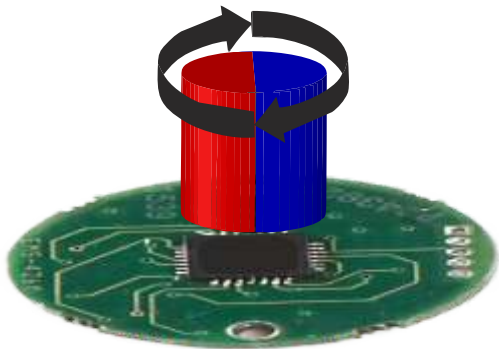


MDE22 - Magnetic shaft encoder









Based on Dipole Magnet and Hall Sensors



MDE22 is a magnetic rotary enclosed encoder with a shaft. It has a precision sensor having an integrated Hall element for scanning a permanent Dipole magnet. The encoder can give Absolute as well as incremental outputs up to 14 bits per rotation.

MDE22 enclosure is designed like a enclosed shaft encoders allowing for very easy installation in applications. Its IP68 robust design makes it ideal for use in harsh environments.

Salient Features:







-  **22mm Circular encoder with Ø4mm Shaft**
-  **Operates on 5V power supply**
-  **Variety of outputs supported like Analog Sin-Cos output, Incremental RS422, Absolute SSI and BiSS-C protocol**
-  **Supports up to 14 bits (16384 positions) per rotation Absolute and Incremental outputs**
-  **Accuracy +/- 0.35 deg**
-  **High Speed operation up to 20000 rpm at 12 bit resolution**
-  **3600 CPR also available to give angular resolutions easier for mathematical calculations**
-  **Suitable for applications like motor control, Medical instrumentation, paper and textile industry, Industrial automation and many more**



RATED TO
IP68

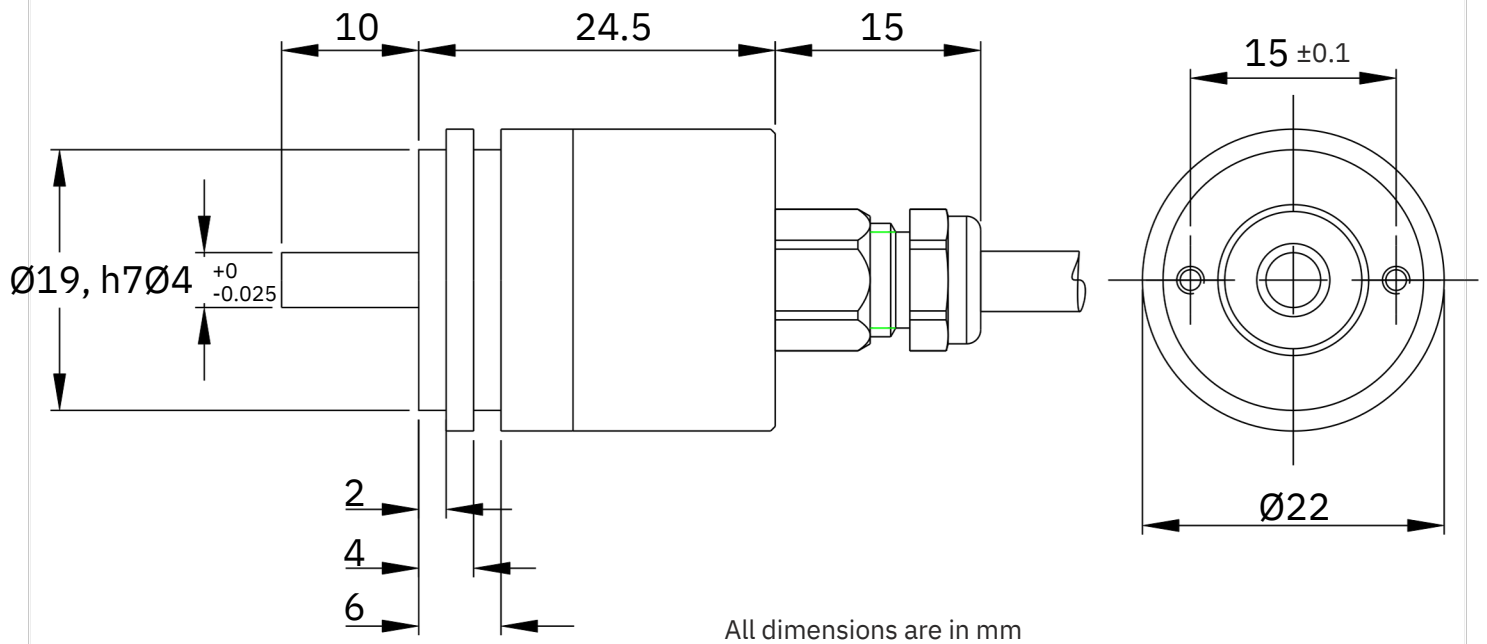


Available models:

