

# GMM240S

Safety motion monitor with SIL3 and PLe certification

Inputs for 1 SinCos encoder (SIL3/PLe) and 2 HTL/PNP control signals

## Overview

- 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



Picture similar



## Technical data

### Safety-relevant key characteristics

DC <sub>avg</sub> (ISO 13849)	97.95 %
Category (ISO 13849)	3 (HFT = 1)
Classification	SIL3/PLe (depending on the used encoder input signals)
MTTF <sub>d</sub> (ISO 13849)	38.1 years
PFH (IEC 61508/EN 62061)	3,76 * 10 <sup>-8</sup> h <sup>-1</sup>
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 <sub>DD</sub> / λ <sub>DU</sub>	2,94 * 10 <sup>-6</sup> h <sup>-1</sup> / 6,14 * 10 <sup>-8</sup> h <sup>-1</sup>
λ <sub>SD</sub> / λ <sub>SU</sub>	1,93 * 10 <sup>-6</sup> h <sup>-1</sup> / 4,64 * 10 <sup>-8</sup> h <sup>-1</sup>

### 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

### Technical data - electrical ratings

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
Approval	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 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 mm <sup>2</sup> 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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### Optional

- GMI230S display and programming unit for parametrization and indication

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## Terminal assignment

### Power supply

#### GMM2x0S, GMM2x6S [X3]

Pluggable 2-position screw terminal, 1.5 mm<sup>2</sup>

Power supply input 24V IN = 18...30 VDC



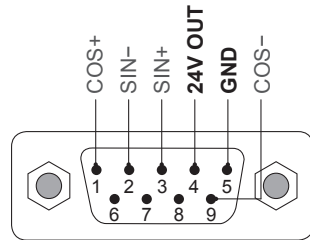
GND  
24V IN

### Encoder supply

#### SinCos inputs [X6][X7]

D-SUB, 9-pin, male

24V OUT = ~2 VDC less the input voltage



### Inputs

#### HTL/PNP inputs / control inputs [X10]

Pluggable 5-position screw terminal, 1.5 mm<sup>2</sup>

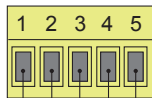
Number of inputs: 2 (each complementary)

Application: HTL encoders, proximity switches or control commands

Signal level: HTL PNP (10...30 V)

Load: ≤15 mA

Frequency: ≤1 kHz (control), ≤250 kHz (incremental)



GND  
IN 1 (A1)  
IN 1/ (B1)  
IN 2 (A2)  
IN 2/ (B2)

## Terminal assignment

### Inputs

#### SinCos inputs [X6][X7]

D-SUB, 9-pin, male

Number of inputs: 2

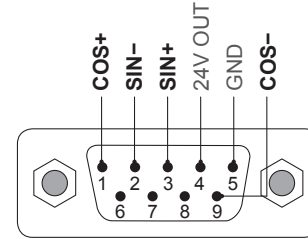
24V OUT: ~2 VDC less the input voltage

Channels: SIN+, SIN-, COS+, COS-

Amplitude: 0.8...1.2 V<sub>pp</sub>

DC offset: 2.4...2.6 VDC

Frequency: ≤500 kHz (with Lissajous figure monitoring ≤100 kHz)



### Outputs (safety related)

#### SinCos output [X5]

D-SUB, 9-pin, female

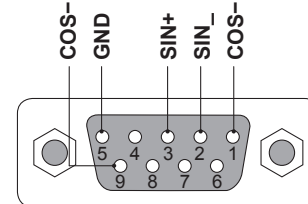
Splitter output of the SinCos 1 input [X6]

Number of outputs: 1

Channels: SIN+, SIN-, COS+, COSAmplitude 0.8...1.2 V<sub>pp</sub>

DC Offset: 2.4...2.6 VDC

Frequency: ≤500 kHz



#### Incremental output [X4]

Pluggable 7-pin screw terminal, 1.5 mm<sup>2</sup>

Splitter output of the SinCos input 1 [X6], SinCos 2 [X7],

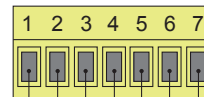
RS422 1 [X8], RS422 2 [X9], HTL 1 [X10] or HTL 2 [X10]

