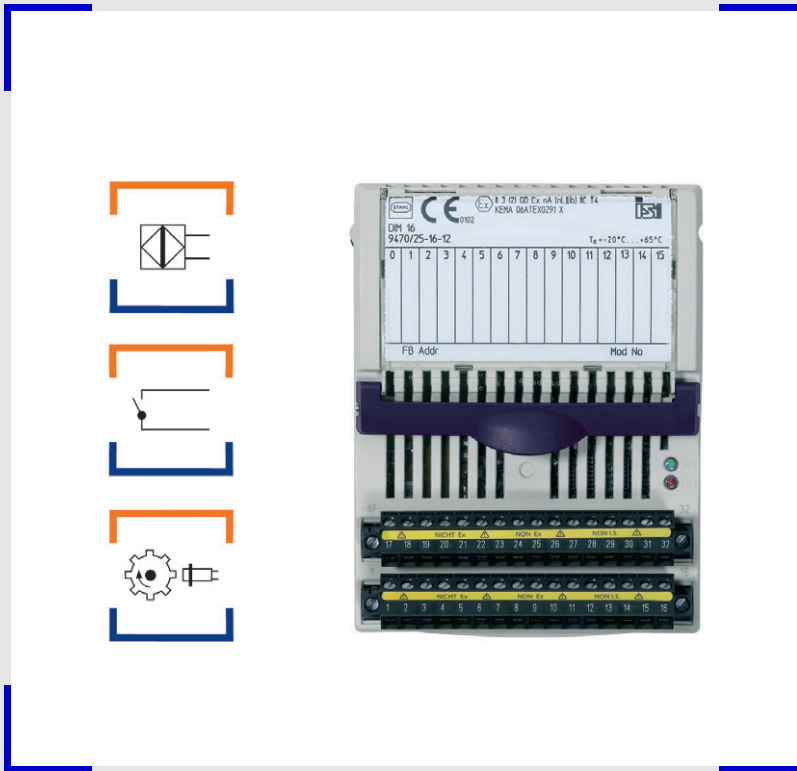


# Digital Input Module NAMUR Ex n Inputs, 16 Channels for Zone 2 / Div. 2 Series 9470/25



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05692E00

- > 16 channels for contacts and NAMUR proximity switches (EN 60947-5-6)
- > Inputs for Ex nL and Ex nA
- > Galvanic separation between inputs and system
- > Open-circuit and short-circuit monitoring for each field circuit
- > Two channels can be used as frequency inputs or counters up to 20 kHz
- > Module can be replaced in operation (hot swap)



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The Digital Input Module is used for the connection and supply of up to 16 volt-free contacts or proximity switches acc. to EN 60947-5-6 (NAMUR). All inputs are short-circuit proof and individually monitored for open-circuit and short-circuit.

Channels 14 and 15 can also be used for frequency measurement or as pulse counters up to 20kHz.

The interface of the Digital Input Module with the internal data bus of the BusRail is designed with redundancy.

	ATEX						NEC 505						NEC 506						NEC 500					
	0	1	2	20	21	22	Zone	0	1	2	20	21	22	Division	1	2	1	2	1	2				
Ex interface			x			x	Ex interface			x			x	Ex interface		x		x			x			
Installation in			x			x	Installation in			x			x	Installation in		x		x			x			

WebCode 9470B

# Digital Input Module NAMUR Ex n Inputs, 16 Channels for Zone 2 / Div. 2

## Series 9470/25



### Selection Table

Version	Description	Order number	Weight kg
Digital Input Module NAMUR	Inputs Ex nL, Ex nA	9470/25-16-12	0.319
Note	Please order 2 terminals separately - see Accessories		

### Explosion Protection

#### Europe (ATEX)

Gas and dust	KEMA 06 ATEX 0291 X ⊕ II 3 (2) GD Ex nA [nL] [ib] IIC T4
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#### Certifications and certificates

Certificates	ATEX, India (PESO), Canada (CSA), Kazakhstan (GOST K), Serbia (SRPS), USA (FM), Belarus (operating authorisation)
Ship approval	ABS, BV, ClassNK, DNV, GL, LR, RS

