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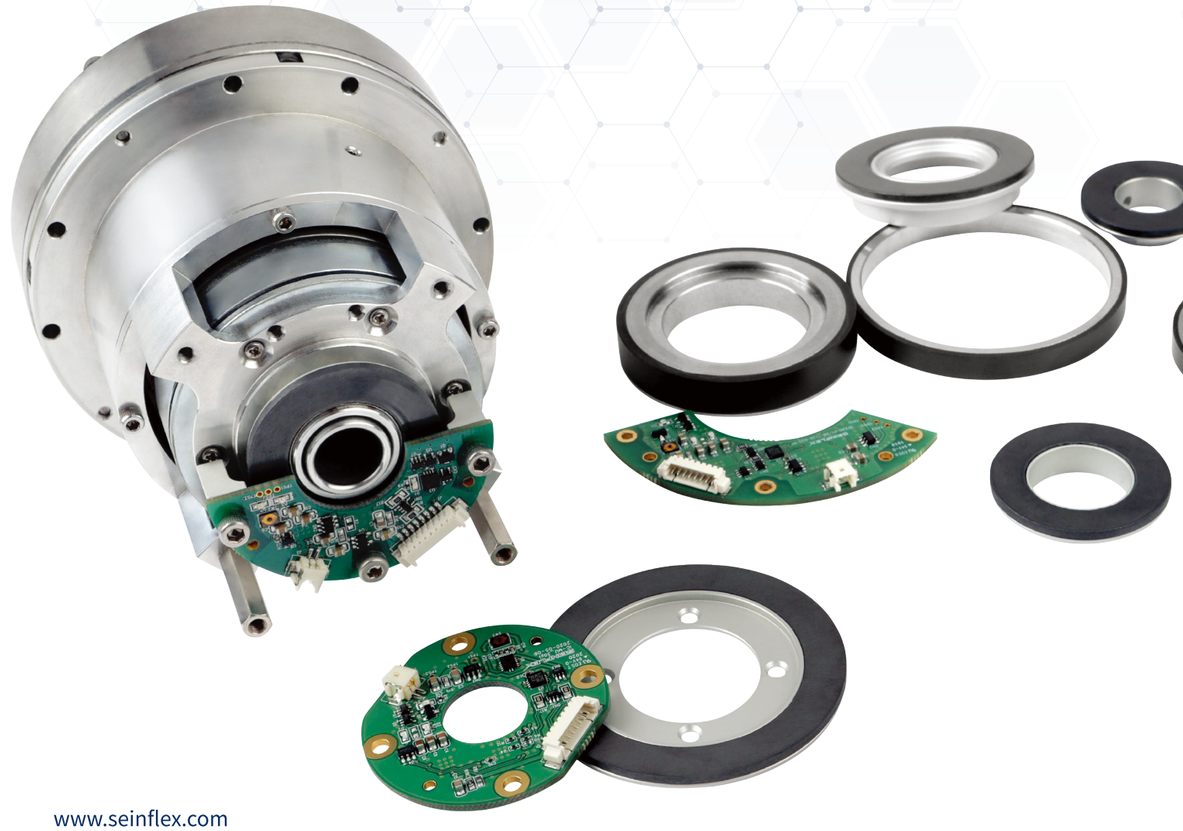
SEINFLEX

Intelligence Module on Seinflex Products

Product **Catalog**

- Magnetic Encoder
- Optical Encoder



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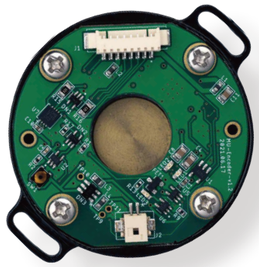
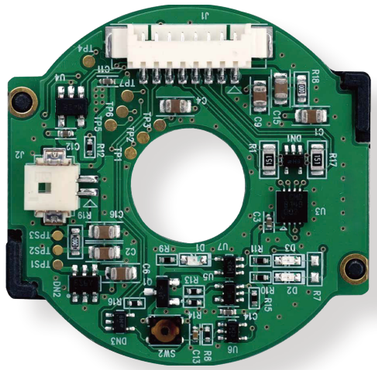
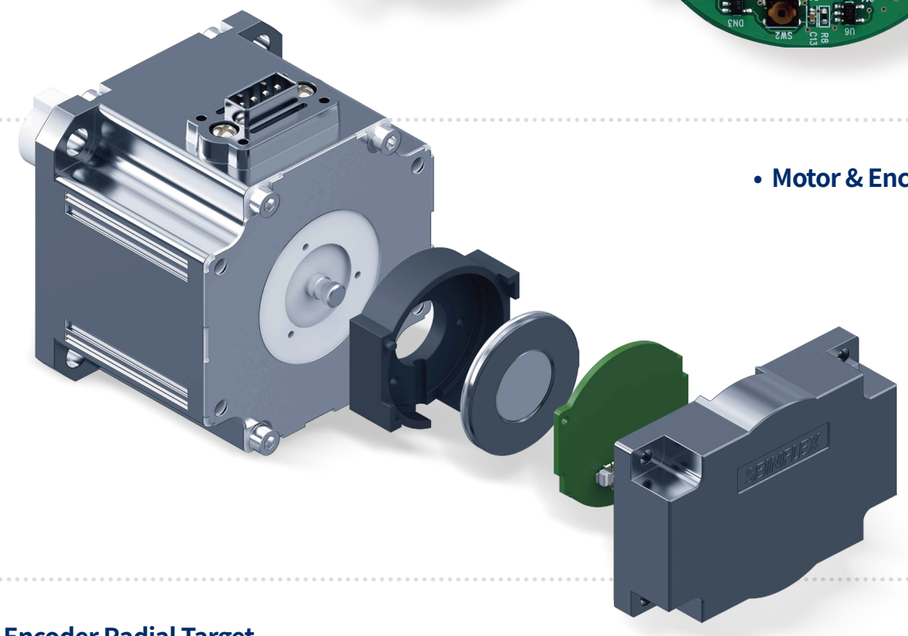
Encoder Module Application

