



Sensors for Motion Control and Positioning

MEYLE ENCODER

Selection Guide Encoder

Meyer Industrie-Electronic GmbH-MEYLE

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Meyer Industrie-Electronic GmbH-MEYLE

Companyprofile

MEYLE - Meyer Industrie Electronic GmbH is an ISO 9001:2015 certified engineering and manufacturing company of a wide range of components and systems for the automation and process control Industries, based in Lengerich, Germany and represented worldwide.

Established in 1965, MEYLE Germany is a family owned company group, specialized in the development and production of optoelectric and magnetic encoder, sensors, safety switches and automation systems.



MEYLE Encoder Events:

In 2006, the first programmable output incremental encoder was published In 2011,

high protection grade magnetic encoder latched

In 2012, linear displacement sensor was published

In 2013, EIN series of new industrial incremental encoder was published

In 2019, IMG Drehimpulsgeber was acquired

Company business

Comprehensive range of incremental, absolute and bus encoder as solid shafts and hollow shaft versions.

- heavy duty encoder
- draw wire sensors
- linear encoder and speed monitors
- encoder overspeed switch combinations
- redundant encoder
- encoder with large hollow shafts
- robust encoder for conveyors and steel works.

MEYLE expanded the encoder program range that has been built up for over 20 years with new versions and over 40 years of know-how from IMG-Drehimpulsgeber which was integrated into Meyle group in 2021.



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Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Incremental Encoder



	EINS24	EINB24	EINS30	EINS40	EINH40	EINB40
Outside diameter	24	24	28	38	38	38
Page number	25	27	29	31	33	35
Output signal	PUSH-PULL	PUSH-PULL	RS422, PUSH-PULL	RS422, PUSH-PULL	RS422, PUSH-PULL	RS422, PUSH-PULL
Supply voltage	10-30VDC	10-30VDC	5VDC, 10-30VDC	5VDC, 10-30VDC	5VDC, 10-30VDC	5VDC, 10-30VDC
Shaft/aperture	4/5/6	4/5/6	5/6/8	6/8	6/8	6/8
Max. speed	6000rpm	6000rpm	8000rpm	10000rpm	10000rpm	10000rpm
Max. resolution	2500	2500	3600	5000	5000	5000
Max. load Axial/radial	20/20	20/200	20/40	30/60	30/60	30/60
Max. frequency	150kHz	150kHz	150kHz	150kHz	150kHz	150kHz
Temperature	-25°C to +85°C	-25°C to +85°C	-25°C to +85°C	-25°C to +85°C	-25°C to +85°C	-25°C to +85°C
Protection class	IP65	IP65	IP65	IP65/IP67	IP65/IP67	IP65/IP67



	EINH90	EINH145	FINS58	FINH58	MINS58	MINH58
Outside diameter	90	145	58	58	58	58
Page number	49	51	53	55	57	59
Output signal	RS422, PUSH-PULL	RS422, PUSH-PULL	RS422(HTL/TTL) PUSH-PULL, sine	RS422(HTL/TTL) PUSH-PULL, sine	PUSH-PULL (HTL/TTL)	PUSH-PULL (HTL/TTL)
Supply voltage	5VDC, 10-30VDC	5VDC, 10-30VDC	5VDC, 10-30VDC	5VDC, 10-30VDC	5-30VDC	5-30VDC
Shaft/aperture	20/25/30/32	48/55/65/72	6/8/10/12	6/8/10/12/14	6/10	10/12/14/15
Max. speed	5000rpm	800rpm	15000rpm	15000rpm	6000rpm	6000rpm
Max. resolution	6000	2500	6000/80000	6000/80000	65536	65536
Max. load Axial/radial	100/200	200/200	50/100	50/100	40/80	40/80
Max. frequency	100kHz	100kHz	300 kHz	300 kHz	900 kHz	900 kHz
Temperature	-20°C to +85°C	-10°C to +70°C	-25°C to +85°C	-25°C to +85°C	-20°C to +85°C	-20°C to +85°C
Protection class	IP65	IP54	IP65/IP67	IP65/IP67	IP65	IP65

* Cable length is 1 meter by default for extension please contact us

Intro. and Quick Selection

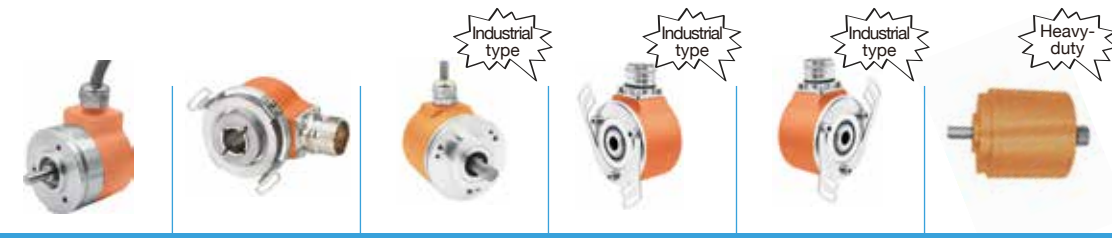
Incremental encoder

Absolute encoder

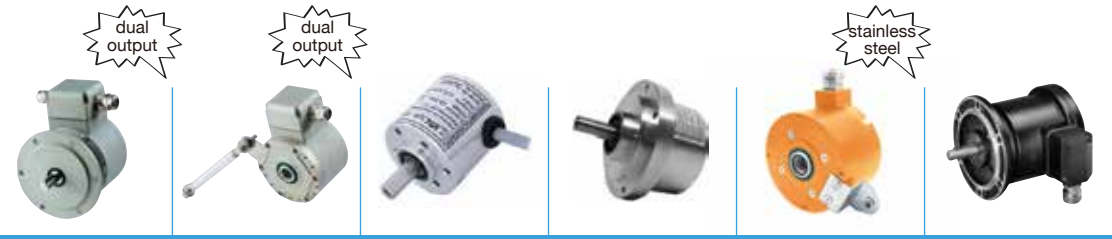
special position device

Accessories and Kits

Incremental Encoder



	EINS50	EINH50	EINS58	EINH58	EINB58	EINS90
Outside diameter	50	50	58	58	58	90
Page number	37	39	41	43	45	47
Output signal	RS422, PUSH-PULL	RS422, PUSH-PULL	RS422, PUSH-PULL	RS422, PUSH-PULL	RS422, PUSH-PULL	RS422, PUSH-PULL
Supply voltage	5VDC, 10-30VDC	5VDC, 10-30VDC	5VDC, 10-30VDC	5VDC, 10-30VDC	5VDC, 10-30VDC	5VDC, 10-30VDC
Shaft/aperture	6/8/10	6/8/10	6/8/10/12	6/8/10/12/15	6/8/10/12/15	12/16
Max. speed	10000rpm	10000rpm	12000rpm	12000rpm	12000rpm	5000rpm
Max. resolution	10000	10000	10000	10000	10000	6000
Max. load Axial/radial	40/80	40/80	50/100	60/80	50/100	100/200
Max. frequency	150kHz	150kHz	150kHz	150kHz	150kHz	100kHz
Temperature	-25°C to +85°C	-25°C to +85°C	-25°C to +85°C	-25°C to +85°C	-25°C to +85°C	-20°C to +85°C
Protection class	IP65/IP67	IP65/IP67	IP65/IP67	IP65/IP67	IP65/IP67	IP66



	MINS100	MINH100	IMG30	IMG60 / 65	IMG100	IMG115
Outside diameter	100	100				
Page number	61	63	65	67	69	71
Output signal	RS422(HTL/TTL) PUSH-PULL	RS422(HTL/TTL) PUSH-PULL	PUSH-PULL	sine, PUSH-PULL	RS422, PUSH-PULL	PUSH-PULL (HTL/TTL)
Supply voltage	5VDC, 10-30VDC	5VDC, 10-30VDC	10-30VDC	5VDC, 10-30VDC	5VDC, 10-30VDC	5-30VDC
Shaft/aperture	11	12/16			12/16/17	
Max. speed	6000rpm	6000rpm	8000rpm	3000rpm	6000rpm	10000rpm
Max. resolution	5000	5000	1435	1000	10000	6000
Max. load Axial/radial	350/400	400/500	5/10	20/30	500/1000	250/350
Max. frequency	300 kHz	300 kHz	200 kHz	200 kHz	200 kHz	100 kHz
Temperature	-20°C to +85°C	-20°C to +85°C	0°C to +80°C -30°C to +80°C	0°C to +80°C	-20°C to +80°C	-25°C to +100°C
Protection class	IP66	IP66	IP64	IP67(60) IP43(65)	IP67	IP56

* Cable length is 1 meter by default for extension please contact us

Intro. and Quick Selection

Incremental encoder

Absolute encoder

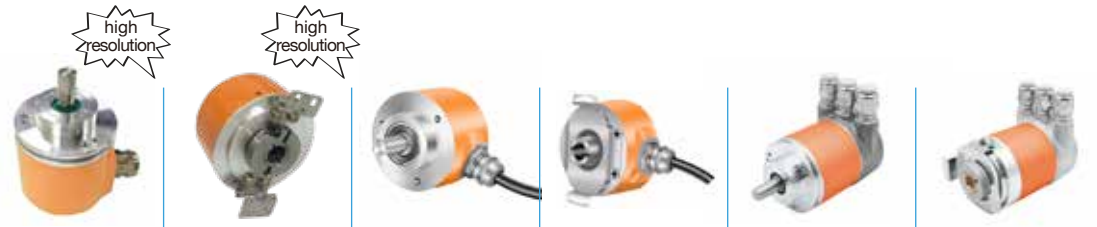
special position device

Accessories and Kits

Absolute encoder



	DAXS37	DAXB37	DAXS58	DAXB58	EAXS40	EAXB40
Outside diameter	37	37	58	58	40	40
Page number	73	75	77	79	81	83
Output signal	SSI/CANopen	SSI/CANopen	SSI/CANopen	SSI/CANopen	SSI/CANopen	SSI/CANopen
Supply voltage	5VDC,10-30VDC	5VDC,10-30VDC	5VDC,10-30VDC	5VDC,10-30VDC	5VDC,10-30VDC	5VDC,10-30VDC
Shaft/aperture	6	6	6/8	10/12/14	6	6
Max. speed	8000rpm	8000rpm	8000rpm	8000rpm	8000rpm	8000rpm
Max. resolution	16 bit(ST),14 bit(MT)	16 bit(ST),14 bit(MT)	16 bit(ST),14 bit(MT)	16 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)
Max. load Axial/radial	20/40	20/40	50/100	50/100	50/100	50/100
Max. frequency	-	-	-	-	-	-
Temperature	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C
Protection class	IP65/IP67	IP65/IP67	IP65/IP67	IP65/IP67	IP65	IP65



	EAXS58	EAXB58	EAXS58	EAXB58	EAXS58	EAXB58
Outside diameter	58	58	58	58	58	58
Page number	85	87	89	91	93	95
Output signal	SSI	SSI	Modbus/Analog	Modbus/Analog	CANopen/Devicenet	CANopen/Devicenet
Supply voltage	5VDC,10-30VDC	5VDC,10-30VDC	10-30VDC	10-30VDC	10-30VDC	10-30VDC
Shaft/aperture	6/10	6/10	6/10	6/10	6/10	6/10
Max. speed	12000rpm	12000rpm	12000rpm	12000rpm	12000rpm	12000rpm
Max. resolution	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)
Max. load Axial/radial	50/100	50/100	50/100	50/100	50/100	50/100
Max. frequency	-	-	-	-	-	-
Temperature	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C
Protection class	IP66	IP66	IP66	IP66	IP66	IP66

* Cable length is 1 meter by default for extension please contact us

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits



	EAXS58	EAXB58	EAXS58	EAXB58	EAXS58	EAXB58
Outside diameter	58	58	58	58	58	58
Page number	97	99	101	103	105	107
Output signal	ProfibusDP	ProfibusDP	Ethernet	Ethernet	Parallel	Parallel
Supply voltage	10-30VDC	10-30VDC	10-30VDC	10-30VDC	10-30VDC	10-30VDC
Shaft/aperture	6/10	6/10	6/10	6/10	6/10	6/10
Max. speed	12000rpm	12000rpm	12000rpm	12000rpm	12000rpm	12000rpm
Max. resolution	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)	21 bit(ST),14 bit(MT)
Max. load Axial/radial	50/100	50/100	50/100	50/100	50/100	50/100
Max. frequency	-	-	-	-	-	-
Temperature	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C
Protection class	IP66	IP66	IP66	IP66	IP66	IP66



	EAXS90	EAXH90	EAXS90	EAXH90
Outside diameter	90	90	90	90
Page number	109	111	113	115
Output signal	SSI/CANopen	SSI/CANopen	ProfibusDP	ProfibusDP
Supply voltage	10-30VDC	10-30VDC	10-30VDC	10-30VDC
Shaft/aperture	11/12	20/25/30	11/12	20/25/30
Max. speed	6000rpm	6000rpm	6000rpm	6000rpm
Max. resolution	13 bit(ST),16 bit(MT)	13 bit(ST),16 bit(MT)	13 bit(ST),16 bit(MT)	13 bit(ST),16 bit(MT)
Max. load Axial/radial	100/200	100/200	100/200	100/200
Max. frequency	-	-	-	-
Temperature	-20°C to +90°C	-20°C to +90°C	-10°C to +80°C	-10°C to +80°C
Protection class	IP65/IP67	IP65/IP67	IP65/IP67	IP65/IP67

* Cable length is 1 meter by default for extension please contact us

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Overspeed switch



	6KB4110	FINS130	AOSH90
Outside diameter	120	115	90
Page number	117	119	121
Output signal	2 relay	PUSH-PULL/RS422+relay	PUSH-PULL/RS422+relay
Supply voltage	No power	10-30VDC	10-30VDC
Shaft/aperture	Pin connector	11/12	12/16/20/25
Max. speed	6000rpm	3600rpm	3600rpm
Max. resolution	-	80000	4000
Max. load Axial/radial	-	-	-
Max. frequency	-	-	-
Temperature	-25°C to +75°C	-20°C to +85°C	-20°C to +85°C
Protection class	IP65	IP67	IP67

Linear encoder



	EMLXX	EC/EDXX
Page number	123	125
Output signal	PUSH-PULL, RS422	Incremental: PUSH-PULL, RS422 Absolute: 4-20mA, SSI, MODbus, DP, CANopen, Profinet
Supply voltage	5VDC, 10-30VDC	5VDC, 10-30VDC
Range	50 m	20 m
Resolution	1 µm	The selected encoder
Temperature	-20°C to +85°C	-30°C to +75°C (EC) -40°C to +80°C (ED)
Protection class	IP68	IP65 (EC) IP50 (ED)

* Cable length is 1 meter by default for extension please contact us



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

GENERAL/OVERVIEW
Introduction

Description

The optical rotary encoder is an angular position sensor. It is made source of light, light emitting diode (or LED), a receptor and a disk rotating in between. The optical disk with dark and clear radial lines is mounted on the rotating shaft of the encoder. Most of the disks used by Meyle are Polyfass (Mylar-Mica composite) and are unbreakable (see photo). The light from the LED crosses the lines on the disk and creates an analogical signal in the receptor, which is later amplified and could be converted in either square-wave or sine-cosine signals. All Meyle encoders use the differential reading, helping to compensate the reduction of the amplitude of the signals due to higher temperature, age, wearing of the bearings, etc.



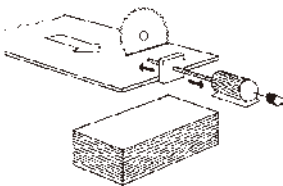
Incremental encoders simply count the number of pulses engraved on the disk and in case of power shut-down, it is necessary to find out the origin at every new start.

Single-turn absolute encoders determine their position at all times using a single code in a given single revolution, even if there is no reference measurement.

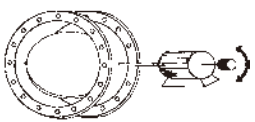
Multi-turn absolute encoders provide in addition a reading of the position within the revolution and is capable of counting the number of turns made.

Applications

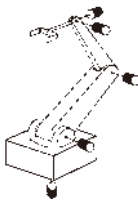
Stop dog positioning



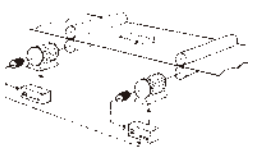
Valve position control



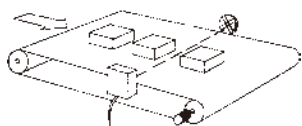
Roboter axis control



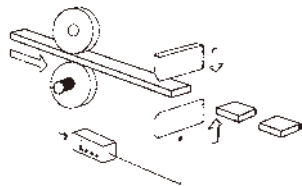
Tensile stress control



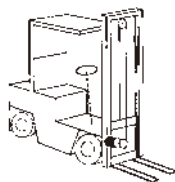
Workpiece length measurement system with opto electric and encoder



Length dimension with measuring wheel



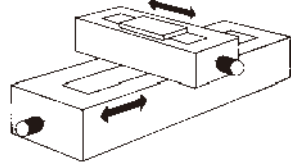
Fork height measuring at fork trucks



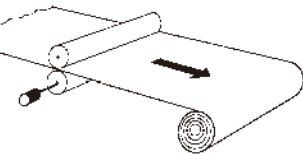
Control of transport vehicles



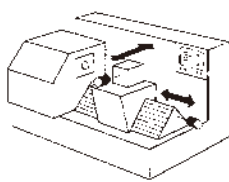
Crosstable positioning



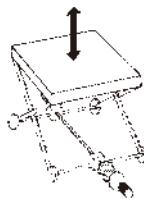
Length measuring of textile or paper rolls



Positioning at CNC-tooling-machines



Adjustment of lift platforms



GENERAL/OVERVIEW
General

Conformity:

All Meyle encoders fully comply with the CE-regulations and are intensively tested in our EMC laboratories. They

conform to CE requirements according to EN 50082-2, EN 50081-2 and EN 55011 class B.

High quality of signals:

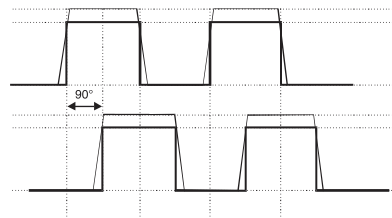
All encoders from Meyle, are equipped with ageing and temperature compensation to ensure a long term and stable signal also after many years of operation.

Ageing compensation:

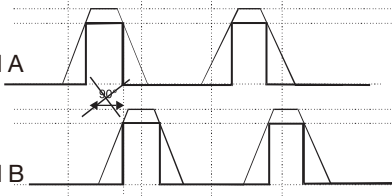
Each LED source will inevitably lose its power over a period of time. As a result, the output signal degrades. The phase shift between channel A and B of 90° becomes

less and less. The direction of rotation may no longer be detected. Properly by the control, a special electronic circuit, which is built in the specific ASIC prevents this effect.

Signals of a new encoder or encoders with ageing compensation:



Signals of an older encoder without ageing compensation:



Benefit: The ageing compensation circuit ensures the same signal, even after many years of operating time. The down time of

machines will be reduced dramatically and the reliability is increased.

Temperature compensation:

This specialised circuit ensures that the quality of the signal will stay on the same high level over the whole working temperature range.

Benefit: The positioning accuracy of a machine will not be affected by temperature changes.

Environmental conditions:

A significant influence on the lifetime of the encoder is set by the environment in which the encoder is operating, e.g.:

- The ambient temperature
- The expected shaft load
- The possible grade of dust/dirt and humidity/liquids

The support design and the use of high quality components makes our encoders suitable for applications in rough conditions. Many references such as from Bosch, Siemens, Bombardier and other customers proof these high requirements.

Temperature:

Definition according to DIN standards 32 878

Working temperature:

Is defined as the environmental temperature, in which the encoder will produce the signals defined in the data sheets.

Operating temperature:

Is defined as the environmental temperature which the encoder can withstand without getting damaged.

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

GENERAL/OVERVIEW
General

Dirt/dust and humidity/water: The IP classification according to EN 60529 describes how the encoder is protected against particles and water. It is described as an abbreviation "IP" followed by two numbers.
The first digit defines the size of the particles. The higher the number the smaller the particles.

Protection against particles
(first digit):

- 0 not protected
- 1 protected against particles 50 mm and larger
- 2 protected against particles 12,5 mm and larger
- 3 protected against particles 2,5 mm and larger
- 4 protected against particles 1,0 mm and larger
- 5 protected against dust
- 6 dust proof

The second digit defines the resistance against water. The higher the number, the higher the water pressure can be. Our encoders have a protection up to IP 67. These two tables summarise the most used IP ratings:

Protection against water
(second digit)

- 0 not protected
- 1 protected against vertically falling drops of water
- 2 protected against falling drops of water up to 15° from vertical
- 3 protected against water sprayed up to 60° from vertical
- 4 protected against water sprayed from all directions, limited ingress permitted
- 5 protected against low pressure jets from all directions, limited ingress permitted
- 6 protected against strong jets of water, e.g. for use on ship decks, limited ingress permitted
- 7 protection against the affects of immersion between 15 cm and 1 m
- 8 protected against long periods of immersion under pressure

Designation of colours
to DIN standard 757

abbreviation	colour
BK	black
BN	brown
RD	red
OG	orange
YE	yellow
GN	green
BU	blue

VT	violet
GY	grey
WH	white
PK	pink
GD	gold
TQ	turquoise
SR	silver

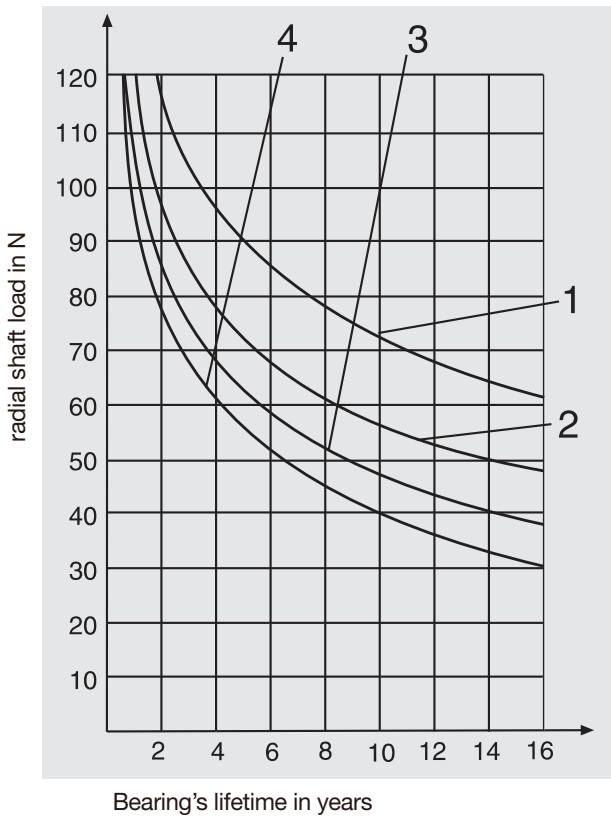
Shaft Load:

Due to misalignment and other mechanical influences from outside, the shaft of the encoder is exposed to a number of different loads. This has a direct impact on the life-time of the ball bearings and also on the electrical signal itself. If there is an overload there will be an early wear and in the worst case it will lead to a failure of the unit and to a destruction of the optical system inside.
For shaft encoders the maximal radial and axial load should not be exceeded. It is highly recommended to use a coupling between the encoder shaft and the drive shaft, see also the accessories and the mounting suggestions.

In the technical data sheets of the encoders, typical values for the radial and axial load at the shaft end are listed. This is based on the lifetime of the ball bearing, the speed, the mechanical load and the temperature.
To easily find the lifetime for the specific application the following diagrams can be used. All of the diagrams are based on the following parameters:
• 60° C environmental temperature
• The axial load is always half the load compared to the radial load

GENERAL/OVERVIEW
General

Type series 58 mm diameter



- 1 n = 3000 min⁻¹
- 2 n = 6000 min⁻¹
- 3 n = 9000 min⁻¹
- 4 n = 12000 min⁻¹

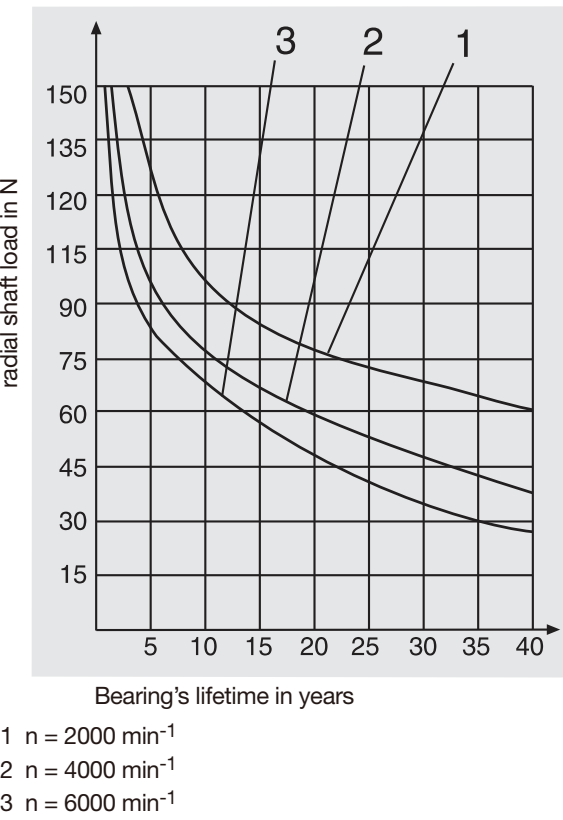
Incremental encoder
Assembly and function:

Meyle encoders operate on an electro-optical scanning principle.
A disk with a radial grating of lines and gaps rotates between a light source (mostly a LED) and a receiver which produces a sine wave signal proportional to the light received.

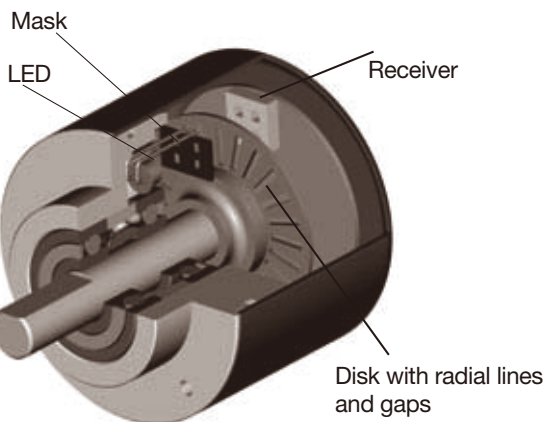
Processing of the signals:

The sine wave signals are processed further in an electronic circuitry, usually a specific ASIC. This is necessary because most controllers controls (like e.g. counters) require digital signals with a certain voltage

Type series 90 mm diameter



- 1 n = 2000 min⁻¹
- 2 n = 4000 min⁻¹
- 3 n = 6000 min⁻¹



level. For that the signals are pre-processed in the encoder. The pre-processed signals are transmitted by the output circuit depending on the application.

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Selecting an incremental encoder:

Number of channels:

When selecting the encoder, following parameters should be considered in addition to the topic mentioned on page 8–10.

Encoders with one output channel

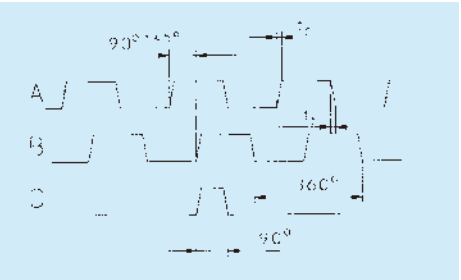
Encoders with one output channel are used where no direction sensing is needed, e.g.

speed control or length measuring.

Encoders with two output channels

Applications, where the direction of a rotation should be sensed, e.g. positioning, require encoders with two channels A and B being shifted 90° out of phase.

By detecting the phase shift, the direction can be located.



- Shaft turning clockwise, top-view of shaft
 - Inverted signals available
 - 0-pulse is linked to AND with channel A and B
- t_r = rise time
 t_f = fall time

Encoders with three output channels

In addition to the two channels A and B there is a zero signal available, that appears once per turn. This can be used e.g. as a

reference signal during the first revolution after power up.

Multiplication of pulses:

The resolution of a two channel encoder can be multiplied by two or four using a special edge detecting.

An encoder with physically 5000 pulses per revolution can generate 20000 pulses per revolution using this technique

Inverted signals:

When used in environments, with a lot of electrical noise and/or if very long cable distances are required, we recommend to use encoders with inverted (complementary)

signals. These signals are always available with output circuits of the RS 422 type and sine wave outputs. Meyle also offers them for push-pull outputs.

Resolution:

Example: An encoder is equipped with a measuring wheel. Every revolution corresponds to a distance of 200 mm (circumference). The accuracy should be 0,1 mm. What is the required resolution (ppr)?

Given: Circumference of the measuring wheel: $U = 200$ [mm]
Accuracy of the system: $G = 0,1$ [mm]
Wanted: Resolution of the encoder: $A = ?$ [pulses/resolution]

$$\text{resolution} = \frac{\text{Circumference}}{\text{Accuracy}} = \frac{U}{G}$$

The required resolution would be 2000 ppr (pulses per revolution).

GENERAL/OVERVIEW
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Pulse frequency:

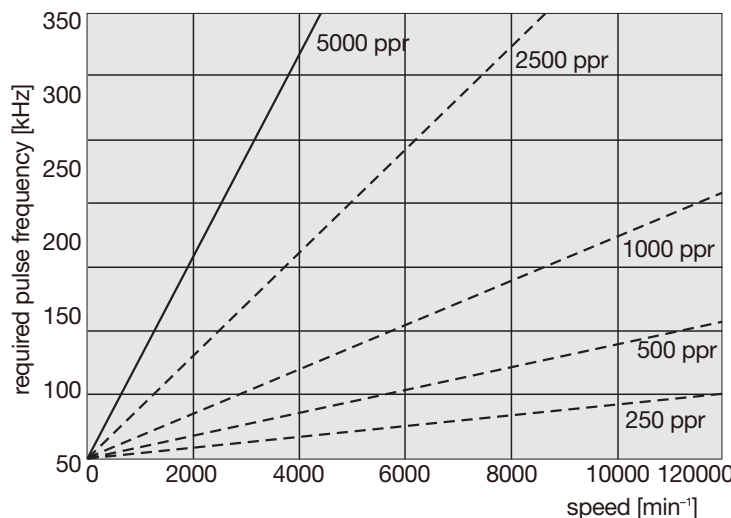
The required pulse frequency can be calculated. This is based on the number of pulses per turn (ppr) and the speed (rpm). The max. pulse frequency is listed for each encoder. Usually it is 300 kHz. Meyle also offers high resolution encoders with a pulse frequency of up to 800 kHz.

Example
of how to calculate the required pulse frequency f_{max} :
Given: Speed $n = 3000 \text{ min}^{-1}$
Resolution of the encoder $R = 1000 \text{ ppr}$

$$f_{\text{max}} = \frac{n \times R}{60}$$

The required pulse frequency is 50 kHz. Now you can compare this result with the data of the encoder you would like to choose.

This diagram can be used for the most common resolutions as a quick guide:



Outputs and voltage supplies (overview):

Meyle offers a wide range of possible outputs and voltage supplies for any application.

Output	Inverted signals	Voltage supply
RS 422	Yes	5 V DC
RS 422	Yes	10 ... 30 V DC or 5 ... 30 V DC
Push Pull output	No	10 ... 30 V DC or 5 ... 30 V DC
Push Pull output	Yes	10 ... 30 V DC or 5 ... 30 V DC
Sine wave voltage output	Yes	5 V DC
Sine wave voltage output	Yes	10 ... 30 VDC

If the encoder is used in an environment with strong electrical noise and long cables we highly recommend the use of inverted signals.

Sensor outputs:

The sensor outputs are used if the distance from the encoder to the control unit is very long and the voltage supply at the encoder could drop due to this long distance. The input impedance of the sensor inputs (Controller) is very high, and the voltage drop

on the sensor output line is almost zero. Due to this it is possible to detect the actual supply voltage of the encoder (e.g. 4,2 V instead of 5 V). Based on this information the controller will increase the voltage supply to e.g. 5,8 V.

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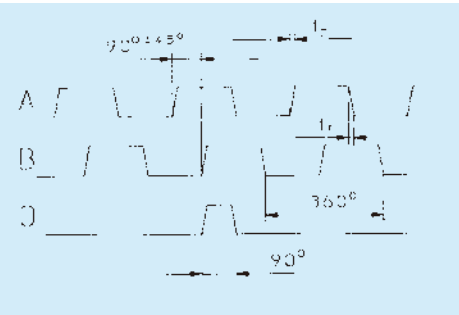
Digital outputs:

The sine wave signal from the optical system is first digitised to have square wave signals available.

- Shaft turning clockwise, top view of shaft
- Inverted signals are available
- 0-pulse is linked to AND with channel A and B

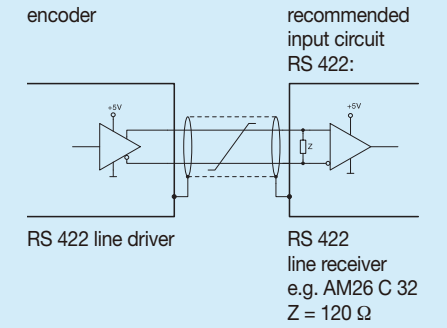
To transmit the signals there are two possible outputs available. RS 422 (TTL compatible) or push-pull (covers PNP or NPN). For choosing the suitable output for the application the following points have to be considered:

- The corresponding unit / controller the encoder will be connected to



- The distance from the encoder to the receiver unit
- The sensitivity against electrical noise or other interferences.

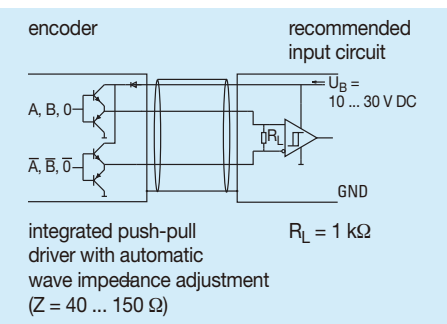
Output circuit and recommended input circuit RS 422:



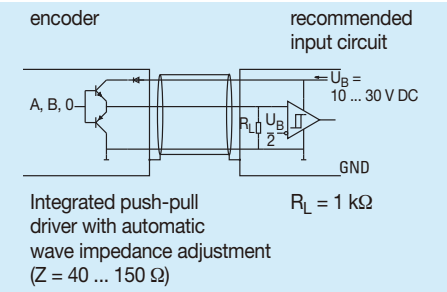
Push-pull:

Push-pull outputs are suitable for count interface cards, electronic counters or PLC inputs.

Output circuit and recommended input circuit push-pull with inverted signals:



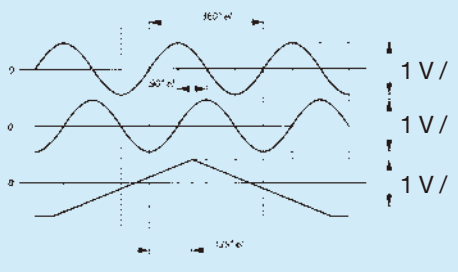
Output circuit and recommended input circuit push-pull without inverted signals:



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Sine wave outputs:

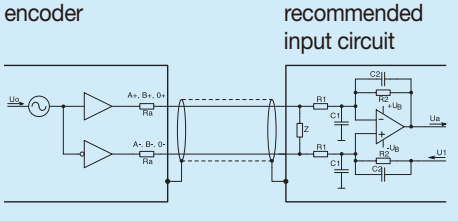
The sine wave signals are available as voltage signals. They can be further processed and can be multiplied by a factor of usually 10, 20, 50, 100, 400, 500, 1000 res. binary factors (512, 1024). Due to the interpolation of the two signals, which are 90° out of phase, a very high resolution can be achieved. This makes these kind of signals specially useful for applications where very high resolutions are required. Further they are very suitable for digital drives with a very slow and precise movement, e.g. for grinding machines or lifts and elevators.



- Shaft turning clockwise, top view of shaft
- 0-pulse is generated once per turn

Output circuit and recommended input circuit for sine wave voltage signals:

- $R_a = 10 \Omega$
- $C_1 = 150 \text{ pF}$
- $C_2 = 10 \text{ pF}$
- $R_1 = 10 \text{ k}\Omega$
- $R_2 = 33 \text{ k}\Omega$
- $U_0 = 2,5 \text{ V} \pm 0,5 \text{ V}$
- $Z = 120 \Omega$
- $U_1 = U_0$
- OPV: z.B. MC33074



Cable length:

Depending on the output circuit and the electrical noise the following cable lengths are recommended:

Output circuit	max. cable length	Encoder connected to e.g.
Push-pull without inverted signals	100 m	counter/PLC
Push-pull with inverted signals	250 m	PLC/IPC ¹⁾
RS 422 with inverted signals	up to 1000 m (> 50 m depending on frequency)	PLC/IPC ¹⁾
Voltage sinus with inverted signals	50 m	PLC/IPC ¹⁾

1)IPC = industrial PC

Annotations:

- Depending on the application the recommended cable length can be shorter, especially in areas with strong electrical noise.
- Always use shielded cables
- The core diameter of the signal cores should be $\varnothing 0,14 \text{ mm}^2$
- The core diameter of the voltage supply cores should be large enough depending on the cable length, that the voltage supply of the encoder is high enough and the signals do not go below the minimum levels!

