CHIEFTEK PRECISION CO., LTD.

OE1

Optical Encoder OE1 Series

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CHIEFTEK PRECISION CO., LTD.

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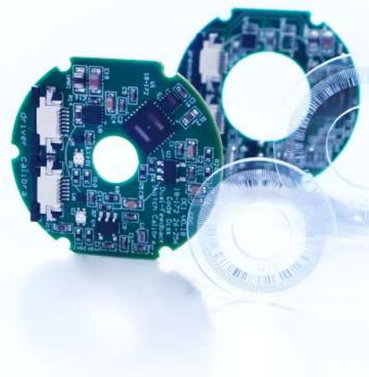
Features of OE1 Series

The OE1 series encoder is a high-precision optical absolute encoder. Its main feature is that the combined size is quite compact, only 4.3 mm, which can significantly save the user's installation space. In addition, the read head and the optical disc have hollow apertures, especially for designers who need hollow-aperture mechanisms. Besides, the position output format supports the BiSS interface. It can provide single-turn and multi-turn position information simultaneously to ensure the reliability of the position feedback of the entire system. The features are as follows:

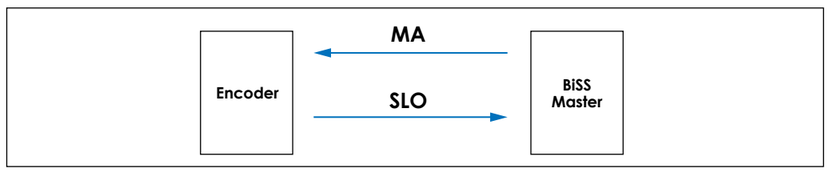
- Hollow design: There are three choices of inner diameter: 11.7, 25.1, and 38.1 mm to facilitate wiring and mechanism integration.
- Thin size: 4.3 mm (combined height)
- High resolution: 17-23 bit
- Absolute open type: BiSS-C communication format



BiSS Interface Overview

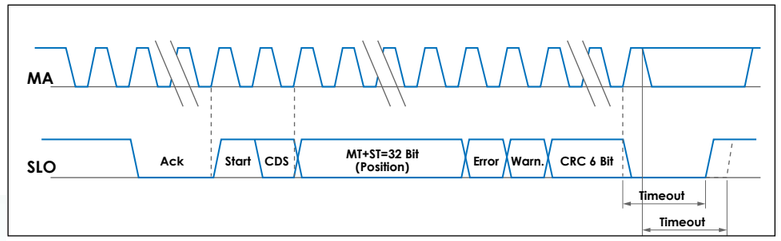
BiSS-C is a fast synchronous serial interface used to read position data from encoders. It is a master-slave transmission mechanism, where the master controls the timing of position sampling and data transmission speed, and the encoder plays the role of the slave. This interface consists of two unidirectional differential line pairs: MA is responsible for the master's position request and timing mechanism to the encoder; SLO synchronously transmits the encoder's position data to the master according to MA.

Data flow

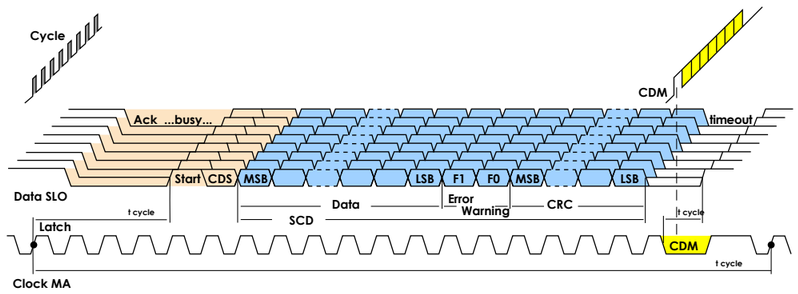


The following figure shows the transmission format of BiSS data.

BiSS-C working mode



Biss Data frame:
32 bit Multiple turn and Single turn position + 1 bit Error + 1 bit Warn + 6 bit CRC The number of bits for multiple turns (MT) and single turns (ST) can be specified, with a total of 32 bits to represent the position.



