SeGMo-Positioning

Compact positioning drives
for confined installation situations

GEL 6109

Technical information

Version 2024-01-24

General

The SeGMo-Positioning is a compact mechatronic unit consisting of a brushless DC motor, a 32-bit microprocessor, a compact power amplifier, a powerful gear and a magnetic-absolute multiturn encoder.
Active system protection against thermal overload and comprehensive system software allow load-dependent duty cycles well beyond 25 %.
With its high degree of protection (IP67), the rigid aluminum housing offers versatile application possibilities in various industrial sectors.

Features

- Nominal torques: 2.5 Nm and 5 Nm
- Aluminum housing, anodized
- Operating temperature -10 °C to +60 °C
- Brushless DCmotor
- Magnetic-absolute multiturn encoder
  - Detection range: 342 revolutions, also in de-energized state
- Degree of protection IP 67
- Integrated communication interfaces
  CANopen (CiA 402); sercos III; POWERLINK;
  PROFINET IO/RT; EtherCAT; EtherNet/IP; Modbus/TCP
- Optional with cULus Component Recognition

Advantages

- Extremely compact for confined installation situations
- Either hybrid cable or connector outlet
- Monitoring equipment to aid trouble-free operation
- Ready for use directly after switching on the power supply due to absolute position detection of the magnetic-absolute multiturn encoder
- Maintenance-free electrical parts
- Maintenance-free gear due to sealed-for-life lubrication

Fields of application

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

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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 18 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:

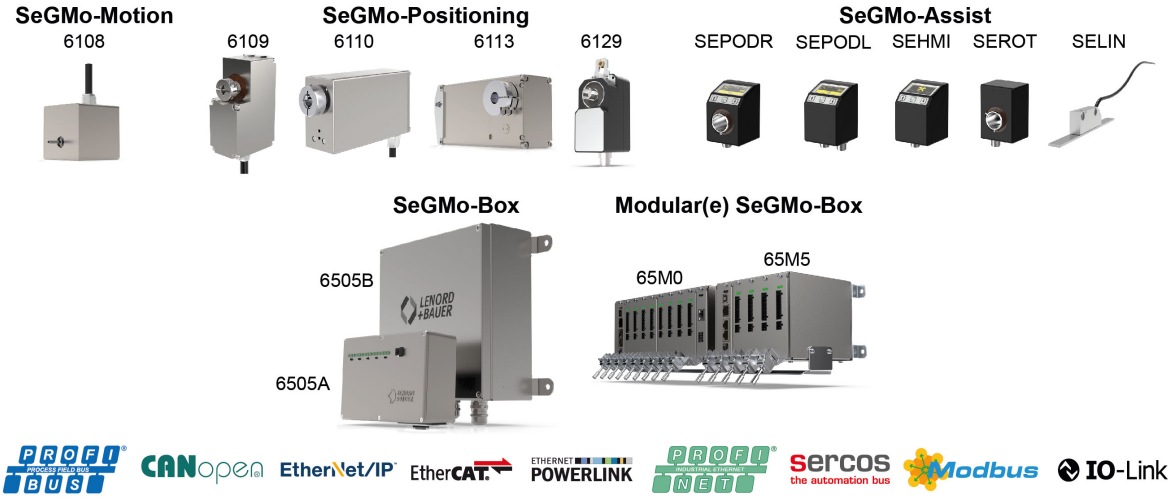
Every modular SeGMo-Box comprises a basic housing with individually equippable plug-in modules. By combining basic housings, up to 17 positioning drives or up to 48 position displays can be connected. A combination of positioning drives and position displays on a modular SeGMo-Box is possible. The power 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.

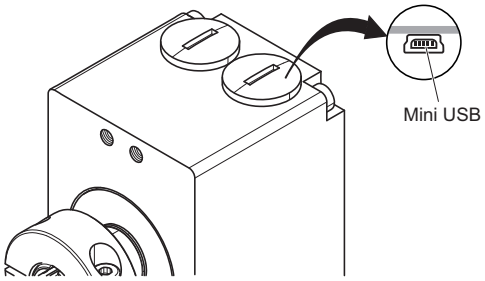


General description

The positioning drive belongs to the SeGMo-Positioning product group and is a component of the SeGMo system. It is an intelligent adjustment unit for mounting on a machine shaft end or for attachment to a machine shaft or spindle.
The positioning drive converts the movement commands into a mechanical rotary motion and actuates a machine shaft. Rotation of the positioning drive with the machine shaft is prevented by mounting a torque support.

Product construction

The positioning drive requires two supply voltages of 24 V to 30 V DC. The logic circuit supply voltage supplies the control electronics and the power circuit supply voltage supplies the power electronics for the motor.
The positioning drive requires a functional ground cable to be connected. The connection is via an M4 thread bore on the underside of the housing. We recommend a wire cross section of 4 mm^2 [12 AWG].
The rigid housing made of anodized aluminum is particularly robust and achieves the degree of protection IP 67 thanks to the shaft sealing ring.
Two blanking plugs are located on top, and a service connector (mini-USB) is accessible behind one of these plugs.
The positioning drive can be configured with the SeGMo-Support Tool via the service connector (mini-USB).



Blanking plugs

Direct connection to a higher level control system

The positioning drive with **ST** connection technology is intended for stand-alone use and is connected directly to a higher level control system. It supports Industrial Ethernet protocols.

Indirect connection to a higher level control system

The positioning drive is connected to a SeGMo-Box or a modular SeGMo-Box using SeGMo-Connect. The hybrid cable SeGMo-Connect handles bus communication and the power supply of the positioning drive. The positioning drive communicates with the SeGMo-Box via the system-internal fieldbus profile (communication interface **CO**). It is available as an option with a hybrid cable (connection technology **H1/H2/H3/S1/S2/S3/xx/Vx**) or plug connection (connection technology **HS**).
The positioning drive with **Vx** connection technology is preassembled and can be connected directly to SeGMo-Box GEL 6505.

Magnetic-absolute multiturn encoder

A magnetic absolute multiturn encoder makes reference search routines superfluous after a power failure or “EMERGENCY STOP”. After the power supply is switched on, the positioning drive detects its position via the batteryless multiturn encoder and is ready for operation directly. When switched off, the output shaft can be adjusted by ±171 revolutions without losing the absolute position.
The multiturn encoder withstands high shock/vibration loads.

General information about SeGMo-Connect

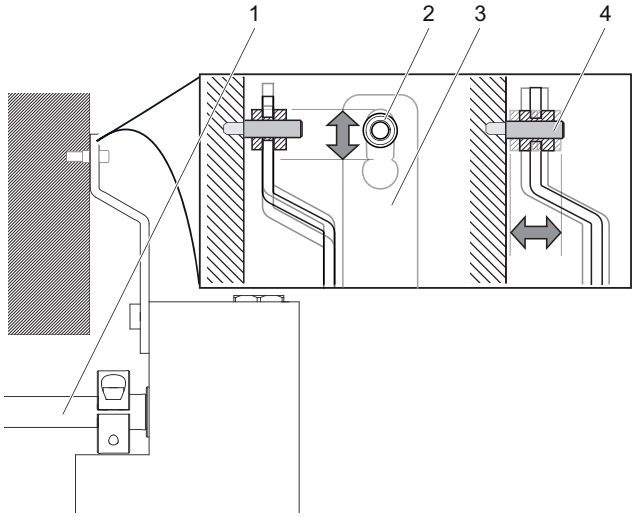
Accessories for connecting to the SeGMo-Box
The SeGMo-Connect hybrid cable is designed for moveable use in drag chains. Its variants are food grade quality, halogen-free and available as a cULus recognized component. The hybrid cable screen is under the outer sheath. The internal communication line is completely insulated and has multiple screening.
All positioning drives are available with hybrid cables and connectors and can be quickly and easily connected to the SeGMo-Box via the freely configurable and preassembled hybrid cables.
Quick disconnect connectors allow safe and quick disconnection from the power supply during maintenance and service work. Preassembled hybrid cables are available for connection.
Connection accessories for stand-alone use
Mating connectors and cables for power supply are available for stand-alone use of positioning drives.