We strictly recommend the use of the cable types written down in the accessories.

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Selecting an Absolute encoder
Design and function:

Absolute encoders have a disk with a digital coding on concentric tracks. This code is read by a Opto-Asic. A unique bit pattern is assigned to each position.

The advantage is, that after power failure true position verification is available as soon as power is up again, even if the shaft was moved during the dead state.

Selecting an absolute encoder: When selecting the right absolute encoder the following parameters should be considered in addition to the recommendations on page 8–10.

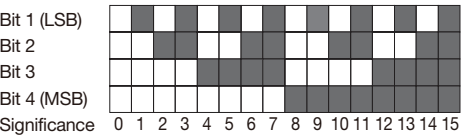
Versions:

Singleturn encoders:

Depending on the number of divisions they generate up to 131072 (17 Bit) unique per turn. This corresponds to an angular resolution of 0,0028°. After one revolution the process re-starts.

Singleturn encoders can be used in applications where revolution is sufficient, e.g. measurement of angles, robotic.

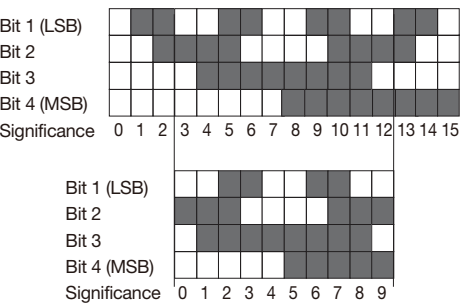
Code types:
Binary Code:



Gray Code:

The Gray Code is a single-step code. This indicates, that from one position to the next only 1 bit is changed. The reliability of the code detection is increased, which leads to a high position-reliability.

Symmetrically cut Gray Code (Gray-Excess):



Reversion of the Gray Code: The code values increase when the shaft is turning clockwise. If the most significant bit (MSB) is inverted, the code values decrease when the shaft is turning clockwise



Advantage:

No reference drives after starting-up are necessary as with incremental systems. Safety is increased and the time taken for reference drives is saved.

- Supply voltage
- Type of code
- Interface (SSI, parallel, fieldbus, 4...20mA)

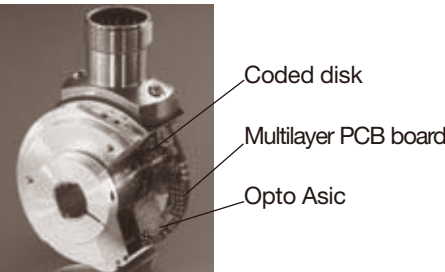
Multiturn encoders:

They are available with up to 131072 (17 Bit) definite angular positions per revolution and in addition 4096 (12 Bit) definite revolutions. This corresponds to 70 billion definite positions. Multiturn encoders can be used for positioning applications e.g. automatic storage, retired systems, lift elevators, cranes, machine tool, etc.

The binary code can be processed very easily by computer systems. When using optical read-out, errors may occur, because the change from one bit to another on the different concentric tracks (LSB, LSB+1...) is not exactly synchronized. Due to this, without any correction of the code, the position information could be wrong.

The gray code is used to optically read out the position for all absolute encoders

The extraction of a defined part of the gray code leads to the gray-excess code. This code enables the generation of non binary based divisions, e.g. 360, 720, 1000, 1440.



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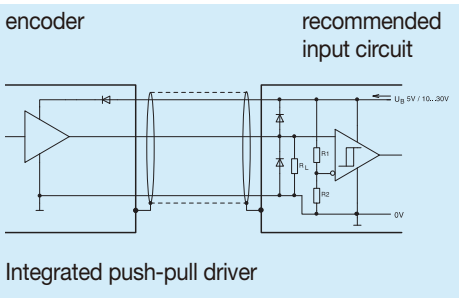
Outputs

To transfer the position data to a controller, different interfaces are available.

Parallel output:

This type of transfer is very fast. All bits of a position are transferred simultaneously each via a separate line.

Output circuit and recommended input circuit parallel interface:

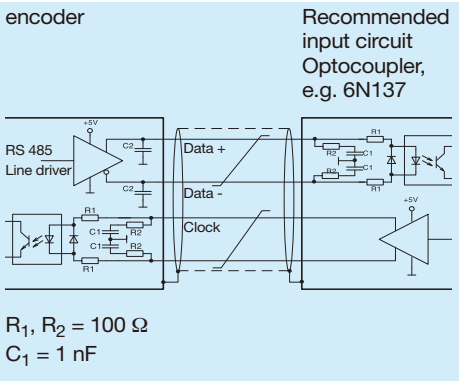


Synchronous Serial Interface (SSI):
SSI

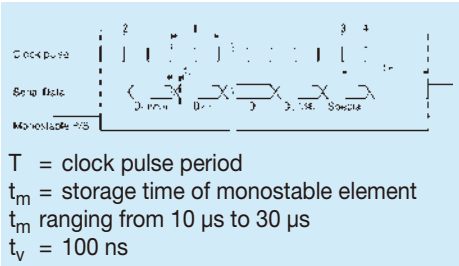
Compared to the parallel interface, the SSI interface needs less components and the EMC-characteristics are much better. In

addition less cores are needed for transmission and the possible cable length is much longer.

Output circuit and recommended input circuit of the SSI-Interface:



Synchronous-serial Transfer (SSI):



With the first shift of the clock signal from low to high ② the most significant bit (MSB) of the angular data is applied to the shaft encoder's serial output.

With each succeeding rising edge, the next less significant bit is shifted to the data output.

After transmission of the least significant bit (LSB) the Alarm bit or other special bits are transferred, depending on configuration. Then the data line switches to low ③ until the time t_m has passed.

A further transfer of data cannot be started until the data line switches to high ④ again. If the clock pulse sequence is not interrupted at point ③, the ring-register mode is activated automatically. This means that the data stored at the first clock pulse transition ① are returned to the serial input si via the terminal so. As long as the clock pulse is not interrupted at ③, the data can be read out as often as wanted (multiple transfer).

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Cable length:

Depending on the desired output circuit, we recommend following cable lengths:

Interface and output circuit	max. cable length	Connected to
Parallel CMOS/TTL	2 m	PLC/IPC ¹⁾
Parallel push-pull	100 m	PLC/IPC ¹⁾
SSI	up to 1200 m	PLC/IPC ¹⁾
RS 422 /RS 485	(> 50 m depending on frequency)	

¹⁾IPC = Industrial PC

Notes:

- Depending on the application the max. allowed cable length can be shorter, especially in areas with strong electrical noise.
- Always use shielded cables
- The core diameter of the signal cores should be Ø 0,14 mm₂
- The core diameter of the voltage supply cores should be large enough depending on the cable length, that the voltage supply of the encoder is high enough and the signals do not go below the minimum levels!

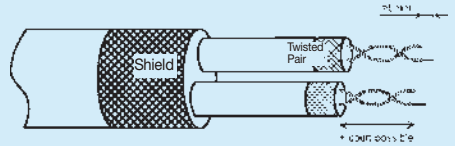
We strictly recommend the use of the cable types written down in the accessories.

Connection – precautions

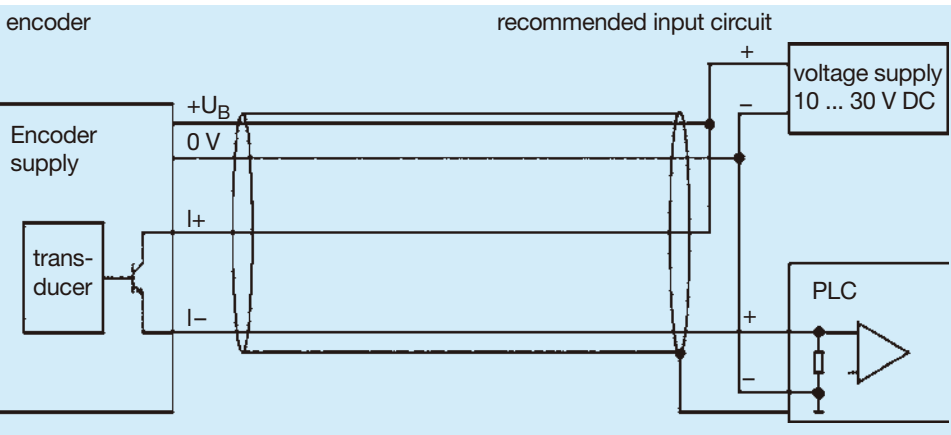
For the connection of the shield braids, refer to the logic control documentation. In all cases, for grounding, the braids must be covered through 360°. All unused conductors must be connected to the same potential at both ends.

Keep the encoder connection cables as far away from the power cables as possible and avoid running them in parallel. Finally, for the same regulated power supply, only connect encoders drawing the current that the power supply can deliver. Group the signals of the same type by pair, CLK+ with CLK-, DATA+ with DATA-.

SSI Transmission



Type of connection and recommended input circuit



BiSS Sensor Communication
Bi-directional and fully-digital

BiSS

BiSS is a fully-digital and bi-directional sensor interface. It defines communication between one master and several slaves (sensors) in industrial control systems. BiSS manifests a new standard in technology and is available license-free (GPL). Due to its high performance, it constitutes an efficient alternative to the standard combination of data interface and analog sine/cosine incremental output.

BiSS only needs a total of 6 lines (4 data, 2 power), does not require any hardware for analog signals (cable(s)/drive interpolation electronics) – and so helps to reduce system costs.

Bus Networking:
Up to 8 sensors can be connected to a bus-master. Wiring and control cost is considerably reduced for multi axe applications.

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Bus systems:

The use of a network of sensor-actuator bus systems has essential advantages:

- Reduced expenditure concerning connection: All members are linked by one cable.
- Wide range diagnostics and programming possibility of the units.

In the following please find the available bus systems:



DeviceNet™



CANopen

CAN:

CANopen

- CAN fulfils the real time demands of the automobile industries (ABS, Airbag, Motormanagement)
- Multi-Master system
- The message text (speed, position...) itself is marked by an identifier through the whole network, instead of indexing the nodes.

- Check for importance of message
- Accept or ignore @ network wide broadcasting
- high allocation on the network
- Monitoring (high reliability)
- Bus Specification according to CAN High Speed ISO/DIN 11898 for transmission rates of up to 1 Mbaud.

Introduction

The Meyle CANopen encoder is an absolute encoder. The version described sends its current position to another station via the "CAN-bus" transmission medium (physically: screened and twisted two-wire line).

The serial bus system CAN (Controller Area Network), which had been originally developed for automotive uses, is gaining ground in industrial automation technology. The system is multimaster compatible, i.e. several CAN- stations are able to request the bus at the same time. The data transfer is regulated by the message's priority. The message with the highest priority (determined by the identifier) will be received immediately. Within the CAN system, there are message identifiers but no transport addresses. The message which is being sent can be received by all stations at the same time (broadcast). By means of a special filter method, the station only accepts the relevant

messages which is of importance for this station. The identifier transmitted with the message is the basis for the decision as to whether the message will be accepted or not.

The bus coupler is standardised according to the international standard ISO-DIS 11898 (CAN High Speed) and allows data to be transferred at a maximum rate of 1 MBit/s. The most significant feature of the CAN-protocol is its high level of transmission reliability (Hamming distance = 6). The CAN-Controller Intel 82527 used in the encoder is basic as well as full-CAN compatible and supports the CAN-specification 2.0 part B (standard protocol with 11-bit- identifier as well as extended protocol with 29-bit identifier).

Field of application

In applications, where the position of a drive or of other parts of a machine has to be recorded and signalled to the control system, the encoder can carry out this function. The encoder can resolve, for

instance, positioning tasks by sending the check-back signal concerning the present drive position via the CAN bus to the positioning unit.

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The CANopen Profile

CANopen allows for:

- synchronisation of the devices,
- auto-configuration of the network,
- comfortable access to all device parameters.

CANopen uses four communication objects (COB) with different features:

- Process Data Objects (PDO) for real-time data
- Service Data Objects (SDO) for the transfer of parameters and programs
- Network Management (NMT, Life-Guarding)
- predefined objects (for synchronisation, time stamp, emergency message)

- simultaneous data input and output.
- cyclical and event-controlled process data processing,

All device parameters are stored in an object directory. The object directory contains the description, data type and structure of the parameters as well as their addresses (index).

The directory consists of three parts:

- communication
- profile parameters,
- device profile parameters and manufacturer specific parameters.

Existing Profiles

The following device profiles already exist:

- CiA Draft Standard Proposal 401 for Input/Output Modules
- CiA Draft Standard Proposal 402 for Drives and Motion Control
- CiA Work Item 403 for Human-Machine Interfaces

- CiA Work Draft 404 for Closed-Loop Controllers and Transformers
- CiA Work Item 405 for IEC-1131 Interfaces
- CiA Draft Standard Proposal 406 for Encoders
- CiA Work Item 407 for Public Transport
- CiA Work Item 408 for Fork-Lifts

The encoder device profile (CIA DSP 406)

This profile describes a standardised and binding, but manufacturer-independent definition of the interface for encoders. The profile not only defines which CANopen functions are to be used, but also how they are to be used. This standard allows an open and manufacturer-independent bus system. The device profile consists of two object categories

- the standard category C1 describes all the basic functions the shaft encoder must contain

- the extended category C2 contains a variety of additional functions which either have to be supported by category C2 shaft encoders (mandatory) or which are optional. Category C2 devices thus contain all C1 and C2 mandatory functions as well as, depending on the manufacturer, further optional functions. In addition, an addressable area is defined in the profile, to which, depending on the manufacturer, different functions can be assigned.

DATA Transmission

In CANopen, the data is transferred by means of two different communication types (COB = Communication Object) with different features:

- Process Data Objects (PDO)
- Service Data Objects (SDO)

The priority of the message objects is determined by the COB identifier.

The process data objects (PDO) serve the highly dynamic exchange of real-time data (e.g. position of the shaft encoder) with a maximum length of 8 Byte.

This data is transferred with high priority (low COB identifier). PDOs are broadcast messages and put their information simultaneously at the disposal of all desired receivers. The service data objects (SDO) form the communication channel for the transfer of device parameters (e.g. programming of the shaft encoder's resolution). Since these parameters are transferred acyclically (e.g. only once when starting up the network), the SDO objects have a low priority (high COB identifier).

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Profibus: General Information



Introduction

The basic functions of the PROFIBUS DP are only described in extracts in here. For additional information, please refer to

The Meyle Profibus encoders are absolute encoders. The version described sends its current position to another station via the transmission medium "PROFIBUS DP" (physically: screened and twisted pair line). The Profibus encoder supports all class 1 and 2 functions listed in the encoder profile. PROFIBUS-DP is standardised and binding, but manufacturer-independent definition for a variety of applications in the field of production, process and automation. The requirements of openness and independence from the manufacturer are stipulated in the European standard EN 50 170.

the standards on PROFIBUS DP, i.e. DIN 19245-3 and EN 50170 respectively.

PROFIBUS-DP permits the communication of devices produced by different manufacturers without any particular adaptations of the interfaces. PROFIBUS DP is a special standard version for a quick data exchange within the field level which has been optimised in terms of speed and low connection costs. Central with local field devices like drives, valves, or encoders. The data exchange between these devices is predominantly cyclical. The communication functions required for this exchange are determined by the functions of the PROFIBUS DP according to the EN 50 170 European standard.

Field of application

In systems, where the position of a drive or of any other part of a machine has to be recorded and transmitted to the control system, the encoder is doing this function. The encoder can resolve, for instance,

positioning tasks by sending the feedback signal concerning the present drive position via the PROFIBUS DP to the positioning unit.

Basic function of the Profibus DP

The central control system (master) cyclically reads out the input information from the slaves and transmits the output information to the slaves. For this purpose, the bus cycle time has to be shorter than the program cycle time of the central control system (e.g. SPC, or IPC), which amounts to approx. 10 ms for several applications. Beside the

cyclical user data transfer, the PROFIBUS DP version also disposes of powerful functions for diagnosis and initial operation procedures. The data traffic is controlled by watchdog functions on both the slave and the master side. In the following the basic functions of the PROFIBUS DP are summarised in short.

PROFIBUS DP Basic Functions

Transmission technology:

- RS-485 twisted pair line
- Baud rates ranging from 9.6 kbit/s up to 12 Mbit/s

Bus access:

- Monomaster or multimaster systems possible
- Token passing procedure between the masters and master-slave procedures for slaves
- Master and slave devices, max. of 126 stations at a single bus

Communication:

- Point-to-point (user data communication) or multicasts (control commands)
- Cyclical master-slave user data communication and acyclical master-master data transfer

Operating state:

- Operate: cyclical transfer of input and output data

- Stop: only master-master data transfer is possible
- Clear: The input data are read, the output data remain in the safe status
- Synchronisation: Control commands enable a synchronisation of the input and output data
- Sync mode: Output data are being synchronised

Functionality:

- Address assignment for the DP slaves via the bus
- Cyclical user data transfer between DP master and DP slave(s)
- Configuration of the DP master (DPM1) via the bus
- Single DP slaves are dynamically activated or deactivated
- Control of the DP slave's configuration.
- Powerful diagnostic functions, 3 stepped diagnostic message levels.

- Maximum of 246 byte input and output data per DP slave possible
- Synchronisation of in- and/ or output

Protection functions:

- Access protection of the DP slaves' input/output
- All messages are transferred with a hamming distance of HD=4
- Response control at the DP slaves
- Monitoring of the user data communication with adjustable control timer at the master

Device types:

- DP master class 2 (DPM2), e.g. programming/ project planning devices
- DP master class 1 (DPM1), e.g. central automation devices like SPC, PC
- DP slave e. g. devices with binary or analogue input/output, drives, valves

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Diagnostic function

The extensive diagnostic functions of PROFIBUS DP allow a quick localisation of possible errors. The diagnostic messages

are transmitted by means of the bus and are joined together at the master.

System Performance

To ensure a high level of exchangeability between the devices, the system performance of PROFIBUS DP has also been standardised. It is mainly determined by the operational status of the DPM1. The DPM1 can either be controlled locally or via the bus by the project planning device. The following three main states are available:

Operate

The DPM1 has entered the data transfer phase. In case of a cyclical data traffic, the input is read by the DP slaves while the output is transferred to the DP slaves. After an error has occurred during the data transfer phase of the DPM1, like for example, the failure of a DP slave, the response of the system is determined by the operating parameter "Auto Clear". If this parameter has

been set to true, the DPM1 will set the output of all the respective DP slaves to the safe status, as soon as a DP slave is no longer available for user data communication. Afterwards, the DPM1 changes to the clear status. If this parameter is = false, the DPM1 remains, even if an error occurs, in the operate status, and the user can determine the response of the system at his own decision.

Stop

There is no data traffic between DPM1 and the DP slaves.

Clear

The DPM1 reads the input information of the DP slaves and maintains the safe status of the DP slaves' output.

Cyclical data transfer
between DPM1
and the DP SLAVES

The data traffic between the DPM1 and the respective DP slaves is automatically handled by the DPM1 in a fixed, recurring order. When configuring the bus system, the user assigns a DP slave to the DPM1. In addition

the slaves are in- or excluded from the user data communication. The data traffic between the DPM1 and the DP slaves is subdivided in three phases: parameterisation, configuration, and data transfer.

Before including a DP slave in the data transfer phase, the DPM1 checks during the parameterisation and configuration phase,

whether the planned set configuration corresponds to the actual configuration of the device. For this check, the device type, the information on the format and the length as well as the number of input and output lines have to be correct. Due to this check it is ensured that the parameterisation is reliable and correct at the end. In addition to the user communication, which is automatically executed by the DPM1, the user can request the new parameterisation data to be sent to the DP slaves.

GENERAL/OVERVIEW
General

Profile



PROFINET, launched by PROFIBUS International (PI), is a new-generation industrial-ethernet-technology-based automation bus standard.

PROFINET provides a sound and complete network solution for automation communi-

cation, including topical issues in the field of automation such as real-time Ethernet, motion control, distributed automation, fail-safe and network security. This cross-supplier technology is compatible with industrial Ethernet and existing profibus technology to protect existing investment.

Technology

To achieve the above communication functions, the following three communication protocol levels are defined. [1]

- TCP/IP is for PROFINET CBA and factory debugging, with a response time of about 100ms.
- RT (real-time) communication protocol is for PROFINET CBA and PROFINET IO, with a response time of less than 10ms.

- IRT (isochronous real-time) communication protocol is for PROFINET IO communication of the drive system, with a response time of less than 1ms. Ethernet analysis tools help to record and display the packets of the PROFINET communication protocol. Some software interpret PROFINET data frames.

PROFINET component model

A PROFINET CBA system includes many automated components, mechanical, electronic or IT variables generated by standard programming tools. Components are described by PROFINET Component Description (PCD) files in XML format. Planning tools load these descriptions and establish logical relationships between the different components. This mode is considerably influenced by the EC 61499 standard. The basic concept of PROFINET CBA is that many times the automation system can be divided into several small subsystems, clearly

distinguished from each other. PROFINET components are generally controlled by only a few input signals. With these components, the program written by the user activates a specific function in the component and transmits the output signal to another, using a maker-neutral technology. Component-based communication requires only planning, not programming. PROFINET CBA communication (non-real-time communication) is suitable for systems with a bus cycle time of 50-100 ms.

PROFINET and peripherals

PROFINET network communicates with external devices through PROFINET IO. PROFINET IO defines the communication function of external devices connected to the field. Its basis is the real-time concept of cascading. PROFINET IO defines the controller (with "master function" equipment) and other equipment (with "slave function" equipment) complete data exchange, parameter setting and diagnosis functions. PROFINET IO is designed to provide fast data transmission between Ethernet-connected devices and supports the provider-consumer model. Devices that support the PROFIBUS communication protocol can be seamlessly connected to the PROFINET network without the need for IO-proxy and other devices. Device developers may use commercially available Ethernet controllers to develop PROFINET IO devices. PROFINET IO is suitable for systems with network cycle times of several milliseconds. [2]

- PROFINET IO system package:
- IO controller that controls the automated task.
 - IO devices, generally field devices controlled and monitored by IO controller. One IO device may include several modules or sub-modules.
 - IO monitor, a PC software, can set parameters and diagnose the status of individual modules.

PROFINET IO establishes an application relation (AR) between the IO controller and the IO device, in which communication relations (CR) with different characteristics such as parameter transmission, periodic data exchange, and warning processing are defined.

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

General/Overview
General

PROFINET IO Addressing

Each module in the PROFINET network has the following three addresses:

- MAC address.
- IP address.
- Device name is the logical name defined for the module in the entire network configuration. Since PROFINET uses TCP/P, MAC address and IP address are used. In case a device is replaced with another, its MAC address changes, and the IP address is the result

PROFINET and real-time

In the PROFINET IO network, program data and warnings are transmitted in real time. The real-time of PROF-INET is according to the definition of IEEE and IEC, which allows real-time services to be processed within a limited time within a network cycle. Real-time communication is the basis for PROFINET IO data

PROFINET and Isochronous Communication

The isochronous data exchange of PROF-INET is defined in the isochronous real time (IRT) function. PROFINET IO field devices with IRT functionality have switch ports integrated in the field devices and can be based on Ethernet controllers ERTEC 400/200. The bus cycle time for general data exchange is from hundreds of milliseconds to several micro-

Application profile

Application profile (profile) is a special device or a pre-defined function and feature configuration for a special application. The PROFINET application profile is formulated by the PI (PROFIBUS & PROFINET International Association) working group and issued by PI. Application profiles contribute to the openness, interoperability and interchangeability of equipment, so end users can be sure that similar equipment provided by different equipment manufacturers will have standardized functions and usage methods.

of dynamic addressing. To have a fixed name for a certain device on the network, a device is named. To assign IP addresses, subnet masks and default gateways, the following two methods are defined: DCP (Protocol) (Discovery and Configuration Protocol). DHCP (Dynamic Host Configuration Protocol).

exchange. When processing, the real-time data is higher than that of TCP (UDVIP data in priority. PROFINET RT, the basis for decentralized peripheral real-time communication, is also for the PROFINET component model (PROFINET CBA). The bus cycle time for general data exchange is within hundreds of microseconds.

seconds. The difference between isochronous communication and real-time communication is that the former features a high degree of certainty. The start time of the bus cycle can be maintained to a high accuracy with a jitter of up to 1 µs. Motion control applications like motor position control programs use isochronous real-time communication.

Choices by users promote the competition of equipment manufacturers, which improves the function of the product and lowers the cost. PROFINET has many application profiles, such as for encoders, PROFIdriveand PROFIsafe. There are even dedicated application profiles for trains. In 2009, German automakers proposed the PROF-lenergy application profile, which mainly manages energy consumption during vehicle manufacturing.

EC/EDXX

Magnetic Linear Incremental Encoder System MyLin

The purpose of linear encoder systems is to measure the displacement on industrial an automation systems. It is an incremental measuring system, which consists of a sensing head and a magnetic encode tape.

The tape has alternating magnetic north-south poles with a gap up to 2.5 mm.

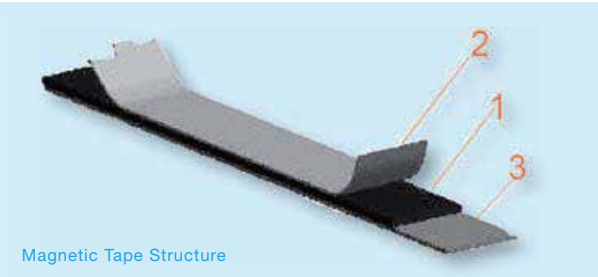
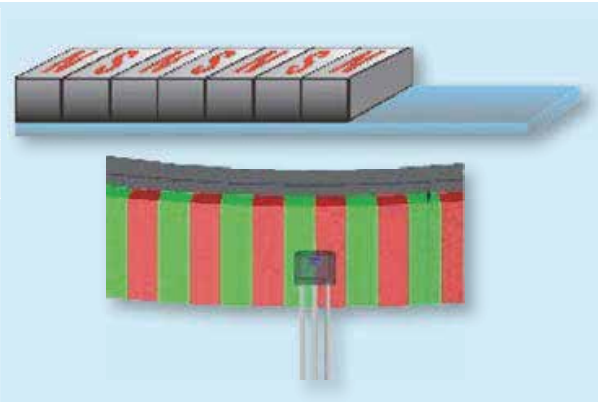
The sensor head is moved along the magnetic tape and produces an output signal equivalent to an incremental encoder or linear scale with a resolution up to 1 µm.

A distance up to 2.5 mm (approx. 50 % of the pole width) between sensor head and magnetic tape is allowed.

This system is highly immune to contermination of oils, dust, etc. and his ideal for use is harsh, dusty industrial environments.

The highly rugged, flexible magnetic tape can be applied to a tool very easy.

1. magnetic tape
2. magnetised steel cover tape
3. carrier tape



Magnetic Tape Structure

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINS24

Micro Solid Shaft Encoder

Features

- ϕ 24mm micro od, suitable for small space
- Fast response and high precision
- Max. 2500 pulses
- Suitable for small instrument applications



Specifications

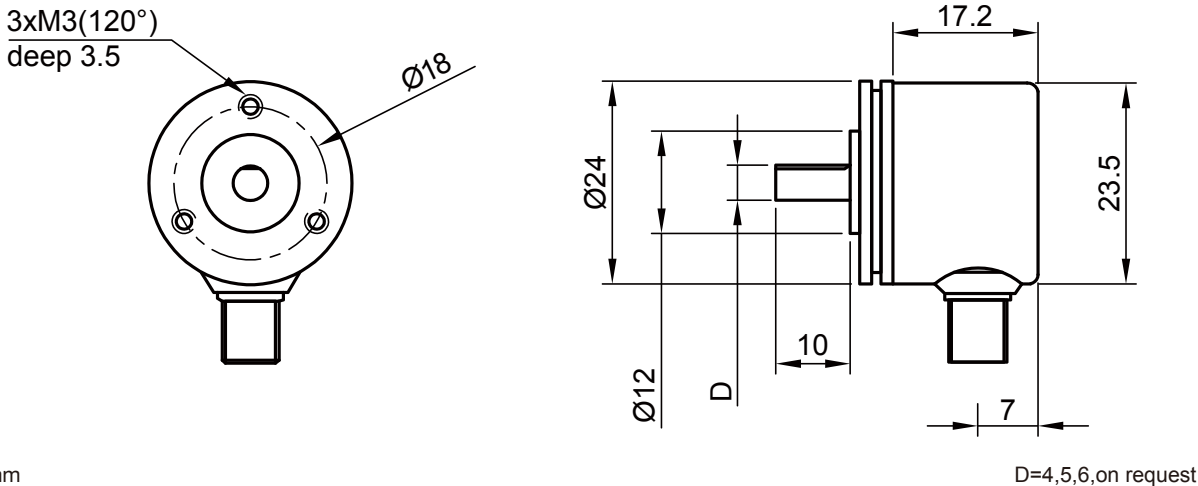
Electrical Specifications

Supply Voltage	10-30VDC
Current Consumption	60mA (P-P)
Output Circuit	PUSH-PULL output
Resolution	2500PPR (Max.)
Output Frequency	150kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Electrical Protection	Short Circuit, reverse polarity and lightning Protection
Level signal	H: >70%VCC L: <1V

Mechanical Specifications

Maximum speed	6000rpm
Shaft load	Axial 20N Radial 20N
Starting Torque	<0.005Nm
Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Operating Temperature	-25°C to +85°C
Protection Class	IP65
Material	Aluminum (shell) , stainless steel (shaft)
Weight	50g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

Connection

Function	3A / 3R
GND	white
VCC	brown
A	green
B	yellow
Z	grey
$\bar{A}$	pink
$\bar{B}$	blue
$\bar{Z}$	red

Ordering Code

Example: EINS2404A593R-1024
24 micro solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter 4mm, radial straight out cable

EINS24	shaft	output	signals	connection	resolution
	04=4x10mm 05=5x10mm 06=6x10mm XX=custom-made	A5=10-30V push-pull	8=ABZ 9=ABZ $\bar{A}$ $\bar{B}$ $\bar{Z}$	3A=axial output 3R=radial output	36/50/100 125/128/200 256/500/512 1000/1024 1250/1500 2000/2048 2500 36-2500 customizable

EINB24

Micro Blind Shaft Encoder

Features

- ϕ 24mm micro od, suitable for small space
- Fast response and high precision
- Max. 2500 pulses
- Suitable for small instrument applications



Specifications

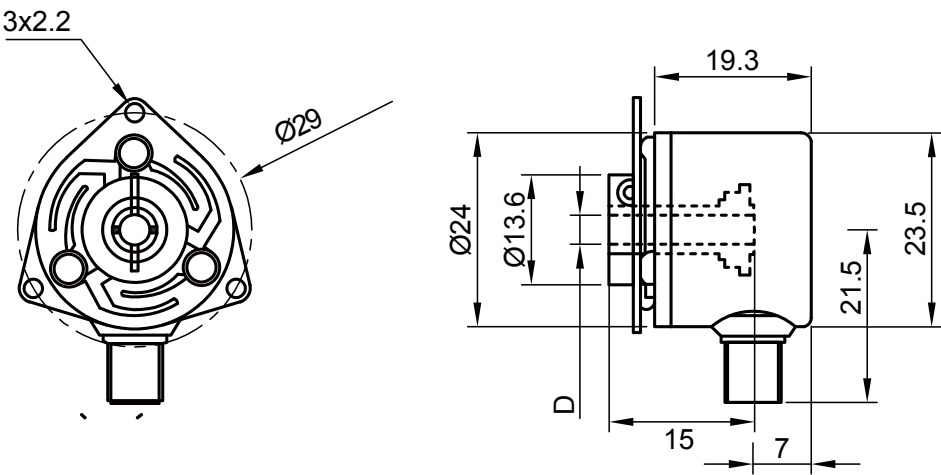
Electrical Specifications

Supply Voltage	10-30VDC
Current Consumption	60mA (P-P)
Output Circuit	PUSH-PULL output
Resolution	2500PPR (Max.)
Output Frequency	150kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Electrical Protection	Short Circuit, reverse polarity and lightning Protection
Level signal	H: >70%VCC L: <1V

Mechanical Specifications

Maximum speed	6000rpm
Shaft load	Axial 20N Radial 20N
Starting Torque	<0.005Nm <0.005Nm
Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Operating Temperature	-25°C to +85°C
Protection Class	IP65
Material	Aluminum
Weight	50g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

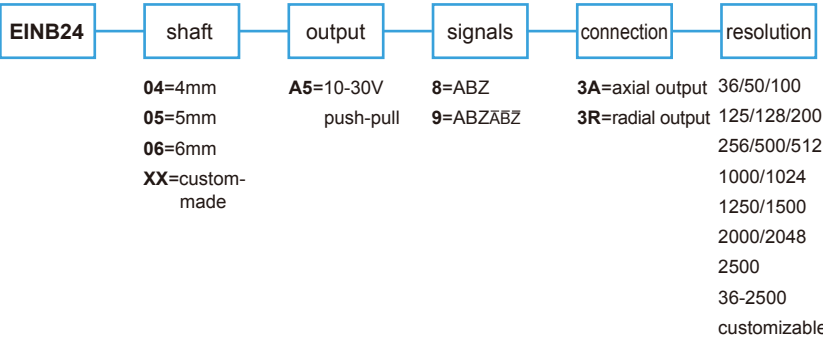
D=4,5,6,on request

Connection

Function	3A / 3R
GND	white
VCC	brown
A	green
B	yellow
Z	grey
$\bar{A}$	pink
$\bar{B}$	blue
$\bar{Z}$	red

Ordering Code

Example: EINB2404A593R-1024
24 micro blind shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 4mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINS30

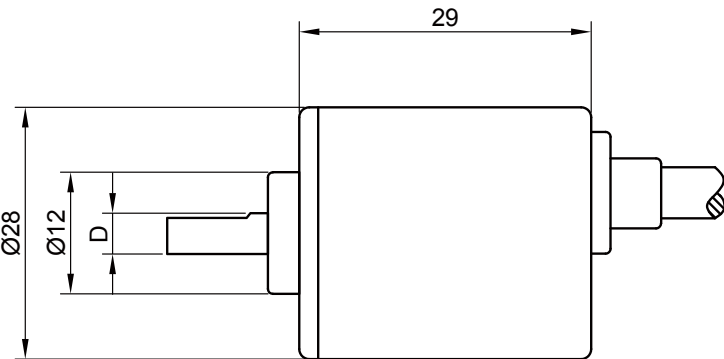
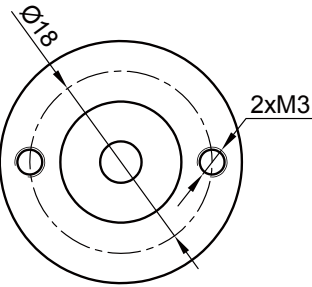
Small Solid Shaft Encoder

Features

- High precision, short response time
- $\phi 28$ mm OD, Suitable for inserting installation
- Max. 3600 pulses
- Suitable for engraving machine, printing machine and other applications



Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=5,6,8,on request

Connection

Function	3A / 3R
GND	white
VCC	brown
A	green
B	yellow
Z	grey
$\bar{A}$	pink
$\bar{B}$	blue
$\bar{Z}$	red

Ordering Code

Example: EINS3006A593R-1024
30 small solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter 6mm, radial straight out cable

EINS30	shaft	output	signals	connection	resolution
	04=4x10mm 06=6x10mm 08=8x12mm XX=custom-made	A2=5V RS422 A5=10-30V push-pull	8=ABZ 9=ABZ $\bar{A}$ $\bar{B}$ Z	3A=axial output 3R=radial output	36/50/100 125/150/200 256/500/512 1000/1024 1250/1500 2000/2048 2500/3000 3600 36-3600 customizable

Specifications

Electrical Specifications		Mechanical Specifications	
Supply Voltage	5VDC, 10-30VDC	Maximum speed	8000rpm
Current Consumption	60mA (P-P) , 140mA (RS422)	Shaft load	Axial 20N Radial 40N
Output Circuit	PUSH-PULL output , RS422	Starting Torque	<0.005Nm
Resolution	3600PPR (Max.)	Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Output Frequency	150kHz	Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Permissible Load/Channel	Max. 30mA	Operating Temperature	-25°C to +85°C
Rise Time	200ns	Protection Class	IP65
Electrical Protection	Short Circuit, reverse polarity and lightning Protection	Material	Aluminum (shell) , stainless steel (shaft)
Level signal	H: >70%VCC L: <1V	Weight	90g

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINS40

Small Solid Shaft Encoder

Features

- High precision, Stable working performance
- $\phi 38\text{mm}$ OD, Optional IP67
- Max. 5000 pulses
- Suitable for robot, machine tool and other applications



