

SeGMo-Connect

Hybrid cable and power supply cable
for SeGMo-System

BZK

Technical information

Version 2024-11-26

General

- Preassembled hybrid cable for simple connection of SeGMo positioning drives to SeGMo-Box or modular SeGMo-Box
 - M17 or M23 connector with integrated bus element for power supply and bus communication
 - Easy quick disconnect connectors
- Power supply cable and mating connector for standalone use of SeGMo positioning drives

Properties

- High electromagnetic compatibility (EMC housing shield)
- Current carrying capacity as per DIN EN 60512
- Length from 3 m to 20 m [118.11 in to 787.40 in]
- Optional with cULus Component Recognition



Advantages

- Reduced cabling effort
- Can be adapted to specific connection situation
- Time saving when connecting SeGMo positioning drives to SeGMo-Box or modular SeGMo-Box
- Simple electrical disconnection of positioning drives with hybrid connection for maintenance and service work using quick disconnect connectors



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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-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 [13.28 ft·lbf], they cover the typical power range for secondary axes.

SeGMo-Positioning



SeGMo-Box



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. Products are available for rotary and linear applications. Another product 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 product variants are food grade quality, halogen-free and available as a cULus recognized component.

SeGMo-Assist



Modular(e) SeGMo-Box



Type code hybrid cable and power supply cable

		Connector type	
17	Connector size M17 (positioning drives with HS/HW/S1/S2/S3/ST/SW connection technology)		
23	Connector size M23 (positioning drives with H1/H2/H3/ST connection technology)		
		Connector 1 (positioning drive connection)	
		L Flying lead	
		S Connector with female contacts	
		Connector construction type	
		0 straight, hybrid (live, going to positioning drive)	
		1 Mating connector power supply, straight (24 V)	
		2 Mating connector power supply, 90° offset (24 V)	
		Design	
		A 16 AWG cULus Listed	
		C 14 AWG cULus Recognized Component	
		N 16 AWG food grade quality	
		U 16 AWG halogen-free	
		Cable length	
		-- Length in meters (between minimum and maximum length)	
		03 3 m [118.11 in] minimum length	
		20 20 m [787.40 in] maximum length	
		Connector 2 (higher level control system, box or power supply connection)	
		K Coupling with male contacts	
		L Flying lead	
		M Preassembled (with assembled female connector) for modular SeGMo-Box GEL 65M ⁽¹⁾	
		V Preassembled (with assembled spring-cage terminals) for SeGMo-Box GEL 6505	
BZK			

Type code restrictions

Design

- A** Power supply cables for standalone use of positioning drives (connection technology ST and SW)
- N/U/C** Hybrid cable for connecting a positioning drive to a SeGMo box or a modular SeGMo box

Connector construction type

- Connector construction types **1** and **2** are only available in design **A**.
- Connector construction type **2** is only available for connector type **23**.



Connector construction types **1** and **2** for connector type **23** can also be ordered separately:

- M23, straight: Item number FS3038
- M23, 90° offset: Item number FS3067

Approvals

Hybrid cable BZK in design **C** is authorized for use in the USA and Canada (certification as cULus recognized component). The following variants are authorized for use in the SeGMo-System as per cULus Component Recognition/cULus listing E483619:

- BZK17S0C__V
- BZK17S0C__L
- BZK17S0C__K
- BZK23S0C__V
- BZK23S0C__L
- BZK23S0C__K

⁽¹⁾ Scope of supply contains female connector (item number: FK1263) for separate power supply of PORT module:
Input voltage (IN)

Technical data cable

Technical data power supply cable (design A)

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 [0.35 in]
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 [221 °F]/fixed: -25 °C [-13 °F] (UL)/c(UL): up to +90 °C [194 °F]

Technical data hybrid cable (design N/U/C)

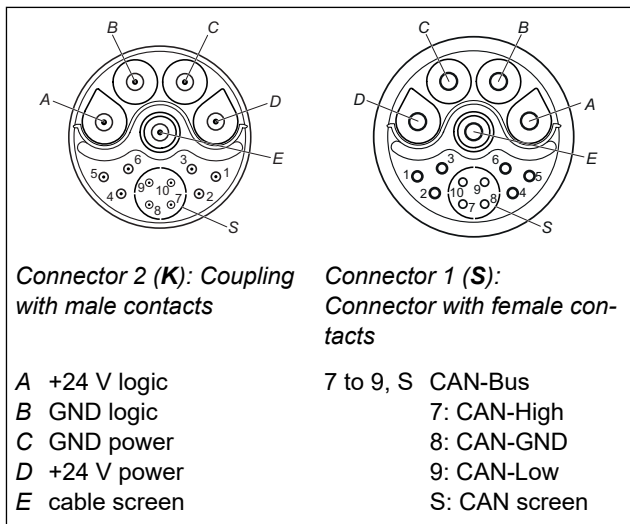
Property	Design N (food grade quality)	Design U (halogen-free)	Design C (cULus recognized component)
Sheath material	PUR, black, glossy	PUR, black, matte	PUR, black, matte
Cable properties	Screened	Screened	Screened
Suitable for drag chain	Yes	Yes	Yes
Food grade quality	Yes	No	No
Halogen-free	No	Yes	Yes
Cable diameter (d)	9.5 mm [0.37 in]	9.5 mm [0.37 in]	9.5 mm [0.37 in]
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 °F to +176 °F]	-40 °C to +80 °C [-40 °F to +176 °F]	-40 °C to +80 °C [-40 °F to +176 °F]