- ABS Encoder



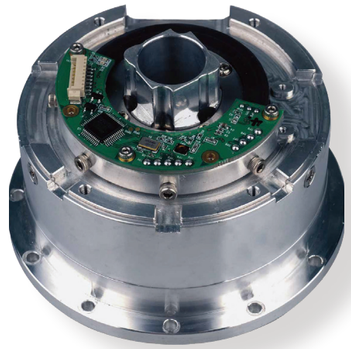




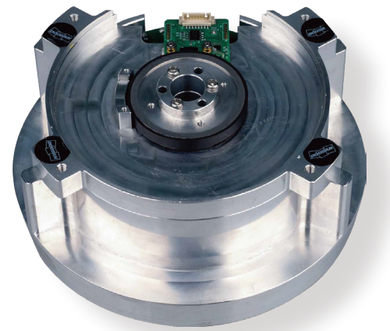
- Motor & Encoder

- Encoder Radial Target

- Robot Arm with ABS Encoder (Axial Target)



- Robot Arm with Incremental Encoder (Radial Target)



- Robot Joint Magnetic Encoder Target

- AVG/AMR In-wheel Motor with Built-in Encoder

Encoder

High Resolution Performance

01. Absolute Rotary Encoder

- Axial Type
  - Battery Type
  - Batteryless Type
  - Pseudo Code
- Radial Type

02. Incremental Rotary Encoder

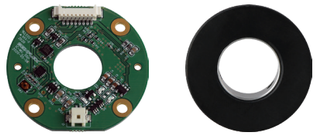
- Radial Type
- On Axis Type

03. Linear Encoder

- Optical Type

Overview

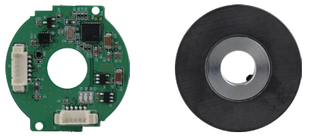
Battery Type



Features

- Master Track 64 / Nonius Track 62 Poles magnet for Encoder
- BiSS-C / SSI Interface
- Resolution up to 19-bit
- Multi-turn counter option (16-bit)
- Built-in self-diagnostics

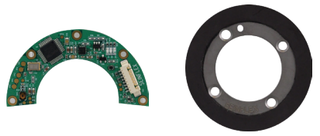
Batteryless Type



Features

- D23(Master Track 32 / Nonius Track 30 Poles) magnet for Encoder
- D30(Master Track 64 / Nonius Track 62 Poles) magnet for Encoder
- BiSS-C / SSI Interface
- Resolution up to 18 / 19-bit
- Multi-turn counter option(16-bit) without battery
- Store last multi-turn counter in MCU

Pseudo Code Type



Features

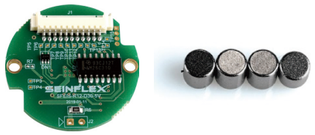
- High-Performance Absolute Encoder
- Proprietary Algorithm
- BiSS-C Interface
- Resolution up to 19-bit available
- Fast response speed and excellent repeatability
- High Accuracy

Radial Type

Features

- Master Track 128 / Nonius Track 126 Poles magnet for Encoder
- Absolute rotary scales
- Two-track magnetization

On Axis Type



Features

- Incremental Encoder / Resolution up to 12-bit
- Supporting presentable zero position
- 5V power supply
- High Speed operation to 30,000RPM
- D20(Single Ended ABZ Interface)
- D30(Differential ABZ / UVW Interface)

Optical Type

Features

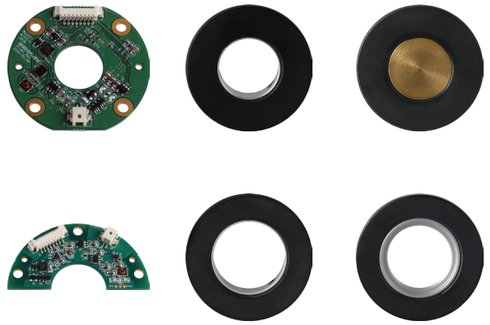
- Optical Linear Encoder / Differential RS422 for A, B, Z
- Resolutions 1μm (fixed)

Absolute Rotary Encoder **Axial Type**

Battery Type (D30/D34/D44)

Features

- Master Track 64 / Nonius Track 62 Poles magnet for Encoder
- BiSS-C / SSI Interface
- Resolution up to 19-bit
- Multi-turn counter option (16-bit)
- Built-in self-diagnostics



Benefits

- True Absolute System
- Easy mounting
- Excellent resistance to vibration, shock, dirt and dust
- Customizable CodeWheel
- Different shaft diameters available

Specification

1. PCB Specification

Classification	Specification
Sensing Method	Magnetic Encoder
Main Supply Voltage	5V ± 7%
Battery Supply Voltage	3.6V (3 ~ 5.5V)
Communication Interface	BiSS-C / SSI
Air Gap	0.3 ~ 0.5mm (recommendation 0.4mm)
Resolution (bit)	Single-turn: MAX. 19-bit / Multi-turn: MAX. 16-bit
Operation Temperature	-10°C ~ +85°C

2. Pin Map

<Table 1> Connector : 0532610871 (Molex) / 510210800 (Molex)

