

# IOA RPSS-I-I/HART/EX - Power/input signal conditioner



2908452

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Ex ic repeater power supply and input signal conditioner, HART for VIP I/O-Marshalling base elements: Transmits 0/4 ... 20 mA signals from the potentially explosive area (zone 2, CID2) to a load (active or passive) in the safe area. 3-way electrical isolation

## Product description

Ex ic repeater power supply and input signal conditioner, HART: Transmits supplied or active 0/4 ... 20 mA signals from the Ex area to a load (active or passive) in the safe area. HART signals are transmitted bidirectionally. The output can be operated either actively or passively via DIP switches. The module is installed on a corresponding VIP I/O-Marshalling base element by means of plug-in contact. Installation in zone 2, "ec" type of protection is permitted.

## Your advantages

- Two-stage progressive release allowing for voltage checks with field-powered devices
- Channel for marking accessories
- Integrated keying reduces possible user error during replacement
- Signal disconnect with test points
- Bidirectional HART signal transmission
- 3-way electrical isolation

## Commercial data

Item number	2908452
Packing unit	1 pc
Minimum order quantity	1 pc
Note	Made to order (non-returnable)
Sales key	C480
Product key	DK1151
GTIN	4055626446158
Weight per piece (including packing)	95.7 g
Weight per piece (excluding packing)	42.9 g
Customs tariff number	85437090
Country of origin	CN

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## Technical data

### Product properties

Product type	Repeater power supply
Product family	VIP I/O-Marshalling
No. of channels	1

### Insulation characteristics

Overvoltage category	II
Degree of pollution	2

### Electrical properties

Electrical isolation	Reinforced insulation in accordance with IEC 61010-1
Limit frequency (3 dB)	1.75 kHz (typ.)
Step response (10-90%)	< 200 $\mu$ s (typ.)
Maximum temperature coefficient	0.01 %/K
Temperature coefficient, typical	0.01 %/K
Maximum transmission error	< 0.1 % (of final value)

### Electrical isolation Input/output/power supply

Electrical isolation	250 V <sub>rms</sub> (Rated insulation voltage (overvoltage category II; degree of pollution 2, safe isolation as per EN 61010-1))
	2.5 kV (50 Hz, 1 min., test voltage)
	60 V (Peak value in accordance with IEC/EN/UL/CSA C22.2 60079-11)

### Supply

Nominal supply voltage	24 V DC
Supply voltage range	18 V DC ... 30 V DC
Power consumption	$\leq$ 1600 mW (at I <sub>OUT</sub> = 20 mA, 24 V DC, 600 $\Omega$ load)

### Input data

#### Signal

Input signal	Current
Current input signal	4 mA ... 20 mA (repeater power supply and isolator operation)
	0 mA ... 20 mA (isolator operation)
Transmitter supply voltage	> 17 V (20 mA)
Step response (10-90%)	typ. 300 $\mu$ s (4 mA ... 20 mA)
	typ. 1000 $\mu$ s (0 mA ... 20 mA)

### Output data

#### Signal

Output description	Current output (active and passive)
Current output signal	0 mA ... 20 mA (isolator amplifier)

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	4 mA ... 20 mA (repeater power supply and isolator operation)
Max. current output signal	22.5 mA
Transmission Behavior	1:1 to input signal
Load/output load current output	≤ 600 Ω (20 mA)
	525 Ω (22.5 mA)
Residual ripple	< 20 mV <sub>rms</sub> (600 Ω)
Output ripple	< 20 mV <sub>rms</sub> (at 600 Ω)
Output behavior in the event of an error	0 mA (Cable break in the input)
	≥ 22.5 mA (Cable short-circuit in the input)
Underload/overload signal range	0 mA ... 22.5 mA (According to NE43)

## Connection data

Connection method	Screw connection
Stripping length	10 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> (with ferrule)
	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> (without ferrule)
Conductor cross-section flexible	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 12 (flexible)