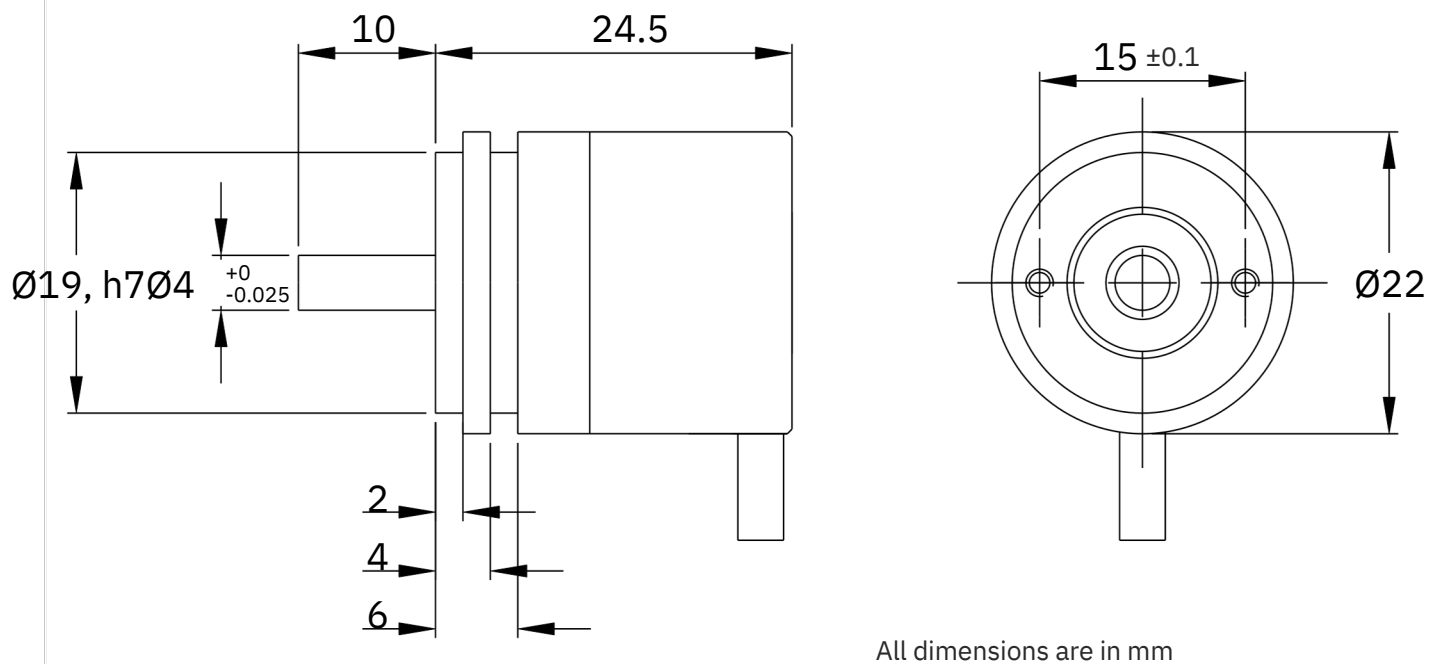
-  **MDE22AS** - Analog single ended Sine Cosine output with a single sine-cosine cycle per rotation
-  **MDE22AC** - Analog complementary Sine Cosine output with a single sine-cosine cycle per rotation
-  **MDE22IR** - Incremental RS422 A, B and Z output with up to 16384 counts per rotation
-  **MDE22SB** - Absolute output on Synchronous Serial interface (SSI) with Binary data up to 13 Bits per rotation
-  **MDE22SG** - Absolute output on Synchronous Serial interface (SSI) with Grey coded data up to 13 Bits per rotation
-  **MDE22BC** - Absolute output on BiSS-C data up to 14 Bits per rotation

Installation drawings:

Axial type

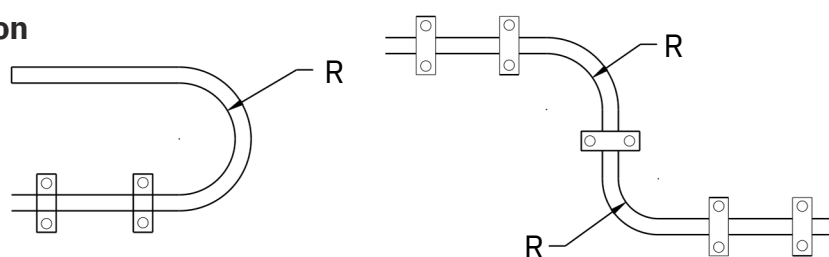


Radial type



Note: The above drawings for IP53 model only. Please contact factory for installation drawings for IP64 / IP68 encoders

