



GEL 6505A: Box for top-hat rail mounting, IP 20 version



GEL 6505B: Box for any other mounting, IP 69K version

General

The PowerDRIVE-Box GEL 6505 is the central unit of the PowerDRIVE-System from Lenord + Bauer. It is available in two versions. Up to five PowerDRIVES can be connected directly using a hybrid cable PowerDRIVE-Connect. The installation of the PowerDRIVE-System is cost-optimised and very compact. The motor power for the positioning drives connected is monitored and switched by the power management in the GEL 6505. The PowerDRIVE-Box should be supplied using a 24 V DC / 40 A power supply unit. Communication via common field bus profiles such as CANopen, PROFIBUS-DP V0/V1, Ethernet/IP or PROFINET is supported by pluggable modules. With the aid of the PowerDRIVE-Box GEL 6505 the PowerDRIVES can be placed in operation without a higher level control system.

Features

- ▶ Configured for up to five PowerDRIVES
- ▶ Supply voltage: 24 V DC / 40 A
- ▶ Separate connection possible for supply of motor power and for supply of logic power
- ▶ Field bus modules:
 - CANopen
 - PROFIBUS-DP
 - EtherCAT
 - PROFINET-IO
 - Ethernet/IP
 - sercos III (I/O profile)
- ▶ Protection class IP 20 or IP 69K

Advantages

- ▶ Compact connection technique
- ▶ Electronic fuses
- ▶ Integrated power management
- ▶ Straightforward commissioning of the PowerDRIVES

Fields of application

- ▶ Packaging machines
- ▶ Food and bottling plants
- ▶ Wood and plastic working machines
- ▶ Printing presses and book binding machines
- ▶ Extensive production plants

Description

System solution

The PowerDRIVE-System consists of three basic components: up to 5 compact, fully automated positioning drives PowerDRIVE, the intelligent decentral communication unit PowerDRIVE-Box and the hybrid cables PowerDRIVE-Connect suitable for use in drag chains.



The intelligent PowerDRIVE-Box simplifies commissioning and allows an efficient integration of the PowerDRIVES into the control of complex production plants. Various field bus modules are available for the communication with the central control system.

The PowerDRIVE-Box takes care of the entire power management for the positioning drives and significantly reduces the connection work. The supply of motor power, supply of logic power and the internal CAN bus communication between the positioning drives and the PowerDRIVE-Box are undertaken via the hybrid cable PowerDRIVE-Connect. Instead of the usual two separate cables for field bus communication and a third cable to supply power to the positioning drives, the connection is reduced to **ONE** hybrid cable suitable for use in drag chains; the logistics effort for the always identical PowerDRIVES is minimised. In the maximum configuration with 5 positioning drives connected, the number of cables can typically be reduced from 15 to 5.

The automatic configuration of the PowerDRIVES after connection to the PowerDRIVE-BOX and the check on the system parameters make commissioning straightforward and quick, even without the central control system connected.

Construction of the PowerDRIVE-Box

GEL 6505A The compact housing of the PowerDRIVE-Box made of cast aluminium is suitable for mounting on top hat rails. For testing and commissioning of each positioning drive, there are state LEDs and push-buttons on the front panel.

GEL 6505B The closed housing of stainless steel met through the cable glands and blanking plugs the protection class IP 69K. All indication and connection elements are located inside.

For each positioning drive 3 state LEDs indicate the state of the power supply and the communication. In case of a

malfunction or during an inspection, the drive voltage and communication can be switched on or off using push-buttons under the LEDs. It is also possible to acknowledge errors and perform a manual reset with the aid of the push-buttons.

Via a USB interface, the device can be connected to a PC. Using a terminal program, important parameters can be read and set. Also, the firmware of the box can be updated with the aid of a connected PC.

The pluggable fieldbus interface is supplied pre-assembled as per the type code.

The hybrid cables for the positioning drives are connected directly to the easily accessible and coded strips using spring-cage terminals. The hybrid cables are earthed via an earth rail.

For safe operation, the box provides integrated electronic fuses. The PowerDRIVE-Box is earthed via an earth cable and the additional earthing via the top-hat rail or mounting brackets.

