wire
Screw terminal torque..... 0.5 Nm

Common specifications

Supply voltage, universal..... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse..... 400 mA SB / 250 VAC
Max. power consumption..... ≤ 2 W (2 channels)
Internal consumption..... ≤ 2 W (2 channels)
Isolation voltage, test / working..... 3.75 kVAC / 250 VAC
Signal / noise ratio..... Min. 60 dB (0...100 kHz)
Accuracy..... Better than 0.1% of selected range
Response time (0...90%, 100...10%)..... < 25 ms
Long-term stability, better than..... ±0.1% of span / Year
Effect of supply voltage change..... < ±10 µA
EMC immunity influence..... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1% of span

Input specifications

Current input: Measurement range..... 4...20 mA
Min. measurement range (span), current input..... 16 mA
Input resistance: Supplied unit..... 10 Ω + PTC, Vdrop < 1.3 V
Input resistance: Non-supplied unit..... Rshunt = ∞, Vdrop < 3.5 V

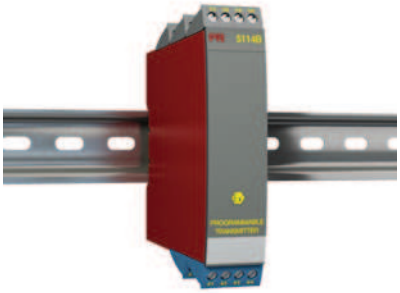
Output specifications

Current output: Signal range..... 4…20 mA
Min. signal range..... 16 mA
Load (max.)..... 20 mA/800 Ω/16 VDC
Load stability, current output..... ≤0.01% of span / 100 Ω
Current limit..... ≤ 28 mA
*of span..... = of the presently selected range

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
PELV/SELV..... IEC 364-4-41 and EN 60742
ATEX..... DEMKO 01ATEX127484
UL..... UL 913, UL 508
GOST R..... Yes
GOST Ex..... Yes

B



Programmable transmitter

5114B

– Input for RTD, TC, mV, linear resistance, mA, and V
– 3-port 3.75 kVAC galvanic isolation
– Current and voltage output
– Universal voltage supply
– 1- and 2-channel versions
– Loop supply > 17.1 V in Ex / I.S. zone 0

ATEX

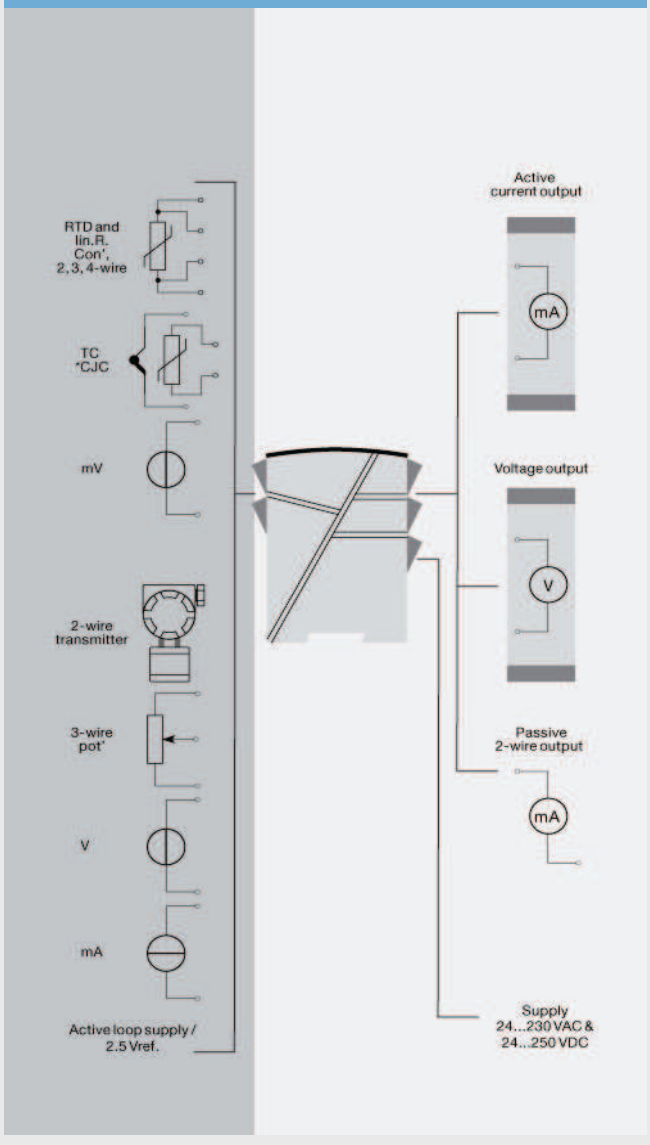
B

Advanced features
- The 5114 transmitter can be configured, with or without a power supply, using the PReset software and the Loop Link communications unit.

Application
- Jumper selectable inputs for current/voltage or temperature.
- Programmable current (0...100 mA) and voltage (0...250 VDC) inputs.
- Linearized, electronic temperature measurement.
- Conversion of linear resistance variation e.g, from solenoids and butterfly valves or linear movements with attached potentiometer.
- 17.1 VDC loop and 2.5 VDC potentiometer supplies.
- Automatic 4- / 3-wire or programmable 2-wire cable compensation.
- Configurable sensor error detection including NAMUR NE43.

Technical characteristics
- Active or Passive current output and selectable voltage output.
- Separation of circuits in PELV/SELV installations.
- I.S. barrier for temperature sensors, potentiometers, and current / voltage signals.
- I.S. barrier with I.S. power supply for 2-wire transmitters in zone 0, 1, 2, 20, 21 and 2.

