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**PART NUMBER:** BME

**DESCRIPTION:** modular incremental encoder

The BME Series are high performance, low cost, 2 or 3 channel optical incremental encoders. Each encoder contains a LED source, an integrated circuit with detectors and circuitry, and an optical disc which rotates between the emitter and detector IC. These encoders can be quickly and easily mounted to a motor.



## ELECTRICAL SPECIFICATIONS

output waveform	Square wave
output signals	A, B phase or A, B, Z phase
output voltage	H: $\geq 85\% V_{cc}$ L: $\leq 0.3 V$
current consumption	$\leq 40 \text{ mA}$
output phase difference	$90^\circ \pm 45^\circ$
supply voltage	5 V dc
output resolution (ppr)	100, 200, 256, 360, 400, 500, 512, 1000, 1024
frequency response	100 kHz
output current	0~5 mA

## MECHANICAL SPECIFICATIONS

rotor inertia of code-wheel	$6.0 \times 10^{-8} \text{ kgm}^2$
hollow shaft diameter	$\leq \varnothing 8 \text{ mm}$
shock resistance	$980 \text{ m/s}^2$ , 6ms, 2 times each on XYZ
vibration proof	$50 \text{ m/s}^2$ , 10~200 Hz, 2 hours each on XYZ
working life	MTBF $\geq 5000\text{h}$ (+25°C, 2000rpm)
weight	20g (with 0.5 meter cable)

## ENVIRONMENTAL SPECIFICATIONS

operating temp	-25° to +85° C
storage temp	-40° to +85° C
humidity	30~85% no condensation
protection	IP50

## ORDERING INSTRUCTIONS

**BMEX - XXXXX - XXXXX**

Mounting base:  
"blank" = standard  
W = wide (46mm)

Resolution:  
100 = 100 PPR 200 = 200 PPR  
256 = 256 PPR 360 = 360 PPR  
400 = 400 PPR 500 = 500 PPR  
512 = 512 PPR 1000 = 1000 PPR †  
1024 = 1024 PPR †  
AB plus index pulse for all resolution

Output type:  
D = line driver 26LS31  
V = voltage

Bore type:  
"blank" = standard  
T = thru bore\*

Bore size:  
300 = 3mm  
400 = 4mm  
500 = 5mm  
600 = 6mm  
635 = 6.35mm (1/4")  
800 = 8mm

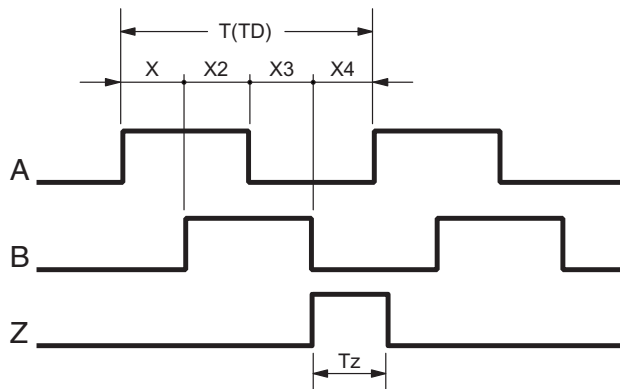
"blank" = no kit  
K = kit (Digi-Key only):  
contains encoder,  
centering tool, and  
Allen wrench

\* Removing the cap which covers the bore will turn the Standard style into a Thru Bore style

† index pulse not offered with this resolution

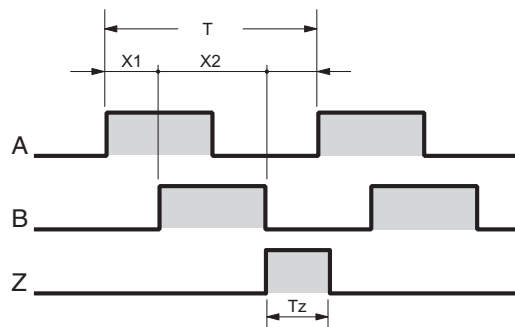
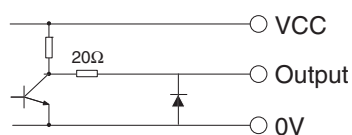
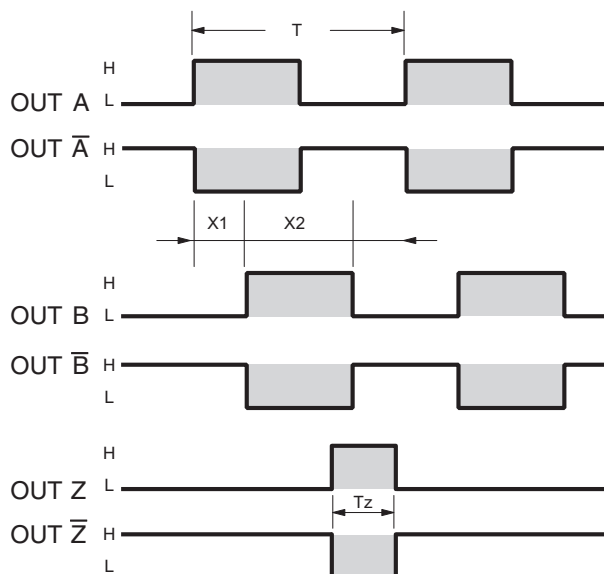
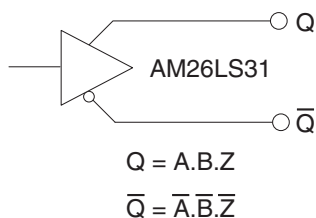
**PART NUMBER:** BME