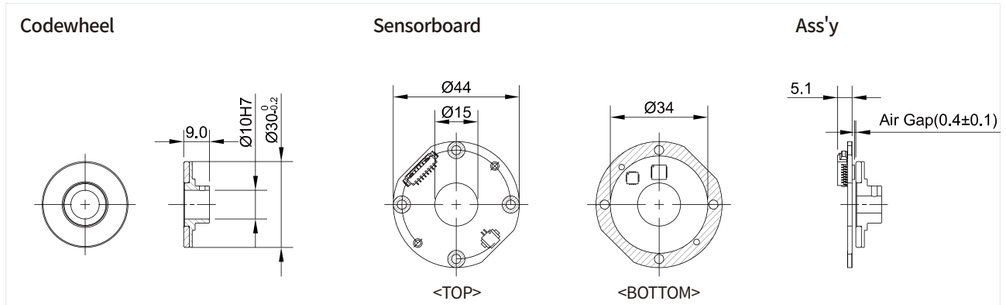
Number	Designation	Function
1	VDD	Power Supply Voltage(5V)
2	SLO+	Data +differential signal from Encoder to Driver
3	SLO-	Data -differential signal from Encoder to Driver
4	MA+	Clock +differential signal from Driver to Encoder
5	MA-	Clock -differential signal from Driver to Encoder
6	GND	Ground
7	PVL_nWRN_OUT	Multi-turn Battery Warning (Active LOW)
8	PVL_PRE_IN	Multi-turn Error (Active LOW)

<Table 2> Connector : 0532610271 (Molex) / 510210200 (Molex)

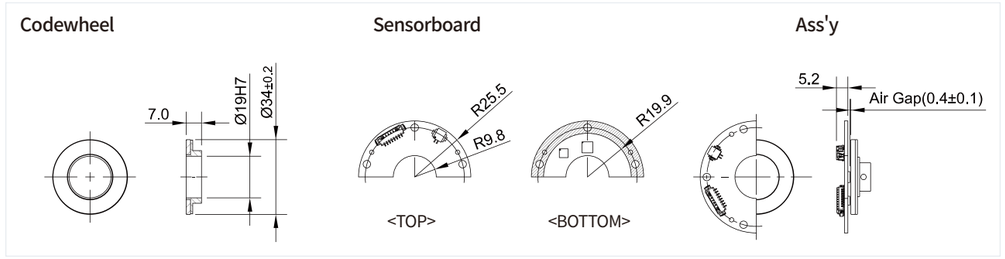
Number	Designation	Function
1	V_Battery	Battery Supply Voltage (3.6V)
8	GND	Battery Ground

Dimensions

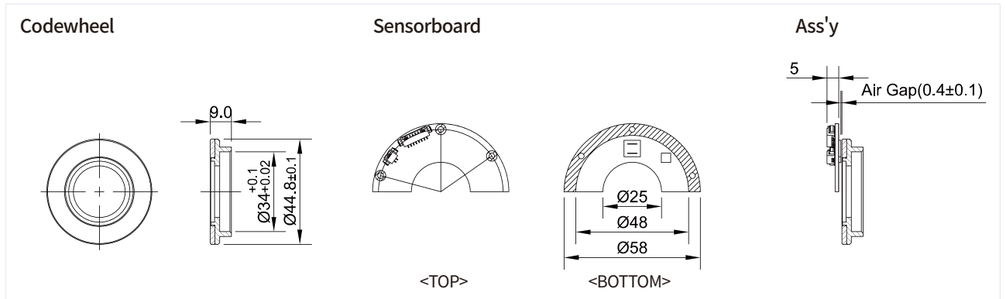
D30



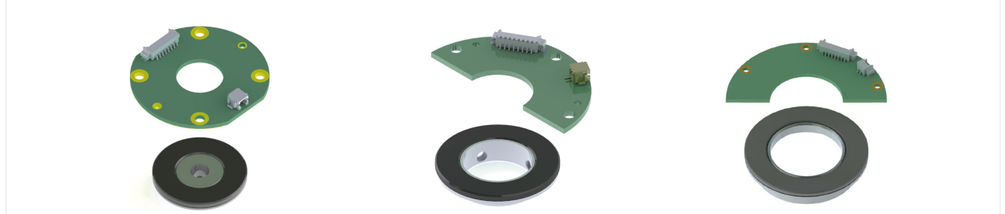
D34



D44



3D Modeling

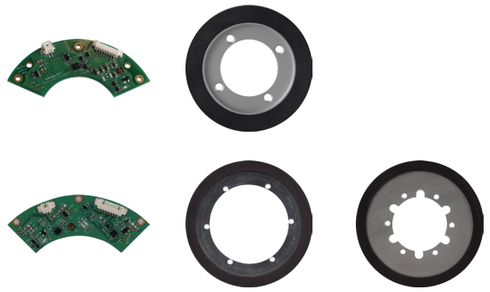


Absolute Rotary Encoder **Axial Type**

Battery Type (D56/D64/D84)

Features

- Master Track 64 / Nonius Track 62 Poles magnet for Encoder
- BiSS-C / SSI Interface
- Resolution up to 20-bit
- Multi-turn counter option (16-bit)
- Multi-turn counter option (16-bit)
- Built-in self-diagnostics



Benefits

- True Absolute System
- Easy mounting
- Excellent resistance to vibration, shock, dirt and dust
- Customizable CodeWheel
- Different shaft diameters available

Specification

1. PCB Specification

Classification	Specification
Sensing Method	Magnetic Encoder
Main Supply Voltage	5V ± 7%
Battery Supply Voltage	3.6V (3 ~ 5.5V)
Communication Interface	BiSS-C / SSI
Air Gap	0.3 ~ 0.5mm (recommendation 0.4mm)
Resolution (bit)	Single-turn: MAX. 20-bit / Multi-turn: MAX. 16-bit
Operation Temperature	-10°C ~ +85°C

2. Pin Map

<Table 1> Connector : 0532610871 (Molex) / 510210800 (Molex)

