Made in Germany

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Technical Information

GEL 6109

SeGMo-Positioning

Compact Positioning Drive for Confined Installation Situations

D-51T-6109 | Date of issue 2026-10-06

CANopen
PROFINET
EtherNet/IP
EtherCAT
Modbus
sercos the automation bus
ETHERNET POWERLINK
IO-Link
c UL us

LENORD +BAUER

Finding solutions. Founding trust.

Motion sensors and integrated drive technology

SeGMo-System

The SeGMo-System is designed for the efficient integration of multiple positioning drives and position indicators into a machine or system.

The system consists of the following components:

- SeGMo-Positioning:
  Positioning drive for fully automatic format adjustment
- SeGMo-Assist:
  Position indicator for manual adjustment operations
- SeGMo-Lib:
  Pre-built function blocks for integration into the system control
- SeGMo-Support Tool:
  Software for advanced commissioning and configuration
- SeGMo-ImgConv Tool:
  Tool for converting image files into pictograms for SeGMo-Assist
- SeGMo-Service Tool:
  Software for advanced commissioning and configuration of Industrial Ethernet interfaces

SeGMo-Positioning

The positioning drives are complete mechatronic systems featuring a battery-free multiturn encoder, gearbox, and motor, as well as integrated power and control electronics. We also offer these for standalone use. With rated torques of up to 18 Nm [13.28 ft•lbf], they cover the performance range typical for secondary axes.

SeGMo-Assist

The position displays facilitate manual adjustment processes by showing target and actual positions. Products are available for rotary and linear applications. Another product without a Measuring system assists the operator, for example, during format or tool changes.

SeGMo-Positioning

6109 6110 6113



6008 6009 6013



SeGMo-Assist

SEPODR SEPODL SEHMI



SEROT SELIN



Overview Positioning Drive

General

The SeGMo positioning drive 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 [1.84 ft•lbf], 5 Nm [3.69 ft•lbf]
- Aluminum housing, anodized
- Operating temperature range
  -10 °C to +60 °C [14 °F to 140 °F]
- Brushless DC motor
- Batteryless magnetic absolute multiturn encoder
- Degree of protection IP67
- Integrated communication interfaces
  CANopen (CiA 402); EtherCAT; IO-Link; EtherNet/IP; Modbus/TCP; POWERLINK; PROFINET IO/RT; sercos III
- 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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Description

General Description

The positioning drive belongs to the SeGMo-Positioning product group and is a component of the SeGMo-System. It is an intelligent positioning unit designed for mounting on the end of a machine shaft or for attachment to a machine shaft or spindle.

The positioning drive converts received motion commands into a mechanical rotational motion, thereby driving a machine shaft. A torque support is installed to prevent the positioning drive from rotating along with the machine shaft.

Product Construction

The positioning drives require two supply voltages of 24 V … 30 V DC. The logic circuit supply voltage powers the control electronics, and the power circuit supply voltage powers the power electronics for the motor.

The positioning drive can be configured using the SeGMo-Support Tool via the service connector (mini-USB).

The rigid housing made of anodized aluminum achieves a Degree of protection IP 67 thanks to the shaft seal ring.

The positioning drive requires the connection of a functional ground wire. The connection is made via an M4 threaded hole on the underside of the housing. We recommend a wire cross-section of 4 mm² [12 AWG].

Standalone Operation

Positioning drives with **SL** (IO-Link) or **ST** (Industrial Ethernet interfaces) connection technology are designed for standalone operation and can be connected directly to a system controller.

Use with a SeGMo-Box

The positioning drive is connected to a SeGMo-Box via SeGMo-Connect. The SeGMo-Connect hybrid cable handles bus communication and the power supply for the positioning drive. The positioning drives communicate with the SeGMo-Box via the system's internal fieldbus profile (communication interface **CO**). It is available with either a hybrid cable (**H1/H2/H3/S1/S2/S3/Vx/xx** connectors) or a plug connection (**HS** connection technology).

The positioning drive with **Vx** connection technology comes pre-assembled and can be connected directly to the SeGMo-Box GEL 6505.

General Information About SeGMo-Connect

Connection accessories for connecting to the SeGMo-Box

The SeGMo-Connect hybrid cable is designed for use in moving applications within drag chains. It is available in food-grade, halogen-free, and cULus Recognized Component versions. The hybrid cable is shielded beneath the outer jacket. The inner communication strand is fully insulated and features multiple layers of Shielding.

All positioning drives are available with hybrid cables and connectors and can be quickly and easily connected to the SeGMo-Box using the freely customizable and pre-assembled hybrid cables.

The connectors with quick-disconnect couplings allow for safe and rapid disconnection from the power supply during maintenance and service work. Customizable hybrid cables are available for connection.

Connection accessories for standalone versions with Industrial Ethernet or fieldbus interfaces

Mating connectors and power supply cables are available for standalone use of positioning drives.

For more information on SeGMo-Connect connection accessories, see the "Technical Information BZK."

SeGMo-Service Tool

The SeGMo-Service Tool offers the following features:

- **IP Communication** Interface:
  - Set IP address.
    (Network connection)

Magnetic Absolute Multiturn Encoder

A magnetic absolute multiturn encoder eliminates the need for reference runs after a power failure or an “EMERGENCY STOP.” Thanks to the battery-free multiturn encoder, the positioning drive detects its position as soon as power is restored and is immediately ready for operation.

When powered off, the output shaft can be rotated by ±171 revolutions without losing its absolute position.

The multi-turn encoder withstands high shock and vibration loads.

Operating Modes

The positioning drives are **not** designed for continuous operation at rated torque.

The positioning drives are designed for short-term operation at rated torque. The following intervals apply for a duty cycle (ED) of

- Duty Cycle (ED) = 25% at 100% load torque,
  rated operating mode S2
  “Base time 4 minutes: Duty Cycle (ED) = 1 minute,
  Pause Duration (PD) = 3 minutes”
- ED ≤ 50% at reduced load torque,
  depending on environmental parameters and application

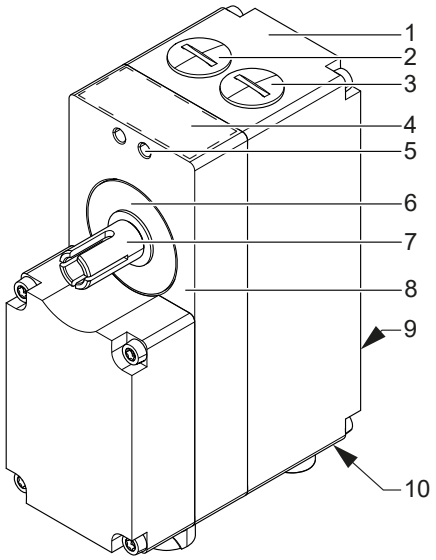
Other operating modes are protected by I^2t and temperature monitoring as well as an adjustable current limit. A brief increase in starting torque is permitted within the scope of this protection.

Operational Safety

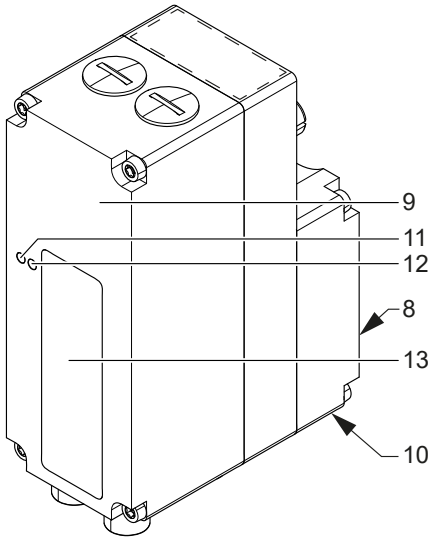
Key parameters are monitored, actively protecting the positioning drive from overload. The following monitoring features ensure trouble-free operation:

- Soft start and stop via acceleration and deceleration ramps
- Overvoltage/undervoltage detection for the supply voltages (power circuit and logic circuit)
- Slip detection (output shaft to motor shaft)
- Temperature monitoring of the power output stage and the interior of the housing
- Overload protection for the motor and the power output stage via I^2t monitoring and, in combination with the SeGMo-Box, via maximum current