Power is supplied to the PowerDRIVE-Box and positioning drives either via a common connection or via two separate connections. Using separate supply, the power of the drives can be switched off, for example during an “emergency stop”, without interrupting the bus communication. In this way state monitoring is ensured.

Integrated power management

The maximum power consumption can be programmed via power management.

It is recommended to use a 24 V DC / 40 A voltage-stabilised power supply that is preferably to be mounted beside the PowerDRIVE-Box. The supply of power to the motors and logic for the positioning drives is separate. For requirements in accordance with the new Machinery Directive, the power for the motors can be switched via certified safety relays in the plant. Nevertheless, continuous state monitoring can be ensured, as the communication via the field bus is not affected. In this way the drive can be safely shut down.

PowerDRIVE-Connect

The hybrid cable PowerDRIVE-Connect is designed for flexible application in drag chains and reaches a permissible dynamic bending radius of ten times the cable diameter in a temperature range of -40 °C to +80 °C. The diameter of the cable is 9.5 mm. The hybrid cable is screened under the PUR outer sheath. The internal communication cores are fully insulated and multiply screened.

The positioning drive is available with hybrid cable and connector. PowerDRIVE and PowerDRIVE-Box can be quickly and easily connected with pre-assembled field attachable hybrid connection cables.

The M23 quick-acting coupling of the plug connection permits a rapid connection and disconnection of the devices. In this manner, the positioning drive can be safely isolated from the power supply within seconds for maintenance and service work.