For more information on SeGMo-Connect connection accessories, please refer to “Technical Information BZK.”

Description

Assembly

The mounting concept provides for fixed-moving bearings. The machine shaft bears the weight of the position display via the fixed bearing. The positioning drive is mounted directly onto the machine shaft via a force-fit connection, for example with a semi-hollow shaft and clamping ring. The torque support prevents the positioning drive from rotating and compensates as a moving bearing for any imbalance movements occurring at the output shaft. The form and design of the torque support depend on the application. Various accessories are available for mounting.



Imbalance movements are absorbed at the moving bearing

1 Machine shaft
2 Plain bearing
3 Torque support
4 Headless screw

Operating modes

The positioning drive is **not** designed for continuous operation at nominal torque.
The positioning drive is designed for short term operation at nominal torque. The following intervals are applicable for a duty cycle (DuCy) of

- DuCy = 25 % at 100 % load torque, duty type S2 “base time 4 minutes: duty cycle (DuCy) = 1 minute, break duration (BD)= 3 minutes”
- DuCy ≤ 50 % at reduced load torque, depending on environmental parameters and application

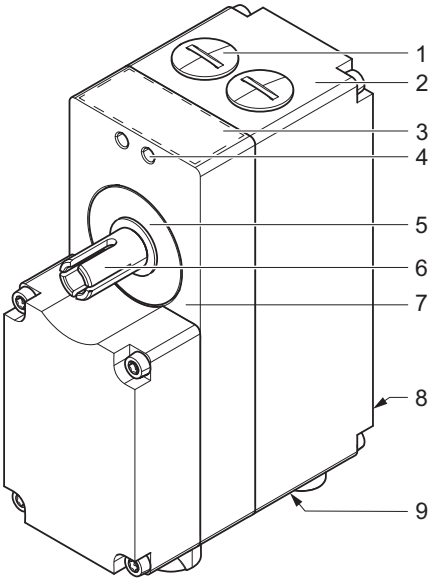
Other operating modes are secured by I^2t- and temperature monitoring and an adjustable current limitation. A briefly increased breakaway torque is permitted within the scope of this protection.

Reliability

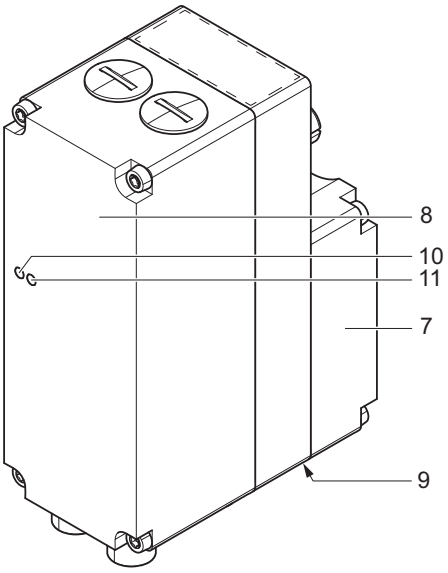
Important parameters are monitored, thus actively protecting the positioning drive from overload. The following monitoring devices support trouble-free operation:

- Soft start and stop via acceleration and deceleration ramp
- Over/undervoltage detection of supply voltage (power circuit and logic circuit)
- Lag error detection (output to motor shaft)
- Temperature monitoring of power amplifier and housing interior
- Overload protection of motor and power amplifier by I^2t monitoring and in combination with the SeGMo-Box by the maximum current

Parts named



Positioning drive with semi-hollow shaft — Front side



Positioning drive with semi-hollow shaft — Rear side

1 Removable blanking plugs:
left: not for operator use;
right: service connector
2 Housing: Top
3 Zone for warning stickers
4 Two threaded bores for mounting a torque support
5 Shaft sealing ring
6 Output shaft as semi-hollow shaft
(diameter as per type code)
7 Housing: Front side
8 Housing: Rear side
9 Housing: Underside
(Connection technology **H1/H2/H3/S1/S2/S3/xx/Vx**)
10 Connection technology **ST**:
Status display — Device (LED1)
11 Connection technology **ST**:
Status display — Communication (LED2)

Technical data

Positioning drive

Nominal torque (construction type)	02 (K)	05 (L)
Electrical data		
Supply voltage logic circuit	24 V to 30 V DC (nominal supply voltage: 24 V DC)	
Power circuit supply voltage	24 V to 30 V DC (nominal supply voltage: 24 V DC) (❗ Maximum motor speed depends on voltage!)	
Maximum current consumption logic circuit(1)(2) - Connection technology**H1/H2/H3/HS/S1/S2/S3/Vx/xx**: - Connection technology **ST**:	 100 mA 200 mA	
Power circuit current consumption(1) (maximum current consumption power circuit)	1.8 A (4 A)	2.6 A (5 A)
Duty cycle (DuCy) in % (load-dependent)(1)	DuCy = 25 % at 100 % load torque, duty type S2 "base time 4 minutes: duty cycle (DuCy) = 1 minute, break duration (BD) = 3 minutes" DuCy ≤ 50 % at reduced load torque, depending on environmental parameters and application	
Communication interfaces: Fieldbus	CANopen (CiA 402)	
Communication interfaces: Industrial Ethernet	sercos III; POWERLINK; PROFINET IO/RT; EtherCAT; EtherNet/IP; Modbus/TCP	
Mechanical data		
Nominal torque output shaft(1)	2.5 Nm at 70 min^{-1}	5 Nm at 70 min^{-1}
Output shaft	Semi-hollow shaft, solid shaft, customized shaft(3)	
Housing material	Aluminum AlMgSi	
Weight (4)	≈ 1.0 kg	≈ 1.25 kg
Encoder data		
Resolution	1,000 increments per 360°	
Measuring system detection range	342 revolutions, also in de-energized state	
Positioning range	Not limited (5)	
Ambient data		
Working temperature range	0 °C to +60 °C	
Operating temperature range	-10 °C to +60 °C	
Storage temperature range	-20 °C to +85 °C	
Maximum relative air humidity	95 %	
Condensation	Not permitted (condensation protection upon request)	
Degree of protection(6)	IP 67, DIN EN 60529:2014-09, shaft sealing ring (material: FKM)	
Dielectric strength	√2× 500 V AC; as per DIN EN 61439-1:2021-10	

(1) At nominal supply voltage
(2) External breaker required
(3) upon request
(4) Depending on type of connection and construction
(5) When the logic circuit supply voltage is applied, an electronic counter detects the positioning range beyond the measuring system detection range.
(6) The degree of protection is only maintained if all blanking plugs are screwed in.