## Ex data

### Safety data

Input voltage U <sub>i</sub>	0 V (nA, nB)
	30 V (nC, nD)
	30 V (Controller interface)
Input current I <sub>i</sub>	100 mA (Controller interface)
Inductance L <sub>i</sub>	0 mH
Capacitance C <sub>i</sub>	0 nF
Max. output voltage U <sub>o</sub>	28 V (nA, nB)
	0 V (nC, nD)
Max. output current I <sub>o</sub>	104 mA
Max. output power P <sub>o</sub>	726 mW
Safety-related maximum voltage U <sub>m</sub>	60 V AC/DC (Peak)
IIC: Max. external inductivity L <sub>o</sub> / Max. external capacitance C <sub>o</sub>	/ 0.27 μF
IIB/IIIC/IIIB/IIIA: Max. external inductivity L <sub>o</sub> / Max. external capacitance C <sub>o</sub>	/ 1.65 μF
IIA: Max. external inductivity L <sub>o</sub> / Max. external capacitance C <sub>o</sub>	/ 6.6 μF
IIC: Max. external inductivity L <sub>o</sub> / Max. external capacitance C <sub>o</sub>	7.3 mH
IIB/IIIC/IIIB/IIIA: Max. external inductivity L <sub>o</sub> / Max. external capacitance C <sub>o</sub>	14.7 mH
IIA: Max. external inductivity L <sub>o</sub> / Max. external capacitance C <sub>o</sub>	29.5 mH

## Interfaces

Data communication (bypass)

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HART function	Yes
Protocols supported	HART
Limit frequency (3 dB)	> 1.75 kHz (typical)

## Signaling

Status display	Green LED (supply voltage)
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## Dimensions

Width	9.8 mm
Height	75.2 mm
Depth	113.2 mm

## Material specifications

Color	gray (RAL 7042)
Flammability rating according to UL 94	V0

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	2000 m (max. altitude above sea level)
Permissible humidity (operation)	5 % ... 95 %

## Approvals

### ATEX

Identification	Ⓜ II 3G Ex ec IIC T4 Gc
	Ⓜ II 3G Ex ec [ic] IIC T4 Gc
	Ⓜ II (3)D [Ex ic IIIC Dc]
Certificate	Sira 17ATEX4208X

### IECEX

Identification	Ex ec IIC T4 Gc
	Ex ec [ic] IIC T4 Gc
	[Ex ic IIIC Dc]
Certificate	IECEX SIR 17.0047X

### CSA, USA/Canada

Identification	Class I, Div. 2 Groups A, B, C, D T4
	ANIFW apparatus for connection to: Class I, II, III, Div. 2 Groups A, B, C, D, F, G
	Class I, Zone 2 AEx ec IIC T4 Gc
	AEx ec [ic] IIC T4 Gc
	Connection to Zone 22, [Ex ic IIIC Dc]
	Connection to: Class I, II, III Div. 2 Groups A, B, C, D, F, G

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	Ex ec IIC T4 Gc
	Ex ec [ic] IIC T4 Gc
	[Ex ic IIIC Dc]

## UKEX

Identification	⊕ II 3G Ex ec IIC T4 Gc
	⊕ II 3G Ex ec [ic] IIC T4 Gc
	⊕ II (3)D [Ex ic IIIC Dc]
Certificate	PxCIF23UKEX2908452X

## Corrosive gas test

Identification	ISA S71.04.2013 G3 Harsh Group A
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## EMC data

Electromagnetic compatibility	Conformance with EMC directive
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## Electromagnetic HF field

Designation	Electromagnetic RF field
Standards/regulations	EN 61000-4-3
Typical deviation from the measuring range final value	1 %

## Fast transients (burst)

Designation	Fast transients (burst)
Standards/regulations	EN 61000-4-4
Typical deviation from the measuring range final value	1 %

## Conducted interference

Designation	Conducted interferences
Standards/regulations	EN 61000-4-6
Typical deviation from the measuring range final value	1 %

## Standards and regulations

Electrical isolation	Reinforced insulation in accordance with IEC 61010-1
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## Mounting

