

# Optical Incremental Encoder with High resolution and robustness 「CE32R」

## ■ Features

**High  
resolution**

- ◆ **High resolution**
  - 360~144000(P/R)
  - Can accommodate requested number of pulse

**Wide variety  
of shape**

### ◆ **Wide variety of shape**

- Hollow type enables space-saving installation
- Shaft end shape can be customized

### ◆ **Superior Robustness**

- Adoption of metal pulse disk improved shock resistance
- Operating Temperature: -20~85°C
- High responsiveness even in high-speed rotating environments

**Superior  
Robustness**

Solid Shaft

Hollow Shaft



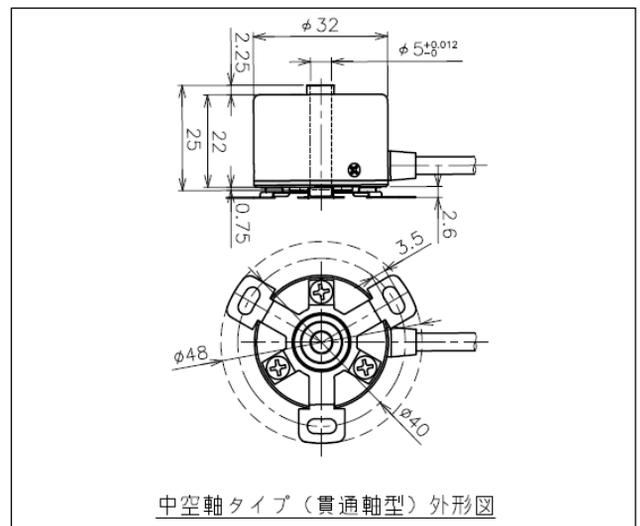
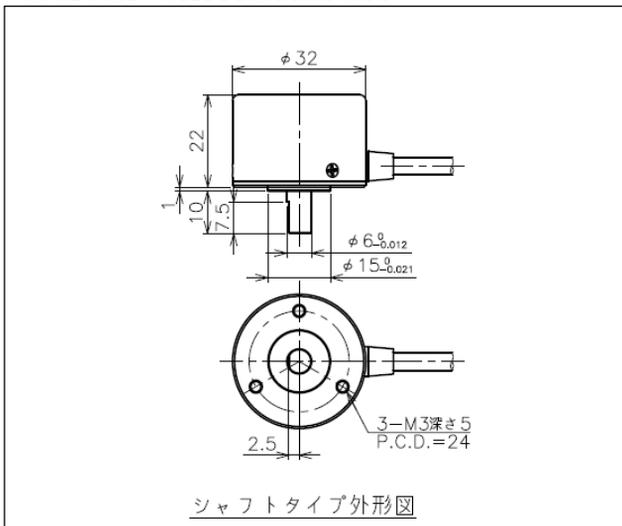
CE32RS



