

# 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

| Voltage            | Operating Voltage<br>(Min to Max) | Operating Current<br>(Typical All Types) |
|--------------------|-----------------------------------|------------------------------------------|
| 2VDC (No Resistor) | 1.8 to 2.5VDC                     | 20mA*                                    |
| 6VDC               | 5.4 to 6.6VDC                     | 20mA                                     |
| 12VDC              | 10.8 to 13.2VDC                   | 20mA                                     |
| 24VDC              | 21.6 to 26.4VDC                   | 20mA                                     |
| 28VDC              | 25.2 to 30.8VDC                   | 20mA                                     |

|                                           |
|-------------------------------------------|
| Max Reverse Voltage: 5V                   |
| 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 | Lock washer: Spring steel |
| Nut: Black chrome plated brass  | Terminal seal: Epoxy      |
| Panel seal: Nitrile O-ring      | Wires: 24AWG to UL1061    |

| Standard LED Intensity                                                                    | MCD Output<br>(all voltages) | Forward Voltage |
|-------------------------------------------------------------------------------------------|------------------------------|-----------------|
| HE Red                                                                                    | 10mcd                        | 2.0V            |
| Green                                                                                     | 8mcd                         | 2.2V            |
| Yellow                                                                                    | 6mcd                         | 2.1V            |
| Blue                                                                                      | 200mcd                       | 3.8V            |
| White                                                                                     | 500mcd                       | 3.3V            |
| Bi-color (Typical) (Red/Green)                                                            | 10/8mcd                      | 2.0V/2.2V       |
| Tri-color (Typical) (Red/Green/Yellow)                                                    | 10/8/6mcd                    | 2.0V/2.2V/2.1V  |
| 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<br>(all voltages) | Forward Voltage |
| HE Red                                                                                    | 980mcd                       | 2.2V            |
| Green                                                                                     | 300mcd                       | 3.2V            |
| Yellow                                                                                    | 250mcd                       | 2.2V            |
| Bi-color (Typical) (Red/Green)                                                            | 350/300mcd                   | 2.2/3.2V        |
| Tri-color (Typical) (Red/Green/Yellow)                                                    | 110/30/20mcd                 | 1.9V/2.2V/2.1V  |
| Luminous intensity will be reduced with lower operating current.                          |                              |                 |

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

The company reserves the right to change specifications without notice.

\* Customer to supply resistor for desired operating current.

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.

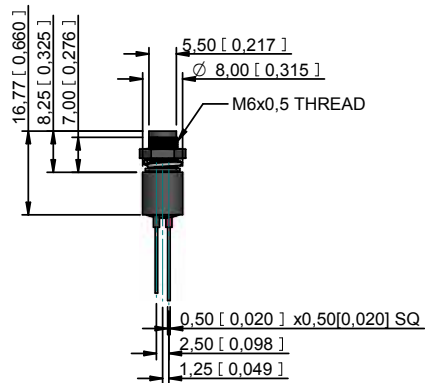
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## Technical Drawings