Hybrid cable for positioning drives with H1/H2/H3 connection technology

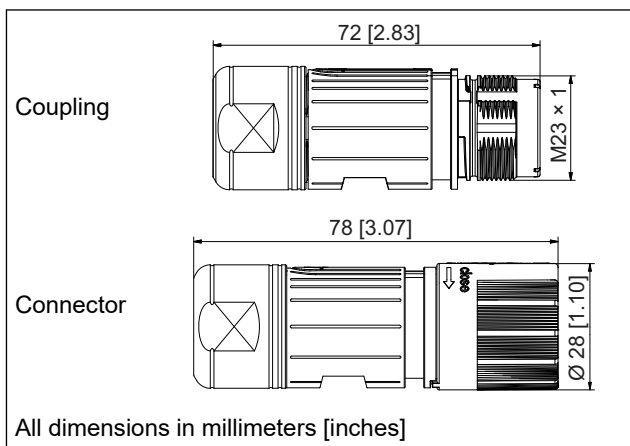
Connector type 23

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 [-4 °F to 266 °F]
Degree of protection ⁽¹⁾	IP 66/IP 67
Mating cycles	> 500
Vibration resistance	≤ 200 m/s ² [656.17 ft/s ²]
Certification	cULus recognized component (no. E247738)

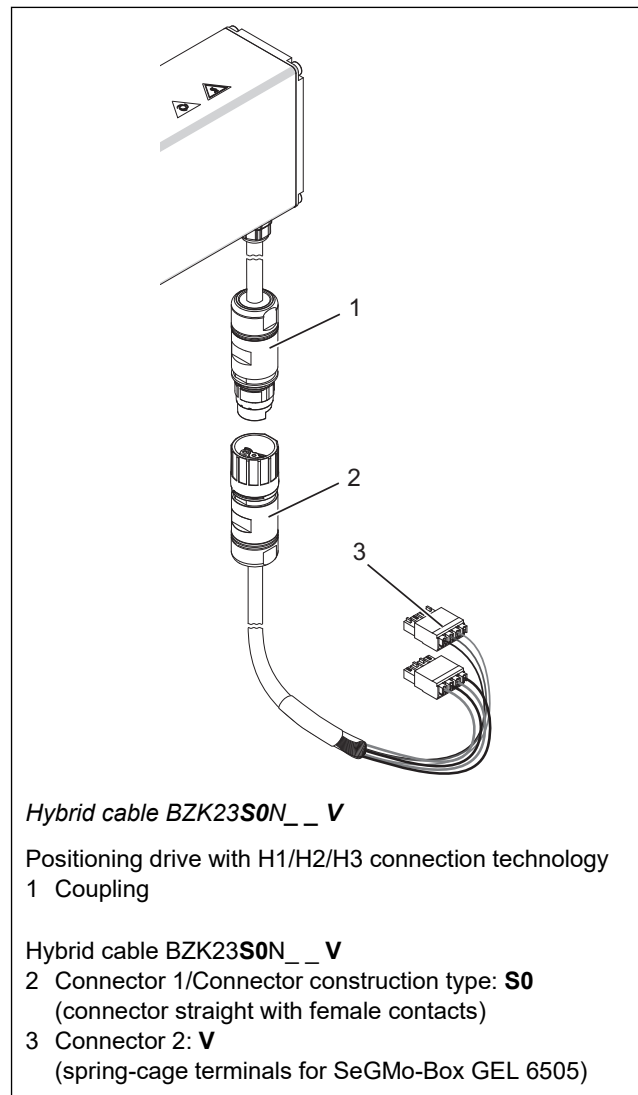
Pin assignment (plug-in view)