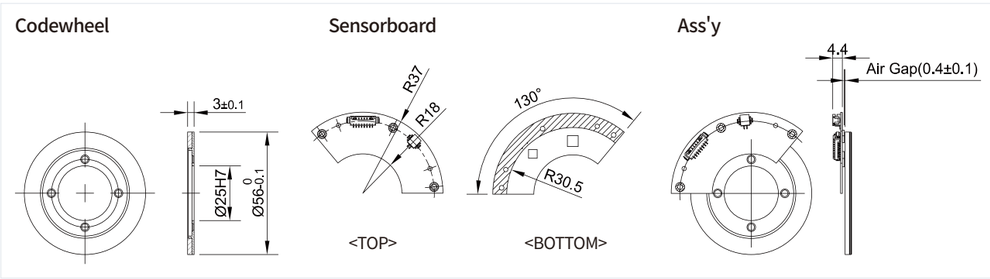
Number	Designation	Function
1	VDD	Power Supply Voltage(5V)
2	SLO+	Data +differential signal from Encoder to Driver
3	SLO-	Data -differential signal from Encoder to Driver
4	MA+	Clock +differential signal from Driver to Encoder
5	MA-	Clock -differential signal from Driver to Encoder
6	GND	Ground
7	PVL_nWRN_OUT	Multi-turn Battery Warning (Active LOW)
8	PVL_PRE_IN	Multi-turn Error (Active LOW)

<Table 2> Connector : 0532610271 (Molex) / 510210200 (Molex)

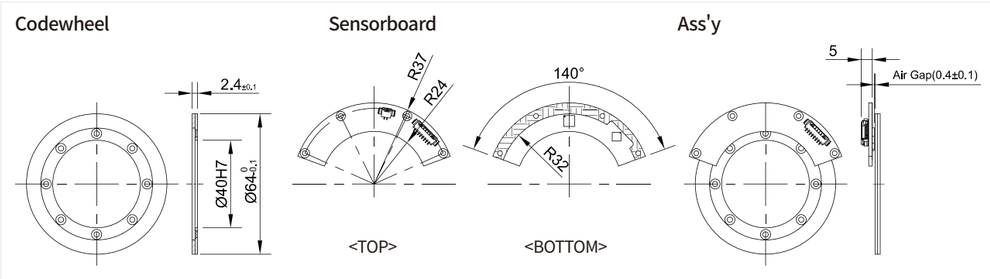
Number	Designation	Function
1	V_Battery	Battery Supply Voltage (3.6V)
8	GND	Battery Ground

Dimensions

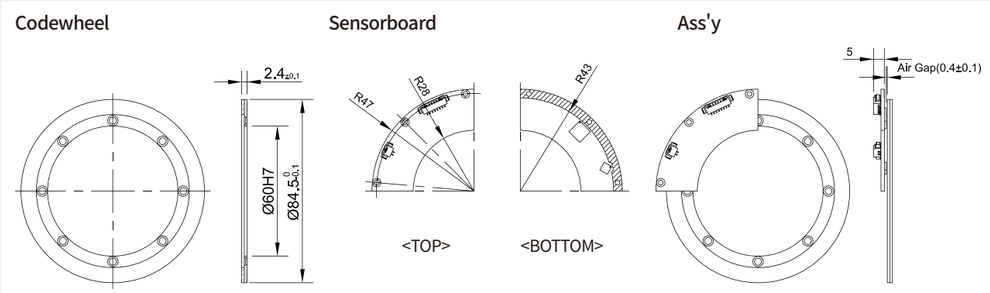
D56



D64



D84



3D Modeling

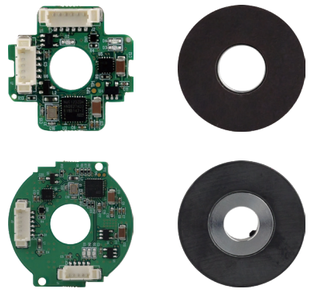
D56 D64 D84

Absolute Rotary Encoder **Axial Type**

Batteryless Type (D23/D30)

Features

- D23(Master Track 32 / Nonius Track 30 Poles) magnet for Encoder
- D30(Master Track 64 / Nonius Track 62 Poles) magnet for Encoder
- BiSS-C / SSI Interface
- Resolution up to 18 / 19-bit
- Multi-turn counter option(16-bit) without battery
- Store last multi-turn counter in MCU



Benefits

- True Absolute System
- Easy mounting
- Excellent resistance to vibration, shock, dirt and dust
- Customizable CodeWheel
- Different shaft diameters available

Specification

1. PCB Specification

Classification	Specification	
Sensing Method	Magnetic Encoder	
Main Supply Voltage	5V ± 7%	
Communication Interface	BiSS-C / SSI	
Air Gap	0.3~0.5mm (recommendation 0.4mm)	
Resolution (bit)	D23	Single-turn: MAX. 18-bit / Multi-turn: MAX. 16-bit
	D30	Single-turn: MAX. 19-bit / Multi-turn: MAX. 16-bit
Operation Temperature	-10°C ~ +85°C	

2. Pin Map

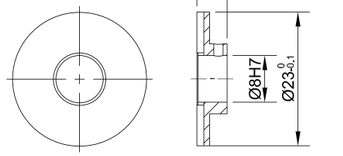
<Table 1> Connector : 0533260671 (Molex)

Number	Designation	Function
1	VDD	Power Supply Voltage(5V)
2	GND	Ground
3	MA+	Clock +differential signal from Driver to Encoder
4	MA-	Clock -differential signal from Driver to Encoder
5	SLO+	Data +differential signal from Encoder to Driver
6	SLO-	Data -differential signal from Encoder to Driver

