

# SeGMo-Assist

Position display with  
CANopen interface

GEL SEPOD

Technical information

Version 2021-03

## General

- Display of nominal and actual position to facilitate manual adjustment processes
- Available for rotary and linear<sup>(1)</sup> position measurements

## Features

- Plastic housing, ABS
- 20 mm through hollow shaft, stainless steel
- Operating temperature 0 °C to +60 °C
- SEPODR: Battery-less, magnetic multiturn encoder
  - Detection range:  
129 revolutions, also in de-energised state
- Bright graphical display
  - Presentation of customer-specific pictograms
- Degree of protection IP 65
- CAN bus with CANopen protocol, profile CiA 406<sup>(2)</sup>



## Advantages

- Insensitive to EMC interference
- Easy wiring
- Extremely compact for confined installation situations
- Ready for use immediately after power on due to absolute multiturn position detection
- Pictograms can be programmed as required for straightforward user navigation
- Maintenance-free

## Fields of application

- Packaging machines
- Food and bottling lines
- Wood and plastic working machines
- General mechanical and plant engineering

<sup>(1)</sup> In preparation

<sup>(2)</sup> Other interfaces via the modular SeGMo-Box are in planning

*Right to technical changes and errors reserved.*

# Description of SeGMo system

## SeGMo system

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

- SeGMo-Positioning:  
Positioning drive for fully automatic format adjustment
- SeGMo-Motion:  
Positioning drive for cyclic operation
- SeGMo-Box:  
decentral control unit for up to 5 drives
- Modular SeGMo-Box:  
decentral control unit for up to 17 drives
- SeGMo-Assist:  
Position display for manual adjustment processes
- SeGMo-Connect:  
Single cable concept (hybrid cable suitable for drag chain)
- SeGMo-Lib:  
Ready-made function blocks for integration in the machine control system
- SeGMo-Support Tool:  
Software for advanced commissioning and configuration
- SeGMo-Web  
Software for monitoring the modular SeGMo-Box in real time
- SeGMo-ImgConv Tool  
Tool for converting image files into pictograms for SeGMo-Assist

## SeGMo-Box:

The usage of SeGMo-Box and SeGMo-Connect significantly reduces the cabling effort for the positioning drives. Instead of the usual two separate cables for internal bus communication and a third cable to supply power to the positioning drives, only **ONE** hybrid cable suitable for use in drag chains is connected. In the maximum configuration with 5 positioning drives connected, the number of cables typically reduces from 15 to 5 due to SeGMo-Connect. With the aid of the SeGMo-Box the overall system offers a high degree of flexibility during integration, as it supports all common communication interfaces.

## Modular SeGMo-Box:

Every modular SeGMo-Box consists of a basic housing with plug-in modules that can be fitted individually. By means of the combination of basic housings, up to 17 positioning drives can be connected. The power for the positioning drive motors (power circuit voltage) can be supplied separately for each positioning drive.

## SeGMo-Motion:

The positioning drives are complete mechatronic systems with a battery-less multiturn absolute rotary encoder, gear and motor as well as integrated power and control electronics.

## SeGMo-Positioning:

The positioning drives are complete mechatronic systems with a battery-less multiturn absolute rotary encoder, gear and motor as well as integrated power and control electronics.

These drives are also available for standalone use. With nominal torques of up to 15 Nm, they cover the capacity range typical for secondary axes.

## SeGMo-Assist:

The position displays make manual adjustment processes easier by means of the indication of nominal and actual positions. Variants are available for rotary and linear applications. A further version without measuring system assists the operator, e.g., while changing the format part or tool.

## SeGMo-Connect:

The ready-to-use hybrid cables minimise the cabling effort. The hybrid cable is designed for flexible application in drag chains. It is available in food grade and halogen-free variants and as a cULus recognised component.



# Type code and accessories SeGMo-Assist

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

## Type code

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

## Accessories

Description	Item no.
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 flying lead	ZBSGX04
ZB cable CAN bus 10 m M12 flying lead	ZBSGX05
ZB Y-distributor CAN bus M12 BU-BU/ST	ZBSGX06
ZB terminating resistor CAN bus M12	ZBSGX07

<sup>(1)</sup> In preparation

<sup>(2)</sup> Other interfaces via the modular SeGMo-Box are in planning

# GEL SEPODR — rotatory measuring system

## General description

The position display GEL SEPODR is intended to be used for rotary position measurement.

