

# HOLLOW TYPE

# HEF Model



## High Water Resistant 38mm Diameter Encoder

•Most Advanced IP65 Encoder.

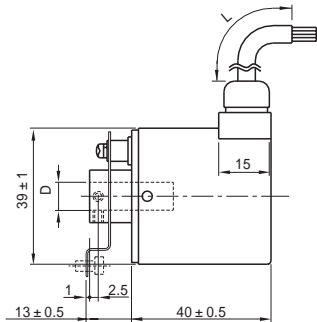
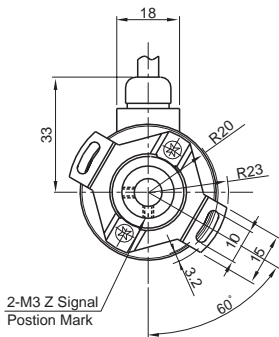
### Model

HEF -       - 2M    -          -          -    0 0

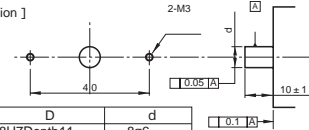
Resolution				Hollow Shaft Diameter		Cable Length		Output Mode	
002	20P/R	05	500P/R	800	8	050	500mm (Standard)	No Indication	Other than D output
003	30P/R	0512	512P/R	635	6.35	100	1000mm	C	D output with LS
0032	32P/R	06	600P/R	600	6	300	3000mm	HC	D output with C-MOS
004	40P/R	08	800P/R	500	5	Option		HCP	
005	50P/R	09	900P/R	9525	9.525			HT	
006	60P/R	10	1000P/R					D	Line Driver Output Low Power Consumption C-MOS Output Available
01	100P/R	1024	1024P/R					No Indication : Voltage Output	
0125	125P/R	12	1200P/R					C : Open Collector Output	
02	200P/R	15	1500P/R					HC : Open Collector Output / High Voltage	
0250	250P/R	18	1800P/R					HCP : PNP Mode Open Collector Output / High Voltage	
0256	256P/R	20	2000P/R					HT : Push-Pull Output / High Voltage	
03	300P/R	2048	2048P/R					D : Line Driver Output Low Power Consumption C-MOS Output Available	
036	360P/R	25	2500P/R						
04	400P/R	36	3600P/R						

Signals ——— 2M : AB90° Phase Difference + Zero Signal

### External Dimension

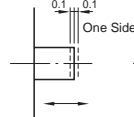


[ Setting Dimension ]

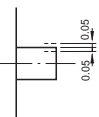


Shaft size No	D	d
800	8H7/Depth11	8g6
500	5H7/Depth11	5g6
600	6H7/Depth11	6g6
635	6.35H7/Depth11	6.35g6
9525	9.525H7/Depth11	9.525g6

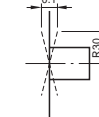
[ Thrust Play ]



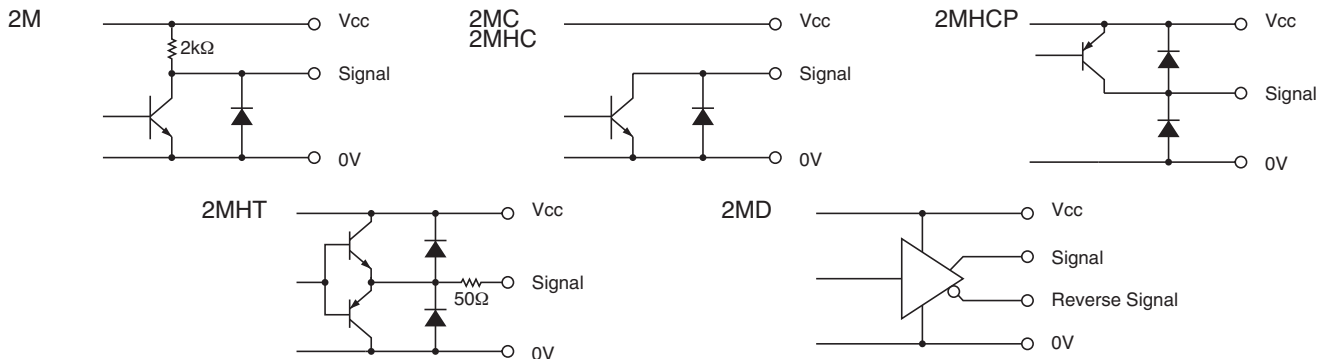
[ Radial Play ]



[ Perpendicularity Between Flange and Shaft ]



### Circuit of Output Signal



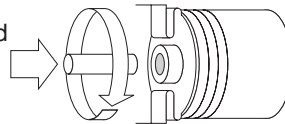
## Electrical Spec.

