SeGMo-Assist

Position display for rotatory
and linear position measurements

GEL SEPOD

Technical information

Version 2022-01-25

General

- Display indicator of nominal and actual position to facilitate manual adjustment processes
- Available for either rotatory or linear position measurements



Features

- Plastic housing, ABS
- Operating temperature range 0 °C to +60 °C
- Bright graphical display
  - Representation of customized pictograms
- Degree of protection IP 65
- CAN bus with CANopen protocol, profile CiA 406(1)

SEPODR:

- Batteryless, magnetic multiturn encoder
  - Detection range:
    129 revolutions, also in de-energized state
- 20.2 mm through hollow shaft, stainless steel

Advantages

- Not sensitive to EMC interference
- Simple cabling
- Extremely compact for confined installation situations
- Ready for use directly after switching on the power due to absolute multiturn position detection
- Freely programmable pictograms for easy user navigation
- Maintenance-free electrical parts

Fields of application

- Packaging machines
- Food and bottling lines
- Wood and plastic processing machines
- General mechanical and systems engineering

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(1) other communication interfaces via the modular SeGMo-Box

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Description of SeGMo system

SeGMo system

The SeGMo system is suitable for efficient integration of several positioning drives and positioning displays in a machine or a system. The system comprises the following components:

- SeGMo-Positioning:
  Positioning drive for fully automatic format setting
- SeGMo-Motion:
  Positioning drive for cyclic operation
- SeGMo-Box:
  Decentral control unit for up to 5 positioning drives
- Modular SeGMo-Box:
  decentral control unit for up to 17 positioning drives or up to 48 positioning displays
- SeGMo-Assist:
  Position display for manual adjustment procedures
- SeGMo-Connect:
  Single cable concept (hybrid cable suitable for drag chain)
- SeGMo-Lib:
  Prefabricated function blocks for integration in the higher level control system
- SeGMo-Support Tool:
  Software for extended commissioning and configuration
- SeGMo-Web:
  Software for real-time transmission of the modular SeGMo-Box
- SeGMo-ImgConv Tool:
  Tool for converting image files into pictograms for SeGMo-Assist

SeGMo-Positioning:

The positioning drives are complete mechatronic systems with a batteryless multiturn encoder, gear and motor as well as integrated power and control electronics. We also offer these items for standalone use. With nominal torques of up to 15 Nm, they cover the typical power range for secondary axes.

SeGMo-Motion:

The positioning drives are complete mechatronic systems with gear and motor as well as integrated power and control electronics for cyclic operation.

SeGMo-Box:

Up to 5 positioning drives can be connected to the SeGMo-Box. The connection of position displays is not provided. The SeGMo-Box supports all common fieldbus and Industrial Ethernet communication interfaces.

Modular SeGMo-Box:

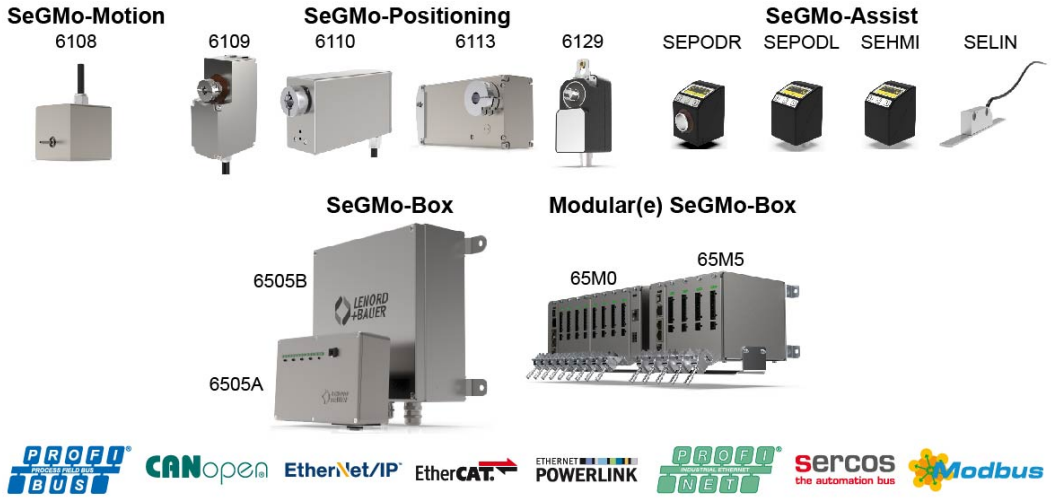
Every modular SeGMo-Box comprises a basic housing with individually equippable plug-in modules. By combining basic housings, up to 17 positioning drives or up to 48 position displays can be connected. A combination of positioning drives and position displays on a modular SeGMo-Box is possible. The power supply can be provided separately for each equipped plug-in module. The modular SeGMo-Box supports all common Industrial Ethernet communication interfaces.

