QRM SERIES Rear Panel Mount LED Indicators
Distinctive features and specifications

Features
- Ø6mm and Ø8mm rear mounting LED indicator
- 5mm flush diffused LED, standard or hyper bright
- Bi-color and Tri-color LED options
- Black chrome finish
- 2VDC – 28VAC/DC
- 200mm wires or pin terminations
- IP67 sealed (EN60529)
- Epoxy sealed rear end
- Supplied with fixing nut, spring washer and O-ring
  (Dress nut available as an option - contact APEM)

NB: UL Recognized Component

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Operating Voltage (Min to Max)</th>
<th>Operating Current (Typical All Types)</th>
<th>Max Reverse Voltage: 5V</th>
</tr>
</thead>
<tbody>
<tr>
<td>2VDC (No Resistor)</td>
<td>1.8 to 2.5VDC</td>
<td>20mA*</td>
<td></td>
</tr>
<tr>
<td>6VDC</td>
<td>5.4 to 6.6VDC</td>
<td>20mA</td>
<td></td>
</tr>
<tr>
<td>12VDC</td>
<td>10.8 to 13.2VDC</td>
<td>20mA</td>
<td></td>
</tr>
<tr>
<td>24VDC</td>
<td>21.6 to 26.4VDC</td>
<td>20mA</td>
<td></td>
</tr>
<tr>
<td>28VDC</td>
<td>25.2 to 30.8VDC</td>
<td>20mA</td>
<td></td>
</tr>
</tbody>
</table>

Note: The operating voltage must not be exceeded by more than 10% as this will result in reduced life expectancy.

Viewing Angle: 60°

Life Expectancy: 100,000 hours

Operating Temperature Range: −40 to +85°C

Storage Temperature Range: −55 to +100°C

Max panel thickness: 3.5mm

Torque: 60cNm

Materials
- Body: Black chrome plated brass
- Nut: Black chrome plated brass
- Panel seal: Nitrile O-ring
- Lock washer: Spring steel
- Terminal seal: Epoxy
- Wires: 24AWG to UL1061

Standard LED Intensity MCD Output Forwards Voltage

<table>
<thead>
<tr>
<th>(all voltages)</th>
<th>HE Red</th>
<th>10mcd</th>
<th>2.0V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Green</td>
<td>8mcd</td>
<td>2.2V</td>
</tr>
<tr>
<td></td>
<td>Yellow</td>
<td>6mcd</td>
<td>2.1V</td>
</tr>
<tr>
<td></td>
<td>Blue</td>
<td>200mcd</td>
<td>3.8V</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>500mcd</td>
<td>3.3V</td>
</tr>
<tr>
<td>Bi-color (Typical) (Red/Green)</td>
<td>10/8mcd</td>
<td>2.0V/2.2V</td>
<td></td>
</tr>
<tr>
<td>Tri-color (Typical) (Red/Green/Yellow)</td>
<td>10/8/6mcd</td>
<td>2.0V/2.2V/2.1V</td>
<td></td>
</tr>
</tbody>
</table>

The color is changed by reversing the polarity of the supply voltage.

Tri-color - The indicator has red and green LEDs, when both connected yellow is produced.

Hyper Bright MCD Output Forwards Voltage

<table>
<thead>
<tr>
<th>(all voltages)</th>
<th>HE Red</th>
<th>900mcd</th>
<th>2.2V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Green</td>
<td>300mcd</td>
<td>3.2V</td>
</tr>
<tr>
<td></td>
<td>Yellow</td>
<td>250mcd</td>
<td>2.2V</td>
</tr>
<tr>
<td>Bi-color (Typical) (Red/Green)</td>
<td>350/300mcd</td>
<td>2.2/3.2V</td>
<td></td>
</tr>
<tr>
<td>Tri-color (Typical) (Red/Green/Yellow)</td>
<td>110/30/20mcd</td>
<td>1.9V/2.2V/2.1V</td>
<td></td>
</tr>
</tbody>
</table>

Luminous intensity will be reduced with lower operating current.

