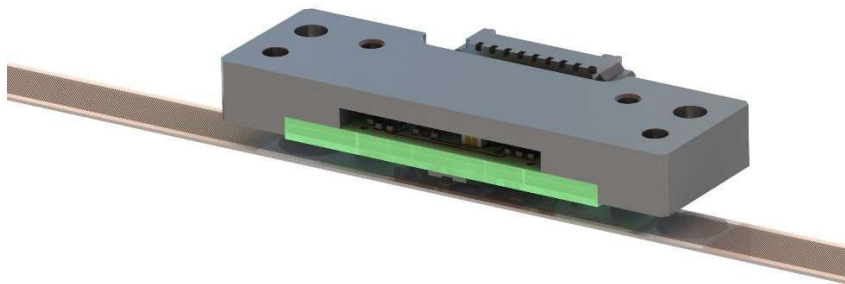


# **Sin/Cos Encoder Kit**

## **Linear, optical reflective**

## **high resolution**



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## **Description**

The EBS Head is an optical reflective encoder with analog Sin/Cos output. In combination with the associated code strip, it forms a complete linear encoder kit system. It can be fixed quickly and easily on different applications and on different mounting situations. Positioning is ensured by 2 dowel pins to guarantee the exact working point from code strip to scanning head. The prescribed air gap between the code disk and the scanning head must be observed.

The EBS Head is designed for very high-resolution structures. Due to this high native basic resolution of the code strip, very clean ambient conditions are a basic requirement.

Other length of code strips are possible on customer request.

On customer request, the code strips can also be provided with an adhesive stripe and a protective film (the protective film must be removed before use). Please contact PWB encoders for this.

This allows the code strips to be mounted quickly and easily.

## **Features**

- Sin/Cos linear encoder
- Channels: Sin+, Sin-, Cos+, Cos-, I+, I-
- Output frequency: up to 200 kHz
- Step size: 20 µm (native pitch)
- Power supply: 5 VDC
- Small size: 40.0 mm x 17.0 mm x 5.5mm
- Bearing free
- Operating temperature: -20°C to +85°C
- Compliant EU-directive 2011/65/EU (RoHS)

## **Applications**

- Motor feedback
- Positioning
- Speed control

## Recommended operating conditions

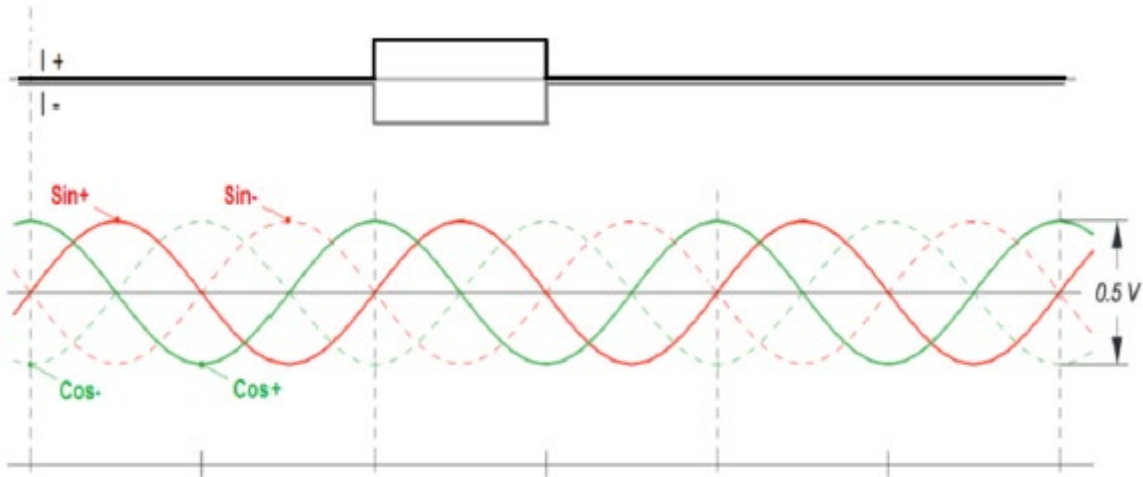
| Parameter                 | Symbol        | Min. | Typ | Max.  | Unit            | Notes             |
|---------------------------|---------------|------|-----|-------|-----------------|-------------------|
| Supply voltage            | $U_B$         | 4.75 | 5.0 | 5.25  | V <sub>DC</sub> |                   |
| Supply current            | $I_{UB}$      | 50   | 70  | 90    | mA              | no Load           |
| Startup time              | $t_{st}$      |      | 20  |       | ms              |                   |
| <b>Signals Sin / Cos</b>  |               |      |     |       |                 |                   |
| Output current            | $I_{out}$     |      |     | ±20   | mA              | per channel       |
| Short circuit current     | $I_{out-max}$ |      |     | ±35   | mA              | per channel       |
| High level output voltage | $V_{oH}$      | 2.4  |     | 3.3   | V <sub>DC</sub> | $R_L=120\Omega$   |
| Low level output voltage  | $V_{oL}$      | 0.0  |     | 0.7   | V <sub>DC</sub> | $R_L=120\Omega$   |
| Rise / Fall time          | $t_r$         |      | 20  |       | ns              |                   |
| Latency                   | $t_L$         |      | 2.4 | 5.0   | µs              |                   |
| Output frequency          | $f_{out}$     |      |     | 200   | kHz             |                   |
| <b>Mechanic</b>           |               |      |     |       |                 |                   |
| Pitch wide                | $T$           |      | 20  |       | µm              | native resolution |
| Linear speed              | $v$           |      |     | 9.5   | m/s             |                   |
| Radial misalignment       |               |      |     | ±0.15 | mm              |                   |
| Air gap                   |               | 0.4  | 0.5 | 0.6   | mm              |                   |
| <b>Environment</b>        |               |      |     |       |                 |                   |
| Operating temperature     | $T_A$         | -20  | 25  | 85    | °C              |                   |
| Storage temperature       | $T_s$         | -20  |     | 85    | °C              |                   |
| Humidity exposure         |               |      |     | 90    | %RH             | not condensing    |
| <b>System</b>             |               |      |     |       |                 |                   |
| Relative Accuracy         |               |      |     | ± 0.2 | µm              | Code strip        |
| Absolute Accuracy         |               |      |     | ± 1   | µm              | Code strip        |