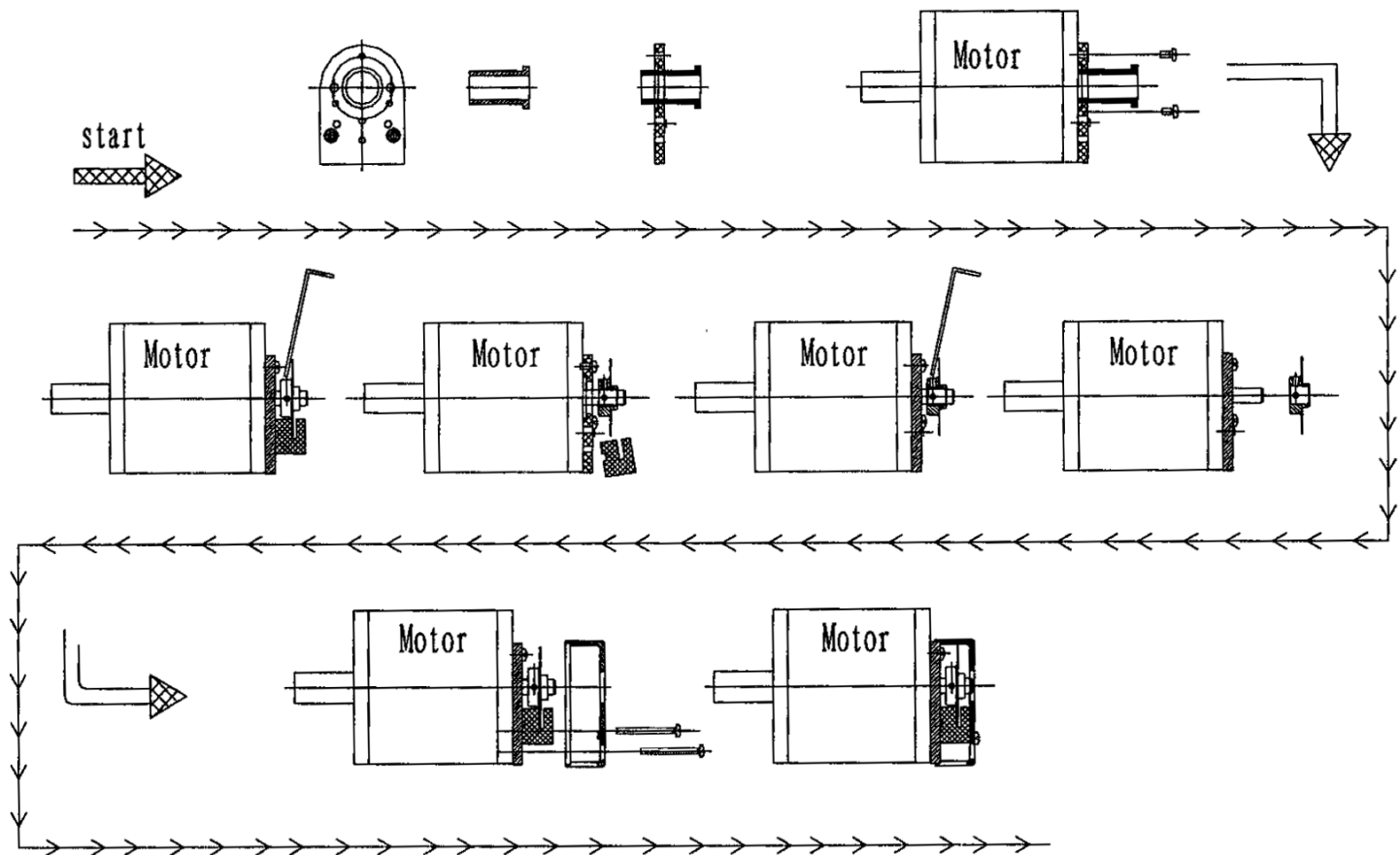
**DESCRIPTION:** modular incremental encoder

