

Safety Analog Input Module HART Ex i Inputs, 8/6 Channels

Series 9462



www.stahl.de



07425E00

- > For all applications up to SIL 2 via PROFIsafe protocol (V1 or V2)
- > For SIL type 2-wire HART transmitters
- > 6 or 8 channels
- > Intrinsically safe inputs Ex ia IIC
- > Galvanic separation between inputs and system
- > Open-circuit and short-circuit monitoring for each field circuit
- > Status LEDs for RUN and ERROR, display for text messages



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The Safety Analog Input Module HART is used for fail-safe operation of intrinsically safe 2-wire HART transmitters. It can be used in circuits with a functional safety (EN/IEC 61508) of up to SIL 2. The module communicates with the automation system as PROFIsafe slave and can be combined with I/O modules that are not relevant for safety.

In addition, the integrated HART multiplexer allows bidirectional HART communication between HART field devices and the automation and engineering system.

Analog transmitters (non-HART) can also be operated.



	ATEX / IECEx						NEC 505						NEC 506						NEC 500					
	0	1	2	20	21	22	Class I						Class II						Class III					
Zone	0	1	2	20	21	22	Zone	0	1	2	20	21	22	Division	1	2	1	2	1	2				
Ex interface	x	x	x	x	x	x	Ex interface	x	x	x	x	x	x	Ex interface	x	x	x	x	x	x				
Installation in		x	x		x	x	Installation in		x	x		x	x	Installation in	x	x	x	x	x	x				

WebCode 9462A

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Selection Table

Version		Order number	Weight kg
Safety Analog Input Module HART	8 channels for SIL-type 2-wire HART transmitters*	9462/12-08-11	0.380
	6 channels for SIL-type 2-wire HART transmitters	9462/12-06-11	0.380
Note	Please order terminal separately - see Accessories * for Safety-Master with > 13 byte user data		

Explosion Protection

Version	9462/12-08-11 (8 inputs)	9462/12-06-11 (6 inputs)
Global (IECEX)		
Gas and dust	IECEX PTB 06.0001X Ex ib [ia Ga] IIC T4 Gb [Ex ia Da] IIIC	IECEX PTB 06.0001X Ex ib [ia Ga] IIC T4 Gb [Ex ia Da] IIIC
Europe (ATEX)		
Gas and dust	PTB 99 ATEX 2175 ⊕ II 2 (1) G Ex ib [ia Ga] IIC T4 Gb ⊕ II (1) D [Ex ia Da] IIIC	PTB 99 ATEX 2175 ⊕ II 2 (1) G Ex ib [ia Ga] IIC T4 Gb ⊕ II (1) D [Ex ia Da] IIIC
Certifications and certificates		
Certificates	ATEX, IECEX, Brazil (INMETRO), Rusia (GOST R), Serbia (SRPS), USA (FM), Belarus (operating authorisation)	ATEX, IECEX, Brazil (INMETRO), Canada (cFM), Serbia (SRPS)
Ship approval	ABS, ClassNK, DNV, LR	ABS, ClassNK, DNV, LR
Safety data		
Maximum values		
Max. voltage U_o	26.2	26.2
Max. current I_o	91	91
Max. power	$P_o = 589$ mW	$P_o = 589$ mW
Max. capacitance for IIC	$C_o = 97$ nF	$C_o = 97$ nF
Max. inductance for IIC	$L_o = 2.1$ mH	$L_o = 2.1$ mH
Further information	see certificate	see certificate
Functional safety		
Max. SIL	tested according to IEC 61508:2010 2	tested according to IEC 61508:2010 2
Safe state	"Alarm Code" or "No communication"	"Alarm Code" or "No communication"
Safe Failure Fraction SFF	98 %	98 %
PFD _{AVG} at $T_{[Proof]}$	$T_{[Proof]}$ 1 year 3 years 5 years PFD _{AVG} 9,8 x 10 ⁻⁵ 1.8 x 10 ⁻⁴ 2.61 x 10 ⁻⁴	$T_{[Proof]}$ 1 year 3 years 5 years PFD _{AVG} 9,8 x 10 ⁻⁵ 1.8 x 10 ⁻⁴ 2.61 x 10 ⁻⁴
Further information	see safety manual and test report	see safety manual and test report

