

**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: $\geq 85\% V_{cc}$<br>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:<br>"blank" = standard<br>W = wide (46mm) | Resolution:<br>100 = 100 PPR 200 = 200 PPR<br>256 = 256 PPR 360 = 360 PPR<br>400 = 400 PPR 500 = 500 PPR<br>512 = 512 PPR 1000 = 1000 PPR †<br>1024 = 1024 PPR †<br>AB plus index pulse for all resolution | Output type:<br>D = line driver 26LS31<br>V = voltage | Bore size:<br>300 = 3mm<br>400 = 4mm<br>500 = 5mm<br>600 = 6mm<br>635 = 6.35mm (1/4")<br>800 = 8mm | "blank" = no kit<br>K = kit (Digi-Key only):<br>contains encoder,<br>centering tool, and<br>Allen wrench |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|

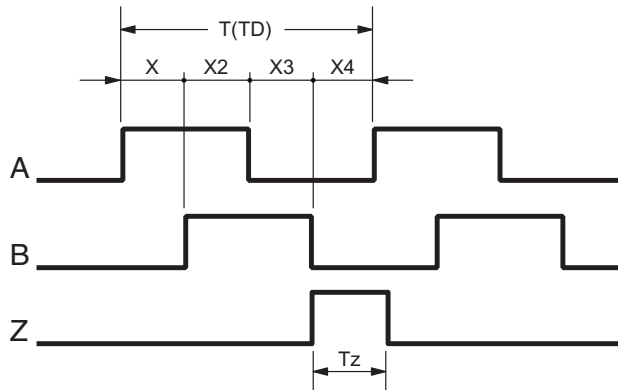
Bore type:  
 "blank" = standard  
 T = thru bore\*

\* Removing the cap which covers the bore will turn the Standard style into a Thru Bore style  
 † index pulse not offered with this resolution

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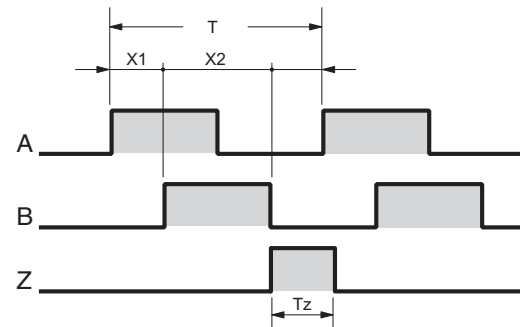
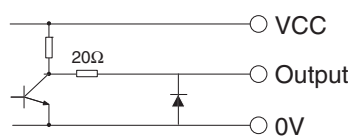
## OUTPUT WAVEFORM



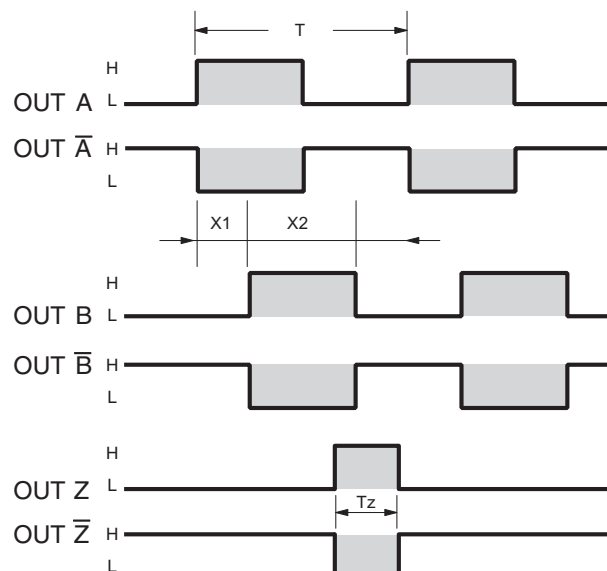
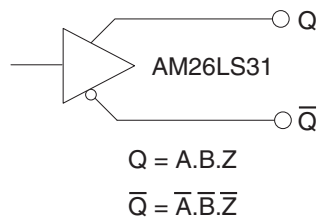
- Square-wave accuracy:  $X_1 + X_2 = 1/2T \pm 1/12T$   
 $X_3 + X_4 = 1/2T \pm 1/12T$
- Pitch error of period:  $\pm 0.01T$
- Pitch error of phase position:  $\leq 1/18T$
- Z phase:  $T_z = 1/4T$  (1T, 1/2T, 1/4T...)
- Period of pulses:  $T = 360^\circ / N$  (N: output pulses)
- Signal accuracy:  $X_n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