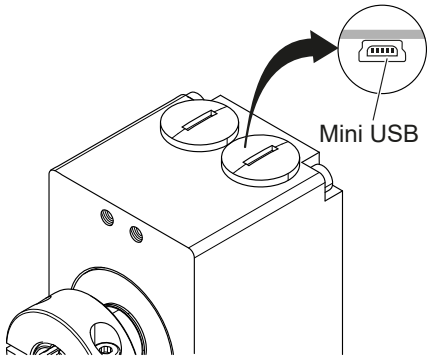
Specified Parts



Positioning drive with semi-hollow shaft - Front view



Positioning drive with semi-hollow shaft - Rear view



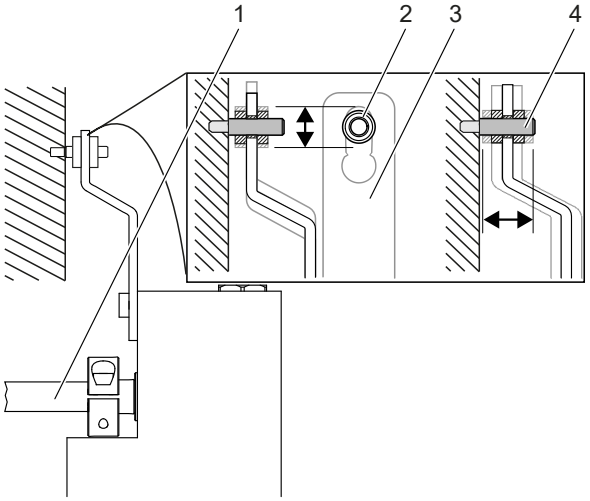
Positioning drive with semi-hollow shaft - Service connector

1 Housing: Top
2 Removable blind plug
(Not to be used by the operator!)
3 Removable blind plug, service connector (Mini-USB)
4 Area for warning labels
5 Two threaded holes
(for mounting the torque support)
6 Shaft seal
7 Output shaft as a semi-hollow shaft
(diameter according to Type Code)
8 Housing: Front side
9 Housing: Rear side
10 Housing: Underside
11 **ST** connection technology:
Status Indicator — Device (LED1)
SL connection technology:
Status indicator — IO-Link communication (LED2)
12 **ST** connection technology:
Status indicator — Communication (LED2)
SL connection technology:
Status indicator — IO-Link status (LED1)
13 Nameplate

Assembly

The installation concept calls for a fixed-floating bearing arrangement. The machine shaft supports the mass of the positioning drive via the fixed bearing. To achieve this, the positioning drive is mounted directly onto the machine shaft via a force-fit connection, for example, using a Semi-hollow shaft with a clamping ring. The torque support prevents the positioning drive from rotating along with the shaft and, as a floating bearing, compensates for any unbalanced movements that may occur on the output shaft. The shape and Design of the torque support are application-specific. Various mounting accessories are available for installation.

Absorption of unbalanced movements at the idler bearing (example with a standard torque support from Lenord+Bauer)



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

Technical Data

Positioning Drive

Rated Torque (Construction type)	**02 (K)**	**05 (L)**
Electrical Data		
Logic circuit supply voltage	24 V … 30 V DC (Rated supply voltage: 24 V DC)	
Power circuit supply voltage	24 V … 30 V DC (Rated supply voltage: 24 V DC) (Maximum motor speed depends on voltage!)	
Maximum current consumption of the logic circuit (1) (2) Connection technology ▪ **H1/H2/H3/HS/S1/S2/S3/SL/xx/Vx** ▪ **ST**	 ▪ 100 mA ▪ 200 mA	
Current consumption of the power circuit (1) (2) (Maximum power circuit current draw)	1.8 A (4.0 A)	2.6 A (5 A)
Duty cycle (ED) in % (load-dependent) (1)	▪ Duty cycle (ED) = 25% at 100% load torque, rated operating mode S2 “Base time 4 minutes: Duty cycle (ED) = 1 minute, pause time (PD) = 3 minutes” ▪ ED ≤ 50% at reduced load torque, depending on environmental parameters and application	
Communication interfaces	CANopen (CiA 402); EtherCAT; IO-Link; EtherNet/IP; Modbus/TCP; POWERLINK; PROFINET IO / RT; sercos III	
Mechanical Data		
Rated output shaft torque (1)	2.5 Nm at 70 min^{-1} [1.84 ft•lbf at 70 rpm]	5 Nm at 70 min^{-1} [3.69 ft•lbf at 70 rpm]
Output shaft	Semi-hollow shaft, solid shaft, custom shaft (3)	
Housing material	Aluminum, anodized	
Housing dimensions (excluding mounting and connection elements)	50 mm [1.97 in] ×125 mm [4.92 in] ×L (4)	
Weight (5)	≈ 1.0 kg [2.21 lb]	≈ 1.25 kg [2.76 lb]
Sensor data		
Resolution	1,000 increments per 360°	
Measurement system range	▪ Under power: Unlimited ▪ When de-energized: 342 revolutions	
Ambient Data		
Working temperature range	0 °C … +60 °C [32 °F … 140 °F]	
Operating temperature range	-10 °C … +60 °C [14 °F … 140 °F]	
Storage temperature range	-20 °C … +85 °C [-4 °F … +185 °F]	
Maximum relative humidity	95%	
Condensation	Not permitted (condensation protection available upon request)	
Degree of protection (6)	IP 67, DIN EN 60529:2014-09, shaft seal (material: FKM)	
Dielectric Strength	√2 × 500 V DC; in accordance with DIN EN 61439-1:2021-10	

Rated Torque (Construction type)	**02 (K)**	**05 (L)**
EMC (7)	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 IO-Link: DIN EN 61000-4-5:2019-03 (±1 kV line-to-ground/±0.5 kV line-to-line) 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/s² [164.04 ft/s²] (≈ 5g), 10 ... 50 Hz; in accordance with DIN EN 60068-2-6:2008-10	
Shock resistance	150 m/s² [492.13 ft/s²] (≈ 15g); in accordance with DIN EN 60068-2-27:2010-02	
Noise emission (8)	50 dB	
Data for “cULus Recognized Component” (Design C)		
cULus Recognized Component, E196161	UL 61800-5-1 CSA C22.2 No. 274-13	
Input voltage (power circuit) U_{IN} (9)	24 V … 30 V DC	
Input power (power circuit), continuous operation	25 VA [0.03 hp]	45 VA [0.06 hp]
Input power (power circuit), duty cycle (DC) = 1 minute, pause duration (PD) = 3 minutes	35 VA [0.05 hp]	60 VA [0.08 hp]
Enclosure protection class (6)	Type 1	
Working temperature range	0 °C … +55 °C [32 °F … 131 °F]	
Operating temperature range	-10 °C … +55 °C [14 °F … 131 °F]	
Approvals		
European Economic Area	Compliance with ▪ EMC Directive 2014/30/EU ▪ Machinery Regulation (EU) 2023/1230 ▪ Machinery Directive 2006/42/EC CE	
United States and Canada	**Design C:** cULus Recognized Component Certification c UL us	

(1) At rated supply voltage
(2) External fuse required
(3) Upon request
(4) Depends on the connection technology (Dimension L: *siehe „Dimension Drawings“, Seite 23*)
(5) Depending on the connection technology and construction type
(6) The Degree of protection/enclosure protection class is maintained only if all blind plugs are screwed in and all unused connectors (**ST/SL** connection technology) are covered.
(7) Use only shielded cables (does not apply to **SL** connection technology).
(8) Measured at a distance of 1.0 m [39.37 in] at rated load and rated speed
(9) Corresponds to the supply voltage of the power circuit

Connectors and Cables

Connection technology **H1/H2/H3**

Coupler/Plug (M23 connector size)	
Rated voltage	Maximum 30 V AC/DC
Current-carrying capacity	According to DIN EN 60512
Contact type (coupler/plug)	Male contact/female contact
Housing material (coupler/plug)	Nickel-plated brass
Material of the cap nut	Nickel-plated brass
Ambient temperature	-20 °C ... +130 °C [-4 °F ... 266 °F]
Degree of protection (When screwed in place, per DIN EN 60529/DIN 40050)	IP 66/IP 67
Mating cycles	> 500
Vibration resistance	≤ 200 m/s² [656.17 ft/s²]
Certification	cULus Recognized Component (No. E247738)

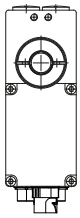
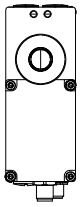
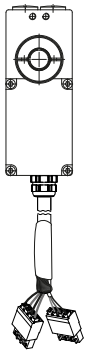
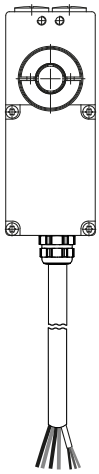
Connection technology **HS/S1/S2/S3/ST**