Connections



Order:

Type	Version	Input	Channels
5114B	ATEX Ex	RTD / TC / mV / R : 1 mA / V / mV : 2 Channel 1, RTD / TC / mV / R : 3 Channel 2, mA / V / mV	Single :A Double :B

Note! For TC inputs with internal CJC, remember to order the CJC connectors type 5910 / 5910 Ex (ch. 1) and 5913 / 5913 Ex (ch. 2)

Environmental Conditions

Specifications range..... -20°C to +60°C
Calibration temperature..... 20...28°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 130 mm
Weight approx..... 225 g
DIN rail type..... DIN 46277
Wire size..... 1 x 2.5 mm^2 stranded wire
Screw terminal torque..... 0.5 Nm

Common specifications

Supply voltage, universal..... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse..... 400 mA SB / 250 VAC
Max. power consumption..... ≤ 3 W (2 channels)
Internal consumption..... ≤ 2 W (2 channels)
Isolation voltage, test / working..... 3.75 kVAC / 250 VAC
Communications interface..... Loop Link
Signal / noise ratio..... Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%): Temperature input (programmable)..... 400 ms...60 s
mA / V input (programmable)..... 250 ms...60 s
Updating time..... 115 ms (temperature input)
Updating time..... 75 ms (mA / V / mV input)
Signal dynamics, input..... 22 bit
Signal dynamics, output..... 16 bit
Auxiliary voltages: Reference voltage..... 2.5 VDC ±0.5% / 15 mA
Auxiliary supply: 2-wire supply (pin 44...42 and 54...52)..... 28...17.1 VDC / 0...20 mA
EMC immunity influence..... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1% of span

Input specifications

Max. offset..... 50% of selected max. value
RTD input..... Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD..... 10 Ω
Sensor current, RTD..... Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD..... < 0.002 Ω / Ω
TC input: Thermocouple type..... B, E, J, K, L, N, R, S, T, U, W3, W5, LR
Cold junction compensation (CJC)..... < ±1.0°C
Sensor error current, TC..... Nom. 30 µA
Sensor error detection, TC..... Yes
Current input: Measurement range..... 0...100 mA
Min. measurement range (span), current input..... 4 mA
Input resistance: Supplied unit..... Nom. 10 Ω + PTC 10 Ω
Input resistance: Non-supplied unit..... RSHUNT = ∞, VDROP < 6 V
Voltage input: Measurement range..... 0...250 VDC
Voltage input: Measurement range..... -150...+150 mV
Min. measurement range (span), voltage input..... 5 mV
Input resistance, voltage input..... Nom. 10 MΩ (≤ 2.5 VDC)
Input resistance, voltage input..... Nom. 5 MΩ (> 2.5 VDC)
Input resistance, voltage input..... Nom. 10 MΩ (mV input)

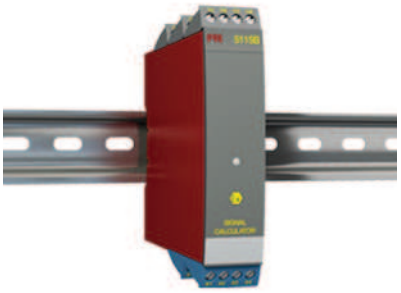
Output specifications

Max. offset..... 50% of selected max. value
Current output: Signal range..... 0...20 mA
Min. signal range..... 10 mA
Load (max.)..... 20 mA/600 Ω/12 VDC
Load stability, current output..... ≤0.01% of span / 100 Ω
Current limit..... ≤ 28 mA
2-wire 4...20 mA output: Signal range..... 4...20 mA
Load stability, 4…20 mA output..... ≤ 0.01% of span / 100 Ω
Max. load resistance [Ω]..... (Vsupply - 3.5) / 0.023 A
Max. external 2-wire supply..... 29 VDC
Effect of external 2-wire supply voltage variation..... < 0.005% of span / V
Voltage output: signal range..... 0...10 VDC
Voltage output, min. signal range..... 500 mV
Load (min.)..... 500 kΩ
Sensor error indication, current output..... Programmable 0...23 mA
NAMUR NE 43 Upscale/Downscale..... 23 mA / 3.5 mA
*of span..... = of the presently selected range

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
PELV/SELV..... IEC 364-4-41 and EN 60742
ATEX..... DEMKO 99ATEX124571
GOST R..... Yes
GOST Ex..... Yes
DNV Marine..... Stand. f. Certific. No. 2.4

B



Ex signal calculator

5115B

– Redundancy measurement with 2 input signals
– Signal calculator with the four arithmetical operations
– Duplication of the input signal
– Input for RTD, Ohm, TC, mV, mA, and V
– Universal supply by AC or DC

Application

- Redundancy measurement of temperature by means of two sensors, where the secondary sensor takes over the measurement when a sensor error occurs on the primary sensor.
- Duplication of the input signal, e.g. from a temperature sensor or an analog process signal to two separate analog outputs.
- Signal calculator with four arithmetical operations: Addition, subtraction, multiplication and division.
- Example: Differential measurement: (Input 1 * K1) - (Input 2 * K2) + K4
- Example: Average measurement: (Input 1 * 0.5) + (Input 2 * 0.5) + K4
- Example: Different functions on the outputs: Output 1 = input 1 - input 2, and Output 2 = input 1 + input 2
- I.S. safety barrier and power supply for 2-wire transmitters.

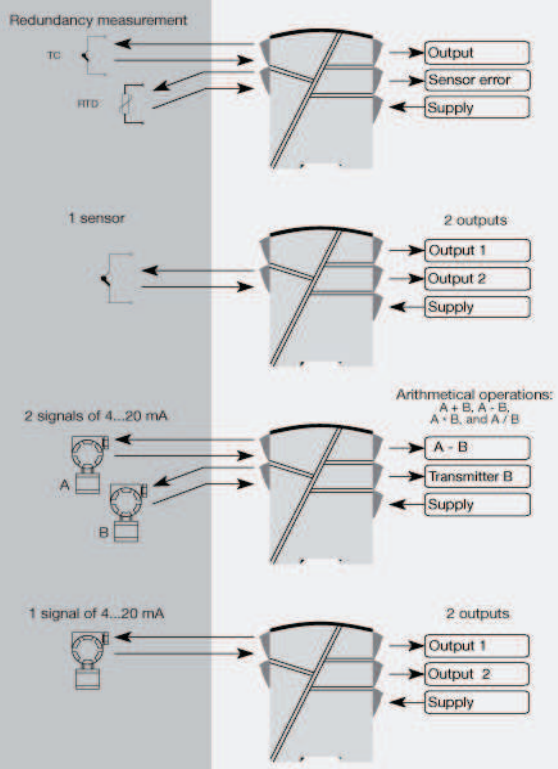
Technical characteristics

- Within a few seconds the user can program PR5115B to a selected application using the configuration program PReset.
- A green front LED indicates normal operation, sensor error on each sensor, and functional error.
- 5-port 3.75 kVAC galvanic isolation.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without any distance between neighboring units, up to 42 devices can be mounted per meter.

