



### General

The PowerDRIVE GEL 6108 forms a compact mechatronic unit comprising a DC brushless motor, a 32-bit microprocessor, a compact power amplifier as well as a spur gear with a nominal torque of 0.4 Nm.

The PowerDRIVE GEL 6108 is suitable for cyclic operation at 0.25 Nm, 50 % duty cycle and a cycle time of 1 s.

This positioning drive is equipped with a robust, incremental measuring system. The position of the shaft can be referenced once per turn via an optional proximity switch input.

Active system protection against thermal overload and comprehensive system software ensure durable operation.

### Features

- ▶ Spur gear: 0.4 Nm nominal torque (duty cycle 25 %)
- ▶ Stainless steel housing, glass-bead blasted, Viton sealed
- ▶ Operating temperature
  - At 25 % duty cycle with 0.4 Nm: 0 °C to +60 °C
  - At 50 % duty cycle with 0.25 Nm: 0 °C to +50 °C
- ▶ DCBL motor
- ▶ Hybrid cable outlet
- ▶ CANopen DS 402
- ▶ High protection class IP 67
- ▶ Gear service life

### Advantages

- ▶ Suitable for cyclic operation at 0.25 Nm and 50 % duty cycle and 1 s cycle time
- ▶ Flexible installation variants make cleaning of all external parts straightforward
- ▶ Maintenance-free due to sealed-for-life lubrication
- ▶ Straightforward installation matched to the application

### Fields of application

- ▶ Packaging machines
- ▶ Food and bottling plants
- ▶ Wood and plastic working machines

# Description

## Construction

The positioning drives in the series PowerDRIVE are intelligent mechatronic units for attachment to solid shafts. The installation of the GEL 6108 is flexible and is adapted to the application. For easier cleaning of the external parts, rotating or removable housing mounting is possible.

The stainless steel housing is glass-bead blasted and laser welded. Equipped with a Viton shaft sealing ring, the GEL 6108 meets protection class IP 67.

The PowerDRIVE GEL 6108 provides a nominal torque of 0.4 Nm at 750 min<sup>-1</sup> via a compact spur gear. In cyclic operation it provides a torque of 0.25 Nm with a duty cycle of 50 % and a cycle time of 1 s. It is operated with a supply voltage of 24 V DC and supports the fieldbus profile CAN-open DS402.

The GEL 6108 is designed for connection to the PowerDRIVE-Box. It is supplied with a hybrid cable outlet or hybrid connector.

The positioning drive acquires the position using an integrated incremental, magnetic sensor. This sensor is extremely robust and withstands high shock and vibration loads. The position of the shaft is referenced once per turn via a proximity switch input.

The hybrid cable and M12 connector for the proximity switch input are on the underside of the housing. On the rear there is a USB port behind the blanking plug. A pressure equalisation valve can also be fitted.

The optional pressure equalisation valve permits the exchange of air and other gases between the interior of the housing and the surroundings. The design prevents the ingress of liquids, dust and particles of dirt.

## Modes of operation

The drive is designed for cyclic short-time operation at nominal torque. The following intervals are valid:

- ▶ 25 % duty cycle in an operating interval of 4 minutes with 0.4 Nm (nominal torque)
- ▶ 50 % duty cycle in an operating interval of 1 second with 0.25 Nm

Other methods of operation are protected by I<sup>2</sup>t and temperature monitoring.

## Reliability

Important parameters such as motor power and device temperature are monitored and in this way the PowerDRIVE actively protected against overload. The following monitoring devices ensure trouble-free operation:

- ▶ Soft start and shutdown via acceleration and deceleration ramps
- ▶ Over/undervoltage detection on the drive and logic supply
- ▶ Lag error detection
- ▶ Temperature monitoring on the power amplifier and inside the housing
- ▶ Motor and power amplifier overload protection via I<sup>2</sup>t monitoring

## System solution

In combination with the PowerDRIVE-Box GEL 6500, Lenord + Bauer offers a system solution for the PowerDRIVE GEL 6108. The power supply and the required interface profile for the positioning drives are configured via the hybrid cable using the PowerDRIVE-Box.

The hybrid cable PowerDRIVE-Connect suitable for use in drag chains makes possible straightforward connection technology.