CE32RH

## ■ Outer dimension

<Unit : mm>



# CE32R

Series No



Shaft shape

H : Hollow shaft  
S : Solid shaft



IP level

0 : IP50  
1 : IP65



Output resolution



Output format

X : Line Driver Output  
C : Open Collector Output  
E : Voltage Output

Model No.		CE32R□△-○X	CE32R□△-○C		CE32R□△-○E	
Standard Spec	Input Voltage	DC4.5V~30V			DC4.5V~13.5V	
	Current consumption	Less than 120mA(Under no load)				
	Output resolution	360	2,000	6,000	16,384	50,000
		500	2,500	7,200	18,000	65,536
		512	2,048	8,000	20,000	72,000
		720	3,000	8,192	21,600	90,000 (※)
		1,000	3,600	9,000	25,000	100,000 (※)
		1,024	4,096	10,000	32,768	125,000 (※)
		1,500	5,000	10,800	36,000	131,072 (※)
		1,800	5,400	12,500	40,000	144,000 (※)
	(※) only for X : Line Driver Output					
	Output Phase	A, B, Z, -A, -B, -Z phase		A, B, Zphase		
	Output phase difference	A phase / B phase difference : 90°±45°( 1/4T± 1/8T)				
	Output format	Line Driver Output		NPN Open Collector Output		Voltage Output
Output Capacity	Output current : H level : I <sub>o</sub> =-20mA L level : I <sub>s</sub> =20mA Output voltage : H level : more than 2.5V L level : less than 0.5V		Applied voltage : less than DC30V Sink current : 30mA Output residual voltage : less than 0.5V		Output resistance : 1.2kΩ Sink current : less than 20mA Output residual voltage : less than 0.5V	
Maximum response frequency	2MHz		125kHz			
Output start-up/fall time	Less than 0.1μs		Less than 1μs			
Shaft rotation torque	・CE32RH(Hollow shaft) : less than 4.9mN·m (less than 50gf·cm) ・CE32RS(Solid shaft) : less than 2.94mN·m (less than 30gf·cm)					
Moment of inertia	Less than 3×10 <sup>-7</sup> kg·m <sup>2</sup>					
Load tolerance	Radial : 19.6N (2kgf) / Thrust : 9.8N (1kgf)					
Rotation speed tolerance	6000r/min.					
Protection Circuit	Power supply reverse connection protection circuit					
Mass	80g					
Shield Cable	AWG28/8 core shield cab tire cable L=1000mm					
Environmental Spec	Operating temperature	-20~85°C				
	Storage temperature	-20~85°C				
	Operating humidity	35~85%RH (No condensation)				
	Storage humidity	35~85%RH (No condensation)				
	Vibration	200m/s <sup>2</sup> (IEC60068-2-6)				
	Shock	1000m/s <sup>2</sup> (100G) ±X, ±Y, ±Z Directions,3times (IEC60068-2-27)				
	EMS	Immunity IEC61000-6-2(IEC61000-4-2,3,4,6,8)				
IP level	IP50/IP65					

# ■ LIST of PART NUMBER

Shaft shape	Output resolution	Line driver output	Open collector output	Voltage Output
Hollow shaft (IP50)	360	CE32RH0-360X	CE32RH0-360C	CE32RH0-360E
	500	CE32RH0-500X	CE32RH0-500C	CE32RH0-500E
	512	CE32RH0-512X	CE32RH0-512C	CE32RH0-512E
	720	CE32RH0-720X	CE32RH0-720C	CE32RH0-720E
	1000	CE32RH0-1000X	CE32RH0-1000C	CE32RH0-1000E
	1024	CE32RH0-1024X	CE32RH0-1024C	CE32RH0-1024E
	1500	CE32RH0-1500X	CE32RH0-1500C	CE32RH0-1500E
	1800	CE32RH0-1800X	CE32RH0-1800C	CE32RH0-1800E
	2000	CE32RH0-2000X	CE32RH0-2000C	CE32RH0-2000E
	2048	CE32RH0-2048X	CE32RH0-2048C	CE32RH0-2048E
	2500	CE32RH0-2500X	CE32RH0-2500C	CE32RH0-2500E
	3000	CE32RH0-3000X	CE32RH0-3000C	CE32RH0-3000E
	3600	CE32RH0-3600X	CE32RH0-3600C	CE32RH0-3600E
	4096	CE32RH0-4096X	CE32RH0-4096C	CE32RH0-4096E
	5000	CE32RH0-5000X	CE32RH0-5000C	CE32RH0-5000E
	5400	CE32RH0-5400X	CE32RH0-5400C	CE32RH0-5400E
	6000	CE32RH0-6000X	CE32RH0-6000C	CE32RH0-6000E
	7200	CE32RH0-7200X	CE32RH0-7200C	CE32RH0-7200E
	8000	CE32RH0-8000X	CE32RH0-8000C	CE32RH0-8000E
	8192	CE32RH0-8192X	CE32RH0-8192C	CE32RH0-8192E
	9000	CE32RH0-9000X	CE32RH0-9000C	CE32RH0-9000E
	10000	CE32RH0-10000X	CE32RH0-10000C	CE32RH0-10000E
	10800	CE32RH0-10800X	CE32RH0-10800C	CE32RH0-10800E
	12500	CE32RH0-12500X	CE32RH0-12500C	CE32RH0-12500E
	16384	CE32RH0-16384X	CE32RH0-16384C	CE32RH0-16384E
	18000	CE32RH0-18000X	CE32RH0-18000C	CE32RH0-18000E
	20000	CE32RH0-20000X	CE32RH0-20000C	CE32RH0-20000E
	21600	CE32RH0-21600X	CE32RH0-21600C	CE32RH0-21600E
	25000	CE32RH0-25000X	CE32RH0-25000C	CE32RH0-25000E
	32768	CE32RH0-32768X	CE32RH0-32768C	CE32RH0-32768X
	36000	CE32RH0-36000X	CE32RH0-36000C	CE32RH0-36000X
	40000	CE32RH0-40000X	CE32RH0-40000C	CE32RH0-40000E
50000	CE32RH0-50000X	CE32RH0-50000C	CE32RH0-50000E	
65536	CE32RH0-65536X	CE32RH0-65536C	CE32RH0-65536E	
72000	CE32RH0-72000X	CE32RH0-72000C	CE32RH0-72000E	
90000	CE32RH0-90000X	-	-	
100000	CE32RH0-100000X	-	-	
125000	CE32RH0-125000X	-	-	
131072	CE32RH0-131072X	-	-	
144000	CE32RH0-144000X	-	-	