Technical Data

Version	9462/12-08-11 (8 inputs)	9462/12-06-11 (6 inputs)
Electrical data		
Ex i inputs		
Number of channels	8 (for 2-wire transmitters with / without HART)	6 (for 2-wire transmitters with / without HART)
Signal		
Signal range	4 ... 20 mA + HART	4 ... 20 mA + HART
Minimum signal	2.4 mA	2.4 mA
Maximum signal	22.8 mA	22.8 mA
Supply voltage	≥ 16 V at 20 mA for 2-wire transmitters at 23 °C ≥ 15 V at 20 mA for 2-wire transmitters at 65 °C	≥ 16 V at 20 mA for 2-wire transmitters at 23 °C ≥ 15 V at 20 mA for 2-wire transmitters at 65 °C
Filter time constant	medium	medium
Resolution in the range 4 ... 20 mA	12.75 bit	12.75 bit
Maximum delay from the input to the internal bus, 0 ... 90 % of the signal span	120 ms	120 ms
Maximum short-circuit current	35 mA	35 mA

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Technical Data

Electrical data

Galvanic separation		
between power supply and system components	1500 V AC	1500 V AC
between two input / output modules	500 V AC	500 V AC
between inputs and system components	500 V AC	500 V AC
	The inputs and outputs of an I/O module have a common negative conductor.	
Accuracy of measurement		
Note	All values in % of the signal span, at 23 °C / 73.4 °F	All values in % of the signal span, at 23 °C / 73.4 °F
Max. measurement deviation		
Functional	0.1 %	0.1 %
Safety-relevant	2 %	2 %
Ambient temperature influence	0.1 % / 10 K	0.1 % / 10 K
Settings		
Functional parameters	None	None
Safety parameters	<ul style="list-style-type: none"> • PROFI-safe slave address • CRC length 2, 3, 4 bytes 	<ul style="list-style-type: none"> • PROFI-safe slave address • CRC length 2, 3, 4 bytes
Value to fieldbus during open circuit, short circuit	Alarm code	Alarm code
Diagnostics		
Retrievable parameters	Manufacturer, type, version, serial number	Manufacturer, type, version, serial number
Module faults	<ul style="list-style-type: none"> • Internal primary bus faults • Internal redundant bus faults • No response • Module does not correspond to configuration • Hardware fault 	<ul style="list-style-type: none"> • Internal primary bus faults • Internal redundant bus faults • No response • Module does not correspond to configuration • Hardware fault
Signal errors for each channel		
Message	Alarm code	Alarm code
Open circuit	< 2.4 mA *)	< 2.4 mA *)
Short circuit	> 22.8 mA *)	> 22.8 mA *)
Measuring range	Over range / under range	Over range / under range
	*)Note: Connect a resistor of approx. 4,7 kΩ +/- 1 kΩ to unused inputs in order to avoid error messages.	
Operator interface		
Operation	LED green "RUN"	LED green "RUN"
Fault	LED red "ERR"	LED red "ERR"
LCD display	Operating and status messages; 2 x 16 characters and 2 operating keys	Operating and status messages; 2 x 16 characters and 2 operating keys
Auxiliary power		
Maximum power consumption	6.6 W	6 W
Maximum power dissipation	3.7 W	3.6 W

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Technical Data

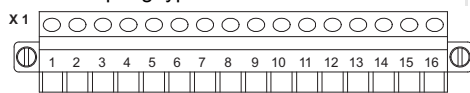
Electrical data

Electrical connection

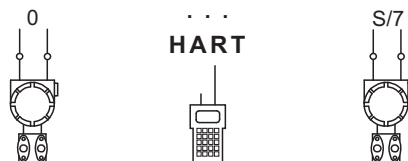
Ex i field signals

Connection diagram

Plug-in terminals 16-pole with catch, 2.5 mm², screw or spring type



4 ... 20 mA HART



Plug-in terminals 16-pole with catch, 2.5 mm², screw or spring type

07423E00

Ambient conditions

Ambient temperature

-20 ... +65 °C

-20 ... +65 °C

Storage temperature

-40 ... +70 °C

-40 ... +70 °C

Maximum relative humidity

95 % (no condensation)

95 % (no condensation)

Sinusoidal vibration (IEC EN 60068-2-6)

1 g in frequency range between 10 ... 500 Hz
2 g in frequency range 45 ... 100 Hz