Connections



Order:

Type	Input	
5115B	RTD / TC / mV / R	: 1
	mA / V / mV	: 2
	Input 1, RTD / TC / mV / R	: 3
	Input 2, mA / V / mV	

***NB!** Please remember to order CJC connectors type 5910EEx (input 1) and 5913EEx (input 2) for TC inputs with an internal CJC.

Environmental Conditions

Specifications range..... -20°C to +60°C
Calibration temperature..... 20...28°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 130 mm
Weight approx..... 225 g
Wire size..... 1 x 2.5 mm^2 stranded wire
Screw terminal torque..... 0.5 Nm
Vibration..... IEC 60068-2-6 : 2007
Vibration: 2...25 Hz..... ±1.6 mm
Vibration: 25...100 Hz..... ±4 g

Common specifications

Supply voltage, universal..... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse..... 400 mA SB / 250 VAC
Max. power consumption..... ≤ 3 W
Internal consumption..... ≤ 2.0 W
Isolation voltage, test / working..... 3.75 kVAC / 250 VAC
Communications interface..... Loop Link
Signal / noise ratio..... Min. 60 dB (0...100 kHz)
Accuracy..... Better than 0.05% of selected range
Response time (0...90%, 100...10%): Temperature input (programmable)..... 400 ms...60 s
mA / V input (programmable)..... 250 ms...60 s
Updating time..... 115 ms (temperature input)
Updating time..... 75 ms (mA / V / mV input)
Redundancy switch-over time..... ≤ 400 ms
Signal dynamics, input..... 22 bit
Signal dynamics, output..... 16 bit
Auxiliary voltages: Reference voltage..... 2.5 VDC ±0.5% / 15 mA
EMC immunity influence..... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1% of span

Input specifications

Max. offset..... 50% of selected max. value
RTD input..... Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD..... 10 Ω
Sensor current, RTD..... Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD..... < 0.002 Ω / Ω
Sensor error detection, RTD..... Yes
TC input: Thermocouple type..... B, E, J, K, L, N, R, S, T, U, W3, W5, LR
Cold junction compensation (CJC)..... < ±1.0°C
Sensor error current, TC..... Nom. 30 µA
Current input: Measurement range..... 0...100 mA
Min. measurement range (span), current input..... 4 mA
Input resistance: Supplied unit..... Nom. 10 Ω + PTC 10 Ω
Input resistance: Non-supplied unit..... RSHUNT = ∞, VDROP < 6 V
Voltage input: Measurement range..... 0...250 VDC
mV input: Measurement range..... -150...+150 mV
Min. measurement range (span), voltage input..... 5 mV
Input resistance, voltage input..... Nom. 10 MΩ (≤ 2.5 VDC)
Input resistance, voltage input..... Nom. 5 MΩ (> 2.5 VDC)
Input resistance, voltage input..... Nom. 10 MΩ (mV input)

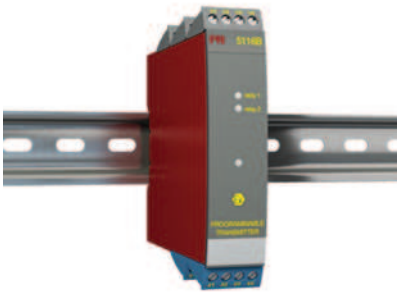
Output specifications

Current output: Signal range..... 0...20 mA
Min. signal range..... 10 mA
Load (max.)..... 20 mA/600 Ω/12 VDC
Load stability, current output..... ≤0.01% of span / 100 Ω
Current limit..... ≤ 28 mA
Voltage output: signal range..... 0...10 VDC
Voltage output, min. signal range..... 500 mV
Load (min.)..... 500 kΩ
2-wire 4...20 mA output: Signal range..... 4...20 mA
Load stability, 4…20 mA output..... ≤ 0.01% of span / 100 Ω
Effect of external 2-wire supply voltage variation..... < 0.005% of span / V
Max. external 2-wire supply..... 29 VDC
Sensor error indication, current output..... Programmable 0...23 mA
NAMUR NE 43 Upscale/Downscale..... 23 mA / 3.5 mA
*of span..... = of the presently selected range

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
PELV/SELV..... IEC 364-4-41 and EN 60742
ATEX..... DEMKO 00ATEX128567
GOST R..... Yes
GOST Ex..... Yes
DNV Marine..... Stand. f. Certific. No. 2.4

B



Programmable transmitter

5116B

– Input for RTD, TC, mV, Ohm, potentiometer, mA and V
– 2-wire supply > 16.5 V to Ex zone 0
– Bipolar voltage input
– Output for current, voltage and 2 relays
– Universal supply by AC or DC

Application

- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, i.e. from solenoids and butterfly valves or linear movements with attached potentiometer.
- Power supply and signal isolator for 2-wire transmitters.
- Process control with 2 potential-free relay contacts which can be configured for advanced functions.
- Galvanic separation of analog signals and measurement of floating signals.