Cable installation

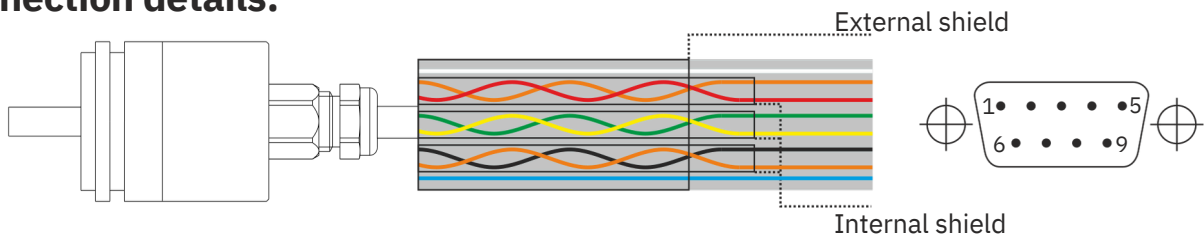


Note: Minimum possible R is 25mm
Tested at 500000 strokes at minimum bending radius

MDE22 Specifications:

	MDE22AS / AC	MD E22IR	MDE22S B / SG	MDE22BC
Power Supply (Vdd)	+5V DC (±5%)			
Current consumption	50mA maximum		90mA maximum	
Output	AS - 2Vpp each signal AC - 0.5Vpp each signal	RS422		
Maximum RPM	20000 RPM			
Operating Temperature	-40°C to +125°C			
Storage Temperature	-40°C to +125°C			
Storage Humidity	Max. 95% relative humidity (non-condensing)			
Operating Humidity	Max. 80% relative humidity (non-condensing)			
Accuracy	±0.35°			
Clock Frequency	Not	4MHz maximum		10MHz maximum
Output data format	Applicable	SB - Binary data SG - Grey coded data 16µS		BiSS-C 12.5µS to 40µS
SSI Data time out	Not			
Standard Cable length	Applicable 1 m			
Connector type	9 Pin D Connector Male (Plug), Flying leads			
Maximum Cable length	3 m	Not	50 m	
Driving current	Applicable		20mA max.	
Cable	Ø5.3mm, double shielded PUR cable, dragchain compatible			
Cable exit	Axial, Radial			
Shaft Size	Ø4 X 10 mm			
Max. Shaft loads	Radial 20N, Axial 10N			
Protection class	IP53, IP64, IP68 (IEC 60529)			
EMI/EMC compliance	EN61326			

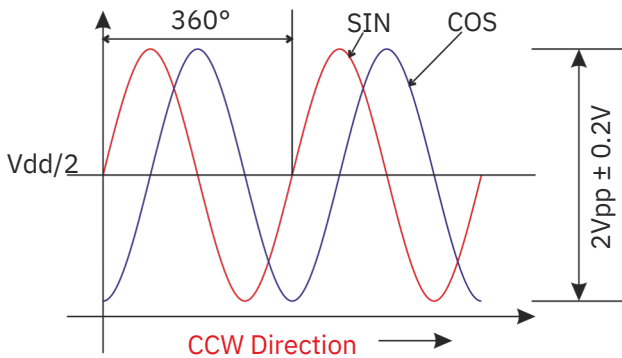
Pin Connection details:



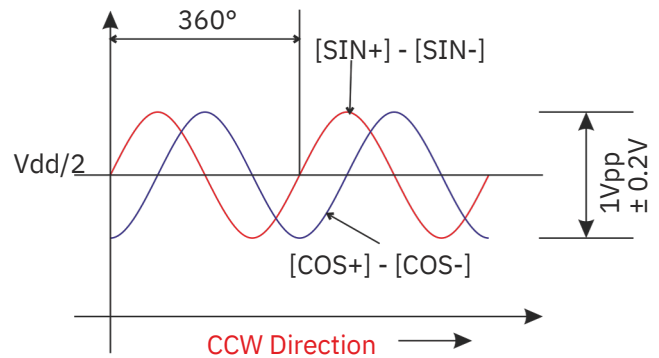
Pin numbers	MDE22AS		MDE22AC		MDE22IR		MDE22SB/SG/BC	
	Signal	Colour	Signal	Colour	Signal	Colour	Signal	Colour
1	Internal Shield		Internal Shield		Internal Shield		Internal Shield	
2	SIN	Red	SIN +	Red	Z +	Brown	CLK +	Red
3	COS	Yellow	COS +	Yellow	B +	Yellow	CLK -	Orange
4	NC	-	NC	-	A +	Red	NC	-
5	Vdd	White	Vdd	White	Vdd	White	Vdd	White
6	NC	-	SIN -	Orange	Z -	Black	Data +	Yellow
7	NC	-	COS -	Green	B -	Green	Data -	Green
8	NC	Blue	NC	-	A -	Orange	NC	-
9	GND		GND	Blue	GND	Blue	GND	Blue
Body	External Shield		External Shield		External Shield		External Shield	