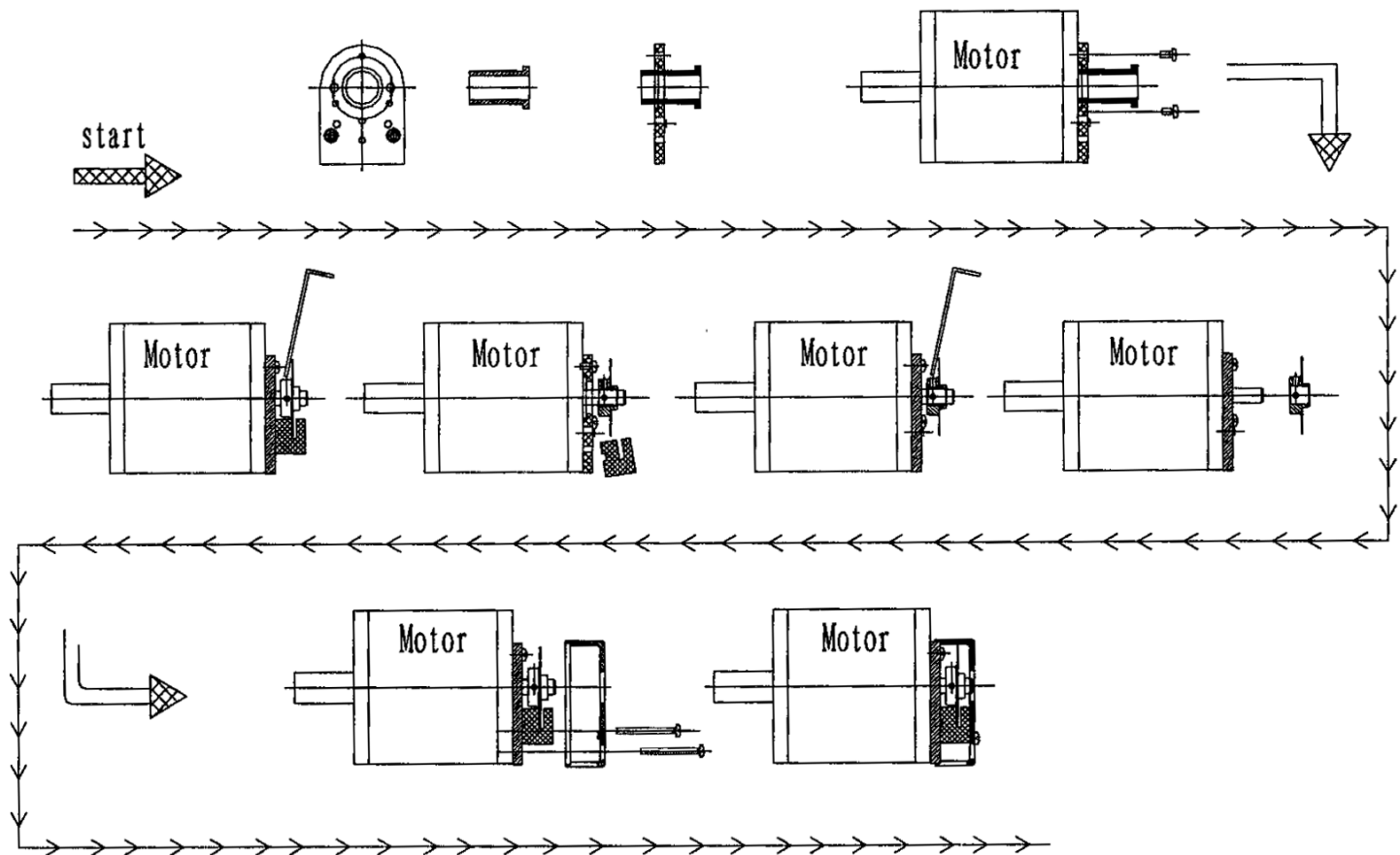
### Line driver output



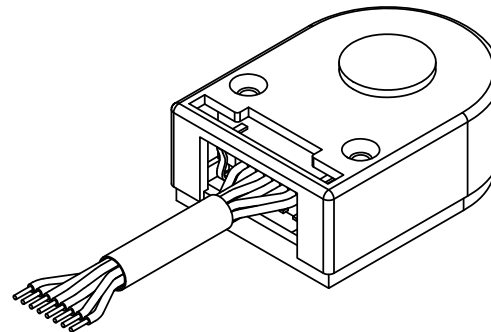
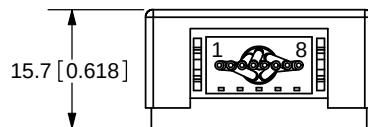
