Speed switches

Safety motion monitor with SIL3 and PLe certification
Inputs for 1 SinCos encoder (SIL3/PLe) and 2 HTL/PNP control signals

GMM240S

SAFETr ®

GMM240S

Features

– **SIL3 and PLe certification**
– **Monitoring of underspeed, overspeed, standstill and rotating direction**
– **Inputs for 1 SinCos encoder (SIL3/PLe) and 2 HTL/PNP control signals**
– **Safety related outputs and signal splitter**
– **Mounting to 35 mm DIN rail (according to EN 60715)**
– **USB interface for simple parametrization by the OS 6.0 operator surface**

Optional

– **GMI230S display and programming unit for parametrization and indication**

Technical data - electrical ratings

Input voltage	18...30 VDC
Consumption w/o load	~150 mA
Protective circuit input	Reverse polarity protection, external fuse (2.5 A, medium time-lag) necessary
Residual ripple	≤10 % (24 VDC)
Encoder output voltage	~2 VDC less the input voltage
Protective circuit encoder supply	Short-circuit-proof
Encoder output current	≤200 mA each encoder
Inputs	1x SinCos encoder (SIL3/PLe) 2x HTL/PNP control signals
Outputs (safety related)	1x relay output 5...36 VDC (NO) 1x analogue output 4...20 mA 4x control output HTL
Signal splitter (safety related)	1x SinCos splitter output 1x RS422 splitter output
Status indicator	LEDs
Control functions	DIL switch: 1 x 3-pin
LED operating status	Green = ready for use "ON" Yellow = "ERROR"
Interference immunity	EN 61000-6-2; EN 61326-3-2
Emitted interference	EN 61000-6-3; EN 61000-6-4
Approvals	CE, SIL3/PLe EN ISO 13849-1, EN 61508, EN 62061

Technical data - mechanical design

Dimensions (W x H x D)	50 x 100 (120) x 165 mm With programming unit GMI230S: 50 x 100 (120) x 180 mm
Protection DIN EN 60529	IP 20
Operating temperature	-20...+55 °C (without dew)
Storage temperature	-25...+70 °C (without dew)
Weight approx.	390 g
Mounting type	35 mm DIN rail (according to EN 60715)
Connection	Plug-in screw terminal 1.5 mm² Connector D-SUB, female, 9-pin (SinCos input) Connector D-SUB, female, 9-pin (SinCos output) USB 1.0 / type B (female)
Material	Plastic

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Part number

GMM24 | **0** | **S**

Type

0 1 SinCos input (SIL3/PLe), 2 control inputs, all outputs as well as signal splitter function (SinCos- / RS422 output)

Accessories

Programming accessories

11180618	Display and programming unit GMI230S for GMM2xxS motion monitors

Safety-relevant key characteristics

DC_{avg} (ISO 13849)	97.95 %
Category (ISO 13849)	3 (HFT = 1)
Classification	SIL3/PLe (depending on the used encoder input signals)
$MTTF_d$ (ISO 13849)	38.1 years
PFH (IEC 61508 / EN 62061)	$3{,}76 * 10^{-8} h^{-1}$
SFF	98.77 %
Safety functions	Equivalent to EN 61800-5-2 for SS1, SS2, SOS, SLS, SDI, SSM, SLI, SBC, STO, SMS (depending on the used encoder input signals)
Structure	Dual-channel
Service interval	Switch on/off for at least 1 times a year (at continuous operation)
λ_{DD} / λ_{DU}	$2{,}94 * 10^{-6} h^{-1}$ / $6{,}14 * 10^{-8} h^{-1}$
λ_{SD} / λ_{SU}	$1{,}93 * 10^{-6} h^{-1}$ / $4{,}64 * 10^{-8} h^{-1}$

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Power supply	Inputs

Power supply

[X3]
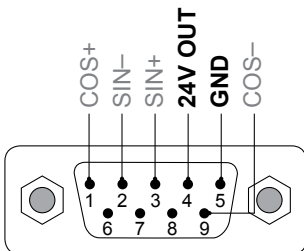Pluggable 2-position screw terminal, AWG 16
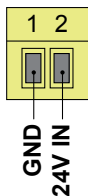
Power supply input 24V IN = 18 ... 30 VDC

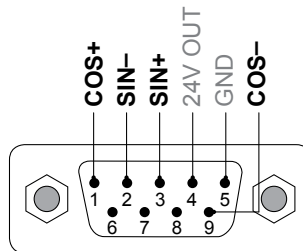**Encoder supply**

SinCos input [X6]
D-SUB, 9-pin, male

24V OUT = ~2 VDC less the input voltage
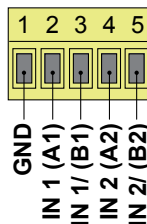
Inputs

SinCos input (SIL3/PLe) [X6]
D-SUB, 9-pin, male

Number of inputs	1
24V OUT	~2 VDC less the input voltage
Channels	SIN+, SIN-, COS+, COS- (SIL3/PLe)
Amplitude	0,8...1,2 Vpp
DC Offset	2,4…2,6 VDC
Frequency	≤500 kHz (with Lissajous figure monitoring ≤100 kHz)

HTL/PNP control inputs [X10]
Pluggable 5-position screw terminal, AWG 16

| Number of inputs	2 (each complementary)
Application	Control commands
Signal level	HTL PNP (10...30 V)
Load	max. 15 mA
Frequency	≤1 kHz (control)

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## Outputs (safety related)