The position display is pushed onto the end of a shaft or attached to a shaft or spindle. It is connected directly to a plant control system via the communication interface. The usage of the position display on the modular SeGMo-Box is in planning and will permit the connection of all standard communication interfaces.

## Connection

The position display is operated with a supply voltage of 24 V DC. The communication interface takes over the bus communication and the supply of power to the position display. Y-distributors, interface cables and terminating resistors are required to connect the position display to the plant control system.

The position display requires the connection of a function earth wire. The connection is made using a 6.3 mm flat connector. We recommend a wire cross-section of 4 mm<sup>2</sup>.

## Integrated absolute rotary encoder

A magnetic-absolute multiturn rotary encoder makes reference search routines after a power failure or emergency stop unnecessary. Due to the battery-less encoder, the position display detects its position after power on and is immediately ready for use.

In the switched off state the drive shaft can be moved by  $\pm 64$  revolutions without loss of 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 the position measurement:

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

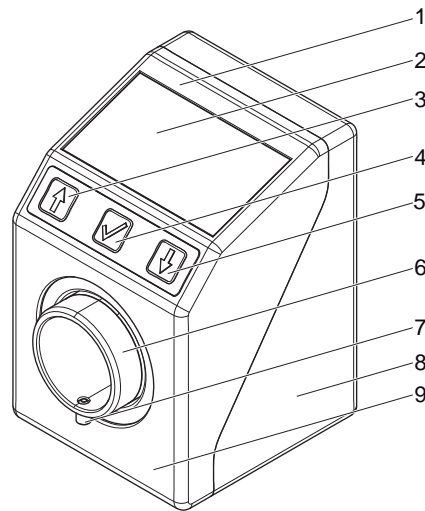
Diagnostic displays assist the user during troubleshooting.

The menus are navigated using three membrane buttons underneath the display.

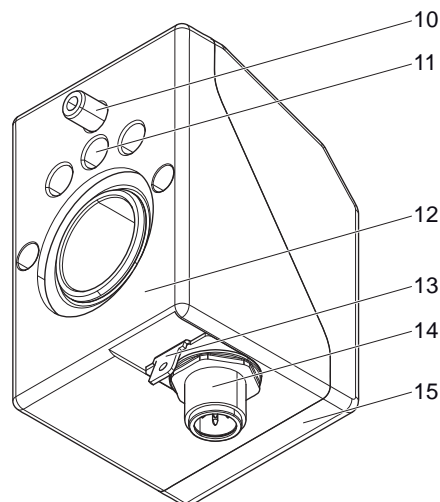
## Pictograms

The SeGMo-ImgConv tool makes it possible to design your own pictograms for use on the display. This feature makes user navigation more straightforward.

## Parts named



- 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

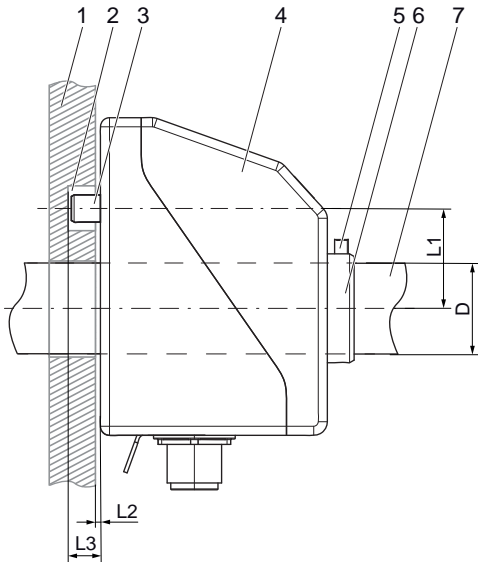


- 10 Position of torque support GEL SEPODR\_...B
- 11 Position of torque support GEL SEPODR\_...A
- 12 Rear
- 13 Function earth (flat connector, 6.3 mm)
- 14 Communication interface and supply voltage
- 15 Underside

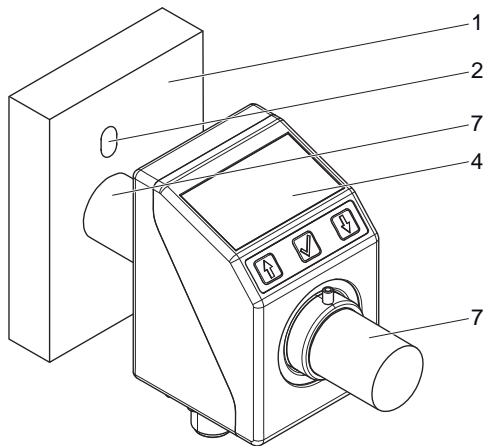
# GEL SEPODR — rotatory measuring system