Output waveforms:

MDE22AS

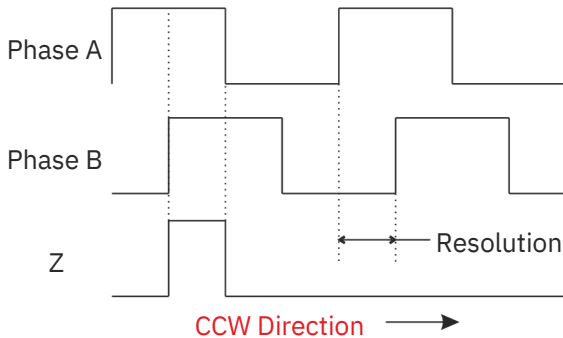


MDE22AC



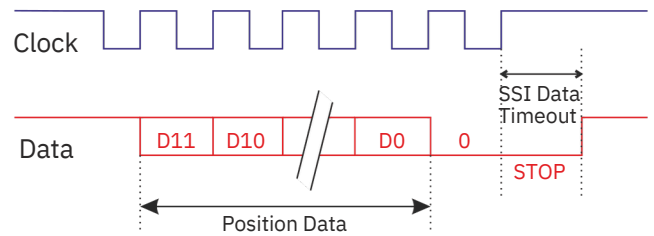
MDE22IR

(Differential signals are not shown)



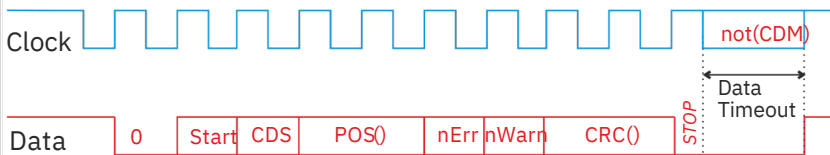
MDE22SB / SG

(Differential signals are not shown)



Position data is 13bit for all resolutions up to 13bits with trailing zeros. Position data increments in CCW direction

MDE22BC



POS() is 12bit data for Res up to 12bits and 16bit data for Resolutions above 12bit with trailing zeros. Position data increments in CCW direction



Output Resolutions:

MDE22IR

CPR	Hysteresis	Max. RPM
4 to 256*	0.7°	20000
260 to 512*	0.35°	20000
516 to 4096*	0.17°	20000
8192	0.17°	5000
16384	0.17°	2500

MDE22SB / MDE22SG

No of Bits	Hysteresis
9	0.35°
10 to 13	0.17°

MDE22BC

No of Bits	Hysteresis
8	0.7°
9	0.35°
10 to 14	0.17°

* - In increments of 4. Eg 4, 8, 12, till 256 etc

Note: Counts per Rotation (CPR) can be calculated as pulse per rotation (PPR) X 4

Ordering Information:

MDE22

Series name
22mm Circular
rotary shaft encoder

Model name
AS - Single ended SIN COS output
AC - Complementary SIN COS output
IR - Incremental RS422 output
SB - SSI with binary data output
SG - SSI with grey coded data output
BC - BiSS-C with binary data output

Resolution in PPR

For **AS** and **AC**

00000

For **IR**

00004 to 04096, 08192, 16384

For **SB** (no of bits)

**00512(9), 01024(10), 02048(11), 04096(12),
08192(13)**

For **BC** (no of bits)

**0256(8), 00512(9), 01024(10), 02048(11),
04096(12), 08192(13), 16384(14)**

Cable Length

10 - 1m standard

00 - Standard
RoHS assembly
01 - Standard
non-RoHS assembly

IP Rating
A - IP53
B - IP64
C - IP68

Shaft size

04 - Ø4mm Std.
F4 - Ø4mm Flat

Cable exit type

A - Axial
R - Radial

Connector type

A - Flying leads
B - 9 pin male (plug)
D connector