**OUTPUT WAVEFORM**


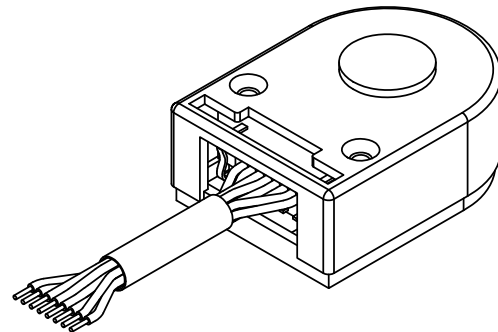
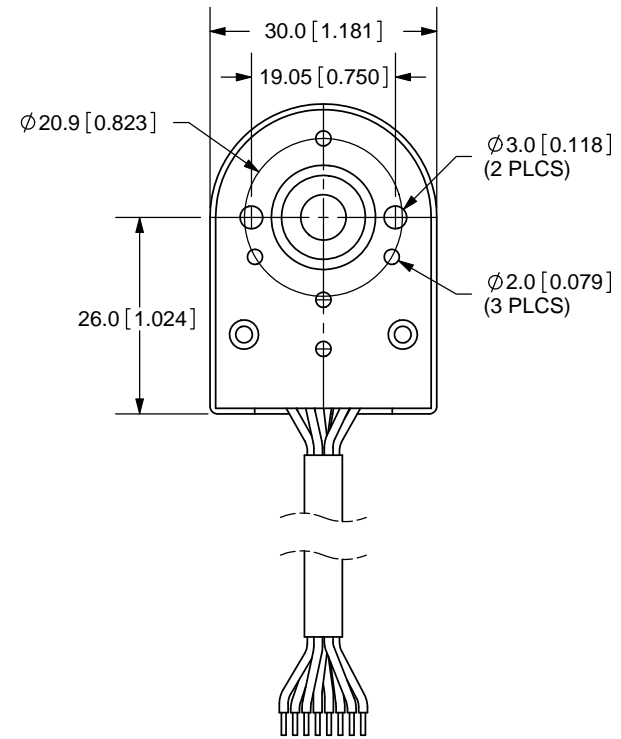
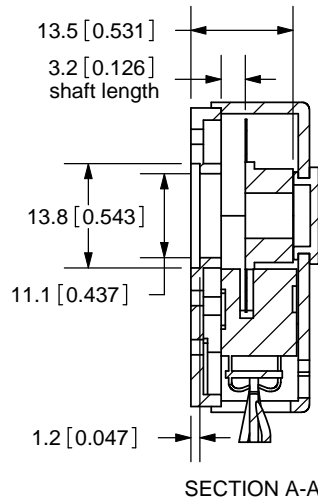
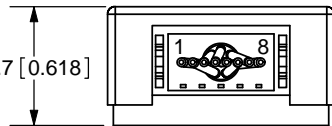
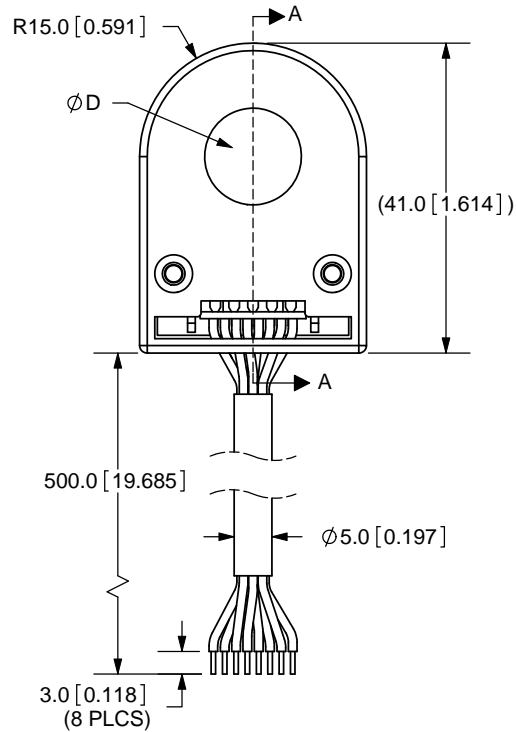
- Square-wave accuracy:  $X_1 + X_2 = 1/2T \pm 1/12T$   
 $X_3 + X_4 = 1/2T \pm 1/12T$
- Pitch error of period:  $\pm 0.01T$
- Pitch error of phase position:  $\leq 1/18T$
- Z phase:  $T_z = 1/4T$  (1T, 1/2T, 1/4T...)
- Period of pulses:  $T = 360^\circ / N$  (N: output pulses)
- Signal accuracy:  $X_n = 1/4T \pm 1/12T$  (n=1, 2, 3, 4)

A leads B clockwise when viewing the encoder shaft end.  
 The position of Z phase against A, B phase is not specified.

