PART NUMBER: NSW **DESCRIPTION:** incremental shaft type encoder

ELECTRICAL SPECIFICATIONS

output waveform		square wave
output signals		A, B, Z phase, inverse A, B, Z phase
current consumption		≤80 mA (voltage output, open collector output) ≤80 mA
frequency response		≤200 KHz, ≤50 KHz (PNP mode only)
supply voltage		4.5 V ~ 13.2 V dc (voltage output), 10.8 V ~ 26.4 V dc (open collector output, PNP mode, push-pull output), 4.75 V ~ 5.25 V dc (line driver), 4.5 V ~ 5.5 V dc (C-MOS)
output current		≤20 mA, ≤40 mA (push-pull output only)
output voltage	"H"	VCC-1V (voltage output, PNP mode[2]), VCC-3V (push-pull), 2.5V or more (line driver)
	"L"[1]	0.5V max (voltage output, open collector, line driver), 3V max (push-pull)
output resolution (ppr)		20,30,32,40,50,60,100,125,200,250,256,300,360,400,500,512,600,800, 900,1000,1024,1200,1500,1800,2000,2048,2500,3600
waveform rise/fall time		1μ or less, 200 ns max (line driver only)

MECHANICAL SPECIFICATIONS

max shaft load, radial:	29.4N
axial:	19.6N
starting torque	9.8 x 10^{-4}N·m max
angular acceleration	1x10^{5} rad/s^2
moment of inertia	8x10^{-7}kg·m^2
max rotational speed	6000 RPM
shock resistance	490 m/s^2, 11 ms, 3 times each on XYZ
vibration proof	10 ~ 55 Hz, double amplitude 1.5mm
weight	140g max

ENVIRONMENTAL SPECIFICATIONS

operating temp	-10° to +70° C
storage temp	-30° to +80° C
humidity	RH 85% max, non-collecting
degree of protection	IP50

NOTES:

1. at maximum output current
2. maximum source current

ELECTRICAL CONNECTIONS

2
2M
2C
2MC
2HC
2MHC
2HCP
2MHCP
2HT
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 $\overline{B}$
Black	0V Common	Gray	Signal B
Green	Signal $\overline{A}$	Yellow	Signal $\overline{Z}$
Blue	Signal A	Orange	Signal Z
Shielding Braid	NC		

PART NUMBER: NSW **DESCRIPTION:** incremental shaft type encoder

ORDERING INSTRUCTIONS

NSW – □□ – □□ □□ – □ – □□□ – 0 0

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

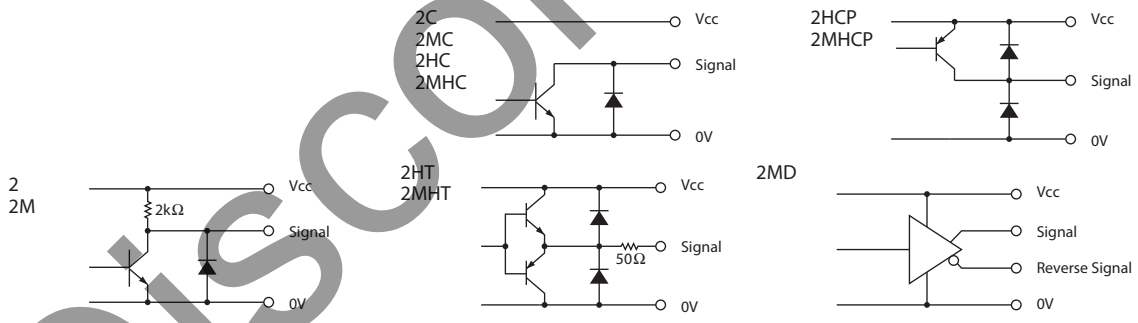
Option
- No Indication: Standard(PCD28)
- A : PCD A

Cable Length
- 050 : 500mm (Standard)
- 100 : 1000mm
- 300 : 3000mm

Signals
- 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

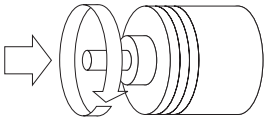
Signals
- 2 : AB90° Phase Difference
- 2M : AB90° Phase Difference + Zero Signal