Nominal torque (construction type)	02 (K)	05 (L)
EMC [1]	Electromagnetic immunity DIN EN 61000-6-1:2007-10 EN 61000- 6-1:2007 DIN EN 61000-6-2:2006-03 + correction 1:2011-06 EN 61000-6-2:2005 + AC 2005 Electromagnetic emission DIN EN 61000-6-3:2011-09 + correction 1:2012-11 EN 61000-6-3:2007 + A1:2011+ AC:2012 DIN EN 61000-6-4:2011-09, EN 61000-6-4:2007 + A1:2011	
Vibration resistance	50 m/s^2 (≈ 5g), 10 to 50 Hz; according to DIN EN 60068-2-6:2008-10	
Shock resistance	150 m/s^2 (≈15 g); according to DIN EN 60068-2-27:2010-02	
Data UL (design C with connection technology H1/H2/H3/HS/S1/S2/S3/xx/Vx)		
cULus recognized Component, E196161	UL 61800-5-1 CSA C22.2 number 274-13	
Input voltage (power circuit) U_{IN} [2]	24 V to 30 V DC	
Input voltage (power circuit), continuous operation	25 VA	45 VA
Input voltage (power circuit), "duty cycle (DuCy) = 1 minute, break duration (BD) = 3 minutes"	35 VA	60 VA
UL enclosure type	Type 1	
Data UL (design C with connection technology H1/H2/H3/HS/S1/S2/S3/xx/Vx): Ambient temperatures		
Working temperature range	0 °C to +55 °C	
Operating temperature range	-10 °C to +55 °C	
Approvals		
European Economic Area	Conformity in accordance with ▪ EMC Directive 2014/30/EU ▪ Machinery Directive 2006/42/EC CE	
USA and Canada	**Design C:** (Certification as cULus recognized component) c UL us	

(1) Use only screened cables.
(2) Corresponds to the supply voltage Power circuit

Technical data

Connector M23

Connection Technology **H1/H2/H3**

Technical data – Coupling/connector (connector size M23)	
Rated voltage	Maximum 30 V AC/DC
Current carrying capacity	As per DIN EN 60512
Contact type (coupling/connector)	Male contact/female contact
Housing material coupling/connector	Brass nickel-plated (others upon request)
Union nut material	Brass nickel-plated
Ambient temperature	-20 °C to +130 °C
Degree of protection (1)	IP 66/IP 67
Mating cycles	> 500
Vibration resistance	≤ 200 m/s^2
Certification	cULus recognized component (no. E247738)

Connector M17

Connection Technology **HS/S1/S2/S3/ST**

Technical data – Coupling/connector (connector size M17)	
Rated voltage	Maximum 30 V AC/DC
Current carrying capacity	As per DIN EN 60512
Contact type (coupling/connector)	Male contact/female contact
Housing material coupling/connector	Brass, zinc die casting and plastic coated
Ambient temperature	-20 °C to +130 °C
Degree of protection (1)	IP 66/IP 67
Mating cycles	> 500
Certification	cULus recognized component (no. E247738)

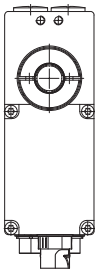
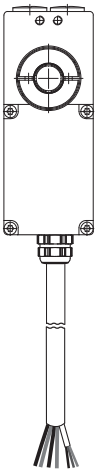
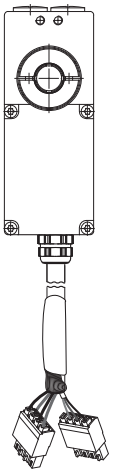
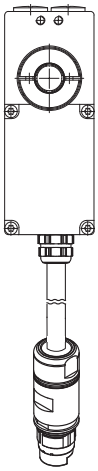
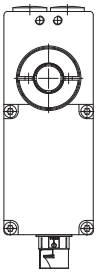
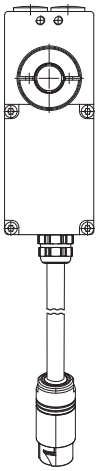
Technical data hybrid cable

Connection technology H1/H2/H3/S1/S2/S3/Vx/xx

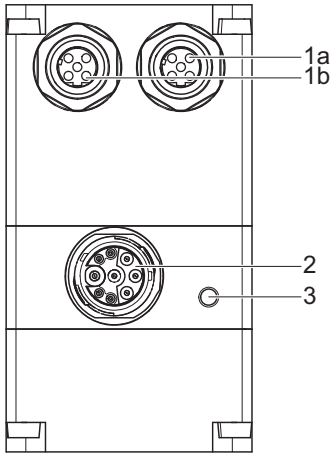
Hybrid cable	Design **0** (standard)	Design **1** (individual protection)	Design **C** (cULus recognized component)
Sheath material	PUR, black, glossy	PUR, black, matte	PUR, black, matte
Cable properties	screened	screened	screened
Suitable for drag chain	yes	yes	yes
Food grade quality	yes	no	no
Halogen-free	no	yes	yes
Cable diameter (d)	9.5 mm	9.5 mm	9.5 mm
Bending radius	permanently flexible: 10 × d fixed: 5 × d	permanently flexible: 15 × d free-moving: 10 × d fixed: 5 × d	permanently flexible: 15 × d free-moving: 10 × d fixed: 5 × d
Maximum peak operating voltage	350 V CAN-Bus 30 V DC (logic/power)	350 V CAN-Bus 30 V DC (logic/power)	300 V CAN-Bus 30 V DC (logic/power)
Temperature range	-40 °C to +80 °C	-40 °C to +80 °C	-40 °C to +80 °C

(1) in screwed state, as per DIN EN 60529/DIN 40050

Connection Technologies

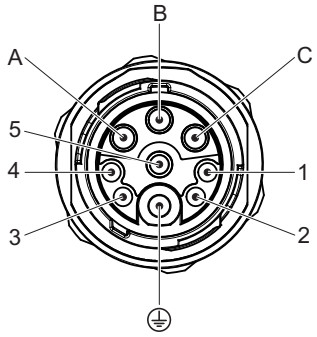
Connection Technology		
ST	**xx** Selectable cable length (1 m to 20 m)	**Vx**: Selectable cable length (maximum 20 m)
Direct connection to a higher level control system	Connection to SeGMo-Box **GEL 6505** or **GEL 65M**	Connection to SeGMo-Box **GEL 6505**
Connector outlet	Hybrid cable with flying lead	Hybrid cable with spring-cage terminals for SeGMo-Box connection
		
Communication interfaces: **EC** (EtherCAT) **IP** (EtherNet/IP) **MB** (Modbus/TCP) **PL** (POWERLINK) **RT** (PROFINET IO / RT) **SC** (SERCOS III)	**Communication interface CO** (CANopen)	**Communication interface CO** (CANopen)
Connection Technology		
H1: Cable length 30 cm **H2**: Cable length 50 cm **H3**: Cable length 100 cm	**HS**	**S1**: Cable length 30 cm **S2**: Cable length 50 cm **S3**: Cable length 100 cm
Connection to SeGMo-Box **GEL 6505** or **GEL 65M** via SeGMo-Connect (hybrid cable **BZK**)		
Hybrid cable with M23 connector (coupling with pin contacts)	M17 panel-mounting socket with male contacts	Hybrid cable with M17 connector (coupling with pin contacts)
		
Communication interface CO (CANopen)	**Communication interface CO** (CANopen)	**Communication interface CO** (CANopen)

Connection technology ST



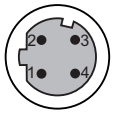
Underside
- 1a M12: Communication interface OUT
- 1b M12: Communication interface IN
- 2 Power supply connector: Power supply
- 3 Threaded bore M4

Assignment Power supply connector

M17 panel-mounting socket with male contacts (plug-in view)	Pin designation	Signal identifier
	*A*	+24 V logic
	B	+24 V power
	C	GND power
	1	GND logic
	2	unallocated
	3	unallocated
	4	unallocated
	5	unallocated
	⏚	Cable screen

Pin ⏚ is electrically and conductively connected to the connector housing.