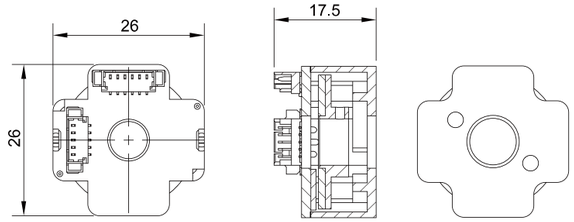
Dimensions

D23

Codewheel

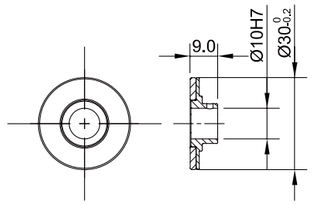


Ass'y

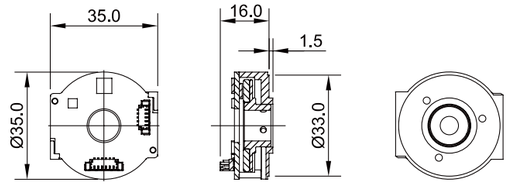


D30

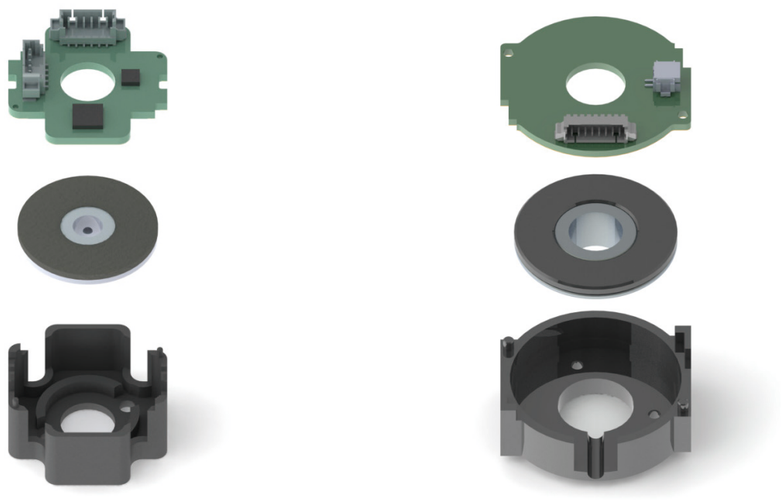
Codewheel



Ass'y



3D Modeling



D23 D30

Absolute Rotary Encoder **Axial Type**

Pseudo Code Type (D39/D49)

Features

- High-Performance Absolute Encoder
- Proprietary Algorithm
- BiSS-C Interface
- Resolution up to 19-bit available
- Fast response speed and excellent repeatability
- High Accuracy

Benefits

- True Absolute System
- Easy mounting
- Excellent resistance to vibration, shock, dirt and dust
- Customizable CodeWheel
- Different shaft diameters available

Specification

1. PCB Specification

Classification	Specification
Sensing Method	Magnetic Encoder
Main Supply Voltage	5V ± 7%
Communication Interface	BiSS-C
Air Gap	0.3~0.5mm (recommendation 0.4mm)
ESD protection	VCP, HCP: 2kV
Encoder accuracy	± 0.2°
Resolution (bit)	Single-turn: MAX. 19-bit / Multi-turn: MAX. 16-bit
Operation Temperature	-30°C ~ +85°C

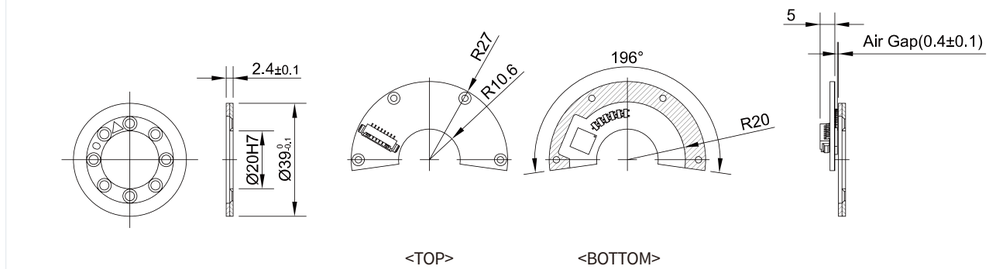
2. Pin Map

<Table 1> Connector : Amphenol ICC - 10114830-11108LF

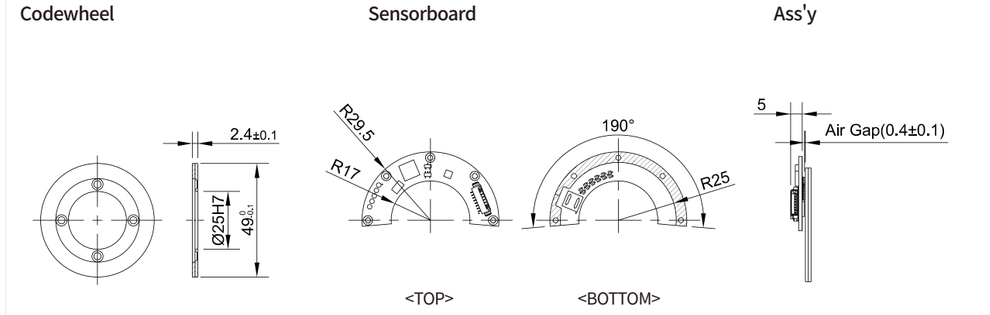
Number	Designation	Function
1	VDD	Power Supply Voltage(5V)
2	GND	Ground
3	RX	Uart communication interface RX
4	TX	Uart communication interface TX
5	MA+	Clock +differential signal from Driver to Encoder
6	MA-	Clock -differential signal from Driver to Encoder
7	SLO+	Data +differential signal from Encoder to Driver
8	SLO-	Data -differential signal from Encoder to Driver