Technical data

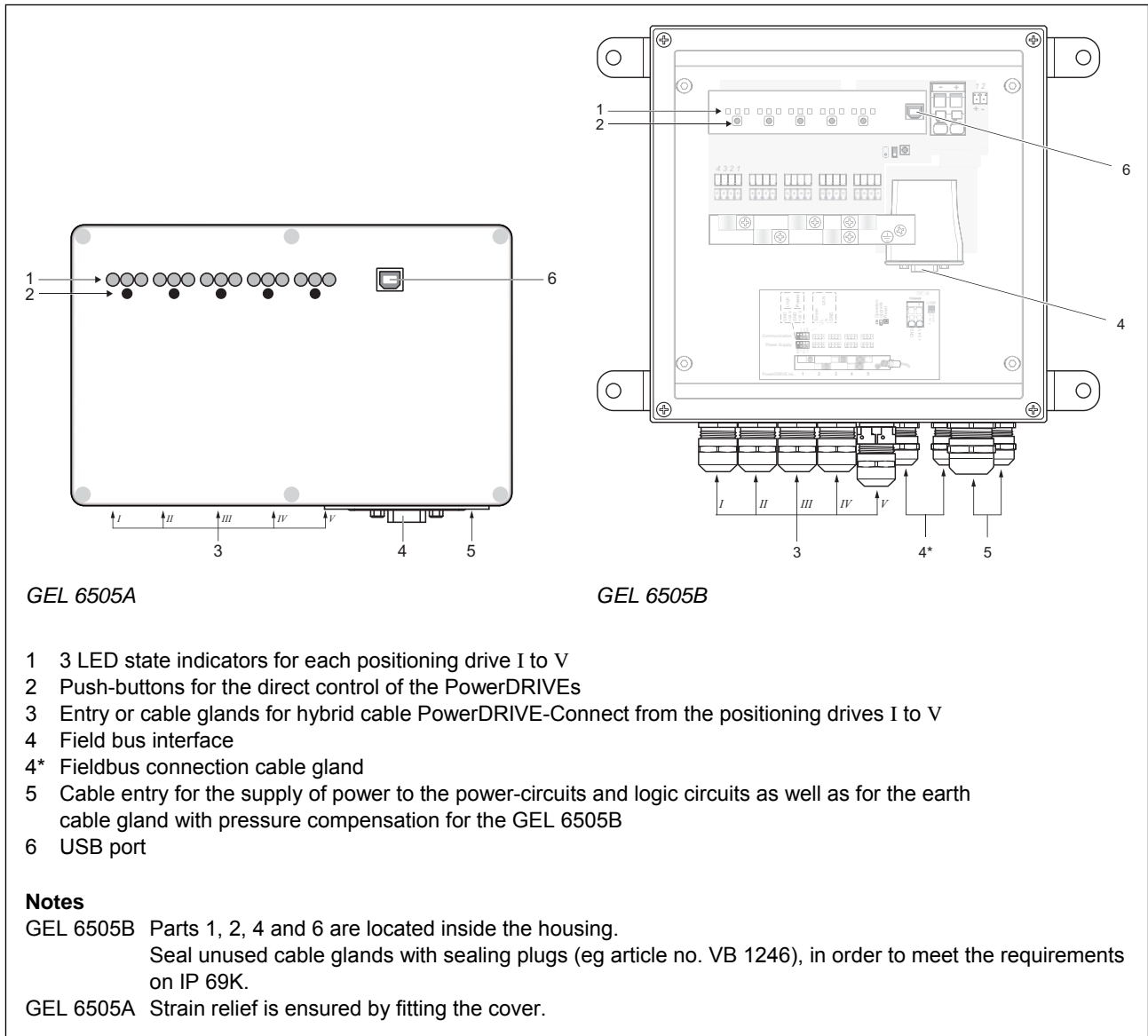
	GEL 6505A	GEL 6505B
Electrical data		
Power supply	Logic: 20 to 30 VDC, 1 A, stabilised Motors: 24 to 30 VDC (depending on cable length), max. 40 A ⁽¹⁾ , stabilised	
Fuse protection	Internal Logic (drive): electronic, resetting Motors: programmable (provide for external fuse)	
Field bus interfaces	CANopen, PROFIBUS-DP, PROFINET-IO, EtherCAT, Ethernet/IP, sercos III	
Connection technique	Spring-cage terminals Motor power supply: 6 to 10 mm ² ⁽²⁾ Logic power supply: 0.5 to 1.5 mm ² Hybrid cable: Power supply PowerDRIVE: 0.5/1.5 mm ² Communication PowerDRIVE: 0.14/0.25/0.75 mm ²	
EMC	Electromagnetic immunity: EN 61000-6-1/-2, EN 61000-4-5 (1 kV surge on DC supply) Electromagnetic emissions: EN 61000-6-4	
Mechanical data		
Assembly	Top-hat rail	Mounting surface
Housing dimensions (W×H×D)	188×120×56 mm	250×250×100 mm
Housing material	Aluminium cast	Stainless steel 1.4301
Weight	1 kg	4.5 kg
Protection class (EN 60529)	IP 20	IP 69K
Cable glands	–	3× M16 (field bus/logic cable) 5× M20 (hybrid cable, 1× pressure compensation membrane) 1× M25 (power supply)
Correct clamping of cable diameters	–	M16: 4.5 to 10 mm M20: 6 to 13 mm M25: 9 to 17 mm
Cable gland tightening torque	–	M16: 1.5 Nm M20: 3 Nm M25: 4 Nm
Shock resistance (EN 60068-2-27)	150 ms ⁻²	
Vibration resistance (EN 60068-2-6)	50 ms ⁻² , 1 to 100 Hz	
Ambient data		
Operating temperature	0 °C to +60 °C	
Condensation	Not permitted	

⁽¹⁾ Max. permissible constant current of the box. The actual current consumption depends on the number and load of attached drives. (→ Technical information GEL 6110).