Assignment – Communication interface

Industrial Ethernet sercos III; POWERLINK; PROFINET IO/RT; EtherCAT; EtherNet/IP; Modbus/TCP		
2 × M12 D-coded (plug-in view)	Pin designation	Signal identifier IN/OUT
	1	Transmission Data+
	2	Receive Data+
	3	Transmission Data-
Switch sockets	4	Receive Data-

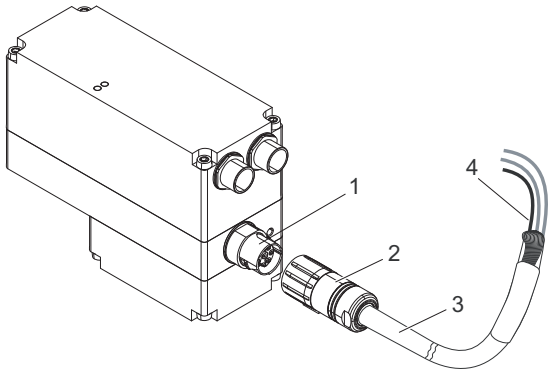
Connection accessories

Designation	Item number
Communication interface	
Industrial Ethernet mating connector input/output, M12, D-coded (male contact)	FS3039
Ethernet network cable, M12 D-coded (male contact) on RJ45, 3 m cable	BK6921
Power supply	
Power supply cable M17 (female contact) and flying lead (SeGMo-Connect)	BZK17S1AxxL[(a)]
[(a)] for xx cable length specify in meters (minimum 3 m/maximum 20 m)	

Connection accessories: Power supply cable

Overview

Power supply cable BZK17S1A_ _ L



*Power supply cable BZK17**S1**A_ _ **L***

Positioning drive with ST connection technology
1 Power supply connector at positioning drive

Power supply cable BZK17**S1**A_ _ **L**
2 Connector 1/Connector construction type: **S1**(“mating connector power supply”, straight - with female contacts)
3 Design A: Power supply cable
4 Connector 2: **L** (flying lead)

Connection technology ST

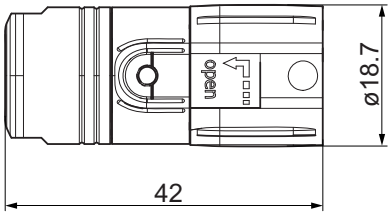
Data connector

BZK**17S1** _ _ _ _

Technical data – Connector

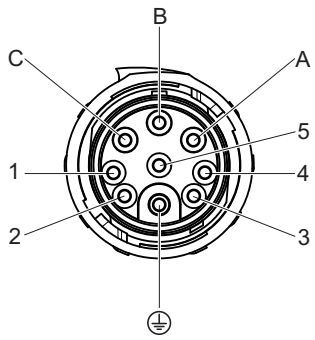
Technical data – Mating connector power supply (connector size M17)	
Rated voltage	Maximum 30 V AC/DC
Current carrying capacity	As per DIN EN 60512
Contact type (coupling/connector)	Male contact/female contact
Housing material coupling/connector	Brass, zinc die casting and plastic coated
Ambient temperature	-20 °C to +130 °C
Degree of protection (1)	IP 66/IP 67
Mating cycles	> 500
Certification	cULus recognized component (no. E247738)

Dimensional drawing – mating connector power supply



All dimensions in millimeters

Assignment – mating connector power supply

"Mating connector power supply" with female contacts (plug-in view)	Pin designation	Signal identifier
M17 	A	+ 24 V logic
	B	+ 24 V power
	C	GND logic and GND power
	GND signals connected internally in the positioning drive.	

The cable screen is connected to the metal connector housing and to the pin ⏚ .

(1) in screwed state, as per DIN EN 60529/DIN 40050

Data cable

BZK17S1**A**_ _ _

Technical data – Cable

Property	Design **A** (cULus Listed)
Sheath material	special UV and oil-resistant PVC, black
Cable properties	screened
Suitable for drag chain	yes
Food grade quality	no
Halogen-free	no
Cable diameter (d)	8.8 mm
Bending radius	permanently flexible: 15 × d free-moving: 10 × d fixed: 5 × d
Maximum peak operating voltage	600 V
Temperature range	UL-AWM: up to +105 °C/fixed: -25 °C (UL)/c(UL): up to +90 °C

BZK17S1**A**_ _ **L**

Pin assignment for connector 2 “L” (flying lead)

Flying lead (connector 2: **L**)		Signal identifier
Core color/Core number	Cross section Design **A**	
red/1	1.5 mm^2 [16 AWG]	+24 V logic
red/2	1.5 mm^2 [16 AWG]	+24 V power
black/1	1.5 mm^2 [16 AWG]	GND logic and GND power

Connection technology H1/H2/H3/S1/S2/S3/xx/Vx

Assignment for xx/Vx connection technology

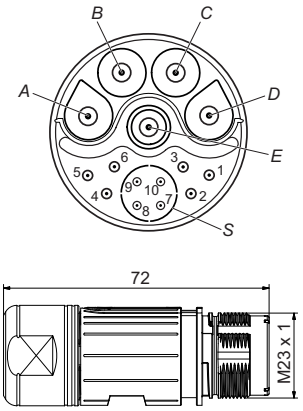
Connection technology **xx**: flying lead				Connection technology **Vx**: preassembled for GEL 6505		Signal identifier
Core color/ Core Number	Cross section Design **0**	Cross section Design **1**	Cross section Design **C**	4-pin spring-cage terminal (internal communi-cation positioning drives) pin designation	4-pin spring-cage terminal (voltage supply positioning drives) pin designation	
red/1	0.5 mm^2 [20 AWG]	0.5 mm^2 [20 AWG]	0.5 mm^2 [20 AWG]	–	3	+24 V logic
red/2	1.5 mm^2 [16 AWG]	1.5 mm^2 [16 AWG]	2.5 mm^2 [14 AWG]	–	1	+24 V power
black/2	1.5 mm^2 [16 AWG]	1.5 mm^2 [16 AWG]	2.5 mm^2 [14 AWG]	–	2	GND power
black/1	0.5 mm^2 [20 AWG]	0.5 mm^2 [20 AWG]	0.5 mm^2 [20 AWG]	–	4	GND logic
black	0.14 mm^2 [26 AWG]	0.14 mm^2 [26 AWG]	0.14 mm^2 [26 AWG]	1	–	CAN-GND
green	0.25 mm^2 [24 AWG]	0.25 mm^2 [24 AWG]	0.25 mm^2 [24 AWG]	3	–	CAN-Low
yellow	0.25 mm^2 [24 AWG]	0.25 mm^2 [24 AWG]	0.25 mm^2 [24 AWG]	2	–	CAN-High