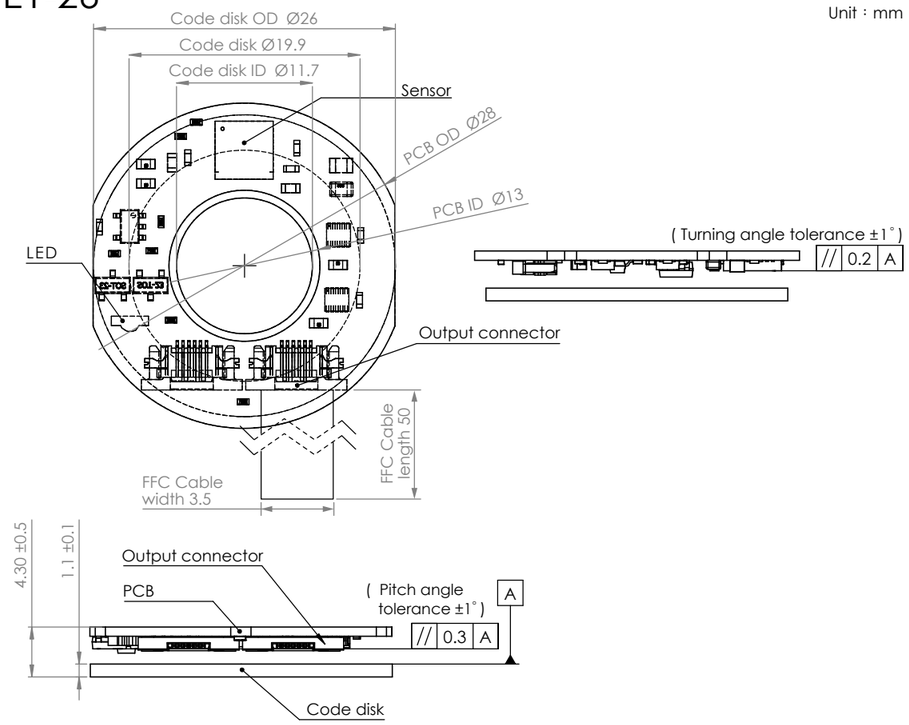
Error Bit: In the event of a position error, this bit is Active low. Possible causes of errors include:
- Internal analog signals error.
- Absolute position error.
- Parameterserror.

Warning Bit: In the event of a warning, this bit is Active low. At this time, the position value is good, but the warning source needs to check. Possible causes of warnings include:
- Voltage supply warning.
- Internal analog signals warning.

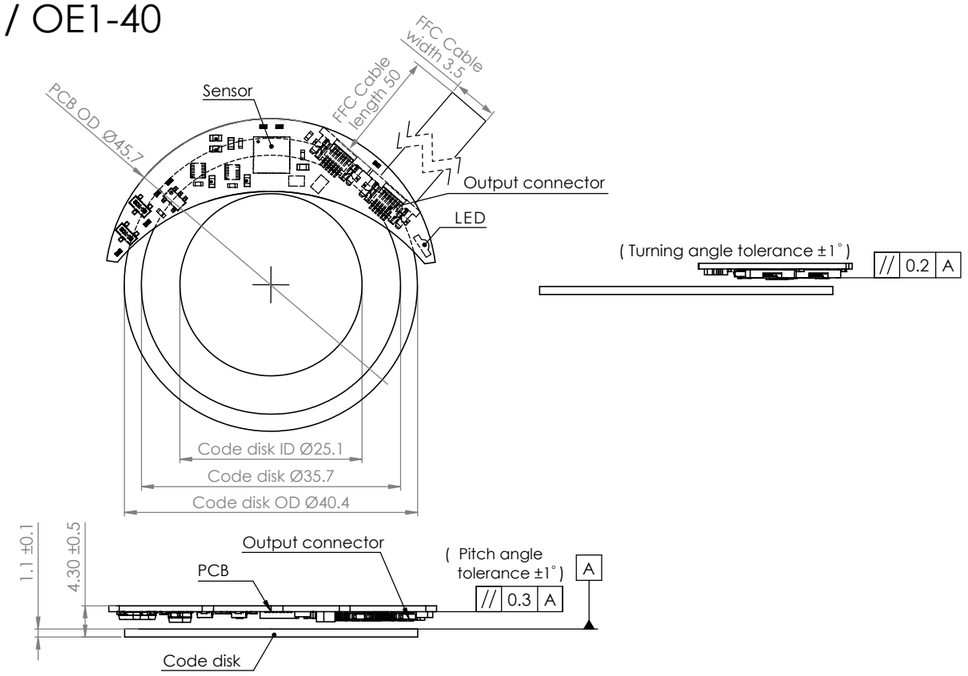
CRC (Cyclic Redundancy Check) The CRC polynomial is 0x43 (x^6 + x^1 + x^0).

