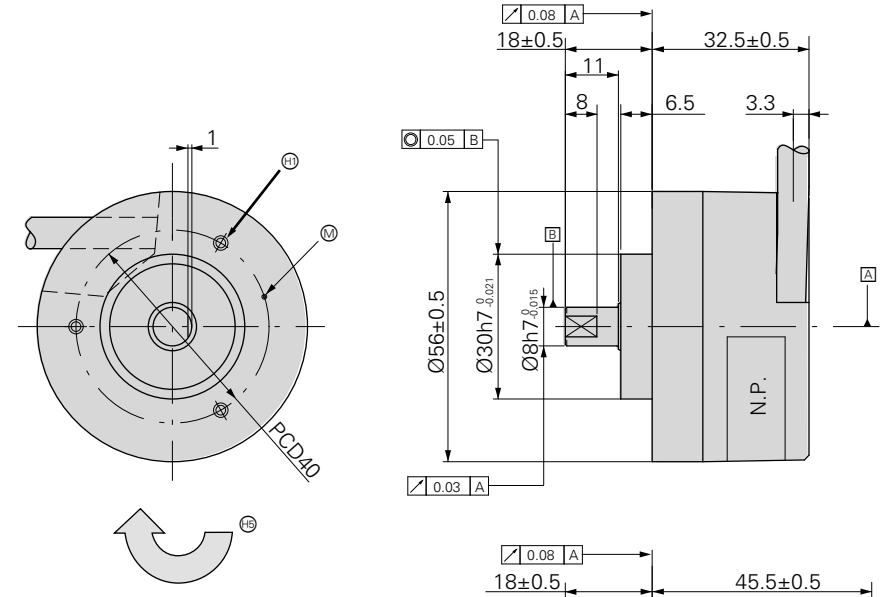
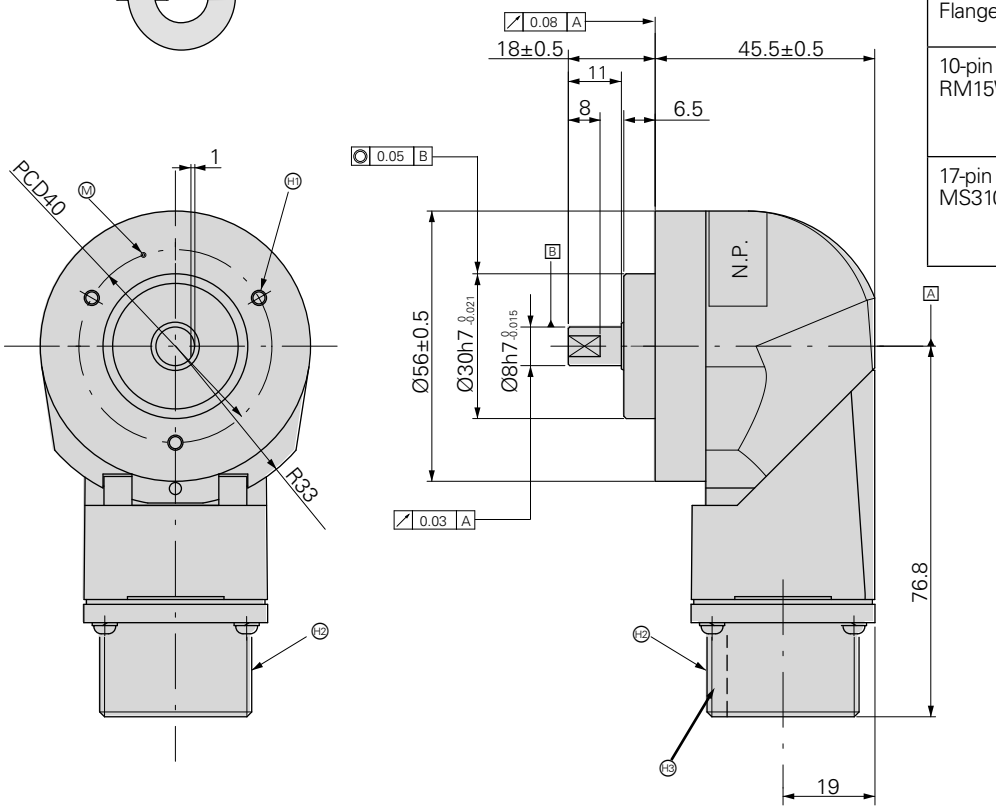
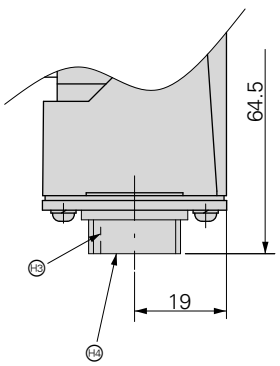
ROD 400 Series