CIRCUIT CONNECTIONS

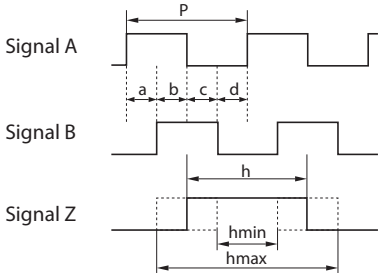


OUTPUT WAVEFORM

CW → Rotating Toward Clockwise Viewed from an Arrow



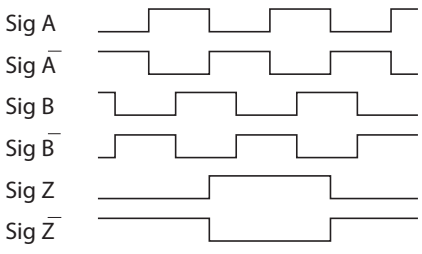
Rising point of A-Signal is always at one point while Z-Signal is at H-Level in CW.



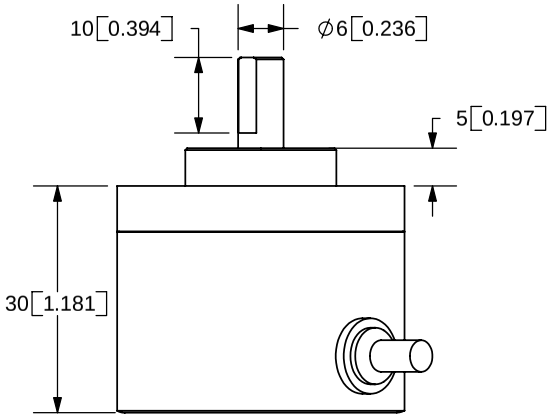
$$P = \frac{1}{1\text{Resolution}}$$

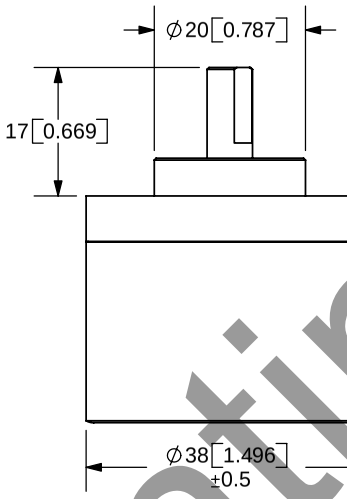
$$a, b, c, d = \frac{P}{4} \pm \frac{P}{8} \quad \frac{P}{2} \leqq h \leqq \frac{3P}{2}$$

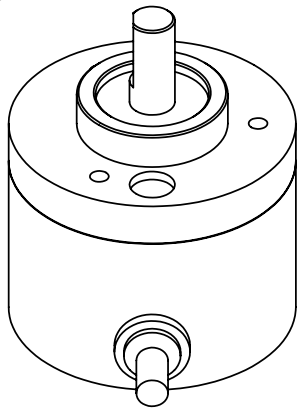
Wave Ratio (Duty); 50 ± 25 (%)

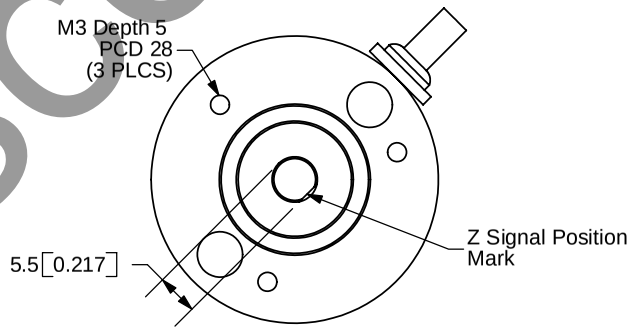


REV.	DESCRIPTION	DATE
A	NEW DRAWING	9/4/2007









TOLERANCE:
±0.3mm UNLESS OTHERWISE SPECIFIED

RoHS

CUI INC
20050 SW 112th Ave.
Tualatin, OR 97062
Phone: 503-612-2300
800-275-4899
Fax: 503-612-2383
Website: www.cui.com

Cable Color	Red	Black	Green	Blue	Shielding Braid	White	Gray	Yellow
Output Type	Power	0V common	Signal A	Signal $\overline{A}$	NC	Signal B	Signal $\overline{B}$	Signal Z
Cable Color	Orange	-	-	-	-	-	-	-
Output Type	Signal $\overline{Z}$	-	-	-	-	-	-	-

TITLE: Incremental Encoder			REV: A
PART NO. NSW		UNITS: MM [INCHES]	
DRAWN BY: JMS	APPROVED BY:		SCALE: 1:1

PC FILE NAME: NSW

For more information, please visit the product page.