**Voltage output**

**Line driver output**


**PART NUMBER:** BME**DESCRIPTION:** modular incremental encoder**INSTALLATION DRAWING**

REV.	DESCRIPTION	DATE
A	NEW DRAWING	4/22/2008



TOLERANCE:  
±0.3mm UNLESS OTHERWISE  
SPECIFIED



ØD (bore size)
3mm
4mm
5mm
6mm
6.35mm
8mm

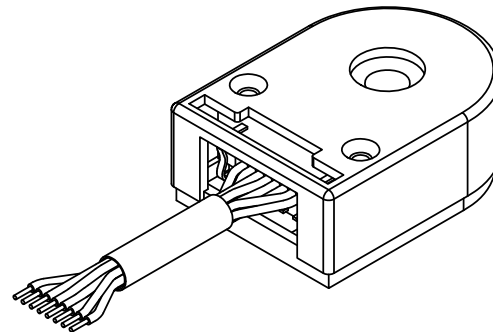
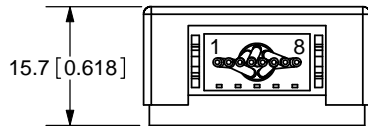
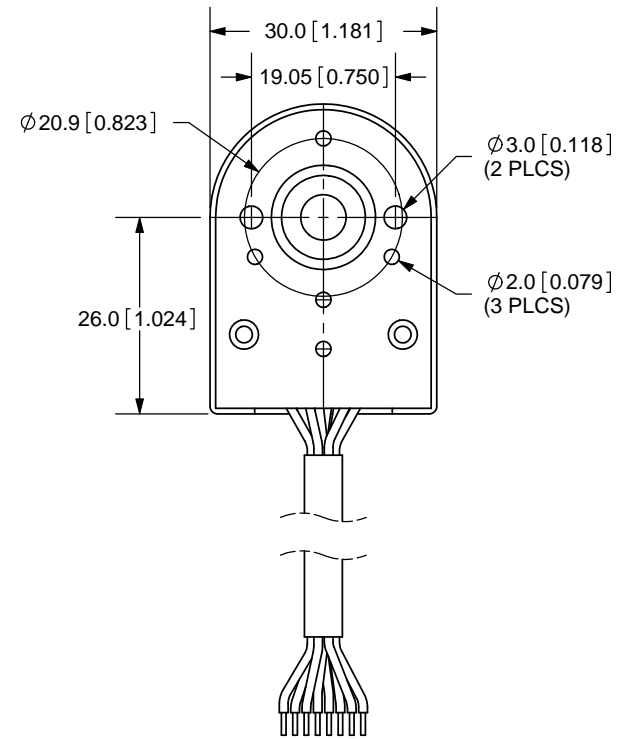
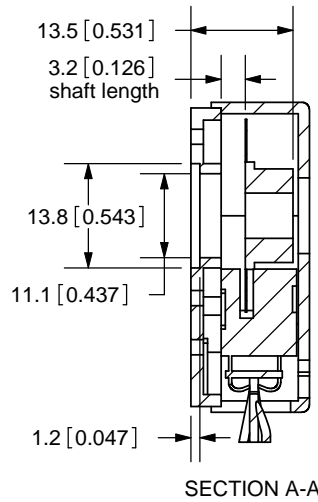
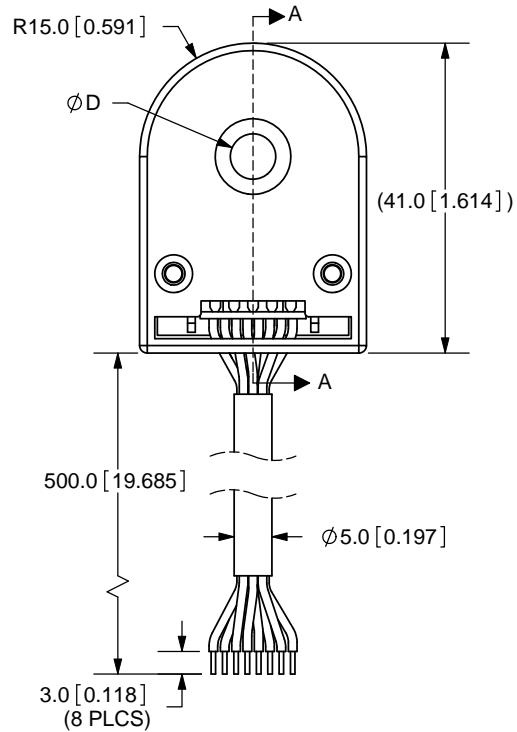
Cable Code	1	2	3	4	5	6	7	8
Cable Color	Black	Red	Green	Brown	White	Grey	Yellow	Orange
Line Driver Output	0V	Vcc	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$
Cable Code	1	2	3	4	5	-	-	-
Cable Color	Black	Yellow	Green	Red	White	-	-	-
Voltage Output	0V	Z	A	Vcc	B	-	-	-