Incremental Rotary Encoders for separate rotor coupling

- **Outer Diameter 56 mm**
- **Length 32.5 mm/45.5mm**
- **Shaft Diameter 8.0 mm**







Flange socket	Mating connector
10-pin RM15WTRZ-10P(71)	Connector RM15WTRZ-10S(71) Clamp JR13WCC-10(72)
17-pin MS3102E20-29P	Connector MS3106B-20-29S Clamp MS3057-12A

Dimensions in mm

Tolerancing ISO 8015

Ⓜ = Measuring point for operating temperature
Ⓗ1 = 3–M3, Depth 6, Equally Spaced
Ⓗ2 = Flange socket MS3102E20-29P(Equivalent)
Ⓗ3 = Key
Ⓗ4 = Flange socket RM15WTRZ-10P(71)
Ⓗ5 = Direction of shaft rotation for output signals as per the interface description

	ROD 420	ROD 430	
Incremental signals	⊓⊔ TTL – C[1)]	⊓⊔ HTL – C[1)]	⊓⊔ HTLs[2)] – C[1)]
Output pulse * (Accuracy Class)	100[(I)] 200[(I)] 300[(I)] 500[(I)] 512[(I)] **600[(I)]** 900[(I)] 1000[(I)] **1024[(I)]** 1200[(I)] 2500[(I)] 4096[(I)] 5000[(I)] 10000[(II)]		
Scanning frequency Edge separation *a*	≤ 300 kHz ≥ 0.41 µs	≤ 200 kHz ≥ 0.62 µs	
System accuracy	Accuracy Class I : ±1/10 SP Accuracy Class II : ±1/5 SP		
Power supply **Current consumption** without load	5V ± 10% ≤ 70 mA	10.8V to 26.4V ≤ 70 mA	
Output current	± 10 mA	± 20 mA	≤ 40 mA
Electrical connection	• **Cable 1m, without connector** • 17-pin MS3102E-20-29P flange socket, radial • 10-pin RM15WTRZ-10P(71) flange socket, radial		
Shaft	Solid shaft D = 8 mm		
Mech. permissible speed n	≤ 6000 min^{-1}		
Starting torque (at 20°C)	≤ 0.007 Nm		
Moment of inertia of rotor	$3.0 \cdot 10^{-6}$ kgm^2		
Shaft load	Axial :20 N Radial: 30 N		
Vibration 25 to 2000 Hz **Shock** 6 ms	≤ 100 m/s^2 (JIS C 60 068-2-6, EN 60 068-2-6) ≤ 1000 m/s^2 (JIS C 60 068-2-27, EN 60 068-2-27)		
Max. operating temp. **(Ambient Temperature)**	90℃（85℃）		
Min. operating temp.	*For rigid configuration :* –20°C *For frequent flexing :* –10°C		
Protection EN 60 529	IP64 (IP66 when shaft is stationary)		
Weight	Approx. 0.2 kg (without cables)		

Bold : preferred versions

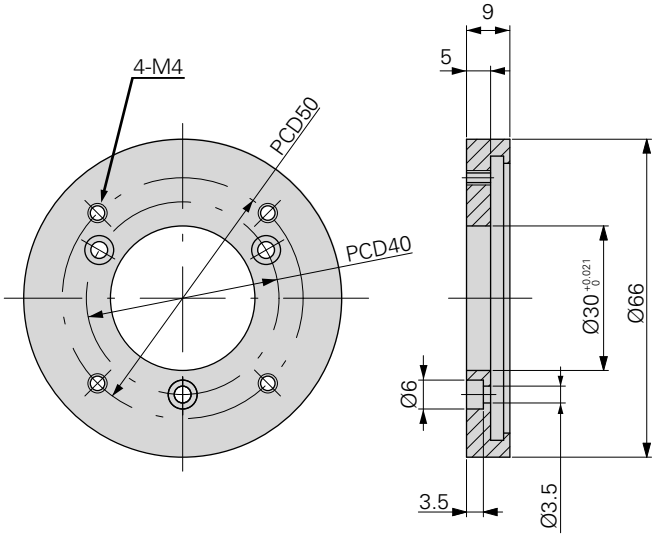
* Please select when ordering.

[1)] Bypass capacitor is connected to FG.