# ■ LIST of PART NUMBER

Shaft shape	Output resolution	Line driver output	Open collector output	Voltage Output
Solid shaft(IP50)	360	CE32RS0-360X	CE32RS0-360C	CE32RS0-360E
	500	CE32RS0-500X	CE32RS0-500C	CE32RS0-500E
	512	CE32RS0-512X	CE32RS0-512C	CE32RS0-512E
	720	CE32RS0-720X	CE32RS0-720C	CE32RS0-720E
	1000	CE32RS0-1000X	CE32RS0-1000C	CE32RS0-1000E
	1024	CE32RS0-1024X	CE32RS0-1024C	CE32RS0-1024E
	1500	CE32RS0-1500X	CE32RS0-1500C	CE32RS0-1500E
	1800	CE32RS0-1800X	CE32RS0-1800C	CE32RS0-1800E
	2000	CE32RS0-2000X	CE32RS0-2000C	CE32RS0-2000E
	2048	CE32RS0-2048X	CE32RS0-2048C	CE32RS0-2048E
	2500	CE32RS0-2500X	CE32RS0-2500C	CE32RS0-2500E
	3000	CE32RS0-3000X	CE32RS0-3000C	CE32RS0-3000E
	3600	CE32RS0-3600X	CE32RS0-3600C	CE32RS0-3600E
	4096	CE32RS0-4096X	CE32RS0-4096C	CE32RS0-4096E
	5000	CE32RS0-5000X	CE32RS0-5000C	CE32RS0-5000E
	5400	CE32RS0-5400X	CE32RS0-5400C	CE32RS0-5400E
	6000	CE32RS0-6000X	CE32RS0-6000C	CE32RS0-6000E
	7200	CE32RS0-7200X	CE32RS0-7200C	CE32RS0-7200E
	8000	CE32RS0-8000X	CE32RS0-8000C	CE32RS0-8000E
	8192	CE32RS0-8192X	CE32RS0-8192C	CE32RS0-8192E
	9000	CE32RS0-9000X	CE32RS0-9000C	CE32RS0-9000E
	10000	CE32RS0-10000X	CE32RS0-10000C	CE32RS0-10000E
	10800	CE32RS0-10800X	CE32RS0-10800C	CE32RS0-10800E
	12500	CE32RS0-12500X	CE32RS0-12500C	CE32RS0-12500E
	16384	CE32RS0-16384X	CE32RS0-16384C	CE32RS0-16384E
	18000	CE32RS0-18000X	CE32RS0-18000C	CE32RS0-18000E
	20000	CE32RS0-20000X	CE32RS0-20000C	CE32RS0-20000E
	21600	CE32RS0-21600X	CE32RS0-21600C	CE32RS0-21600E
	25000	CE32RS0-25000X	CE32RS0-25000C	CE32RS0-25000E
	32768	CE32RS0-32768X	CE32RS0-32768C	CE32RS0-32768E
36000	CE32RS0-36000X	CE32RS0-36000C	CE32RS0-36000E	
40000	CE32RS0-40000X	CE32RS0-40000C	CE32RS0-40000E	
50000	CE32RS0-50000X	CE32RS0-50000C	CE32RS0-50000E	
65536	CE32RS0-65536X	CE32RS0-65536C	CE32RS0-65536E	
72000	CE32RS0-72000X	CE32RS0-72000C	CE32RS0-72000E	
90000	CE32RS0-90000X	-	-	
100000	CE32RS0-100000X	-	-	
125000	CE32RS0-125000X	-	-	
131072	CE32RS0-131072X	-	-	
144000	CE32RS0-144000X	-	-	