Dimension / OE1-26

Unit：mm

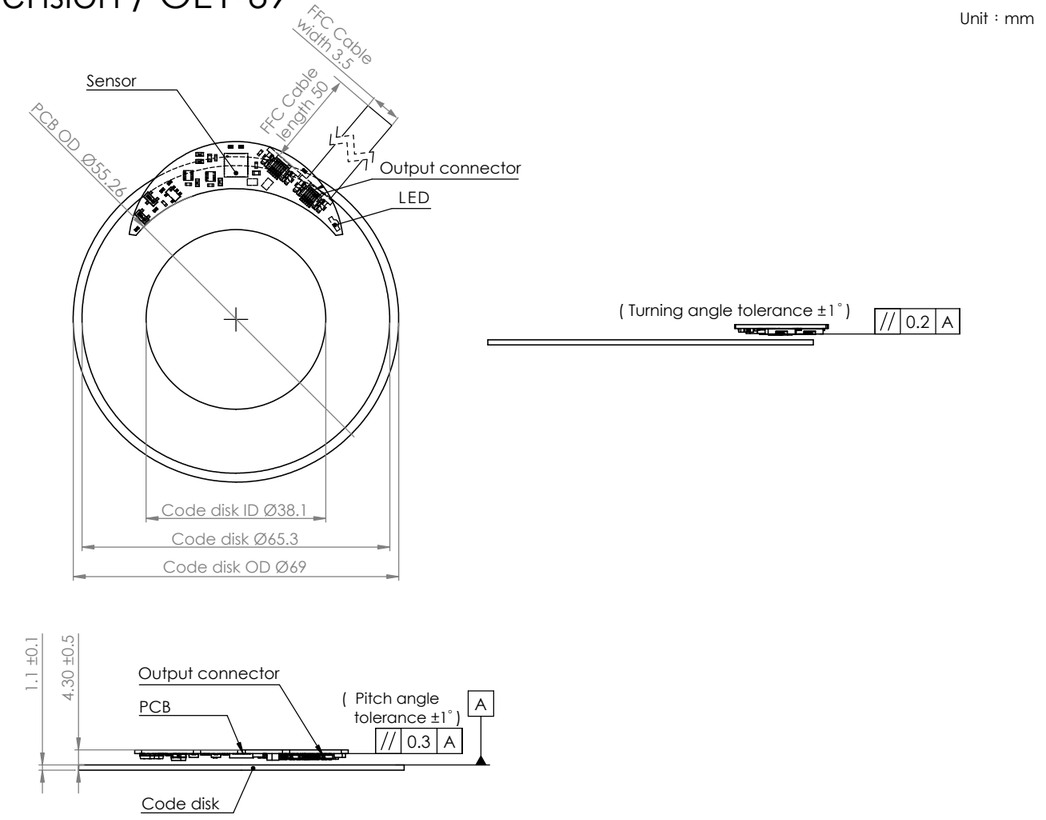


Dimension / OE1-40



Dimension / OE1-69

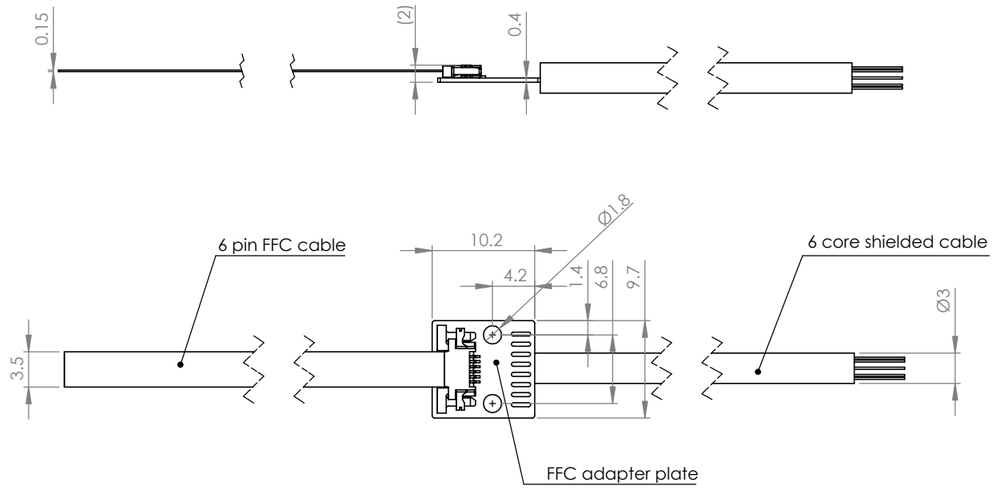
Unit：mm



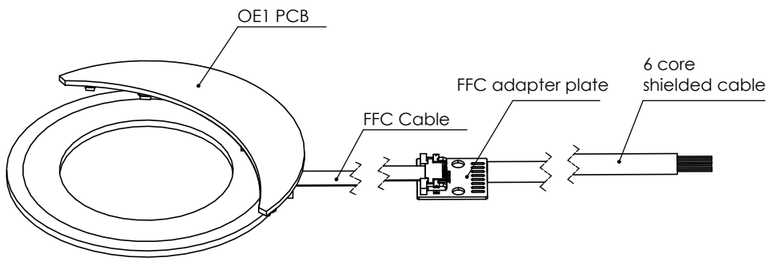
Ordering Information

OE1	K	40	25	446	23	09	0200	
							Cable length：0200：200mm N: none	
						Multi-turn resolution: 9 bit N: none		
					Single-turn resolution: 17, 18, 19, 20, 21, 22, 23 bit N: none			
				Number of original scales： 72、256、446、1024、2048 N: none				
			The code disc inner diameter：8, 11, 25, 38, 81 mm N: none					
		The code disc outer diameter ： 18、26、40、69、138 mm N: none						
		Product: K: System R: Read head D: Code disc						
	Product Type: OE1：Absolute optical encoder							

FFC adapter plate dimensions



Wiring



Pin definition of 6 core shielded cable	
Color of loose leads	Function
red	5V
blue	GND
brown	Data+
gray	Data-
yellow	CLK+
green	CLK-

Technical specifications

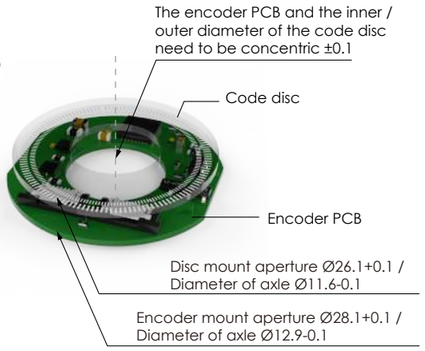
Specification	Digital output signal