Number of outputs: 1

Format: RS422

Channels: Differential signals A, /A, B, /B

Frequency: ≤500 kHz



GND  
4-20 mA  
AGND  
A  
/A  
B  
/B

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## Terminal assignment

### Outputs (safety related)

#### Analogue output [X4]

Pluggable 7-pin screw terminal, 1,5 mm<sup>2</sup>

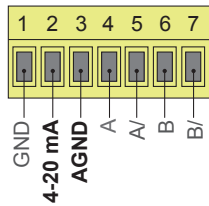
Number of outputs: 1

Current output: 4 ... 20 mA (load ≤270 Ohm)

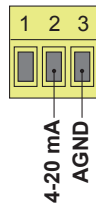
Resolution: 14 bits

Accuracy: ±0.1 %

GMM230S:



GMM236S:



#### Control outputs [X2]

Pluggable 8-pin screw terminal, 1,5 mm<sup>2</sup>

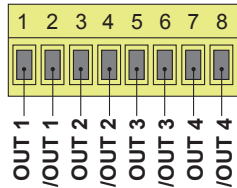
Number of outputs: 4 (each complementary)

Output voltage: ~2 VDC less the input voltage

Output current: ≤30 mA each output

Output stage: HTL/push-pull

Protective circuit: Short-circuit-proof



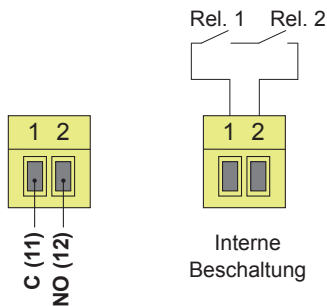
#### Relay outputs [X1]

Pluggable 2-pin screw terminal, 1,5 mm<sup>2</sup>

Number of relays: 2 relays in series with forced-guided contacts (NO)

Switching capability: 5...36 VDC

Switching capacity: 5 mA...5 A



## Terminal assignment

### Outputs (safety related)

#### 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 GMM230S monitors.

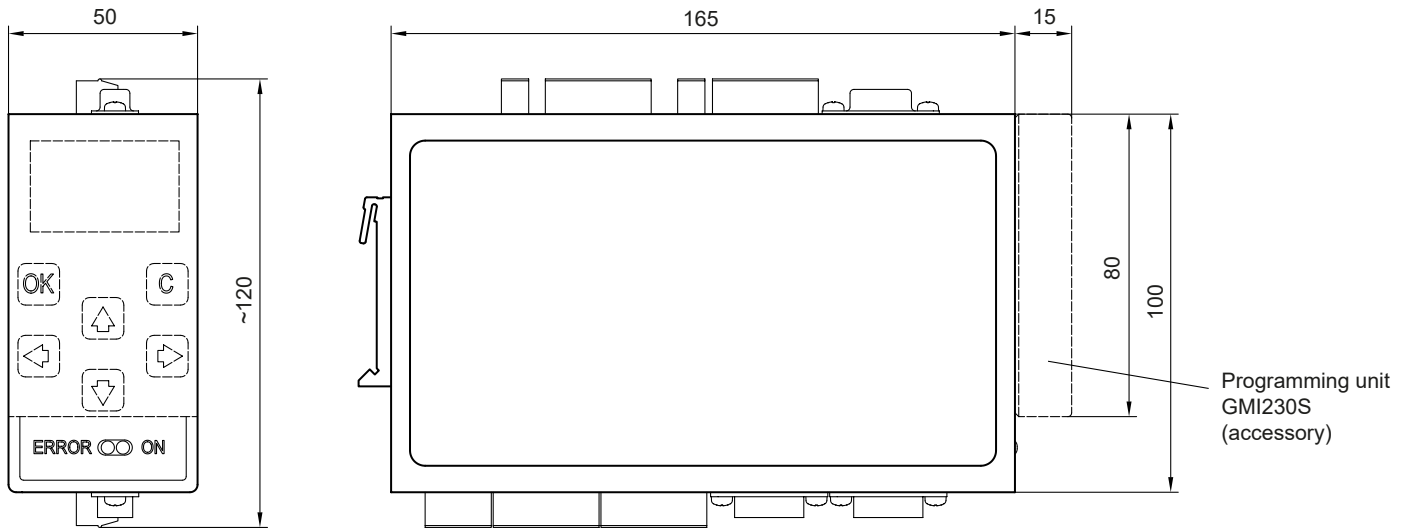


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## Dimensions



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## Ordering reference

**GMM24 0S**

## Product

GMM24

## Type

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

0S

## Accessories

### Programming accessories

11180618

GMI230S