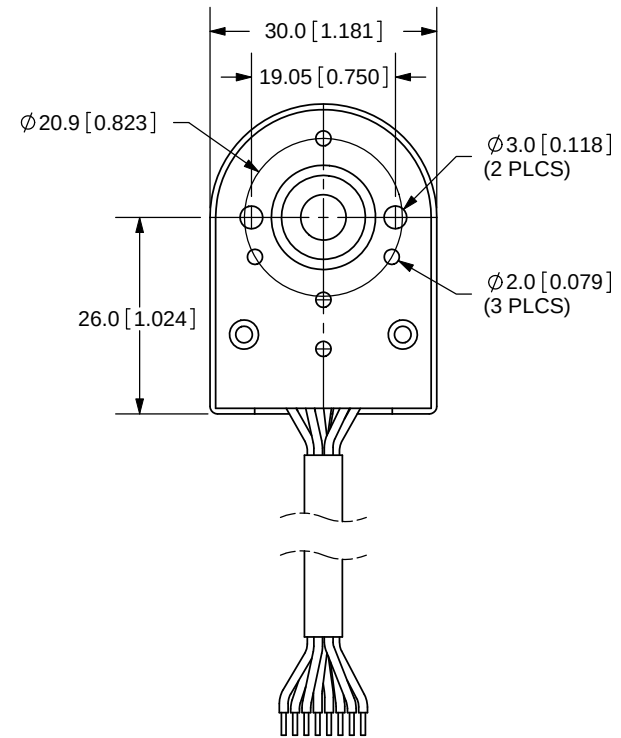
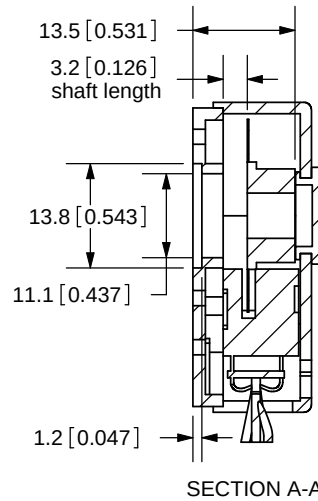
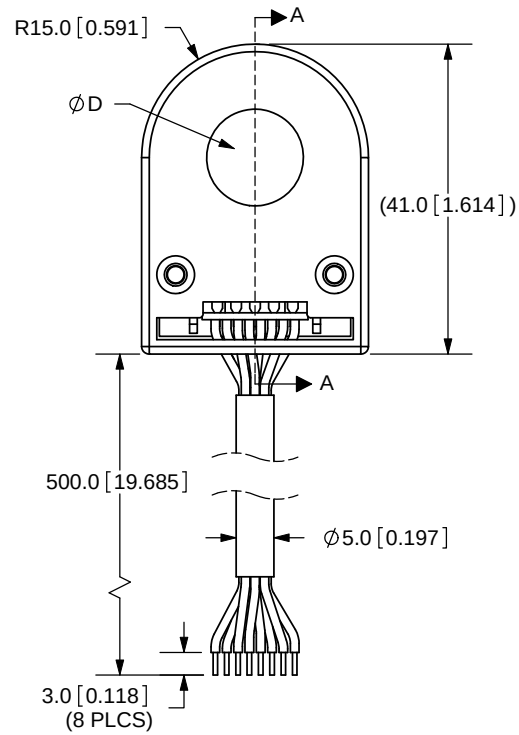
**PART NUMBER:** BME