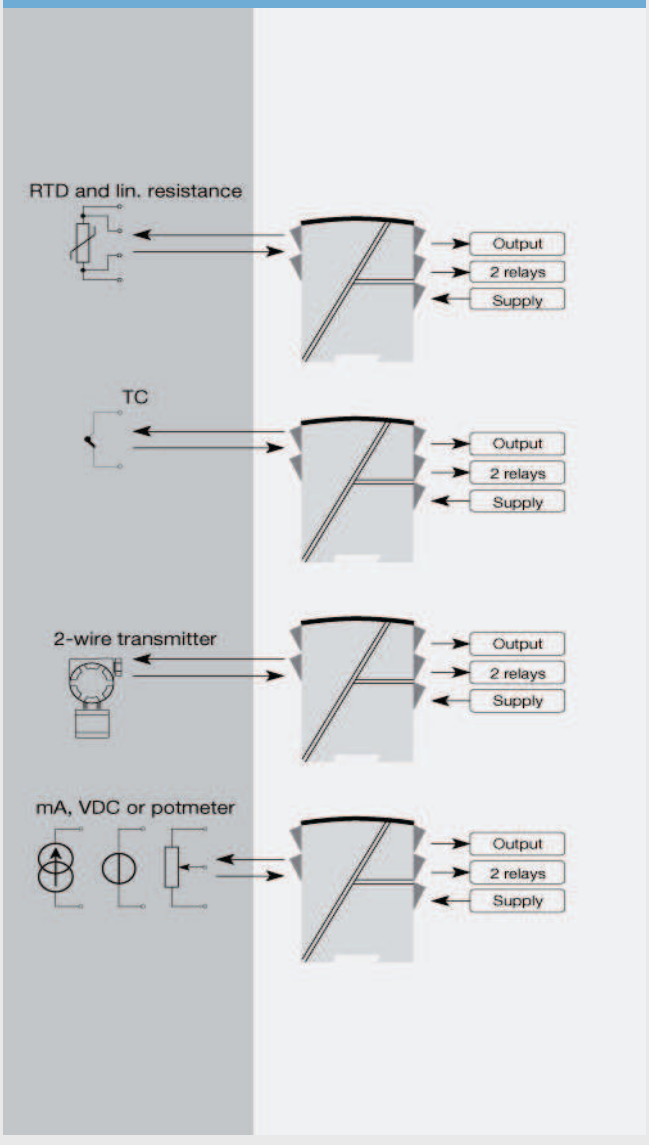
Technical characteristics

- Within a few seconds the user can program PR5116B to suit the specific application.
- By way of the front push-button the input can be calibrated to the exact span of the process. Zero drift on the process signal can be adjusted by a single press of the front buttton.
- A green front LED indicates normal operation and malfunction. A yellow LED is ON for each active output relay.
- Continuous check of vital stored data for safety reasons.
- 3-port 3.75 kVAC galvanic isolation.

Mounting / installation

- Mounted vertically or horizontally on a DIN rail. As the devices can be mounted without any distance between neighboring units, up to 42 devices can be mounted per meter.

Connections



Order:

Type
5116B

*NB! Please remember to order CJC connectors type 5910Ex for TC inputs with internal CJC

Environmental Conditions

Specifications range	-20°C to +60°C
Calibration temperature	20...28°C
Relative humidity	< 95% RH (non-cond.)
Protection degree	IP20

Mechanical specifications

Dimensions (HxWxD)	109 x 23.5 x 130 mm
Weight approx.	235 g
Wire size	1 x 2.5 mm^2 stranded wire
Screw terminal torque	0.5 Nm

Common specifications

Supply voltage, universal	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse	400 mA SB / 250 VAC
Max. power consumption	≤ 3 W
Isolation voltage, test / working	3.75 kVAC / 250 VAC
Communications interface	Loop Link
Signal / noise ratio	Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%): Temperature input (programmable)	400 ms...60 s
mA / V input (programmable)	250 ms...60 s
Signal dynamics, input	22 bit
Signal dynamics, output	16 bit
Auxiliary voltages: Reference voltage	2.5 VDC ±0.5% / 15 mA
Auxiliary supplies: 2-wire supply (pin 54...52)	28...16.5 VDC / 0...20 mA

Input specifications

Max. offset	50% of selected max. value
RTD input	Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD	10 Ω (max. 50 Ω)
Sensor current, RTD	Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD	< 0.002 Ω / Ω
Sensor error detection, RTD	Yes
TC input: Thermocouple type	B, E, J, K, L, N, R, S, T, U, W3, W5, LR
Cold junction compensation (CJC)	< ±1.0°C
Sensor error current, TC	Nom. 30 µA
Sensor error detection, TC	Yes
Current input: Measurement range	0...100 mA
Min. measurement range (span), current input	4 mA
Input resistance: Supplied unit	Nom. 10 Ω + PTC 10 Ω
Input resistance: Non-supplied unit	RSHUNT = ∞, VDROP < 6 V
Sensor error detection, current input	Loop break 4...20 mA
Voltage input: Measurement range	0...250 VDC
Voltage input: Measurement range	-2500...+2500 mV
Min. measurement range (span), voltage input	5 mV
Input resistance, voltage input	Nom. 10 MΩ (≤ 2.5 VDC)
Input resistance, voltage input	Nom. 5 MΩ (> 2.5 VDC)
Input resistance, voltage input	> 5 MΩ (mV input)
Potentiometer via 2.5 V ref.	170 Ω

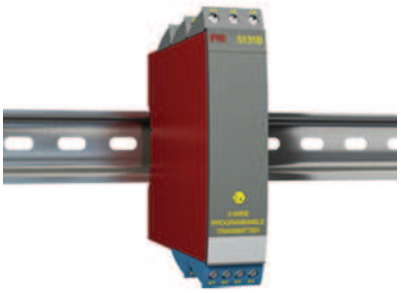
Output specifications

Current output: Signal range	0...20 mA
Min. signal range	10 mA
Load (max.)	20 mA/600 Ω/12 VDC
Load stability, current output	≤0.01% of span / 100 Ω
Current limit	≤ 28 mA
Voltage output: signal range	0...10 VDC
Voltage output, min. signal range	500 mV
Load (min.)	500 kΩ
2-wire 4...20 mA output: Signal range	4...20 mA
Load stability, 4…20 mA output	≤ 0.01% of span / 100 Ω
Max. external 2-wire supply	29 VDC
Effect of external 2-wire supply voltage variation	< 0.005% of span / V
Sensor error indication, current output	Programmable 0...23 mA
NAMUR NE 43 Upscale/Downscale	23 mA / 3.5 mA
Relay output: Relay functions	Increasing / decreasing
Relay output: Relay functions	Window
Max. voltage	250 VRMS
Max. current	2 AAC
Max. AC power	500 VA
Max. load at 24 VDC	1 A
Sensor error reaction	Break / Make / Hold / None
*of span	= of the currently selected measurement range

Approvals

EMC	EN 61326-1
LVD	EN 61010-1
PELV/SELV	IEC 364-4-41 and EN 60742
ATEX	KEMA 04ATEX1316 X
FM	3023092
UL	UL 508
GOST R	Yes
GOST Ex	Yes
DNV Marine	Stand. f. Certific. No. 2.4