⁽²⁾ Max. tensile force for cable with 6 (10) mm²: 80 (90) N

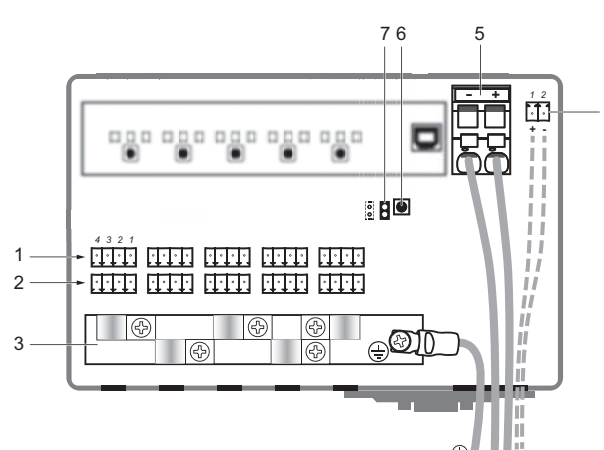
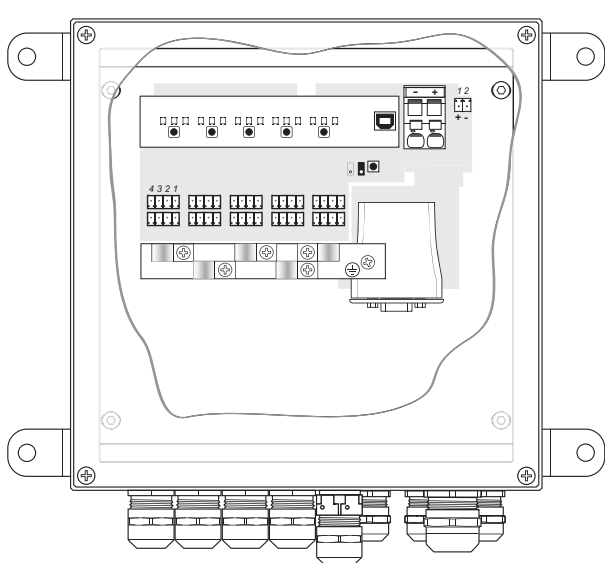
Unit overview

View – front panel



Connections and Pin layout

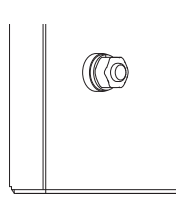
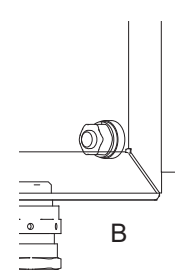
Connections

Internal view of GEL 6505A

*Internal view of GEL 6505B
(construction as GEL 6505A)*

- 1 PowerDRIVE-Connect strips for internal communication
- 2 PowerDRIVE-Connect strips for supply (logic and drive)
- 3 Earth rail with cable clips for PowerDRIVE-Connect
- 4 Connection for supply to logic circuits (in case of separate power supply, optional)
- 5 Connection for supply to motor circuits (in case of common power supply also logic circuits)
- 6 Reset push-button
- 7 Firmware upgrade jumper