# ■ LIST of PART NUMBER

Shaft shape	Output resolution	Line driver output	Open collector output	Voltage Output
Hollow shaft (IP65)	360	CE32RH1-360X	CE32RH1-360C	CE32RH1-360E
	500	CE32RH1-500X	CE32RH1-500C	CE32RH1-500E
	512	CE32RH1-512X	CE32RH1-512C	CE32RH1-512E
	720	CE32RH1-720X	CE32RH1-720C	CE32RH1-720E
	1000	CE32RH1-1000X	CE32RH1-1000C	CE32RH1-1000E
	1024	CE32RH1-1024X	CE32RH1-1024C	CE32RH1-1024E
	1500	CE32RH1-1500X	CE32RH1-1500C	CE32RH1-1500E
	1800	CE32RH1-1800X	CE32RH1-1800C	CE32RH1-1800E
	2000	CE32RH1-2000X	CE32RH1-2000C	CE32RH1-2000E
	2048	CE32RH1-2048X	CE32RH1-2048C	CE32RH1-2048E
	2500	CE32RH1-2500X	CE32RH1-2500C	CE32RH1-2500E
	3000	CE32RH1-3000X	CE32RH1-3000C	CE32RH1-3000E
	3600	CE32RH1-3600X	CE32RH1-3600C	CE32RH1-3600E
	4096	CE32RH1-4096X	CE32RH1-4096C	CE32RH1-4096E
	5000	CE32RH1-5000X	CE32RH1-5000C	CE32RH1-5000E
	5400	CE32RH1-5400X	CE32RH1-5400C	CE32RH1-5400E
	6000	CE32RH1-6000X	CE32RH1-6000C	CE32RH1-6000E
	7200	CE32RH1-7200X	CE32RH1-7200C	CE32RH1-7200E
	8000	CE32RH1-8000X	CE32RH1-8000C	CE32RH1-8000E
	8192	CE32RH1-8192X	CE32RH1-8192C	CE32RH1-8192E
	9000	CE32RH1-9000X	CE32RH1-9000C	CE32RH1-9000E
	10000	CE32RH1-10000X	CE32RH1-10000C	CE32RH1-10000E
	10800	CE32RH1-10800X	CE32RH1-10800C	CE32RH1-10800E
	12500	CE32RH1-12500X	CE32RH1-12500C	CE32RH1-12500E
	16384	CE32RH1-16384X	CE32RH1-16384C	CE32RH1-16384E
	18000	CE32RH1-18000X	CE32RH1-18000C	CE32RH1-18000E
	20000	CE32RH1-20000X	CE32RH1-20000C	CE32RH1-20000E
	21600	CE32RH1-21600X	CE32RH1-21600C	CE32RH1-21600E
	25000	CE32RH1-25000X	CE32RH1-25000C	CE32RH1-25000E
	32768	CE32RH1-32768X	CE32RH1-32768C	CE32RH1-32768E
36000	CE32RH1-36000X	CE32RH1-36000C	CE32RH1-36000E	
40000	CE32RH1-40000X	CE32RH1-40000C	CE32RH1-40000E	
50000	CE32RH1-50000X	CE32RH1-50000C	CE32RH1-50000E	
65536	CE32RH1-65536X	CE32RH1-65536C	CE32RH1-65536E	
72000	CE32RH1-72000X	CE32RH1-72000C	CE32RH1-72000E	
90000	CE32RH1-90000X	-	-	
100000	CE32RH1-100000X	-	-	
125000	CE32RH1-125000X	-	-	
131072	CE32RH1-131072X	-	-	
144000	CE32RH1-144000X	-	-	