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

TITLE: BME - MODULAR OPTICAL ENCODER	REV: A
PART NO. BME - STANDARD BORE	UNITS: MM [INCHES]
DRAWN BY: ZRJ	APPROVED BY:
	SCALE: 1:1

REV.	DESCRIPTION	DATE
A	NEW DRAWING	4/22/2008



TOLERANCE:  
±0.3mm UNLESS OTHERWISE  
SPECIFIED



ØD (bore size)
3mm
4mm
5mm
6mm
6.35mm
8mm

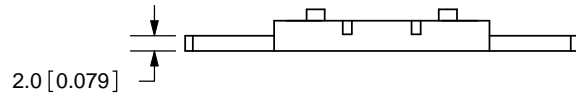
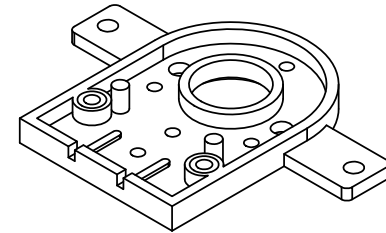
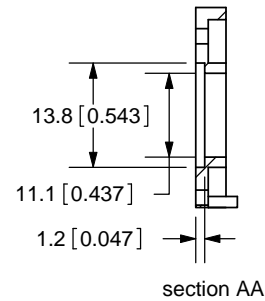
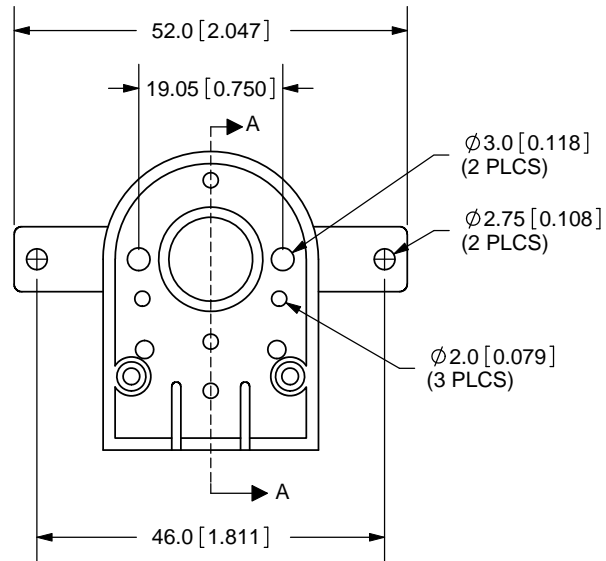
Cable Code	1	2	3	4	5	6	7	8
Cable Color	Black	Red	Green	Brown	White	Grey	Yellow	Orange
Line Driver Output	0V	Vcc	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$
Cable Code	1	2	3	4	5	-	-	-
Cable Color	Black	Yellow	Green	Red	White	-	-	-
Voltage Output	0V	Z	A	Vcc	B	-	-	-



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TITLE: BME - MODULAR OPTICAL ENCODER	REV: A
PART NO. BME - THROUGH BORE	UNITS: MM [INCHES]
DRAWN BY: ZRJ	APPROVED BY:
	SCALE: 1:1

REV.	DESCRIPTION	DATE
A	NEW DRAWING	4/22/2008



TOLERANCE:  
 $\pm 0.3\text{mm}$  UNLESS OTHERWISE  
 SPECIFIED



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 800-275-4899  
 Fax: 503-612-2383  
 Website: www.cui.com

TITLE: BME - OPTIONAL WIDE BASE		REV: A
PART NO. BME - WIDE BASE	UNITS: MM [INCHES]	
DRAWN BY: ZRJ	APPROVED BY:	SCALE: 1:1