B



2-wire programmable transmitter

5131B

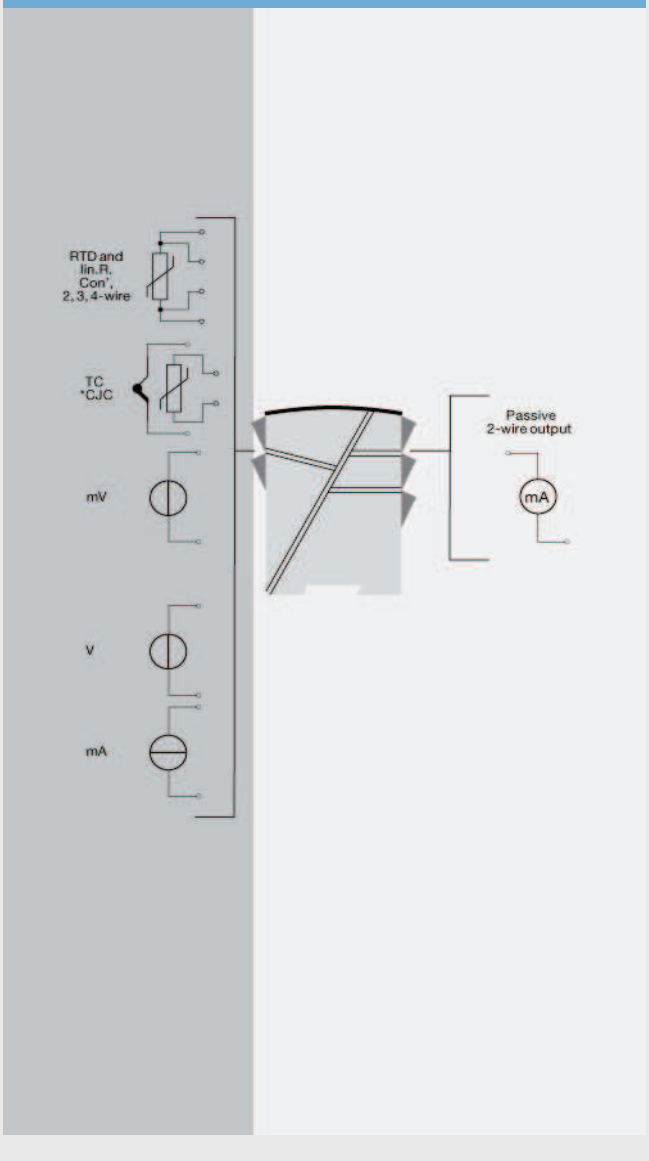
– Input for RTD, TC, mV, linear resistance, mA, and V
– 3.75 kVAC galvanic isolation
– 4...20 mA loop output
– 1- and 2-channel versions
– ATEX Ex / I.S. version
– DIN rail mounting

Advanced features
- The 5131 transmitter can be configured with a standard PC and the Loop Link communications unit.

Application
- Independent channel jumper selectable inputs for current/voltage or temperature.
- Current input programmable in range the 0...100 mA and voltage inputs in the range 0...250 VDC.
- Linearized, electronic temperature measurement with RTD or TC sensor.
- Conversion of linear resistance variation to a standard analog current / voltage signal, for example from solenoids and butterfly valves or linear movements with attached potentiometer.
- 4- or 3-wire connection with automatic cable compensation or 2-wire connection with programmable cable compensation.
- Configurable sensor error detection including NAMUR NE43.

Technical characteristics
- Analog current output can be configured to any current within the range 0...20 mA.
- Voltage output range is selectable between 0...10 VDC.
- Programming can be performed with or without a power supply.
- The 2-channel version has full galvanic isolation between the channels.
- Separation of circuits in PELV/SELV installations.
- I.S. barrier for temperature sensors, potentiometers and current / voltage signals.

Connections



Order:

Type	Input		Channels	
5131B	RTD / TC / mV / R	: 1	Single	: A
	mA / V / mV	: 2	Double	: B
	Channel 1, RTD / TC / mV / R	: 3		
	Channel 2, mA / V / mV			

***Note!** For TC inputs with internal CJC, remember to order CJC connectors type 5910Ex (ch. 1) and 5913Ex (ch. 2).

Environmental Conditions

Specifications range..... -20°C to +60°C
Calibration temperature..... 20...28°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 130 mm
Weight approx..... 195 g
DIN rail type..... DIN 46277
Wire size..... 1 x 2.5 mm^2 stranded wire
Screw terminal torque..... 0.5 Nm

Common specifications

Supply voltage..... 7.5...35 VDC
Fuse..... 50 mA SB / 250 VAC
Isolation voltage, test / working..... 3.75 kVAC / 250 VAC
Communications interface..... Loop Link
Signal / noise ratio..... Min. 60 dB (0...100 kHz)
Response time (0...90%, 100...10%): Temperature input (programmable)..... 400 ms...60 s
mA / V input (programmable)..... 250 ms...60 s
Updating time..... 115 ms (temperature input)
Updating time..... 75 ms (mA / V / mV input)
Signal dynamics, input..... 22 bit
Signal dynamics, output..... 16 bit
Effect of supply voltage change..... < 0.005% of span / VDC
EMC immunity influence..... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1% of span

Input specifications

Max. offset..... 50% of selected max. value
RTD input..... Pt100, Ni100, lin. R
Cable resistance per wire (max.), RTD..... 10 Ω
Sensor current, RTD..... Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire), RTD..... < 0.002 Ω / Ω
Sensor error detection, RTD..... Yes
TC input: Thermocouple type..... B, E, J, K, L, N, R, S, T, U, W3, W5, LR
Cold junction compensation (CJC)..... < ±1.0°C
Sensor error current, TC..... Nom. 30 µA
Sensor error detection, TC..... Yes
Current input: Measurement range..... 0...100 mA
Min. measurement range (span), current input..... 4 mA
Input resistance: Supplied unit..... Nom. 10 Ω + PTC 10 Ω
Input resistance: Non-supplied unit..... RSHUNT = ∞, VDROP < 6 V
Voltage input: Measurement range..... 0...250 VDC
Voltage input: Measurement range..... -150...+150 mV
Min. measurement range (span), voltage input..... 5 mV
Input resistance, voltage input..... Nom. 10 MΩ (≤ 2.5 VDC)
Input resistance, voltage input..... Nom. 5 MΩ (> 2.5 VDC)
Input resistance, voltage input..... Nom. 10 MΩ (mV input)

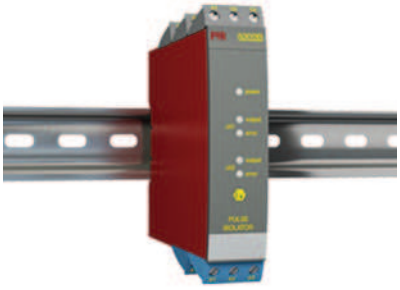
Output specifications

Max. offset..... 50% of selected max. value
Current output: Signal range..... 4…20 mA
Min. signal range..... 10 mA
Load resistance, current output..... ≤ (Vsupply -7.5)/0.023 [Ω]
Load stability, current output..... ≤0.01% of span / 100 Ω
Current limit..... ≤ 28 mA
Sensor error indication, current output..... Programmable 3.5…23 mA
NAMUR NE 43 Upscale/Downscale..... 23 mA / 3.5 mA
*of span..... = of the presently selected range