### **PWB encoders GmbH RESTRICTED**

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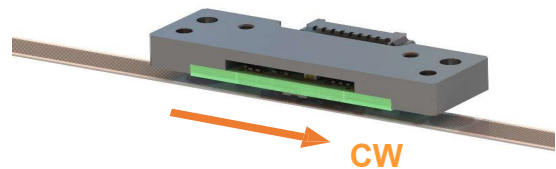
## Output signals:



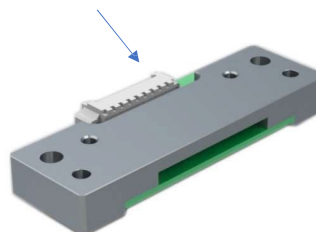
## Pin Description

| Pin | Signal | Cable color |
|-----|--------|-------------|
| 1   | Sin+   | Red         |
| 2   | Sin-   | Green       |
| 3   | Cos+   | Blue        |
| 4   | Cos-   | Purple      |
| 5   | I+     | Brown       |
| 6   | I-     | Yellow      |
| 7   | GND    | Orange      |
| 8   | $U_B$  | Black       |

## Direction of movement



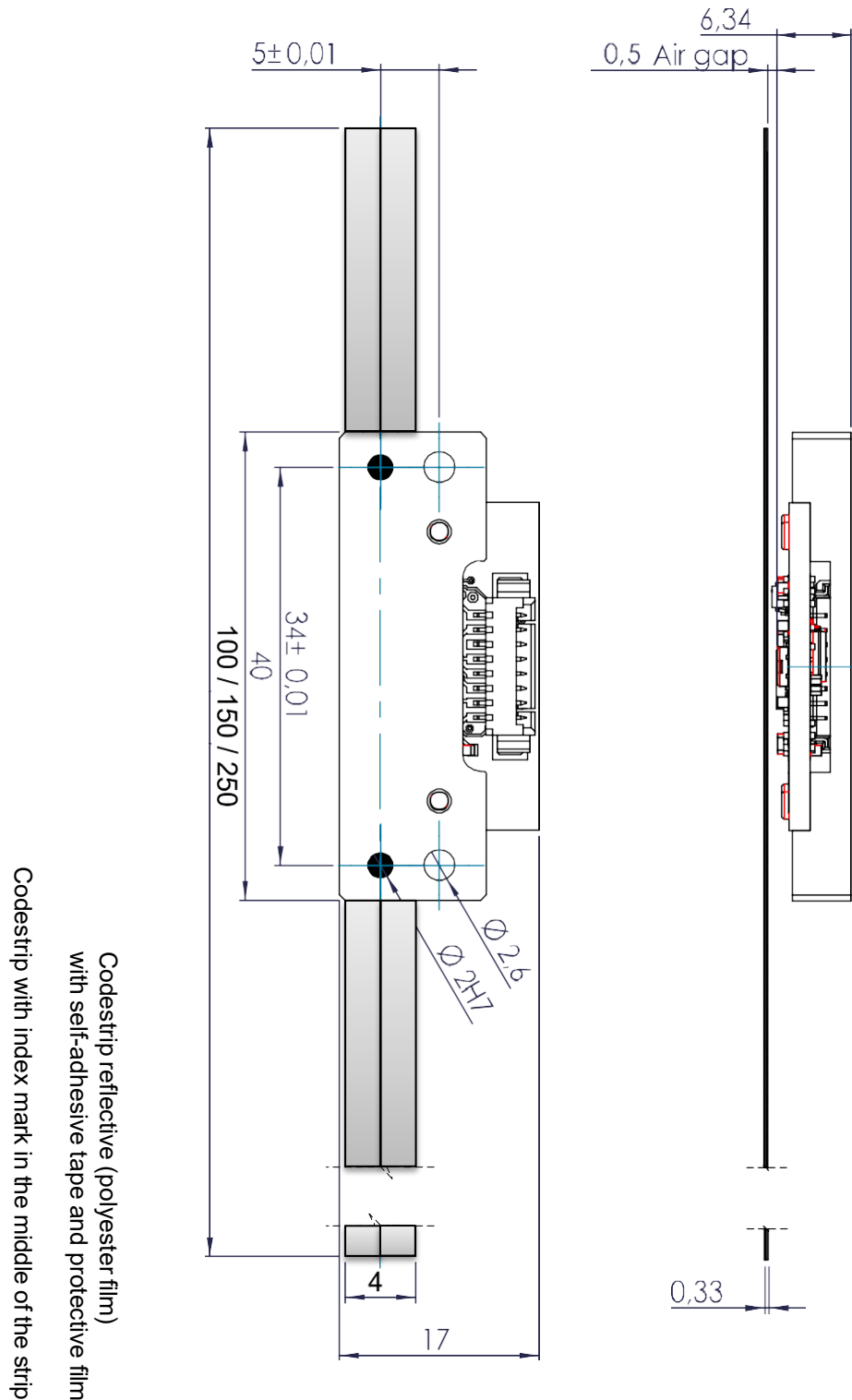
Pin 1



Connector:  
Molex 53261-0871

**ESD Warning: Normal handling precautions should be taken to avoid static discharge damage to the sensor.**

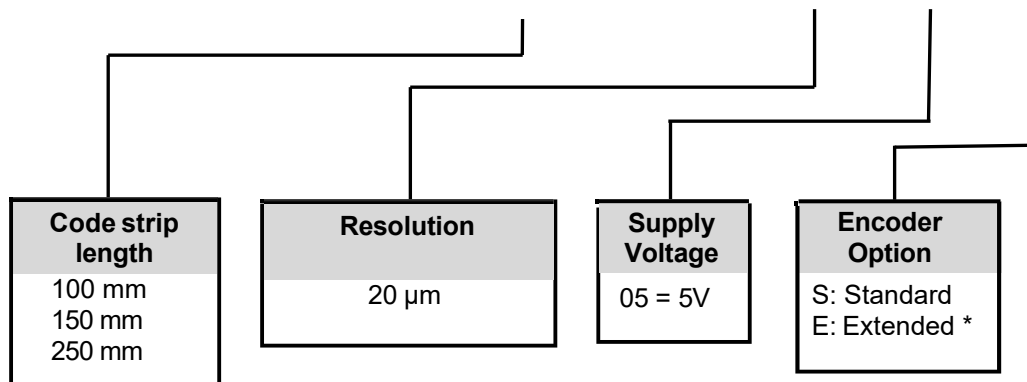
## Mechanical Dimensions: Type 100/150/250



## Ordering Information

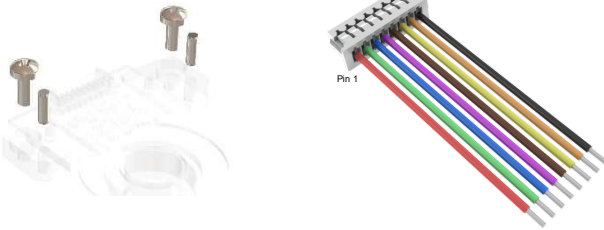
Ordering Code:

**EBS Head Linear 100 – SIN – 20 – 05 – S**



\* Customer specific version – feel free to ask us for special solution.

## Necessary accessories

| Description                                                                             | Picture                                                                              | Item number |
|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------|
| Accessory-Set:<br>Cable 300mm,<br>2 screws M2,5x8,<br>2 cylindrical pins 2x6 (DIN 6325) |  | 108546      |