Dimensions

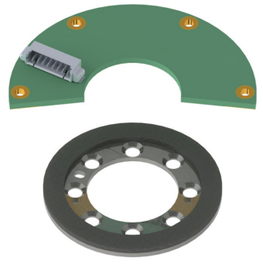
D39



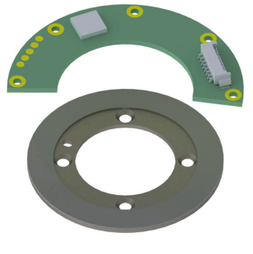
D49



3D Modeling



D39



D49

Absolute Rotary Encoder **Axial Type**

Pseudo Code Type (D53/D64)

Features

- High-Performance Absolute Encoder
- Proprietary Algorithm
- BiSS-C Interface
- Resolution up to 20-bit available
- Fast response speed and excellent repeatability
- High Accuracy

Benefits

- True Absolute System
- Easy mounting
- Excellent resistance to vibration, shock, dirt and dust
- Customizable CodeWheel
- Different shaft diameters available

Specification

1. PCB Specification

Classification	Specification
Sensing Method	Magnetic Encoder
Main Supply Voltage	5V ± 7%
Communication Interface	BiSS-C
Air Gap	0.3~0.5mm (recommendation 0.4mm)
ESD protection	VCP, HCP: 2kV
Encoder accuracy	± 0.2°
Resolution (bit)	Single-turn: MAX. 20-bit / Multi-turn: MAX. 16-bit
Operation Temperature	-30°C ~ +85°C

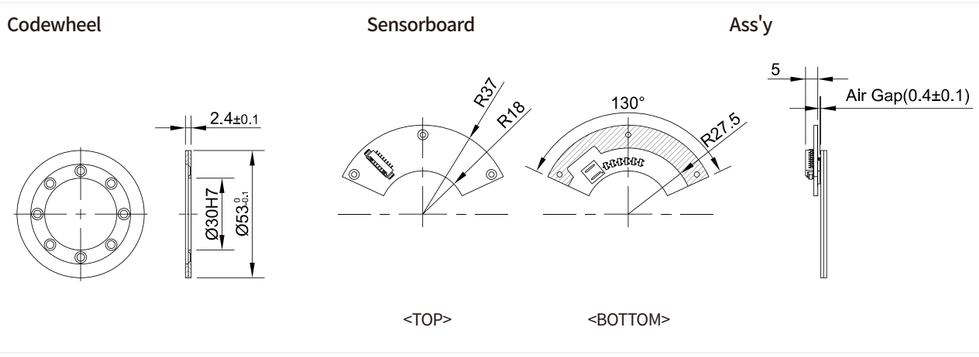
2. Pin Map

<Table 1> Connector : Amphenol ICC - 10114830-11108LF

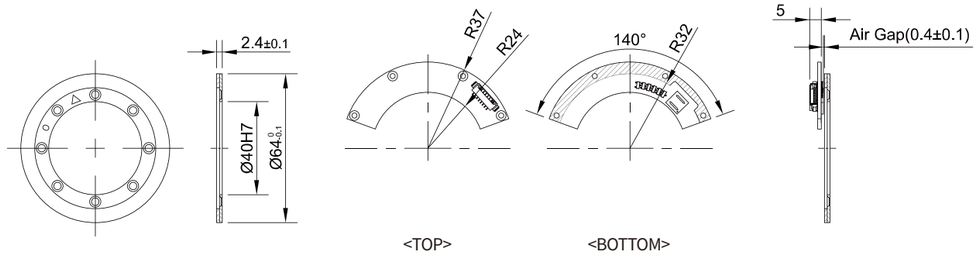
Number	Designation	Function
1	VDD	Power Supply Voltage(5V)
2	GND	Ground
3	RX	Uart communication interface RX
4	TX	Uart communication interface TX
5	MA+	Clock +differential signal from Driver to Encoder
6	MA-	Clock -differential signal from Driver to Encoder
7	SLO+	Data +differential signal from Encoder to Driver
8	SLO-	Data -differential signal from Encoder to Driver

Dimensions

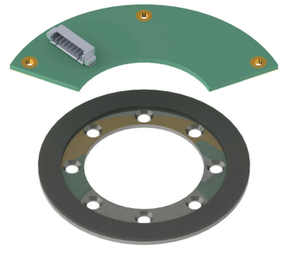
D53



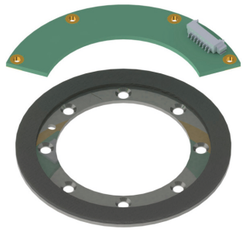
D64



3D Modeling



D53



D64

Absolute Rotary Encoder **Radial Type**

D59

Features

- Master Track 128 / Nonius Track 126 Poles magnet for Encoder
- Absolute rotary scales
- Two-track magnetization

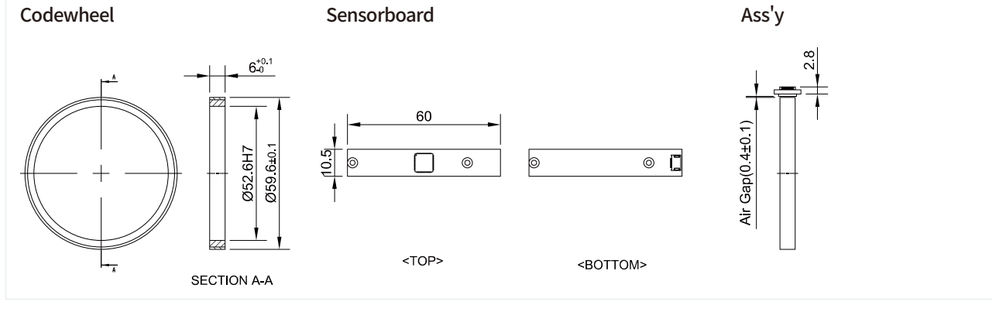
Benefits

- Excellent resistance to vibration, shock, dirt and dust
- Customizable CodeWheel
- Different shaft diameters available