※1) at Maximum Output Current ※2) Maximum Source Current

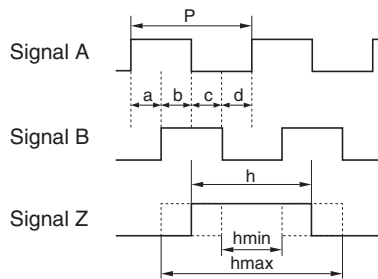
TYPE		2•2M	2C•2MC	2HC•2MHC	2HCP•2MHCP	2HT•2MHT	2MD
Supply Voltage		DC4.5 ~ 13.2 V			DC10.8 ~ 26.4 V		DC4.75 ~ 5.25V C-MOS DC4.5 ~ 5.5V
Requirement		80 mA Max	60 mA Max		100 mA Max	60 mA Max	150 mA Max C-MOS80 mA Max
Output Voltage	“H”	Within -1 Power Volt	—————		Within -1 <sup>2</sup> Power Volt	Within -3 Power Volt	2.5 V or More
	“L” ※1	0.5 V Max			—————	3 V Max	0.5 V Max
Maximum Output Current		20 mA MAX				40 mA MAX	20 mA MAX
Rise & Fall Time		1 μs Max					200 ns Max
Maximum Frequency Response		200 kHz			50 kHz	200 kHz	
Withstanding Voltage of Output Tr.		—————	50 V MAX.		—————		

## Wave Form.

CW → Rotating Toward Clockwise Viewed from an Arrow



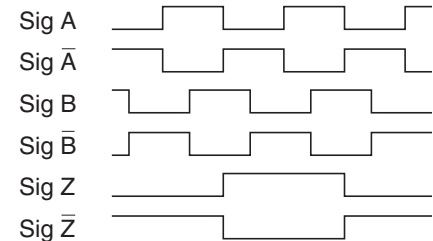
Rising point of A-Signal is always at one point while Z-Signal is at H-Level in CW.



$$P = \frac{1}{1\text{Resolution}}$$

$$a, b, c, d = \frac{P}{4} \pm \frac{P}{8} \quad \frac{P}{2} \leq h \leq \frac{3P}{2}$$

Wave Ratio (Duty); 50 ± 25 (%)



## Electrical Connections

2M  
2MC  
2MHC  
2MHCP  
2MHT

Color of Lead Wire	Description
Red	Power Source
Black	0V Common
Green or Blue	Signal A
White	Signal B
Yellow	Signal Z
Shielding Braid	NC

2MD

Color of Lead Wire	Description	Color of Lead Wire	Description
Red	Power Source	White	Signal B
Black	0V Common	Gray	Signal B
Green	Signal A	Yellow	Signal Z
Blue	Signal A	Orange	Signal Z
Shielding Braid	NC		

## Mechanical Spec.

Starting Torque		4.9×10 <sup>-3</sup> N • m Max
Angular Acceleration		1×10 <sup>5</sup> rad/s <sup>2</sup>
Shaft Loading	Thrust axial	9.8N
	Radial	19.6N
Moment of Inertia		1.2×10 <sup>-6</sup> kg • m <sup>2</sup>
Maximum RPM		5000r/min
Net Weight		300g Max

## Environmental Spec.

Operating Temperature	-10°C ~ +70°C
Storage Temperature	-30°C ~ +80°C
Humidity	RH 85% Max No Condensation
Vibration	10~55 Hz / 1.5mm 2 h
Shock	294m/s <sup>2</sup> , 11ms X, Y, Z Each 3 times
Degree of Protection	IP65