

NEMICON

HOLLOW TYPE

HES Model



Best Seller Hollow Shaft Encoder

- Wide Variation of Outputs (6) and Resolution (20~3600 P/R).

Model

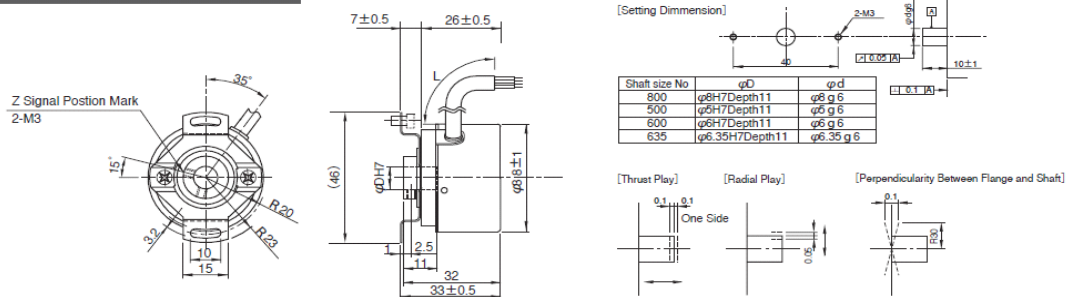
HES - - **2M** - - - **00**

Resolution			
002	20P/R	05	500P/R
003	30P/R	0512	512P/R
0032	32P/R	06	600P/R
004	40P/R	08	800P/R
005	50P/R	09	900P/R
006	60P/R	10	1000P/R
01	100P/R	1024	1024P/R
0125	125P/R	12	1200P/R
02	200P/R	15	1500P/R
0250	250P/R	18	1800P/R
0256	256P/R	20	2000P/R
03	300P/R	2048	2048P/R
036	360P/R	25	2500P/R
04	400P/R	36	3600P/R

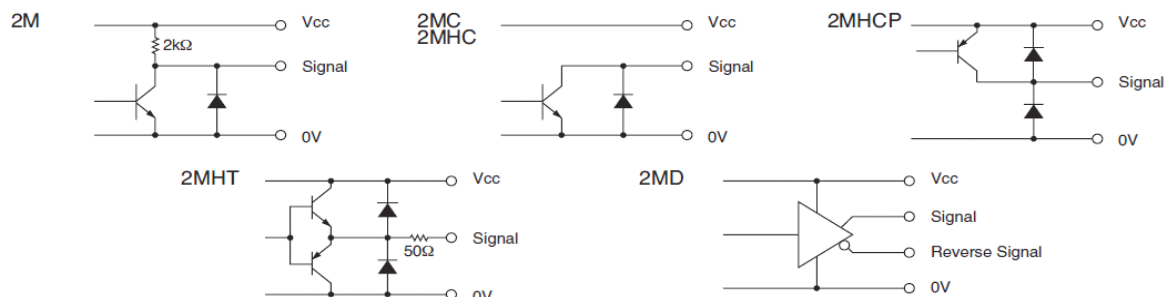
- Output Mode**
 - No Indication : Voltage Output
 - C : Open Collector Output
 - HC : Open Collector Output / High Voltage
 - HCP : PNP Mode Open Collector Output / High Voltage
 - HT : Push-Pull Output / High Voltage
 - D : Line Driver Output
Low Power Consumption C-MOS Output Available
- Hollow Shaft Diameter**
 - 800 : $\varnothing 8$
 - 635 : $\varnothing 6.35$
 - 600 : $\varnothing 6$
 - 500 : $\varnothing 5$
- Cable Length**
 - 050 : 500mm (Standard)
 - 100 : 1000mm
 - 300 : 3000mm
- Signals**
 - No Indication : Other than D output
 - No Indication : D output with LS
 - C : D output with C-MOS

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

External Dimension



Circuit of Output Signal



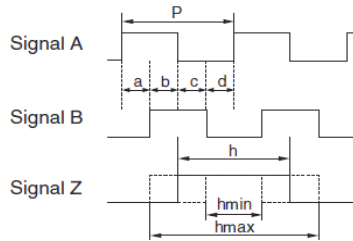
Electrical Spec.		※1) at Maximum Output Current				※2) Maximum Source Current	
TYPE		2•2M	2C•2MC	2HC•2MHC	2HCP•2MHCP	2HT•2MHT	2MD
Supply Voltage		DC4.5 ~ 13.2 V			DC10.8 ~ 26.4 V		
Requirement		80 mA Max	60 mA Max		100 mA Max	60 mA Max	150 mA Max C-MOS60 mA Max
Output Voltage	"H"	Within -1 Power Volt	—————		Within -1※2 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



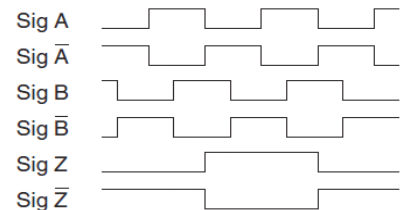
Rising point of A-Signal is always at one point while Z-Signal is at H-Level in CW.



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

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

Wave Ratio (Duty); 50 ± 25 (%)



Electrical Connections

2M 2MC 2MHC 2MHCP 2MHT	Color of Lead Wire		Description	2MD	Color of Lead Wire		Description
	Color	Description	Color		Description		
	Red	Power Source			White	Signal B	
	Black	0V Common			Gray	Signal B	
	Green or Blue	Signal A			Yellow	Signal Z	
	White	Signal B			Orange	Signal Z	
	Yellow	Signal Z					
	Shielding Braid	NC					

Mechanical Spec.

Starting Torque		9.8×10 ⁻⁴ N • m Max
Angular Acceleration		1×10 ⁵ rad/s ²
Shaft Loading	Thrust axial	9.8N
	Radial	29.4N
Moment of Inertia		8×10 ⁻⁷ kg • m ²
Maximum RPM		6000r/min
Net Weight		120g 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 ² , 11ms X, Y, Z Each 3 times
Degree of Protection	IP50