Note: Luminous intensity is measured at 20mA on a discrete LED unless otherwise stated.
Luminous intensities and color shades of white LEDs may vary within a batch.

* Customer to supply resistor for desired operating current.
QRM SERIES Rear Panel Mount LED Indicators
Technical Drawings

6mm

Pins

Wires

8mm

Pins

Wires

Hardware

Panel Cut out

Dress nuts for 8mm QRM

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Panel Cut out</th>
<th>Dress nuts for 8mm QRM</th>
</tr>
</thead>
<tbody>
<tr>
<td>6mm nut (std)</td>
<td>6mm nut (std)</td>
<td>6mm nut (std)</td>
</tr>
<tr>
<td>M6 x 0.5 THREAD</td>
<td>Ø8 +0.15/-0.0</td>
<td>Ø8 +0.15/-0.0</td>
</tr>
<tr>
<td>2.80</td>
<td>6mm</td>
<td>8mm</td>
</tr>
<tr>
<td>8,00 ±0.315 AF</td>
<td>2,00 ±0.079</td>
<td>3.50</td>
</tr>
<tr>
<td>ø6 ±0.15/-0.0</td>
<td>2.80 ±0.118</td>
<td></td>
</tr>
</tbody>
</table>

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APEM
QRM SERIES Rear Panel Mount LED Indicators

Custom options

- X0245

Fixed and Bi-color long body rigid pins

Long body matches the behind panel depth of APEM 12200X778 PCB mounting military grade toggle switches

- X0246

Tri-color long body and rigid PCB

- X0259

Fixed and Bi-color standard body rigid pins

To apply the above custom option, suffix the part number with the -X reference number

Example QRM84BXXHB24AE-X0245
STANDARD OPTIONS

The QRM Series is available with a range of standard options, to specify your LED, simply choose one option from each column. An example is shown below.

<table>
<thead>
<tr>
<th>QRM</th>
<th>8</th>
<th>4</th>
<th>B</th>
<th>XX</th>
<th>HB</th>
<th>24A</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERIES</td>
<td>MOUNTING HOLE</td>
<td>TERMINALS</td>
<td>BEZEL FINISH</td>
<td>TYPE OF ILLUMINATION</td>
<td>LED COLOR</td>
<td>VOLTAGE</td>
<td>SEALING</td>
</tr>
<tr>
<td>QRM</td>
<td>Ø8mm</td>
<td>4 = Pins</td>
<td>B = Black Chrome</td>
<td>XX = Fixed light, YY = Bi-color, ZZ = Tri-color</td>
<td>R = Red, G = Green, Y = Yellow, B = Blue, W = White</td>
<td>02 = 2VDC, 06 = 6VDC, 12 = 12VDC, 12A = 12VAC/DC, 24 = 24VDC, 24A = 24VAC/DC, 28 = 28VDC, 28A = 28VAC/DC</td>
<td>E = IP67 (Standard)</td>
</tr>
</tbody>
</table>

Example QRM84BXXHR24AE
Ø8mm mounting hole with pin terminations, black chrome finish, fixed light, Red 24VAC, panel sealed to IP67

- Standard wire length is 200mm, 24AWG, red wire denotes Anode (+), black wire denotes Cathode (-) for other wire lengths consult APEM
- For LEDs with alternate voltages consult APEM
- Bi-color LEDs, by connecting the gold Faston (+) one colour is produced, by reversing the supply voltage another colour is produced – Bi-colours are available up to 28VDC
- Take care when soldering (recommended solder temperature 270°C - 2 sec)
- The Tri-color LED has red and green LEDs when both are connected yellow is produced
- Standard Tri-color termination is two Anodes (+) and one Cathode (-)
- Tri-color wires are one red (+) and one green (+) Anode and one black (-) Cathode
- Tri-color pins are center (-) Cathode, shortest (+) Anode pin green, longest (+) Anode pin red
- Maximum panel thickness 3.5mm
- For resistorless versions (02) please pay attention to the forward voltage
- For multi-voltage options please consult APEM