Material	Soda-lime glass
Code disk thickness	1.1 mm
Reference zero point	Single reference on code disk
Marking accuracy	18 Code disc = 31.268 arc seconds 26 Code disc = 20.433 arc seconds 40 Code disc = 11.485 arc seconds 69 Code disc = 6.296 arc seconds 138 Code disc = 3.119 arc seconds
coefficient of thermal expansion	~8 µm/m/°C
power input	5 V ±10%
Temperature	storage temperature -20 °C to +80 °C operating temperature 0 °C to +80 °C
Humidity	95% relative humidity (no condensation)
Weight	Readhead Model / Weight(g): OE1-18: 1.07; OE1-26: 1.21; OE1-40: 1.15; OE1-69: 1.15; OE1-138: 1.2 Code disc Model / Weight(g): OE1-18: 0.6; OE1-26: 1.04; OE1-40: 2.1; OE1-69: 6.54; OE1-138: 24.93 FFC adapter plate： Weight(g): 0.2

Tachometer / Maximum Speed

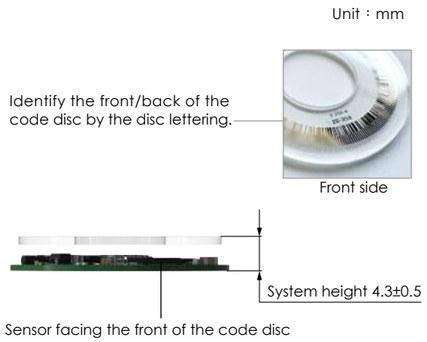
Model	Maximum speed (RPS)
OE1-18	1395
OE1-26	938
OE1-40	538
OE1-69	234
OE1-138	117

Installation

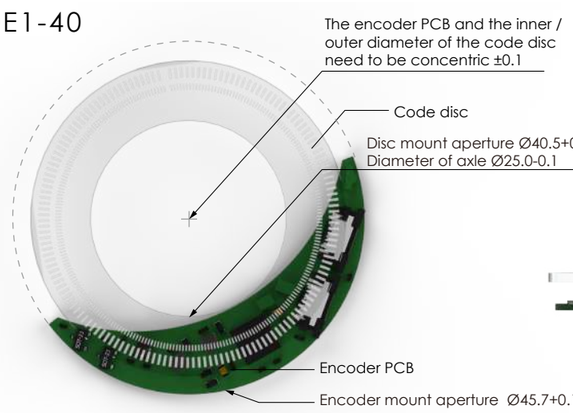
OE1-26

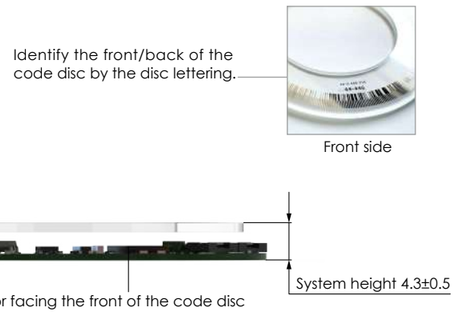


Unit：mm



OE1-40





OE1-69