SeGMo-Assist:

The position displays facilitate manual adjustment procedures by displaying nominal and actual positions. Variants are available for rotary and linear applications. Another variant without a measuring system supports the operator, for example, when changing format parts or tools.

SeGMo-Connect:

By using the positioning drives with a SeGMo-Box the cabling effort is considerably reduced by SeGMo-Connect. Instead of the usual two separate cables for internal bus communication and a third cable for power supply to the positioning drives, only **ONE** hybrid cable is connected. In combination with the SeGMo-Box and 5 connected positioning drives, the SeGMo-Connect typically reduces the number of cables from 15 to 5.
The hybrid cable is designed for moveable use in drag chains. Its variants are food grade quality, halogen-free and available as a cULus recognized component.



Type code and accessories SeGMo-Assist

The position displays belong to the SeGMo-Assist product group and are a component of the SeGMo system.

Type code

	Measuring system					
	L Linear measuring system					
	R Rotary measuring system with hollow shaft					
		Detection range in de-energized state				
		0 Only available for measuring system L				
		1 129 revolutions - only available for measuring system R				
			Design			
			N Standard			
				Communication interface		
				CO CAN bus with CANopen protocol, profile CiA 406 (system internal communication)[1]		
					Position torque support for rotatory measuring systems	
					A 22 mm[2]	
					B 30 mm	
SEPOD	_	_	_	_ _	_	

Accessories

Mechanical accessories GEL SEPODR

Designation	Item number:
ZB reducing sleeve di = 14 mm	ZBSGX08

Connection accessories

CAN bus

Designation	Item number:
ZB cable CAN bus 2 m M12	ZBSGX01
ZB cable CAN bus 5 m M12	ZBSGX02
ZB cable CAN bus 10 m M12	ZBSGX03
ZB cable CAN bus 2 m M12 open	ZBSGX04
ZB cable CAN bus 10 m M12 open	ZBSGX05
ZB T-distributor CAN bus M12	ZBSGX06
ZB Y-distributor CAN bus M12	ZBSGX09
ZB terminating resistor CAN bus M12	ZBSGX07

Connection to modular SeGMo-Box GEL 65M

Designation	Item number:
Connection: Supply voltage U_B	
Connector 24 V capacity (IN) for PORT module, comprising: ▪ 5 × 2-pin female connectors with 4 contacts, item number: FK1263	ZB65MX03
Connection: CAN bus	
Connector LOG/OUT/CAN for PORT module, comprising: ▪ 5 × 7-pin female connectors, item number: FK1264	ZB65MX04

(1) other interfaces via the modular SeGMo-Box
(2) upon request

GEL SEPODR — rotatory measuring system

General description

The position display is intended for rotatory position measurement.
The position display is designed for mounting on a machine shaft or spindle. It is connected to a higher level control system directly via the communication interface or indirectly via the modular SeGMo-Box. The use of the position display on the modular SeGMo-Box allows connection of all standard Industrial Ethernet communication interfaces.

Connection

The position display is operated with a supply voltage of 20 to 30 V DC. The communication interface controls bus communication and power supply to the position display.
Y- or T-distributors, interface cables and terminating resistors are required to connect the position display to a higher level control system or the modular SeGMo-Box.
The position display requires a functional ground cable to be connected. Connection is via a 6.3 mm flat connector.
We recommend a wire cross section of 4 mm^2.

Integrated absolute rotary encoder

A magnetic absolute multiturn encoder makes reference search routines superfluous after a power failure or “emergency stop”. After the power is switched on, the position display detects its position via the batteryless encoder and is ready for operation directly.
When switched off, the sensor shaft can be adjusted by ±64 revolutions without losing the absolute position.
The absolute rotary encoder withstands high shock/vibration loads.