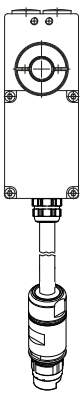
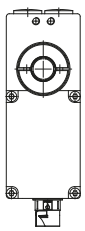
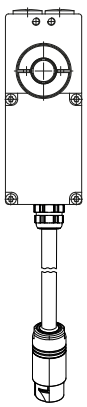
Coupler/Plug (M17 connector size)	
Rated voltage	Maximum 30 V AC/DC
Current-carrying capacity	According to DIN EN 60512
Contact type (coupler/plug)	Male contact/female contact
Housing material for connector/plug	Brass, die-cast zinc, and plastic-coated
Ambient temperature	-20 °C ... +130 °C [-4 °F ... 266 °F]
Degree of protection (When screwed together, per DIN EN 60529/DIN 40050)	IP 66/IP 67
Mating cycles	> 500
Certification	cULus Recognized Component (No. E247738)

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

Hybrid cables	Design **0** (Standard)	Design **1** (Individual Fuse Protection)	Design **C** (cULus Recognized Component)
Cable jacket	PUR, black, glossy	PUR, black, matte	PUR, black, matte
Cable Properties	Shielded	Shielded	Shielded
Suitable for drag chains	Yes	Yes	Yes
Food-grade	Yes	No	No
Halogen-free	No	Yes	Yes
Cable diameter (d)	9.5 mm [0.37 in]	9.5 mm [0.37 in]	9.5 mm [0.37 in]
Bend radius	Permanently flexible: 10 × d Permanently installed: 5 × d	Permanently flexible: 15 × d Freely movable: 10 × d Permanently installed: 5 × d	Permanently flexible: 15 × d Freely movable: 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 … +80 °C [-40 °F … +176 °F]	-40 °C … +80 °C [-40 °F … +176 °F]	-40 °C … +80 °C [-40 °F … +176 °F]

Overview of Connection Technology

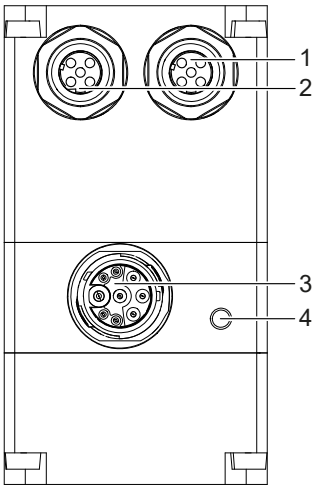
Connection technology			
ST	**SL**	**Vx** Selectable cable length: up to 20 m [787.40 in]	**xx** Selectable cable length: 1 m to 20 m [39.37 in to 787.40 in]
Standalone operation	Standalone operation	Connection to SeGMo-Box **GEL 6505**	Connection to SeGMo-Box **GEL 6505**
Plug outlet	Plug outlet	Hybrid cable with spring-loaded terminals	Hybrid cable with flying lead
			
Communication interfaces:			
EC (EtherCAT) **IP** (EtherNet/IP) **MB** (Modbus/TCP) **PL** (POWERLINK) **RT** (PROFINET IO / RT) **SC** (Sercos III)	**IL** (IO-Link)	**CO** (CANopen)	**CO** (CANopen)

Connection technology		
H1: Cable length 30 cm [11.81 in] **H2**: Cable length 50 cm [19.69 in] **H3**: Cable length 100 cm [39.37 in]	**HS**	**S1**: Cable length 30 cm [11.81 in] **S2**: Cable length 50 cm [19.69 in] **S3**: Cable length 100 cm [39.37 in]
Connection to SeGMo-Box **GEL 6505** via SeGMo-Connect (**BZK** hybrid cable)		
Hybrid cable with M23 connector (female connector with male contacts)	M17 mounting box with male contacts	Hybrid cable with M17 connector (female connector with male contacts)
		
Communication interfaces:		
CO (CANopen)	**CO** (CANopen)	**CO** (CANopen)

Connection Technology **ST**

Parts Named

Underside



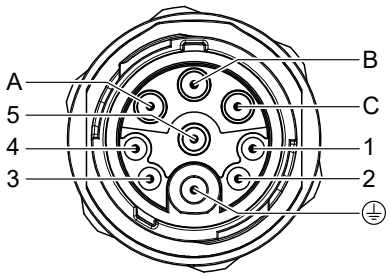
1 M12 connector: Communication interface (OUT)
2 M12 connector: Communication interface (IN)
3 M17 connector: Power supply
- Logic circuit supply voltage
- Power circuit supply voltage

4 M4 threaded hole (functional ground)

Pin Assignments

Power Supply

M17



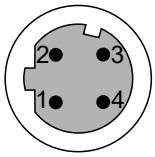
Mounting box with male contacts (plug-in view)

Pin designation	Signal Designation
A	+24 V logic
B	+24 V Power
C	GND Power
1	GND Logic
2	Not Assigned
3	Not Assigned
4	Not assigned
5	Not assigned
⏚	Cable shield

Pin ⏚ is electrically connected to the connector housing.

Communication Interfaces
EtherCAT (**EC**), EtherNet/IP (**IP**), Modbus/TCP (**MB**), POWERLINK (**PL**), PROFINET IO / RT (**RT**), sercos III (**SC**)

2 ×M12 D-coded



Switch sockets (plug-in view)

Pin designation	Signal designation IN/OUT
1	Transmission Data+
2	Receive Data+
3	Transmission Data-
4	Receive Data-

Connection Accessories

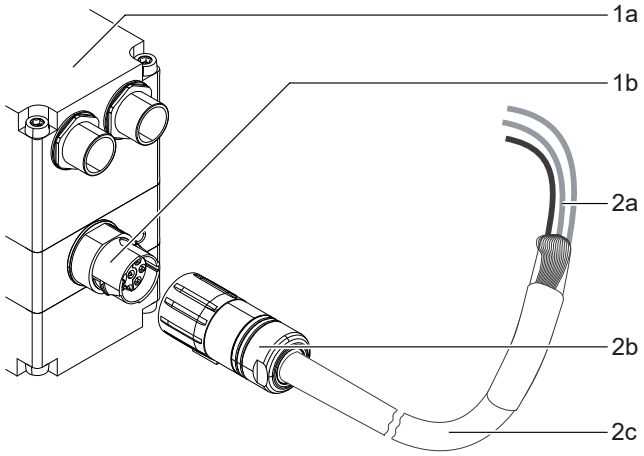
Description	Item number
Industrial Ethernet	
Mating Connector, Industrial Ethernet Input/Output, M12, D-coded (male contact) (1)	FS3039
Ethernet network cable, M12 D-coded (male contact) to RJ45, 3 m [118.11 in] Cable (1)	BK6921
Power Supply	
Power supply cable, M17 (female contact) and flying lead (SeGMo-Connect)	BZK17S1A_ _ L (a)
(a) Specify _ _ cable length in meters: minimum 3 m [118.11 in]/maximum 20 m [787.40 in]	

(1) Not UL-certified

Overview of Power Cables

M17 Power Supply Cable (SeGMo-Connect, see Technical Information BZK)

Example: BZK17S1A_ _ L power supply cable
(_ _ = length in meters)



Power supply cable for positioning drives
Positioning drives
1a Positioning drives
1b M17 connector: Power supply

Power supply cable BZK17**S1A**_ _ **L**
2a Connector 2: **L** (flying lead)
2b Connector 1/Construction type **S1**
(“Mating Plug for Power Supply,” straight with female contacts)
2c Design: **A**
(Power supply cable: 16 AWG cULus Listed)

Mating Connector for Power Supply

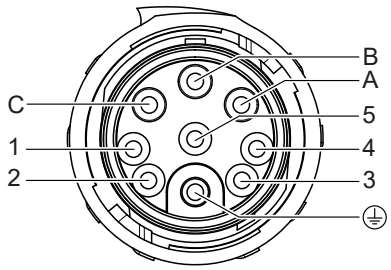
Technical Data

“Mating Connector for Power Supply” (Connector Size M17)	
Rated Voltage	Maximum 30 V AC/DC
Current-carrying capacity	According to DIN EN 60512
Contact type	female contact
Housing material	Brass, die-cast zinc, and plastic-coated
Ambient temperature	-20 °C ... +130 °C [-4 °F ... 266 °F]
Degree of protection (When screwed together, per DIN EN 60529/DIN 40050)	IP 66/IP 67
Mating cycles	> 500
Certification	cULus Recognized Component (No. E247738)

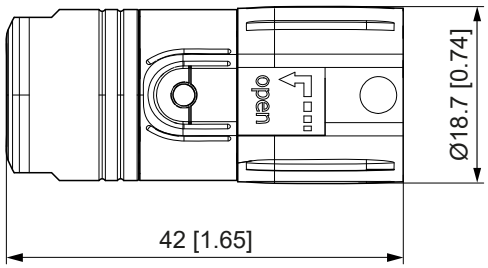
Pin Assignment

Mating connector for power supply

M17



female contact
(plug-in view)



All dimensions in millimeters [inches]

Pin designation	Signal designation
A	+24 V Logic
B	+24 V Power
C	GND Logic and GND Power

- The GND signals are connected internally within the positioning drives.
- The cable shield is connected ⏚ to the metal connector housing and to the pin.