#### Safety data

Maximum values	per channel	
max. voltage $U_o$	12.6 V	
max. voltage $U_i$	12.6 V	
max. current $I_o$	15 mA	
max. current $I_i$	any	
max. power $P_o$	48 mW	
max. power $P_i$	any	
Cable parameters (ATEX) (for inductive or capacitive circuits)	per channel	
max. capacitance $C_o$ for IIC	1.2 $\mu$ F	
max. capacitance $C_i$ for IIC	2.6 nF	
max. inductance $L_o$ for IIC	1 mH	
max. inductance $L_i$ for IIC	0 mH	
Further information	see respective certificate and operating instructions	

#### Further parameters

Installation in	Zone 2, Div. 2, Zone 22
Further information	see respective certificate and operating instructions

### Technical Data

#### Electrical data

Digital inputs			
Number of channels	16		
Signal	EN 60947-5-6 (NAMUR)		
Minimum current for ON	2.1 mA		
Maximum current for OFF	1.2 mA		
Switching threshold	1.65 mA		
Supply voltage	7.8 V		
Internal resistance	1 k $\Omega$		
Minimum pulse width of the input signal		without OC/SC detection	with OC/SC detection
	Channels 0-15 as digital inputs	approx. 1 ms	approx. 2 ms
	Channels 14 or 15 as frequency input or counter	approx. 2 ms	approx. 4 ms

# Digital Input Module NAMUR Ex n Inputs, 16 Channels for Zone 2 / Div. 2

## Series 9470/25



### Technical Data

#### Electrical data

Digital inputs Maximum signal delay			without OC/SC detection	with OC/SC detection
	from digital inputs to internal bus	channels 0-15 as digital inputs channels 14 or 15 as frequency input or counter	approx. 1 ms approx. 2 ms	approx. 2 ms approx. 4 ms
	from frequency inputs to internal bus	measuring range 1 Hz ... 1 kHz (measurement frequency f = 1 ... 35 Hz)	2 ms + 1/f	4 ms + 1/f
		measuring range 1 Hz ... 1 kHz (measurement frequency f = 35 Hz ... 1 kHz)	34 ms + 1/f	36 ms + 1/f
measuring range 1 Hz ... 20 kHz gate time 50 ms 200 ms 1 s		approx. 50 ms approx. 200 ms approx. 1 s	approx. 50 ms approx. 200 ms approx. 1 s	
	from counter inputs to internal bus		approx. 2 ms	approx. 4 ms
Galvanic separation between power supply and system components between two input / output modules between inputs and system components	1500 V AC			
	1500 V AC			
	1500 V AC			
	The inputs of an I/O module have a common negative conductor.			
Channels 14 and 15 as frequency input or counter Maximum switching frequency Minimum pulse width	20 kHz (the line length must be reduced for frequencies > 1 kHz, e.g. at 5 kHz to approx. 75 m / 246 ft)			
	25 µs			
Frequency input		Measuring range		
		1 Hz ... 1 kHz	1 Hz ... 20 kHz	
	Resolution	0.05 Hz	1 Hz	
Accuracy	0.02 %	0.02 %		
	adjustable parameters for each channel			
Counter input Control signal for counter Counter range	Start, Stop, Reset			
	0 ... 65535			
Settings Open-circuit and short-circuit monitoring Value to fieldbus during open circuit, short circuit Invert input value Adjustable pulse width Gate time for frequency measuring range 1 Hz ... 20 kHz Active edge for counter (channels 14 and 15)	ON, OFF (for each channel)			
	ON, OFF, hold last value (all channels)			
	ON, OFF (all channels)			
	0 s, 0.6 s, 1.2 s, 2.4 s (for channel groups)			
	50 ms, 200 ms, 1 s			
	positive (voltage ↑) negative (voltage ↓)			

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# Digital Input Module NAMUR Ex n Inputs, 16 Channels for Zone 2 / Div. 2

## Series 9470/25



### Technical Data

#### Electrical data

##### Diagnostics

Retrievable parameters Manufacturer, type, version, serial number

Characteristic values for open circuit and short-circuit detection

Open-circuit detection < 0.05 mA

Short-circuit detection < 100 Ω

Note: If open-circuit / short-circuit detection is required, then contacts require resistors with 1.2 kΩ wiring in series and 15 kΩ in parallel.