Specification

Classification	Specification
Sensing Method	Magnet sensing
IC for Sensing	MU150
Magnet pole	Master Track - 64Pole Pair Nonius Track - 63Pole Pair
Pole Pitch	1.5mm
Magnet Outline	∅59.6 (mm)
Inner Diameter	∅52.6 H7 (mm)
Operation Temperature	-10°C ~ +85°C
Magnet Material	Rubber
Flange Material	SUS304

Dimensions



Incremental Rotary Encoder **Radial Type**

D48

Features

- 76 Poles magnet for Encoder
- Incremental rotary scales with reference
- ABZ / UVW Interface
- Resolution up to 14-bit

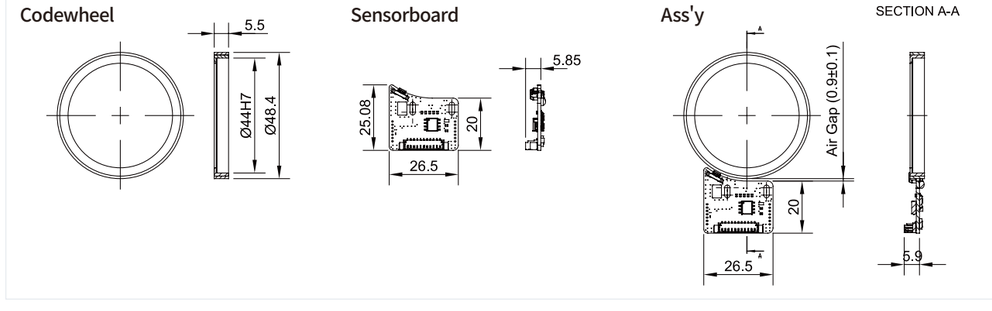
Benefits

- Excellent resistance to vibration, shock, dirt and dust
- Customizable CodeWheel
- Different shaft diameters available

Specification

Classification	Specification
Resolution	Min. Over 14-bit(Default, 76,000 pulse)
Sensing Method	Magnet
Supply Voltage	5V ± 7%
Supply Current	Max. 210mA
ESD Protection	IEC 61000-4-2, Indirect radiation Level 1 (±2V)
Communication	Differential I/F for ABZ, UVW
I/F for Monitoring	I2C
Magnet Pole	76 poles, 2mm pole pitch
Temperature Operating	-20°C to +100°C (IEC 60068-2-1, IEC 60068-2-2)
Temperature Storage	-30°C to +125°C (IEC 60068-2-1, IEC 60068-2-2)
Humidity	RH 20% ~ RH 90%(non-condensing)

Dimensions



Incremental Rotary Encoder **On Axis Type**

D20/D30

Features

- Incremental Encoder
- Resolution up to 12-bit
- Supporting presentable zero position
- 5V power supply
- High Speed operation to 30,000RPM
- D20(Single Ended ABZ Interface)
- D20D/D30(Differential ABZ / UVW Interface)

Benefits

- Simple Installation and Setup
- Non-contact, No-friction design
- Minimizing Cost
- Customizable CodeWheel

Specification

Classification		Specification
Sensor Board	Resolution	Magnetic type 12-bit Incremental Encoder
	Speed	Able to sense maximum 30,000RPM
	Size	∅20, ∅30
	I/O	D20 : ABZ(Single Ended) / UVW(Single Ended), ABZ(Differencial)
		D30 : UVW(Single Ended), ABZ(Differential)
	Power	5V
	Zero set	Supporting presetable zero position
	Humidity	Moisture sensitivity level 3
	Operating Condition	-40℃ ~ +85℃
Magnet	Material	Diametrically polarized Neodymium Magnet
	Size	∅4mm x 4mm
Note		Supporting 20Mbps & 2kV ESD for ABZ signal Supporting a connector for I2C (for Engineer)

D20 Pin Map

#Pin	Name	Description
1	Zero	Zeroing input
2	SDA	TWI serial interface data line
3	SCL	TWI serial interface Clock line
4	Ri	Incremental output Z
5	B	Incremental output B
6	A	Incremental output A
7	V_in	Power supply input 5 V
8	GND	Ground

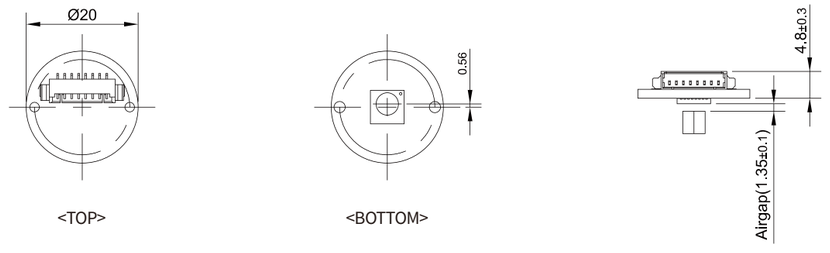
D20D/D30 Pin Map

#Pin	Name	Description
1	GND	Ground
2	VDD 5V	Power supply input 5 V
3	Z-	Incremental output Z-
4	Z+	Incremental output Z+
5	B+	Incremental output B+
6	B-	Incremental output B-
7	A-	Incremental output A-
8	A+	Incremental output A+
9	U	Commutation output U
10	V	Commutation output V
11	W	Commutation output W