## 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

<b>Electrical data</b>	
Nominal voltage control system	24 V DC -5 % / +20 %
Nominal voltage motor	24 V DC -5 % / +20 % (Attention: max. motor speed is voltage dependent!)
Nominal current control system	Max. 400 mA, internal fuse, self-resetting
Nominal current motor	3 A, maximum current 5 A, external fuse required
Duty cycle (load-dependent)	25 % at 100 % load torque, short-time duty S2, base time 4 minutes <sup>(1)</sup> : $t_B = 1$ minute, $t_P = 3$ minutes; 50 % at 0.25 Nm, dependent on ambient parameters and application
Position actual value resolution	96 increments per 360° 120 increments per 360° (with internal multiplier)
Positioning accuracy	±7.5°
Repeat accuracy	±3.75°
Interfaces	CANopen (DS-402) further interfaces using PowerDRIVE-Box GEL 65xx
Dielectric strength (DIN EN 60439-1)	500 V DC
EMC <sup>(2)</sup>	Electromagnetic immunity EN 61000-6-1 and -2 electromagnetic emissions EN 61000-6-4
<b>Mechanical data</b>	
Nominal torque output shaft	Max. 0.4 Nm at 750 min <sup>-1</sup>
Gear service life at nominal load (for nominal torque)	$L_{10h}$ : 10,000 h
Output shafts	Solid shaft, 5 mm outside diameter
Max. shaft load (axial/radial)	30 N / 50 N
Housing material	Stainless steel 1.4301
Weight	1.25 kg
Protection class (EN 60529)	IP 67 with shaft sealing ring made of Viton
Shock resistance (DIN EN 60068-2-27)	150 m/s <sup>2</sup> (approx. 15 g)
Vibration resistance (DIN EN 60068-2-6)	50 m/s <sup>2</sup> (approx. 5 g) at 55 Hz
<b>Ambient data</b>	
Assured operating temperature range	At 25 % duty cycle with 0.4 Nm: 0 °C to +60 °C At 50 % duty cycle with 0.25 Nm: 0 °C to +50 °C
Operating temperature range	-10 °C to +60 °C
Storage temperature range	-20 °C to +85 °C
Max. relative humidity of air	95 %
Condensation	Not permitted pressure equalisation valve optional <sup>(3)</sup>
<b>Technical data – hybrid cable</b>	
Jacket material	PUR, black
Cable properties	screened, drag chain-suitable
Cable diameter (d)	9.5 mm
Bending radius	permanently flexible, 10 x d
Peak operating voltage	max. 350 V CAN bus max. 30 V DC (control system / motor)
Temperature range	-40 °C to +80 °C

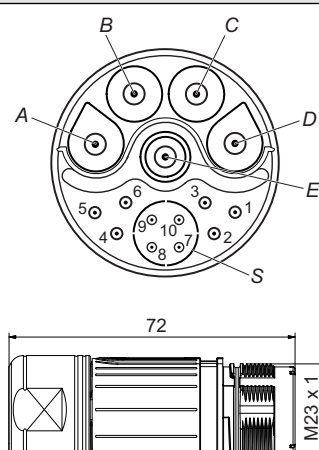
(1) Base time with  $t_B$  operating time and  $t_P$  pause duration

(2) Use only screened cables.

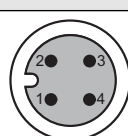
(3) Optional, see type code: Option package

# Connection

## Hybrid cable PowerDRIVE-Connect<sup>(1)</sup>

With M23 connector/option H1 - Hx	Flying lead/option xx		Assignment
Male coupling	Pin	Core colour Cross-section [mm <sup>2</sup> ]	
	A	red 0.5	+24 V control system
	B	black 0.5	GND control system
	C	black 1.5	GND motor
	D	red 1.5	+24 V motor
	E	– –	Cable screen
	7	yellow 0.25	CAN_H
	8	black 0.14	CAN GND
	9	green 0.25	CAN_L
	S	– –	CAN screen