1 g in frequency range between 10 ... 500 Hz
2 g in frequency range 45 ... 100 Hz

Semi-sinusoidal shock (IEC EN 60068-2-27)

15 g (3 shocks per axis and direction)

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Electromagnetic compatibility

Tested according to the following standards and regulations: EN 61326-1 (1998)
IEC 61000-4-1...6, NAMUR NE 21

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IEC 61000-4-1...6, NAMUR NE 21

Mechanical data

Module enclosure

Polyamide 6GF

Polyamide 6GF

Fire resistance (UL 94)

V2

V2

Degree of protection (IEC 60529)

Modules

IP30

IP30

Connections

IP20

IP20

Mounting / Installation

Installation conditions

Mounting type

on 35 mm DIN rail NS 35/15

on 35 mm DIN rail NS 35/15

Mounting orientation

horizontal and vertical

horizontal and vertical


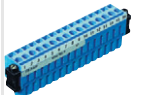

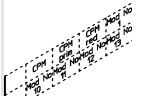


Engineering notes

- Safety modules and non-safety modules can be combined on a BusRail
- Zone 1 modules (946./2) and Zone 2 modules (946./5) can be combined on a BusRail
- A partition (162740) is required to separate intrinsically safe and non-intrinsically safe circuits (≥ 50 mm / 2 in)

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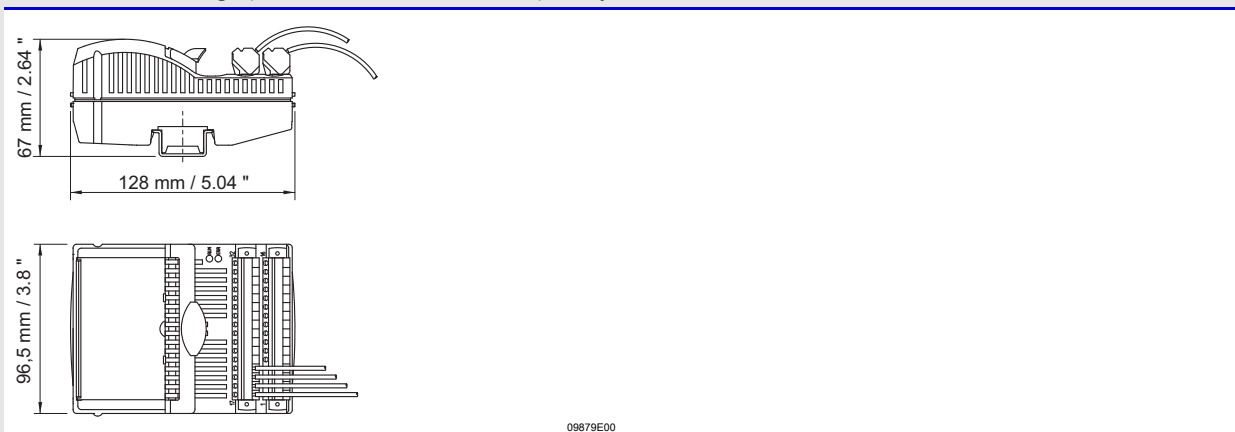


Accessories and Spare Parts

Designation	Figure	Description	Art. no.
Plug-in terminal	 02079E00	2.5 mm ² with lock, 16-pole, screw connector, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits Labelling: 1 ... 16 Attention: An additional terminal is necessary for I/O module Series 9470 and 9480. Designation: 17 ... 32	162702
	 02077E00	2.5 mm ² with lock, 16-pole, spring clamp connection, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits, incl. test jacks Labelling: 1 ... 16 Attention: An additional terminal is necessary for I/O module Series 9470 and 9480. Designation: 17 ... 32	162695
Labelling strips	 05869E00	"FB Addr ... Mod No ..." for pluggable terminal, sheet with 26 strips	162788
Designation strips	 05871E00	For BusRail, for 1 BusRail with 16 I/O modules	162793
Warning sign	 05872E00	"Clean modules only with a damp cloth."	162796
Partition	 15196E00	For mounting between intrinsically safe and non-intrinsically safe connections of the I/O modules, in order to adhere to the required 50 mm distance	220101

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Dimensional Drawings (All Dimensions in mm / inches) - Subject to Alterations



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