**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     | -         | -      | -         |

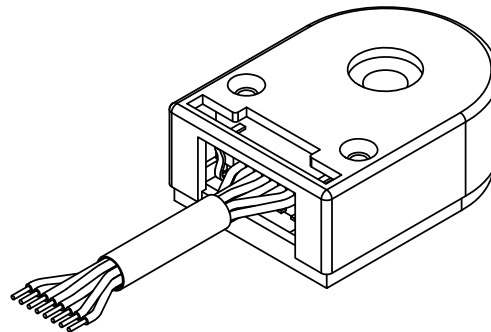
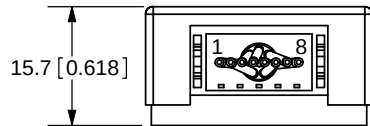
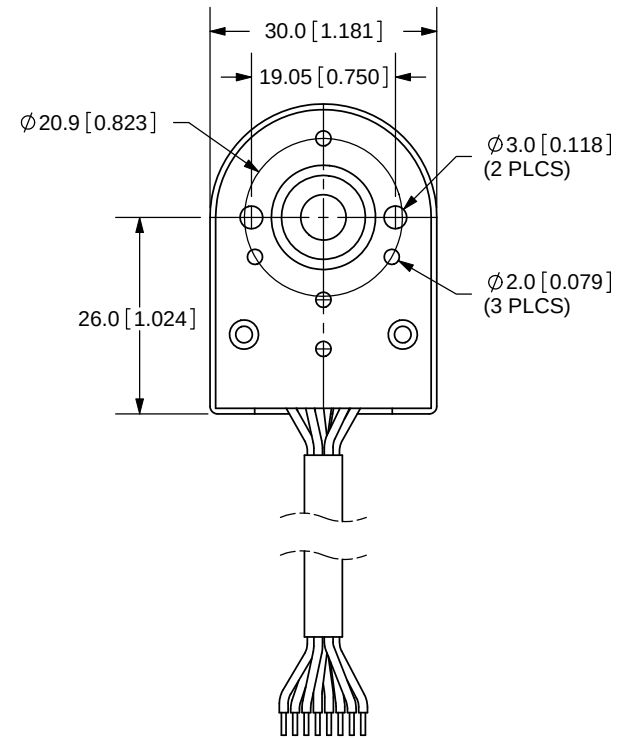
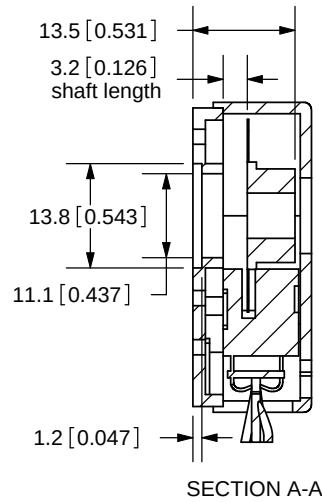
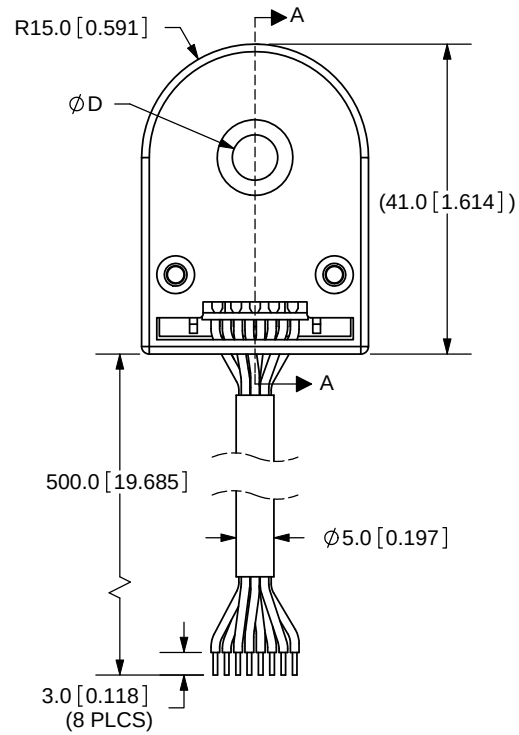