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
PELV/SELV..... IEC 364-4-41 and EN 60742
ATEX..... DEMKO 99ATEX124572
GOST R..... Yes
GOST Ex..... Yes

B



Pulse isolator

5202B

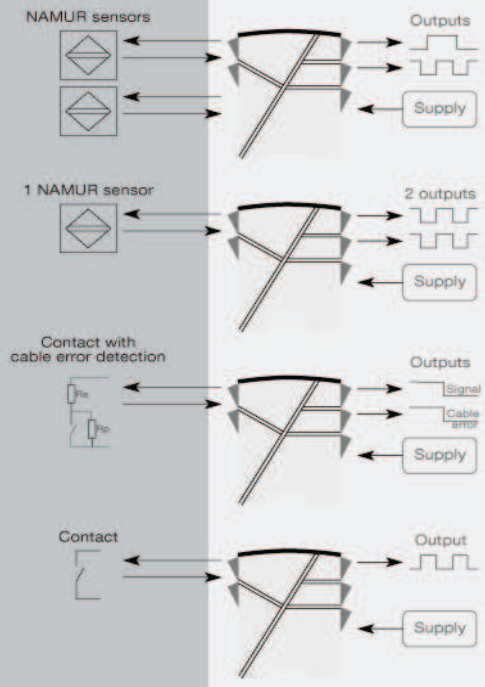
– 2 channels - 2 or 4 outputs
– Dual output
– 5-port 3.75 kVAC galvanic isolation
– Cable error detection
– Universal supply by AC or DC

Application
- Pulse isolator with safety barrier for the supply of NAMUR sensors installed in the hazardous area.
- Pulse isolator with safety barrier for the detection of mechanical contacts installed in the hazardous area.
- One input signal can be used on two separate outputs.
- A cable error alarm can be detected on a separate output.

Technical characteristics
- PR5202B1 and 5202B2 have relays with change-over contacts or open NPN collectors available in the safe area.
- PR5202B4 has 4 SPST relays, which are activated simultaneously two and two, available in the safe area. Each relay can be programmed to the function N.O. or N.C.
- Inputs, outputs and supply are floating and galvanically separated.
- 5202B is designed according to strict safety requirements and is therefore suitable for application in SIL 2 installations.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. Up to 84 channels per meter can be mounted.

Connections



Order:

Type	Output	
5202B	Open collector NPN	: 1
	2x1 relay	: 2
	2x2 relays	: 4

Environmental Conditions

Specifications range..... -20°C to +60°C
Calibration temperature..... 20...28°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 130 mm
Weight approx..... 230 g
Wire size..... 1 x 2.5 mm^2 stranded wire
Screw terminal torque..... 0.5 Nm

Common specifications

Supply voltage, universal..... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse..... 400 mA SB / 250 VAC
Max. power consumption..... ≤ 1.5 W (2 channels), 5202B1 and 5202B2
Max. power consumption..... ≤ 2.0 W (2 channels), 5202B4
Internal consumption..... ≤ 1.5 W (2 channels), 5202B1 and 5202B2
Internal consumption..... ≤ 2.0 W (2 channels), 5202B4
Isolation voltage, test / working..... 3.75 kVAC / 250 VAC
Auxiliary supplies: NAMUR supply..... 8 VDC / 8 mA
EMC immunity influence..... < ±0.5%
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1%

Input specifications

Sensor types..... NAMUR according to EN 60947-5-6 / mechanical contact
Frequency range..... 0...5 kHz
Pulse length..... > 0.1 ms
Input resistance..... 1 kΩ
Trig level, signal..... < 1.2 mA, > 2.1 mA
Trig level, cable fault..... < 0.1 mA, > 6.5 mA

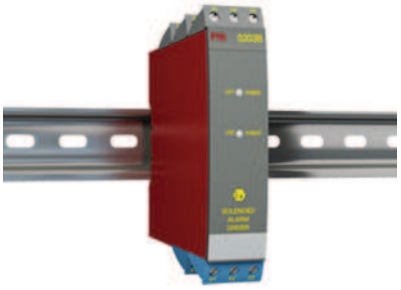
Output specifications

Relay output: Max. switching frequency..... 20 Hz
Max. voltage..... 250 VRMS
Max. current..... 2 AAC
Max. AC power..... 100 VA
Max. load at 24 VDC..... 1 A
Opto, NPN outputs: Max. switching frequency..... 5 kHz
Min. pulse length, NPN output..... > 0.1 ms
Max. load, current / voltage..... 80 mA / 30 VDC
Voltage drop at 25 mA / 80 mA..... < 0.75 VDC / < 2.5 VDC

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
PELV/SELV..... IEC 364-4-41 and EN 60742
ATEX..... DEMKO 99ATEX127186
UL..... UL 913, UL 508
GOST R..... Yes
GOST Ex..... Yes

B



Ex solenoid / alarm driver

5203B

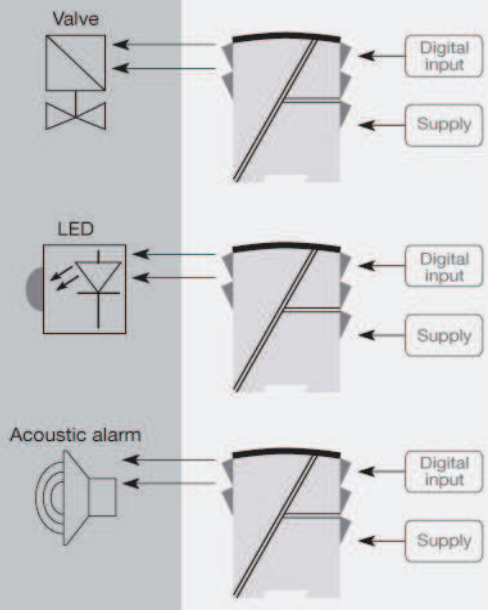
– 1- or 2-channel version
– Solenoid driver for I.S. area
– 3- / 5-port 3.75 kVAC galvanic isolation
– Digitally controlled voltage supply for I.S. area
– Universal supply by AC or DC

Application
- Driver with safety barrier for the control of ON / OFF solenoids mounted in hazardous area.
- Driver with safety barrier for the supply of LEDs and acoustic alarms mounted in hazardous area.
- Voltage supply with ON / OFF control of other equipment.