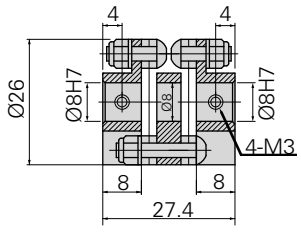
[2)] Without inverse signal

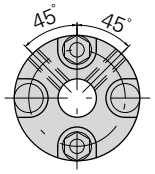
Mounting Accessories

Mounting flange for ROD 400 series
ID 728 586-01



Rotor coupling for ROD 400 series
ID 731 375-01

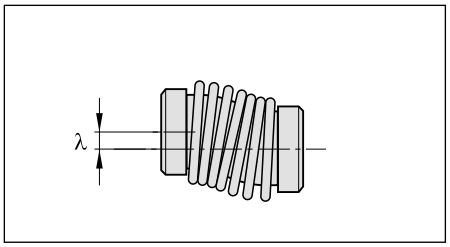




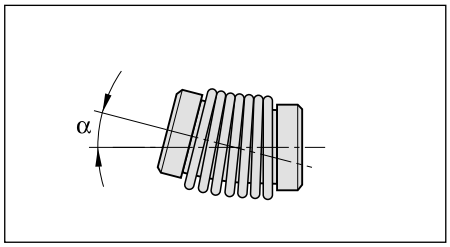
	for ROD 400 series
Hub bore	8/8 mm
Kinematic transfer error*	± 20"
Torsional rigidity	225 $\frac{Nm}{rad}$
Max. torque	0.98 Nm
Max. radial offset λ	$\leqq$ 0.2 mm
Max. angular error α	$\leqq$ 1.5°
Max. axial motion δ	$\leqq$ 0.3 mm
Moment of inertia (approx.)	$2.5 \cdot 10^{-6}$ kgm^2
Permissible speed	20000 min^{-1}
Weight	30 g

*With radial misalignment λ = 0.1 mm,
angular error α = 0.15 mm over 100 mm $\triangleq$ 0.09 , valid up to 50 °C

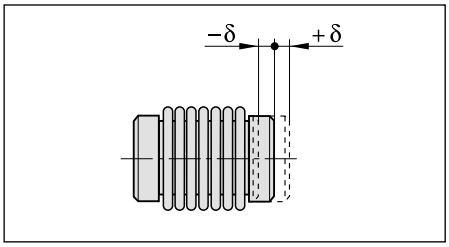
Radial offset



Angular error



Axial motion



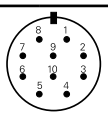
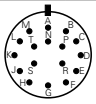
Connecting Elements and Cables

Connecting Cables

Cable diameter 6.5 mm		
Connector	Cable Specification	
10-pin	4x 2x 0.18 mm^2	736 060-01 (1m) 736 060-03 (3m) 736 060-05 (5m)
17-pin	4x 2x 0.18 mm^2	736 061-01 (1m) 736 061-03 (3m) 736 061-05 (5m)

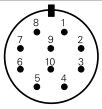
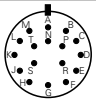
Pin Layout

⊓⊔ TTL – C / ⊓⊔ HTL – C

10-pin RM15WTRZ-10P(71) flange socket 				**17-pin MS3102B-20-29P flange socket** 								
	Power supply			Incremental signals						Other signals		
10-pin RM15WTRZ-10P(71) flange socket	**1**	**2**	**10**	**3**	**4**	**5**	**6**	**7**	**8**	**/**	**9**	**/**
17-pin MS3102B-20-29P flange socket	**H**	**K**	**T**	**A**	**N**	**C**	**R**	**B**	**P**	**M**	**/**	**D/E/F/G/J/L/S**
	U_P	**0 V**	**FG**	**U_{a1}**	**$\overline{U_{a1}}$**	**U_{a2}**	**$\overline{U_{a2}}$**	**U_{a0}**	**$\overline{U_{a0}}$**	**0 V**	**Vacant**	**Vacant**
	White	Black		Red	Pink	Olive	Blue	Yellow	Orange			

Cable shield connected to housing; **U_P** = power supply

⊓⊔ HTLs– C / Open Collectors

10-pin RM15WTRZ-10P(71) flange socket 				**17-pin MS3102B-20-29P flange socket** 								
	Power supply			Incremental signals						Other signals		
10-pin RM15WTRZ-10P(71) flange socket	**1**	**2**	**10**	**3**	**4**	**5**	**6**	**7**	**8**	**/**	**9**	**/**
17-pin MS3102B-20-29P flange socket	**H**	**K**	**T**	**A**	**N**	**C**	**R**	**B**	**P**	**M**	**/**	**D/E/F/G/J/L/S**
	U_P	**0 V**	**FG**	**U_{a1}**	**0 V**	**U_{a2}**	**0 V**	**U_{a0}**	**0 V**	**0 V**	**Vacant**	**Vacant**
	White	Black		Red	Pink	Olive	Blue	Yellow	Orange			

Cable shield connected to housing; **U_P** = power supply

HEIDENHAIN

http://www.heidenhain.co.jp

HEIDENHAIN K.K.
Hulic Kojimachi Bldg., 9F
3-2 Kojimachi , Chiyoda-ku,
Tokyo 102-0083 Japan
☎ +81 (0)3 3234 7781
FAX +81 (0)3 3262 2539