SinCos output [X5]
D-SUB, 9-pin, female
Splitter output of the SinCos 1 input [X6]
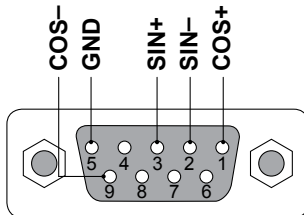
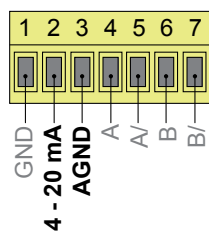| Number of outputs	1
Channels	SIN+, SIN-, COS+, COS-
Amplitude	0,8...1,2 Vpp
DC Offset	2,4…2,6 VDC
Frequency	≤500 kHz
Signal delay	~200 ns

Incremental output [X4]
Pluggable 7-pin screw terminal, AWG 16
Splitter output of the SinCos 1 input [X6], SinCos 2 input [X7], RS422 1 input [X8], RS422 2 input [X9], HTL 1 input [X10] or HTL 2 input [X10]
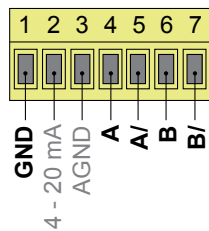
Number of outputs	1
Format	RS422
Channels	Differential signals A, /A, B, /B
Frequency	≤500 kHz

Analogue output [X4]
Pluggable 7-pin screw terminal, AWG 16

Number of outputs	1
Current output	4 ... 20 mA (load ≤270 Ohm)
Resolution	14 bits
Accuracy	±0,1%

Control outputs [X2]
Pluggable 8-pin screw terminal, AWG 16
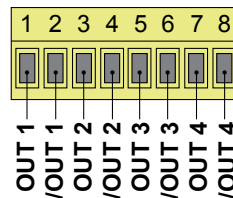
Number of outputs	4 (each complementary)
Output voltage	~2 VDC less the input voltage
Output current	≤30 mA each output
Output stage	HTL push-pull
Protective circuit	Short-circuit-proof

Relay outputs [X1]
Pluggable 2-pin screw terminal, AWG 16

Internal connection
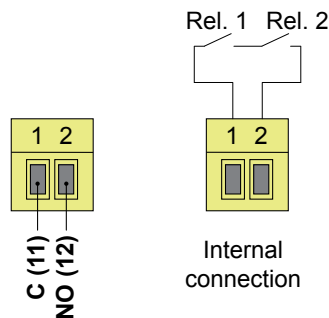
Number of relays	2 relays in series with forced-guided contacts (NO)
Switching capability	5...36 VDC
Switching capacity	5 mA...5 A

USB interface
For communication between the unit and a PC or a superordinate controller, a virtual COM port is accessible at the USB connector. A standard USB-cable with a Type B connector is used for connection. This USB cable is available as an option. The USB port serves for PC setup of the GMM240S monitors.
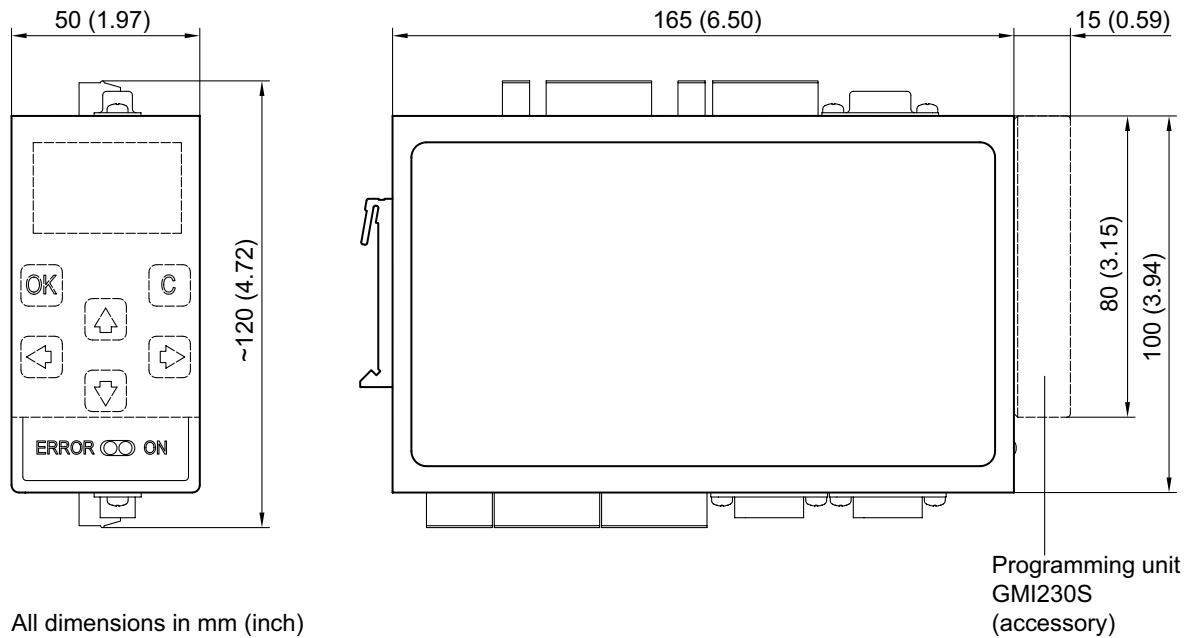
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Dimensions

50 (1.97)

165 (6.50)

15 (0.59)

~120 (4.72)

80 (3.15)

100 (3.94)

ERROR ⬭ ON

OK   C

Programming unit
GMI230S
(accessory)

All dimensions in mm (inch)