## Mounting

The mounting concept comprises a fixed-moving bearing. The machine shaft supports the weight of the position display via the fixed bearing. For this purpose the position display is mounted directly and positively on the machine shaft using a clamped connection with a form-fit. A torque support as a moving bearing prevents the position display rotating with the shaft.



### Mounting example



### Mounting example: Slot alignment

- 1 Machine housing
- 2 Bore for mounting the torque support (recommendation: slot)
- 3 Torque support
- 4 Housing
- 5 Setscrew
- 6 Sensor shaft
- 7 Machine shaft
- D Machine shaft diameter
- L1 Distance "middle of sensor shaft - middle of bore"  
GEL SEPODR\_...A: 22 mm  
GEL SEPODR\_...B: 30 mm
- L2 Distance "machine housing - housing": 1 mm
- L3 Minimum hole depth: 7 mm

# GEL SEPODR — rotatory measuring system

## Technical data GEL SEPODR1N\_...


<b>Electrical data</b>	
Supply voltage $U_B$ (Polarity reversal protection, overvoltage protection)	+24 V DC -20 % +25 %
Current consumption	Approx. 50 mA at 24 V DC
Power consumption	Requirements on the power supply unit: Maximum supply power: 100 VA
Communication interface	CAN bus with CANopen protocol, profile CiA 406; no electrical isolation
<b>Mechanical data</b>	
Sensor shaft	Through hollow shaft: Stainless steel corrosion-proof, 20.2 mm diameter
Rotational speed	Max. 100 min <sup>-1</sup> at duty cycle = 25 %
Housing material	Plastic ABS, anthracite
Viewing window material	Plastic, impact protection
Dimensions (without connector, without torque support)	48 mm x 56 mm x 70 mm
Weight	170 g
<b>Encoder data</b>	
Scanning	Magnetic, absolute
Resolution	1000 increments per 360° (parameters can be configured as required)
Detection range of the measuring system	129 revolutions, also in de-energised state
<b>Connections</b>	
Communication interface and supply voltage	5-pin male connector M12, A-coded
Function earth	Flat connector, 6.3 mm
<b>Controls</b>	
Push-button	3 membrane buttons
<b>Indicators</b>	
Display	OLED 1.54" monochrome, yellow (128 x 64 pixels, graphic) Language: English
<b>Ambient data</b>	
Operating temperature range	0 °C to +60 °C
Storage temperature range	-20 °C to +80 °C
Max. relative humidity of air	Condensation not permitted
Dielectric strength	500 V AC; as per DIN EN 61439-1:2012-06
EMC <sup>(1)</sup>	DIN EN 61326-1:2013-07 Class B device with immunity requirements for industrial environments
Degree of protection	IP 65; as per DIN EN 60529:2014-09
Vibration resistance	1 to 100 m/s <sup>2</sup> (5 to 15 Hz); 100 m/s <sup>2</sup> (15 to 159 Hz); as per DIN EN 60068-2-6:2008-10
Shock resistance	800 m/s <sup>2</sup> , 6 ms, as per DIN EN 60068-2-27:2010-02

(1) Use only screened cables.