Dimensional drawing – Connector



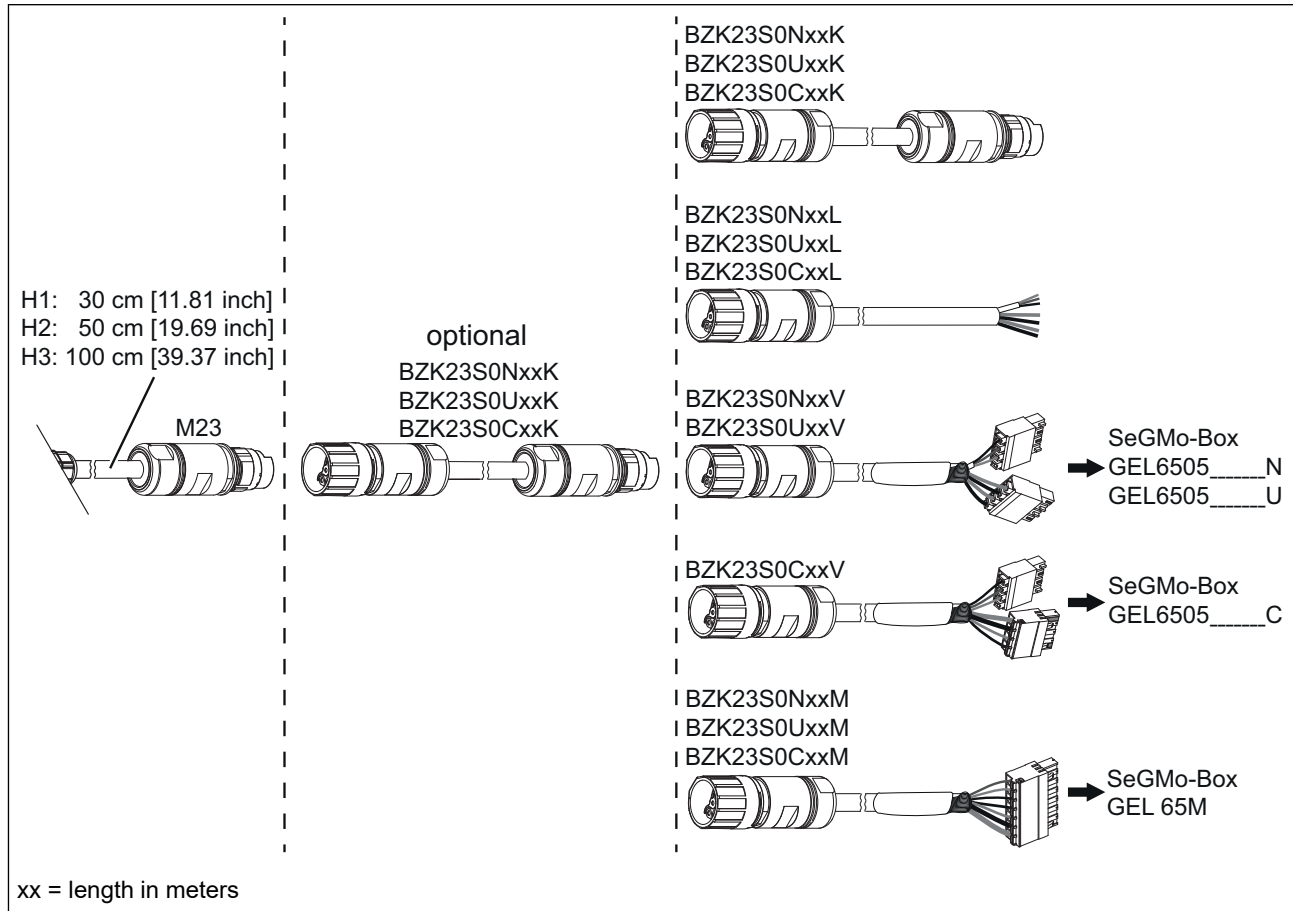
Connection example



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

Hybrid cable for positioning drives with H1/H2/H3 connection technology

Cable variants for positioning drives with H1/H2/H3 connection technology



Pin assignment for connector 2:

“L” flying lead, “M” (preassembled) and “V” (preassembled)

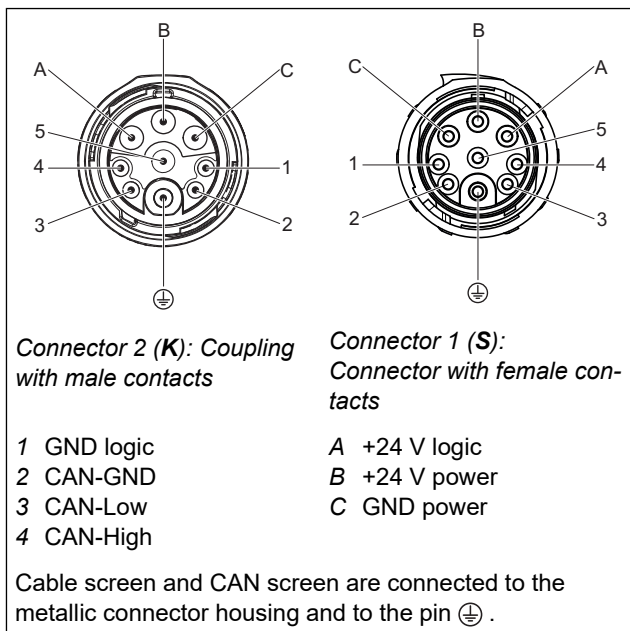
Flying lead (connector 2: L)			Preassembled for GEL 6505 (connector 2: V)		Preassembled for GEL 65M (connector 2: M)	Signal identifier
Core color/ Core number	Cross section Design: N /U	Cross section Design: C	Internal communication, 4-pin pin designation	Power supply, 4-pin pin designation	PORT module LOG, OUT, CAN, 7-pin pin designation	
Red/1	0.5 mm ² [20 AWG]	0.5 mm ² [20 AWG]	–	3	5	+24 V logic
Red/2	1.5 mm ² [16 AWG]	2.5 mm ² [14 AWG]	–	1	7	+24 V power
Black/2	1.5 mm ² [16 AWG]	2.5 mm ² [14 AWG]	–	2	6	GND power
Black/1	0.5 mm ² [20 AWG]	0.5 mm ² [20 AWG]	–	4	4	GND logic
Black	0.14 mm ² [26 AWG]	0.14 mm ² [26 AWG]	1	–	3	CAN-GND
Green	0.25 mm ² [24 AWG]	0.25 mm ² [24 AWG]	3	–	1	CAN-Low
Yellow	0.25 mm ² [24 AWG]	0.25 mm ² [24 AWG]	2	–	2	CAN-High
Cable screen			–	–	–	–
CAN screen			–	–	–	–