Displays and controls

The position display is equipped with a graphic display.
The following values can be read for position measurement:

- Actual position
- Nominal position
- Direction of rotation
- Operating status

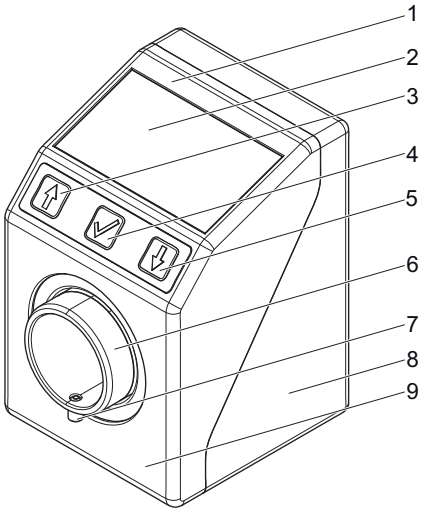
Diagnostic displays support the user in troubleshooting.

Menu navigation is via three membrane buttons below the display.

Pictograms

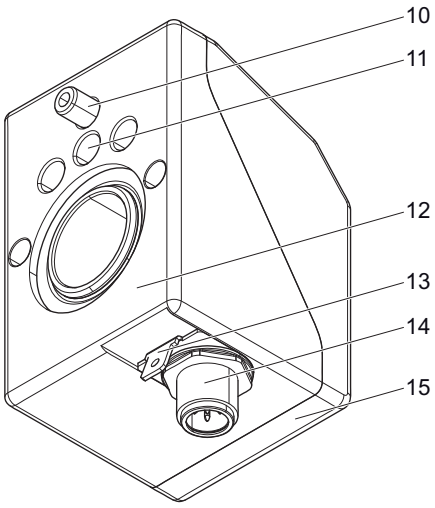
The SeGMo-ImgConv tool can be used to design your own pictograms and thus simplify user navigation. The position display can store up to 40 customized pictograms.

Parts named



Front

1 Top
2 Display
3 Navigation button
4 Confirmation button
5 Navigation button
6 Sensor shaft
7 Setscrew
(fastening machine shaft – sensor shaft)
8 Housing
9 Front

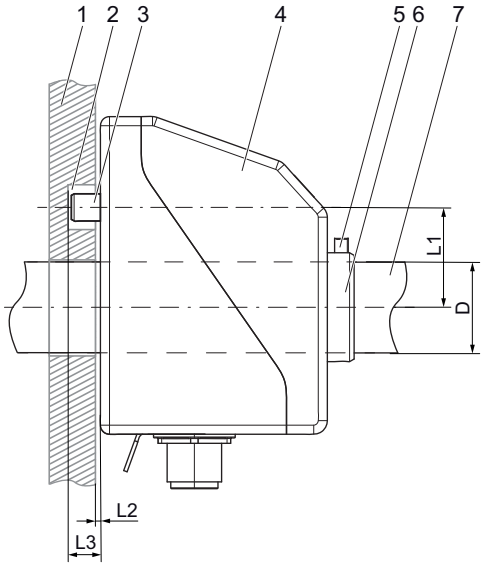


Rear side

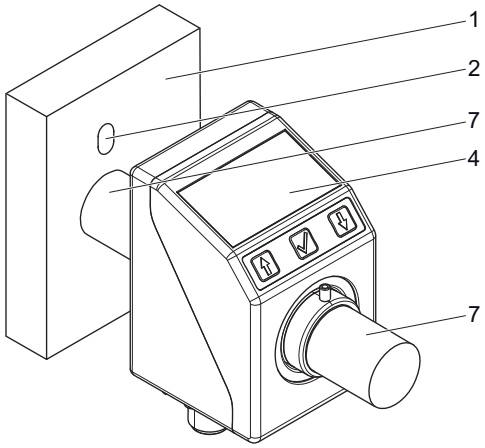
10 Position torque support GEL SEPODR␣␣␣␣B
11 Position torque support GEL SEPODR␣␣␣␣A
12 Rear side
13 Functional ground (flat connector 6.3 mm)
14 Communication interface and supply voltage
15 Underside

Assembly

The mounting concept provides for fixed-moving bearings. The machine shaft bears the weight of the position display via the fixed bearing. The position display is mounted directly onto the machine shaft via a force-fit connection. A torque support as moving bearing prevents the position display from rotating.