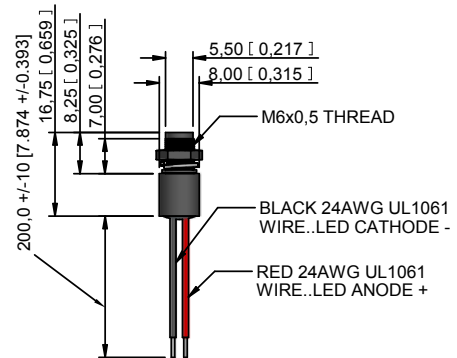
6mm



Pins



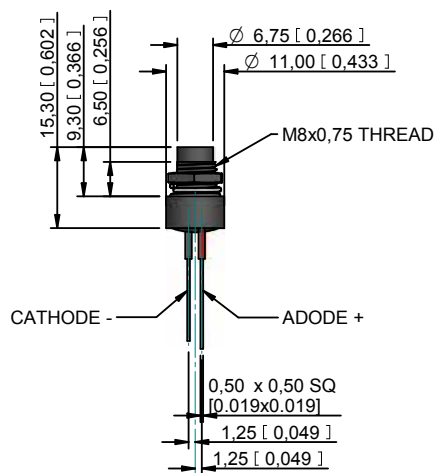
Wires



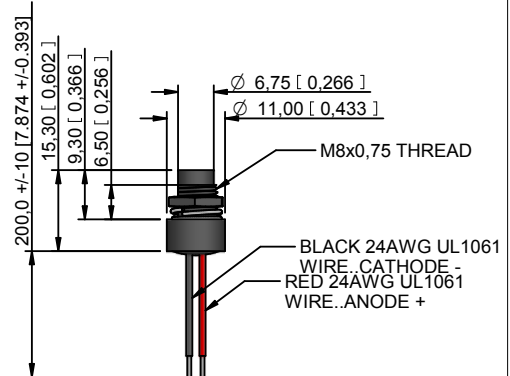
8mm



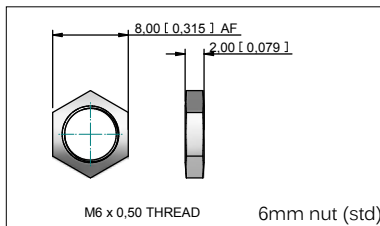
Pins



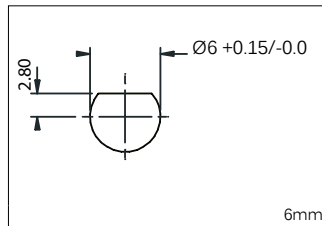
Wires



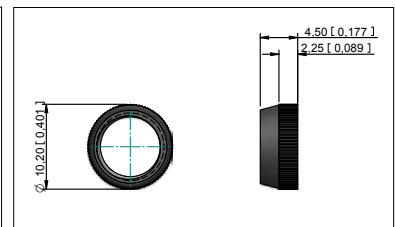
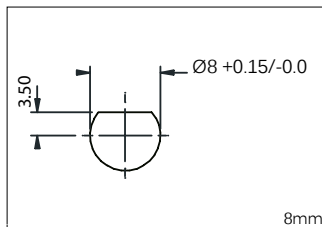
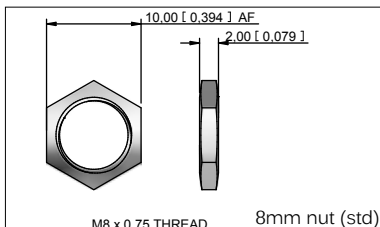
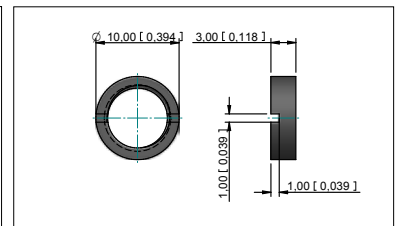
Hardware



Panel Cut out

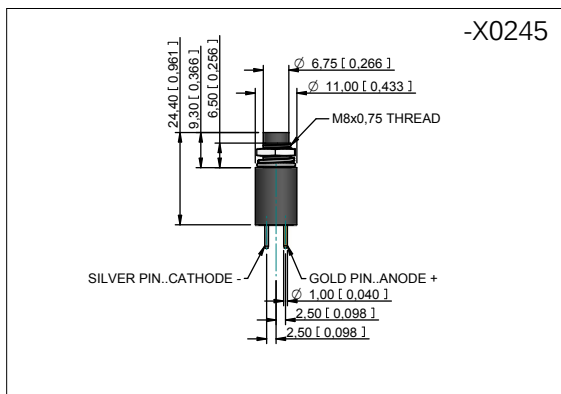


Dress nuts for 8mm QRM



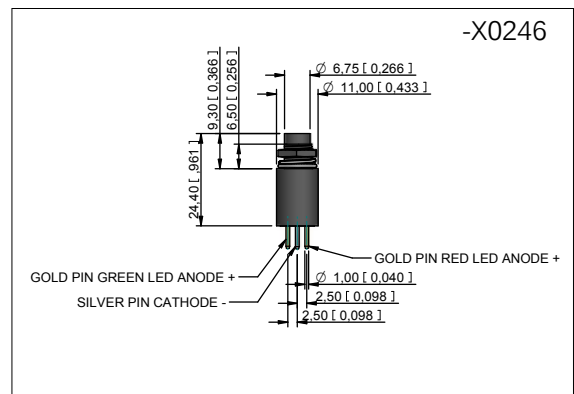
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## Custom options

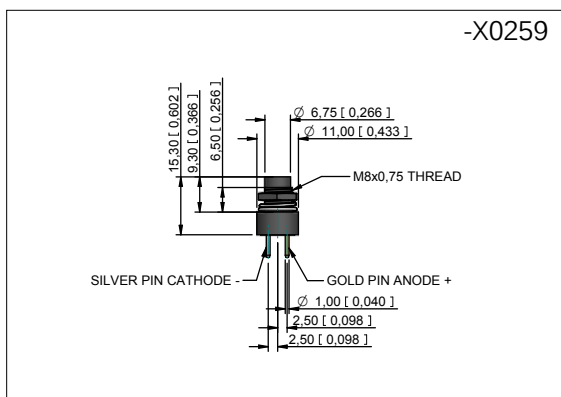


Fixed and Bi-color long body rigid pins

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



Tri-color long body and rigid PCB



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**

# QRM SERIES Rear Panel Mount LED Indicators

## Overview

### 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.

| QRM    | 8                    | 4                     | B                | XX                                                  | HB                                                                                                                                                                                                                                                                                               | 24A                                                                                                                    | E                   |
|--------|----------------------|-----------------------|------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------|
| SERIES | MOUNTING HOLE        | TERMINALS             | BEZEL FINISH     | TYPE OF ILLUMINATION                                | LED COLOR                                                                                                                                                                                                                                                                                        | VOLTAGE                                                                                                                | SEALING             |
| QRM    | 6 = Ø6mm<br>8 = Ø8mm | 4 = Pins<br>5 = Wires | B = Black Chrome | XX = Fixed light<br>YY = Bi-color<br>ZZ = Tri-color | R = Red<br>G = Green<br>Y = