

**PART NUMBER:** NSV**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) |
| output current | | ≤20 mA, ≤40 mA (push-pull output only) |
| output voltage | “H” | V _{cc} - 1 V (voltage output, PNP mode ²), V _{cc} - 3 V (push-pull), 2.5 V or more (line driver) |
| | “L” ¹ | 0.5 V max (voltage output, open collector, line driver), 3 V 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 | | 1 μs or less, 200 ns max (line driver only) |

MECHANICAL SPECIFICATIONS

| | |
|-------------------------|---|
| max shaft load, radial: | 19.6 N |
| axial: | 9.8 N |
| starting torque | 4.9 x 10 ⁻³ N·m max |
| angular acceleration | 1x10 ⁵ rad/s ² |
| moment of inertia | 1.2x10 ⁻⁶ kg·m ² |
| max rotational speed | 5000 RPM |
| shock resistance | 294 m/s ² , 11 ms, 3 times each on XYZ |
| vibration proof | 10 ~ 55 Hz, double amplitude 1.5 mm |
| weight | 140 g max |

ENVIRONMENTAL SPECIFICATIONS

| | |
|----------------------|----------------------------|
| operating temp | -10° to +70° C |
| storage temp | -30° to +80° C |
| humidity | RH 85% max, non-collecting |
| degree of protection | IP65 |

NOTES:

1. at maximum output current
2. maximum source current

ELECTRICAL CONNECTIONS

| | Color of Lead Wire | Description |
|-------|--------------------|--------------|
| 2 | | |
| 2M | | |
| 2C | Red | Power Source |
| 2MC | Black | 0V Common |
| 2HC | Green or Blue | Signal A |
| 2MHC | | |
| 2MCP | White | Signal B |
| 2MHCP | Yellow | Signal Z |
| 2HT | Shielding Braid | NC |
| 2MHT | | |

| | Color of Lead Wire | Description | Color of Lead Wire | Description |
|-----|--------------------|--------------|--------------------|-------------|
| 2MD | | | | |
| | 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 | | |

PART NUMBER: NSV

DESCRIPTION: incremental shaft type encoder

ORDERING INSTRUCTIONS

NSV-XXXX-2MXXX-XXX-XXX

Resolution (PPR):

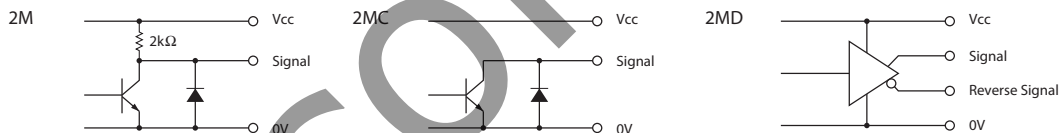
| | |
|----------------|-----------------|
| 002 = 20 PPR | 05 = 500 PPR |
| 003 = 30 PPR | 0512 = 512 PPR |
| 0032 = 32 PPR | 06 = 600 PPR |
| 004 = 40 PPR | 08 = 800 PPR |
| 005 = 50 PPR | 09 = 900 PPR |
| 006 = 60 PPR | 10 = 1000 PPR |
| 01 = 100 PPR | 1024 = 1024 PPR |
| 0125 = 125 PPR | 12 = 1200 PPR |
| 02 = 200 PPR | 15 = 1500 PPR |
| 025 = 250 PPR | 18 = 1800 PPR |
| 0256 = 256 PPR | 20 = 2000 PPR |
| 03 = 300 PPR | 2048 = 2048 PPR |
| 036 = 360 PPR | 25 = 2500 PPR |
| 04 = 400 PPR | 36 = 3600 PPR |

Channels:
M = AB + Z

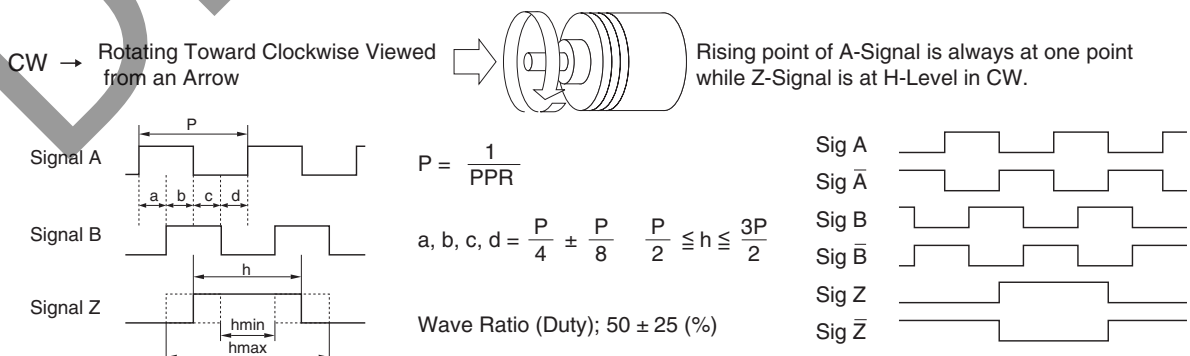
| | |
|-----------------|---------------|
| Shaft diameter: | Cable length: |
| 800 = ø8 mm | 050 = 0.5 m* |
| 635 = ø6.35 mm | 100 = 1.0 m |
| 600 = ø6 mm | 300 = 3.0 m |
| 500 = ø5 mm | *standard |

Output type:
 "no entry" = Voltage output
 C = Open collector output
 HC = HV open collector output
 HCP = PNP HV open collector output
 HT = Push-pull / high voltage output
 D = Line driver output

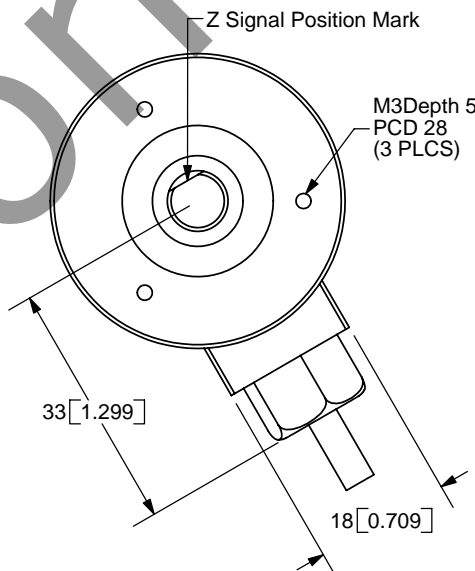
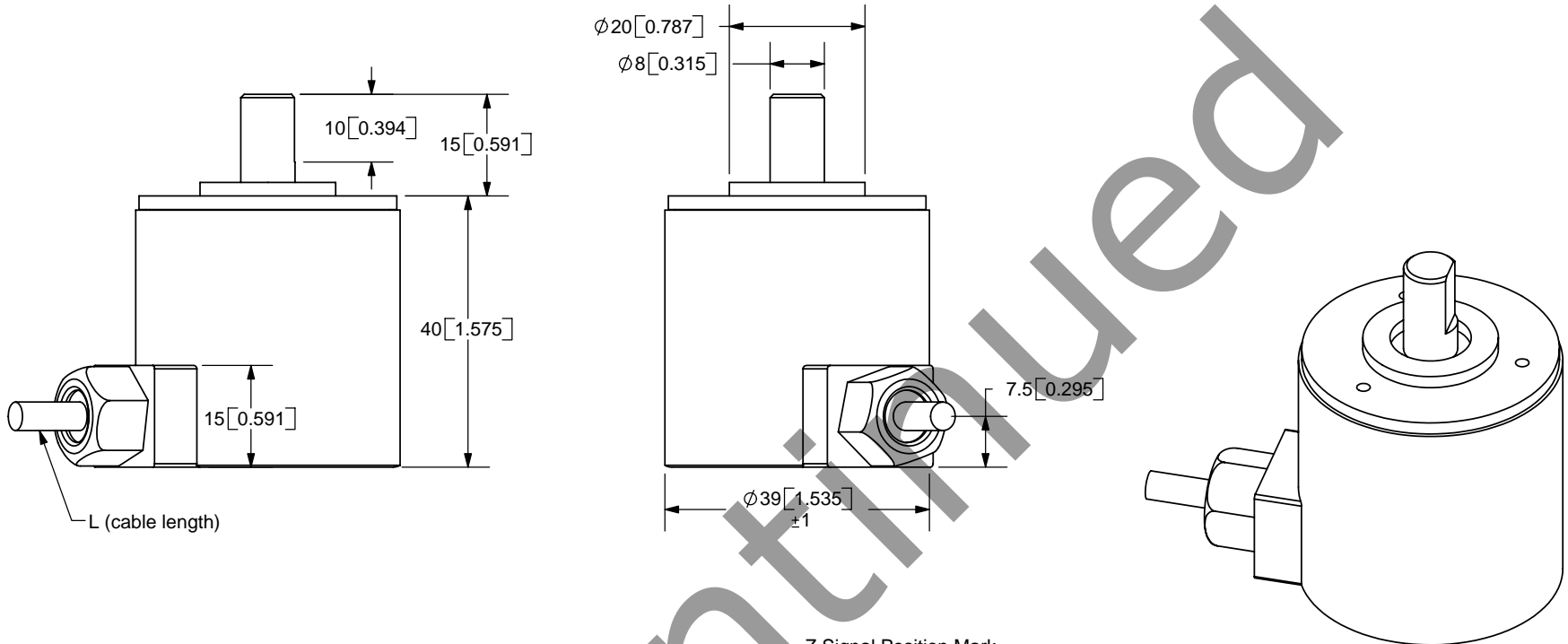
CIRCUIT CONNECTIONS



OUTPUT WAVEFORM



| | | |
|------|-------------|-----------|
| REV. | DESCRIPTION | DATE |
| A | NEW DRAWING | 9/11/2007 |



TOLERANCE:
±0.3mm UNLESS OTHERWISE
SPECIFIED



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

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

| | | | | | | | | |
|-------------|-----------------|-----------|----------|-----------|----------|-----------|----------|-----------|
| Cable Color | Red | Black | Green | Blue | White | Gray | Yellow | Orange |
| Output Type | Power | 0V common | Signal A | Signal A̅ | Signal B | Signal B̅ | Signal Z | Signal Z̅ |
| Cable Color | Shielding Braid | - | - | - | - | - | - | - |
| Output Type | NC | - | - | - | - | - | - | - |

PC FILE NAME:
NSV

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DISCONTINUED