Assembly example



Assembly example: Alignment slot

1 Machine housing

2 Mounting bore for torque support (slot recommended)

3 Torque support

4 Housing

5 Setscrew

6 Sensor shaft

7 Machine shaft

D Machine shaft diameter

L1 Spacing “center sensor shaft – center bore”
GEL SEPODR␣␣␣␣A: 22 mm
GEL SEPODR␣␣␣␣B: 30 mm

L2 Spacing “machine housing – housing”: 1 mm

L3 Minimum bore depth: 7 mm

GEL SEPODR — rotatory measuring system

Technical data GEL SEPODR1N␣␣␣

Electrical data	
Supply voltage U_B (polarity reversal protection, overvoltage protection)	20 to 30 V DC
Current consumption	approximately 50 mA at 24 V DC
Power consumption	Power supply unit requirements: Maximum supply output: 100 VA
Communication interface	CAN bus with CANopen protocol, profile CiA 406; no electrical isolation
Mechanical data	
Sensor shaft	Through hollow shaft: Stainless steel rustproof, 20.2 mm diameter
Maximum permissible rotational speed	100 min^{-1} at DC = 25 % (DC = duty cycle)
Housing material	Plastic ABS, anthracite
Viewing window material	Plastic, impact protection
Dimensions (not including connectors, not including torque support)	48 mm × 56 mm × 70 mm
Weight	approximately 170 g
Encoder data	
Scanning	magnetic, absolute
Resolution	1000 increments per 360° (freely programmable)
Measuring system detection range	129 revolutions, also in de-energized state
Connections	
Communication interface and supply voltage	5-pin male connector M12, A-coded
Functional ground	Flat connector, 6.3 mm
Controls	
Push-button	3 membrane buttons
Indicators	
Display	OLED 1.54” monochrome, yellow (128 × 64 pixels, graphic) Language: English
Ambient data	
Operating temperature range	0 °C to +60 °C
Storage temperature range	-20 °C to +80 °C
Maximum relative air humidity	Condensation not permitted
Degree of protection	IP 65; as per DIN EN 60529:2014-09
Dielectric strength	500 V AC; as per DIN EN 61439-1:2012-06
EMC (1)	DIN EN 61326-1:2013-07 Class B device with immunity requirements for industrial environments
Vibration resistance	1 to 100 m/s^2 (5 to 15 Hz); 100 m/s^2 (15 to 159 Hz); as per DIN EN 60068-2-6:2008-10
Shock resistance	800 m/s^2, 6 ms, as per DIN EN 60068-2-27:2010-02
Approvals	
European Economic Area	Conformity in accordance with EMC Directive 2014/30/EU CE

(1) Use only screened cables.