##### Module faults

- Internal primary bus faults
- Internal redundant bus faults
- No response
- Module does not correspond to configuration
- Hardware fault

##### Operator interface

Operation LED green "RUN"

Fault LED red "ERR"

##### Auxiliary power

Maximum power consumption 3 W

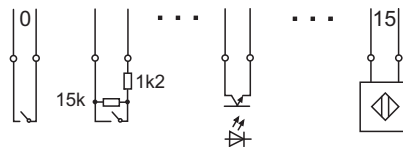
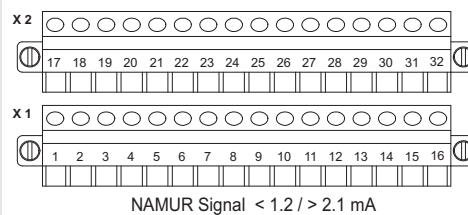
Maximum power dissipation 3 W

##### Electrical connection

Ex n field signals

Connection diagram

Plug-in terminals 16-pole with catch, 2.5 mm<sup>2</sup>, screw or spring type



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#### Ambient conditions

Ambient temperature -20 ... +65 °C

Storage temperature -40 ... +70 °C

Maximum relative humidity 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

Semi-sinusoidal shock (IEC EN 60068-2-27)  
15 g (3 shocks per axis and direction)

Electromagnetic compatibility Tested according to the following standards and regulations:  
EN 61326-1 (1998) IEC 1000-4-1...6, NAMUR NE 21

#### Mechanical data

Module enclosure Polyamide 6GF

Fire resistance (UL 94) V2

Degree of protection (IEC 60529)

Modules IP30

Connections IP20

# Digital Input Module NAMUR Ex n Inputs, 16 Channels for Zone 2 / Div. 2

## Series 9470/25









### Technical Data

#### Mounting / Installation

Installation conditions	on 35 mm DIN rail NS 35/15
Mounting type	horizontal and vertical
Mounting orientation	
Engineering notes	<ul style="list-style-type: none"> <li>• Versions 9470/5 are only for installation in Zone 2 / Division 2 or in safe area.</li> <li>• Mixing of Zone 1 / Division 1 modules (9470/.2) and Zone 2 / Division 2 modules (9470/.5) on same BusRail is allowed.</li> <li>• For separation between intrinsically safe and non-intrinsically safe circuits (<math>\geq 50</math> mm / 2 in), a partition (162740) is required.</li> </ul>

#### Accessories and Spare Parts

Designation	Figure	Description	Art. no.
Plug-in terminal		Screw connection, 2.5 mm <sup>2</sup> with screw lock, 16 pin, black, for connecting Ex nL/Ex nA field signals Labelling: 1 ... 16	<b>162708</b>
	09898E00	Screw connection, 2.5 mm <sup>2</sup> with screw lock, 16 pin, black, for connecting Ex nL/Ex nA field signals Labelling: 17 ... 32	<b>162719</b>
		Spring connection, 2.5 mm <sup>2</sup> with screw lock and test jacks, 16 pin, black, for connecting Ex nL/Ex nA field signals Labelling: 1 ... 16	<b>162710</b>
	09899E00	Spring connection, 2.5 mm <sup>2</sup> with screw lock and test jacks, 16 pin, black, for connecting Ex nL/Ex nA field signals Labelling: 17 ... 32	<b>162720</b>
Labelling strips		"FB Addr ... Mod No ..." for pluggable terminal, sheet with 26 strips	<b>162788</b>
05869E00			
Warning sign		"Clean modules only with a damp cloth."	<b>162796</b>
05872E00			
DIN A4 sheet		For label plate on I/O modules; 6 labels on each sheet; print-out using IS Wizard; packaging unit = 20 sheets	<b>162832</b>
09900E00			
Partition		For assembly between intrinsically safe and non-intrinsically safe connectors of the I/O modules, in order to adhere to the required 50 mm distance	<b>162740</b>
02078E00			

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



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