Hybrid cable for positioning drives with HS/HW connection technology

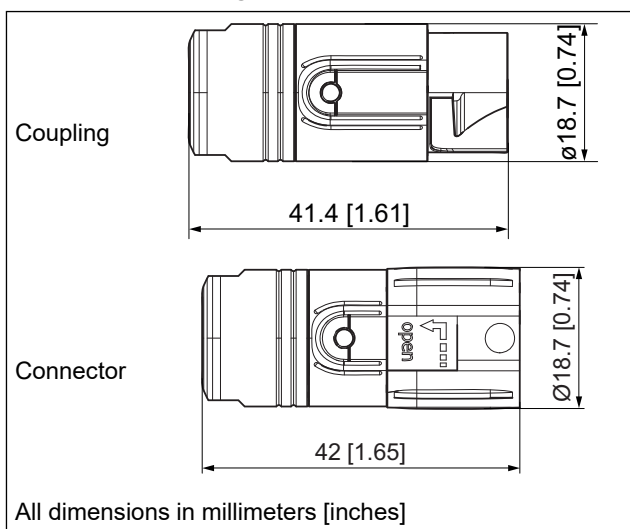
Connector type 17

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 [-4 °F to 266 °F]
Degree of protection ⁽¹⁾	IP 66/IP 67
Mating cycles	> 500
Certification	cULus recognized component (no. E247738)

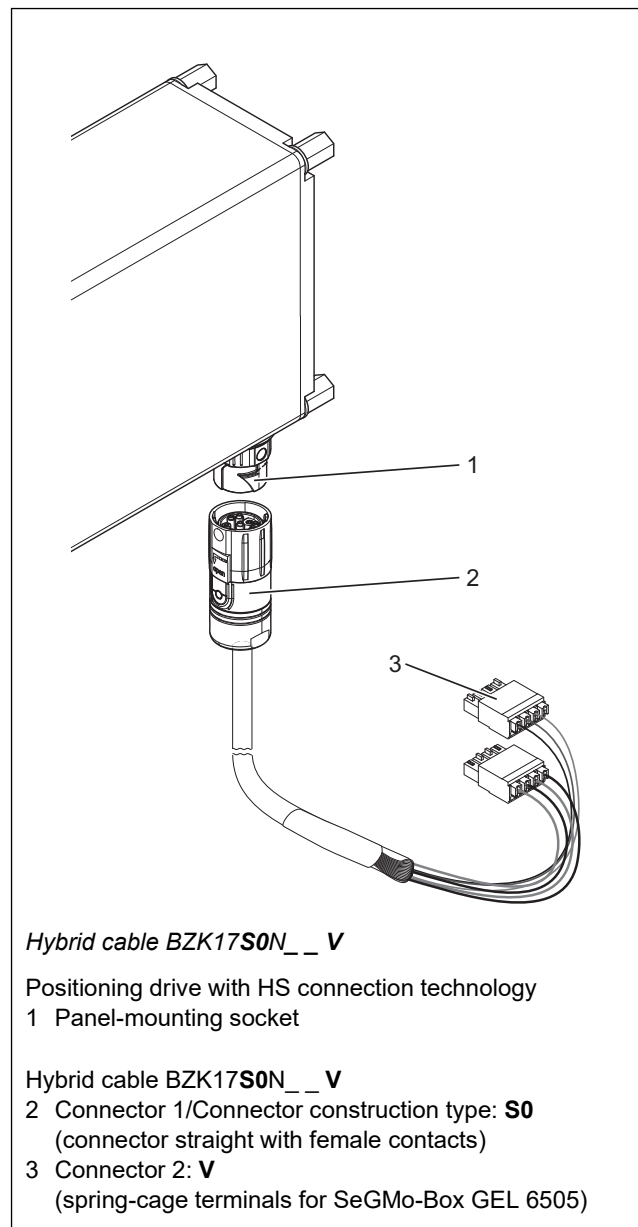
Pin assignment (plug-in view)