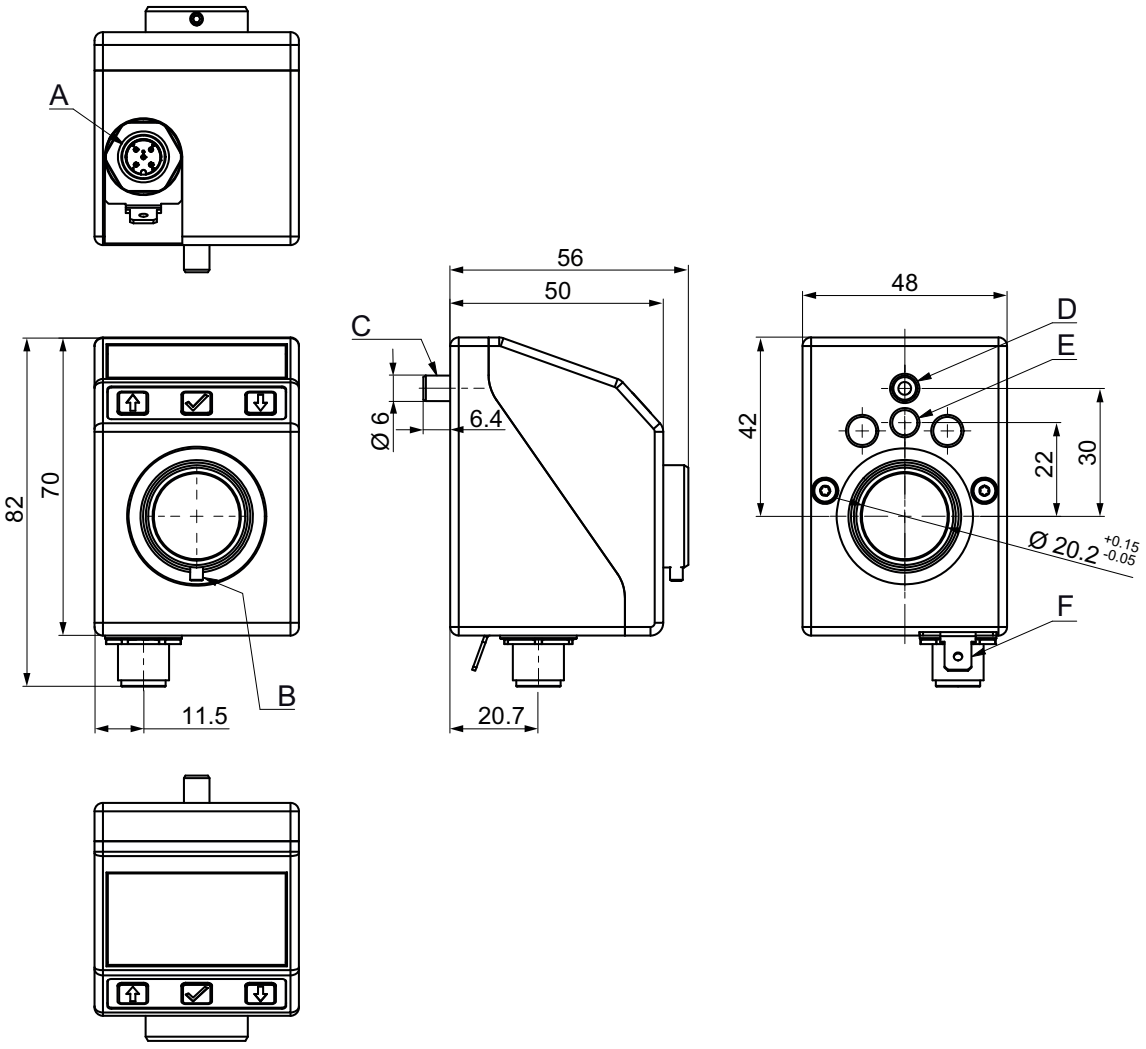
Connection GEL SEPODR␣␣CO␣

CAN bus communication interface and supply voltage

Male connector, M12 A-coded (view connector contact side)	Pin	Signal identifier
	1	Functional ground (cable screen)
	2	U_B
	3	CAN-GND(1)
	4	CAN-High
	5	CAN-Low
	Connector housing	Functional ground

(1) Connection for GND of supply voltage U_B and GND of CAN bus

Dimensional drawing GEL SEPODR␣␣CO␣



A Communication interface and supply voltage
B Setscrew DIN 916 M3x5 A2 for fastening the shaft (threadlocker recommended); tightening torque: 0.4 Nm
C Torque support
D Position torque support GEL SEPODR␣␣␣␣B
E Position torque support GEL SEPODR␣␣␣␣A
F Functional ground (flat connector 6.3 mm)

All dimensions in millimeters

GEL SEPODL — linear measuring system

General description

The position display is intended for linear position measurement with the external linear sensor GEL SELIN.
The position display is attached to the system with two screws. It is connected to the external linear sensor and directly or indirectly via the modular SeGMo-Box to a higher level control system. The use of the position display on the modular SeGMo-Box allows connection of all standard Industrial Ethernet communication interfaces.

Connection

The position display is operated with a supply voltage of 20 to 30 V DC. The communication interface controls bus communication and power supply to the position display and the external linear sensor. Y- or T-distributors, interface cables and terminating resistors are required to connect the position display to a higher level control system or the modular SeGMo-Box. The external linear sensor is connected to the sensor port of the position display.
The position display requires a functional ground cable to be connected. Connection is via a 6.3 mm flat connector. We recommend a wire cross section of 4 mm^2.