**CUI INC**

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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            |

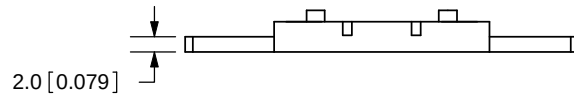
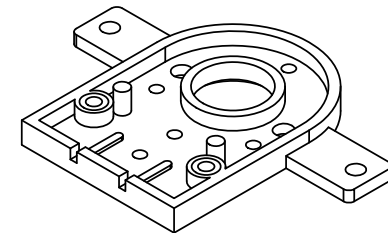
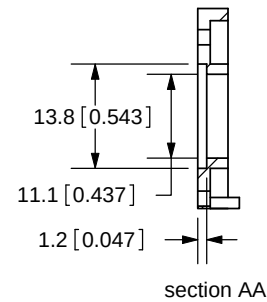
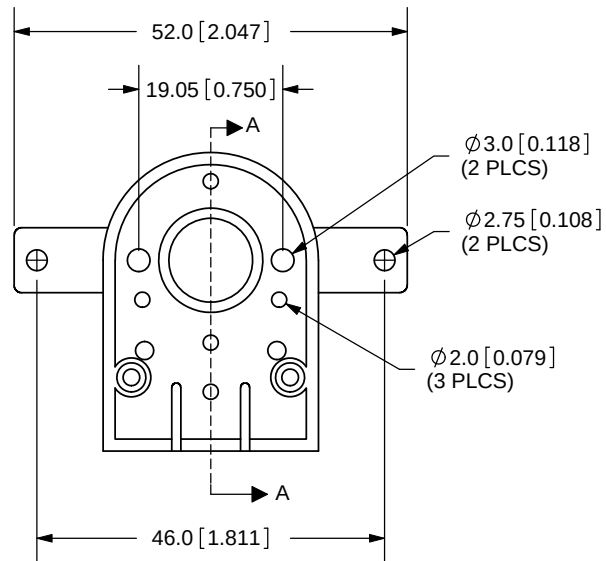
| Cable Code         | 1     | 2      | 3     | 4         | 5     | 6         | 7      | 8         |
|--------------------|-------|--------|-------|-----------|-------|-----------|--------|-----------|
| Cable Color        | Black | Red    | Green | Brown     | White | Grey      | Yellow | Orange    |
| 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:  
±0.3mm UNLESS OTHERWISE  
SPECIFIED



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

PC FILE NAME:  
BME - WIDE BASE

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# AMEYA360

Components Supply Platform

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