Dimensional drawing – Connector



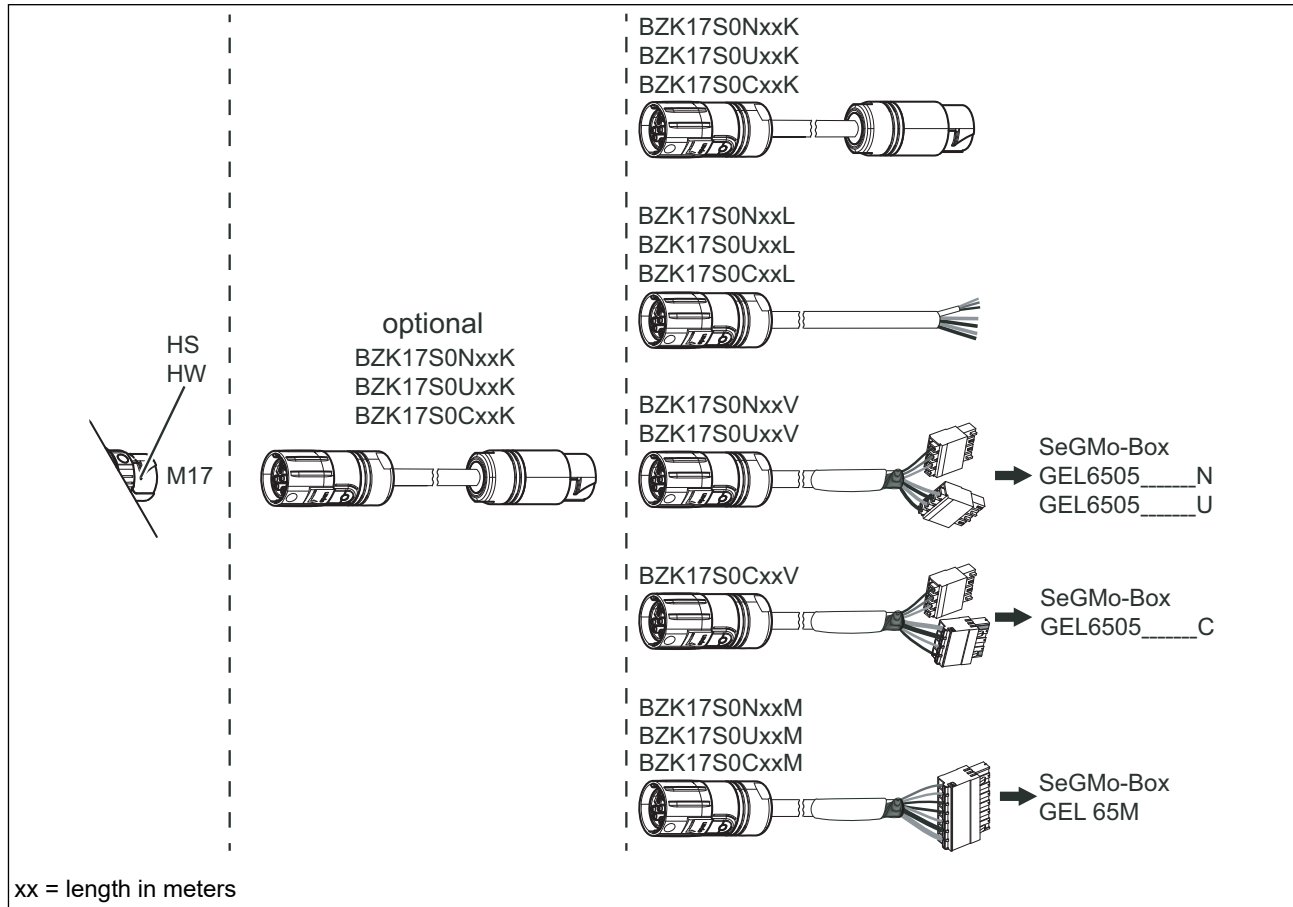
Connection example



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

Hybrid cable for positioning drives with HS/HW connection technology

Cable variants for positioning drives with HS/HW connection technology



Pin assignment for connector 2:

“L” flying lead, “M” (preassembled) and “V” (preassembled)

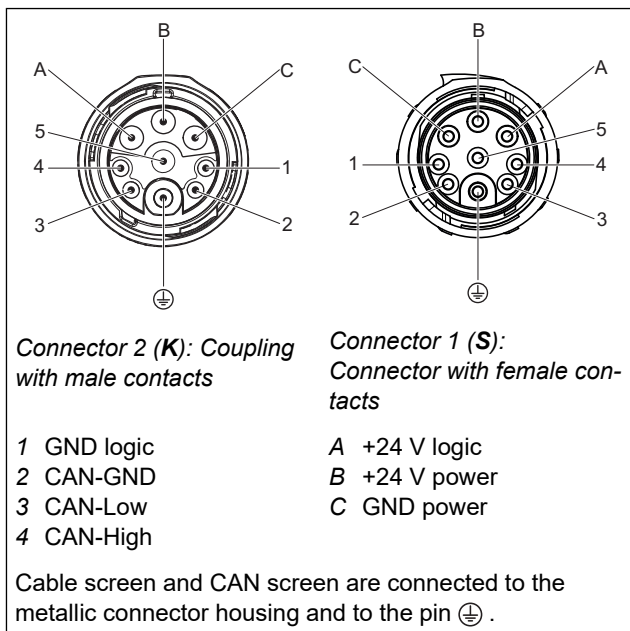
Flying lead (connector 2: L)			Preassembled for GEL 6505 (connector 2: V)		Preassembled for GEL 65M (connector 2: M)	Signal identifier
Core color/ Core number	Cross section Design: N/U	Cross section Design: C	Internal communication, 4-pin pin designation	Power supply, 4-pin pin designation	PORT module LOG, OUT, CAN, 7-pin pin designation	
Red/1	0.5 mm ² [20 AWG]	0.5 mm ² [20 AWG]	–	3	5	+24 V logic
Red/2	1.5 mm ² [16 AWG]	2.5 mm ² [14 AWG]	–	1	7	+24 V power
Black/2	1.5 mm ² [16 AWG]	2.5 mm ² [14 AWG]	–	2	6	GND power
Black/1	0.5 mm ² [20 AWG]	0.5 mm ² [20 AWG]	–	4	4	GND logic
Black	0.14 mm ² [26 AWG]	0.14 mm ² [26 AWG]	1	–	3	CAN-GND
Green	0.25 mm ² [24 AWG]	0.25 mm ² [24 AWG]	3	–	1	CAN-Low
Yellow	0.25 mm ² [24 AWG]	0.25 mm ² [24 AWG]	2	–	2	CAN-High
Cable screen			–	–	–	–
CAN screen			–	–	–	–