Displays and controls

The position display is equipped with a graphic display. The following values can be read for position measurement:

- Actual position
- Nominal position
- Direction indication
- Operating status

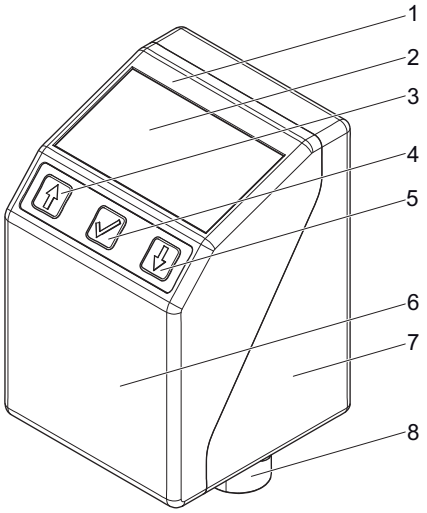
Diagnostic displays support the user in troubleshooting.

Menu navigation is via three membrane buttons below the display.

Pictograms

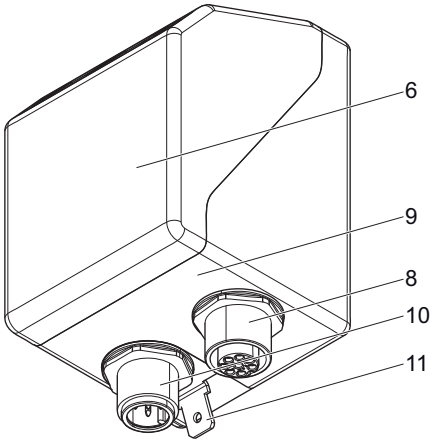
The SeGMo-ImgConv tool can be used to design your own pictograms and thus simplify user navigation. The position display can store up to 40 customized pictograms.

Parts named



Top

1 Top
2 Display
3 Navigation button ⇧
4 Confirmation button ☑
5 Navigation button ⇩
6 Front
7 Housing
8 Sensor connection



Underside

9 Underside
10 Communication interface and supply voltage
11 Functional ground (flat connector 6.3 mm)

Assembly

The position display is fastened using two M5 screws. We recommend greasing the screw threads before screwing them in. The maximum screw-in depth of the position display is 7 mm.

Technical data GEL SEPODL0N␣␣

Electrical data	
Supply voltage U_B (polarity reversal protection, overvoltage protection)	20 to 30 V DC
Current consumption	Without linear sensor approx. 50 mA at 24 V DC With linear sensor GEL SELIN maximum 150 mA
Power consumption	Power supply unit requirements: Maximum supply output: 100 VA
Communication interface	CAN bus with CANopen protocol. Profile CiA 406; no electrical isolation
Mechanical data	
Housing material	Plastic ABS, anthracite
Viewing window material	Plastic, impact protection
Dimensions (not including connector)	48 mm × 50 mm × 70 mm
Weight	approximately 100 g
Connections	
Communication interface and supply voltage	5-pin male connector M12, A-coded
Sensor connection	8-pin female connector M12, A-coded
Functional ground	Flat connector, 6.3 mm
Controls	
Push-button	3 membrane buttons
Indicators	
Display	OLED 1.54” monochrome, yellow (128 × 64 pixels, graphic) Language: English
Ambient data	
Operating temperature range	0 °C to +60 °C
Storage temperature range	-20 °C to +80 °C
Maximum relative air humidity	Condensation not permitted
Degree of protection	IP 65; as per DIN EN 60529:2014-09
Dielectric strength	500 V AC; as per DIN EN 61439-1:2012-06
EMC (1)	DIN EN 61326-1:2013-07 Class B device with immunity requirements for industrial environments
Vibration resistance	1 to 100 m/s^2 (5 to 15 Hz); 100 m/s^2 (15 to 159 Hz); as per DIN EN 60068-2-6:2008-10
Shock resistance	800 m/s^2, 6 ms, as per DIN EN 60068-2-27:2010-02
Approvals	
European Economic Area	Conformity in accordance with EMC Directive 2014/30/EU CE

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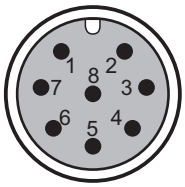
Connections GEL SEPODL␣␣CO␣