Connection accessories for xx connection technology

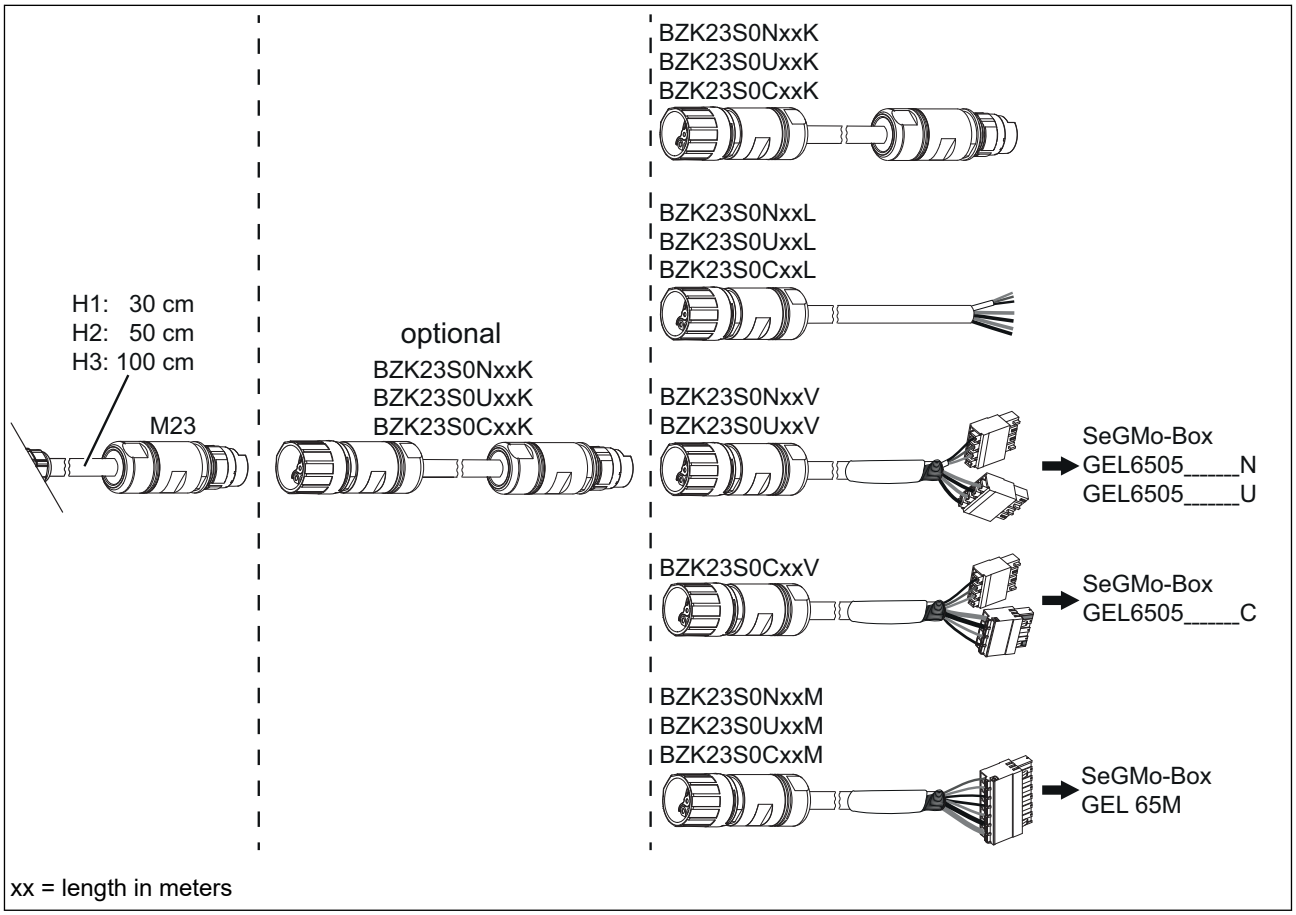
Designation	Item number:
Hybrid cable assembly for	
SeGMo-Box GEL 6505 in design N/U	89070
SeGMo-Box GEL 6505 in design C	ZB6505UL01
Modular SeGMo-Box GEL 65M, design N	ZB65MX01

Connection technology H1/H2/H3/S1/S2/S3/xx/Vx

Assignment for H1/H2/H3 connection technology

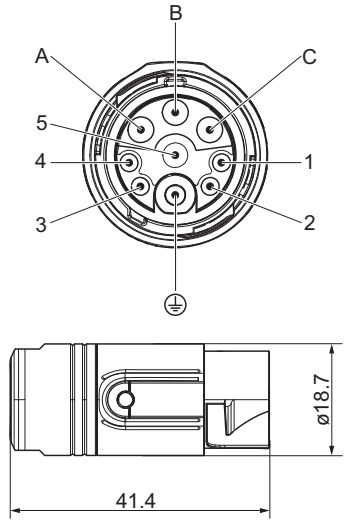
M23 connector		
Coupling with male contacts (plug-in view)	Pin designation	Signal identifier
	*A*	+24 V logic
	B	GND logic
	C	GND power
	D	+24 V power
	E	Cable screen
	7	CAN-High
	8	CAN-GND
	9	CAN-Low
	S	CAN screen

Connection accessories for H1/H2/H3 connection technology (SeGMo-Connect, see BZK Technical Information)