Earthing bolts of GEL 6505B

A earthing bolt on the cover

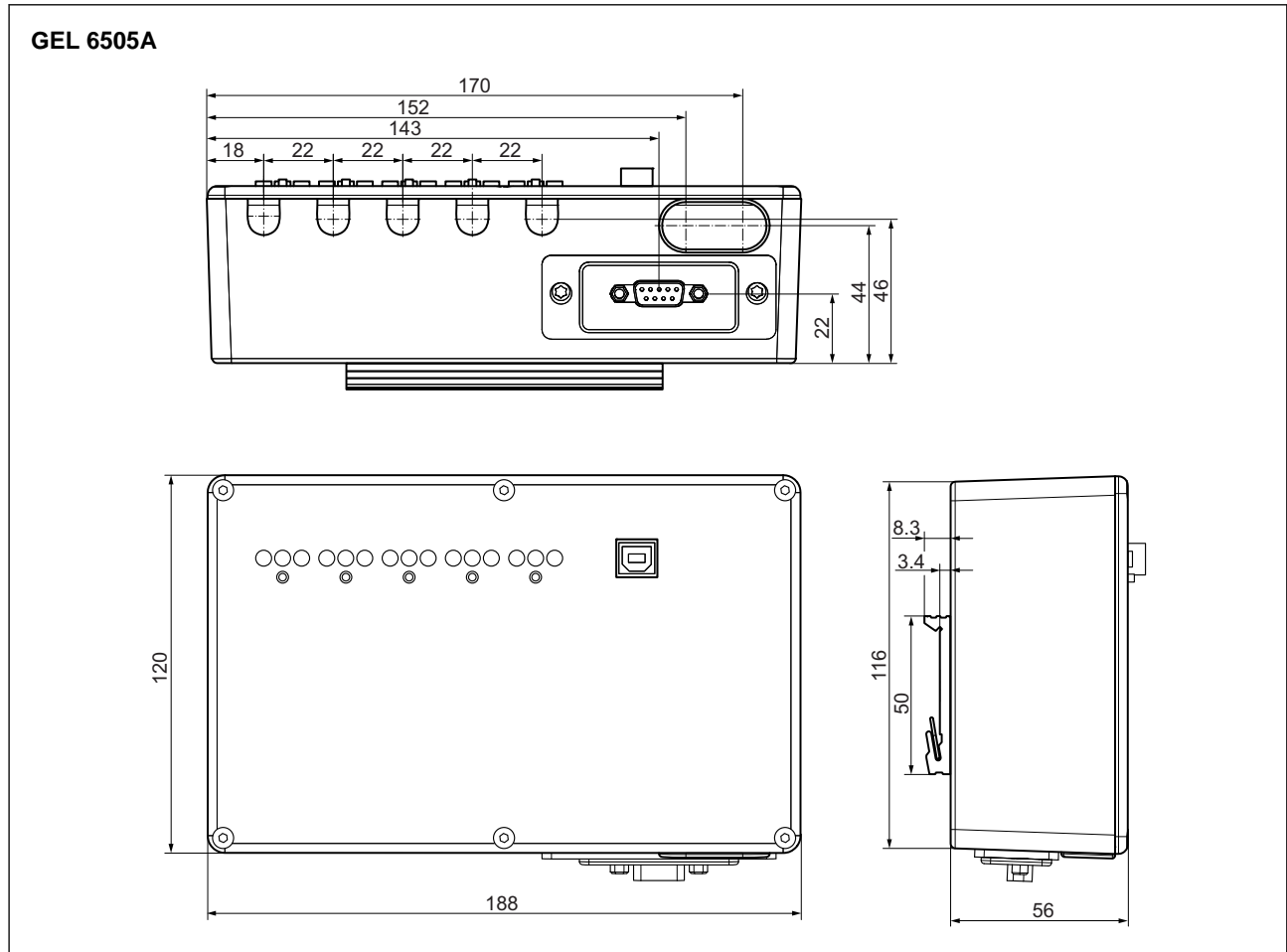
B earthing bolt on the right side wall

Pin layout – hybrid cable PowerDRIVE-Connect

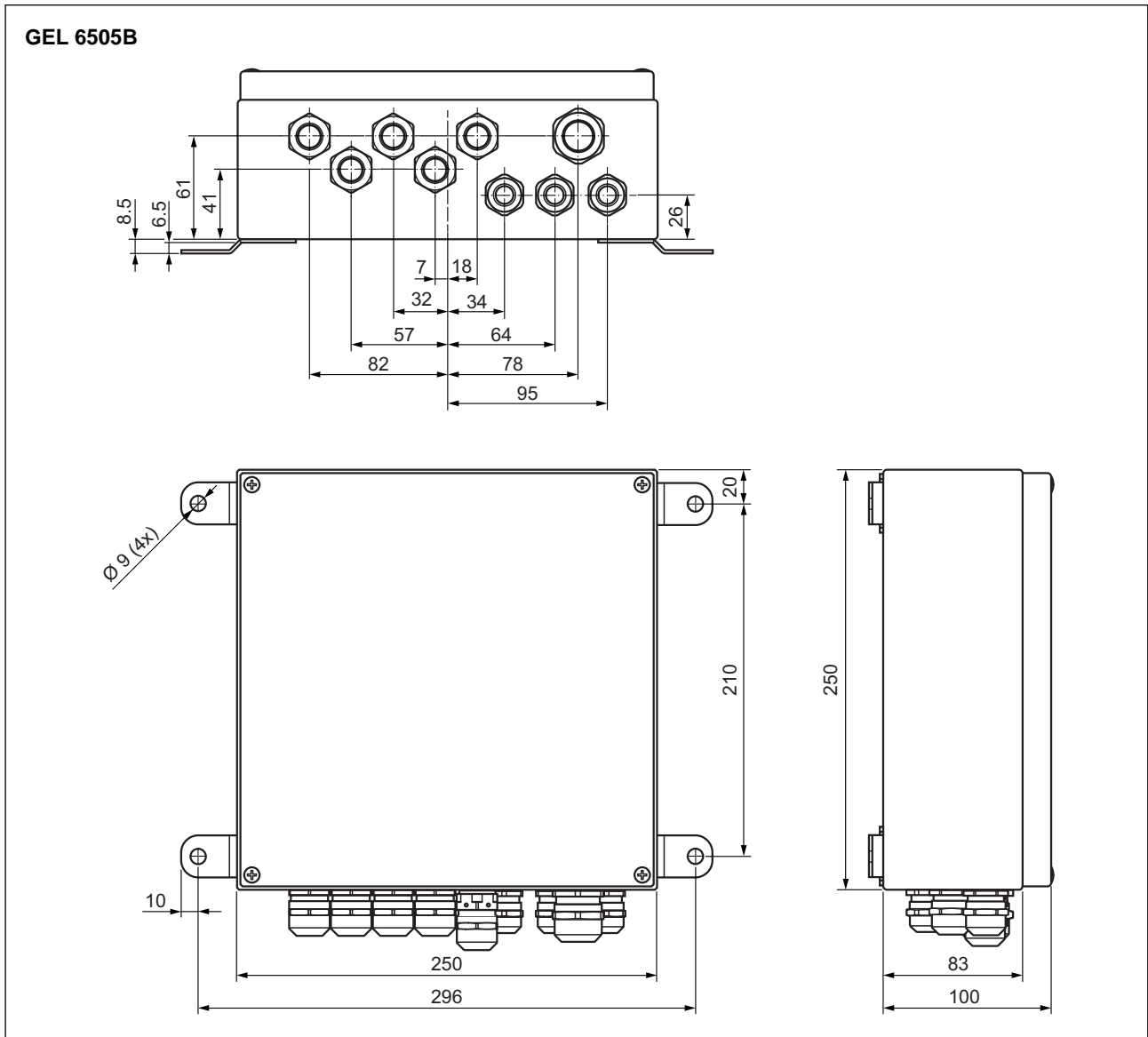
Terminal strip	Connection	Core colour	Cross-section [mm ²]	Assignment
Supply	1	red	1.5	+24 V drive
	2	black	1.5	GND drive
	3	red	0.5	+24 V logic
	4	black	0.5	GND logic
Internal communication	1	black	0.14	CAN GND
	2	yellow	0.25	CAN_H
	3	green	0.25	CAN_L
	4		0.75	CAN screen

Dimensional drawing

Dimensional drawing PowerDRIVE-Box



Dimensional drawing



Type code, accessories

Type code GEL 6505

GEL 6505	Protection class	
	A	IP20
	B	IP67 (only with "Housing" option VA)
	Housing	
	TR	Ground cast aluminium, bare
	PB	Powder coated cast aluminium, black
PG	Powder coated cast aluminium, grey RAL 9006 (upon request)	
VA	Stainless steel (only for "Protection class" option B)	
Plug		
1	1 × Sub-D connector (for field bus CO or DP)	
2	2 × RJ45 connector (for field bus EC, IP, RT or SE)	
Field bus		
--	None	
CO	CANopen (based on profile DS 402)	
DP	PROFIBUS-DP (based on PROFIDRIVE)	
EC	EtherCAT (based on profile DS 402)	
IP	Ethernet/IP (based on profile DS 402)	
RT	PROFINET-IO (based on PROFIDRIVE)	
SC	sercos III (I/O profile based on PROFIDRIVE)	
Connection accessories		
0	No accessories	
1	Accessory set for 5 PowerDRIVE positioning drives	

Connection accessories

The connection accessory set can be selected as an option "1" or being ordered separately (item number and scope of supply see list of accessories).

List of accessories

Description	Item no.
Accessory set for 5 PowerDRIVE positioning drives 1× spring-cage terminal logic supply, 10× spring-cage terminals supply/communication 1× fork cable lug M4 for cable 4–6 mm ² , 1× heat shrink sleeve Ø 13 mm, 1× heat shrink sleeve Ø 6 mm, 1× heat shrink sleeve Ø 3 mm	89070
Sealing plug for cable gland of PowerDRIVE-Box GEL 6505B	VB 1246
Pre-assembled hybrid cable , for connection of positioning drive PowerDRIVE to PowerDRIVE-Box	61BZK ⁽¹⁾

⁽¹⁾ see separate "Technical Information"