Cable

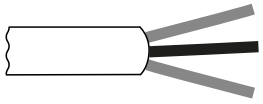
Technical Data

Feature	Design **A** (cULus Listed)
Cable Jacket	Special UV- and oil-resistant PVC, black
Cable Properties	Shielded
Suitable for use in drag chains	Yes
Food-grade	No
Halogen-free	No
Cable diameter (d)	8.8 mm [0.35 in]
Bending radius	Permanently flexible: 15 × d Freely movable: 10 × d Fixed installation: 5 × d
Maximum peak operating voltage	600 V
Temperature range	UL-AWM: up to +105 °C [221 °F]/fixed installation: -25 °C [-13 °F] (UL)/c(UL): up to +90 °C [194 °F]

Pin Assignment

Power Supply

Flying lead

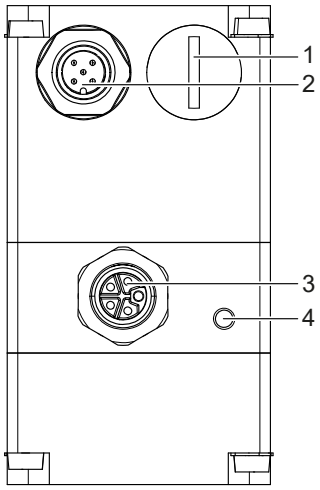


Wire color/wire number	Cross-sectional area Design **A**	Signal designation
Red/1	1.5 mm² [16 AWG]	+ 24 V Logic
Red/2	1.5 mm² [16 AWG]	+ 24 V Power
Black/1	1.5 mm² [16 AWG]	GND (Logic) and GND (Power)

Connection Technology **SL**

Parts Named

Underside



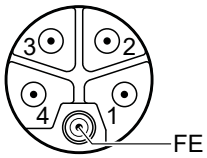
1 Blind plug
(Not to be used by the operator!)
2 M12 connector: Communication interface
3 M12 connector: Power supply
- Logic circuit supply voltage
- Power circuit supply voltage

4 M4 threaded hole (functional ground)

Pin Assignments

Power Supply

M12 L-coded

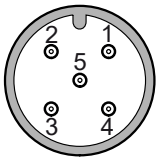


male contact
(plug-in view)

Pin designation	Signal designation
1	+24 V Logic
2	GND Power
3	GND Logic
4	+24 V Power
FE	Functional Ground
Connector housing	Functional ground

IO-Link (**IL**) Communication Interface

M12 A-coded



male contact
(plug-in view)

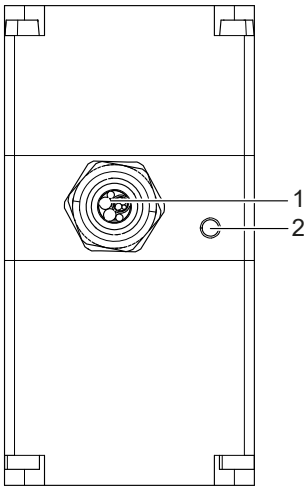
Pin designation	Signal designation
1	U_B
2	Not Assigned
3	GND
4	IO-Link C/Q
5	Not Assigned
Connector housing	Functional ground

Connection Accessories

Description	Item number
IO-Link	
ZB IO-Link Cable, 2 m [78.74 in], M12	ZBSGX11
ZB IO-Link Cable, 5 m [196.85 in], M12	ZBSGX12
ZB IO-Link Cable, 10 m [393.70 in], M12	ZBSGX13

Connection Technology **H1/H2/H3/S1/S2/S3/Vx/xx**

Parts Named

Underside	
	1 M16 cable gland (box connection): ▪ Power supply ▪ Communication interface 2 M4 threaded hole (functional ground)

Pin Assignment for Vx/xx Connection technology

Power Supply and CANopen (**CO**) Communication Interface						
xx connection technology: Flying lead				**Vx** connection technology: Pre-assembled for GEL 6505		Signal designation
Wire color / Wire number	Cross-section Design **0**	Cross-section Design **1**	Cross-section Design **C**	4-pole spring-loaded terminal block (internal communication Positioning drives) Pin designation	4-pole spring-loaded terminal block (Power Supply Positioning drives) Pin designation	
Red/1	0.5 mm² [20 AWG]	0.5 mm² [20 AWG]	0.5 mm² [20 AWG]	-	3	+24 V Logic
Red/2	1.5 mm² [16 AWG]	1.5 mm² [16 AWG]	2.5 mm² [14 AWG]	-	1	+24 V Power
Black/2	1.5 mm² [16 AWG]	1.5 mm² [16 AWG]	2.5 mm² [14 AWG]	-	2	GND Power
Black/1	0.5 mm² [20 AWG]	0.5 mm² [20 AWG]	0.5 mm² [20 AWG]	-	4	GND Logic
Black	0.14 mm² [26 AWG]	0.14 mm² [26 AWG]	0.14 mm² [26 AWG]	1	-	CAN-GND
Green	0.25 mm² [24 AWG]	0.25 mm² [24 AWG]	0.25 mm² [24 AWG]	3	-	CAN-Low
Yellow	0.25 mm² [24 AWG]	0.25 mm² [24 AWG]	0.25 mm² [24 AWG]	2	-	CAN High

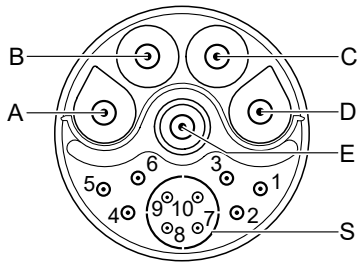
Connection Accessories for xx Connection technology

Description	Item number
Assembly of hybrid cables for	
SeGMo-Box GEL 6505 with N/U design	89070
SeGMo-Box GEL 6505 with C design	ZB6505UL01

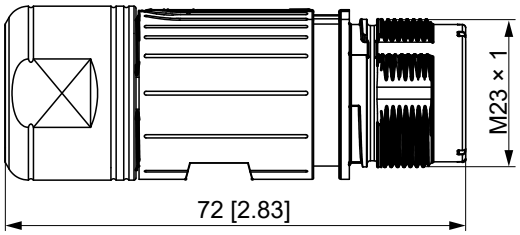
Pin Assignment for H1/H2/H3 Connection technology

Power Supply and CANopen (**CO**) Communication Interface

M23



Connector with male contacts
(plug-in view)

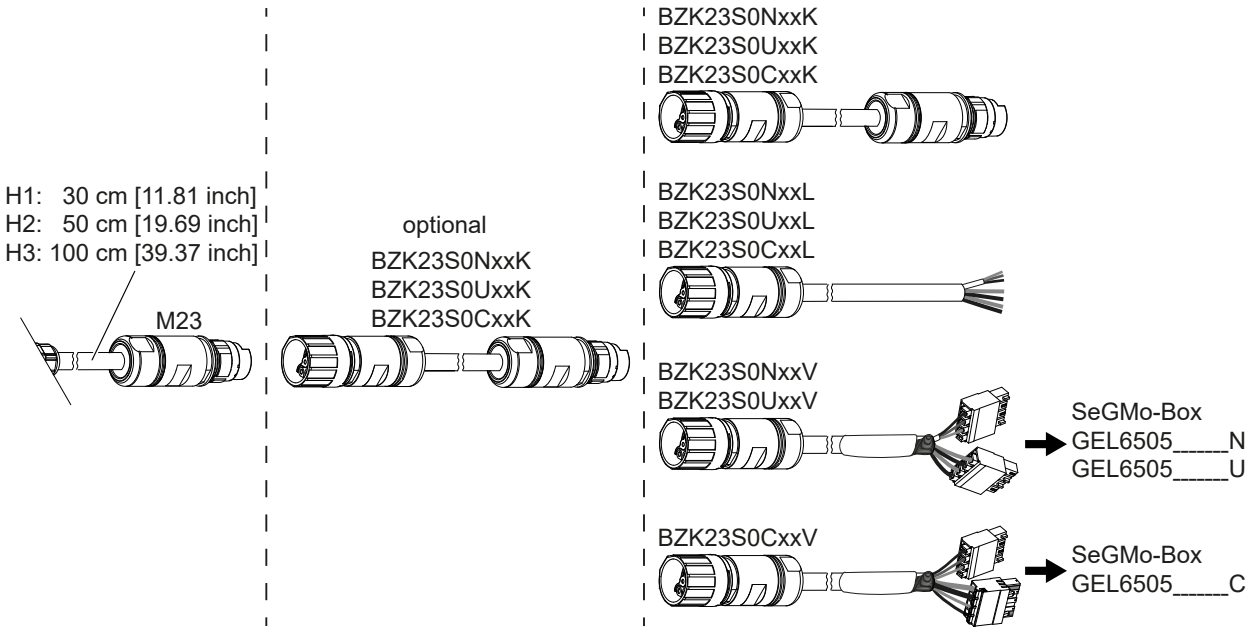


All dimensions in millimeters [inches]