Mounting position	any
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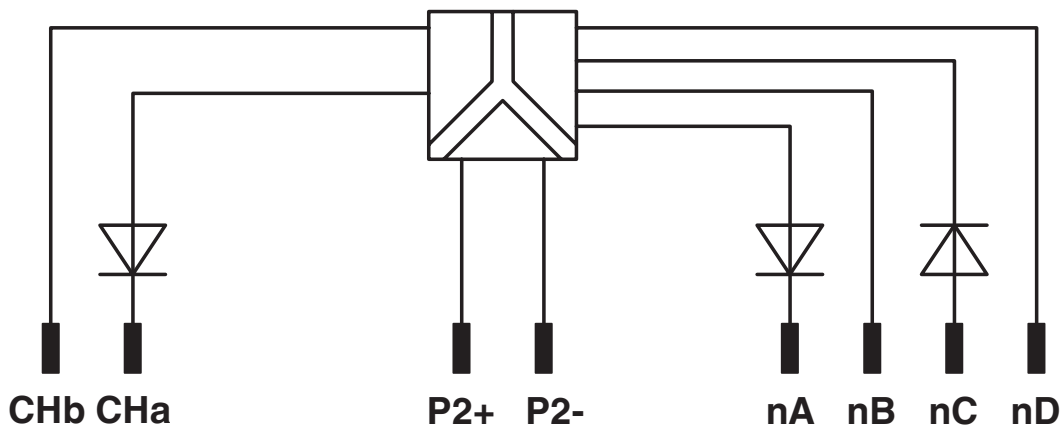
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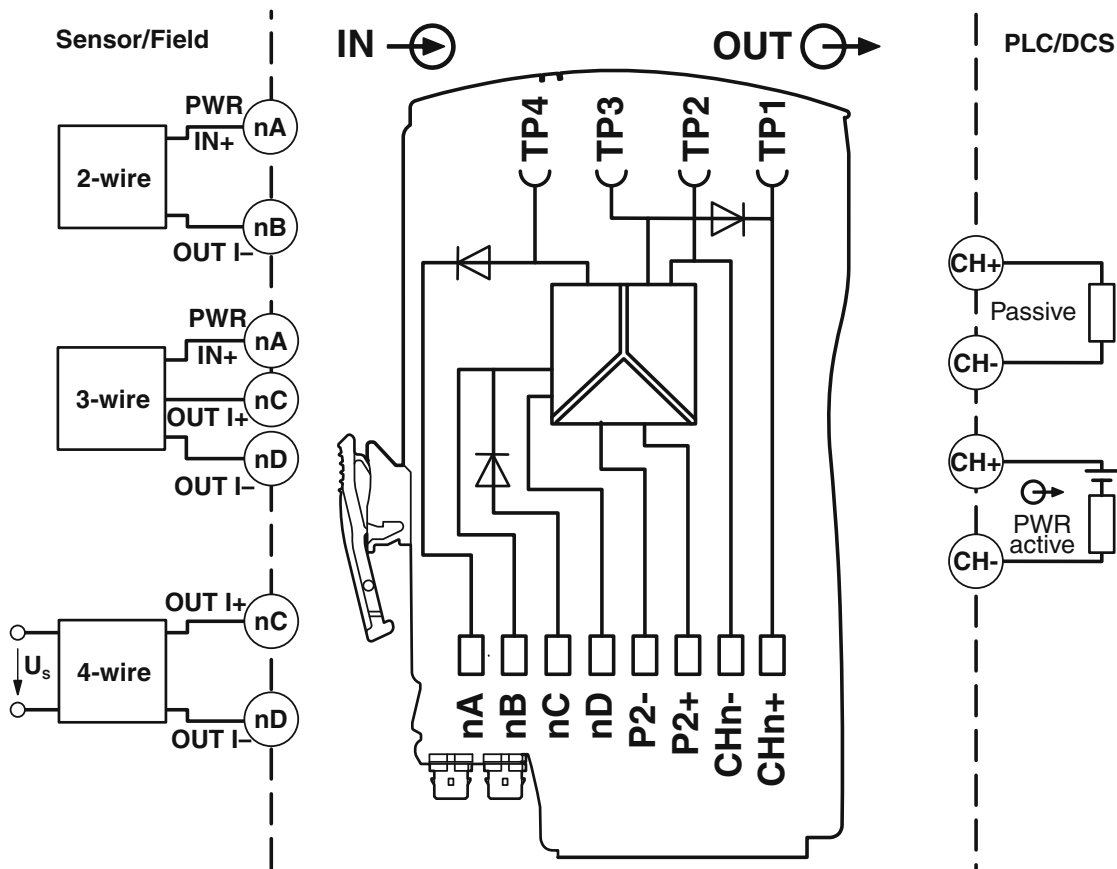
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## Drawings

Circuit diagram



Block diagram



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## Classifications

### ECLASS

ECLASS-13.0

27141152

### ETIM

ETIM 9.0

EC002780

### UNSPSC

UNSPSC 21.0

39121400

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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(c), 7(a), 7(c)-I

### China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

### EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
	2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7)
SCIP	6fc6af25-2b62-46c5-ad0b-7d1ad663cad9

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Phoenix Contact USA  
586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)