# ■ LIST of PART NUMBER

Shaft shape	Output resolution	Line driver output	Open collector output	Voltage Output
Solid shaft (IP65)	360	CE32RS1-360X	CE32RS1-360C	CE32RS1-360E
	500	CE32RS1-500X	CE32RS1-500C	CE32RS1-500E
	512	CE32RS1-512X	CE32RS1-512C	CE32RS1-512E
	720	CE32RS1-720X	CE32RS1-720C	CE32RS1-720E
	1000	CE32RS1-1000X	CE32RS1-1000C	CE32RS1-1000E
	1024	CE32RS1-1024X	CE32RS1-1024C	CE32RS1-1024E
	1500	CE32RS1-1500X	CE32RS1-1500C	CE32RS1-1500E
	1800	CE32RS1-1800X	CE32RS1-1800C	CE32RS1-1800E
	2000	CE32RS1-2000X	CE32RS1-2000C	CE32RS1-2000E
	2048	CE32RS1-2048X	CE32RS1-2048C	CE32RS1-2048E
	2500	CE32RS1-2500X	CE32RS1-2500C	CE32RS1-2500E
	3000	CE32RS1-3000X	CE32RS1-3000C	CE32RS1-3000E
	3600	CE32RS1-3600X	CE32RS1-3600C	CE32RS1-3600E
	4096	CE32RS1-4096X	CE32RS1-4096C	CE32RS1-4096E
	5000	CE32RS1-5000X	CE32RS1-5000C	CE32RS1-5000E
	5400	CE32RS1-5400X	CE32RS1-5400C	CE32RS1-5400E
	6000	CE32RS1-6000X	CE32RS1-6000C	CE32RS1-6000E
	7200	CE32RS1-7200X	CE32RS1-7200C	CE32RS1-7200E
	8000	CE32RS1-8000X	CE32RS1-8000C	CE32RS1-8000E
	8192	CE32RS1-8192X	CE32RS1-8192C	CE32RS1-8192E
	9000	CE32RS1-9000X	CE32RS1-9000C	CE32RS1-9000E
	10000	CE32RS1-10000X	CE32RS1-10000C	CE32RS1-10000E
	10800	CE32RS1-10800X	CE32RS1-10800C	CE32RS1-10800E
	12500	CE32RS1-12500X	CE32RS1-12500C	CE32RS1-12500E
	16384	CE32RS1-12500X	CE32RS1-16384C	CE32RS1-12500E
	18000	CE32RS1-16384X	CE32RS1-18000C	CE32RS1-16384E
	20000	CE32RS1-18000X	CE32RS1-20000C	CE32RS1-18000E
	21600	CE32RS1-20000X	CE32RS1-21600C	CE32RS1-20000E
	25000	CE32RS1-21600X	CE32RS1-25000C	CE32RS1-21600E
	32768	CE32RS1-25000X	CE32RS1-32768C	CE32RS1-25000E
	36000	CE32RS1-36000X	CE32RS1-36000C	CE32RS1-36000E
	40000	CE32RS1-40000X	CE32RS1-40000C	CE32RS1-40000E
50000	CE32RS1-50000X	CE32RS1-50000C	CE32RS1-50000E	
65536	CE32RS1-65536X	CE32RS1-65536C	CE32RS1-65536E	
72000	CE32RS1-72000X	CE32RS1-72000C	CE32RS1-72000E	
90000	CE32RS1-90000X	-	-	
100000	CE32RS1-100000X	-	-	
125000	CE32RS1-125000X	-	-	
131072	CE32RS1-131072X	-	-	
144000	CE32RS1-144000X	-	-	