

GMM230S

Safety motion monitor with SIL3 and PLe certification
Inputs for SinCos and incremental encoders / sensors

Overview

- SIL3 and PLe certification
- Monitoring of underspeed, overspeed, standstill and rotating direction
- Inputs for HTL/RS422/SinCos encoders and sensors
- 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 _{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

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	2x SinCos encoder 2x RS422 incremental encoder 2x HTL/PNP incremental encoders, proximity switches or 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 ² 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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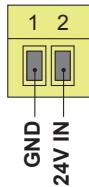
Terminal assignment

Power supply

GMM2x0S, GMM2x6S [X3]

Pluggable 2-position screw terminal, 1.5 mm²

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

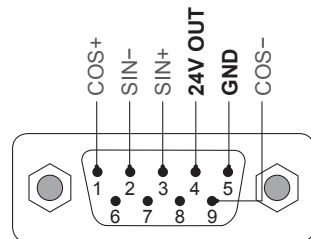


Encoder supply

SinCos inputs [X6][X7]

D-SUB, 9-pin, male

24V OUT = ~2 VDC less the input voltage

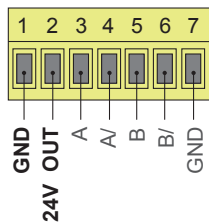


RS422 inputs [X8][X9]

Pluggable 7-position screw terminal, 1.5 mm²

24V OUT = ~2 VDC less the input voltage

HTL encoders must be supplied by the encoder supply of the RS422 inputs.



Terminal assignment

Inputs

SinCos inputs [X6][X7]

D-SUB, 9-pin, male

Number of inputs: 2

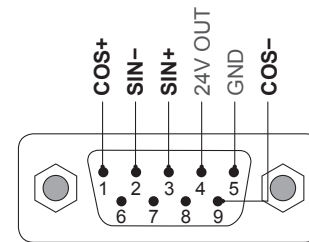
24V OUT: ~2 VDC less the input voltage

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

Amplitude: 0.8...1.2 Vpp

DC offset: 2.4...2.6 VDC

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



RS422 inputs [X8][X9]

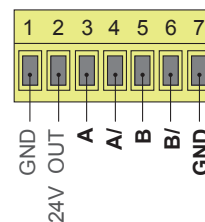
Pluggable 7-position screw terminal, 1.5 mm²

Number of inputs: 1

Format: RS422

Channels: Differential signal A, A/, B, B/

Frequency: ≤500 kHz



HTL/PNP inputs / control inputs [X10]

Pluggable 5-position screw terminal, 1.5 mm²

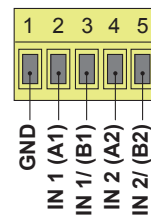
Number of inputs: 2 (each complementary)

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)



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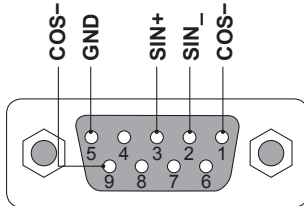
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Terminal assignment

Outputs (safety related)

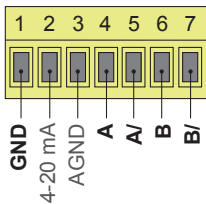
SinCos output [X5]

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



Incremental output [X4]

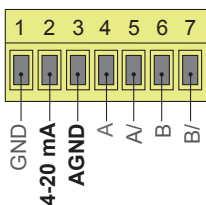
Pluggable 7-pin screw terminal, 1,5 mm²
Splitter output of the SinCos input 1 [X6], SinCos 2 [X7], RS422 1 [X8], RS422 2 [X9], HTL 1 [X10] or HTL 2 [X10]
Number of outputs: 1
Format: RS422
Channels: Differential signals A, /A, B, /B
Frequency: ≤500 kHz



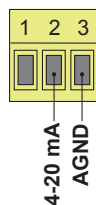
Analogue output [X4]

Pluggable 7-pin screw terminal, 1,5 mm²
Number of outputs: 1
Current output: 4 ... 20 mA (load ≤270 Ohm)
Resolution: 14 bits
Accuracy: ±0.1 %

GMM230S:



GMM236S:

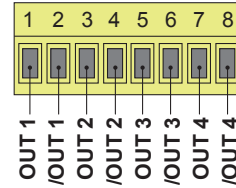


Terminal assignment

Outputs (safety related)

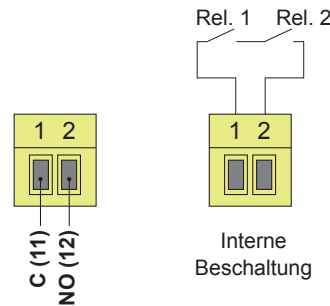
Control outputs [X2]

Pluggable 8-pin screw terminal, 1,5 mm²
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 mm²
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

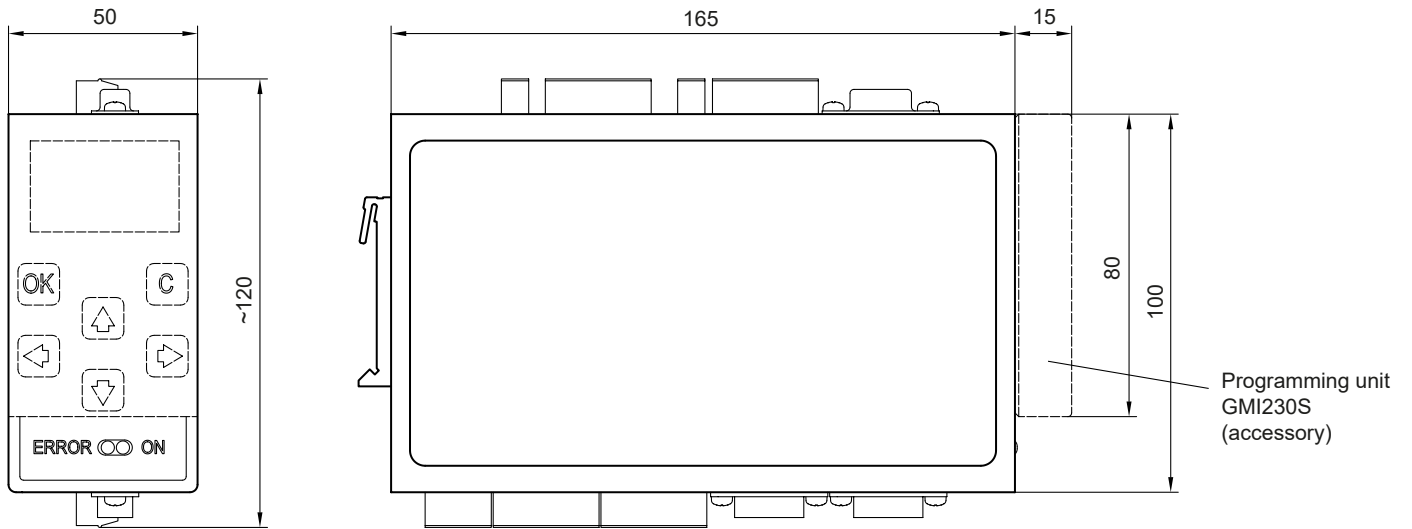
For communication between the unit and a PC or a superordinate controller, a virtual COM port is accessible at the USB connector. A standard USB-cable with a Type B connector is used for connection. This USB cable is available as an option. The USB port serves for PC setup of the GMM230S monitors.



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Dimensions



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Ordering reference

GMM23 0S

Product

GMM23

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