CAN bus communication interface and supply voltage

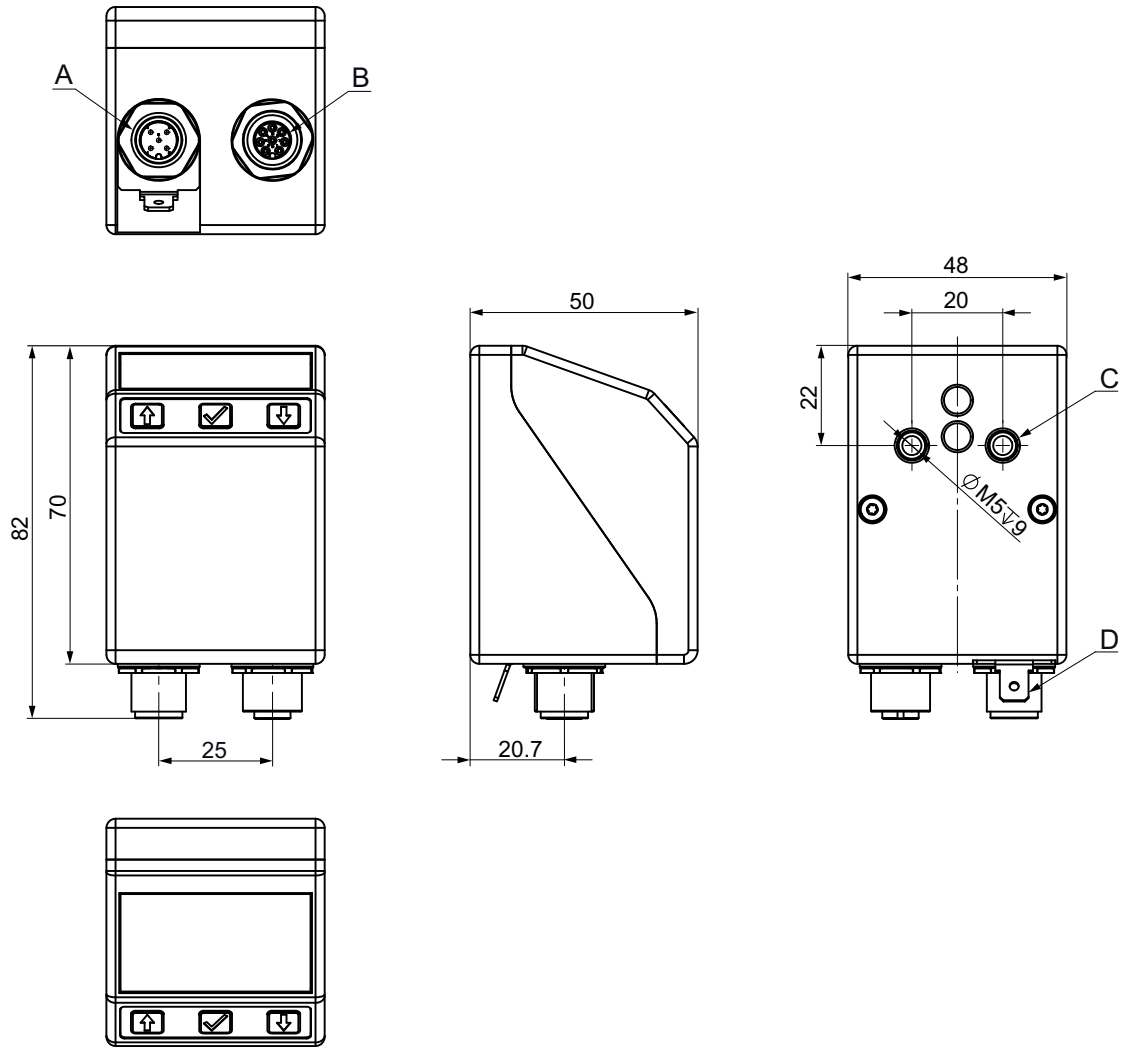
Male connector, M12 A-coded (view connector contact side)	Pin	Signal identifier
	1	Functional ground (cable screen)
	2	U_B
	3	CAN-GND (1)
	4	CAN-High
	5	CAN-Low
	Connector housing	Functional ground

(1) Connection for GND of supply voltage and GND of CAN bus

Sensor connection (SSI interface, RS422 compatible)

Female connector, M12 A-coded (view connector contact side)	Pin	Signal identifier
	1	GND
	2	U_B
	3	CLK+
	4	CLK-
	5	DAT-
	6	DAT+
	7	unallocated
	8	unallocated
	Connector housing	Functional ground

Dimensional drawing GEL SEPODL␣␣CO␣



A Communication interface and supply voltage
B Sensor connection
C 2 M5-thread bore, maximum screw-in depth: 7 mm
D Functional ground (flat connector 6.3 mm)

All dimensions in millimeters

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