Pin designation	Signal Designation
A	+24 V Logic
B	GND Logic
C	GND Power
D	+24 V Power
E	Cable Shield
7	CAN High
8	CAN GND
9	CAN-Low
S	CAN Shield

Connection Accessories for H1/H2/H3 Connection technology

SeGMo-Connect, see Technical Information BZK

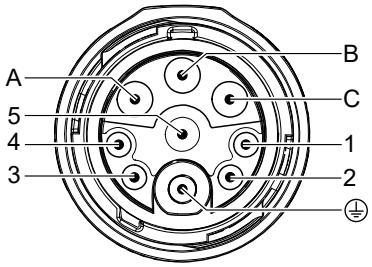


xx = length in meters

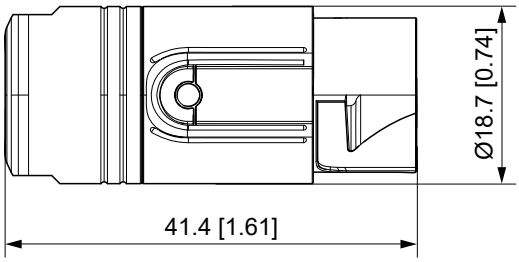
Pin Assignment for S1/S2/S3 Connection technology connectors

Power Supply and CANopen (**CO**) Communication Interface

M17



Connector with male contacts
(plug-in view)



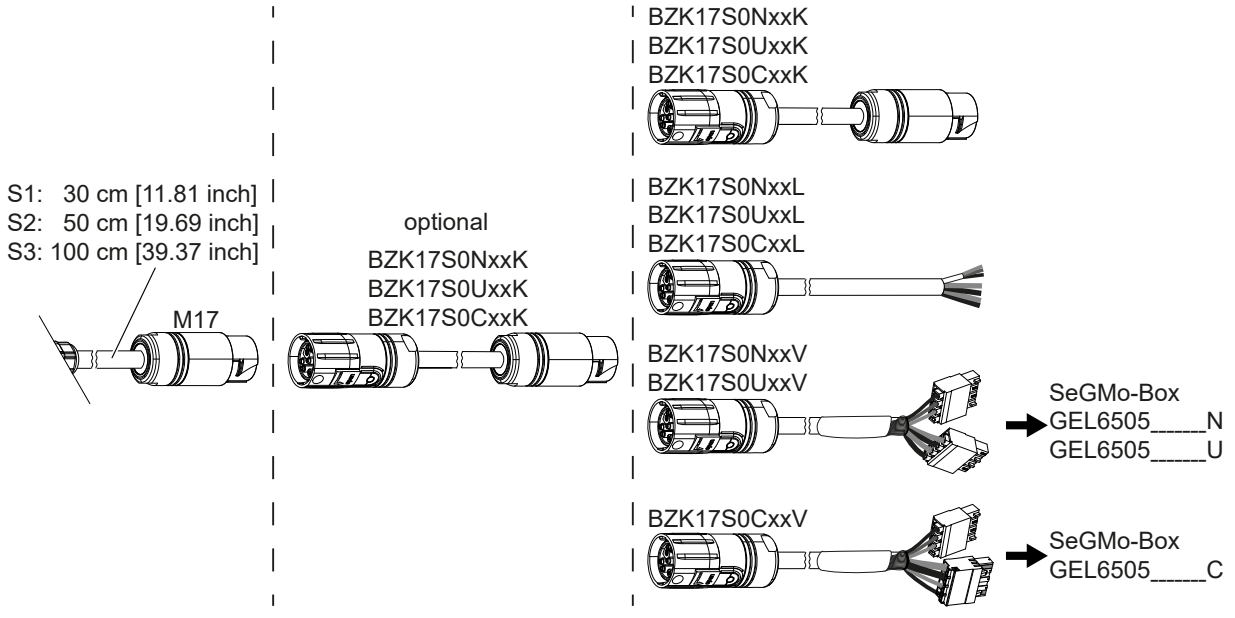
All dimensions in millimeters [inches]

Pin designation	Signal Designation
A	+24 V Logic
B	+24 V Power
C	GND Power
1	GND Logic
2	CAN-GND
3	CAN Low
4	CAN-High

The cable shield and CAN shield are connected ⏚ to the metal coupling housing and to the pin.

Connection Accessories for S1/S2/S3 Connection technology

SeGMo-Connect, see Technical Information BZK

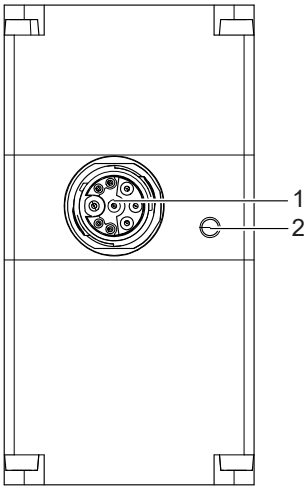


xx = length in meters

Connection Technology **HS**

Parts Named

Underside



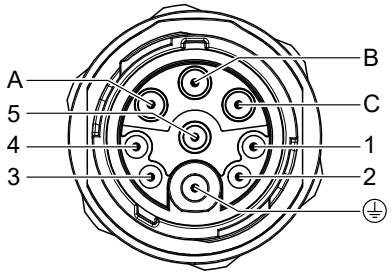
1 M17 mounting box with male contacts (box connection):
- Power supply
- Communication interface

2 M4 threaded hole (functional ground)

Assignment

Power Supply and CANopen (**CO**) Communication Interface

M17

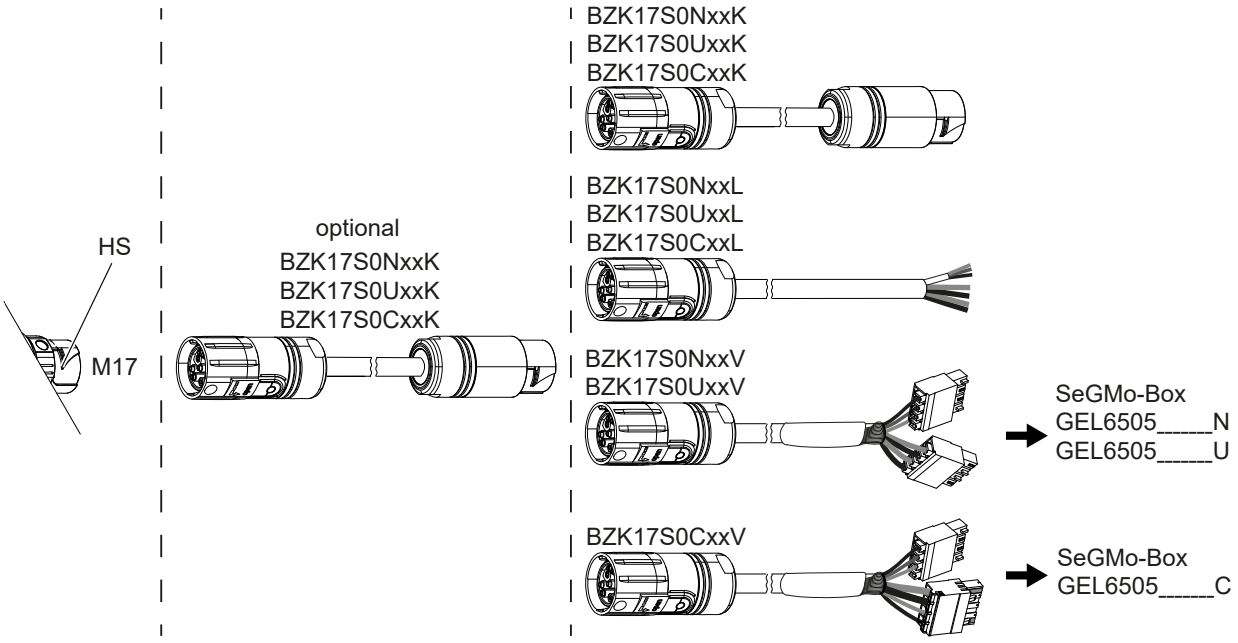


Mounting box with male contacts
(plug-in view)