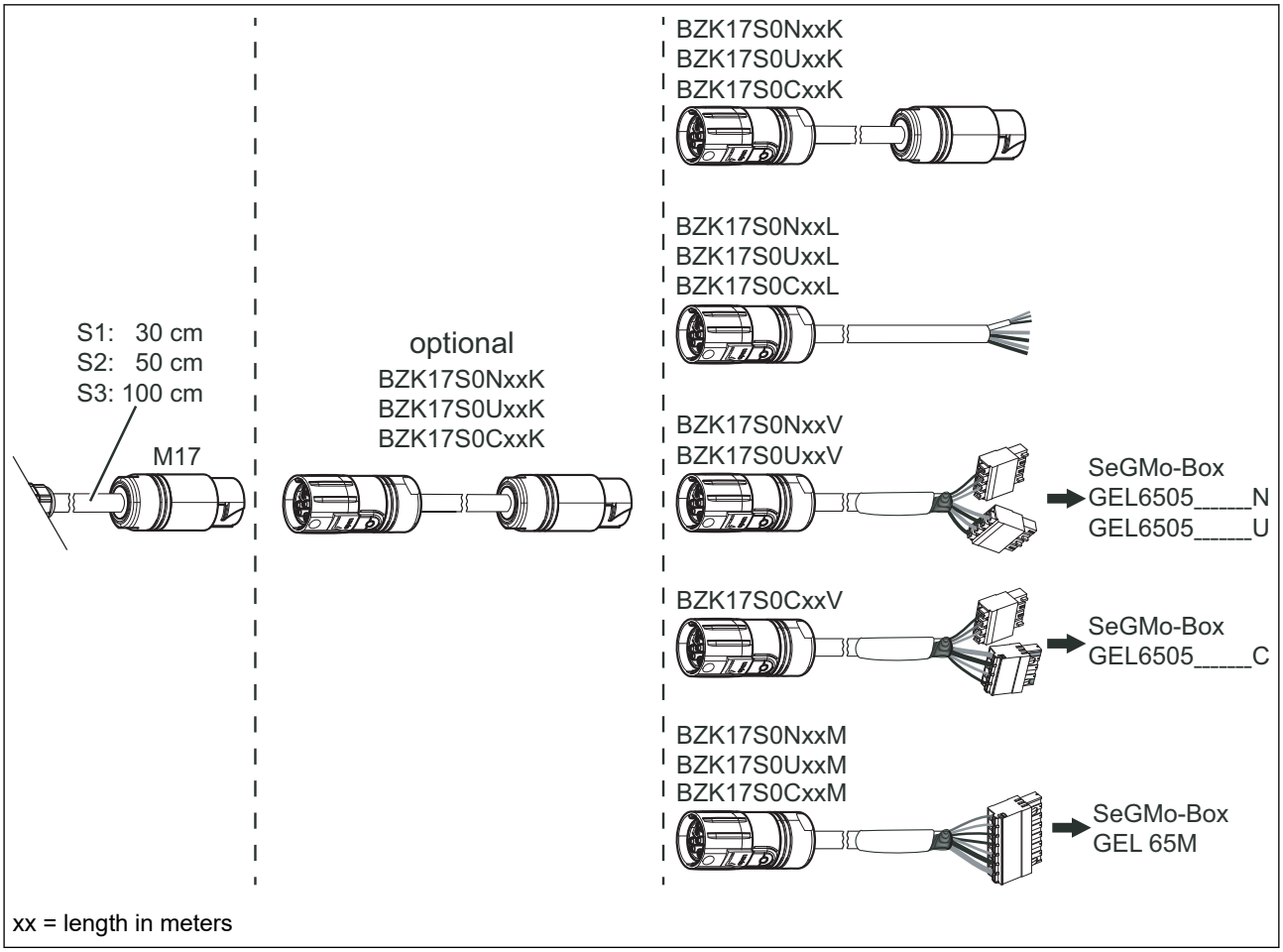


Connection technology H1/H2/H3/S1/S2/S3/xx/Vx

Assignment for S1/S2/S3 connection technology

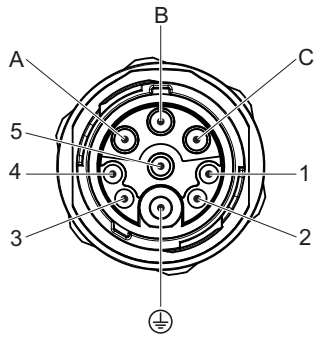
M17 connector		
Coupling with male contacts (plug-in view)	Pin designation	Signal identifier
	*A*	+24 V logic
	B	+24 V power
	C	GND power
	1	GND logic
	2	CAN-GND
	3	CAN-Low
	4	CAN-High
Cable screen and CAN screen are connected to the metallic coupling housing and to the pin ⏚ .		

Connection accessories for S1/S2/S3 connection technology (SeGMo-Connect, see BZK Technical Information)

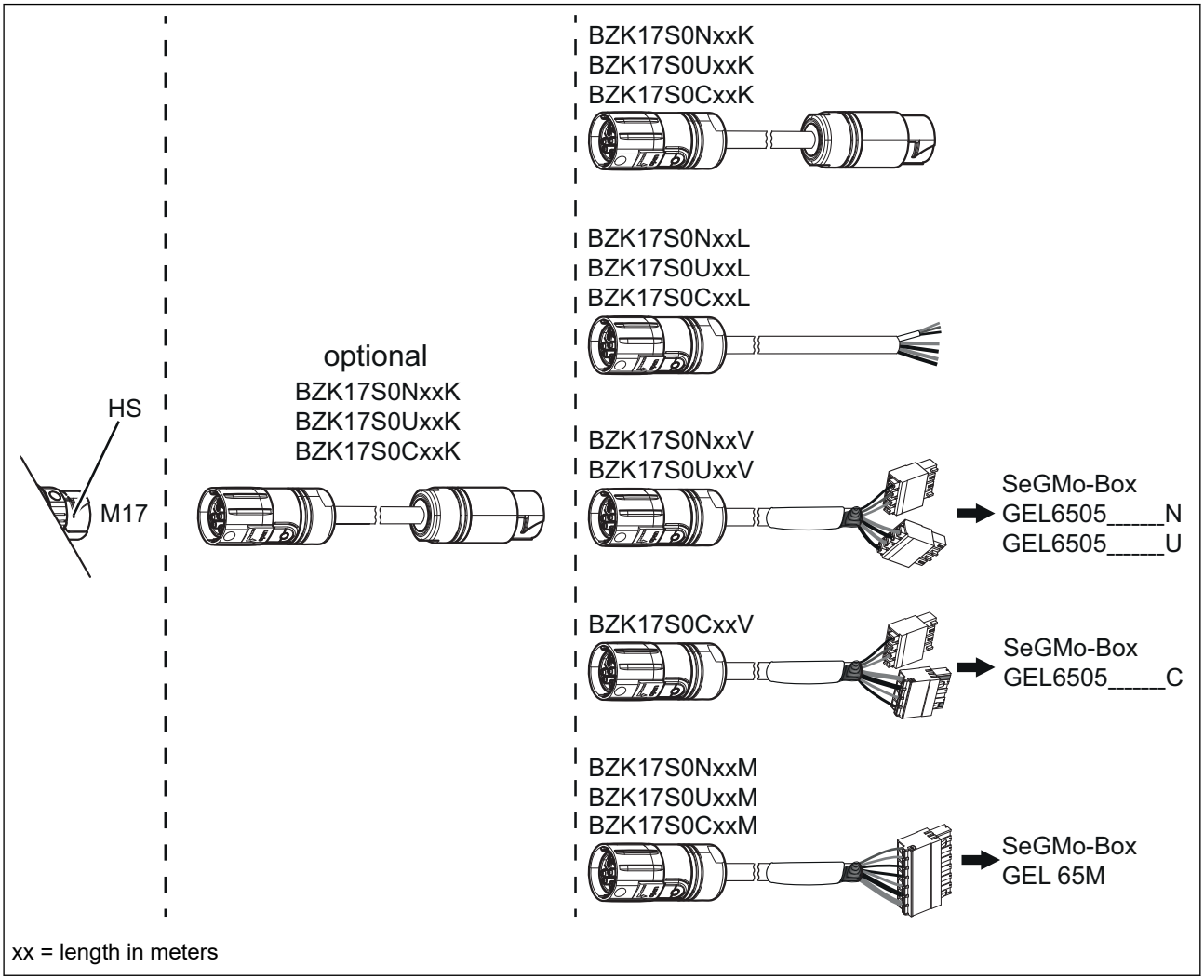


xx = length in meters

Assignment for HS connection technology

M17 connector		
Panel-mounting socket with male contacts (plug-in view)	Pin designation	Signal identifier
	*A*	+24 V logic
	B	+24 V power
	C	GND power
	1	GND logic
	2	CAN-GND
	3	CAN-Low
	4	CAN-High

Connection accessories for HS connection technology (SeGMo-Connect, see BZK Technical Information)



xx = length in meters

Accessories for mounting and spare parts

Assembly accessories

Accessories for mounting (not included in the scope of supply)

Designation	Item number
Clamping ring for output shaft: — **A** / **B** / **C** / **D** — **8** / **9** / **E**	 MZ1380 MZ1379
Accessory set for GEL 6110 ≤ 10 Nm and GEL 6109, comprising: ▪ 1 pc. torque support including plain bearing, item number: BG5012 ▪ 2 pc. screw M5×8, item number: VS2107 ▪ 1 pc. headless screw M5×20, item number: VS3412 ▪ 1 pc. assembly note, item number: D-53H-6110_01	ZB6100
Accessories kit plain bearings, comprising: 5 pc. plain bearings, item number: OG0001	ZB61X01
Accessories kit headless screws, comprising: 5 pc. headless screws M5×20, item number: VS3412	ZB61X02
Accessories kit screws torque support, comprising: 10 pc. screws M5×8, item number: VS2107	ZB61X03