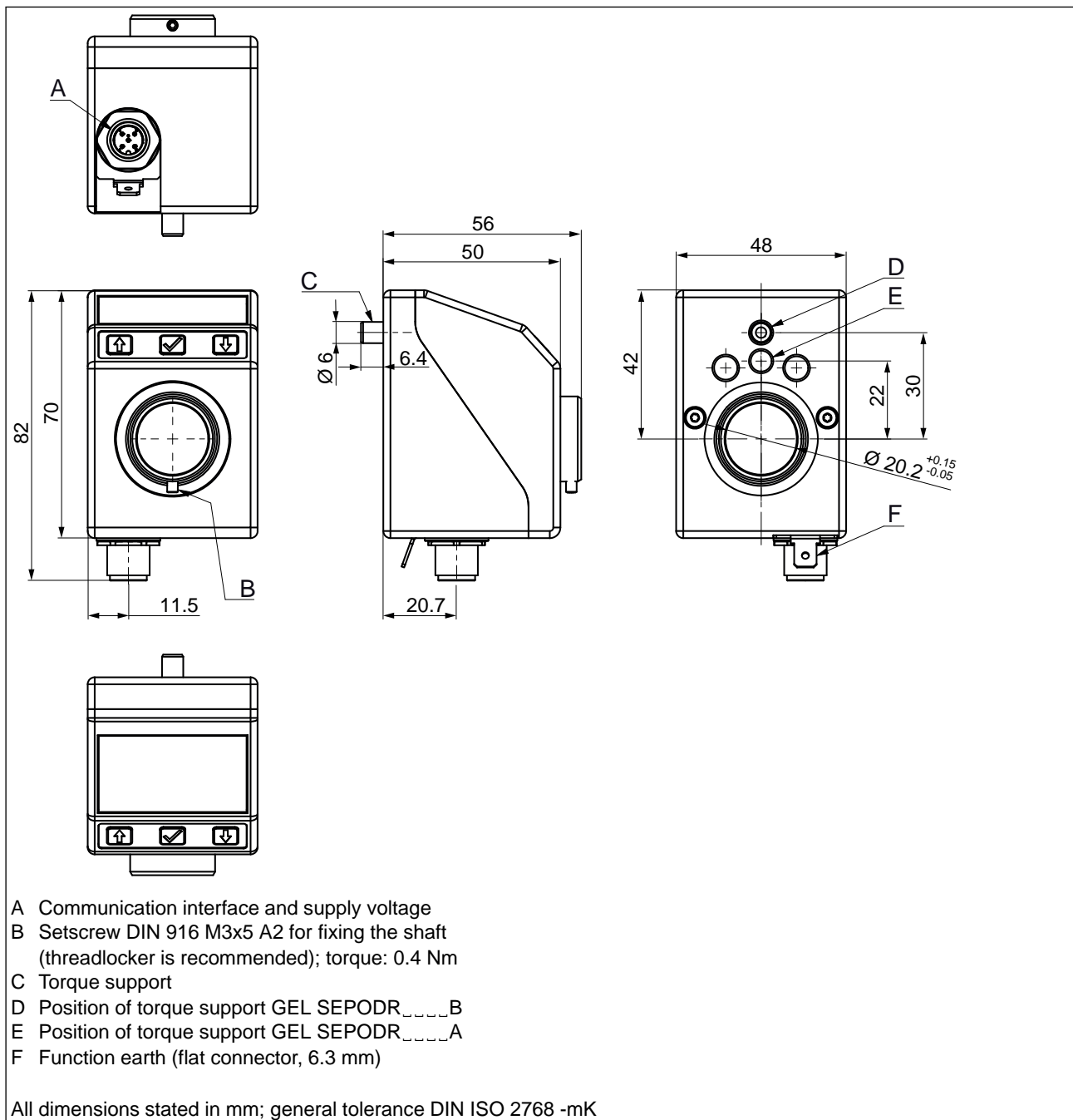
# GEL SEPODR — rotatory measuring system

## Connection GEL SEPODR\_ \_CO\_ \_

### Communication interface CAN bus and supply voltage

Male connector, M12 A-coded (view of connector contact side)	Pin	Signal identifier
	1	Function earth (cable screen)
	2	$U_B$
	3	CAN GND
	4	CAN high
	5	CAN low
	Connector housing	Function earth

### Dimensional drawing GEL SEPODR\_ \_CO\_ \_



# GEL SEPODL — linear measuring system

## Description

The position display GEL SEPODL is intended to be used for linear position measurement.

The position display is fastened to the plant using two screws and connected to an external sensor and the plant control system. The usage of the position display on the modular SeGMo-Box is in planning and will permit the connection of all standard communication interfaces.

## Connection

The position display is operated with a supply voltage of 24 V DC. The communication interface takes over the bus communication and the supply of power to the position display and the external sensor. Y-distributors, interface cables and terminating resistors are required to connect the position display to the plant control system. The external sensor is connected to the sensor connection on the position display.

The position display requires the connection of a function earth wire. The connection is made using a 6.3 mm flat connector. We recommend a wire cross-section of 4 mm<sup>2</sup>.

## Displays and controls

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

- Actual position
- Nominal position
- Direction information
- Operating states

Diagnostic displays assist the user during troubleshooting.