Specifications

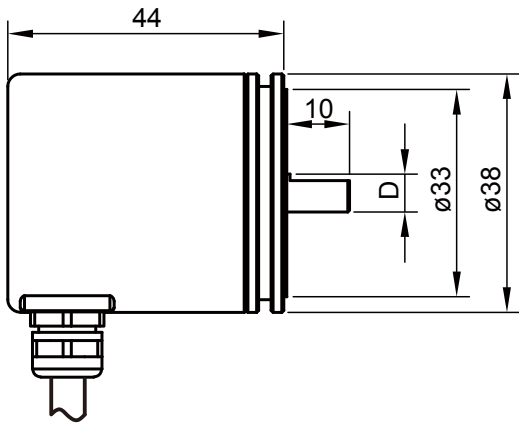
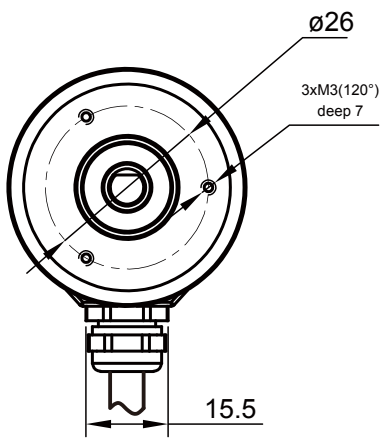
Electrical Specifications

Supply Voltage	5VDC, 10-30VDC
Current Consumption	60mA (P-P) , 140mA (RS422)
Output Circuit	PUSH-PULL output , RS422
Resolution	5000PPR (Max.)
Output Frequency	150kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Electrical Protection	Short Circuit, reverse polarity and lightning Protection
Level signal	H: >70%VCC L: <1V

Mechanical Specifications

Maximum speed	10000rpm
Shaft load	Axial 30N Radial 60N
Starting Torque	<0.025Nm
Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Operating Temperature	-25°C to +85°C
Protection Class	IP65/IP67 (option)
Material	Aluminum (shell) , stainless steel (shaft)
Weight	120g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

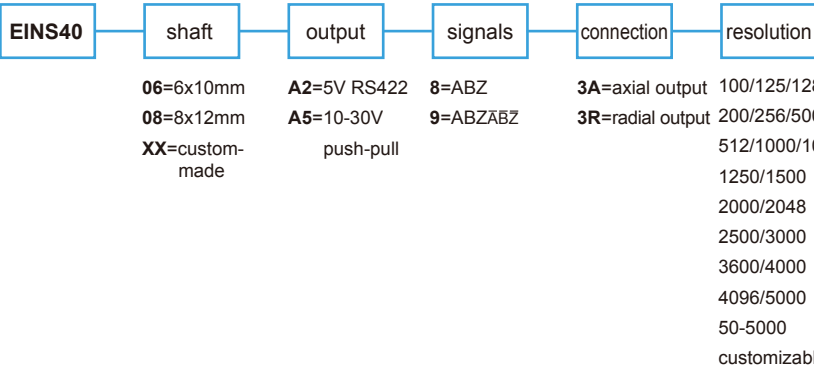
D=6,8,on request

Connection

Function	3A / 3R
GND	white
VCC	brown
A	green
B	yellow
Z	grey
$\bar{A}$	pink
$\bar{B}$	blue
$\bar{Z}$	red

Ordering Code

Example: EINS4006A593R-1024
40 small solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter 6mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINH40

Small Hollow Shaft Encoder

Features

- High precision, Stable working performance
- $\phi 38$ mm OD, Optional IP67
- Max. 5000 pulses
- Suitable for robot, machine tool and other applications



Specifications

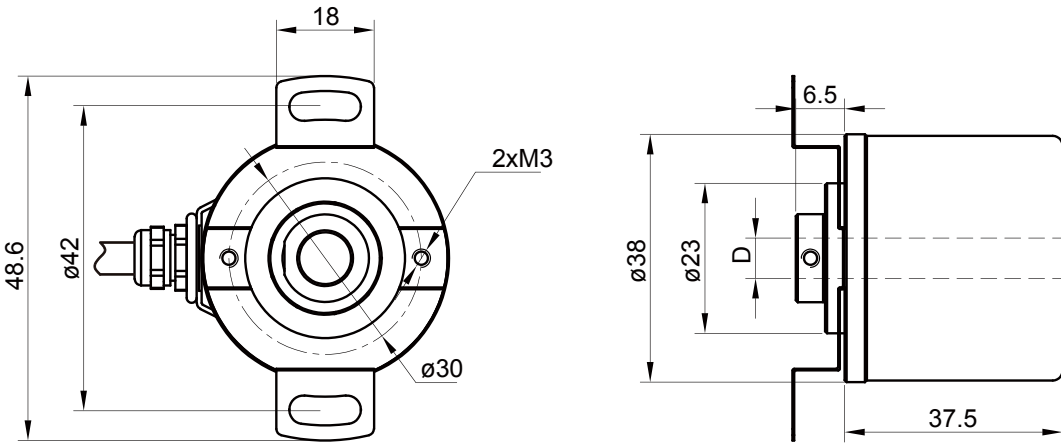
Electrical Specifications

Supply Voltage	5VDC, 10-30VDC
Current Consumption	60mA (P-P) , 140mA (RS422)
Output Circuit	PUSH-PULL output , RS422
Resolution	5000PPR (Max.)
Output Frequency	150kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Electrical Protection	Short Circuit, reverse polarity and lightning Protection
Level signal	H: >70%VCC L: <1V

Mechanical Specifications

Maximum speed	10000rpm
Shaft load	Axial 30N Radial 60N
Starting Torque	<0.025Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-25°C to +85°C
Protection Class	IP65/IP67(Option)
Material	Aluminum
Weight	120g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

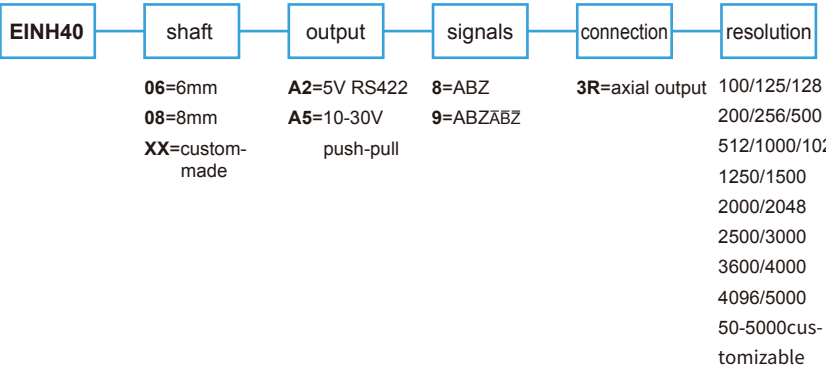
D=6,8,on request

Connection

Function	3R
GND	white
VCC	brown
A	green
B	yellow
Z	grey
$\bar{A}$	pink
$\bar{B}$	blue
$\bar{Z}$	red

Ordering Code

Example: EINH4006A593R-1024
40 small hollow shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 6mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINB40

Small Blind Shaft Encoder

Features

- High precision, Stable working performance
- $\phi 38$ mm OD, Optional IP67
- Max. 5000 pulses
- Suitable for robot, machine tool and other applications



Specifications

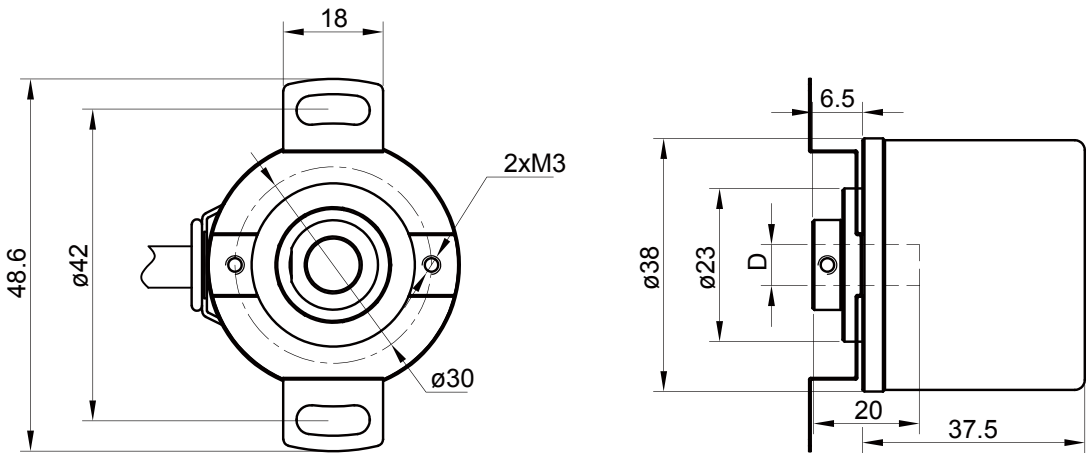
Electrical Specifications

Supply Voltage	5VDC, 10-30VDC
Current Consumption	60mA (P-P) , 140mA (RS422)
Output Circuit	PUSH-PULL output , RS422
Resolution	5000PPR (Max.)
Output Frequency	150kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Electrical Protection	Short Circuit, reverse polarity and lightning Protection
Level signal	H: >70%VCC L: <1V

Mechanical Specifications

Maximum speed	10000rpm
Shaft load	Axial 30N Radial 60N
Starting Torque	<0.025Nm
Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Operating Temperature	-25°C to +85°C
Protection Class	IP65/IP67(Option)
Material	Aluminum
Weight	120g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

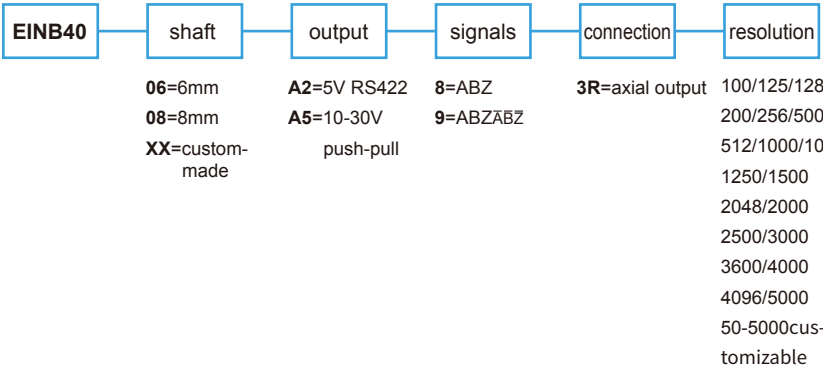
D=6,8,on request

Connection

Function	3R
GND	white
VCC	brown
A	green
B	yellow
Z	grey
$\bar{A}$	pink
$\bar{B}$	blue
$\bar{Z}$	red

Ordering Code

Example: EINB4006A593R-1024
40 small blind shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 6mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINS50

Universal Solid Shaft Encoder

Features

- Responsiveness , Optional IP67
- Standard $\phi 50\text{mm}$ OD
- Max. 10000 pulses
- Suitable for flow monitoring, transmission control and other applications



Specifications

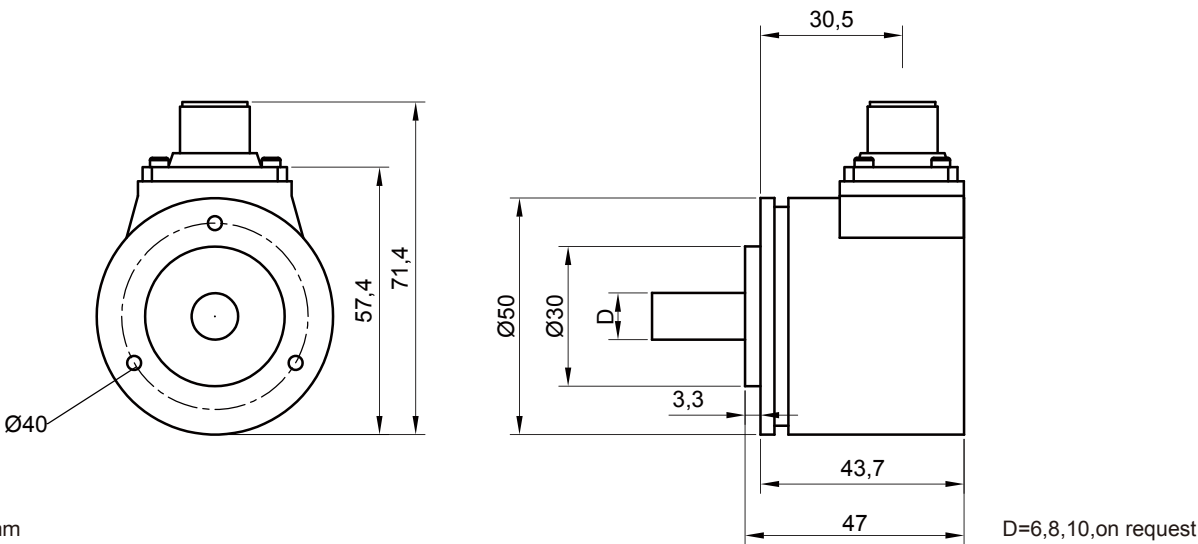
Electrical Specifications

Supply Voltage	5VDC, 10-30VDC
Current Consumption	60mA (P-P) , 140mA (RS422)
Output Circuit	PUSH-PULL output , RS422
Resolution	10000PPR (Max.)
Output Frequency	150kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Electrical Protection	Short Circuit, reverse polarity and lightning Protection
Level signal	H: >70%VCC L: <1V

Mechanical Specifications

Maximum speed	10000rpm
Shaft load	Axial 40N Radial 80N
Starting Torque	<0.025Nm
Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Operating Temperature	-25°C to +85°C
Protection Class	IP65/IP67 (option)
Material	Aluminum (shell) , stainless steel (shaft)
Weight	190g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



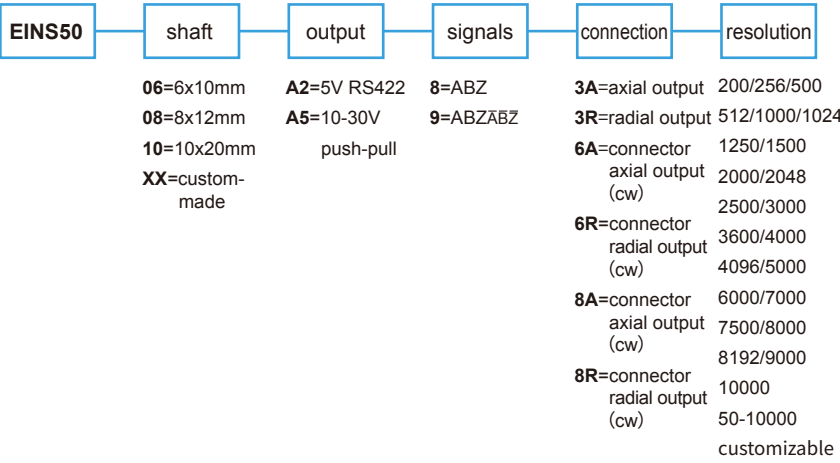
unit: mm

Connection

Function	3A / 3R	6A/6R/8A/8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
$\bar{A}$	pink	6
$\bar{B}$	blue	7
$\bar{Z}$	red	8

Ordering Code

Example: EINS5006A593R-1024
50 universal solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter 6mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINH50

Universal Hollow Shaft Encoder

Features

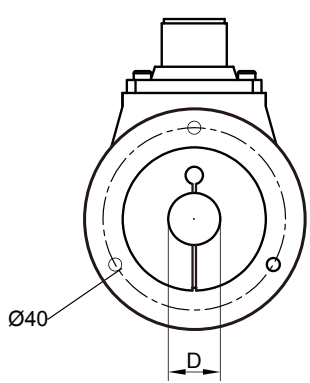
- Responsiveness , Optional IP67
- Standard ϕ 50mm OD
- Max. 10000 pulses
- Suitable for flow monitoring, transmission control and other applications



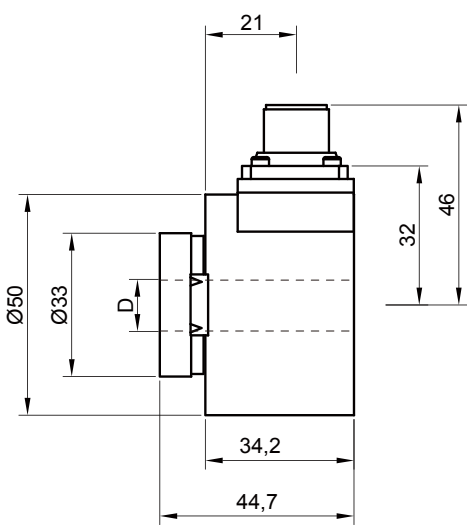
Specifications

Electrical Specifications		Mechanical Specifications	
Supply Voltage	5VDC, 10-30VDC	maximum speed	10000rpm
Current Consumption	60mA (P-P) , 140mA (RS422)	Shaft load	Axial 40N Radial 80N
Output Circuit	PUSH-PULL output , RS422	Starting Torque	<0.03Nm
Resolution	10000PPR (Max.)	Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Output Frequency	150kHz	Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Permissible Load/Channel	Max. 30mA	Operating Temperature	-25°C to +85°C
Rise Time	200ns	Protection Class	IP65/IP67 (option)
Electrical Protection	Short Circuit, reverse polarity and lightning Protection	Material	Aluminum
Level signal	H: >70%VCC L: <1V	Weight	190g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm



D=6,8,10,on request

Connection

Function	3R	6R/8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
$\bar{A}$	pink	6
$\bar{B}$	blue	7
$\bar{Z}$	red	8

Ordering Code

Example: EINH5006A593R-1024
50 universal hollow shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 6mm, radial straight out cable

EINH50	shaft	output	signals	connection	resolution
	06=6mm 08=8mm 10=10mm XX=custom-made	A2=5V RS422 A5=10-30V push-pull	8=ABZ 9=ABZ $\bar{A}$ $\bar{B}$ Z	3R=radial output 6R=connector radial output (cw) 8R=connector radial output (ccw)	1024/1250 1500/2000 2048/2500 3000/3600 4000/4096 5000/6000 7000/7500 8000/8192 9000/10000 50-10000 customizable

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINS58

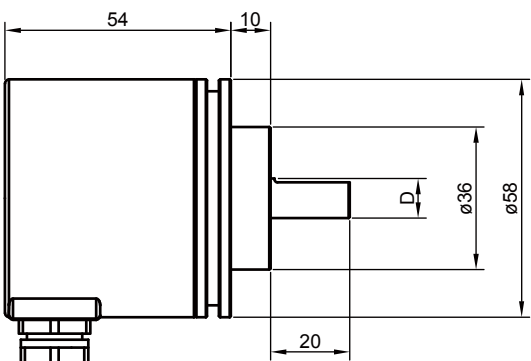
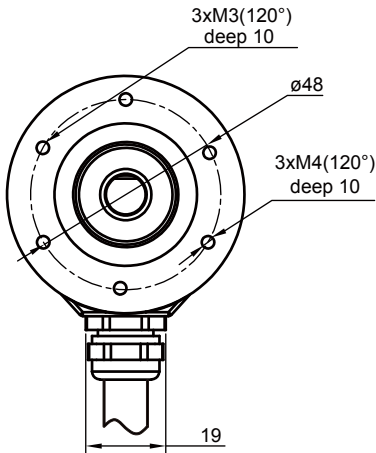
Standard Solid Shaft Encoder

Features

- High protection grade, up to IP67, suitable for various occasions
- Standard $\phi 58\text{mm}$ OD, easy to install and pair
- Max. 10000 pulses
- Suitable for applications such as industrial automation and drive control



Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,8,10,12,on request

Connection

Function	3A / 3R	6A/6R/8A/8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
$\bar{A}$	pink	6
$\bar{B}$	blue	7
$\bar{Z}$	red	8

Ordering Code

Example: EINS5806A593R-1024
58 standard solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter 6mm, radial straight out cable

EINS58	shaft	output	signals	connection	resolution
	06=6x10mm 08=8x12mm 10=10x20mm 12=12x25mm XX=custom-made	A2=5V RS422 A5=10-30V push-pull	8=ABZ 9=ABZ $\bar{A}$ $\bar{B}$ Z	3A=axial output 3R=radial output 6A=connector axial output (cw) 6R=connector radial output (cw) 8A=connector axial output (ccw) 8R=connector radial output (ccw)	200/256/500 512/1000/1024 1250/1500 2000/2048 2500/3000 3600/4000 4096/5000 6000/7000 7500/8000 8192/9000 10000 50-10000 customizable

Specifications

Electrical Specifications		Mechanical Specifications	
Supply Voltage	5VDC, 10-30VDC	Maximum speed	12000rpm
Current Consumption	60mA (P-P) , 140mA (RS422)	Shaft load	Axial 50N Radial 100N
Output Circuit	PUSH-PULL output , RS422	Starting Torque	<0.05Nm
Resolution	10000PPR (Max.)	Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Output Frequency	150kHz	Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Permissible Load/Channel	Max. 30mA	Operating Temperature	-25°C to +85°C
Rise Time	200ns	Protection Class	IP65/IP67 (option)
Electrical Protection	Short Circuit, reverse polarity and lightning Protection	Material	Aluminum alloy / Stainless steel
Level signal	H: >70%VCC L: <1V	Weight	300g

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINH58

Standard Hollow Shaft Encoder

Features

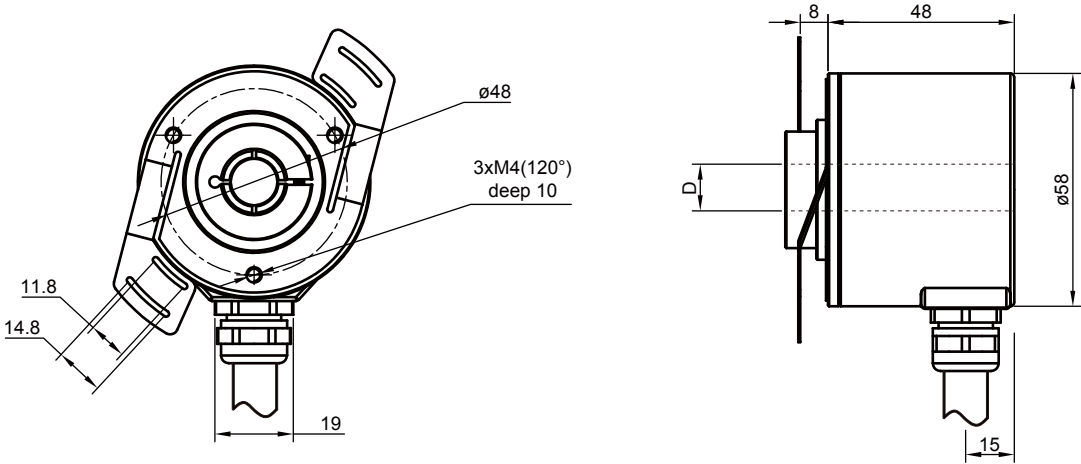
- High protection grade, up to IP67, suitable for various occasions
- Standard $\phi 58\text{mm}$ OD, easy to install and pair
- Max. 10000 pulses
- Suitable for applications such as industrial automation and drive control



Specifications

Electrical Specifications		Mechanical Specifications	
Supply Voltage	5VDC, 10-30VDC	maximum speed	12000rpm
Current Consumption	60mA (P-P) , 140mA (RS422)	Shaft load	Axial 50N Radial 100N
Output Circuit	PUSH-PULL output , RS422	Starting Torque	<0.05Nm
Resolution	10000PPR (Max.)	Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Output Frequency	150kHz	Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Permissible Load/Channel	Max. 30mA	Operating Temperature	-25°C to +85°C
Rise Time	200ns	Protection Class	IP65/IP67 (option)
Electrical Protection	Short Circuit, reverse polarity and lightning Protection	Material	Aluminum
Level signal	H: >70%VCC L: <1V	Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,8,10,12,14,on request

Connection

Function	3R	6R/8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
$\bar{A}$	pink	6
$\bar{B}$	blue	7
$\bar{Z}$	red	8

Ordering Code

Example: EINH5806A593R-1024
58 standard hollow shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 6mm, radial straight out cable

EINH58	shaft	output	signals	connection	resolution
	06=6mm 08=8mm 10=10mm 12=12mm 14=14mm 15=15mm XX=custom-made	A2=5V RS422 A5=10-30V push-pull	8=ABZ 9=ABZ $\bar{A}$ $\bar{B}$ Z	3R=radial output 6R=connector radial output (cw) 8R=connector radial output (ccw)	200/256/500/ 512/1000/1024/ 1250/1500/ 2000/2048/ 2500/3000/ 3600/4000/ 4096/5000/ 6000/7000/ 7500/8000/ 8192/9000/ 10000/ 50-10000 customizable

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINB58

Standard Blind Shaft Encoder

Features

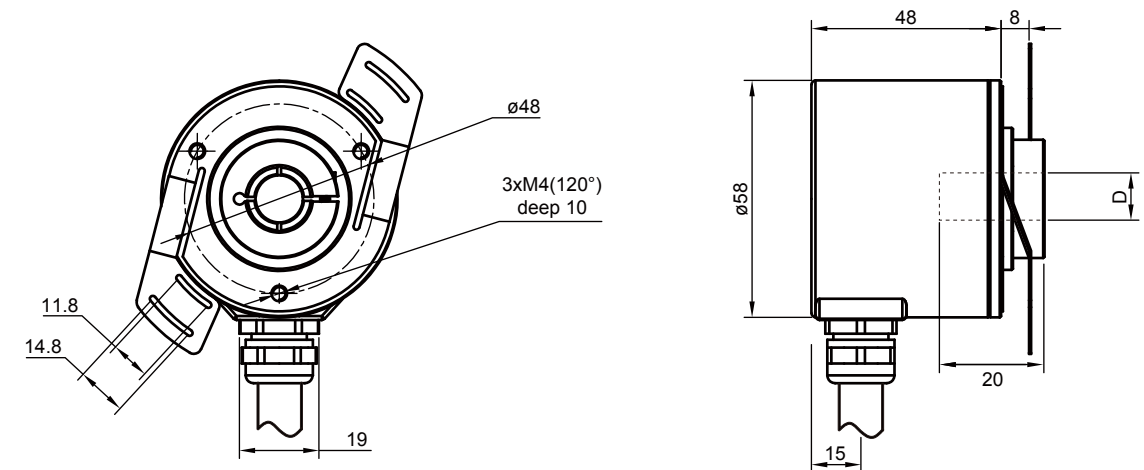
- High protection grade, up to IP67, suitable for various occasions
- Standard $\phi 58\text{mm}$ OD, easy to install and pair
- Max. 10000 pulses
- Suitable for applications such as industrial automation and drive control



Specifications

Electrical Specifications		Mechanical Specifications	
Supply Voltage	5VDC, 10-30VDC	maximum speed	12000rpm
Current Consumption	60mA (P-P) , 140mA (RS422)	Shaft load	Axial 50N Radial 100N
Output Circuit	PUSH-PULL output , RS422	Starting Torque	<0.05Nm
Resolution	10000PPR (Max.)	Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Output Frequency	150kHz	Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Permissible Load/Channel	Max. 30mA	Operating Temperature	-25°C to +85°C
Rise Time	200ns	Protection Class	IP65/IP67 (option)
Electrical Protection	Short Circuit, reverse polarity and lightning Protection	Material	Aluminum
Level signal	H: >70%VCC L: <1V	Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,8,10,12,14,on request

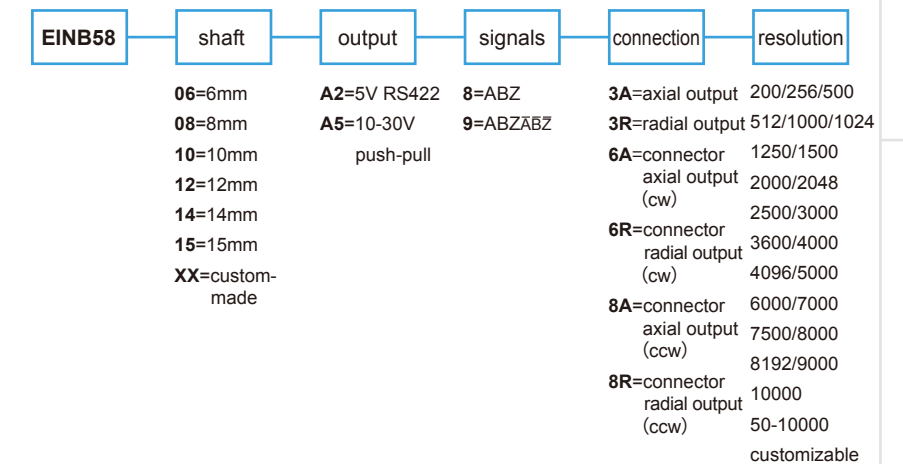
Connection

Function	3A / 3R	6A/6R/8A/8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
$\bar{A}$	pink	6
$\bar{B}$	blue	7
$\bar{Z}$	red	8

Ordering Code

Example: EINB5806A593R-1024

58 standard blind shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 6mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINS90

Heavy-duty Solid Shaft Encoder

Features

- Heavy-duty encoder
- High precision, short response time used
- Max. 6000 pulses
- Suitable for crane, excavator and other heavy machinery



Specifications

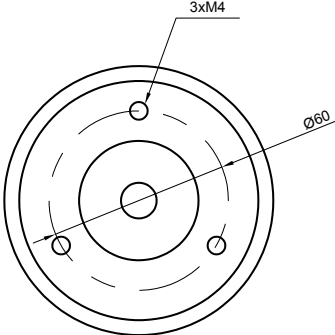
Electrical Specifications

Supply Voltage	5VD, 10-30VDC 5VDC, 10-30VDC
Current Consumption	60mA (P-P) , 140mA (RS422)
Output Circuit	PUSH-PULL output , RS422
Resolution	6000PPR (Max.)
Output Frequency	100kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Level signal	H:>70%VCC L:<1V
Electrical Protection	Short Circuit, reverse polarity and lightning Protection

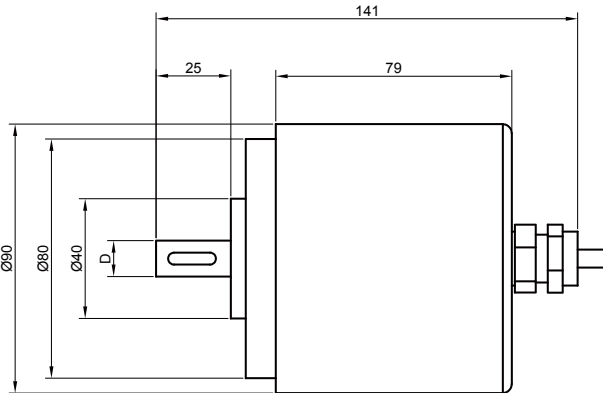
Mechanical Specifications

maximum speed	5000rpm
Shaft load	Axial 100N Radial 200N
Starting Torque	<0.08Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	068-2-6 100m/s² 55....2000HZ EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-20°C to +85°C
Protection Class	IP66
Material	Aluminum alloy / Stainless steel
Weight	850g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm



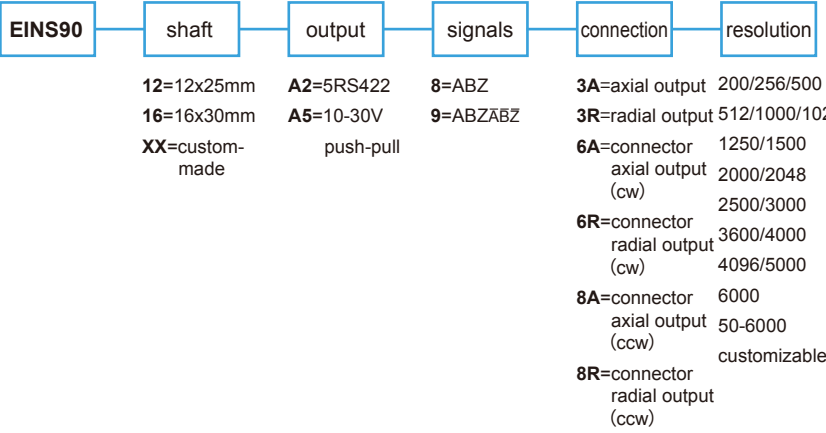
D=12,16,on request

Connection

Function	3A / 3R	6A/6R/8A/8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
Ā	pink	6
B̄	blue	7
Z̄	red	8

Ordering Code

Example: EINS9012A593R-1024
90 heavy-duty solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter12mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINH90

Heavy-duty Hollow Shaft Encoder

Features

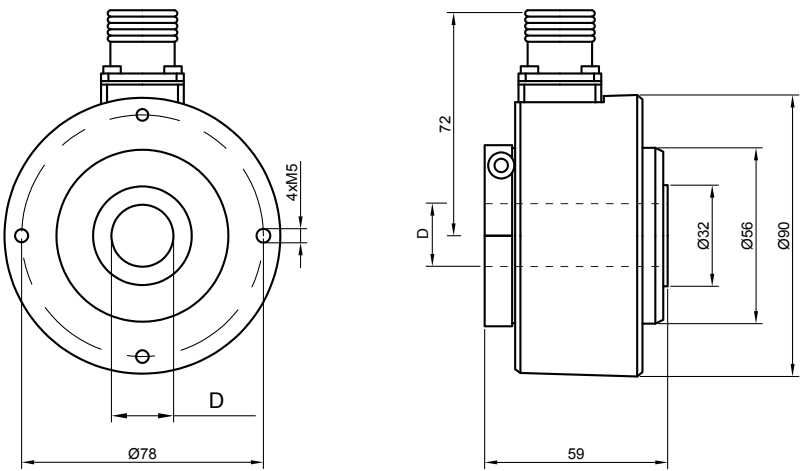
- Heavy-duty encoder
- High precision, short response time used
- Max. 6000 pulses
- Suitable for crane, excavator and other heavy machinery



Specifications

Electrical Specifications		Mechanical Specifications	
Supply Voltage	5VDC,10-30VDC	maximum speed	5000rpm
Current Consumption	60mA (P-P) , 140mA (RS422)	Shaft load	Axial 100N Radial 200N
Output Circuit	PUSH-PULL output , RS422	Starting Torque	<0.08Nm
Resolution	6000PPR (Max.)	Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Output Frequency	100kHz	Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Permissible Load/Channel	Max. 30mA	Operating Temperature	-20°C to +85°C
Rise Time	200ns	Protection Class	IP65
Level signal	H:>70%VCC L:<1V	Material	Aluminum
Electrical Protection	Short Circuit, reverse polarity and lightning Protection	Weight	850g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=20,25,30,32,on request

Connection

Function	3R	6R/8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
$\bar{A}$	pink	6
$\bar{B}$	blue	7
$\bar{Z}$	red	8

Ordering Code

Example: EINH9020A593R-1024
90 heavy-duty hollow shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 20mm, radial straight out cable

EINH90	shaft	output	signals	connection	resolution
	20=20mm 25=25mm 30=30mm 32=32mm XX=custom-made	A2=5V RS422 A5=10-30V push-pull	8=ABZ 9=ABZ $\bar{A}$ $\bar{B}$ Z	3R=radial output 6R=connector radial output (cw) 8R=connector radial output (ccw)	200/256/500/ 512/1000/1024/ 1250/1500/ 2000/2048/ 2500/3000/ 3600/4000/ 4096/5000/ 6000/ 50-6000 customizable

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EINH145

Heavy-duty Hollow Shaft Encoder

Features

- Large aperture, suitable for large spindle size
- Can be equipped with shaft sleeve protection
- Max. 2500 pulses
- Suitable for large motor large water pump control and other applications



Specifications

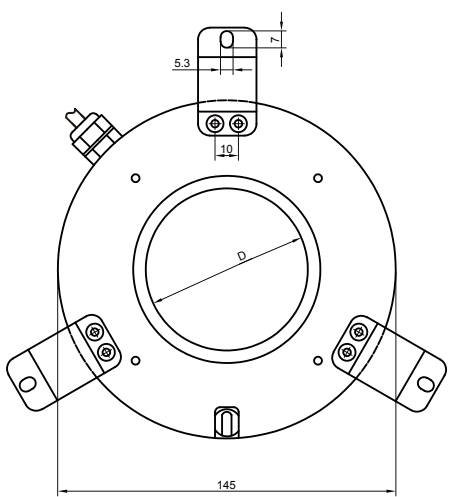
Electrical Specifications

Supply Voltage	5VDC,10-30VDC
Current Consumption	60mA (P-P) , 140mA (RS422)
Output Circuit	PUSH-PULL output , RS422
Resolution	2500PPR (Max.)
Output Frequency	100kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Level signal	H:>70%VCC L:<1V
Electrical Protection	Short Circuit, reverse polarity and lightning Protection

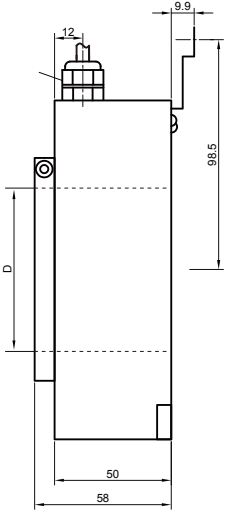
Mechanical Specifications

Maximum speed	800rpm
Shaft load	Axial 200N Radial 200N
Starting Torque	<1.5Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	50m/s² 10....2000Hz
Operating Temperature	-10°C to +70°C
Protection Class	IP54
Material	Aluminum
Weight	1700g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm



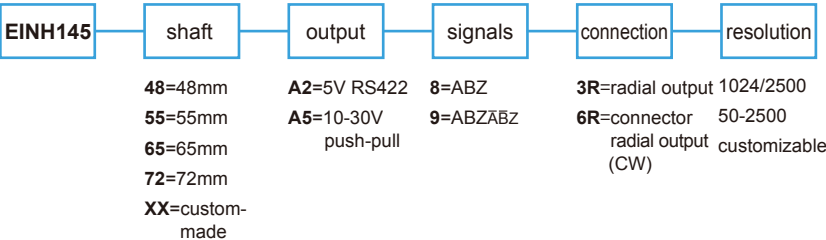
D=58,55,65,72,on request

Connection

Function	3R	6R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
$\bar{A}$	pink	6
$\bar{B}$	blue	7
$\bar{Z}$	red	8

Ordering Code

Example: EINH14548A593R-1024
145 heavy-duty hollow shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 48mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

FINS58

High Performance Solid Shaft Encoder

Features

- Excellent performance, wide selection, IP67 structure optiona
- Optional sinusoidal output or square wave output, the resolution can be double frequency output
- Maximum 80000 pulses, can be equipped with special accessories and FINH58 (FINS58) combination
- Suitable for papermaking equipment, steel industry and other industrial fields



Specifications

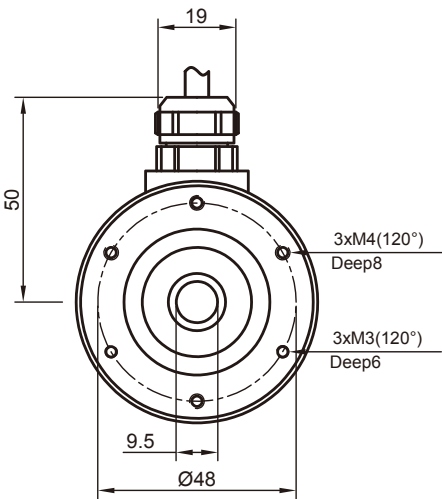
Electrical Specifications

Supply Voltage	5VDC, 10-30VDC
Current Consumption	60mA (P-P) , 140mA (RS422)
Output Circuit	PUSH-PULL output , RS422
Resolution	Square Wave:10000PPR (Max.) Sine Wave:6000PPR Adjustable :50-6000PPR
Output Frequency	300kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Level signal	H:>70%VCC L:<1V
Electrical Protection	Short Circuit, reverse polarity and lightning Protection

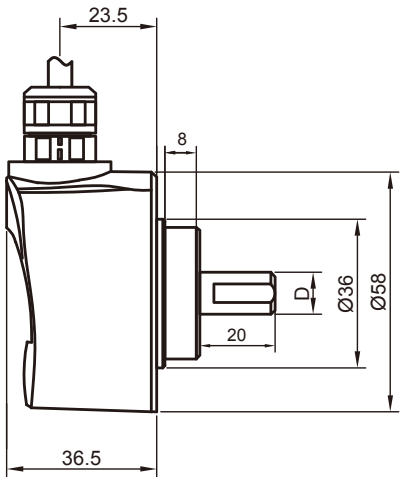
Mechanical Specifications

Maximum speed	15000rpm
Shaft load	Axial 50N Radial 100N
Starting Torque	<0.05Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-25°C to +85°C
Protection Class	IP65/IP67 (option)
Material	Aluminum (shell) , stainless steel (shaft)
Weight	260g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm



D=6,8,10,12,on request

Connection

Function	3R	6R/8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
A̅	pink	6
B̅	blue	7
Z̅	red	8

Ordering Code

Example: FINS5806A593R-1024
58 high performance solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter 6mm, radial straight out cable

FINS58	shaft	output	signals	connection	resolution
06=6x10mm 08=8x12mm 10=10x20mm 12=12x25mm XX=custom-made	A2=5V RS422 (TTL) A5=10-30V push-pull A8=10V-30V RS422 (HTL) sine S1=sine wave output 1V PP frequency doubling D2=5V RS422 (TTL) D5=10-30V push-pull D8=10V-30V RS422 (HTL)	8=ABZ 9=ABZABZ	3R=radial output standard: Max. 80000 frequency doubling: basic resolution Max. 6000 sine: Max. 2500	6R=connector radial output (cw) 8R=connector radial output (ccw)	

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

FINH58

High Performance Hollow Shaft Encoder

Features

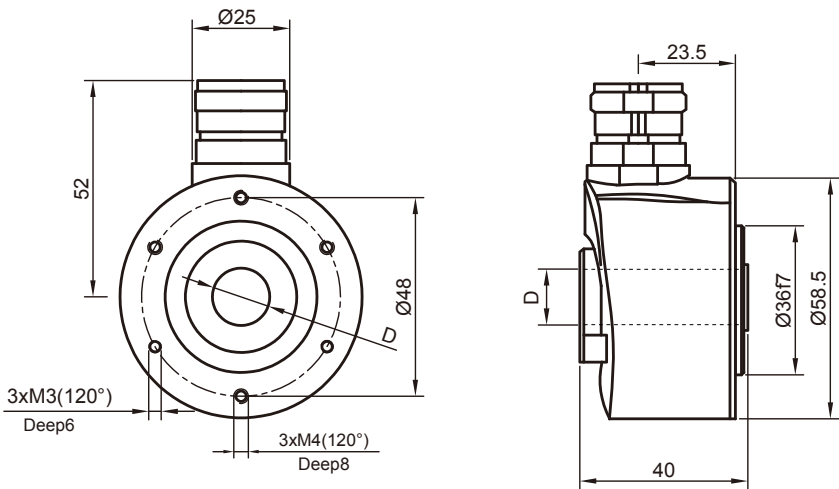
- Excellent performance, wide selection, IP67 structure optiona
- Optional sinusoidal output or square wave output, the resolution can be double frequency output
- Maximum 80000 pulses, can be equipped with special accessories and FINH58 (FINS58) combination
- Suitable for papermaking equipment, steel industry and other industrial fields



Specifications

Electrical Specifications		Mechanical Specifications	
Supply Voltage	5VDC, 10-30VDC	Maximum speed	15000rpm
Current Consumption	60mA (P-P) , 140mA (RS422)	Shaft load	Axial 50N Radial 100N
Output Circuit	PUSH-PULL output , RS422	Starting Torque	<0.05Nm
Resolution	Square Wave:10000PPR (Max.) Sine Wave:6000PPR Adjustable :50-6000PPR	Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Output Frequency	300kHz	Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Permissible Load/Channel	Max. 30mA	Operating Temperature	-25°C to +85°C
Rise Time	200ns	Protection Class	IP65/IP67 (option)
Level signal	H:>70%VCC L:<1V	Material	Aluminum
Electrical Protection	Short Circuit, reverse polarity and lightning Protection	Weight	260g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

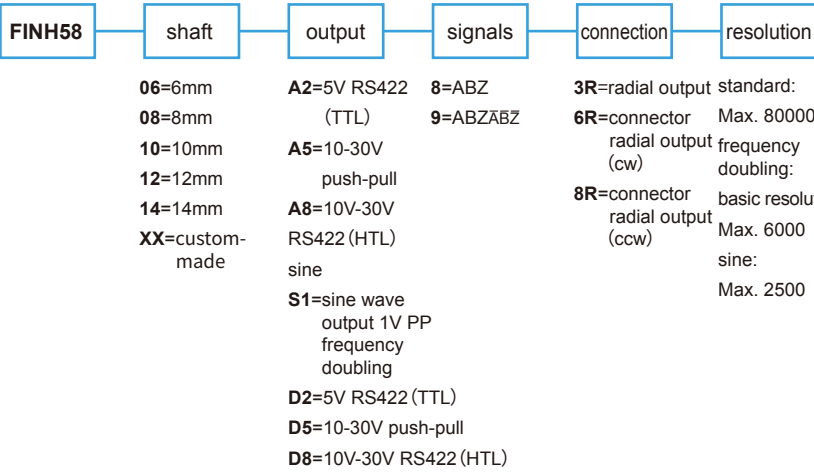
D=6,8,10,12,14,on request

Connection

Function	3R	6R/8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
A̅	pink	6
B̅	blue	7
Z̅	red	8

Ordering Code

Example: FINH5806A593R-1024
58 high performance hollow shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 6mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

MIN58

Programmable Solid Shaft Encoder

Features

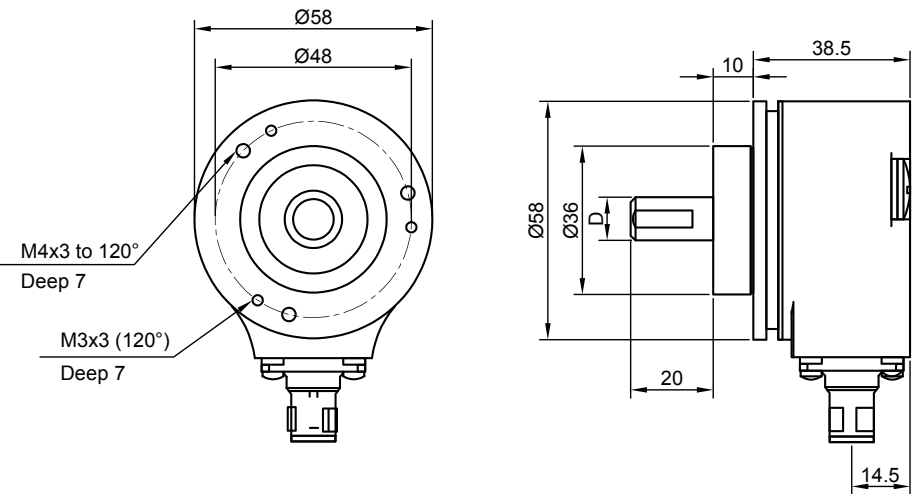
- Resolution, output, direction and so on can be freely programmed by supporting software
- Standard $\phi 58\text{mm}$ OD, easy to install
- Max programmable to 65536 pulses
- Suitable for pipeline monitoring, servo system and other applications



Specifications

Electrical Specifications		Mechanical Specifications	
Supply Voltage	5VDC, 10-30VDC	Maximum speed	6000rpm
Current Consumption	60mA (P-P)	Shaft load	Axial 40N Radial 80N
Output Circuit	PUSH-PULL output , RS422	Starting Torque	<0.02Nm
Resolution	65536PPR (Max.) , Software Modification	Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Output Frequency	900kHz	Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Permissible Load/Channel	Max. 30mA	Operating Temperature	-20°C to +85°C
Rise Time	200ns	Protection Class	IP65
Level signal	H:>70%VCC L:<1V	Material	Aluminum (shell) , stainless steel (shaft)
Electrical Protection	Short Circuit, reverse polarity and lightning Protection	Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

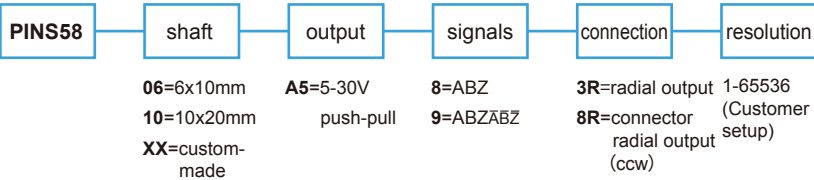
D=6, 10,on request

Connection

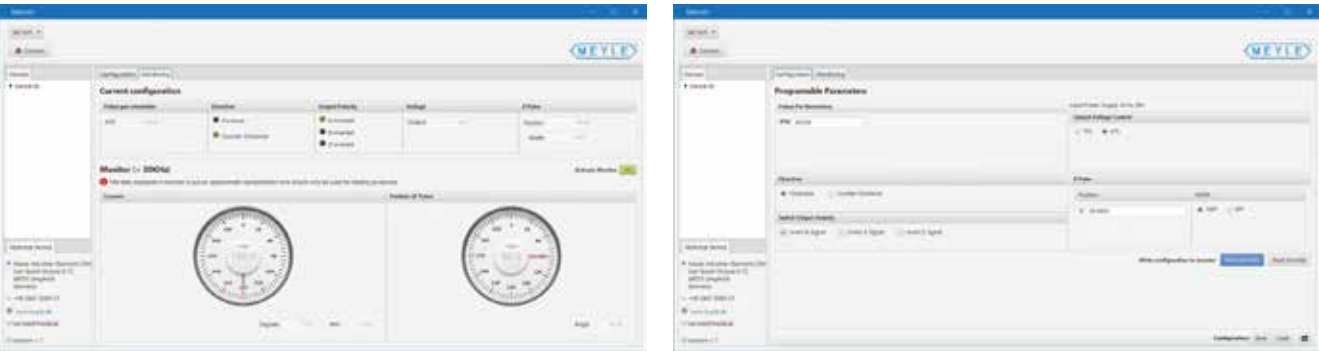
Function	3R	8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
$\bar{A}$	pink	6
$\bar{B}$	blue	7
$\bar{Z}$	red	8

Ordering Code

Example: PINS5806A593R-1024
58 programmable solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter 6mm, radial straight out cable



Programming Software



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

MINH58

Programmable Hollow Shaft Encoder

Features

- Resolution, output, direction and so on can be freely programmed by supporting software
- Standard $\phi 58\text{mm}$ OD, easy to install
- Max programmable to 65536 pulses
- Suitable for pipeline monitoring, servo system and other applications



Specifications

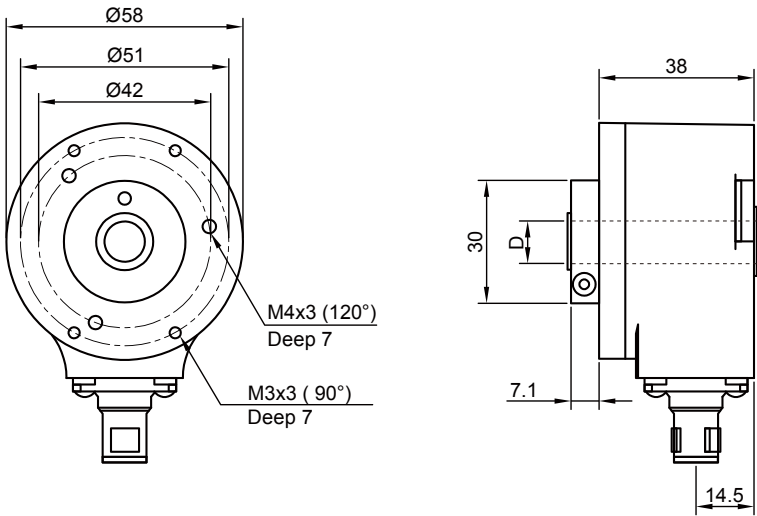
Electrical Specifications

Supply Voltage	5VDC, 10-30VDC
Current Consumption	60mA (P-P)
Output Circuit	PUSH-PULL output , RS422
Resolution	65536PPR (Max.) , Software Modification
Output Frequency	900kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Level signal	H:>70%VCC L:<1V
Electrical Protection	Short Circuit, reverse polarity and lightning Protection

Mechanical Specifications

Maximum speed	6000rpm
Shaft load	Axial 40N Radial 80N
Starting Torque	<0.02Nm
Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Operating Temperature	-20°C to +85°C
Protection Class	IP65
Material	Aluminum
Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

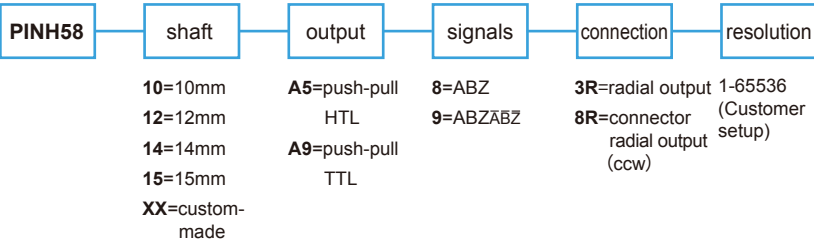
D=10,12,14,15,on request

Connection

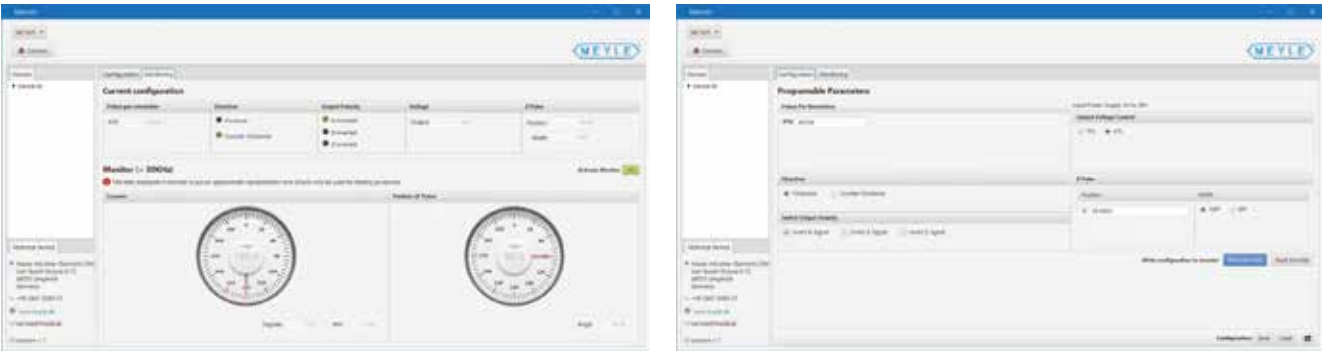
Function	3R	8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
$\bar{A}$	pink	6
$\bar{B}$	blue	7
$\bar{Z}$	red	8

Ordering Code

Example: PINH5806A593R-1024
58 programmable hollow shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 6mm, radial straight out cable



Programming Software



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

MIN S100

Dual-output Solid Shaft Encoder

Features

- Double output type, no response time difference
- Heavy-duty encoder
- Max. 5000 pulses
- Suitable for large machinery monitoring and other applications



Specifications

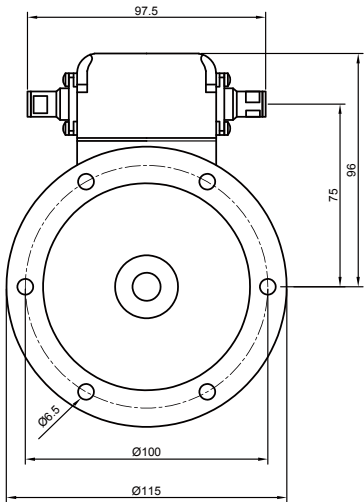
Electrical Specifications

Supply Voltage	5VDC, 10-30VDC
Current Consumption	60mA (P-P) , 140mA (RS422)
Output Circuit	PUSH-PULL output , RS422
Resolution	5000PPR (Max.)
Output Frequency	300kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Level signal	H:>70%VCC L:<1V
Electrical Protection	Short Circuit, reverse polarity and lightning Protection

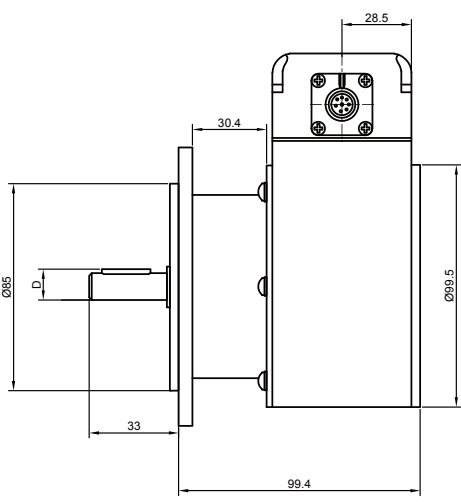
Mechanical Specifications

Maximum speed	6000rpm
Shaft load	Axial 350N Radial 400N
Starting Torque	<0.08Nm
Shock Resistance	EN 60068-2-27 2500m/s² 6ms
Vibration Resistance	EN 60068-2-6 300m/s² 55....2000HZ
Operating Temperature	-20°C to +85°C
Protection Class	IP66
Material	Aluminum (shell) , stainless steel (shaft)
Weight	1800g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm



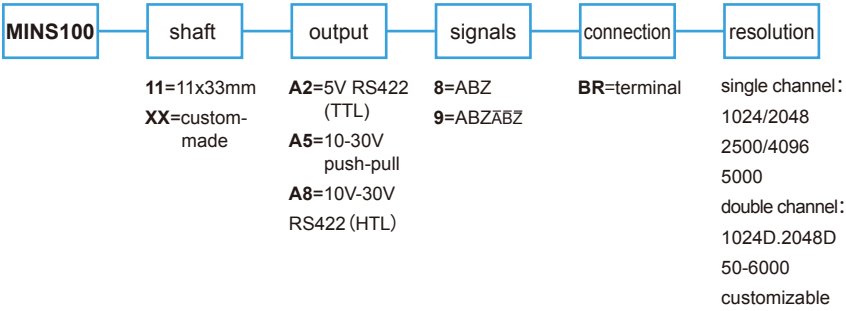
D=11,on request

Connection

Function	BR
GND	1
VCC	2
A	3
B	4
Z	5
A̅	6
B̅	7
Z̅	8

Ordering Code

Example: MINS10011A593R-1024D
100 dual-output solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter 12mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

MINH100

Dual-output Hollow Shaft Encoder

Features

- Double output type, no response time difference
- Heavy-duty encoder
- Max. 5000 pulses
- Suitable for large machinery monitoring and other applications



Specifications

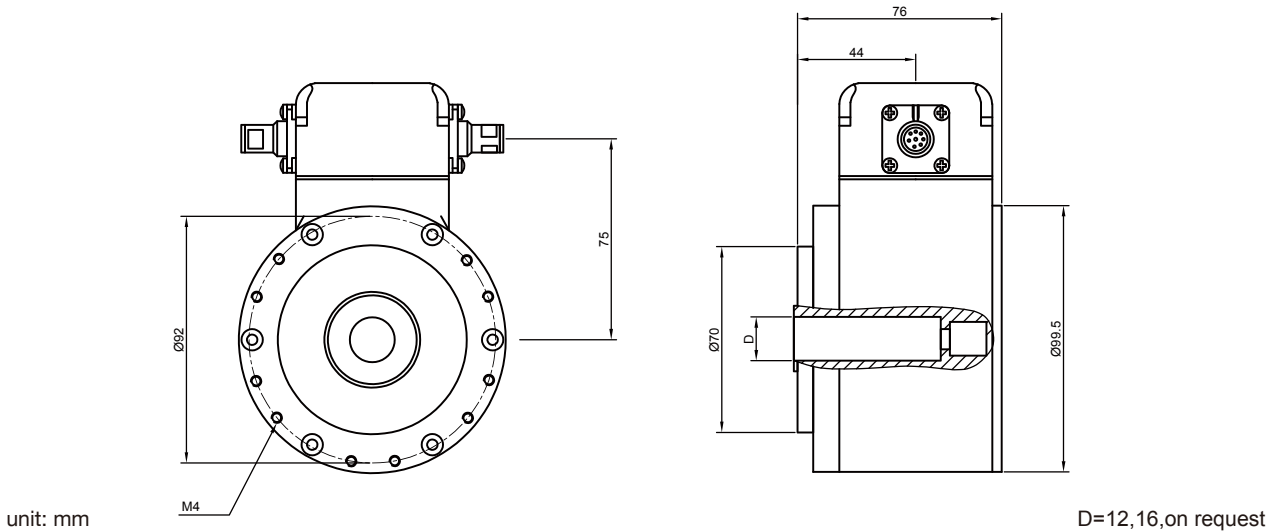
Electrical Specifications

Supply Voltage	5VDC, 10-30VDC
Current Consumption	60mA (P-P) , 140mA (RS422)
Output Circuit	PUSH-PULL output , RS422
Resolution	5000PPR (Max.)
Output Frequency	200kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Level signal	H:>70%VCC L:<1V
Electrical Protection	Short Circuit, reverse polarity and lightning Protection

Mechanical Specifications

Maximum speed	6000rpm
Shaft load	Axial 400N Radial 500N
Starting Torque	<0.06Nm
Shock Resistance	EN 60068-2-27 2500m/s² 6ms
Vibration Resistance	EN 60068-2-6 300m/s² 55....2000HZ
Operating Temperature	-20°C to +85°C
Protection Class	IP66
Material	Aluminum
Weight	1700g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)

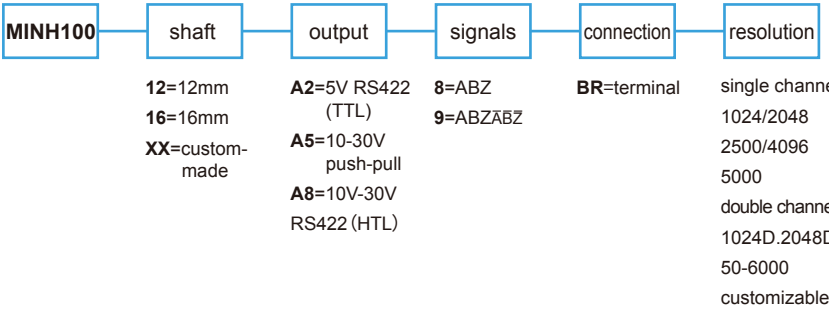


Connection

Function	BR
GND	1
VCC	2
A	3
B	4
Z	5
A̅	6
B̅	7
Z̅	8

Ordering Code

Example: MINH10012A593R-1024D
100 dual-output hollow shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 12mm, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

IMG30

Special solid shaft encoder

Features

- Special encoder for speed measurement
- Compact size for easy installation
- Three pulses outputs,Optional high temperature type
- Dedicated to small equipment speed control and other applications



Specifications

Electrical Specifications

Supply Voltage	10-24VDC
Current Consumption	50mA
Output Circuit	HTL

Resolution	A:1435 B:1435 (A90°Phase difference) C:572
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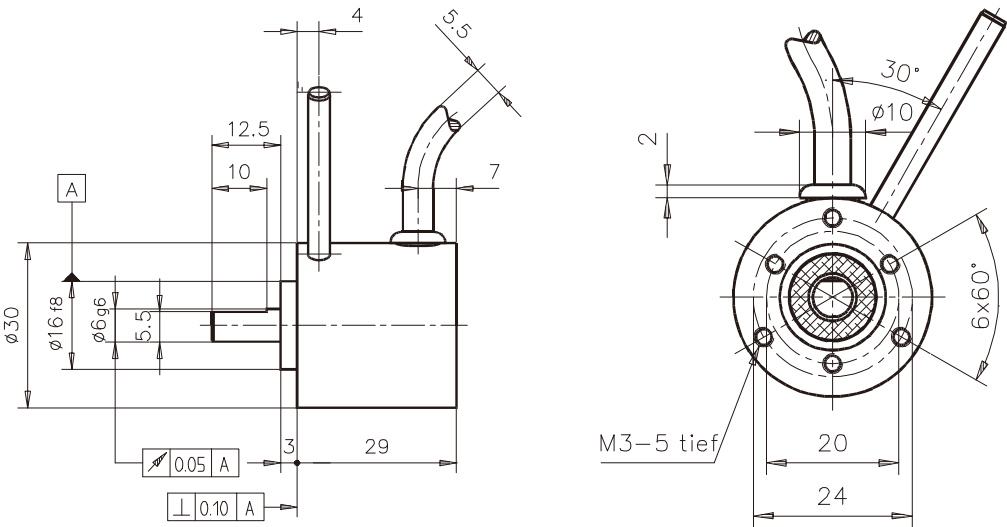
OutputFrequency	200kHz
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Electrical Protection	short circuit protection, reverse polarity protection, lightning strike protection
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Mechanical Specifications

Maximum speed	8000rpm
Shaft load	Axial 5N Radial 10N
Starting Torque	<0.015Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	0°Cto+80°C, -30°Cto+80°C (On Request)
Protection Class	IP64
Material	Cover:Auminium solid (high-grade steel on inquiry) Shaft:steel (stainless)
Weight	127g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

Connection

Function	Color	Plug
GND	white	1
VCC	brown	2
A	green	3
B	grey	4
C	blue	5

Ordering Code

IMG30B-1435/572-AB/C-PT

Example: A:1435 pulse
B:1435 pulse
C:572 pulse
axle diameter 6mm
radial straight out cable

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

IMG100

Special Hollow Shaft Encoder

Features

- Super heavy load encoder
- Special lightning protection, anti - static design, tap lock link
- Max. 6000 pulses
- Dedicated to wind power equipment and other applications



Specifications

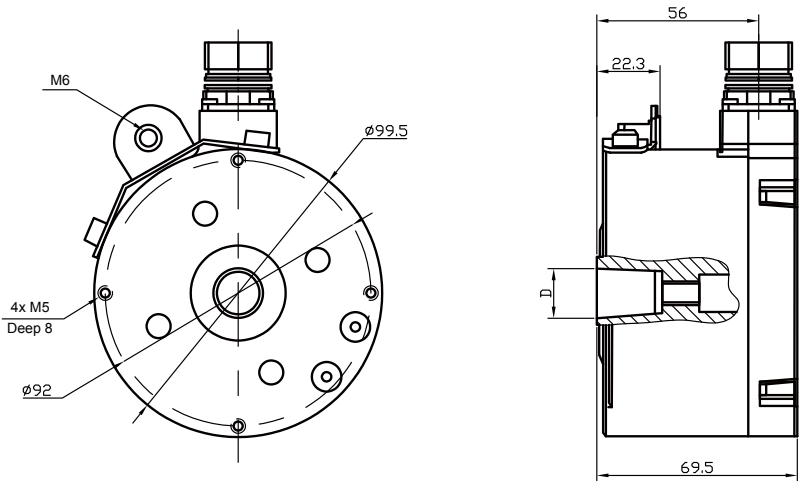
Electrical Specifications

Supply Voltage	5VDC,10-30VDC
Current Consumption	60mA(P-P) , 140mA (RS422) Short Circuit Protection
Output Circuit	PUSH-PULL output , RS422
Resolution	6000PPR (Max.)
Output Frequency	200kHz
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Level signal	H:>70%VCC L:<1V
Electrical Protection	Short Circuit, reverse polarity and lightning Protection

Mechanical Specifications

maximum speed	6000rpm
Shaft load	
Starting Torque	<0.08Nm
Shock Resistance	EN 60068-2-27 4000m/S² 3.5ms
Vibration Resistance	EN 60068-2-6 200m/s² 55....2000Hz
Operating Temperature	-20°C to +80°C
Protection Class	IP67
Material	Aluminum
Weight	1300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=12,14,16,17,on request

Connection

Function	3R	6R/8R
GND	white	1
VCC	brown	2
A	green	3
B	yellow	4
Z	grey	5
Ā	pink	6
Ḃ	blue	7
Z̄	red	8

Ordering Code

Example: IMG10012A593R-1024
100 special hollow shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 12mm, radial straight out cable

IMG100	shaft	output	signals	connection	resolution
	12=12mm 14=14mm 16=16mm 17=17mm XX=custom-made	A2=5V RS422 A5=10-30V push-pull	8=ABZ 9=ABZĀBZ	3R=radial output 6R=connector radial output (cw) 8R=connector radial output (ccw)	10/50/200 256/500/512 1000/1024 1250/1500 2000/2048 2500/3000 3600/4000 4096/5000 6000/50-6000 10000 10-10000 customizable

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

IMG115

Special Solid Shaft Encoder

Features

- Special Flange connection of European standard (EURO flange flange B10)
- Heavy duty encoder, high vibration and impact resistance
- Max. 5000 pulses
- Dedicated to wind power equipment and other applications



Specifications

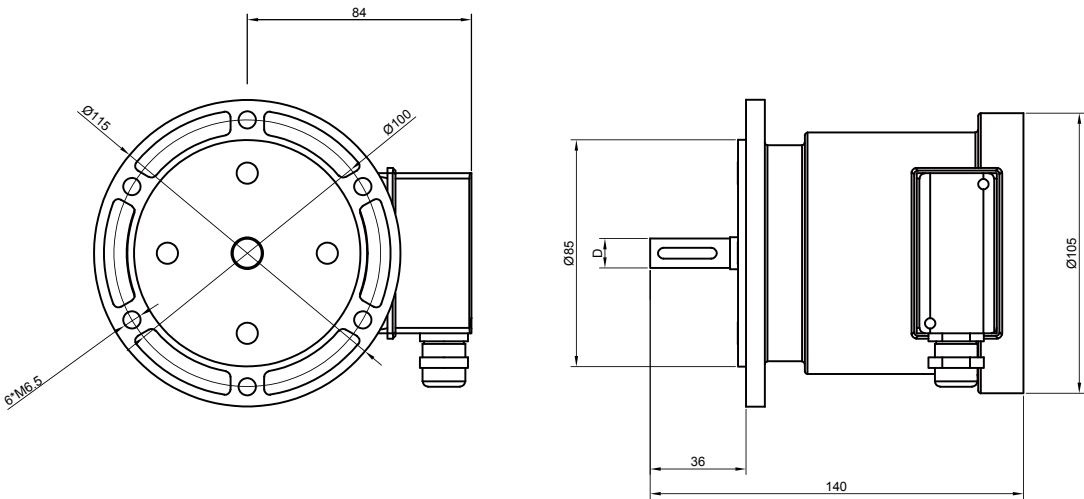
Electrical Specifications

Supply Voltage	10-30VDC, 5VDC
Current Consumption	60mA (P-P)
Output Circuit	PUSH-PULL output(HTL/TTL)
Resolution	5000PPR (Max.)
Output Frequency	100kHz (300kHz on request)
Permissible Load/Channel	Max. 30mA
Rise Time	200ns
Level signal	H:>70%VCC L:<1V
Electrical Protection	Short Circuit, reverse polarity and lightning Protection

Mechanical Specifications

Maximum speed	10000rpm
Shaft load	Axial 250N Radial 350N
Starting Torque	<0.08Nm
Shock Resistance	EN 60068-2-27 3000m/s² 1ms
Vibration Resistance	EN 60068-2-6 100m/s² 10....2000Hz
Operating Temperature	-25°C to +100°C
Protection Class	IP56
Material	Aluminum
Weight	1400g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=12, 15, 16, on request

Connection

Function	BR
GND	1
VCC	2
A	3
B	4
Z	5
A̅	6
B̅	7
Z̅	8

Ordering Code

Example: IMG11512A593R-1024
115 special solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter 12mm, radial straight out cable

IMG115	shaft	output	signals	connection	resolution
	12=12x36mm 15=15x36mm 16=16x36mm XX=custom-made	A5=push-pull (HTL) A9=push-pull (TTL)	8=ABZ 9=ABZABZ̅	BR=terminal	300/500/512 1000/1024 1250/1500 2000/2048 2500/3000 3600/4000 4096/5000 6000 50-5000 customizable

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

DAXS37

Small Solid Shaft Encoder

Features

- Small size, easy to install
- Standard CANopen protocol, SSI and biss protocol
- Up to 16 bit singleturn,14 bit multiturn
- Suitable for instrument and other applications



CANopen SSI

Specifications

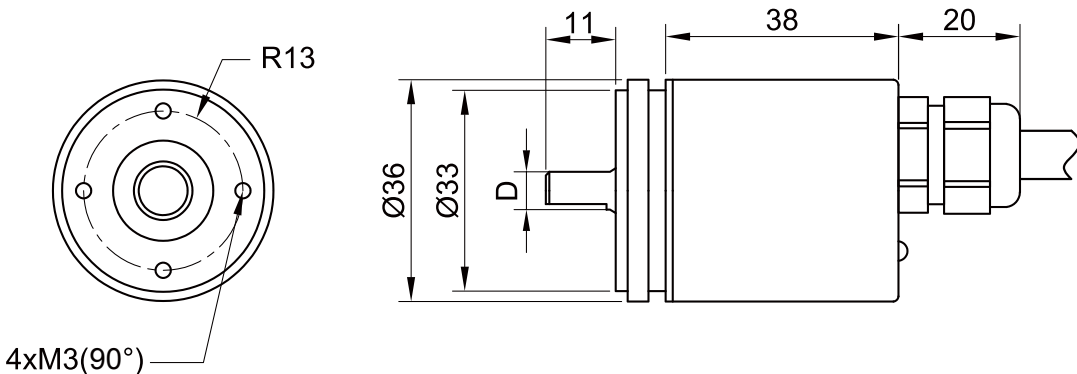
Electrical Specifications

Interface	CAN open	SSI/BISS
Supply Voltage	10-30VDC, 5VDC	
Current Consumption	50mA	80mA
Output Code	Binary	Binary/Gray
Resolution	16 bit single turn (Max.), 14 bit multiturn (Max.)	
Output speed	1MBit/s	0.1-2 MBit/s
Criterion	DSP406, Class 1 Class2	RS422
linearity	1LSB	

Mechanical Specifications

Maximum speed	8000rpm
Shaft load	Axial 20N Radial 40N
Starting Torque	<0.02Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-40°C to +80°C
Protection Class	IP65/IP67 (option)
Material	Stainless steel (316L)
Weight	150g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,on request

Connection

SSI	3A/3R
GND	white
VCC	brown
CLCOK+	green
CLOCK-	yellow
DATE+	grey
DATE-	pink
ZERO	blue
DIR	red

CANopen	3A/3R
GND	white
VCC	brown
CAN_GROUND	green
CAN_LOW(-)	yellow
CAN_HIGH(+)	grey

Ordering Code

Example: DASS370012E06SB3A
37single turn 12 bit resolution SSI binary solid shaft encoder, power voltage 10-30V DC, radial straight out cable

DAXS37	resolution	power	shaft	output	connection
DASS=ST	1212=12 MT	A=5VDC	06=6x11mm	SB=SSI binary	3A=axial output
DAMS=MT	12 ST	E=10-30VDC	XX=custom-made	SG=SSI gray	3R=radial output
	1213=12 MT			CO=CANopen	
	13 ST				
	1214=12 MT				
	14 ST				
	1216=12 MT				
	16 ST				
	0012=12 ST				
	0016=16 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

DAXB37

Small Blind Shaft Encoder

Features

- Small size, easy to install
- Standard CANopen protocol, SSI and biss protocol
- Up to 16 bit singleturn, 14 bit multiturn
- Suitable for instrument and other applications



CANopen SSI

Specifications

Electrical Specifications

Interface CAN open SSI/BISS

Supply Voltage 10-30VDC, 5VDC

Current Consumption 50mA 80mA

Output Code Binary Binary/Gray

Resolution 16 bit single turn (Max.),
14 bit multiturn (Max.)