Pin designation	Signal designation
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

SeGMo-Connect, see Technical Information BZK

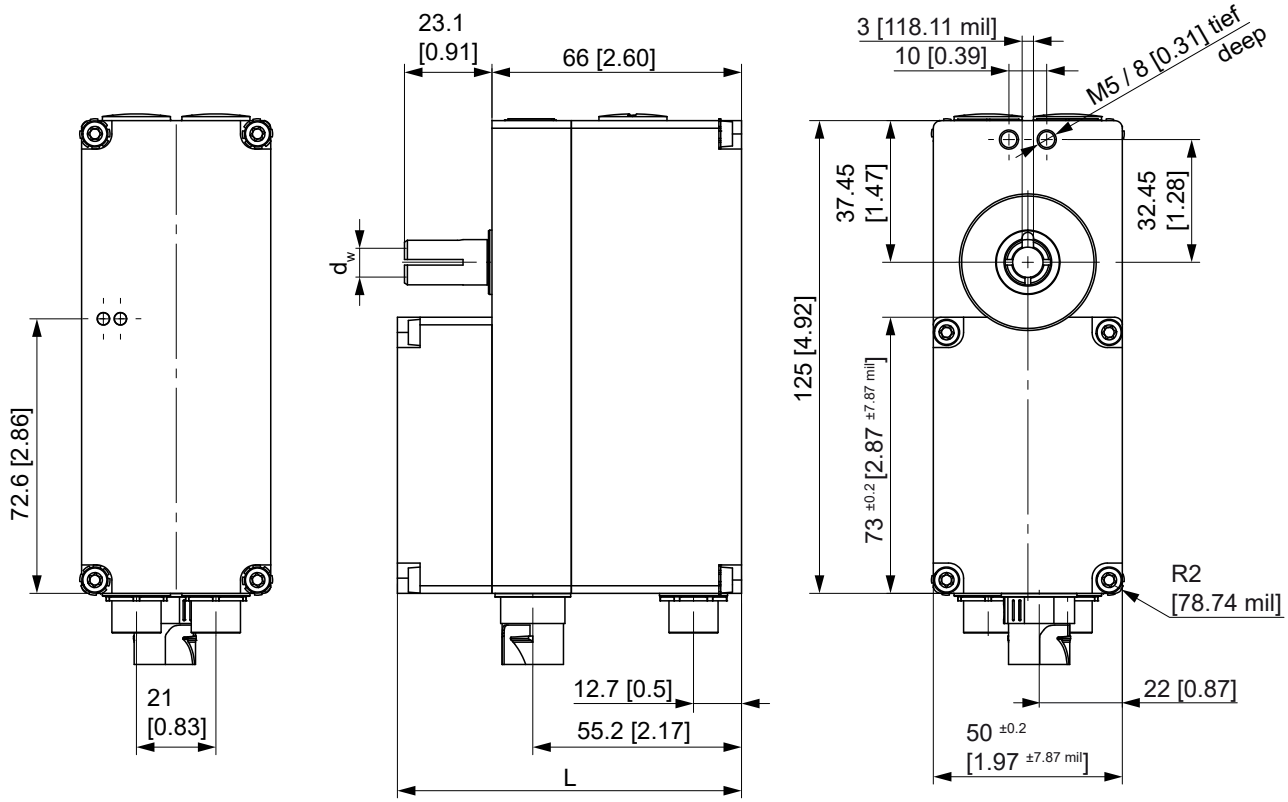


xx = length in meters

Dimension Drawings

All dimensions in millimeters [inches]; general tolerance DIN ISO 2768 -mK

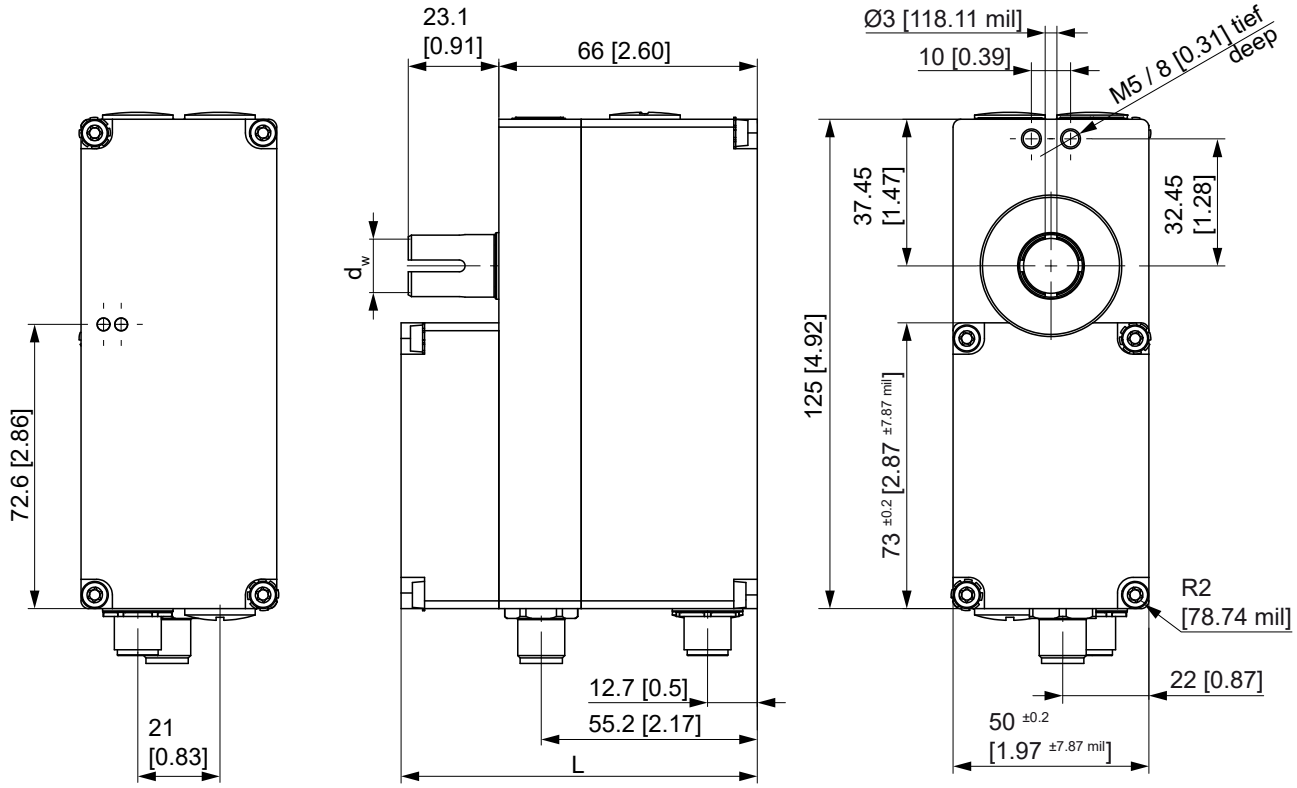
Connection Technology: **ST**/Output shaft: Semi-hollow shaft



d_w Diameter output shaft

Construction type		Dimension L (length of housing)
Short	**K**	91 [3.58]
Long	**L**	111 [4.37]