## Proximity switch input<sup>(2)</sup>

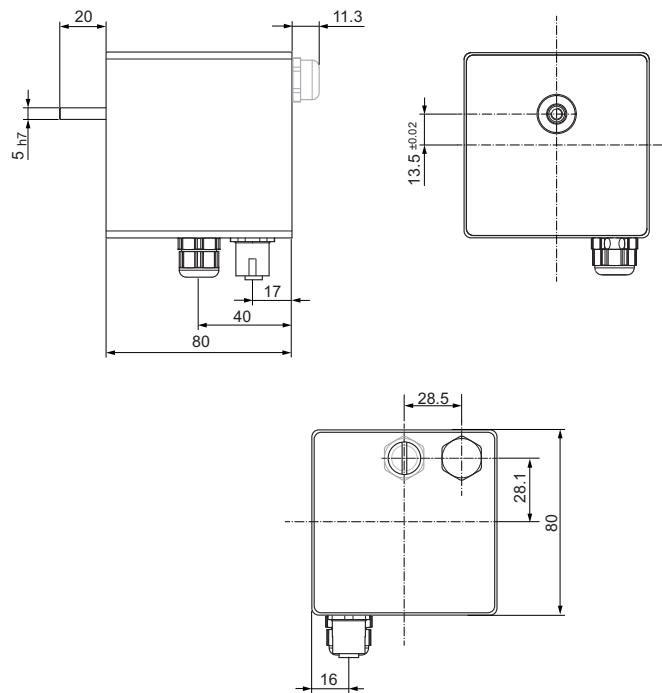
Connector	Pin	Assignment
 Female M12, 4-pin, A-coded	1	+ 24 V DC (output)
	2	n.c.
	3	GND
	4	Signal

<sup>(1)</sup> Configurable connecting cables are available for the connection, see "Technical information 61BZK".

<sup>(2)</sup> Optional, see type code: Option package

# Dimensional drawings

## Dimensional drawing – PowerDRIVE GEL 6108



All dimensions stated in mm  
 Grey: pressure equalisation valve option

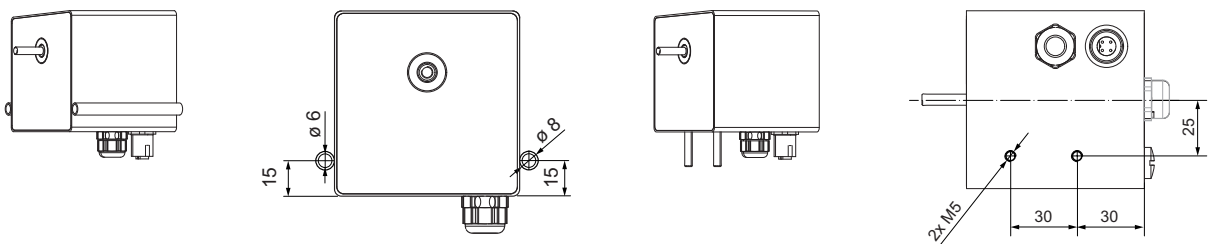
## Dimensional drawings – torque supports

### Sleeve

inside diameter 6 mm, material stainless steel 1.4301

### Stud

M5 x 25 mm, material V2 A,  
 welded to the underside of the housing



The receptacle and mounting for the housing must be provided in the system.  
 The positioning drive does not have a separate earth connection, earthing is via the torque support.  
 Other torque supports are available upon request.

# Type code GEL 6108

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										<b>Interfaces</b>
										<b>CO</b> CANopen DS 402
										<b>Nominal torque</b>
										<b>04</b> 0.4 Nm / 750 min <sup>-1</sup> at duty cycle 25 %
										<b>Shaft in mm</b>
										<b>A</b> Solid shaft, outside diameter 5 mm
										<b>Housing</b>
										<b>E</b> Stainless steel 1.4301
										<b>Torque support</b>
										<b>1</b> Sleeves, 2 pieces, inside diameter 6 mm
										<b>2</b> Studs, 2 pieces, M5 x 25 mm
										<b>Hybrid cable/connector</b>
										<b>xx</b> Hybrid cable with flying lead, length of the cable in m, <b>03</b> minimum length 3 m, <b>20</b> maximum length 20 m
										<b>H1</b> Hybrid cable (length 30 cm) with M23 connector, male coupling <sup>(1)</sup>
										<b>H2</b> Hybrid cable (length 50 cm) with M23 connector, male coupling <sup>(1)</sup>
										<b>H3</b> Hybrid cable (length 100 cm) with M23 connector, male coupling <sup>(1)</sup>
										<b>Hx</b> Hybrid cable (length xx cm) with M23 connector, male coupling <sup>(1)</sup>
										<b>Sensor</b>
										<b>I</b> Incremental sensor with 96 increments per turn
										<b>Version</b>
										<b>0</b> With standard components
										<b>1</b> With UL/CSA hybrid cable
										<b>Option package</b>
										<b>A</b> Proximity switch input (M12 connector) and pressure equalisation valve
<b>6108</b>	--	--	--	--	--	--	--	--	--	

<sup>(1)</sup> Configurable connecting cables are available for the connection, see "Technical information 61BZK".

Your notes:



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Subject to technical modifications and typographical errors.  
The latest version can be downloaded at [www.lenord.com](http://www.lenord.com).