Output speed 1MBit/s 0.1-2 MBit/s

Criterion DSP406, Class 1 Class2 RS422

linearity 1LSB

Mechanical Specifications

Maximum speed 8000rpm

Shaft load Axial 20N Radial 40N

Starting Torque <0.02Nm

Shock Resistance EN 60068-2-27 1000m/s² 6ms

Vibration Resistance EN 60068-2-6 100m/s² 55....2000HZ

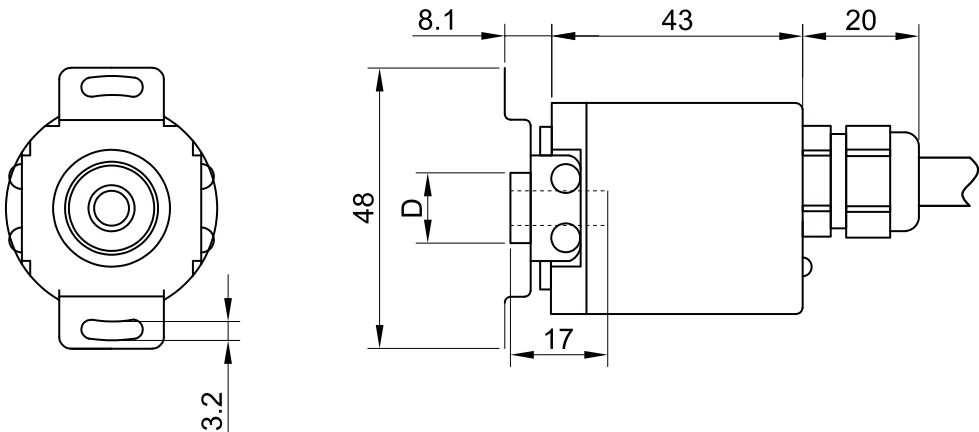
Operating Temperature -40°C to +80°C

Protection Class IP65/IP67 (option)

Material stainless steel (316L)

Weight 150g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,on request

Connection

SSI 3A/3R

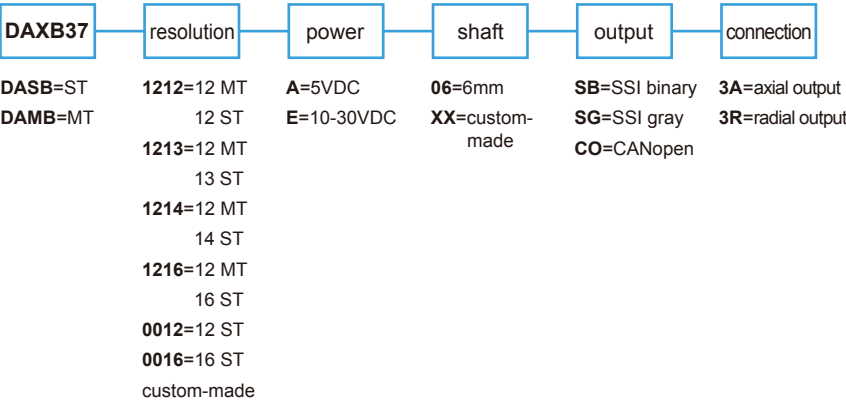
GND white
VCC brown
CLCOK+ green
CLOCK- yellow
DATE+ grey
DATE- pink
ZERO blue
DIR red

CANopen 3A/3R

GND white
VCC brown
CAN_GROUND green
CAN_LOW(-) yellow
CAN_HIGH(+) grey

Ordering Code

Example: DASB370012E06SB3A
37single turn 12 bit resolution SSI binary blind shaft encoder, power voltage 10-30V DC, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

DAXS58

Standard Solid Shaft Encoder

Features

- Strong anti-interference capability
- Standard CANopen protocol, SSI and biss protocol
- Up to 16 bit singleturn, 14 bit multiturn
- Suitable for assembly line monitoring and other applications



CANopen SSI

Specifications

Electrical Specifications

Interface CAN open SSI/BISS

Supply Voltage 10-30VDC, 5VDC

Current Consumption 50mA 80mA

Output Code Binary Binary/Gray

Resolution 16 bit single turn (Max.),
14 bit multiturn (Max.)

Output speed 1MBit/s 0.1-2 MBit/s

Criterion DSP406, Class 1 Class2 RS422

linearity 1LSB

Mechanical Specifications

Maximum speed 8000rpm

Shaft load Axial 50N Radial 100N

Starting Torque <0.05Nm

Shock Resistance EN 60068-2-27 1000m/s² 6ms

Vibration Resistance EN 60068-2-6 100m/s² 55....2000HZ

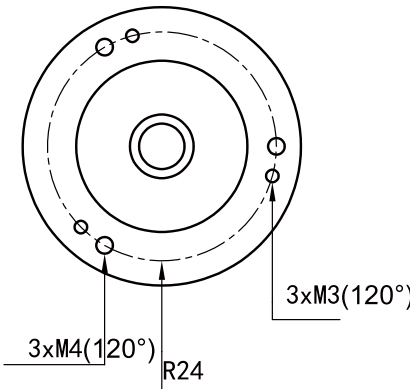
Operating Temperature -40°C to +80°C

Protection Class IP65/IP67 (option)

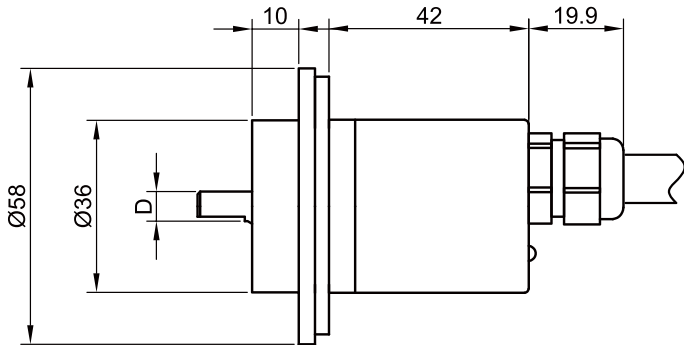
Material Stainless steel (316L)

Weight 150g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm



D=6,8,on request

Connection

SSI	3A/3R	6A/6R
GND	white	2
VCC	brown	1
CLCOK+	green	6
CLOCK-	yellow	4
DATE+	grey	5
DATE-	pink	8
ZERO	blue	7
DIR	red	3

CANopen	3R	6R
GND	white	3
VCC	brown	2
CAN_GROUND	green	1
CAN_LOW(-)	yellow	5
CAN_HIGH(+)	grey	4

Ordering Code

Example: DASS580012E06SB3A
58single turn 12 bit resolution SSI binary solid shaft encoder, power voltage 10-30V
DC, radial straight out cable

DAXS58	resolution	power	shaft	output	connection
DASS=ST	1212=12 MT	A=5VDC	06=6x10mm	SB=SSI binary	3A=axial output
DAMS=MT	12 ST	E=10-30VDC	08=8x12mm	SG=SSI gray	3R=radial output
	1213=12 MT		XX=custom-made		6A=connector axial output (cw)
	13 ST				6R=connector radial output (cw)
	1214=12 MT				
	14 ST				
	1216=12 MT				
	16 ST				
	0012=12 ST				
	0016=16 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

DAXB58

Standard Blind Shaft Encoder

Features

- Strong anti-interference capability
- Standard CANopen protocol, SSI and biss protocol
- Up to 16 bit singleturn,14 bit multiturn
- Suitable for assembly line monitoring and other applications



CANopen SSI

Specifications

Electrical Specifications

Interface CAN open SSI/BISS

Supply Voltage 10-30VDC, 5VDC

Current Consumption 50mA 80mA

Output Code Binary Binary/Gray

Resolution 16 bit single turn (Max.),
14 bit multiturn (Max.)

Output speed 1MBit/s 0.1-2 MBit/s

Criterion DSP406, Class 1 Class2 RS422

linearity 1LSB

Mechanical Specifications

Maximum speed 8000rpm

Shaft load Axial 50N Radial 100N

Starting Torque <0.05Nm

Shock Resistance EN 60068-2-27 1000m/s² 6ms

Vibration Resistance EN 60068-2-6 100m/s² 55....2000HZ

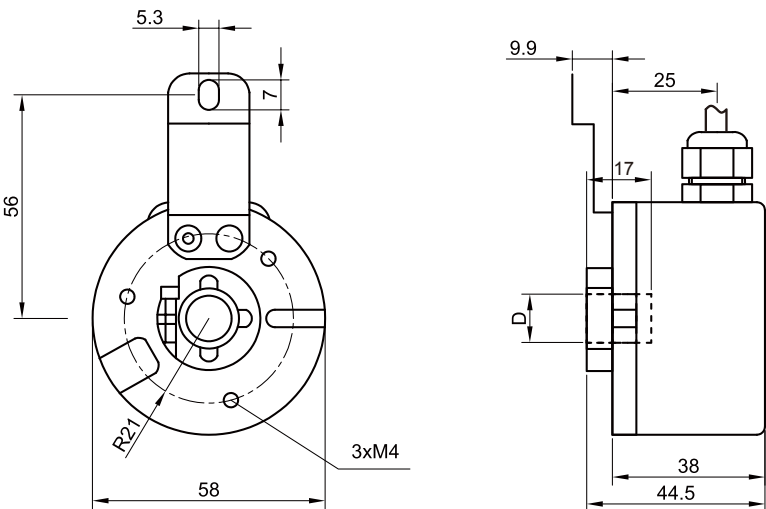
Operating Temperature -40°C to +80°C

Protection Class IP65/IP67 (option)

Material stainless steel (316L)

Weight 150g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=10,12,14,on request

Connection

SSI	3A/3R	6A/6R
GND	white	2
VCC	brown	1
CLCOK+	green	6
CLOCK-	yellow	4
DATE+	grey	5
DATE-	pink	8
ZERO	blue	7
DIR	red	3

CANopen	3R	6R
GND	white	3
VCC	brown	2
CAN_GROUND	green	1
CAN_LOW(-)	yellow	5
CAN_HIGH(+)	grey	4

Ordering Code

Example: DASB580012E06SB3A
58single turn 12 bit resolution SSI binary blind shaft encoder, power voltage 10-30V DC, radial straight out cable

DAXB58	resolution	power	shaft	output	connection
DASB=ST	1212=12 MT	A=5VDC	10=10mm	SB=SSI binary	3A=axial output
DAMB=MT	12 ST	E=10-30VDC	12=12mm	SG=SSI gray	3R=radial output
	1213=12 MT		14=14mm		6A=connector axial output (cw)
	13 ST		XX=custom-made		6R=connector radial output (cw)
	1214=12 MT				
	14 ST				
	1216=12 MT				
	16 ST				
	0012=12 ST				
	0016=16 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXS40

Small Solid Shaft Encoder

Features

- Easy installation and integration
- Standard CANopen protocol, SSI protocol
- Up to 21 bit singleturn, 14 bit multiturn
- Suitable for printer applications



CANopen SSI

Specifications

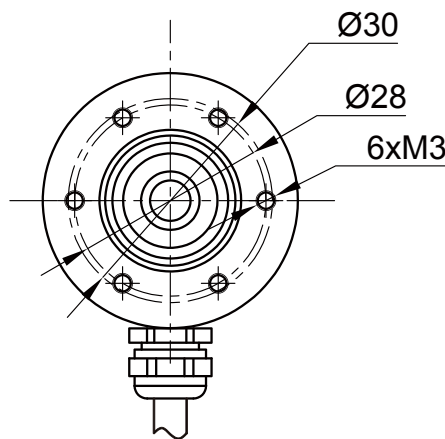
Electrical Specifications

Interface	CAN open	SSI/BISS
Supply Voltage	10-30VDC, 5VDC	10-30VDC, 5VDC
Current Consumption	50mA	80mA
Output Code	Binary	Binary/Gray
Resolution	21 bit single turn (Max.), 21 bit single turn (Max.) 14 bit multiturn (Max.), 14 bit multiturn (Max.)	
Output speed	1MBit/s	0.1-2 MBit/s
Criterion	DSP406, Class 1 Class2	RS422
linearity	1LSB	1LSB

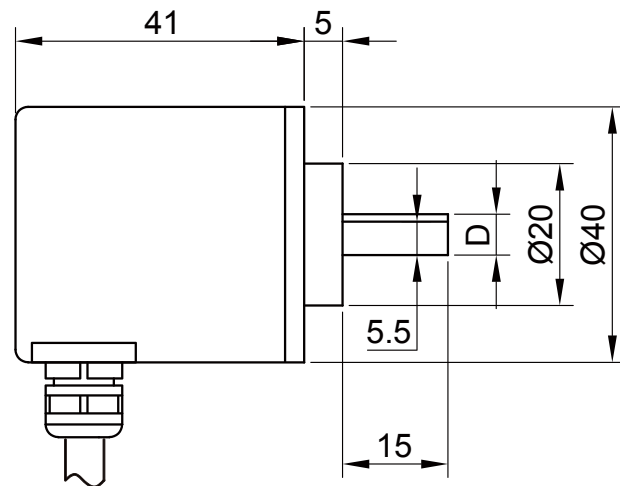
Mechanical Specifications

Maximum speed	8000rpm
Shaft load	Axial 30N Radial 60N
Starting Torque	<0.02Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-40°C to +80°C
Protection Class	IP66
Material	stainless steel (316L)
Weight	150g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm



D=6,10,on request
Singleturn: H=38, Multiturn: H=43

Connection

SSI	3A/3R	6A/8A
GND	brown	2
VCC	white	1
CLCOK+	yellow	6
CLOCK-	green	4
DATE+	pink	5
DATE-	grey	8
ZERO	black	7
DIR	blue	3

CANopen	3A/3R	6A/8A
GND	white	3
VCC	brown	2
CAN_GROUND	green	1
CAN_LOW(-)	yellow	5
CAN_HIGH(+)	grey	4

Ordering Code

Example: EASS400012E06SB3A
37single turn 12 bit resolution SSI binary solid shaft encoder, power voltage 10-30V DC, radial straight out cable

EAXS40	resolution	power	shaft	output	connection
EASS=ST	1212=12 MT	A=5VDC	06=6x15mm	SB=SSI binary	3A=axial output
EAMS=MT	12 ST	E=10-30VDC	XX=custom-made	SG=SSI gray	3R=radial output
	1214=12 MT			CO=CANopen	6A=connector axial output (cw)
	14 ST				8A=connector axial output (ccw)
	1021=10 MT				
	21 ST				
	1220=12 MT				
	20 ST				
	1418=14 MT				
	18 ST				
	0012=12 ST				
	0021=21 ST				
	custom-made				

EAXB40

Small Blind Shaft Encoder



CANopen 

Features

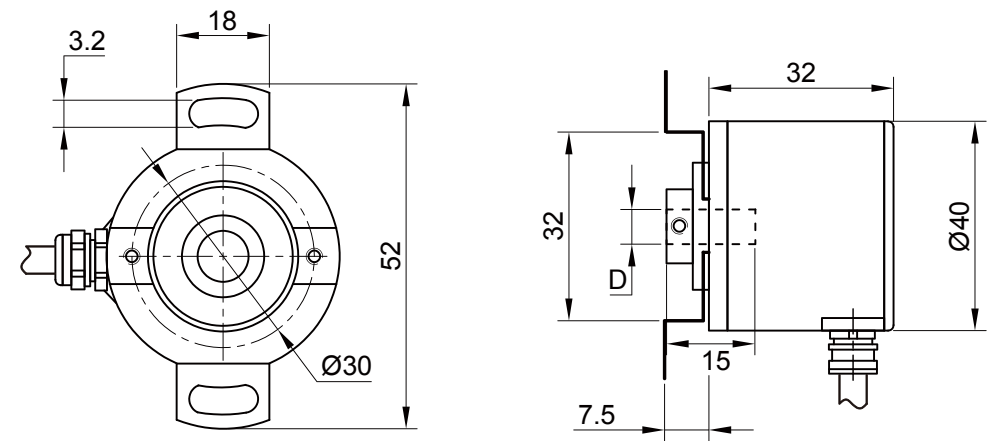
- Easy installation and integration
- Standard CANopen protocol, SSI protocol
- Up to 21 bit singleturn, 14 bit multeturn
- Suitable for printer applications

Specifications

Electrical Specifications		
Interface	CAN open	SSI/BISS
Supply Voltage	10-30VDC, 5VDC	10-30VDC, 5VDC
Current Consumption	50mA	80mA
Output Code	Binary	Binary/Gray
Resolution	21 bit single turn (Max.), 21 bit single turn (Max.), 14 bit multiturn (Max.) 14 bit multiturn (Max.)	
Output speed	1MBit/s	0.1-2 MBit/s
Criterion	DSP406, Class 1 Class2	RS422
linearity	1LSB	1LSB

Mechanical Specifications	
Maximum speed	8000rpm
Shaft load	Axial 30N Radial 60N
Starting Torque	<0.02Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-40°C to +80°C
Protection Class	IP66
Material	stainless steel (316L)
Weight	150g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,10,on request
Singleturn: H=38, Multiturn: H=43

Connection

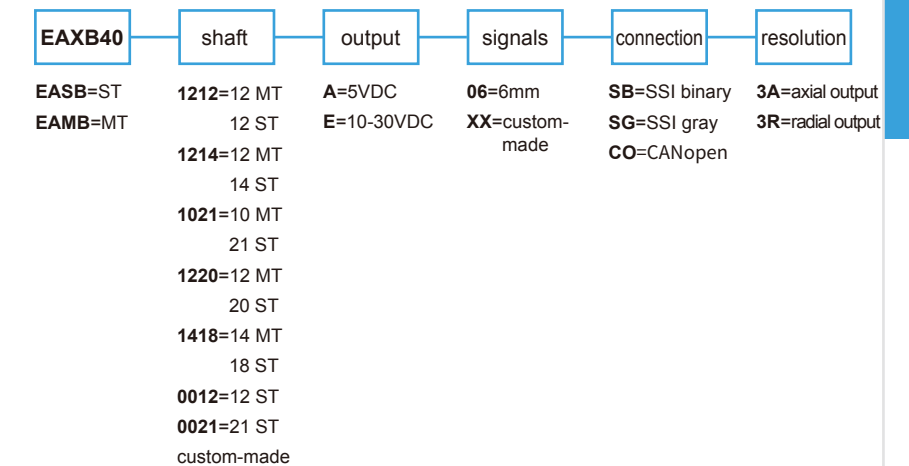
SSI	3A/3R
GND	brown
VCC	white
CLCOK+	yellow
CLOCK-	green
DATE+	pink
DATE-	grey
ZERO	black
DIR	blue

CANopen	3A/3R
GND	white
VCC	brown
CAN_GROUND	green
CAN_LOW(-)	yellow
CAN_HIGH(+)	grey

Ordering Code

Example: EASB400012E06SB3A

37single turn 12 bit resolution SSI binary blind shaft encoder, power voltage 10-30V DC, radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXS58

SSI Solid Shaft Encoder

Features

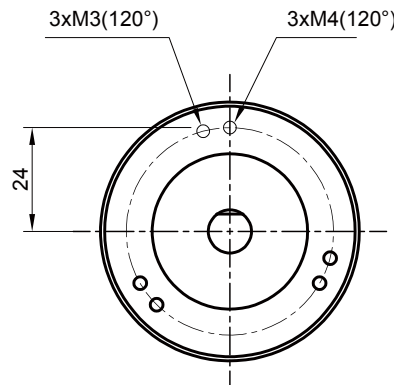
- Standard $\phi 58\text{mm}$ OD, easy to install
- high precision ,Standard SSI and biss protocol
- Up to 21 bitsingleturn,14bitmultiturn
- Suitable for system control and other applications



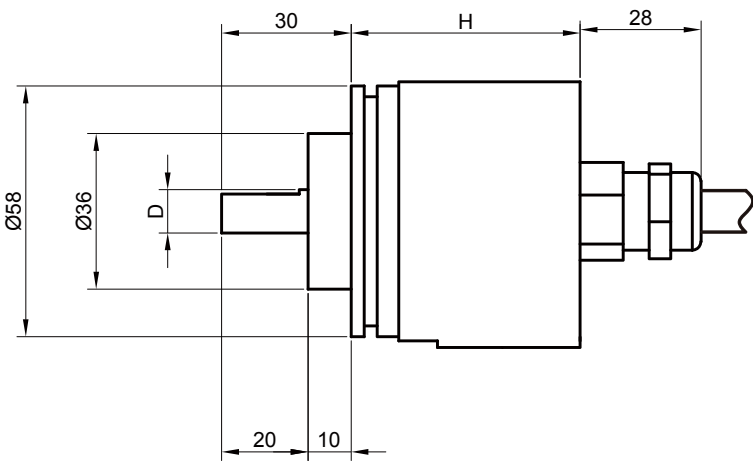
Specifications

Electrical Specifications		Mechanical Specifications	
Interface	SSI	Maximum speed	12000rpm
Supply Voltage	5VDC, 10-30VDC	Shaft load	Axial 50N Radial 100N
Current Consumption	80mA	Starting Torque	<0.05Nm
Output Code	Binary/Gray	Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Resolution	21 bit single turn (Max.), 14 bit multiturn (Max.)	Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Output speed	0.1-2 MBit/s	Operating Temperature	-40°C to +80°C
Criterion	RS422	Protection Class	IP66
linearity	1LSB	Material	stainless steel (316L)
Incremental output	Refer to EINS58 parameter	Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm



D=6,10,on request
Singleturn: H=47, Multiturn: H=54

Connection

SSI	3A/3R	6A/6R/8A/8R
GND	brown	2
VCC	white	1
CLCOK+	yellow	6
CLOCK-	green	4
DATE+	pink	5
DATE-	grey	8
ZERO	black	7
DIR	blue	3

Ordering Code

Example: EASS580012E06SB3R
58single turn 12 bit resolution SSI binary solid shaft encoder, power voltage 10-30V DC, axle diameter 6mm, radial straight out cable

EASS58	resolution	power	shaft	output	connection
EASS=ST EAMS=MT	1212=12 MT 12 ST 1214=12 MT 14 ST 1021=10 MT 21 ST 1220=12 MT 20 ST 1418=14 MT 18 ST 0012=12 ST 0021=21 ST custom-made	A=5VDC E=10-30VDC	06=6x10mm 10=10x20mm XX=custom-made	SB=SSI binary SG=SSI gray	3A=axial output 3R=radial output 6A=connector radial output (cw) 6R=connector axial output (cw) 8A=connector radial output (ccw) 8R=connector axial output (ccw)

option:
incremental output

1024/2048/4096

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXB58

SSI Blind Shaft Encoder

Features

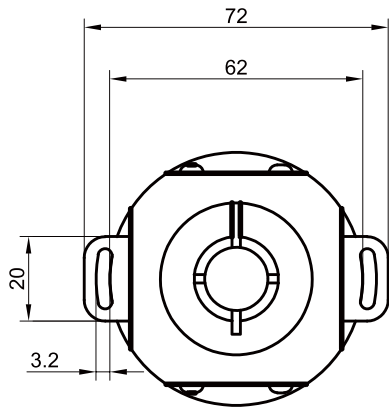
- Standard $\phi 58\text{mm}$ OD, easy to install
- high precision ,Standard SSI and biss protocol
- Up to 21 bitsingleturn,14bitmultiturn
- Suitable for system control and other applications



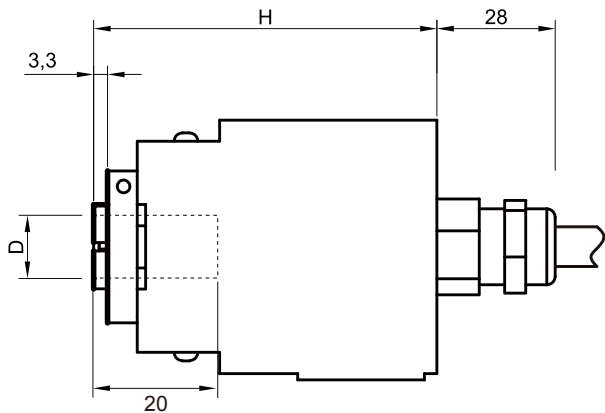
Specifications

Electrical Specifications		Mechanical Specifications	
Interface	SSI	Maximum speed	12000rpm
Supply Voltage	5VDC, 10-30VDC	Shaft load	Axial 50N Radial 100N
Current Consumption	80mA	Starting Torque	<0.05Nm
Output Code	Binary/Gray	Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Resolution	21 bit single turn (Max.), 14 bit multiturn (Max.)	Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Output speed	0.1-2 MBit/s	Operating Temperature	-40°C to +80°C
Criterion	RS422	Protection Class	IP66
linearity	1LSB	Material	stainless steel (316L)
Incremental output	Refer to EINS58 parameter	Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm



D=6,10,on request
Singleturn: H=47, Multiturn: H=54

Connection

SSI	3A/3R	6A/6R/8A/8R
GND	brown	2
VCC	white	1
CLCOK+	yellow	6
CLOCK-	green	4
DATE+	pink	5
DATE-	grey	8
ZERO	black	7
DIR	blue	3

Ordering Code

Example: EASB580012E06SB3R
58single turn 12 bit resolution SSI binary blind shaft encoder, power voltage 10-30V DC, aperture 6mm, radial straight out cable

EASB58	resolution	power	shaft	output	connection
EASB=ST EAMB=MT	1212 =12 MT 12 ST 1214 =12 MT 14 ST 1021 =10 MT 21 ST 1220 =12 MT 20 ST 1418 =14 MT 18 ST 0012 =12 ST 0021 =21 ST custom-made	A =5VDC E =10-30VDC	06 =6mm 10 =10mm XX =custom-made	SB =SSI binary SG =SSI gray	3A =axial output 3R =radial output 6A =connector radial output (cw) 6R =connector axial output (cw) 8A =connector radial output (ccw) 8R =connector axial output (ccw)

option:
incremental output

1024/2048/4096

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXS58

Analog Solid Shaft Encoder

Features

- Standard ϕ 58mm OD, easy to install protection grade up to IP67
- high precision ,Standard MODBUS protocol 4-20mA output
- Address, baud rate, etc
- Suitable for field testing applications



MODBUS/485 4-20mA

Specifications

Electrical Specifications

Interface MODBUS and Analog

Supply Voltage 10-30VDC

Current Consumption 50mA

Output Code Binary

Resolution 21 bit single turn (Max.), 14 bit multiturn (Max.)

Output speed 4-20mA

Criterion GB/Z19582

linearity 1LSB

Mechanical Specifications

Maximum speed 12000rpm

Shaft load Axial 50N Radial 100N

Starting Torque <0.05Nm

Shock Resistance EN 60068-2-27 1000m/s² 6ms

Vibration Resistance EN 60068-2-6 100m/s² 55....2000HZ

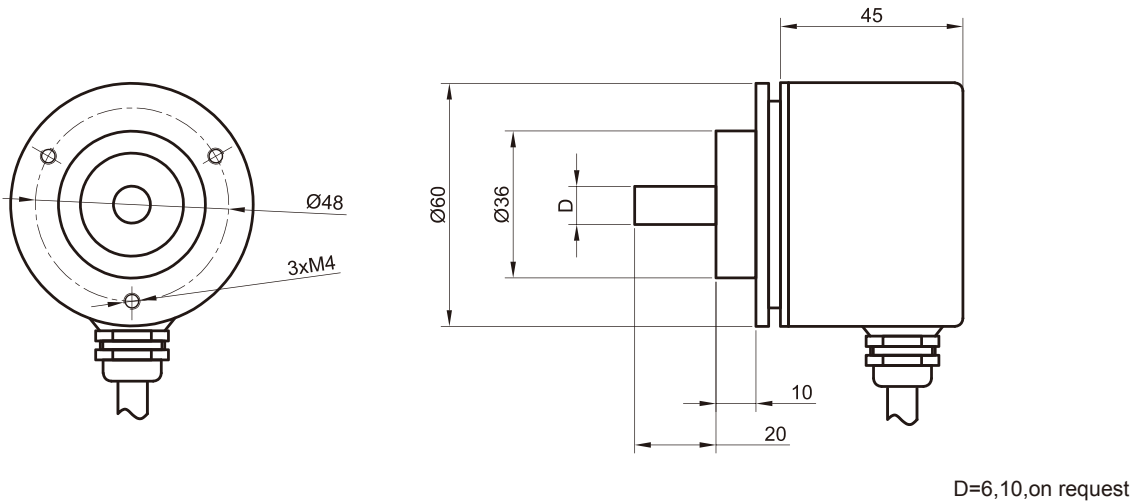
Operating Temperature -40°C to +80°C

Protection Class IP66

Material aluminium alloy

Weight 300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,10,on request

Connection

Modbus/AO	3A/3R	6A/6R/8A/8R
GND	brown	1
VCC	blue	2
MOD_A(pro.)	black	3
MOD_B(pro.)	white	4
ANA+	red	5
ANA-	yellow	6
RST	grey	7
pro.	green	8

Ordering Code

Example: EASS580012E06MA3R
58single turn 12 bit resolution MODBUS/analog solid shaft encoder, power voltage 10-30V DC, axle diameter 6mm, radial straight out cable

EASS58	resolution	power	shaft	output	connection
EASS=ST	1212=12 MT	E=10-30VDC	06=6x10mm	MA=analog&	3A=axial output
EAMS=MT	12 ST		10=10x20mm	MODBUS RTU	3R=radial output
	1214=12 MT		XX=custom-made		6A=connector radial output (cw)
	14 ST				6R=connector axial output (cw)
	1021=10 MT				8A=connector radial output (ccw)
	21 ST				8R=connector axial output (ccw)
	1220=12 MT				
	20 ST				
	1418=14 MT				
	18 ST				
	0012=12 ST				
	0021=21 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXB58

Analog Blind Shaft Encoder

Features

- Standard $\phi 58\text{mm}$ OD, easy to install protection grade up to IP67
- high precision ,Standard MODBUS protocol 4-20mA output
- Address, baud rate, etc
- Suitable for field testing applications



MODBUS/485 4-20mA

Specifications

Electrical Specifications

Interface MODBUS and Analog

Supply Voltage 10-30VDC

Current Consumption 50mA

Output Code Binary

Resolution 21 bit single turn (Max.), 14 bit multiturn (Max.)

Output speed 4-20mA

Criterion GB/Z19582

linearity 1LSB

Mechanical Specifications

Maximum speed 12000rpm

Shaft load Axial 50N Radial 100N

Starting Torque <0.05Nm

Shock Resistance EN 60068-2-27 1000m/s² 6ms

Vibration Resistance EN 60068-2-6 100m/s² 55....2000HZ

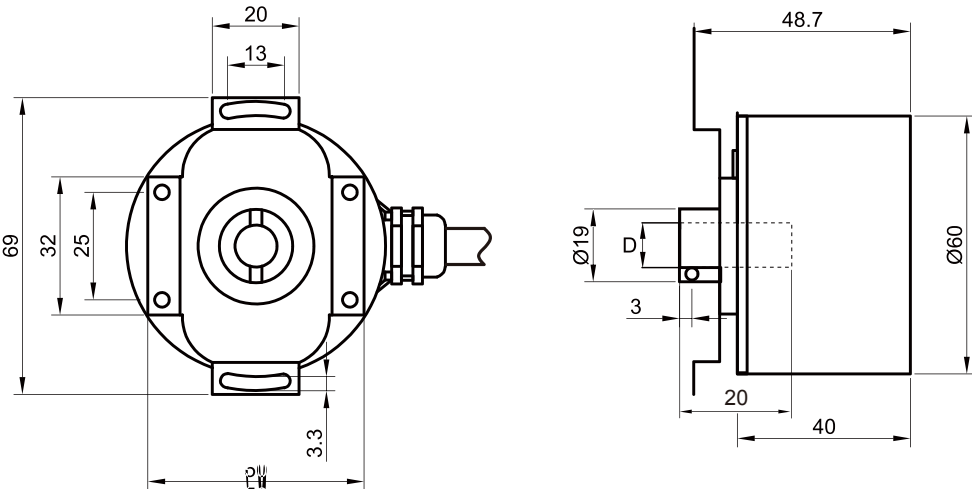
Operating Temperature -40°C to +80°C

Protection Class IP66

Material aluminium alloy

Weight 300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,10,on request

Connection

Modbus/AO	3A/3R	6A/6R/8A/8R
GND	brown	1
VCC	blue	2
MOD_A(pro.)	black	3
MOD_B(pro.)	white	4
ANA+	red	5
ANA-	yellow	6
RST	grey	7
pro.	green	8

Ordering Code

Example: EASB580012E06MA3R
58single turn 12 bit resolution MODBUS/analog blind shaft encoder, power voltage 10-30V DC, aperture 6mm ,radial straight out cable

EAXB58	resolution	power	shaft	output	connection
EASB=ST	1212=12 MT	E=10-30VDC	06=6mm	MA=analog&	3A=axial output
EAMB=MT	12 ST		10=10mm	MODBUS RTU	3R=radial output
	1214=12 MT		XX=custom-made		6A=connector radial output (cw)
	14 ST				6R=connector axial output (cw)
	1021=10 MT				8A=connector radial output (ccw)
	21 ST				8R=connector axial output (ccw)
	1220=12 MT				
	20 ST				
	1418=14 MT				
	18 ST				
	0012=12 ST				
	0021=21 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXS58

CANopen Solid Shaft Encoder

Features

- Integrated bus interface, supporting all DeviceNet and CANopen
- Programmable working mode
- Up to 21 bitsingleturn,14bitmultiturn
- Suitable for automation integration and other applications



CANopen DeviceNet.

Specifications

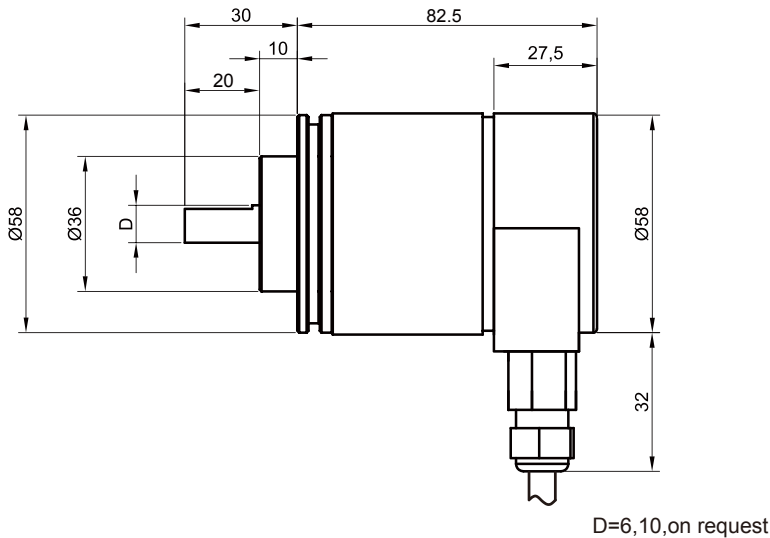
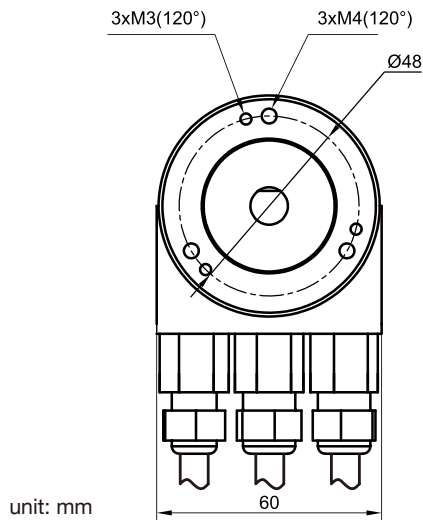
Electrical Specifications

Interface	CANopen/DeviceNet
Supply Voltage	10-30VDC
Current Consumption	180mA
Output Code	Binary
Resolution	21 bit single turn (Max.), 14 bit multiturn (Max.)
Output speed	0.5MBit/s(DeviceNet) 1MBit/s(CANopen)
Criterion	DSP406, Class 1 Class2
linearity	1LSB

Mechanical Specifications

Maximum speed	12000rpm
Shaft load	Axial 50N Radial 100N
Starting Torque	<0.05Nm
Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Operating Temperature	-40°C to +80°C
Protection Class	IP66
Material	aluminium alloy
Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



Connection

CANopen DeviceNet	Z
VCC	1
GND	2
CAN_G	3
CAN_LOW	4
CAN_HIGH	5
CAN_G	6
CAN_LOW	7
CAN_HIGH	8

Ordering Code

Example: EASS580012E06COZ
58single turn 12 bit resolution CANopen solid shaft encoder, power voltage 10-30V DC, axle diameter 6mm, terminal box

EAXS58	resolution	power	shaft	output	connection
EASS=ST	1212=12 MT	E=10-30VDC	06=6x10mm	CO=CANopen	Z=tenminal
EAMS=MT	12 ST		10=10x20mm	VD=DeviceNet	3xPG9
	1214=12 MT		XX=custom-made		
	14 ST				
	1021=10 MT				
	21 ST				
	1220=12 MT				
	20 ST				
	1418=14 MT				
	18 ST				
	0012=12 ST				
	0021=21 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXB58

CANopen Blind Shaft Encoder

Features

- Integrated bus interface, supporting all DeviceNet and CANopen
- Programmable working mode
- Up to 21 bitsingleturn,14bitmultiturn
- Suitable for automation integration and other applications



CANopen DeviceNet.