The menus are navigated using three membrane buttons underneath the display.

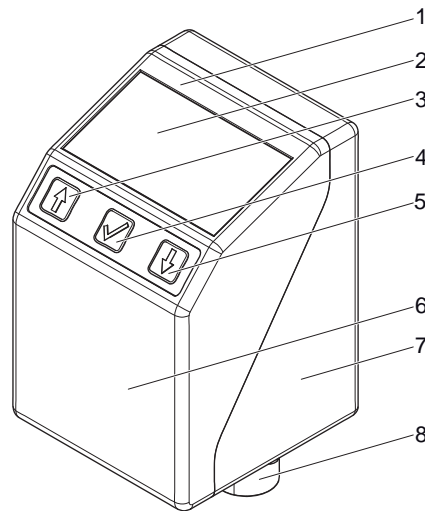
## Pictograms

The SeGMo-ImgConv tool makes it possible to design your own pictograms for use on the display. This feature makes user navigation more straightforward.

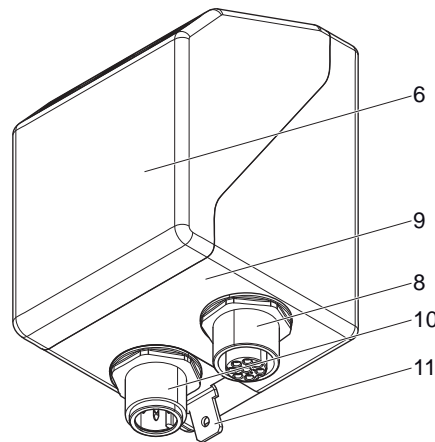
## Mounting

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

## Parts named



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



- 9 Underside
- 10 Communication interface and supply voltage
- 11 Function earth (flat connector, 6.3 mm)



# GEL SEPODL — linear measuring system

## Technical data GEL SEPODL1N\_...

<b>Electrical data</b>	
Supply voltage $U_B$ (Polarity reversal protection, overvoltage protection)	+24 V DC -20 % +25 %
Current consumption	Without sensor approx. 50 mA at 24 V DC <sup>(1)</sup>
Power consumption	Requirements on the power supply unit: Maximum supply power: 100 VA
Communication interface	CAN bus with CANopen protocol. Profile CiA 406; no electrical isolation
<b>Mechanical data</b>	
Housing material	Plastic ABS, anthracite
Viewing window material	Plastic, impact protection
Dimensions (not including connector)	48 mm × 50 mm × 70 mm
Weight <sup>(2)</sup>	Approx. 100 g
<b>Connections</b>	
Communication interface and supply voltage	5-pin male connector M12, A-coded
Sensor connection	8-pin female connector M12, A-coded
Function earth	Flat connector, 6.3 mm
<b>Controls</b>	
Push-button	3 membrane buttons
<b>Indicators</b>	
Display	OLED 1.54" monochrome, yellow (128 × 64 pixels, graphic) Language: English
<b>Ambient data</b>	
Operating temperature range	0 °C to +60 °C
Storage temperature range	-20 °C to +80 °C
Max. relative humidity of air	Condensation not permitted
Dielectric strength	500 V AC; as per DIN EN 61439-1:2012-06
EMC <sup>(3)</sup>	DIN EN 61326-1:2013-07 Class B device with immunity requirements for industrial environments
Degree of protection	IP 65; as per DIN EN 60529:2014-09
Vibration resistance	1 to 100 m/s <sup>2</sup> (5 to 15 Hz); 100 m/s <sup>2</sup> (15 to 159 Hz); as per DIN EN 60068-2-6:2008-10
Shock resistance	800 m/s <sup>2</sup> , 6 ms, as per DIN EN 60068-2-27:2010-02

(1) Suitable sensor types upon request


(2) Depending on the type of connection and the design

(3) Use only screened cables.