Spare parts

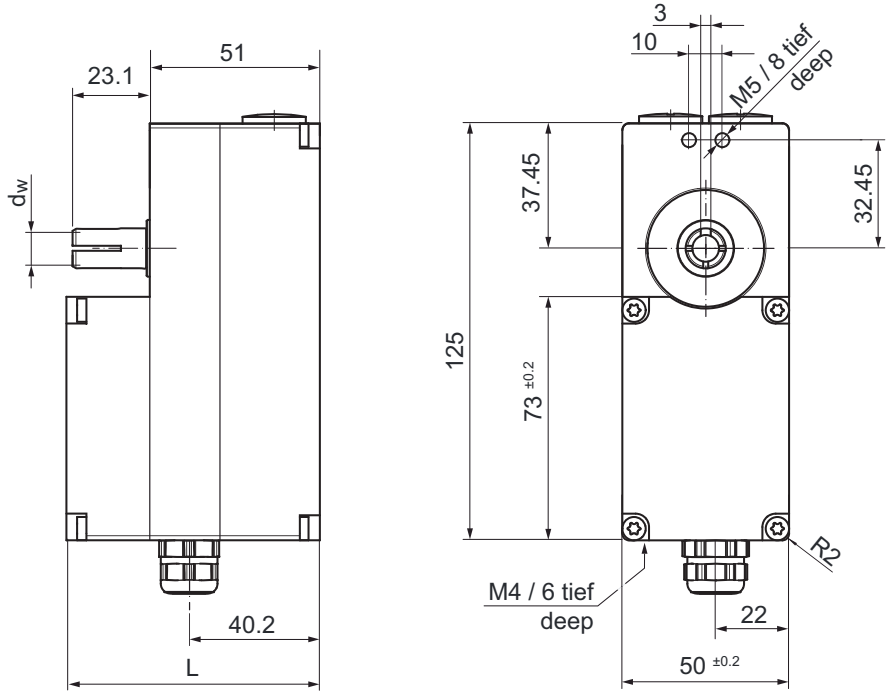
Warning stickers

Designation
Warning sign “Warning automatic start-up”, lateral length 25 mm, ASR A1.3 / ISO 7010, Warning sign W018
Warning sign “Warning for hot surface”, lateral length 25 mm, ASR A1.3 / ISO 7010, Warning sign W017

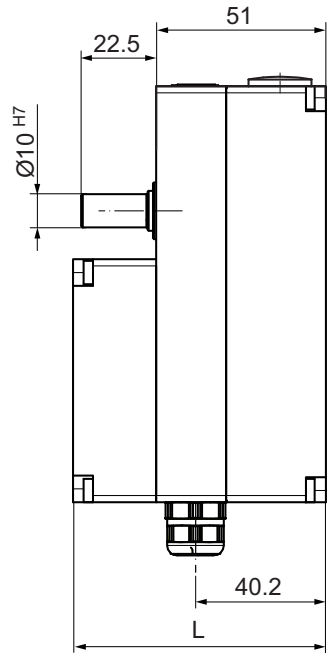
All dimensions in millimeters; general tolerance DIN ISO 2768 – mK

GEL 6109 (connection technology H1/H2/H3/S1/S2/S3/Vx/xx)

Semi-hollow shaft



Output shaft **M**



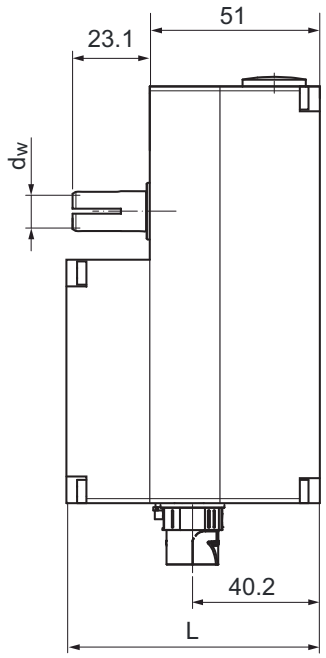
d_w Diameter output shaft

Construction type		Dimension L (length of housing)
Short	**K**	76
Long	**L**	96

Dimensional drawings

GEL 6109 (connection technology HS)

Semi-hollow shaft

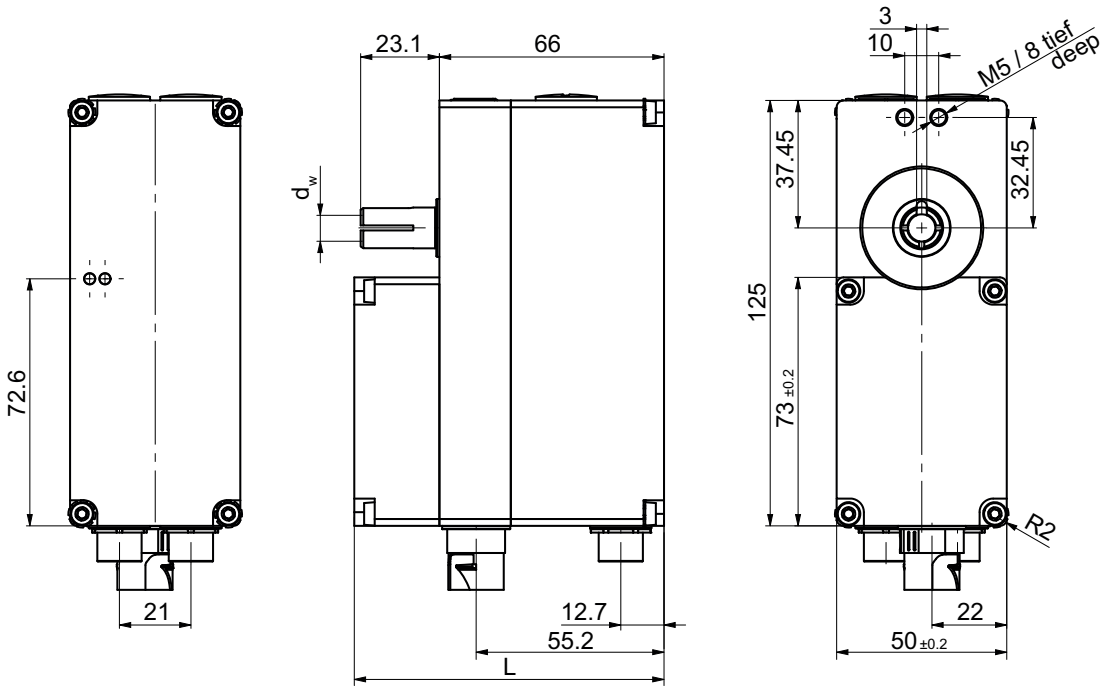


d_w Diameter output shaft

Construction type		Dimension L (length of housing)
Short	**K**	76
Long	**L**	96

GEL 6109 (connection technology ST)

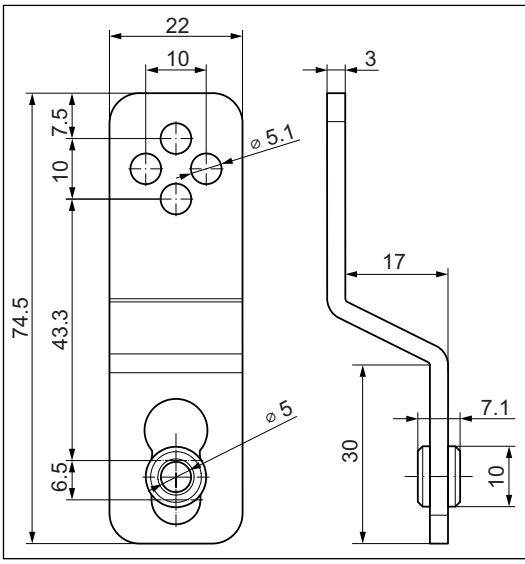
Semi-hollow shaft



d_w Diameter output shaft

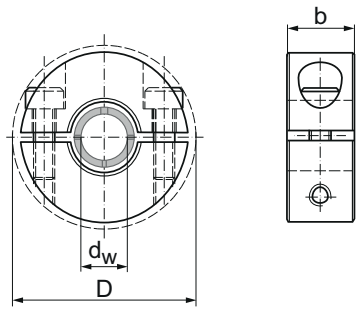
Construction type		Dimension L (length of housing)
Short	**K**	91
Long	**L**	111