Specifications

Electrical Specifications

Interface CANopen/DeviceNet

Supply Voltage 10-30VDC

Current Consumption 180mA

Output Code Binary

Resolution 21 bit single turn (Max.),
14 bit multiturn (Max.)

Output speed 0.5MBit/s(DeviceNet) 1MBit/s(CANopen)

Criterion DSP406, Class 1 Class2

linearity 1LSB

Mechanical Specifications

Maximum speed 12000rpm

Shaft load Axial 50N Radial 100N

Starting Torque <0.05Nm

Shock Resistance EN 60068-2-27 1000m/s² 6ms

Vibration Resistance EN 60068-2-6 100m/s² 55....2000HZ

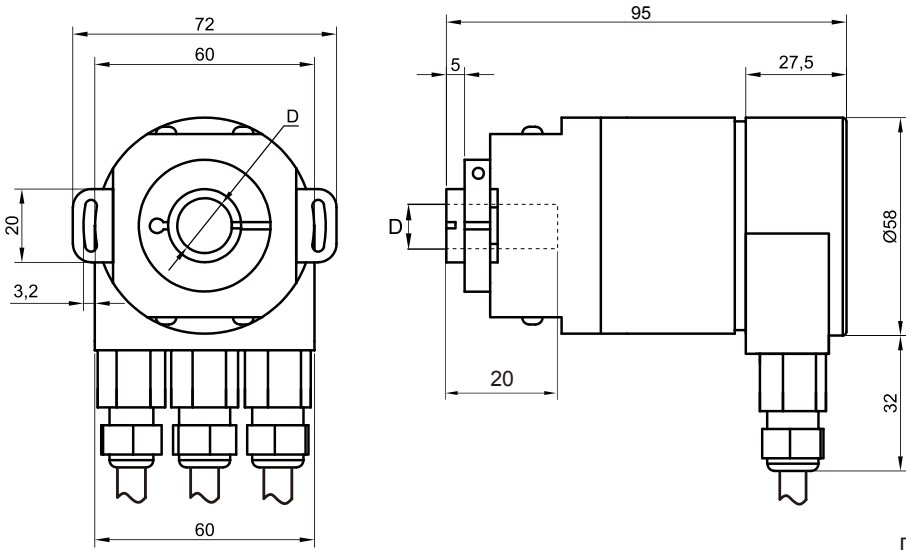
Operating Temperature -40°C to +80°C

Protection Class IP66

Material aluminium alloy

Weight 300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

Connection

CANopen DeviceNet	Z
VCC	1
GND	2
CAN_G	3
CAN_LOW	4
CAN_HIGH	5
CAN_G	6
CAN_LOW	7
CAN_HIGH	8

Ordering Code

Example: EASB580012E06COZ
58single turn 12 bit resolution CANopen blind shaft encoder, power voltage 10-30V
DC, aperture 6mm ,terminal box

EAXB58	resolution	power	shaft	output	connection
EASB=ST	1212=12 MT	E=10-30VDC	06=6mm	CO=CANopen	Z=tenminal
EAMB=MT	12 ST		10=10mm	VD=DeviceNet	3xPG9
	1214=12 MT		XX=custom-made		
	14 ST				
	1021=10 MT				
	21 ST				
	1220=12 MT				
	20 ST				
	1418=14 MT				
	18 ST				
	0012=12 ST				
	0021=21 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXS58

DP Solid Shaft Encoder

Features

- With optical coupler isolation standard PROFIBUS-DP interface
- Terminal resistance, address and so on can be set (dip switch)
- Up to 21 bitsingleturn,14bitmultiturn
- Suitable for group control with industrial bus and other applications



Specifications

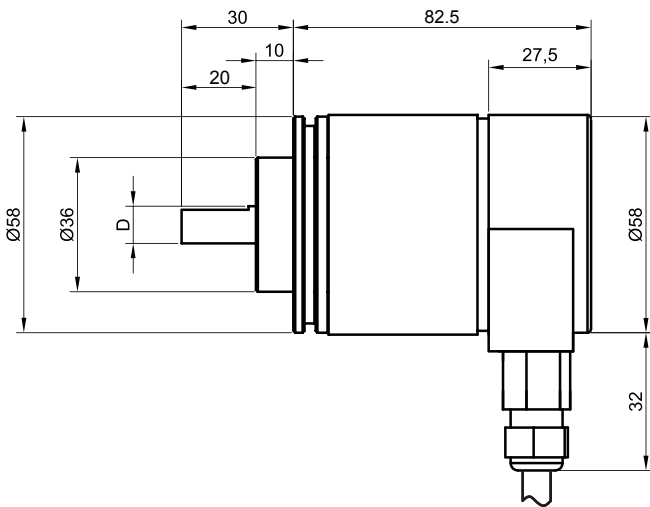
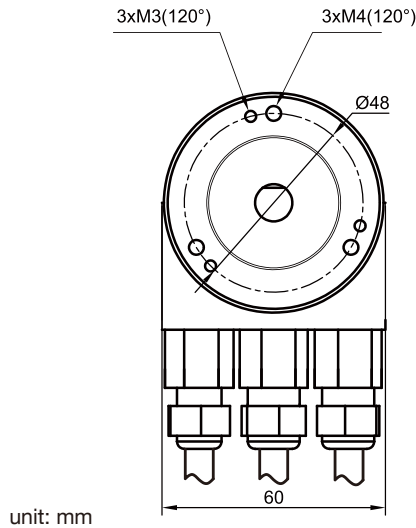
Electrical Specifications

Interface	Profibus DP
Supply Voltage	10-30VDC
Current Consumption	200mA
Output Code	Binary
Resolution	21 bit single turn (Max.), 14 bit multiturn (Max.)
Output speed	0.001-12MBit/s
Criterion	DPV0,DPV1 and DPV2 Class 2
linearity	1LSB

Mechanical Specifications

Maximum speed	12000rpm
Shaft load	Axial 50N Radial 100N
Starting Torque	<0.05Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-40°C to +80°C
Protection Class	IP66
Material	aluminium alloy
Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



D=6,10,on request

Connection

DP	Z
BUS IN(B)	5
BUS IN(A)	6
BUS IN(0 V)	2
BUS IN(+ V)	1
BUS OUT(B)	7
BUS OUT(A)	8
BUS OUT(0 V)	4
BUS OUT(+ V)	3

Ordering Code

Example: EASS580012E06DPZ
58single turn 12 bit resolution profibus solid shaft encoder, power voltage 10-30V DC, axle diameter 6mm, terminal box

EAXS58	resolution	power	shaft	output	connection
EASS=ST	1212=12 MT	E=10-30VDC	06=6x10mm	DP=profibus	Z=tenminal
EAMS=MT	12 ST		10=10x20mm		3xPG9
	1214=12 MT		XX=custom-made		
	14 ST				
	1021=10 MT				
	21 ST				
	1220=12 MT				
	20 ST				
	1418=14 MT				
	18 ST				
	0012=12 ST				
	0021=21 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXB58

DP Blind Shaft Encoder

Features

- With optical coupler isolation standard PROFIBUS-DP interface
- Terminal resistance, address and so on can be set (dip switch)
- Up to 21 bitsingleturn,14bitmultiturn
- Suitable for group control with industrial bus and other applications



Specifications

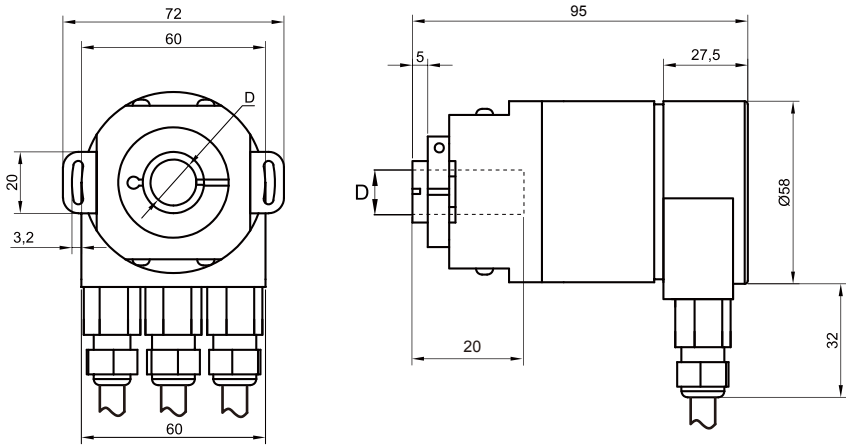
Electrical Specifications

Interface	Profibus DP
Supply Voltage	10-30VDC
Current Consumption	200mA
Output Code	Binary
Resolution	21 bit single turn (Max.), 14 bit multiturn (Max.)
Output speed	0.001-12MBit/s
Criterion	DPV0,DPV1 and DPV2 Class 2
linearity	1LSB

Mechanical Specifications

Maximum speed	12000rpm
Shaft load	Axial 50N Radial 100N
Starting Torque	<0.05Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-8 100m/s², 55 ... 2000 Hz
Operating Temperature	-40°C to +80°C
Protection Class	IP66
Material	aluminium alloy
Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,10,on request

Connection

DP	Z
BUS IN(B)	5
BUS IN(A)	6
BUS IN(0 V)	2
BUS IN(+ V)	1
BUS OUT(B)	7
BUS OUT(A)	8
BUS OUT(0 V)	4
BUS OUT(+ V)	3

Ordering Code

Example: EASB580012E06DPZ
58single turn 12 bit resolution profibus blind shaft encoder, power voltage 10-30V DC, aperture 6mm, terminal box

EAXB58	resolution	power	shaft	output	connection
EASB=ST	1212=12 MT	E=10-30VDC	06=6mm	DP=profibus	Z=tenminal
EAMB=MT	12 ST		10=10mm		3xPG9
	1214=12 MT		XX=custom-made		
	14 ST				
	1021=10 MT				
	21 ST				
	1220=12 MT				
	20 ST				
	1418=14 MT				
	18 ST				
	0012=12 ST				
	0021=21 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXS58

Ethernet Solid Shaft Encoder

Features

- Standard Ethernet interface, $\phi 58\text{mm}$ standard od
- Supports Profinet, PowerLink, TCP/IP and other protocols
- Up to 21 bitsingleturn, 14bitmultiturn
- Suitable for industrial Internet of Things and other applications



Specifications

Electrical Specifications

Interface Ethernet

Supply Voltage 10-30VDC

Current Consumption 4W

Output Code Binary

Resolution 21 bit single turn (Max.), 14 bit multiturn (Max.)

Output speed 10M or 100MBit/s

Criterion Standard Ethernet

linearity 0.5LSB

Mechanical Specifications

Maximum speed 12000rpm

Shaft load Axial 50N Radial 100N

Starting Torque <0.05Nm

Shock Resistance EN 60068-2-27 1000m/s² 6ms

Vibration Resistance EN 60068-2-6 100m/s² 55....2000HZ

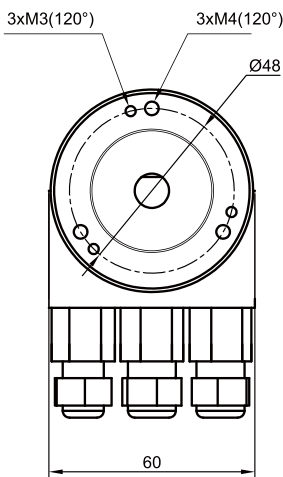
Operating Temperature -40°C to +80°C

Protection Class IP66

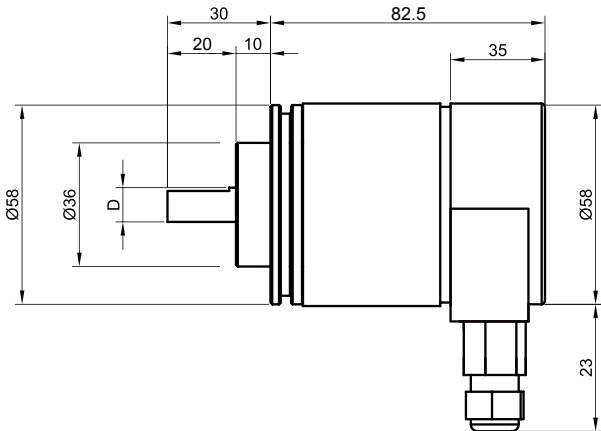
Material aluminium alloy

Weight 300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm



D=6,10,on request

Connection

NET	CD(M12)
RXD+	1(X1,X2)
TXD+	2(X1,X2)
RXD-	3(X1,X2)
TXD-	4(X1,X2)
/	5(X1,X2)
VCC	1(X3)
VCC	2(X3)
GND	3(X3)
GND	4(X3)
PE	5(X3)

Ordering Code

Example: EASS580012E06PNCD
58single turn 12 bit resolution profinet solid shaft encoder, power voltage 10-30V DC, axle diameter 6mm, terminal box

EAXS58	resolution	power	shaft	output	connection
EASS=ST	1212=12 MT	E=10-30VDC	06=6x10mm	PN=profinet	CD=M12
EAMS=MT	12 ST		10=10x20mm	PL=Powerlink	A-coded+M12
	1214=12 MT		XX=custom-made	TI=TCIP/IP	D-coded*2
	14 ST				
	1021=10 MT				
	21 ST				
	1220=12 MT				
	20 ST				
	1418=14 MT				
	18 ST				
	0012=12 ST				
	0021=21 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXB58

Ethernet Blind Shaft Encoder

Features

- Standard Ethernet interface, $\phi 58\text{mm}$ standard od
- Supports Profinet, PowerLink, TCP/IP and other protocols
- Up to 21 bitsingleturn,14bitmultiturn
- Suitable for industrial Internet of Things and other applications



Specifications

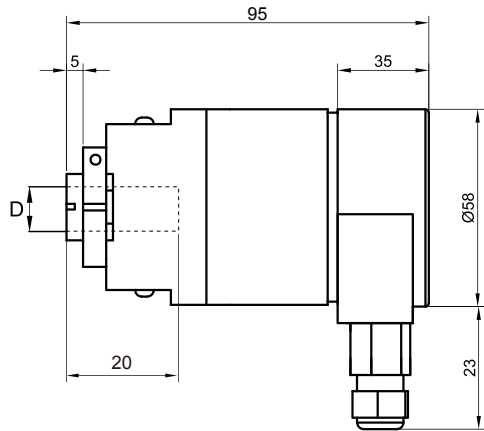
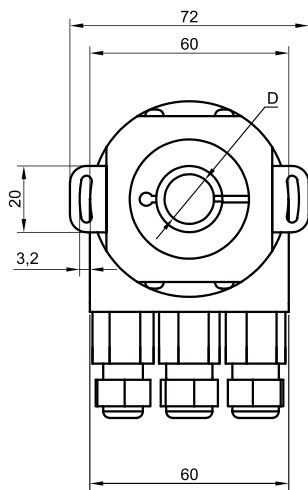
Electrical Specifications

Interface	Ethernet
Supply Voltage	10-30VDC
Current Consumption	300Ma
Output Code	Binary
Resolution	21 bit single turn (Max.), 14 bit multiturn (Max.)
Output speed	10M or 100MBit/s
Criterion	Standard Ethernet
linearity	0.5LSB

Mechanical Specifications

Maximum speed	12000rpm
Shaft load	Axial 50N Radial 100N
Starting Torque	<0.05Nm
Shock Resistance	EN 60068-2-27 1000m/s ² 6ms
Vibration Resistance	EN 60068-2-6 100m/s ² 55....2000HZ
Operating Temperature	-40°C to +80°C
Protection Class	IP66
Material	aluminium alloy
Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,10,on request

Connection

NET	CD(M12)
RXD+	1(X1,X2)
TXD+	2(X1,X2)
RXD-	3(X1,X2)
TXD-	4(X1,X2)
/	5(X1,X2)
VCC	1(X3)
VCC	2(X3)
GND	3(X3)
GND	4(X3)
PE	5(X3)

Ordering Code

Example: EASB580012E06PNCD
58single turn 12 bit resolution profinet blind shaft encoder, power voltage 10-30V DC, aperture 6mm, terminal box

EAXB58	resolution	power	shaft	output	connection
EASB=ST	1212=12 MT	E=10-30VDC	06=6mm	PN=profinet	CD=M12
EAMS=MT	12 ST		10=10mm	PL=Powerlink	A-coded+M12
	1214=12 MT		XX=custom-made	TI=TCIP/IP	D-coded*2
	14 ST				
	1021=10 MT				
	21 ST				
	1220=12 MT				
	20 ST				
	1418=14 MT				
	18 ST				
	0012=12 ST				
	0021=21 ST				
	custom-made				

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXS58

Parallel Solid Shaft Encoder

Features

- High speed parallel interface, binary or gray code optional
- Up to 21 bit singleturn, 14 bit multiturn
- Frequency 400Khz
- Suitable for measurement laboratory applications

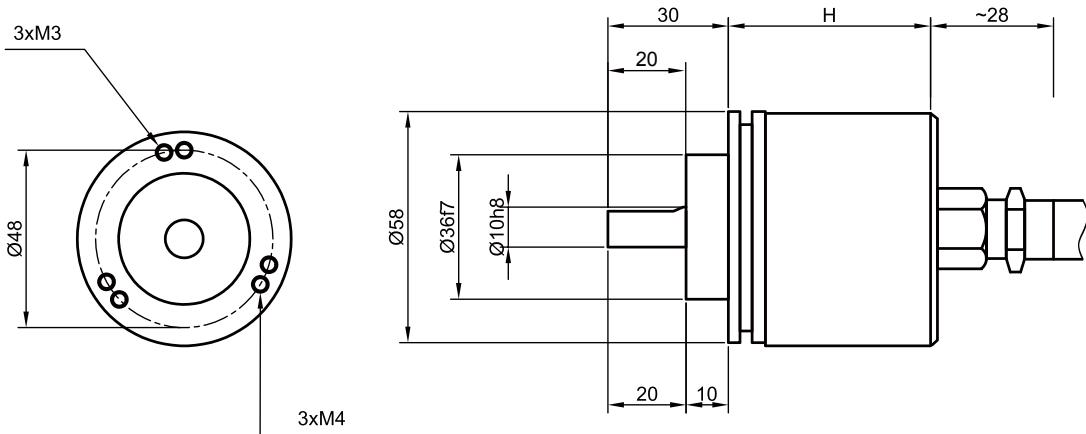


Parallel

Specifications

Electrical Specifications		Mechanical Specifications	
Interface	Parallel Interface	Maximum speed	12000rpm
Supply Voltage	10-30VDC	Shaft load	Axial 50N Radial 100N
Current Consumption	140mA	Starting Torque	<0.05Nm
Output Code	Binary/Gray	Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Resolution	21 bit single turn (Max.), 14 bit multiturn (Max.)	Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Electrical interface	Push-pull output with short circuit protection	Operating Temperature	-40°C to +80°C
Frequency	400KHZ	Protection Class	IP66
linearity	0.5LSB	Material	aluminium alloy
		Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=6,10,on request
Singleturn: H=53, Multiturn: H=62

Connection

	PD /3A/3R				PD /3A/3R			
GND	1	WH	DATA	14	BR/GN			
VCC	2	BR	DATA	15	WH/YE			
DATA	3	GN	DATA	16	YE/BR			
DATA	4	YE	DATA	17	WH/GY			
DATA	5	GY	DATA	18	GY/BR			
DATA	6	PK	DATA	19	WH/PK			
DATA	7	BL	DATA	20	PK/BR			
DATA	8	RD	DATA	21	WH/BL			
DATA	9	BK	DATA	22	BR/BL			
DATA	10	PE	DATA	23	WH/RD			
DATA	11	GY/PK	LATCH	24	YE/GY			
DATA	12	RD/BL	DIR	25	GY/GN			
DATA	13	WH/GN	RST	26	YE/			

Ordering Code

Example: EASS580012E06PB3R
58single turn 12 bit resolution parallel solid shaft encoder, power voltage 10-30V DC, axle diameter 6mm, radial straight out cable

EAXS58	resolution	power	shaft	output	connection
EASS=ST EAMS=MT	1212=12 MT 12 ST 1214=12 MT 14 ST 1021=10 MT 21 ST 1220=12 MT 20 ST 1418=14 MT 18 ST 0012=12 ST 0021=21 ST custom-made	E=10-30VDC	06=6x10mm 10=10x20mm XX=custom-made	PB= binary PG= gray	3A=axial output 3R=radial output PD=25针 D-coder

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXB58

Parallel Blind Shaft Encoder

Features

- High speed parallel interface, binary or gray code optional
- Up to 21 bit singleturn, 14 bit multiturn
- Frequency 400Khz
- Suitable for measurement laboratory applications



Parallel

Specifications

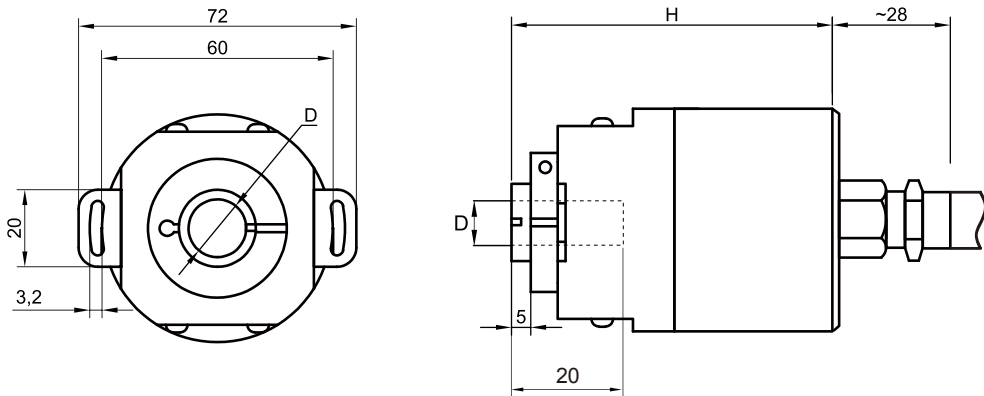
Electrical Specifications

Interface	Parallel Interface
Supply Voltage	10-30VDC
Current Consumption	140mA
Output Code	Binary/Gray
Resolution	21 bit single turn (Max.), 14 bit multiturn (Max.)
Electrical interface	Push-pull output with short circuit protection
Frequency	400KHZ
linearity	0.5LSB

Mechanical Specifications

Maximum speed	12000rpm
Shaft load	Axial 50N Radial 100N
Starting Torque	<0.05Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-40°C to +80°C
Protection Class	IP66
Material	aluminium alloy
Weight	300g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

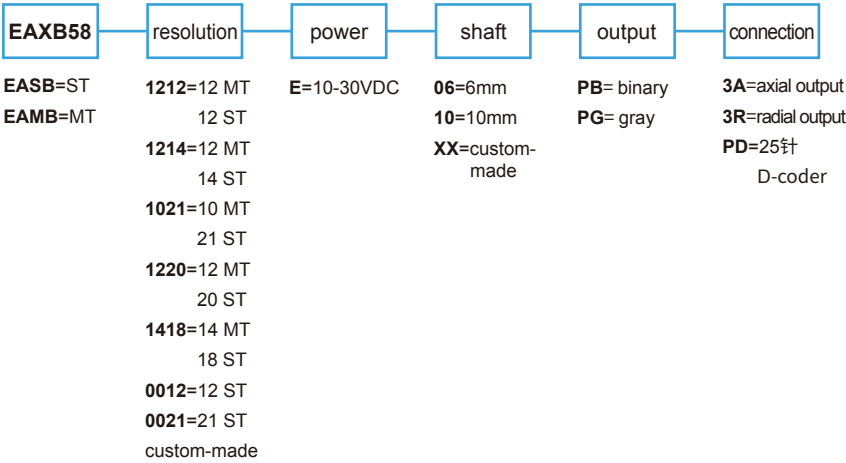
D=6,10,on request
Singleturn: H=72, Multiturn: H=80

Connection

	PD/3A/3R	PD/3A/3R
GND	1 WH	DATA 14 BR/GN
VCC	2 BR	DATA 15 WH/YE
DATA	3 GN	DATA 16 YE/BR
DATA	4 YE	DATA 17 WH/GY
DATA	5 GY	DATA 18 GY/BR
DATA	6 PK	DATA 19 WH/PK
DATA	7 BL	DATA 20 PK/BR
DATA	8 RD	DATA 21 WH/BL
DATA	9 BK	DATA 22 BR/BL
DATA	10 PE	DATA 23 WH/RD
DATA	11 GY/PK	LATCH 24 YE/GY
DATA	12 RD/BL	DIR 25 GY/GN
DATA	13 WH/GN	RST 26 YE/

Ordering Code

Example: EASB580012E06PB3R
58single turn 12 bit resolution parallel blind shaft encoder, power voltage 10-30V DC, aperture 6mm ,radial straight out cable



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXS90

Heavy-duty Solid Shaft Encoder

Features

- Heavy duty large size absolute encoder
- Standard CANopen protocol, SSI protocol
- Up to 13 bit singleturn, 16 bit multiturn
- Suitable for steel, mining and other heavy industry applications



CANopen SSI

Specifications

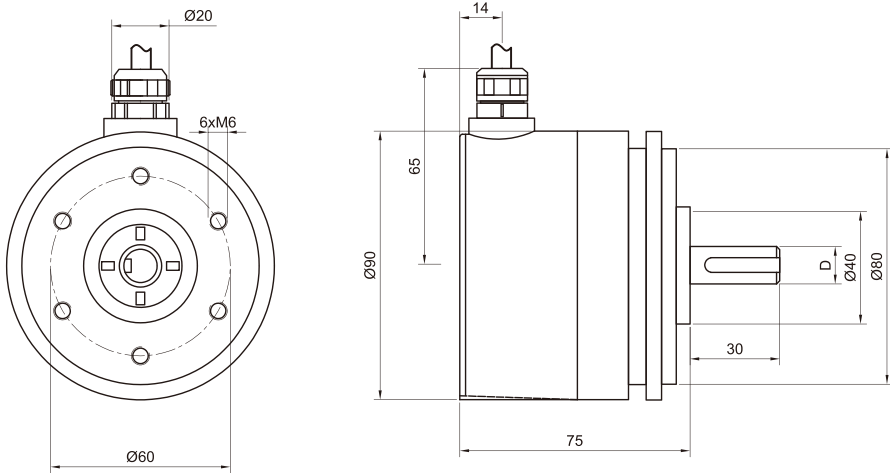
Electrical Specifications

Interface	CAN open	SSI/BISS
Supply Voltage	10-30VDC	10-30VDC
Current Consumption	120mA	100mA
Output Code	Binary	Binary/Gray
Resolution	13 bit single turn (Max.), 13 bit single turn (Max.), 16 bit multiturn (Max.) 16 bit multiturn (Max.)	
Output speed	1MBit/s	0.1-2 MBit/s
Criterion	DSP406, Class 1 Class2	RS422
linearity	1LSB	1LSB

Mechanical Specifications

Maximum speed	6000rpm
Shaft load	Axial 100N Radial 200N
Starting Torque	<0.06Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-20°C 至 +90°C -20°C to +90°C
Protection Class	IP65/IP67(option)
Material	galvanized aluminum housing/ Stainless steel
Weight	1500g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=11, 12, on request

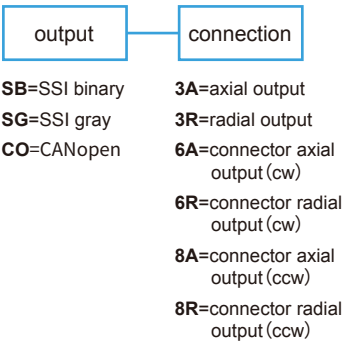
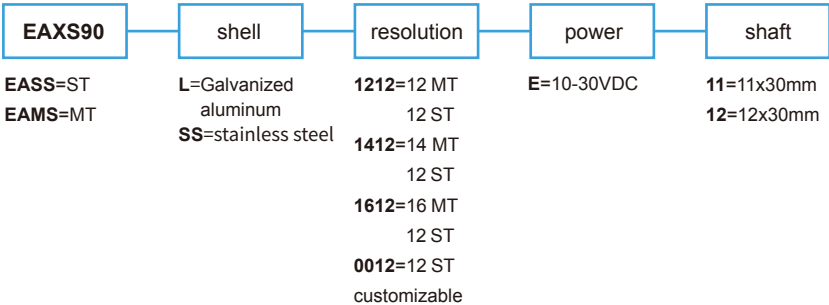
Connection

SSI	3A/3R	6A/6R/8A/8R
GND	brown	2
VCC	white	1
CLCOK+	yellow	6
CLOCK-	green	4
DATE+	pink	5
DATE-	grey	8
ZERO	pink	7
DIR	blue	3

CANopen	3A/3R	6A/6R/8A/8R
GND	white	3
VCC	brown	2
CAN_GROUND	green	1
CAN_LOW(-)	yellow	5
CAN_HIGH(+)	grey	4

Ordering Code

Example: EASS90SS0012E12SB3R
90single turn 12 bit resolution SSI binary solid shaft encoder, power voltage 10-30V DC, radial straight out cable, stainless steel housing



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXH90

Heavy-duty Hollow Shaft Encoder

Features

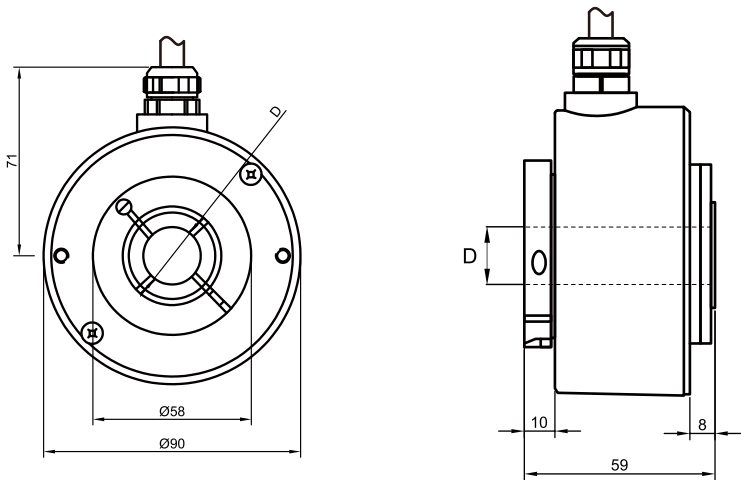
- Heavy duty large size absolute encoder
- Standard CANopen protocol, SSI protocol
- Up to 13 bit singleturn, 16 bit multiturn
- Suitable for steel, mining and other heavy industry applications



Specifications

Electrical Specifications			Mechanical Specifications	
Interface	CAN open	SSI/BISS	Maximum speed	6000rpm
Supply Voltage	10-30VDC	10-30VDC	Shaft load	Axial 100N Radial 200N
Current Consumption	120mA	100mA	Starting Torque	<0.06Nm
Output Code	Binary	Binary/Gray	Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Resolution	13 bit single turn (Max.), 13 bit single turn (Max.), 16 bit multiturn (Max.) 16 bit multiturn (Max.)		Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Output speed	1MBit/s	0.1-2 MBit/s	Operating Temperature	-20°C to +90°C
Criterion	DSP406, Class 1 Class2	RS422	Protection Class	IP65/IP67 (option)
Material			Material	galvanized aluminum housing/Stainless steel
linearity	1LSB	1LSB	Weight	1200g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=20,25,30,on request

Connection

SSI	3A	6A/8A
GND	brown	2
VCC	white	1
CLCOK+	yellow	6
CLOCK-	green	4
DATE+	pink	5
DATE-	grey	8
ZERO	pink	7
DIR	blue	3

CANopen	3A	6A/8A
GND	white	3
VCC	brown	2
CAN_GROUND	green	1
CAN_LOW(-)	yellow	5
CAN_HIGH(+)	grey	4

Ordering Code

Example: EASH90SS0012E25SB3R
90single turn 12 bit resolution SSI binary blind shaft encoder, power voltage 10-30V DC, radial straight out cable, stainless steel housing

EAXH90

shell

resolution

power

shaft

EASH=ST
EAMH=MT

L=Galvanized aluminum
SS=stainless steel

1212=12 MT
12 ST
1412=14 MT
12 ST
1612=16 MT
12 ST
0012=12 ST
customizable

E=10-30VDC

20=20mm
25=25mm
30=30mm

output

connection

SB=SSI binary
SG=SSI gray
CO=CANopen

3R=radial output
6R=connector radial output (cw)
8R=connector radial output (ccw)

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXS90

Heavy-duty Solid Shaft Encoder

Features

- Heavy duty large size absolute encoder
- Standard profibus protocol
- Up to 13 bit singleturn, 16 bit multiturn
- Suitable for mining machinery, power plants, and other occasions



Specifications

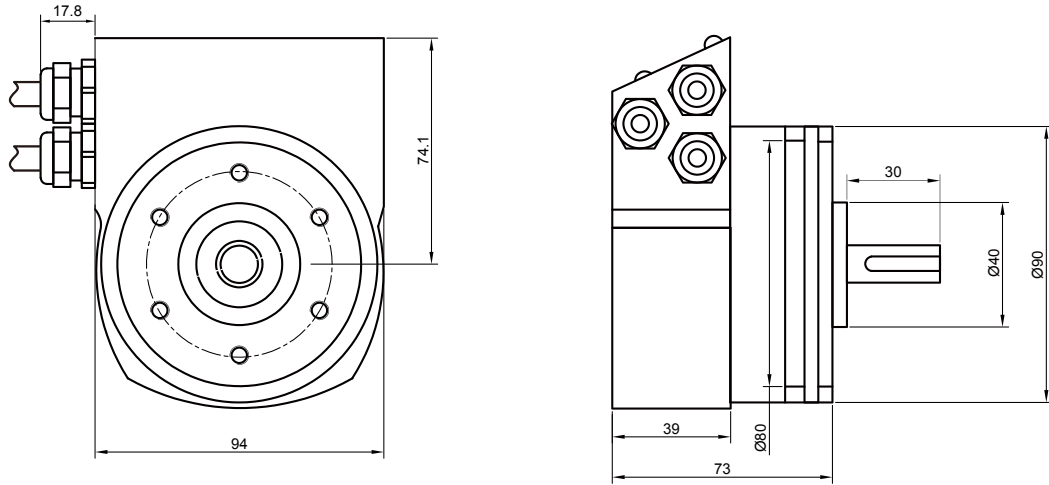
Electrical Specifications

Interface	Profibus DP
Supply Voltage	10-30VDC
Current Consumption	200mA
Output Code	Binary
Resolution	13 bit single turn (Max.), 16 bit multiturn (Max.)
Output speed	0.001-12MBit/s
Criterion	DPV0,DPV1 and DPV2 Class 2
linearity	1LSB

Mechanical Specifications

Maximum speed	6000rpm
Shaft load	Axial 100N Radial 200N
Starting Torque	<0.06Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-10°C to +80°C
Protection Class	IP65/IP67 (option)
Material	galvanized aluminum housing/ Stainless steel
Weight	1500g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

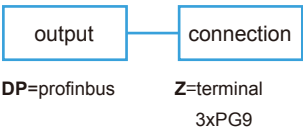
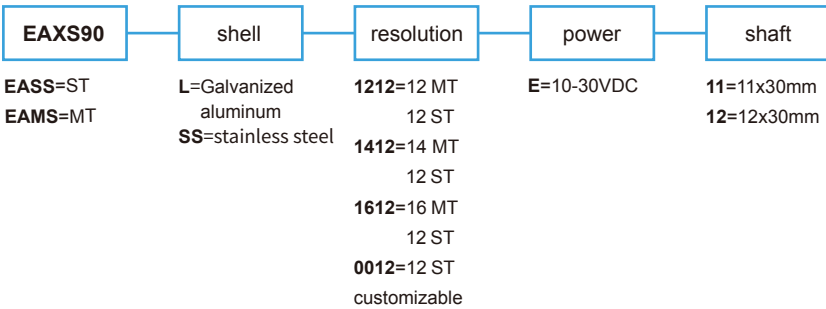
D=11,12,on request