Hybrid cable for positioning drives with S1/S2/S3 connection technology

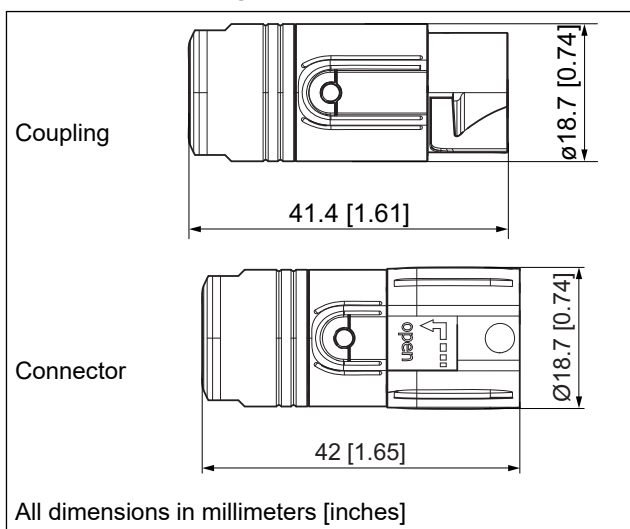
Connector type 17

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 [-4 °F to 266 °F]
Degree of protection ⁽¹⁾	IP 66/IP 67
Mating cycles	> 500
Certification	cULus recognized component (no. E247738)

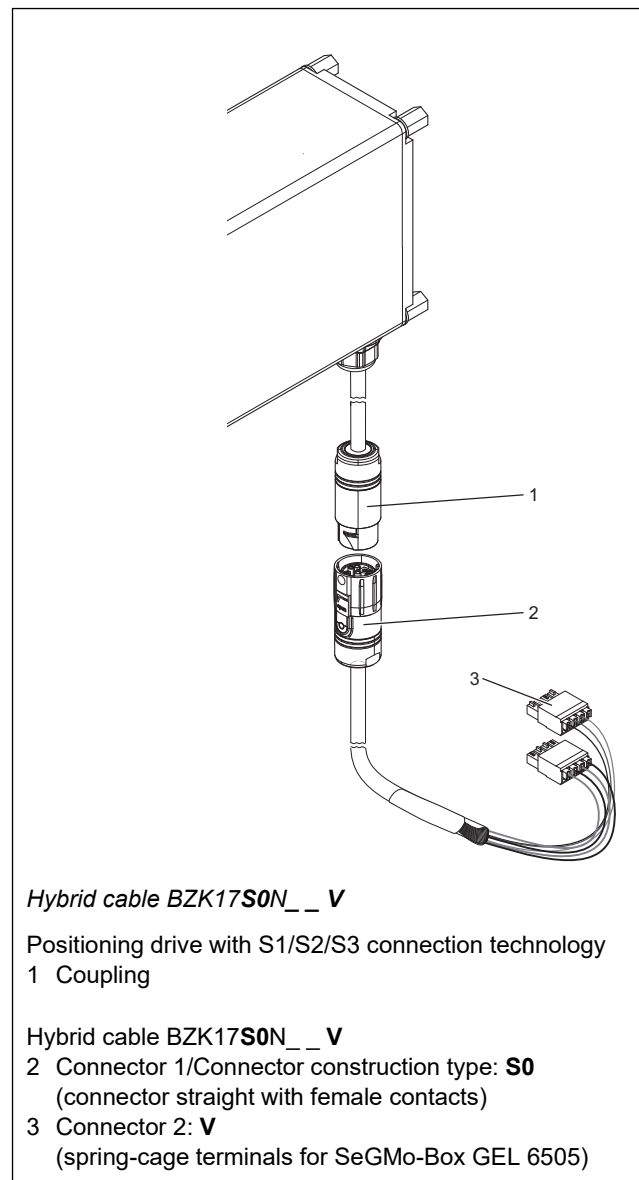
Pin assignment (plug-in view)