Accessory set ZB6100 (torque support including plain bearing)



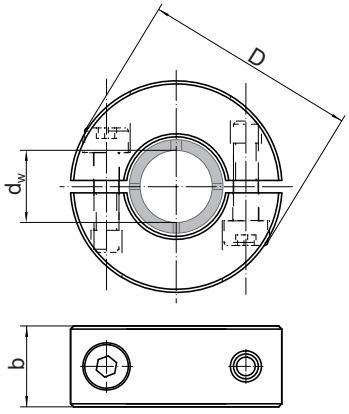
Dimensional drawings

Clamping ring



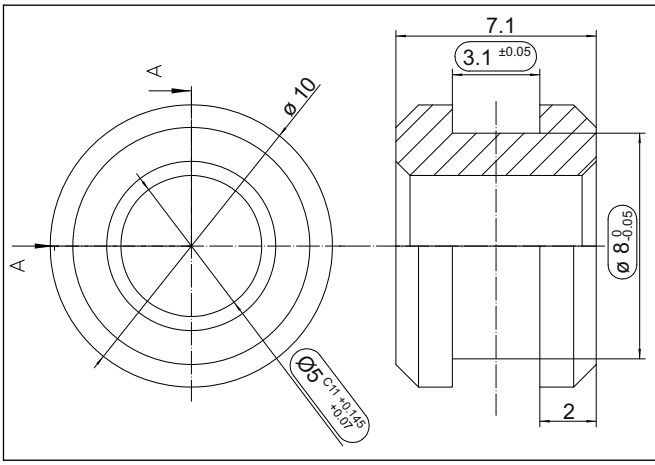
Dimensions/**item number clamping ring**	**MZ1379**
Diameter output shaft d_w H7 [mm] (type code)	8/9/10 (**8** / **9** / **E**)
D [mm]	32
b [mm]	11
Screw DIN 912	M4

Clamping ring



Dimensions/**item number clamping ring**	**MZ1380**
Diameter output shaft d_w H7 [mm] (type code)	11/12/13/14 (**D**/**C**/**B**/**A**)
D [mm]	34.5
b [mm]	13
Screw DIN 912	M4

Plain bearing OG0001



Section A-A

Type code

	Communication interface								
	CO	CANopen CiA 402[1]							
	EC	EtherCAT							
	IP	EtherNet/IP							
	MB	Modbus/TCP							
	PL	POWERLINK							
	RT	PROFINET IO/RT							
	SC	sercos III							
		Nominal torque							
		02	2.5 Nm/70 min^{-1} at ED 25 %						
		05	5 Nm/70 min^{-1} at ED 25 %						
			Output shaft [d_w in millimeter]						
			A	14 H7 Semi-hollow shaft					
			B	13 H7 Semi-hollow shaft[2]					
			C	12 H7 Semi-hollow shaft					
			D	11 H7 Semi-hollow shaft[2]					
			E	10 H7 Semi-hollow shaft					
			9	9 H7 Semi-hollow shaft[2]					
			8	8 H7 Semi-hollow shaft					
			M	10 h7 Solid shaft[3]					
				Housing material					
				A	Aluminum AlMgSi, anodized				
					Construction type				
					K	Short			
					L	Long			
						Connection Technology			
						ST	Connector (standard): M12 fieldbus, M17 power supply)		
						HS	M17 panel-mounting socket with male contacts		
						S1	30 cm hybrid cable and M17 coupling with male contacts		
						S2	50 cm hybrid cable and M17 coupling with male contacts		
						S3	100 cm hybrid cable and M17 coupling with male contacts		
						H1	30 cm hybrid cable and M23 coupling with male contacts		
						H2	50 cm hybrid cable and M23 coupling with male contacts		
						H3	100 cm hybrid cable and M23 coupling with male contacts		
						Vx	Hybrid cables pre-assembled with spring-cage terminals for SeGMo-Box GEL 6505, Cable length V**1** = 1 m; V**2** = 3 m; V**3** = 5 m; V**4** = 8 m; V**5** = 10 m; V**6** = 13 m; V**7** = 15 m; V**8** = 18 m; V**9** = 20 m		
						xx	xx m hybrid cable with flying lead, length in meters (xx = 01 to 20; standard: 3 m)		
							Sensor		
							M	Magnetic-absolute multiturn encoder (342 revolutions)	
								Design	
								0	Standard
								1	Individual protection
								C	cULus recognized component
									Degree of protection
									3 IP 67 (with shaft sealing ring and protection against humidity), design **C**: additionally UL protection class type 1
6109	_ _	_ _	_	_	_	_ _	_	_	_

(1) System-internal communication, other interfaces via SeGMo-Box
(2) upon request
(3) Clamp coupling upon request

Type code

Restrictions

Connection Technology

- Connection technologies **HS/H1/H2/H3/S1/S2/S3/xx/Vx** are only available with communication interface **CO** (CANopen).
- Connection technology **ST** is not available in design **C**(1) and is not available with communication interface **CO** (CANopen).

Nominal torque/construction type

Nominal torque		Construction type (dimension L: length of housing)	
		Connection technology **HS/ H1/H2/H3/S1/S2/S3/xx/Vx**	Connection technology **ST**
02	2.5 Nm at 70 min^{-1}	**K** (76 mm)	**K** (91 mm)
05	5 Nm at 70 min^{-1}	**L**(96 mm)	**L**(111 mm)

Customized modifications

Customized special housings and customized shafts are available upon request as per approval drawing.

Customized special designs are assigned a Y-number. A positioning drive marked with Y (example: 6109Yxxx) is a customized design with a special assembly or modified technical specifications. Depending on the customized modification, more or other documents may apply.

(1) In preparation

Certification for USA and Canada

Certification: cULus recognized component (document E196161)

General
- The positioning drives were only examined for the application area of NFPA 79 (Electrical Standard for Industrial Machinery).
- Mechanical hazards caused by moving parts must be evaluated as part of the final application.
- Suitability of connection cables and connectors must be evaluated as part of the final application.
- Protecting the motor against overload was not taken into account as part of the certification process and must be evaluated as part of the final application.
- Protecting the motor against excessive temperature was not taken into account as part of the certification process and must be evaluated as part of the final application.
- Protecting the motor against a blocked machine shaft was not taken into account as part of the certification process and must be evaluated as part of the final application.

Connection technologies **H1 / H2 / H3 / S1 / S2 / S3 / xx / Vx**
- The positioning drives were examined and tested as an integral part of the SeGMo system for the "Factory Automation" area. The application is permissible only in combination with SeGMo-Boxes, types GEL6505B␣␣␣␣␣␣C (GPNY) and GEL6505A␣␣␣␣␣␣C (GPNY2) (document E483619).
- The positioning drives are only intended for use with SeGMo-Box GEL6505A␣␣␣␣␣␣C or GEL6505B␣␣␣␣␣␣C in combination with SeGMo-Connect BZK␣␣␣␣C␣␣␣.

Your notes

Your notes

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