Connection

DP	Z
A	1
B	2
+	3
-	4
A	5
B	6
+	7
-	8

Ordering Code

Example: EASS90SS0012E12DPZ
90single turn 12 bit resolution profinet solid shaft encoder, power voltage 10-30V DC, axle diameter 12mm, terminal box, stainless steel housing



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EAXH90

Heavy-duty Hollow Shaft Encoder

Features

- Heavy duty large size absolute encoder
- Standard profibus protocol
- Up to 13 bit singleturn, 16 bit multiturn
- Suitable for mining machinery, power plants, and other occasions



Specifications

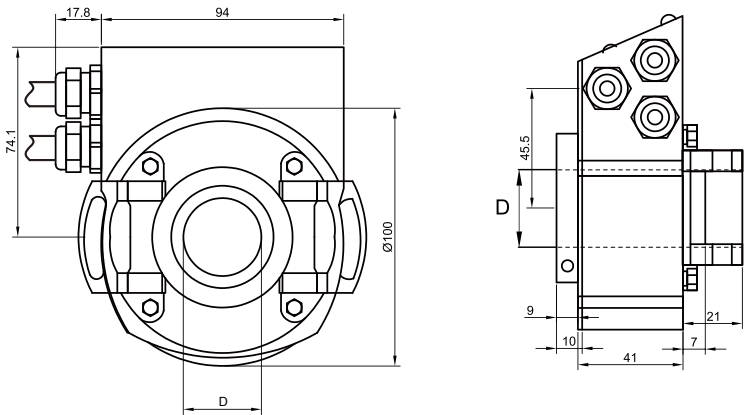
Electrical Specifications

Interface	Profibus DP
Supply Voltage	10-30VDC
Current Consumption	200mA
Output Code	Binary
Resolution	13 bit single turn (Max.), 16 bit multiturn (Max.)
Output speed	0.001-12MBit/s
Criterion	DPV0,DPV1 and DPV2 Class 2
linearity	1LSB

Mechanical Specifications

Maximum speed	6000rpm
Shaft load	Axial 100N Radial 200N
Starting Torque	<0.06Nm
Shock Resistance	EN 60068-2-27 1000m/s² 6ms
Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Operating Temperature	-10°C to +80°C
Protection Class	IP65/IP67 (option)
Material	galvanized aluminum housing/ Stainless steel
Weight	1200g

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

D=20,25,30,on request

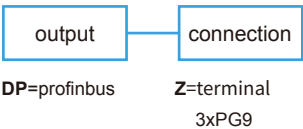
Connection

DP	Z
A	1
B	2
+	3
-	4
A	5
B	6
+	7
-	8

Ordering Code

Example: EASH90SS0012E25DPZ
90single turn 12 bit resolution profinet blind shaft encoder, power voltage 10-30V DC, aperture 25mm ,terminal box, stainless steel housing

EAXH90	shell	resolution	power	shaft
EASH=ST EAMH=MT	L=Galvanized aluminum SS=stainless steel	1212=12 MT 12 ST 1412=14 MT 12 ST 1612=16 MT 12 ST 0012=12 ST customizable	E=10-30VDC	20=20mm 25=25mm 30=30mm



If the product information is updated, please refer to the order confirmation

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

6KB 4110

Rotary Overspeed Switch

Features

- Accurate speed alarm and fast response time
- Rotation Speed can be set from 60 to 6000rpm
- No extra power, purely mechanical principle
- Separate clockwise and counterclockwise rotation control



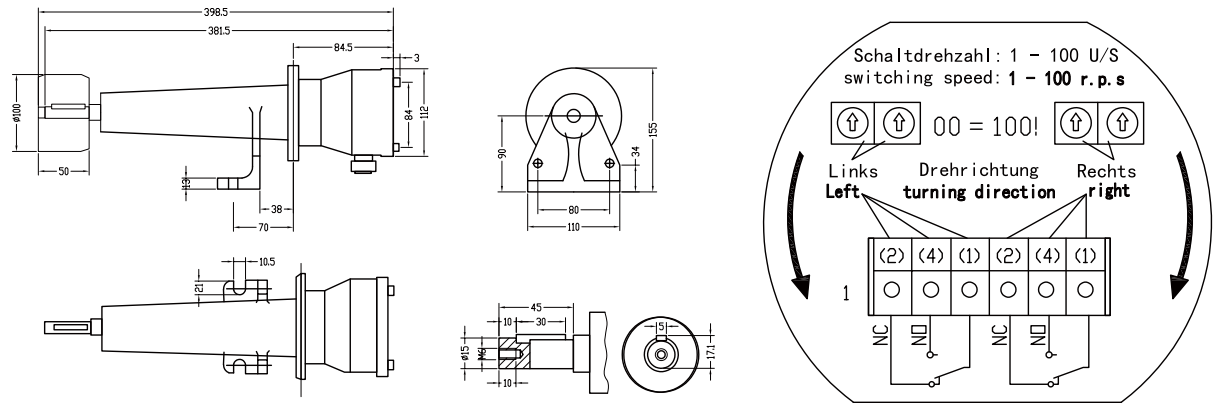
Specifications

Electrical Data		Mechanical Data	
Supply Voltage	NO	Material	Glass fiber reinforced plastic ; oil, grease and acid resistant
Speed Range	60-6000 rpm	Operating Temperature	-25°C - +75°C
Relay	twin channel (CW/CCW) MAX.400VAC 5A 1250W 240VDC 5A 150W	Protection Class	IP65

Testing and Qualification of the Item

Humidity		Vibration	
DINIEC68-2-30		DINEN60068-2-6	
Lower temp. +25°C	hum. 97%	Frequency	10–150Hz
Upper temp. +55°C	hum. 93%	Amplitude	35 mm
Testduration	6days	Resp.acceleration	5g
Shock loads		Shock loads	
DINEN60068-2-27		DINEN60068-2-29	
Shock type	semi-sine	Shock type	semi-sine
Amplitude	30g	Amplitude	25g
Duration	18ms	Duration	6ms
Shocks per orientation	3	Shocks per orientation	1000
Isolation		Emission	
DIN/VDE0435 Part 303		DINEN55022	
Check value	2kVAC	LINE B	

Dimension

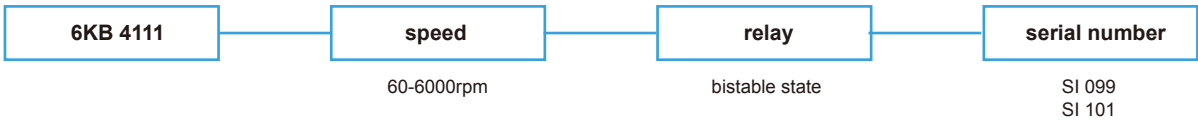


unit: mm

Speed Setting

Pos.	rps	rpm	Pos.	rps	rpm	Pos.	rps	rpm	Pos.	rps	rpm	Pos.	rps	rpm
0:1	1	60	2:1	21	1260	4:1	41	2460	6:1	61	3660	8:1	81	4860
0:2	2	120	2:2	22	1320	4:2	42	2520	6:2	62	3720	8:2	82	4920
0:3	3	180	2:3	23	1380	4:3	43	2580	6:3	63	3780	8:3	83	4980
0:4	4	240	2:4	24	1440	4:4	44	2640	6:4	64	3840	8:4	84	5040
0:5	5	300	2:5	25	1500	4:5	45	2700	6:5	65	3900	8:5	85	5100
0:6	6	360	2:6	26	1560	4:6	46	2760	6:6	66	3960	8:6	86	5160
0:7	7	420	2:7	27	1620	4:7	47	2820	6:7	67	4020	8:7	87	5220
0:8	8	480	2:8	28	1680	4:8	48	2880	6:8	68	4080	8:8	88	5280
0:9	9	540	2:9	29	1740	4:9	49	2940	6:9	69	4140	8:9	89	5340
1:0	10	600	3:0	30	1800	5:0	50	3000	7:0	70	4200	9:0	90	5400
1:1	11	660	3:1	31	1860	5:1	51	3060	7:1	71	4260	9:1	91	5460
1:2	12	720	3:2	32	1920	5:2	52	3120	7:2	72	4320	9:2	92	5520
1:3	13	780	3:3	33	1980	5:3	53	3180	7:3	73	4380	9:3	93	5580
1:4	14	840	3:4	34	2040	5:4	54	3240	7:4	74	4440	9:4	94	5640
1:5	15	900	3:5	35	2100	5:5	55	3300	7:5	75	4500	9:5	95	5700
1:6	16	960	3:6	36	2160	5:6	56	3360	7:6	76	4560	9:6	96	5760
1:7	17	1020	3:7	37	2220	5:7	57	3420	7:7	77	4620	9:7	97	5820
1:8	18	1080	3:8	38	2280	5:8	58	3480	7:8	78	4680	9:8	98	5880
1:9	19	1140	3:9	39	2340	5:9	59	3540	7:9	79	4740	9:9	99	5940
2:0	20	1200	4:0	40	2400	6:0	60	3600	8:0	80	4800	0:0	100	6000

Ordering Code



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

FINS130

Solid Shaft Encoder+Overspeed Switch

Features

- Heavy-duty encoder Add overspeed alarm switch
- Accurate speed alarm and fast response time
- Max. 1024 pulses
- Suitable for heavy machinery and other applications



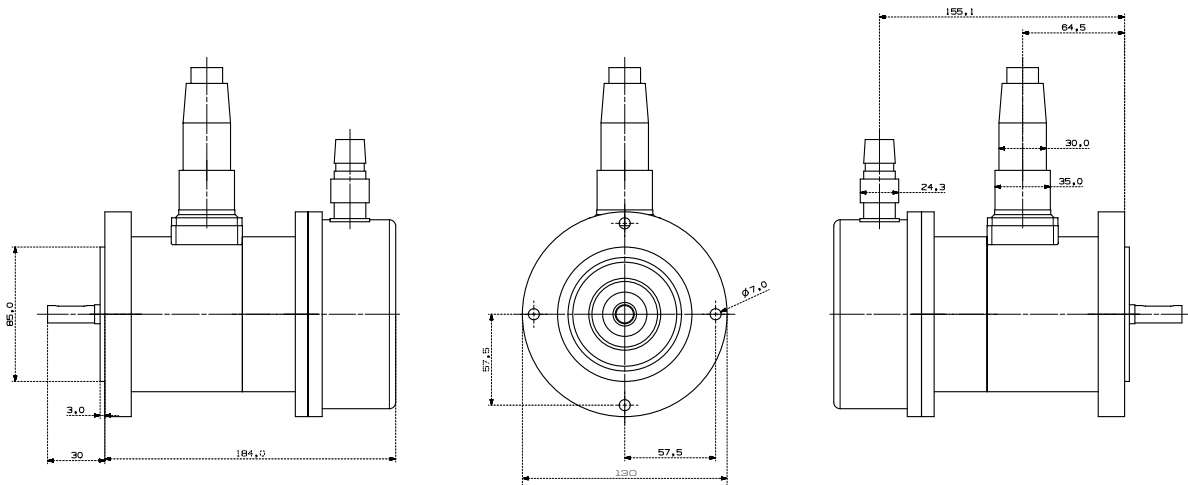
Specifications

Electrical Specifications

Supply Voltage	10-30VDC	Switching hysteresis	40% of switching speed
Current Consumption	70mA (P-P) , 150mA (RS422)	Shock Resistance	EN 60068-2-27 1000m/s²
Resolution	1024PPR (MAX.)	Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Electrical Protection	short circuit protection, reverse polarity protection, lightning strike protection	Operating Temperature	-20°C - +85°C
Maximum speed	3600rpm	Protection Class	IP67
Range	720-3000rpm	Material	Aluminum
Switch precision	<20% (MAX.)	Weignt	1620g

© Encoder parameters refer to EINS90 series

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



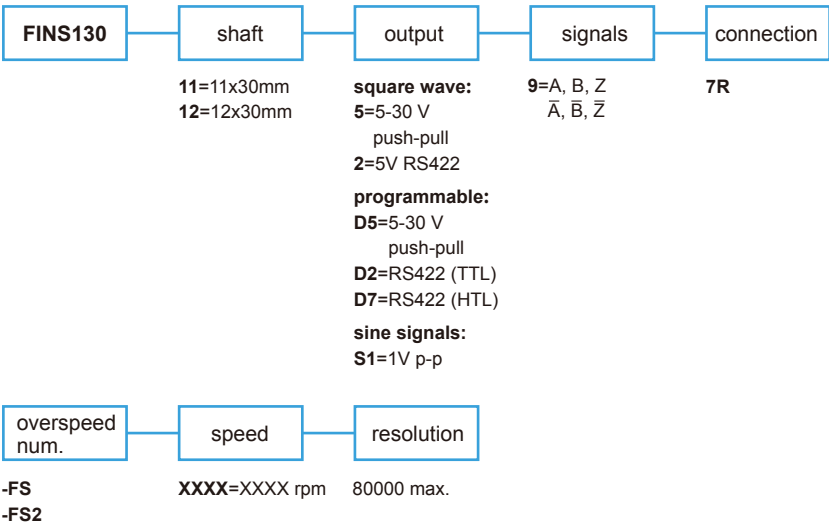
unit: mm

Connection

Function	Color	端子
0	white	1(X1)
+	brown	2(X1)
A	green	3(X1)
B	yellow	4(X1)
Z	grey	5(X1)
Ā	pink	6(X1)
B̄	blue	7(X1)
Z̄	red	8(X1)
NC	brown	1(X2)
NO	blue	2(X2)
COM	red	3(X2)

Ordering Code

Example: FINS13012597RFS970-1024
Solid shaft encoder 1024 pulse push-pull output with ABZ inverse signal, axle diameter 12mm, 1-way switch, 970rpm alarm



If the product information is updated, please refer to the order confirmation

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

AOSH90

Hollow Shaft Encoder +Overspeed Switch

Features

- Heavy-duty encoder Add overspeed alarm switch
- Special installation components are included
- Max. 4000 pulses
- Suitable for heavy machinery and other applications



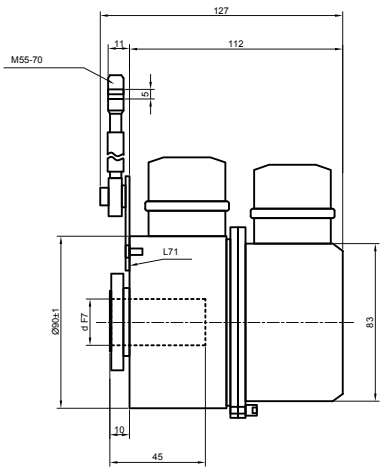
Specifications

Electrical Specifications

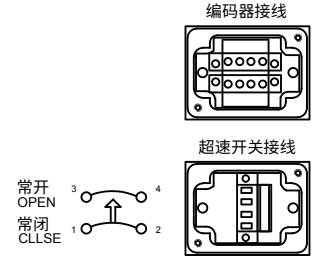
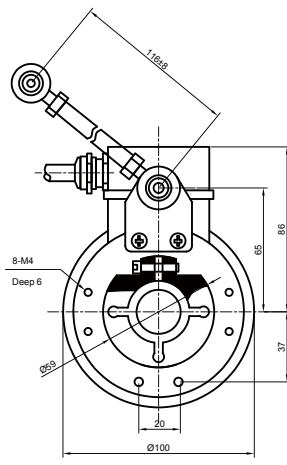
Supply Voltage	10-30VDC	Switching hysteresis	40% of switching speed
Current Consumption	70mA (P-P) , 150mA (RS422)	Shock Resistance	EN 60068-2-27 1000m/s² 6m/s
Resolution	4000PPR (MAX.)	Vibration Resistance	EN 60068-2-6 100m/s² 55....2000HZ
Electrical Protection	short circuit protection, reverse polarity protection, lightning strike protection	Operating Temperature	-20°C - +85°C
Maximum speed	3600rpm	Protection Class	IP67
Range	720-3000rpm	Material	Aluminum
Switch precision	<20% (MAX.)	Weignt	1620g

© Encoder parameters refer to EINH90 series

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



unit: mm

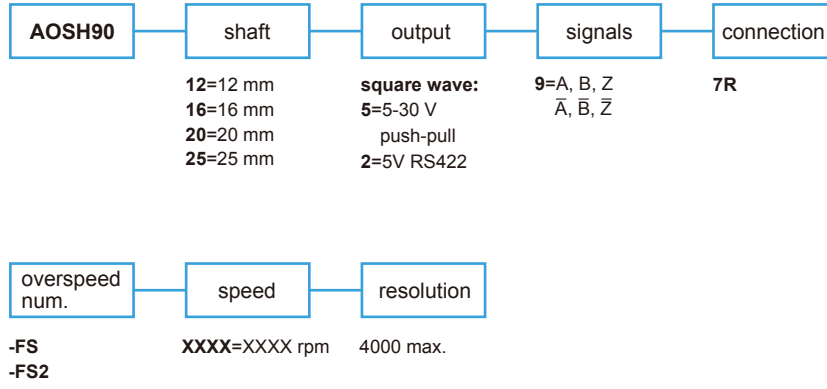


Connection

Function	Color	端子
0	white	1(X1)
+	brown	2(X1)
A	green	3(X1)
B	yellow	4(X1)
Z	grey	5(X1)
Ā	pink	6(X1)
B̄	blue	7(X1)
Z̄	red	8(X1)
NC+	brown	1(X2)
NC-	blue	2(X2)
NO+	red	3(X2)
NO-	white	4(X2)

Ordering Code

Example: AOSH9012597RFS970-1024
Hollow shaft encoder 1024 pulse push-pull output with ABZ inverse signal, aperture 12mm, 1-way switch, 970rpm alarm



If the product information is updated, please refer to the order confirmation

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EMLXX

Magnetic Linear Encoder

Features

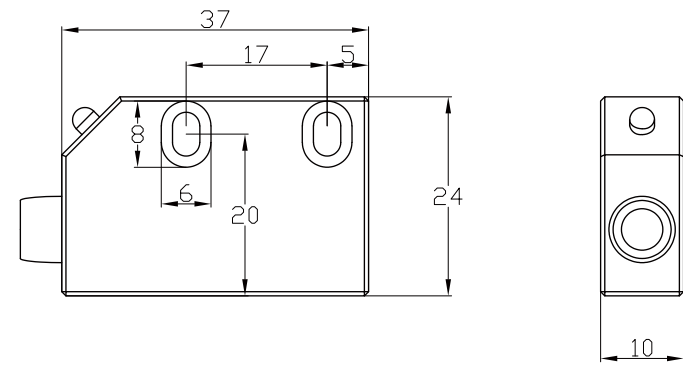
- Linear distance measurement, wide parameter selection
- Standard general purpose, can be specially IP68 housing
- Strong adaptability to environment
- Suitable for factory assembly line



Specifications

Electrical Specifications	EML	EMLH
Supply Voltage	5V, 10-30VDC	5V, 10-30VDC
Output Circuit	PUSH-PULL,RS422	PUSH-PULL
Non-load current	30mA	30mA
accuracy	0.01mm/m	0.01mm/m
linearity	0.01%	0.01%
resolution	5µm/10µm /25µm /62.5µm	1µm
Speed	25m/s	25m/s
Magnetic moment	5mm	2mm
Shock Resistance	EN 60068-2-27 1000m/s² 11m/s	
Vibration Resistance	EN 60068-2-6 100m/s² 50.....2000HZ	
Operating Temperature	-20°C - +85°C	
Protection Class	IP68	

Dimension (Installation flanges, hole positions, etc. shall be subject to the order confirmation)



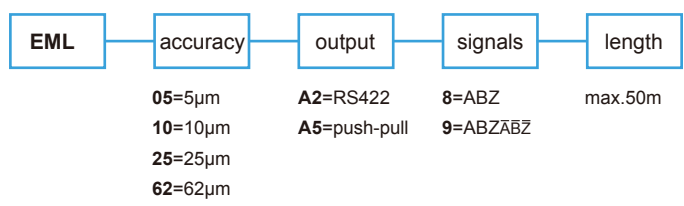
unit: mm

Connection

Function	Color
VCC	white
GND	brown
A	green
B	yellow
Z	grey
Ā	red
Ḃ	pink
Z̄	blue

Ordering Code

Example: EML05A5910
Linear encoder push-pull output with ABZ signal, range 10meter, resolution 5µm



If the product information is updated, please refer to the order confirmation

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

EC/EDXX

Draw Wire+Incremental /Absolute Encoder



Features

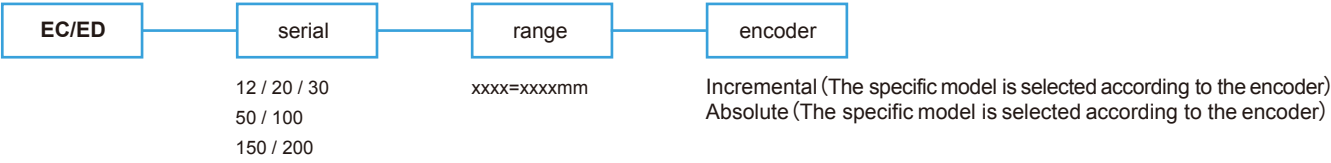
- Linear distance measurement, Optional digital output and analog output, incremental encoder or absolute encoder
- With 6mm shaft servo flange ,easy to install, Fast displacement speed, can do high speed movement
- Economy type or high protection type free choice
- Suitable for all kinds of linear measurement design

Specifications

Electrical Data

Shock Resistance	EN 60068-2-27 1000m/s² 11m/s
Vibration Resistance	EN 60068-2-6 100m/s 55.....2000HZ
Operating Temperature	-40°C - +80°C(ED) -30°C - +75°C(EC)
Protection Class	IP65(ED) IP50(EC)
Supply Voltage	5VDC, 10-30VDC
Output Circuit	Incremental: push-pull output, RS422 Absolute: 4-20 ma, SSI, MODbus, DP, CANopen, Profinet, etc

Ordering Code



Example: ED2001000EINS5810593R-1024:High precision type draw wire encoder range 1meter with eins58 incremental encoder

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

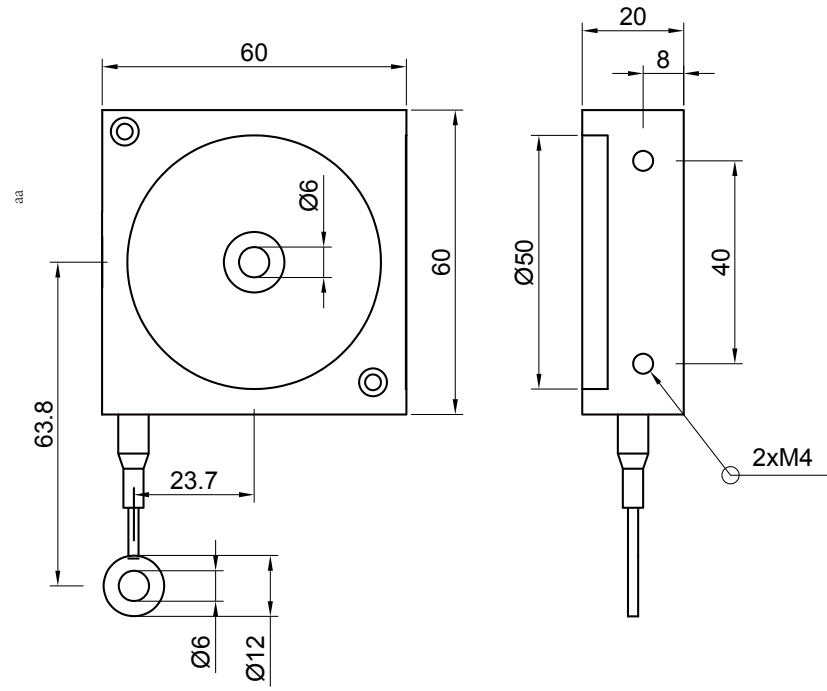
EC



EC12

Range	0-1.2m	Materials	Aluminium Alloy
Repeatability	<0.2mm	Single turn length	150mm
Linearity	<2mm	Resilience force	1N-1.4N
Hysteresis	<0.5mm	Diameter	0.5mm
Weight	80g	Accelerated Speed	5m/s²
Weight (drawstring)	0.58g/m	Lifetime	5000,000
Materials (drawstring)	304 stainless steel		

Dimension



unit: mm

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

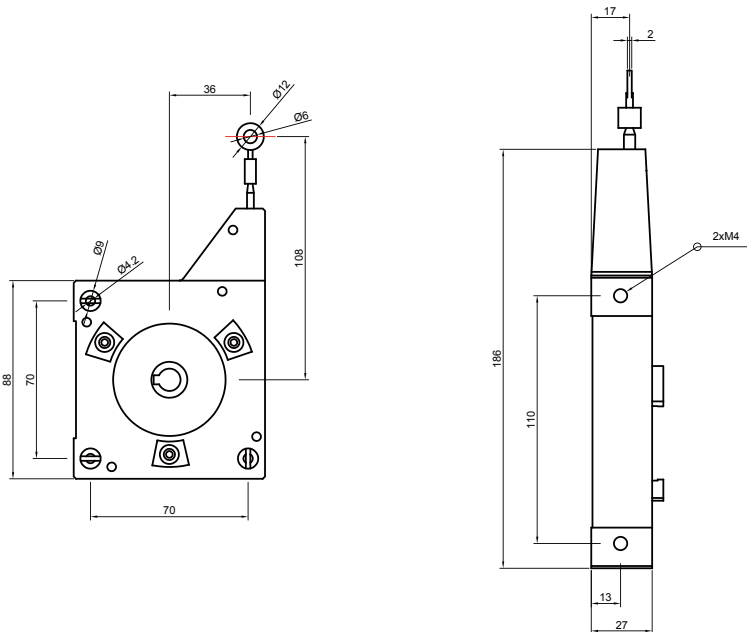
EC



EC30

Range	0-3m	Materials	Aluminium Alloy
Repeatability	<0.3mm	Single turn length	250mm
Linearity	<2mm	Resilience force	3.3N-4.4N
Hysteresis	<1.2mm	Diameter	0.6mm
Weight	250g	Accelerated Speed	10m/s ²
Weight (drawstring)	1.2g/m	Lifetime	5000,000
Materials (drawstring)	316 stainless steel		

Dimension



unit: mm

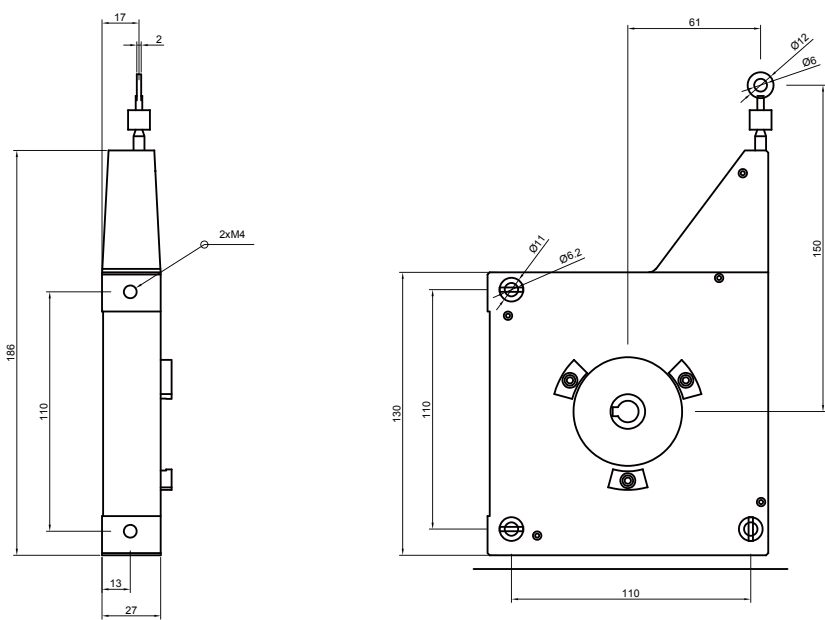
EC



EC50

Range	0-5m	Materials	Aluminium Alloy
Repeatability	<0.3mm	Single turn length	385mm
Linearity	<2mm	Resilience force	1N-1.4N
Hysteresis	<1.2mm	Diameter	0.6mm
Weight	800g	Accelerated Speed	10m/s ²
Weight (drawstring)	1.2g/m	Lifetime	5000,000
Materials (drawstring)	316 stainless steel		

Dimension



unit: mm

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

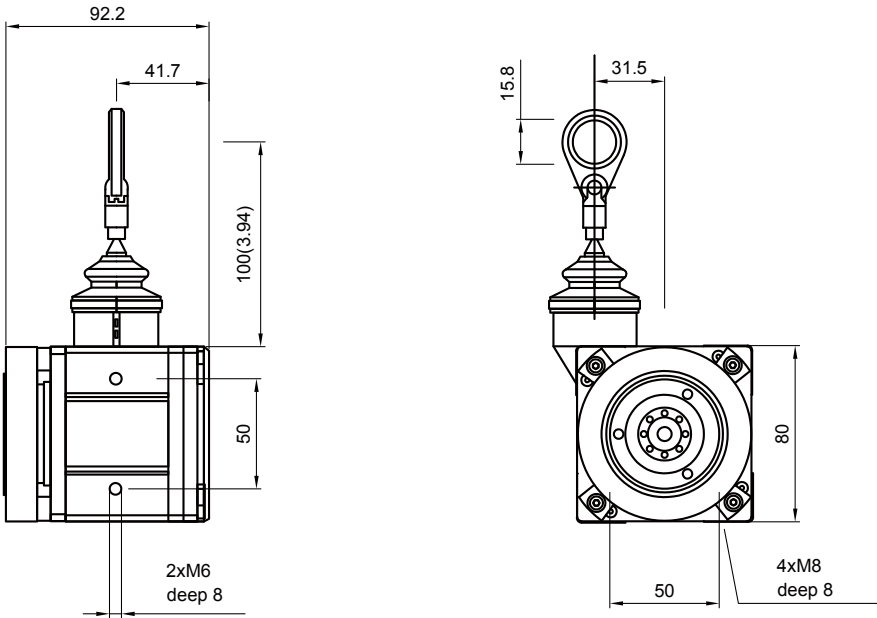
ED



EC20

Range	0-2m	Materials	Die-casting zinc
Repeatability	<0.2mm	Single turn length	200mm
Linearity	<2mm	Resilience force	6N-14N
Hysteresis	<1mm	Diameter	1.2mm
Weight	1.3kg	Accelerated Speed	40m/s²
Weight (drawstring)	7.1g/m	Lifetime	500,000
Materials (drawstring)	316 stainless steel		

Dimension



unit: mm

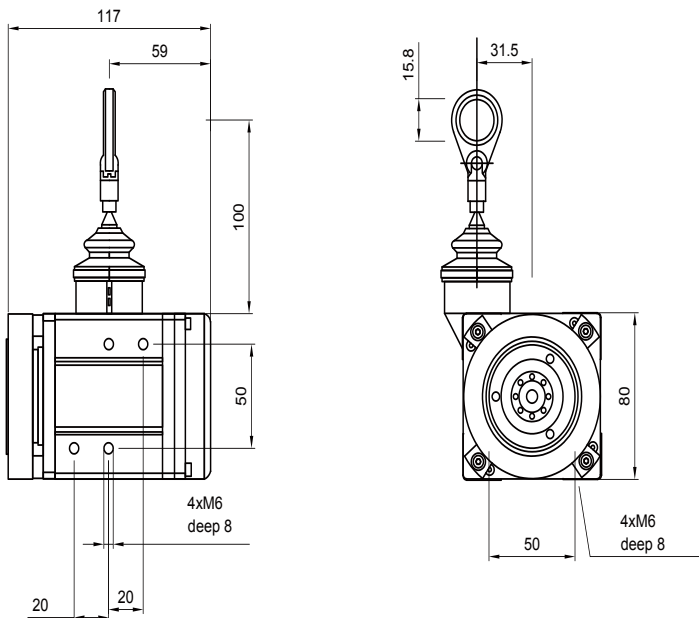
ED



ED30

Range	0-3m	Materials	Die-casting zinc
Repeatability	<0.2mm	Single turn length	200mm
Linearity	<2mm	Resilience force	6N-14N
Hysteresis	<1mm	Diameter	1.2mm
Weight	1.5kg	Accelerated Speed	40m/s²
Weight (drawstring)	7.1g/m	Lifetime	500,000
Materials (drawstring)	316 stainless steel		

Dimension



unit: mm

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

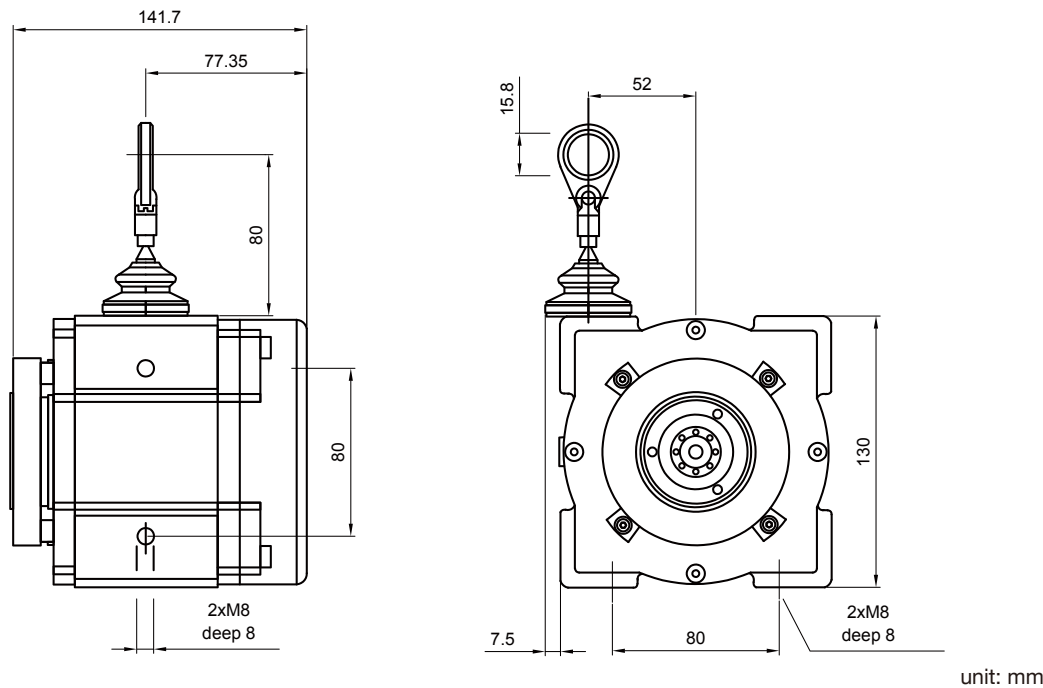
ED



ED50

Range	0-5m	Materials	Plastic
Repeatability	<0.5mm	Single turn length	333mm
Linearity	<3mm	Resilience force	15N-20N
Hysteresis	<2mm	Diameter	1.2mm
Weight	2.8kg	Accelerated Speed	70m/s²
Weight (drawstring)	7.1g/m	Lifetime	500,000
Materials (drawstring)	316 stainless steel		

Dimension



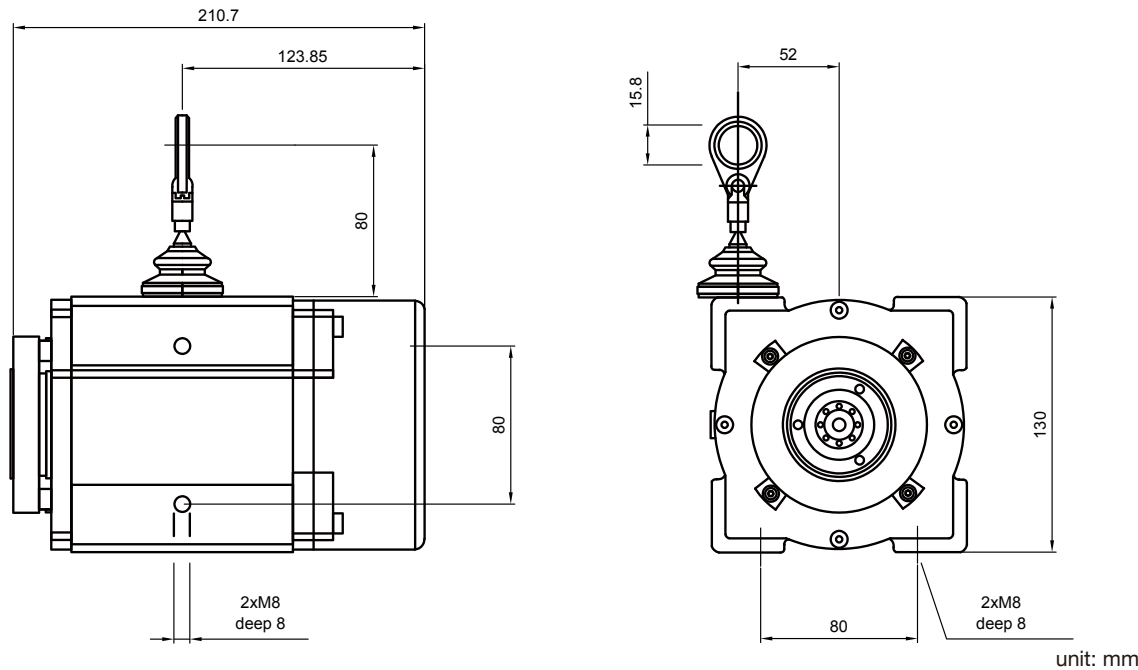
ED



ED100

Range	0-5m	Materials	Plastic
Repeatability	<0.5mm	Single turn length	333mm
Linearity	<3mm	Resilience force	15N-20N
Hysteresis	<2mm	Diameter	1.2mm
Weight	2.8kg	Accelerated Speed	70m/s²
Weight (drawstring)	7.1g/m	Lifetime	500,000
Materials (drawstring)	316 stainless steel		

