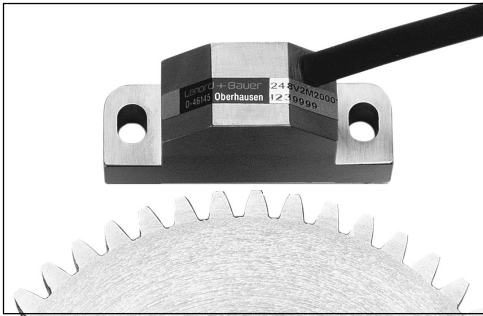


Encoder kit: MiniCoder GEL 248

Incremental toothed-wheel encoder
with rectangular output



01/00



General Information

- non-contacting measurement of rotary movements
- toothed wheel as measure
- high EMC stability and immunity to interference
- very high protection class IP 68
- can be used under very harsh conditions

Fields of application

- measurement of speed and position in gears, machines and motors
- fluid technology
 - can be used in hydraulic pumps
 - can be used in hydraulic motors

Measuring principle

- difference Hall elements
- internal enhancement of the Hall signals
- measurement of speed from zero to the max. measuring frequency of 25 kHz

Output signals

- reverse battery protection of the supply voltage
- open-collector output (option: integrated line driver)
- waveforms:
 - single-track signals
 - two signals dephased by 90° for way detection

Design

- robust die-cast zinc housing
- the sensor elements are protected by a metallic layer

Technical data, Pin layout




supply voltage U_B	$U_B = 10 \dots 30 \text{ V}$
current consumption I_B without load	$I_B \leq 40 \text{ mA}$
output signals	square-wave signals open-collector outputs or push pull power amplifier with $I_{\text{max}} = 20 \text{ mA}$
input and output frequency	0 ... 25 kHz
module	$m = 1.0; 1.25; 1.5; 1.75; 2.0; 2.25; 2.5; 3.0; 3.5$ (other modules between 1 and 3.5 mm be supplied upon request)
admissible air gap	0.1 mm ... 0.8 mm ¹⁾ (recommended nominal value 0.5 mm)
duty	0,5 +/- 0,25 ²⁾
working temperature range	-20°C ... +85°C
operating temperature range	-40°C ... +120°C
storage temperature range	-40°C ... +120°C
protection class	IP 68
electromagnetic compatibility (EMC)	industrial applications: EN 50081-1 and 2; EN 50082-1 and 2
insulation strength	500 V
vibration protection	200 m/s ²
shock protection (IEC 68-T2-27)	2000 m/s ²
width of the toothed wheel	$\geq 10 \text{ mm}$ considering all tolerances
material of the toothed wheel	ferromagnetic steel
weight	approx. 150 g
housing	zinc diecasting
connection	4 x 0.25 mm ² screen applied on the encoder side Please ask for our separate cable specification LK 1062
connecting technique	sealed cable outlet, 1 m

¹⁾ Limited air gap for module 1.0 and 1.25 (air gap from 0.1 ... 0.5 mm).

²⁾ The tolerance depends on the module of the toothed wheel.

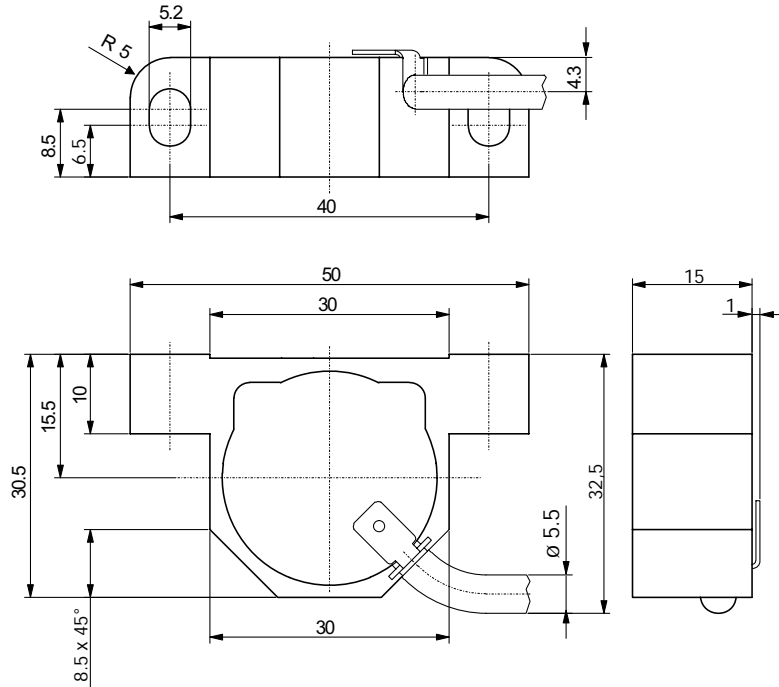
Pin layout



type	function	line colour
GEL 248 E	 A	yellow
	0 V, GND	blue
	$U_B = +10 \dots +30 \text{ V}$	red
GEL 248 V	 A	yellow
	 B	white
	0 V, GND	blue
	$U_B = +10 \dots +30 \text{ V}$	red

Dimensioned drawing, Type code

Dimensioned drawing



Type code

248	X	X	XXXX	XX	description
				01	cable length 1 m (standard)
				M100 M125 M150 M175 M200 M225 M250 M300 M350	module M...
				1 2	outputs 1 open collector 2 push-pull power amplifier
			E V		signal pattern E square-wave signal, one track V two square-wave signals 90 °offset

EMC assembly instructions, Installation drawing

To avoid influencing the certified electromagnetic compatibility (EMC) the following assembly instructions must be observed:

- The **screen at the cable end** must have **large-surface** contact. In the **MiniCoder** the cable screen is applied to the **sensor housing**.
- Keep all unshielded cables **as short as possible**.
- Provide for earth connections being **as short as possible** and having a **large cross-section** (e.g. low-inductance metal-alloy tape, flat-band conductor).
- Should there be any **potential differences** between the earth connection of the machine and the electronics, take appropriate measures to ensure that no compensating currents can flow over the cable screening (e.g. lay potential equalization lines with large cross-section or use cables with separated duplex screening, each screen being connected at one side only).
- Signal and control lines must be **laid away** from the power conduits.
- The power supply must comply with the installation type class 0 or 1 as per point B.3 of the EN 61000-4-5 of 1995.
- Observe the process tolerance DIN 2768-m upon installation.