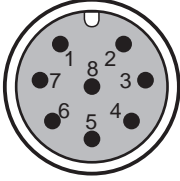
# GEL SEPODL — linear measuring system

## Connections GEL SEPODL\_ \_CO\_

### CAN bus communication interface and supply voltage

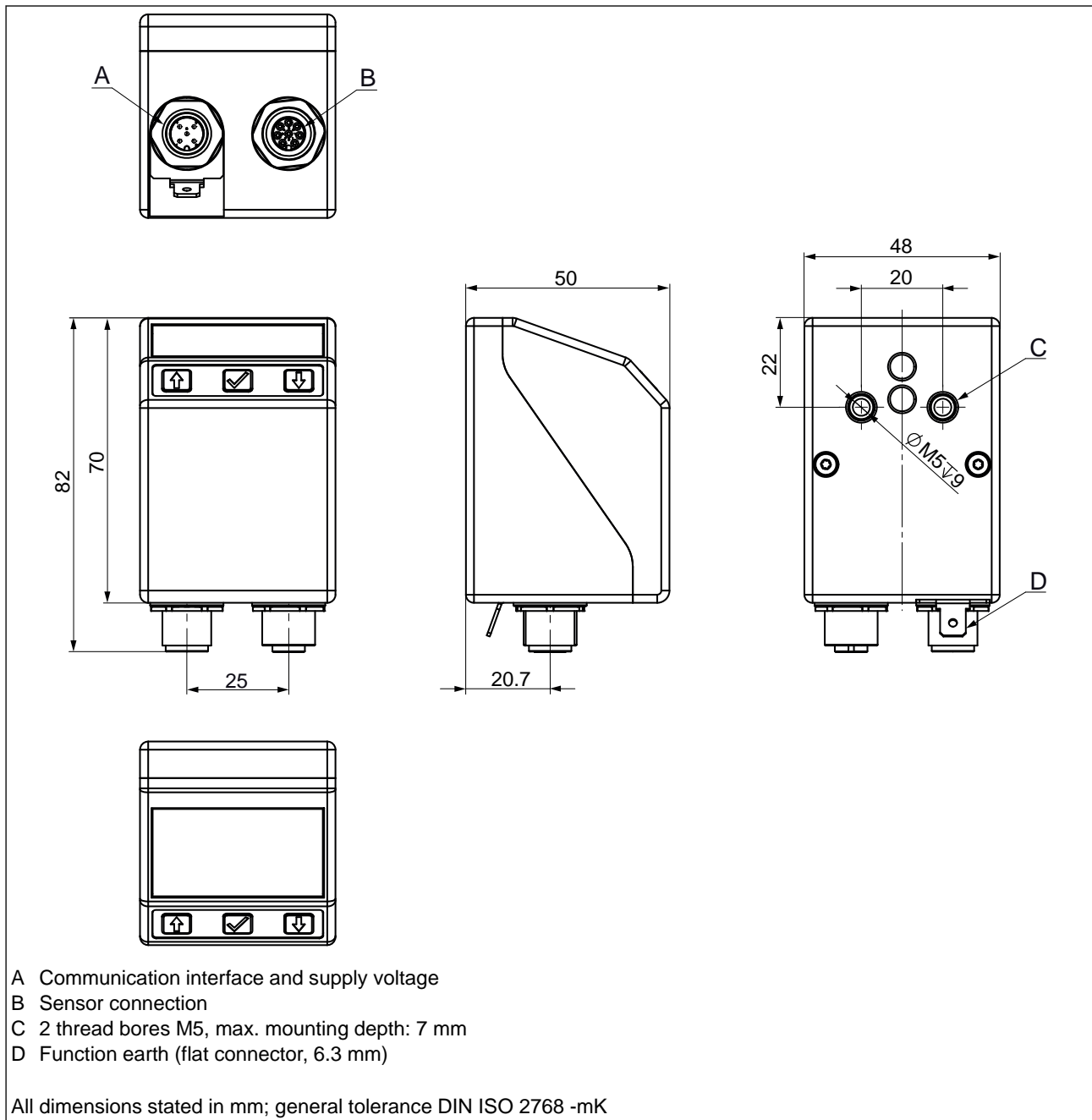
Male connector, M12 A-coded (view of connector contact side)	Pin	Signal identifier
	1	Function earth (cable screen)
	2	$U_B$
	3	CAN GND
	4	CAN high
	5	CAN low
	Connector housing	Function earth

### Sensor connection (SSI interface, RS422 compatible)

Female connector M12 A-coded (view of connector contact side)	Pin	Signal identifier
	1	GND
	2	$U_B$
	3	CLK+
	4	CLK-
	5	DAT-
	6	DAT+
	7	Not used
	8	Not used
Connector housing	Function earth	

# GEL SEPODL — linear measuring system

Dimensional drawing GEL SEPODL\_ \_CO\_





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