Dimension



Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

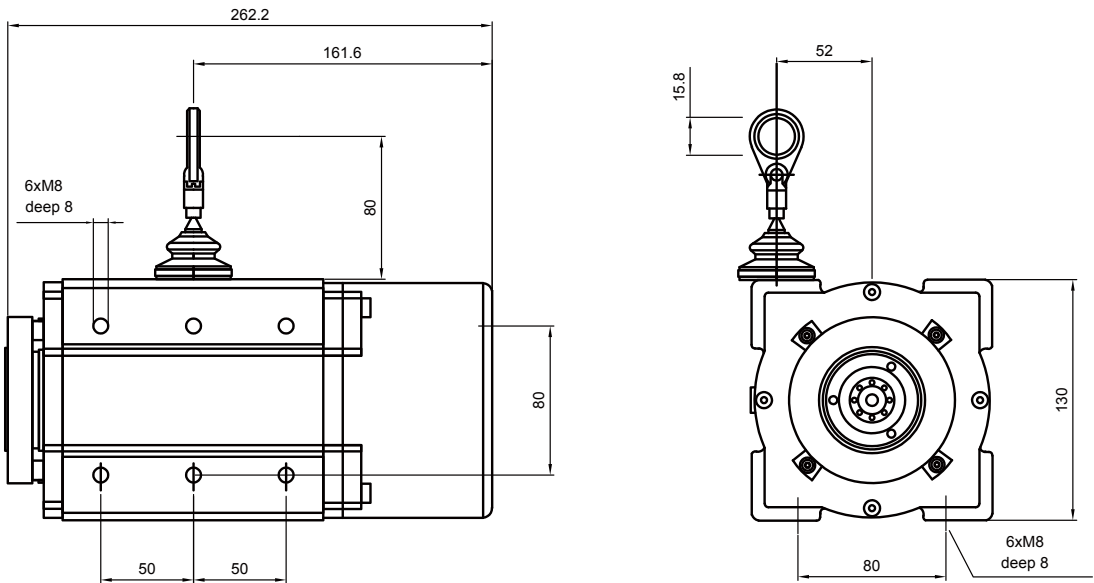
ED



ED150

Range	0-15m	Materials	Plastic
Repeatability	<2mm	Single turn length	333mm
Linearity	<10mm	Resilience force	10N-20N
Hysteresis	<6mm	Diameter	0.8mm
Weight	5kg	Accelerated Speed	30m/s²
Weight (drawstring)	2.6g/m	Lifetime	500,000
Materials (drawstring)	316 stainless steel		

Dimension



unit: mm

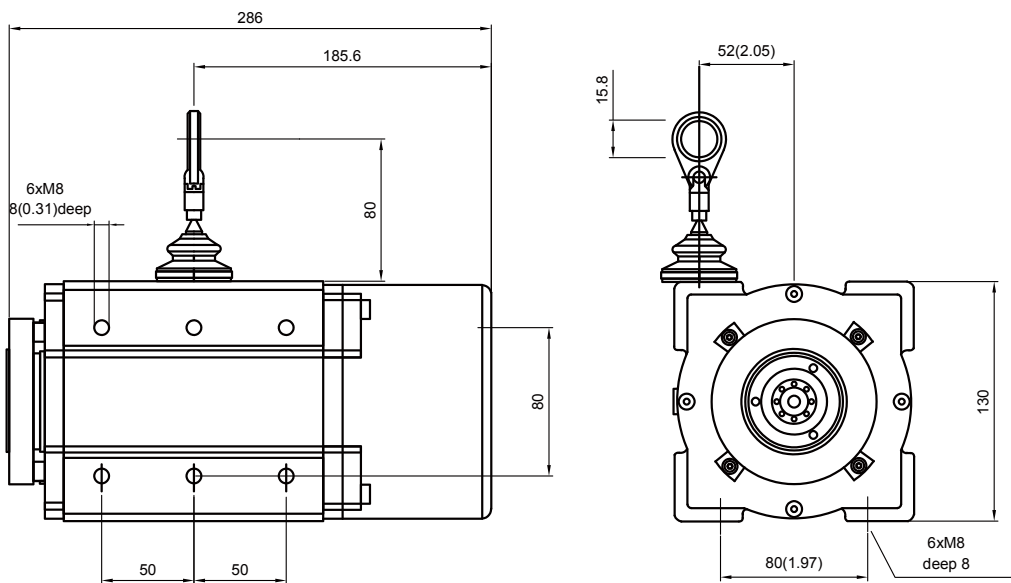
ED



ED200

Range	0-20m	Materials	Plastic
Repeatability	<2mm	Single turn length	333mm
Linearity	<10mm	Resilience force	10N-20N
Hysteresis	<6mm	Diameter	0.8mm
Weight	5kg	Accelerated Speed	30m/s²
Weight (drawstring)	2.6g/m	Lifetime	500,000
Materials (drawstring)	316 stainless steel		

Dimension



unit: mm

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

Incremental encoder

Absolute encoder

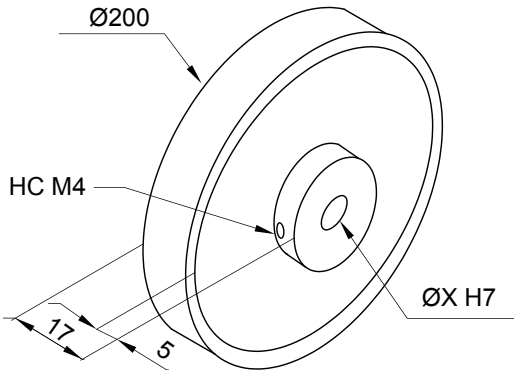
special position device

Accessories and Kits

Rotary Overspeed Switch

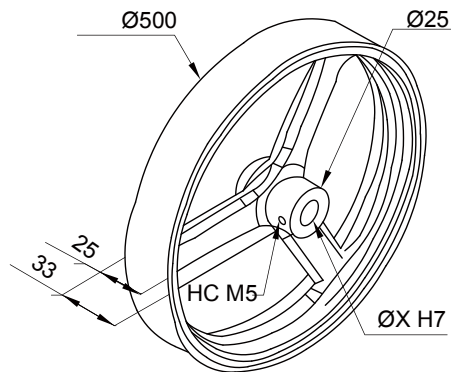
Perimeter 200mm

	H7	shell
9108/06	6	carboxamide
9108/08	8	
9108/10	10	
9109/06	6	rubber
9109/08	8	
9109/10	10	
9110/06	6	aluminium alloy



Perimeter 500mm

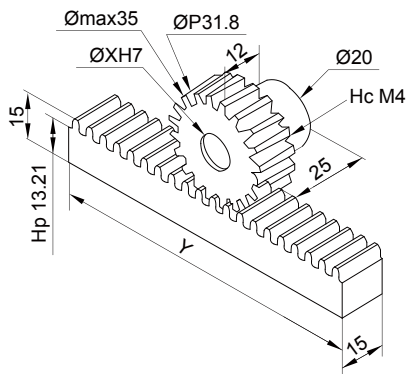
	H7	shell
9101/08	8	carboxamide
9101/10	10	
9101/12	12	
9102/08	8	rubber
9102/10	10	
9102/12	12	
9103/12	12	aluminium alloy



rack and pinion length1.591

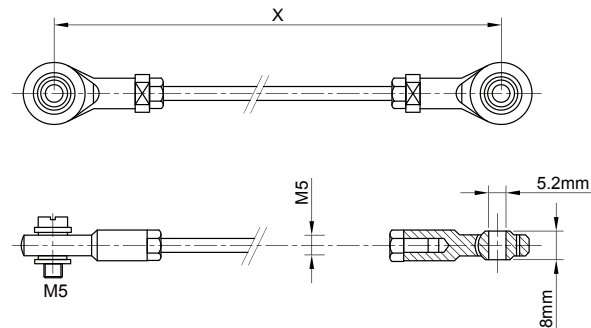
	Y	shell
9212/08	8	stainless steel
9212/10	10	

	H7	shell
9215/002	8	stainless steel
9215/004	10	
9215/005	12	



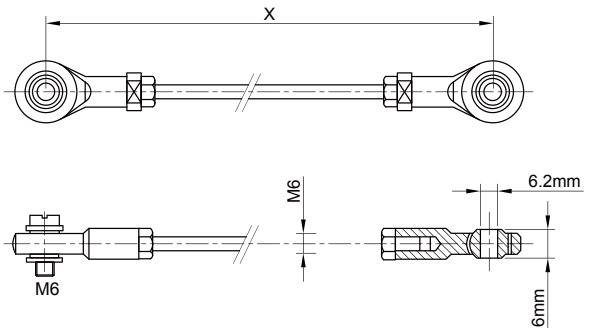
Torque arm

Type A size



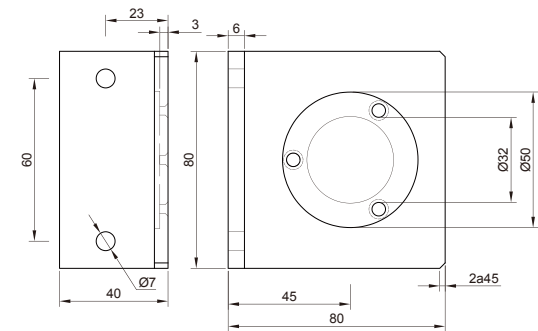
9100A	X
9100A/001	68
9100A/002	100
9100A/003	150
9100A/004	200

Type B size

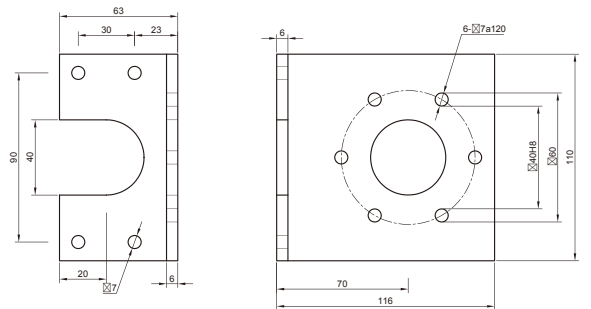


9100B	X
9100B/001	68
9100B/002	100
9100B/003	150
9100B/004	200

L Support



9202
Suitable for 58 solid shaft series



9302
Suitable for 90 solid shaft series

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

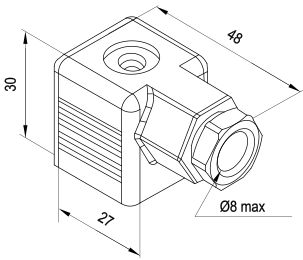
Incremental encoder

Absolute encoder

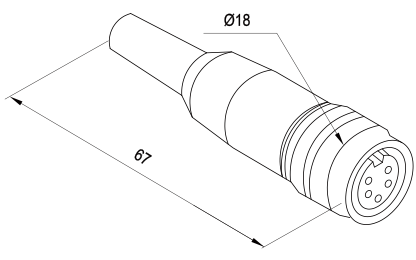
special position device

Accessories and Kits

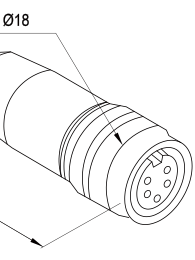
Cable Connector



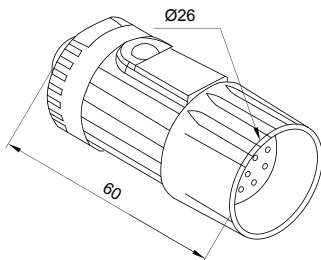
9412/F
4 hole plug



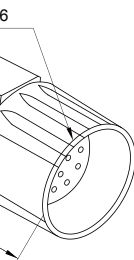
9414/F4
4 hole plug



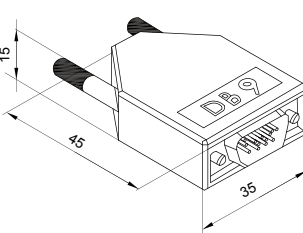
9414/F5
5 hole plug



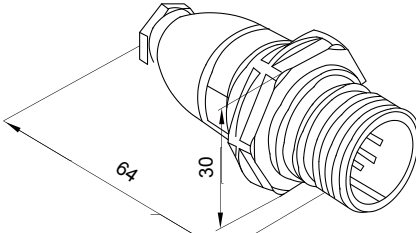
9416/F12A
12 hole plug, CW



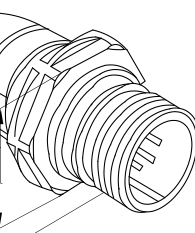
9416/F12B
12 hole plug, CCW



8213
9 pin plug

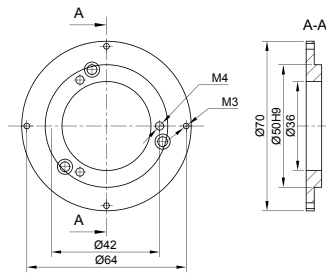


9416/E12A
12 pin plug, CW

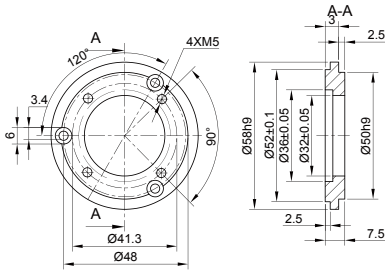


9416/E12B
12 pin plug, CCW

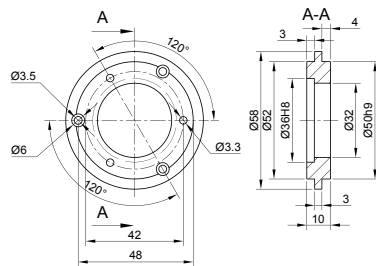
Flange



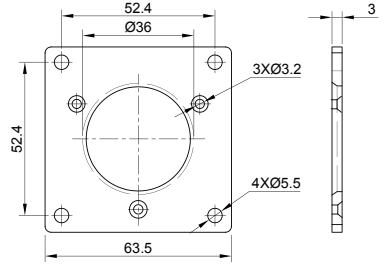
9500/002 aluminium alloy
Suitable for 58 solid shaft series



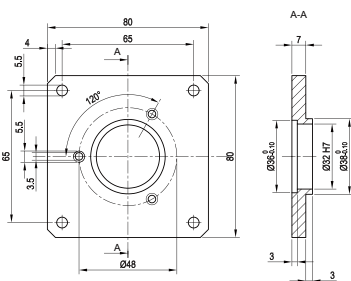
9500/003 aluminium alloy
Suitable for 58 solid shaft series



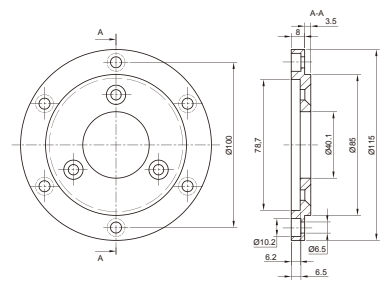
9500/004 aluminium alloy
Suitable for 58 solid shaft series



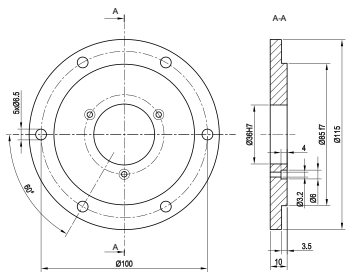
9500/005 aluminium alloy
Suitable for 58 solid shaft series



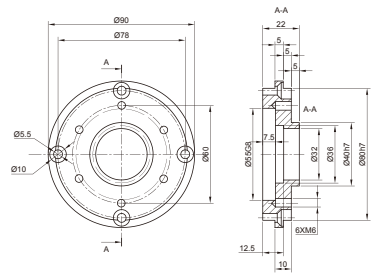
9500/006 aluminium alloy
Suitable for 58 solid shaft series



9500/007 aluminium alloy
Suitable for 90 solid shaft series



9500/010 aluminium alloy
Suitable for 58 hollow shaft series



9500/011 aluminium alloy
Suitable for 90 hollow shaft series

Intro. and Quick Selection

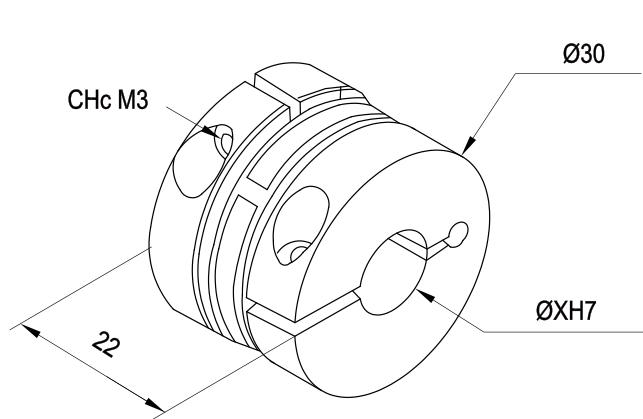
Incremental encoder

Absolute encoder

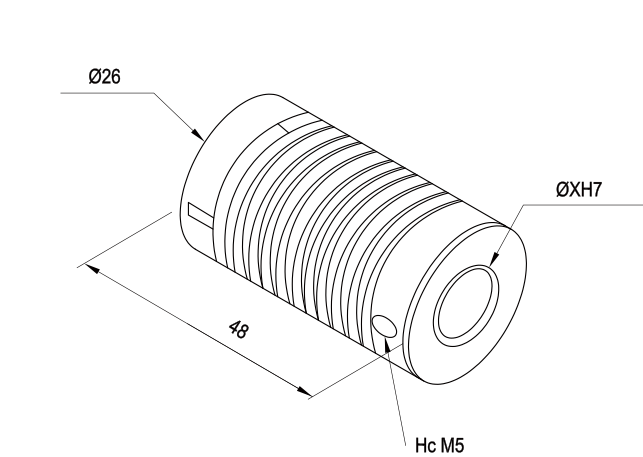
special position device

Accessories and Kits

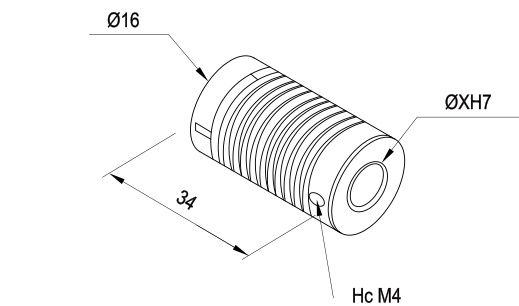
Shaft Coupling



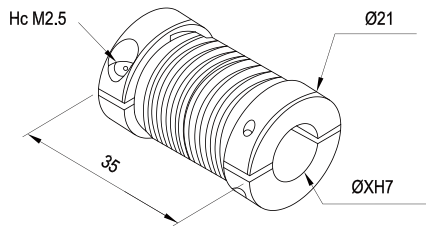
	X1 H7	X2 H7
9400/12-12	12	12
9400/10-10	10	10
9400/06-06	6	6
9400/06-10	6	10
9400/06-12	6	12
9400/10-10	10	12
9400/08-08	8	8
9400/08-06	8	6
9400/08-10	8	10
9400/08-12	8	12



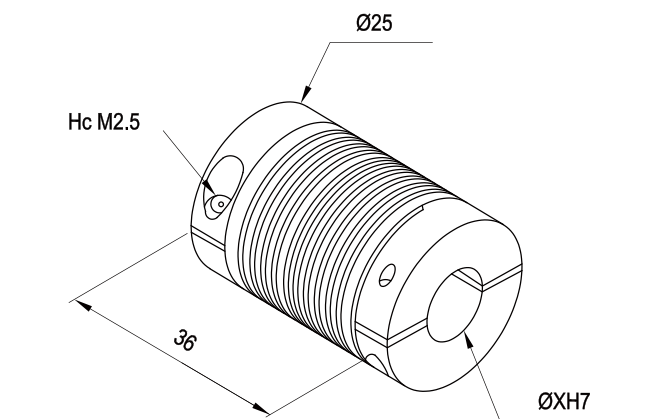
	X1 H7	X2 H7
9401/12-12	12	12
9401/10-10	10	10
9401/06-06	6	6
9401/06-10	6	10
9401/06-12	6	12
9401/10-10	10	12
9401/08-08	8	8
9401/08-06	8	6
9401/08-10	8	10
9401/08-12	8	12
9401/12-14	12	14
9401/12-14	14	14



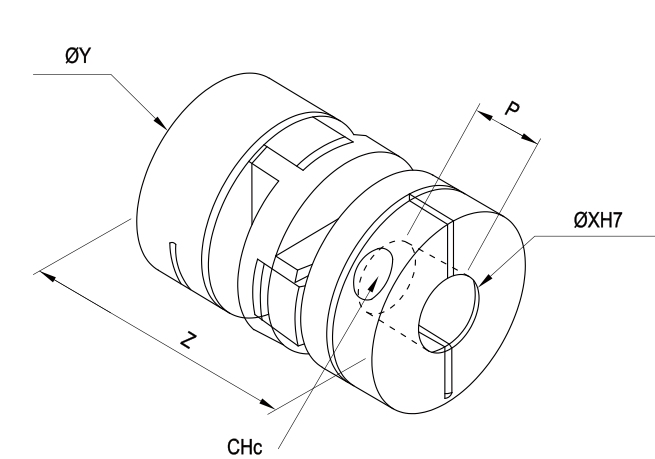
	X1 H7	X2 H7
9402/10-10	10	10
9402/06-06	6	6



	X1 H7	X2 H7
9403/10-10	10	10
9403/06-06	6	6
9403/06-10	6	10



	X1 H7	X2 H7
9404/12-12	12	12
9404/10-10	10	10
9404/06-06	6	6
9404/06-10	6	10
9404/06-12	6	12
9404/10-10	10	12
9404/08-08	8	8
9404/08-06	8	6
9404/08-10	8	10
9404/08-12	8	12



	X1 H7	X2 H7	Y	Z	P
9410/C06-06	6	6	25.4	28.4	8.6
9410/C06-10	6	10	25.4	28.4	8.6
9410/C10-10	10	10	25.4	28.4	8.6
9410/A06-06	6	6	33.3	48	13
9410/A06-10	6	10	33.3	48	13
9410/A08-08	8	8	33.3	48	13
9410/A08-12	8	12	33.3	48	13
9410/A10-10	10	10	33.3	48	13
9410/A12-12	12	12	33.3	48	13
9410/B10-10	10	10	41.3	50.8	16.7
9410/B12-12	12	12	41.3	50.8	16.7

Intro. and Quick Selection

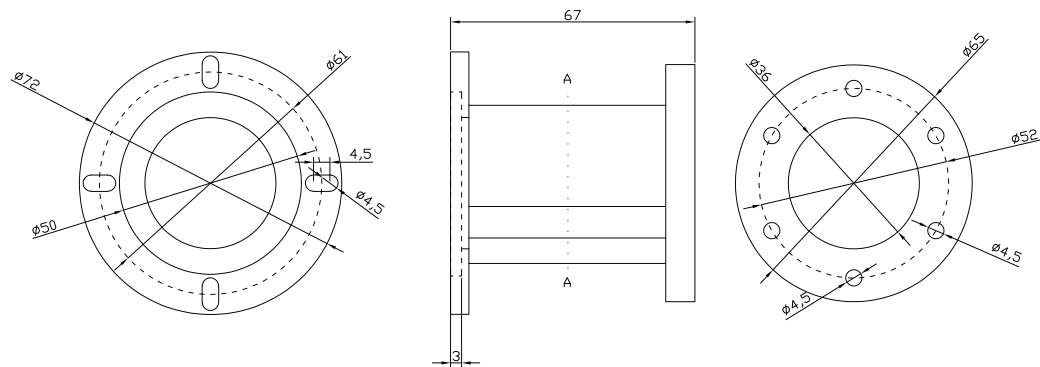
Incremental encoder

Absolute encoder

special position device

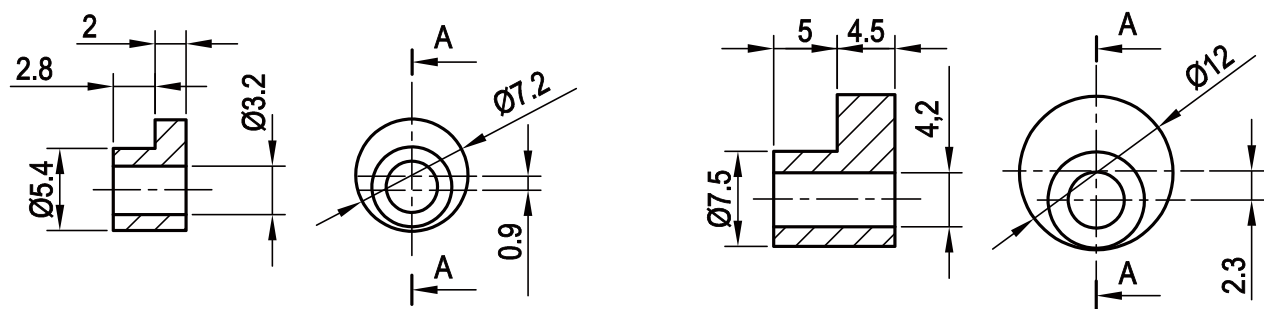
Accessories and Kits

Torque arm



9800/001 aluminium alloy
Suitable for 58 encoder and direct fixing of DC motor

Eccentric wheel

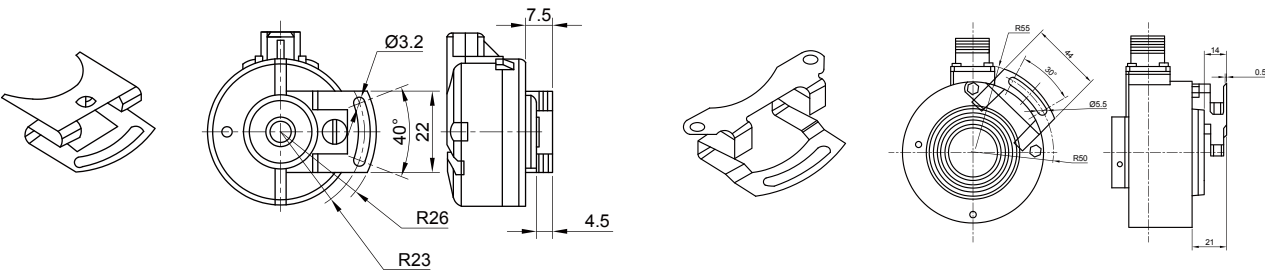


9601
Suitable for synchronous flange installation

9602
Suitable for synchronous flange installation

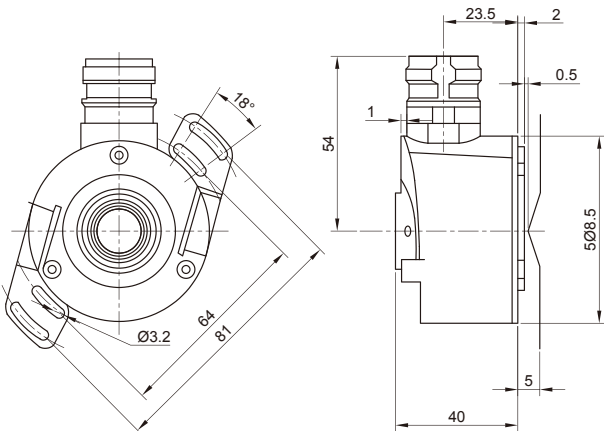
Spring Support

Single wing support

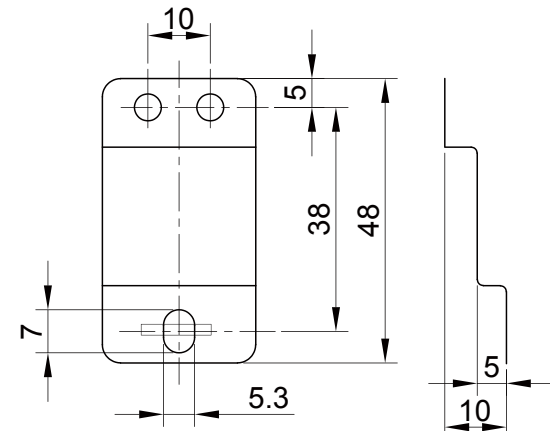


9445/001
Suitable for 40 hollow shaft and blind shaft series

9445/002
Suitable for 90 hollow shaft and blind shaft series



9445/003
Suitable for 58 hollow shaft and blind shaft series



9445/004
Suitable for 40 hollow shaft and blind shaft series

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Intro. and Quick Selection

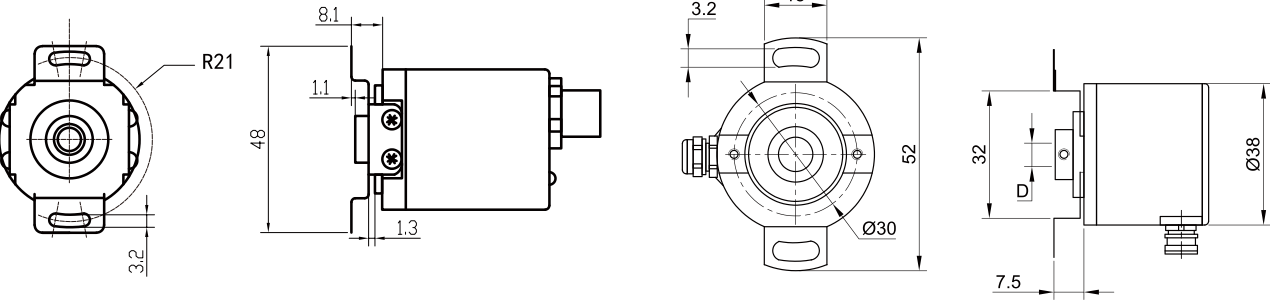
Incremental encoder

Absolute encoder

special position device

Accessories and Kits

Double wing support

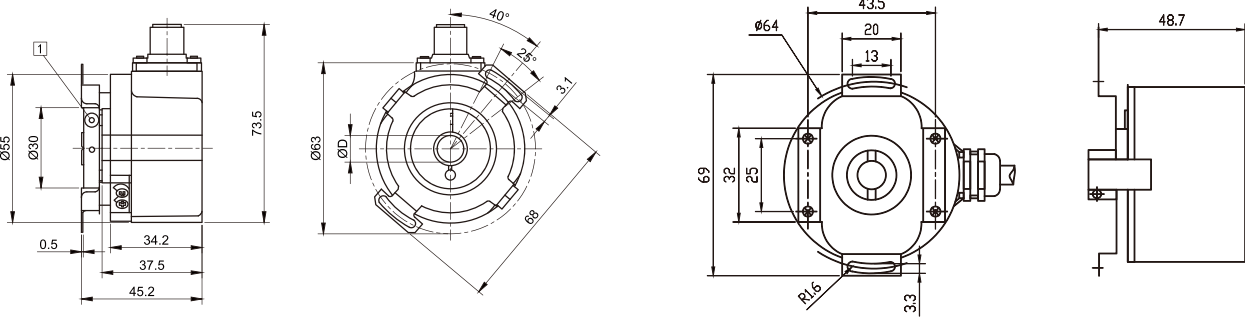


9445/010

Suitable for 37 hollow shaft and blind shaft series

9445/011

Suitable for 40 hollow shaft and blind shaft series

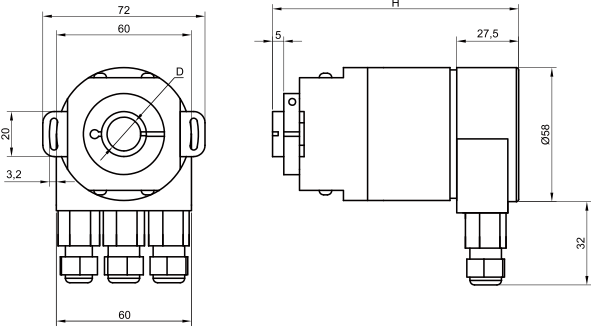


9445/012

Suitable for 50 hollow shaft and blind shaft series

9445/013

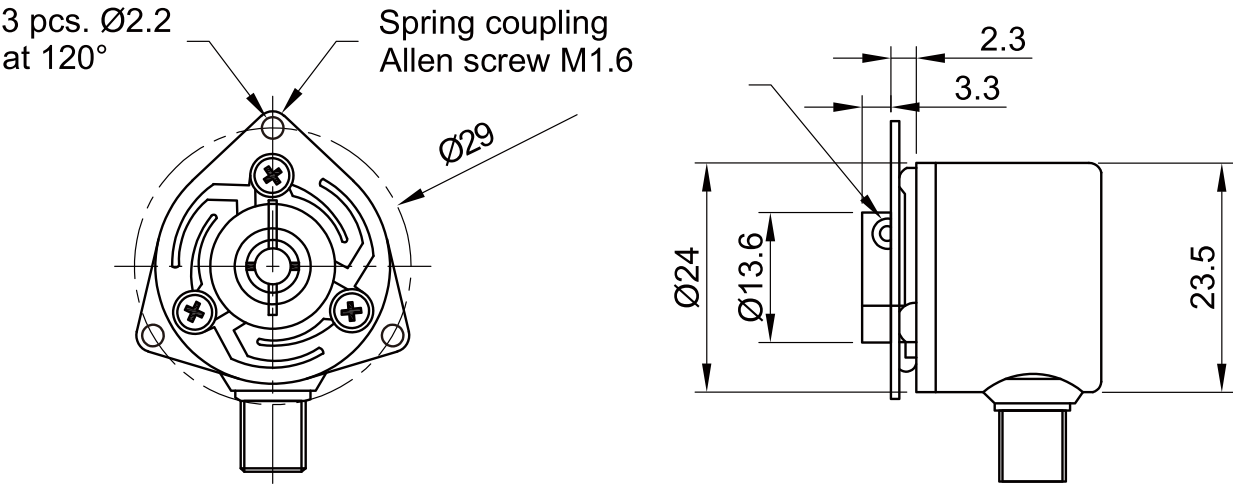
Suitable for 58 hollow shaft and blind shaft series, front fixation



9445/014

Suitable for 58 hollow shaft and blind shaft series, lateral fixation

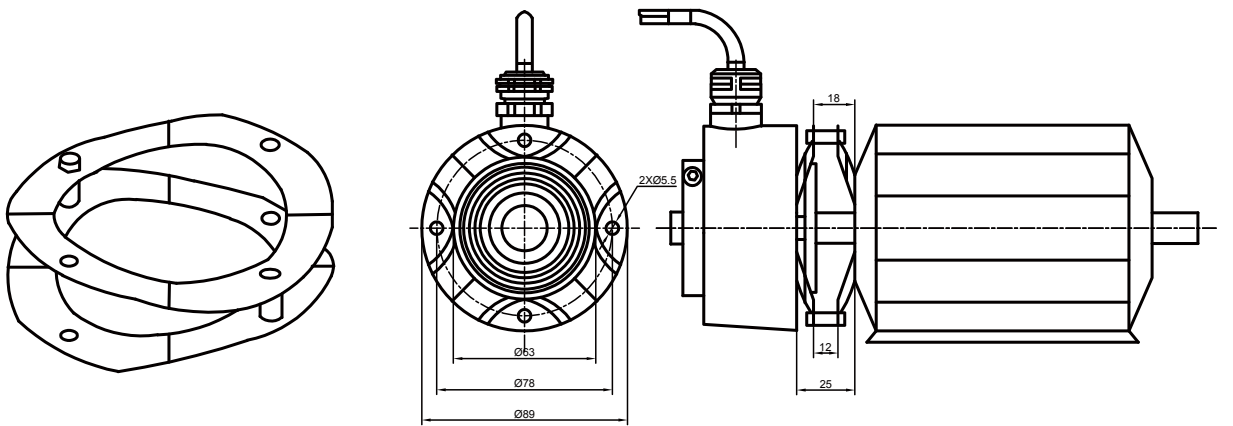
Triangular support



9445/020

Suitable for 24 hollow shaft and blind shaft series

Double end bracket



9445/030

Suitable for 90 heavy duty and motor connection

Intro. and Quick Selection

Incremental encoder

Absolute encoder

special position device

Accessories and Kits