Dimensional drawing – Connector



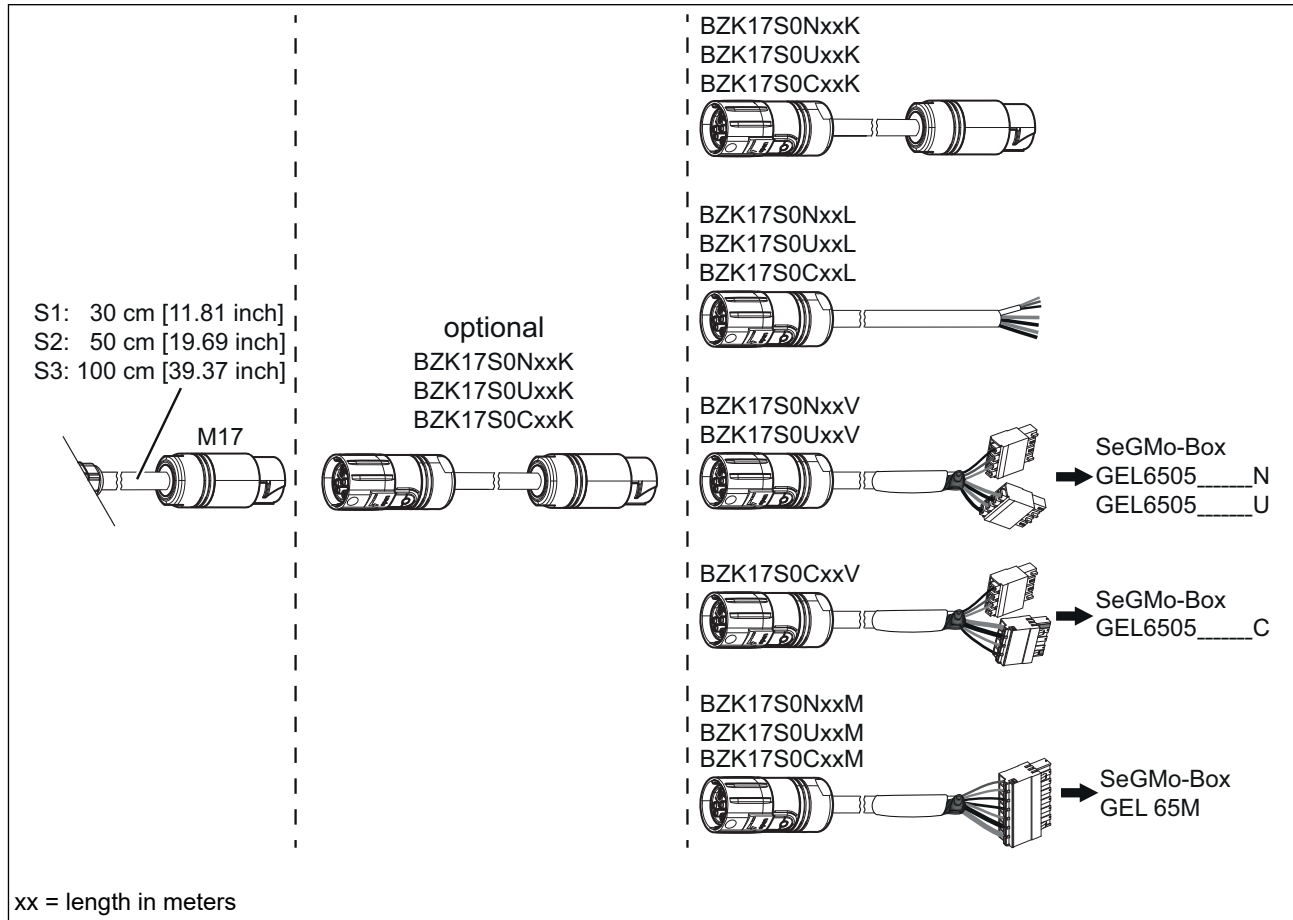
Connection example



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

Hybrid cable for positioning drives with S1/S2/S3 connection technology

Cable variants for positioning drives with S1/S2/S3 connection technology



Pin assignment for connector 2:

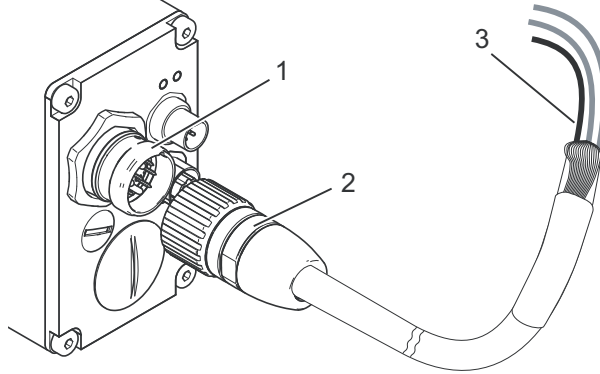
“L” flying lead, “M” (preassembled) and “V” (preassembled)

Flying lead (connector 2: L)			Preassembled for GEL 6505 (connector 2: V)		Preassembled for GEL 65M (connector 2: M)	Signal identifier
Core color/ Core number	Cross section Design: N/U	Cross section Design: C	Internal communication, 4-pin pin designation	Power supply, 4-pin pin designation	PORT module LOG, OUT, CAN, 7-pin pin designation	
Red/1	0.5 mm ² [20 AWG]	0.5 mm ² [20 AWG]	–	3	5	+24 V logic
Red/2	1.5 mm ² [16 AWG]	2.5 mm ² [14 AWG]	–	1	7	+24 V power
Black/2	1.5 mm ² [16 AWG]	2.5 mm ² [14 AWG]	–	2	6	GND power
Black/1	0.5 mm ² [20 AWG]	0.5 mm ² [20 AWG]	–	4	4	GND logic
Black	0.14 mm ² [26 AWG]	0.14 mm ² [26 AWG]	1	–	3	CAN-GND
Green	0.25 mm ² [24 AWG]	0.25 mm ² [24 AWG]	3	–	1	CAN-Low
Yellow	0.25 mm ² [24 AWG]	0.25 mm ² [24 AWG]	2	–	2	CAN-High
Cable screen			–	–	–	–
CAN screen			–	–	–	–

Power supply cable with M23 power supply connector

Suitable for positioning drive power supply for standalone use
(ST connection technology with M23 power supply connector).

Connection example power supply cable



Power supply cable BZK23S1A_ _ L

Positioning drive with ST connection technology

1 Power supply connector at positioning drive

Power supply cable BZK23S1A_ _ L

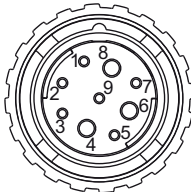
2 Connector 1/Connector construction type: **S1**("mating connector power supply", straight with female contacts)

3 Connector 2: **L** (flying lead)

Technical data; Connector type 23

Technical data – Mating connector power supply (connector size M23)	
Rated voltage	150 V
Maximum connection cross section	6 × 1.0 mm ² [18 AWG]/3 × 2.5 mm ² [14 AWG]
Contact type	Female contact
Housing material	Metal (GD-Zn/ CuZn Ni)
Ambient temperature	-40 °C to +100 °C [-40 °F to 212 °F]
Degree of protection ⁽¹⁾	IP 67
Mating cycles	50
Certification	cULus recognized component (no. E153698)

Pin assignment – mating connector power supply

Mating connector power supply (plug-in view)	Pin designation	Signal identifier
M23  Female	1	+24 V logic
	6	+24 V power
	8	GND logic and GND power
	GND signals connected internally in the positioning drive.	