Dimensions

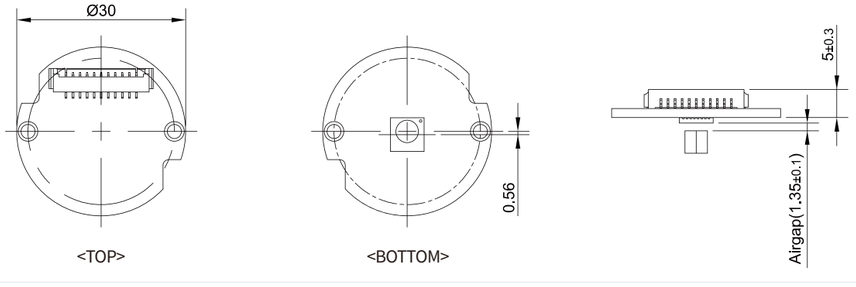
D20

Ass'y



D30

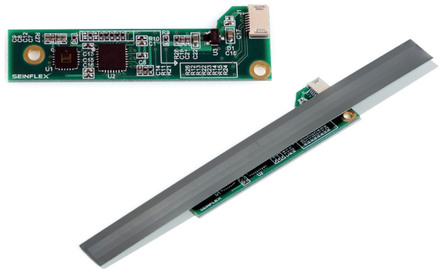
Ass'y



Linear Encoder **Optical Type**

Features

- Optical Linear Encoder
- Differential RS422 for A, B, Z
- Resolutions 1μm (fixed)



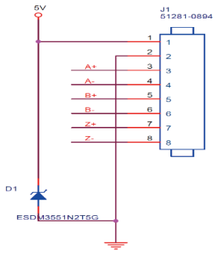
Benefits

- Compact-Size
- Extended temperature range
- Pick & Place Advantage
- Minimizing Cost

Specification

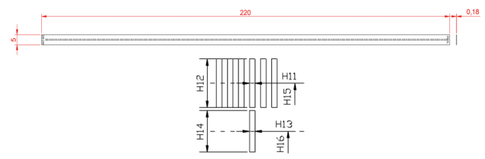
Classification	Specification
Sensing Method	Optical Encoder
Main Supply Voltage	5V ± 7%
Signal	ABZ (Differential)
Resolution	1μm
PCB size	49 x 15 x 2.5 (mm)
PCB hole	∅2.2 x 2 (EA)
Air Gap	1mm to 3mm (recommenation 1.5mm)

1. Pin Map



#Pin	Designation	Function
1	VCC	Power Supply Voltage(SV)
2	GND	System ground
3	A+	A+ signal
4	A-	A- signal
5	B+	B+ signal
6	B-	B- signal
7	Z+	Z+ signal
8	Z-	Z- signal

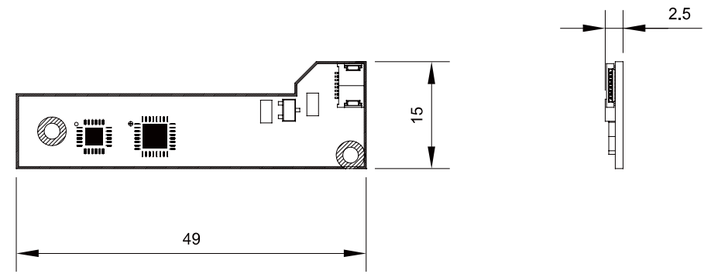
2. Encoder Scale Specifications



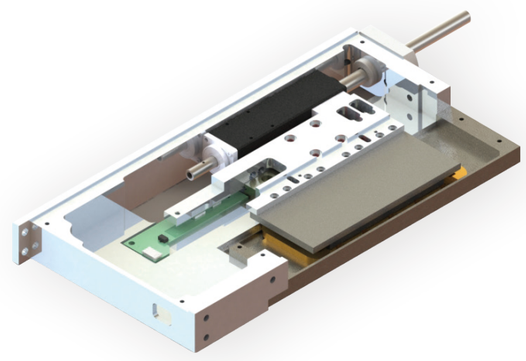
Item	Parameter	μm
H11	AB-Track Width	128
H12	AB-Track Height	525
H13	PRC/ Index-Track Width	128
H14	PRC/ Index-Track Height	525
H15	Y-coord_AB-Track	575
H16	Y-coord.Index-Track	25

Dimensions

Sensorboard



3D Modeling



Company **Introduction**

SEINFLEX Co., Ltd. is a global magnet company that leads the world magnet market flexible magnet application technology for any situation in the era of 4th industrial revolution.

 # About the Company

Starting as 'KSM' in 1998, the company was renamed the current name, SEINFLEX Co., Ltd. in 2006. It is leading the Korean magnet market through the essential magnet application technology in the era of the 4th industrial revolution.

In 1998 when no one dared to enter the domestic magnet raw material market, SEINFLEX challenged itself into the rare earth material magnet business. It expanded into RF-based business in 2004, isolator circulator in 2008, and linear motor in 2004. The company localized the precise sensor encoder, the core part of robot joint, for the first time in Korea in 2007, and developed VCM jointly with a leading overseas company in 2018, successfully localizing the core national technology. In 2019, SEINFLEX has been producing the SMD-type isolator developed by the company, which is used for 5G telecommunication base stations.

SEINFLEX is also expanding its business all around the world through strategic partnership and it opened its branch in China 2012. SEINFLEX pursues perfect products and best quality by building smart factories and operating a precise processing management system.

Customized service is its own differentiated competitiveness. SEINFLEX satisfies its customers 100% by customizing products into the specifications they want. This is how it has been gaining huge attention and positive response from the global market. Established in 2008, the technology research institute has talented, competent researchers who are accumulating independent technology know-hows by demonstrating flexibility in the fast-changing market.

SEINFLEX Co., Ltd. has achieved growth over the last 20 years and will lead the global magnet market in the next 20 years with its world-class technology.

Head Office & R&D Center

- Location : Anyang-si, Gyeonggi-do, Republic of Korea
- Number of employees : 23
- Business Area : Magnet, Magnet application (Magnet, Encoder, Linear motor, Isolator / Circulator etc.)
- Annual Turnover : 9 Million

Factory in China

- Location : Suzhou, China
- Number of employees : 10
- Business Area : Magnet, Motor assembly
- Annual Turnover : 2.2 Million

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ILJIN LS메카피온 LG Innotek DOOSAN neuromeka

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