Technical characteristics
- PR5203B has a digital input per channel for the control of the I.S. output voltage.
- Supply, inputs, and outputs are floating and galvanically separated.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. By way of the 2-channel version up to 84 channels per meter can be mounted.

Connections



Order:

Type	Input	Ex barrier	Channels
5203B	PNP : 1 Switch : 2 NPN : 3	[EEx ia] type : F	Single : 1
		[EEx ia] type : H	Single : 1
		[EEx ia] type : I	Double : 2

Environmental Conditions

Specifications range..... -20°C to +60°C
Calibration temperature..... 20...28°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 130 mm
Weight approx..... 230 g
Wire size..... 1 x 2.5 mm^2 stranded wire
Screw terminal torque..... 0.5 Nm

Common specifications

Supply voltage, universal..... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse..... 400 mA SB / 250 VAC
Max. power consumption..... ≤ 4 W (2 channels)
Internal consumption..... ≤ 2 W (2 channels)
Isolation voltage, test / working..... 3.75 kVAC / 250 VAC
Max. frequency..... 20 Hz
EMC immunity influence..... < ±0.5% of span
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1% of span

Input specifications

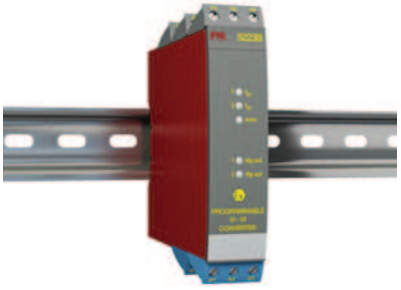
Trig level LOW, NPN+switch..... ≤ 4.0 VDC
Trig level HIGH, NPN+switch..... ≥ 7.0 VDC
Max. external voltage, NPN+switch..... 28 VDC
Input impedance, NPN+switch..... 3.48 kΩ
Trig level LOW, PNP..... ≤ 4.0 VDC
Trig level HIGH, PNP..... ≥ 7.0 VDC
Max. external voltage, PNP..... 28 VDC
Input impedance, PNP..... 3.48 kΩ

Output specifications

Output voltage..... See Ex data in manual
Output current..... See Ex data in manual
Output ripple..... < 40 mVRMS

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
PELV/SELV..... IEC 364-4-41 and EN 60742
ATEX..... DEMKO 99ATEX126257
UL..... UL 913, UL 508
GOST R..... Yes
GOST Ex..... Yes



Programmable f/I-f/f converter

5223B

– Pulse calculator / frequency generator
– Galvanic isolation
– ATEX I.S. version
– Analog current and voltage output
– PNP / NPN output, optional relays
– Universal supply

ATEX

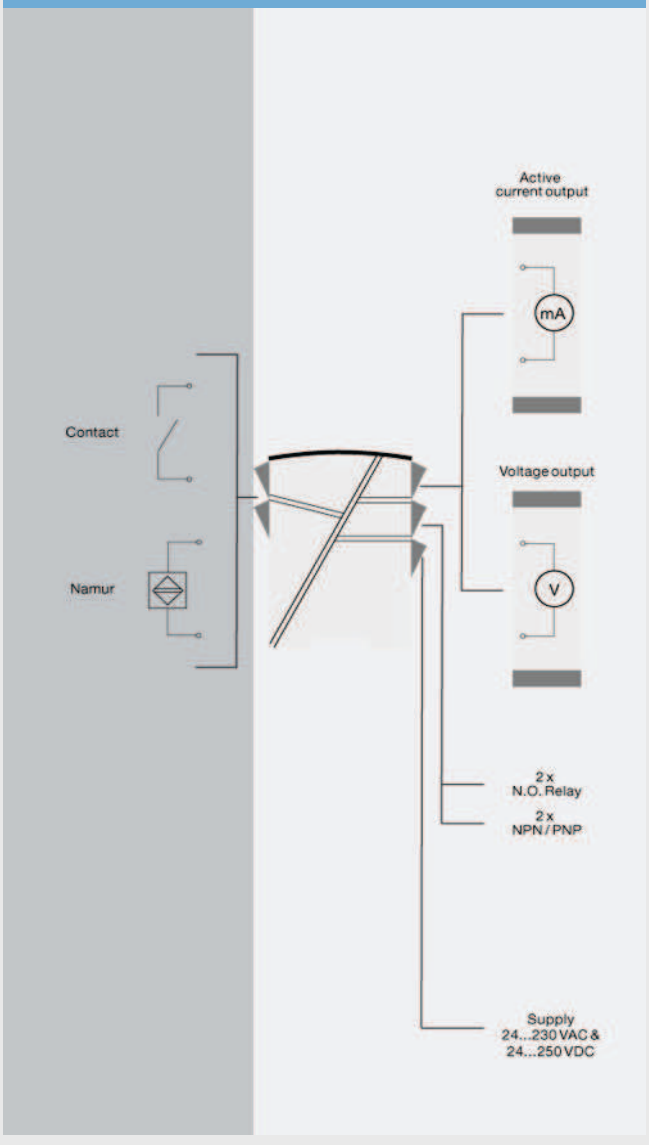
B

Advanced features
- The 5223 transmitter can be configured with a standard PC and the Loop Link communications unit, or delivered fully configured.

Application
- The f/I function performs frequency to current and voltage conversion.
- The f/f function can be used for pulse division or multiplication and as a buffer collecting fast pulse trains.
- A scale factor may be entered in all functions. Using both digital inputs, pulse addition or subtraction are possible.
- The frequency generator function is used as e.g. a time base or clock generator.
- Input and supply polarity reversal protection.
- Current and voltage output signals galvanically separated from the supply and the inputs.
- Programmable digital outputs including NPN, PNP or relay options.
- ATEX units have input for mechanical contact and NAMUR inductive proximity sensor.

Technical characteristics
- 5 front LEDs, indicating f1 and f2 active inputs (not NPN), Dig.out.1 and 2 active outputs, and a programmable error signal.
- Analog current output can be configured to any current within 0...20 mA range.
- Voltage output range is selectable between 0...10 VDC and 0...1 VDC by use of internal jumpers.
- Programming can be performed with or without a power supply.