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

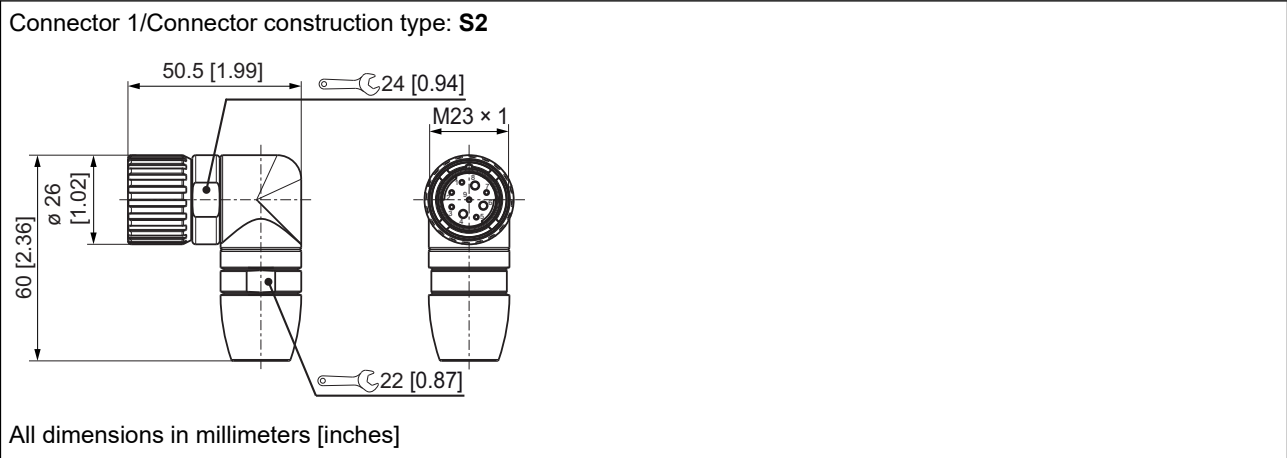
Power supply cable with M23 power supply connector

The cable screen is connected to the metal connector housing.

Dimensional drawing – mating connector power supply, straight (item number FS3038)



Dimensional drawing – mating connector power supply, 90° offset (item number FS3067)



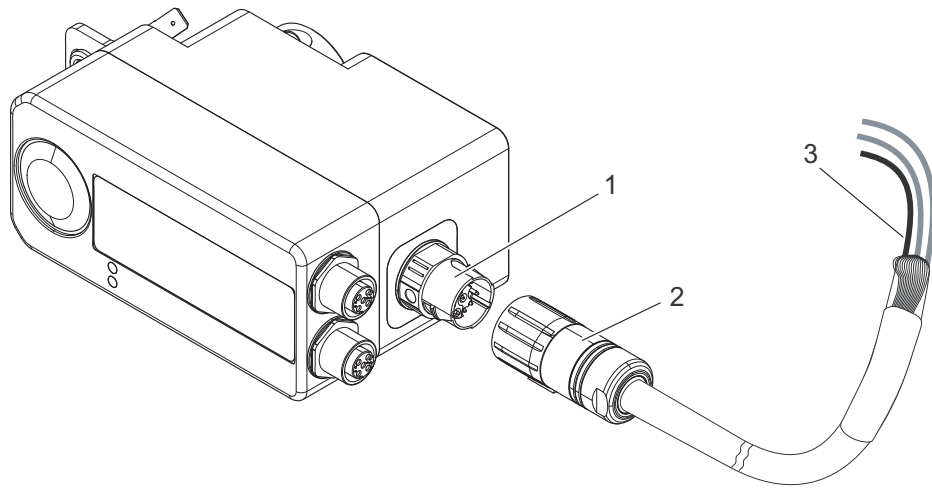
Pin assignment for connector 2 “L” (flying lead)

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

Power supply cable with M17 power supply connector

Suitable for positioning drive power supply for standalone use
(ST and SW connection technology with M17 power supply connector).

Connection example power supply cable



Power supply cable BZK17S1A__ L

Positioning drive with ST connection technology

1 Power supply connector at positioning drive

Power supply cable BZK17S1A__ L

2 Connector 1/Connector construction type: **S1** ("mating connector power supply", straight with female contacts)

3 Connector 2: **L** (flying lead)

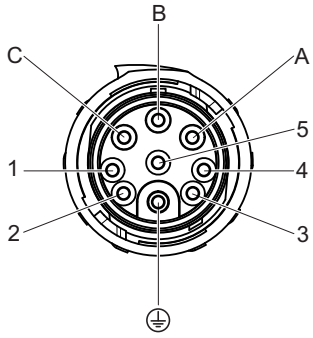
Technical data; Connector type 17

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 [-4 °F to 266 °F]
Degree of protection ⁽¹⁾	IP 66/IP 67
Mating cycles	> 500
Certification	cULus recognized component (no. E247738)

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

Power supply cable with M17 power supply connector

Pin assignment – mating connector power supply

Mating connector power supply (plug-in view)	Pin designation	Signal identifier
<p>M17</p>  <p>Female</p>	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  .

Dimensional drawing – mating connector power supply


All dimensions in millimeters [inches]

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

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