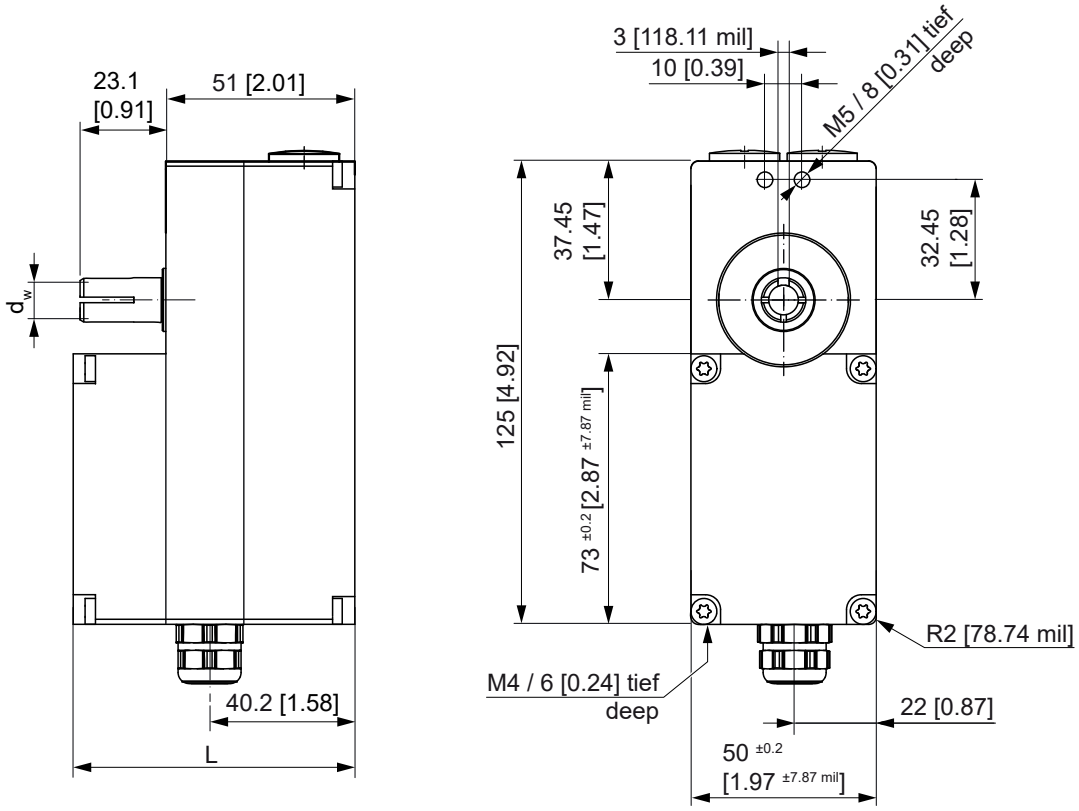
Connection technology: **SL** / Output Shaft: Semi-hollow shaft



d_w Output shaft diameter

Construction type		Dimension L (housing length)
Short	**K**	91 [3.58]
Long	**L**	111 [4.37]

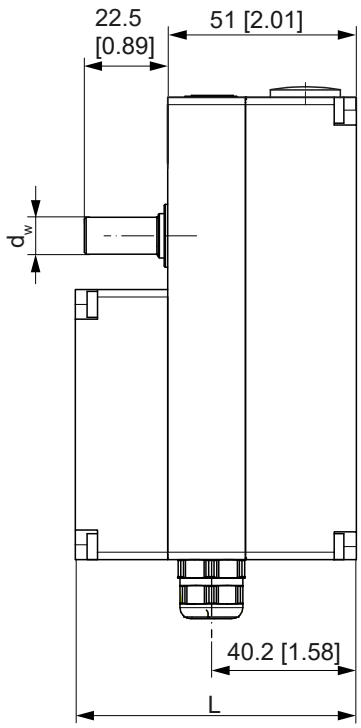
Connection technology: **H1/H2/H3/S1/S2/S3/Vx/xx** / Output shaft: Semi-hollow shaft



d_w Output shaft diameter

Construction type		Dimension L (housing length)
Short	**K**	76 [2.99]
Long	**L**	96 [3.78]

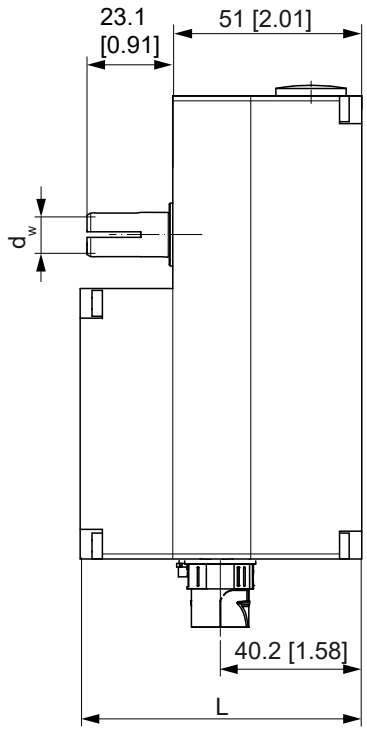
Connection technology: **H1/H2/H3/S1/S2/S3/Vx/xx** / Output shaft: Solid shaft **M**



d_w Output shaft diameter

Construction type		Dimension L (housing length)
Short	**K**	76 [2.99]
Long	**L**	96 [3.78]

Connection technology: **HS** / Output Shaft: Semi-hollow shaft



d_w Output Shaft Diameter

Construction type		Dimension L (housing length)
Short	**K**	76 [2.99]
Long	**L**	96 [3.78]

Installation Accessories and Spare Parts

Assembly Accessories

Installation accessories are not included.

Description	Item number
Clamping ring for output shaft **A/B/C/D**	MZ1380
Clamping ring for output shaft **8/9/E**	MZ1379
Plain Bearing Accessory Kit, consisting of: 5 plain bearings, item number: OG0001	ZB61X01
Accessory kit for shaft screws, consisting of: 5 M5×20 shaft screws, item number: VS3412	ZB61X02
Accessory kit: Torque support screws, consisting of: 10 M5×8 screws, item number: VS2107	ZB61X03
Accessory set for GEL 6110 ≤ 10 Nm [7.38 ft•lbf] and GEL 6109, consisting of: ▪ 1 torque support GZ1163 including plain bearing OG0001, item number: BG5012 ▪ 1 GZ1163 torque support, including OG0002 plain bearing, part number: BG5012 ▪ 2 M5×8 screws, item number: VS2107 ▪ 1 M5×20 shaft screw, item number: VS3412 ▪ 1 set of assembly instructions, item number: D-53H-6110_01	ZB6100

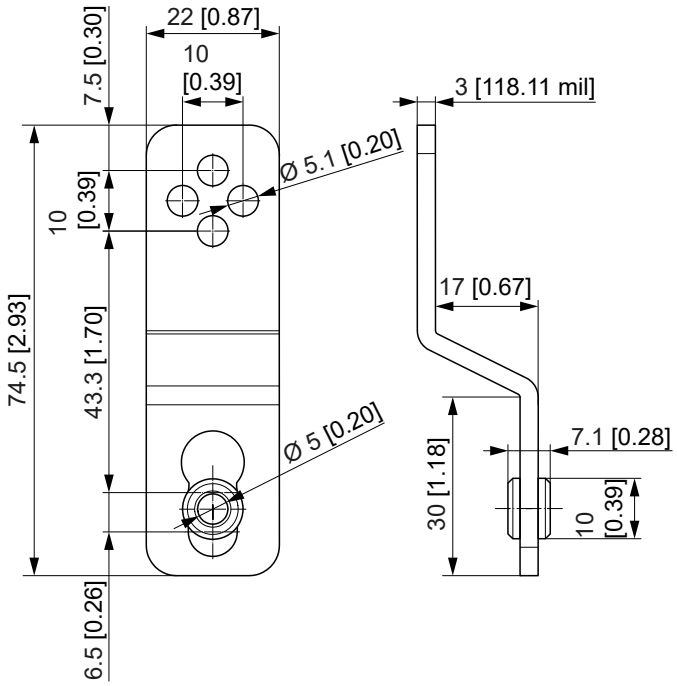
Spare parts

Designation
Warning stickers
Warning sign “Warning Automatic start-up", lateral length 25 mm [0,98 in], ASR A1.3/ISO 7010, Warning sign W018
Warning sign “Warning Hot surface", lateral length 25 mm [0,98 in], ASR A1.3/ISO 7010, Warning sign W017

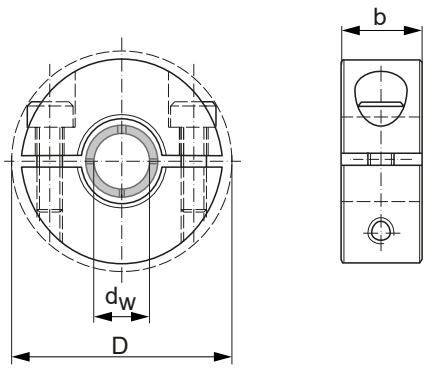
Dimensional drawings assembly accessories