Connections



Order:

Type	Output	
5223B	Analog + NPN / PNP	: 1
	Analog + relay output	: 2

Environmental Conditions

Specifications range	-20°C to +60°C
Calibration temperature	20...28°C
Relative humidity	< 95% RH (non-cond.)
Protection degree	IP20

Mechanical specifications

Dimensions (HxWxD)	109 x 23.5 x 130 mm
Weight approx	240 g
DIN rail type	DIN 46277
Wire size	1 x 2.5 mm^2 stranded wire
Screw terminal torque	0.5 Nm

Common specifications

Supply voltage, universal	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse	400 mA SB / 250 VAC
Max. power consumption	3.5 W
Internal consumption	3 W
Isolation voltage, test / working	3.75 kVAC / 250 VAC
Power-up delay	0...999 s
Warm-up time	1 min.
Communications interface	Loop Link
Signal / noise ratio	Min. 60 dB
Response time, analog	< 60 ms + period
Response time, digital output	< 50 ms + period
Effect of supply voltage change	< 0.005% of span / VDC
Temperature coefficient	< ±0.01% of span / °C
Linearity error	< 0.1% of span
NAMUR supply I.S. / Ex	8.9 VDC ±0.5 VDC / 8 mA
S0 supply	17 VDC / 20 mA
NPN / PNP supply	17 VDC / 20 mA
Special supply (programmable)	5...17 VDC / 20 mA
EMC immunity influence	< ±0.5%

Input specifications

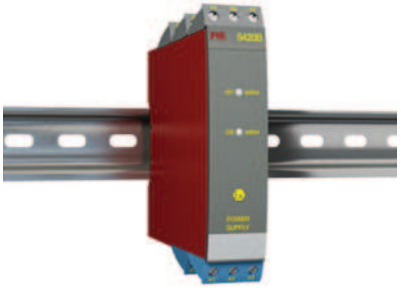
Max. offset	90% of selected max. frequency
Measurement range	0...20 kHz
Min. measurement range	0.001 Hz
Min. pulse length	25 µs
Input types	NAMUR acc. to DIN 19234
Input types	Tacho
Input types	NPN / PNP
Input types	2-phase encoder
Input types	TTL
Input types	S0 acc. to DIN 43864

Output specifications

Max. offset	50% of selected max. value
Current output: Signal range	0...20 mA
Min. signal range	5 mA
Updating time	20 ms
Load (max.)	20 mA/600 Ω/12 VDC
Load stability, current output	≤0.01% of span / 100 Ω
Current limit	< 23 mA
Voltage output through internal shunt	See manual for details
Other output types	Active outputs (NPN / PNP)
Other output types	f/f converter output
Other output types	Frequency generator
Relay output: Max. switching frequency	20 Hz
Max. voltage	250 VRMS
Max. current	2 AAC
Max. AC power	100 VA (I.S. version 5223B)
Max. load at 24 VDC	1 A
*of span	= of the presently selected range

Approvals

EMC	EN 61326-1
LVD	EN 61010-1
PELV/SELV	IEC 364-4-41 and EN 60742
ATEX	KEMA 04ATEX1001
GOST R	Yes
GOST Ex	Yes



Ex power supply

5420B

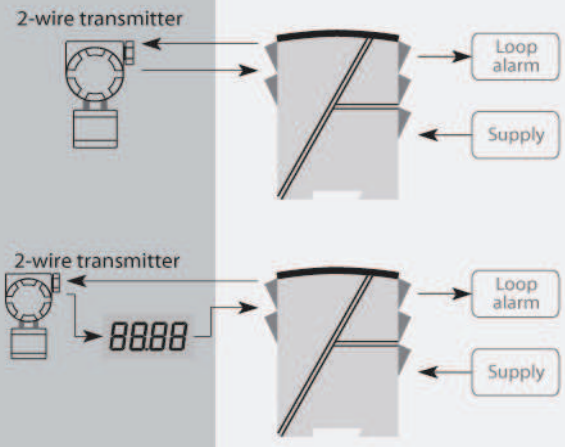
– 2 channels
– 5-port 3.75 kVAC galvanic isolation
– Output voltage > 18 V to I.S. area
– Active current loop detection
– Universal supply by AC or DC

Application
- Voltage supply with safety barrier for the supply of equipment mounted in hazardous area.
- Voltage supply with failsafe detection of active current loop from 2-wire transmitters mounted in hazardous area.

Technical characteristics
- PR5420B has a relay with change-over contacts available in the safe area. When the loop current is within the defined limit, the relay is ON.
- Supply and outputs are floating and galvanically separated.

Mounting / installation
- Mounted vertically or horizontally on a DIN rail. Up to 84 channels per meter can be mounted.

Connections



Order:

Type	Channels
5420B	Double : 2

Environmental Conditions

Specifications range..... -20°C to +60°C
Calibration temperature..... 20...28°C
Relative humidity..... < 95% RH (non-cond.)
Protection degree..... IP20

Mechanical specifications

Dimensions (HxWxD)..... 109 x 23.5 x 130 mm
Weight approx..... 215 g
DIN rail type..... DIN 46277
Wire size..... 1 x 2.5 mm^2 stranded wire
Screw terminal torque..... 0.5 Nm

Common specifications

Supply voltage, universal..... 21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Max. power consumption..... ≤ 4 W (2 channels)
Internal consumption..... ≤ 2 W (2 channels)
Fuse..... 400 mA SB / 250 VAC
Isolation voltage, test / working..... 3.75 kVAC / 250 VAC
EMC immunity influence..... < ±0.5%
Extended EMC immunity: NAMUR NE 21, A criterion, burst..... < ±1%

Output specifications

Output voltage..... > 18 VDC at 20 mA
Output current..... 28 mA per channel (max.)
Relay outputs: On within limit..... > 3.8...< 20.5 mA
Max. voltage..... 250 VRMS
Max. current..... 2 ARMS
Max. AC power..... 100 VA
Max. load at 24 VDC..... 1 A

Approvals

EMC..... EN 61326-1
LVD..... EN 61010-1
PELV/SELV..... IEC 364-4-41 and EN 60742
ATEX..... DEMKO 99ATEX126256
GOST R..... Yes
GOST Ex..... Yes