All dimensions in millimeters [inches]; general tolerance DIN ISO 2768 -mK

Torque support GZ1163, including OG0001 plain bearing from accessory kit ZB6100

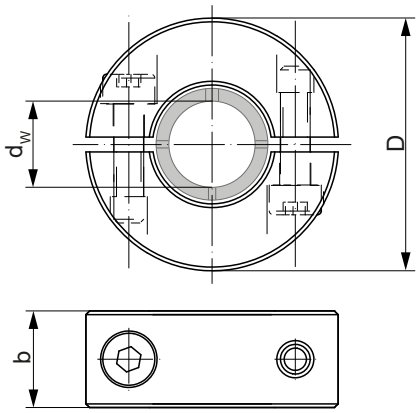


Clamping Ring



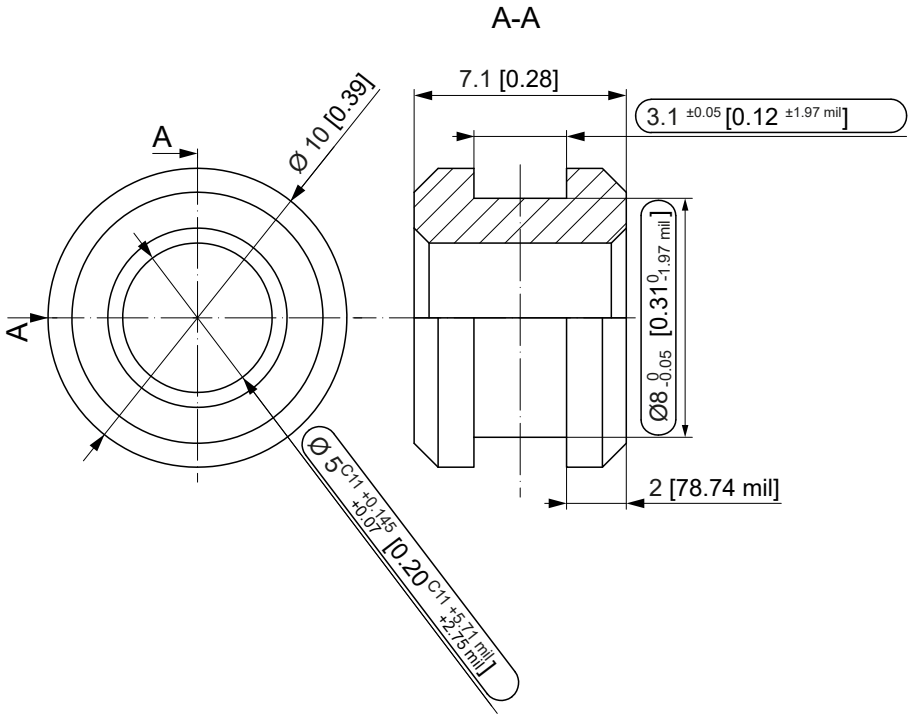
Dimensions / **Item number**	**MZ1379**
Output shaft diameter d_w H7 (Type Code)	8/9/10 [0.31/0.35/0.39] (**8/9/E**)
D	32 [1.26]
b	11 [0.43]
Screw DIN 912	M4

Clamping Ring



Dimensions / **Item number**	**MZ1380**
Output shaft diameter d_w H7 (Type Code)	11/12/13/14 [0.43/0.47/0.51/0.55] (**D/C/B/A**)
D	34.5 [1.36]
b	13 [0.51]
Screw DIN 912	M4

Plain Bearing OG0001
(Part of accessory kits ZB6100 and ZB61X01)



Type Code

6109	**Product Type**									
	Communication Interface									
	CO CANopen (CiA 402) (1)		**MB** Modbus/TCP							
	EC EtherCAT		**PL** POWERLINK							
	IL IO-Link		**RT** PROFINET IO / RT							
	IP EtherNet/IP		**SC** Sercos III							
		Rated torque								
		02 2.5 Nm at 70 min^{-1} [1.84 ft•lbf at 70 rpm]								
		05 5 Nm at 70 min^{-1} [3.69 ft•lbf at 70 rpm]								
			Output shaft d_w in millimeters [inches]							
			A 14 [0.55] H7 Semi-hollow shaft		**E** 10 [0.39] H7 Semi-hollow shaft					
			B 13 [0.51] H7 Semi-hollow shaft (2)		**9** 9 [0.35] H7 Semi-hollow shaft (2)					
			C 12 [0.47] H7 Semi-hollow shaft		**8** 8 [0.31] H7 Semi-hollow shaft					
			D 11 [0.43] H7 Semi-hollow shaft (2)		**M** 10 [0.39] h7 Solid shaft (3)					
				Housing material						
				A Aluminum, anodized						
					Construction type					
					K Short					
					L Long					
						Connection technology				
						ST Connectors (M12: Industrial Ethernet, M17: Power Supply)				
						SL Connectors (M12: IO-Link and power supply)				
						HS M17 mounting box with male contacts				
						S1 30 cm [11.81 in] hybrid cable and M17 connector with male contacts				
						S2 50 cm [19.69 in] hybrid cable and M17 connector with male contacts				
						S3 100 cm [39.37 in] hybrid cable and M17 connector with male contacts				
						H1 30 cm [11.81 in] hybrid cable and M23 connector with male contacts				
						H2 50 cm [19.69 in] hybrid cable and M23 connector with male contacts				
						H3 100 cm [39.37 in] hybrid cable and M23 connector with male contacts				
						Vx Hybrid cable pre-assembled for SeGMo-Box GEL 6505, Cable length V1 = 1 m [39.37 in]; V2 = 3 m [118.11 in]; V3 = 5 m [196.85 in]; V4 = 8 m [314.96 in]; V5 = 10 m [393.70 in]; **V6** = 13 m [511.81 in]; V7 = 15 m [590.55 in]; V8 = 18 m [708.66 in]; V9 = 20 m [787.40 in]				
						xx xx m hybrid cable with flying lead, length in meters: xx = 01 … 20; standard: 3 m [39.37 in … 787.40 in; standard: 118.11 in]				
							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 seal and moisture protection), Design **C**: additionally enclosure protection class Type 1	
▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	
6109	_ _	_ _	_	_	_	_ _	_	_	_	**◄ Product code**

(1) Internal system communication; additional interfaces via SeGMo-Box

(2) Upon request

(3) Clamp coupling upon request

Restrictions in the Type Code

Connection technology

Use with a SeGMo-Box
- The connection technologies **H1/H2/H3/HS/S1/S2/S3/Vx/xx** are only available with the **CO** (CANopen) communication interface.

Standalone use
- The **ST** connection technology is only available with Industrial Ethernet interfaces (**EC/IP/MB/PL/RT/SC**).
- The **SL** connection technology is available only with the **IL** communication interface.

Rated torque/Construction type

Rated torque		Construction type	Housing length (dimension L)	
			Connection technology **H1/H2/H3/HS/S1/S2/S3/Vx/xx**	Connection technology **ST/SL**
02	2.5 Nm at 70 min^{-1} [1.84 ft•lbf at 70 rpm]	**K**	76 mm [2.99 in]	91 mm [3.58 in]
05	5 Nm at 70 min^{-1} [3.69 ft•lbf at 70 rpm]	**L**	96 mm [3.78 in]	111 mm [4.37 in]

Customized modifications
- Customized housings and customized shafts are available upon request as per approval drawing.
- Customized versions with a special assembly or modified technical specifications are assigned a Y-number (<Product type>Y<Three-digit number>). Depending on the customized modification, more or other documents may apply.

Notes for the U.S. and Canada (Design **C**)

Certification: cULus Recognized Component (Document E196161)

General Information

- The positioning drives have been tested only for applications covered by NFPA 79 (Electrical Standard for Industrial Machinery).
- Mechanical hazards posed by moving parts must be assessed in the context of the end application.
- The suitability of the connection cables and connectors must be verified in the context of the end application.
- Motor overload protection was not considered as part of the certification and must be evaluated in the end application.
- Protection of the motor against overheating was not considered as part of the certification process and must be evaluated in the end-use application.
- Protection of the motor against a jammed machine shaft was not considered as part of the certification process and must be evaluated in the end application.

Connection technologies **H1/H2/H3/HS/S1/S2/S3/Vx/xx**

- The positioning drives were tested and verified as an integral part of the SeGMo-System for the “Factory Automation” sector. Use is permitted only in combination with the SeGMo-Boxes GEL6505B␣␣␣␣␣␣ C (GPNY) and GEL6505A␣␣␣␣␣␣ C (GPNY2) (Document E483619).
- The positioning drives are intended for use only with the SeGMo-Box GEL6505A␣␣␣␣␣␣ C or GEL6505B␣␣␣␣␣␣ C in combination with SeGMo-Connect BZK␣␣␣␣ C␣␣␣.

ST/SL Connection technology

- The positioning drives are not intended for direct connection to the power grid. The power supply must be provided at the installation site via a power supply unit with UL listing in accordance with UL 61010 or UL 508. The power supply unit must ensure galvanic isolation from the main power supply. A UL 248-compliant fuse must be installed in the supply line between the power supply unit and the positioning drives. Depending on the input voltage, the fuse must have a rated value of I = 100 W/U_{IN} (input voltage U_{IN}: 24 V … 30 V DC).
- The positioning drives have been tested only for use in overvoltage category II.
- The positioning drives have been tested only for use in the “Factory Automation” (GPNY) sector.

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www.lenord.co.in

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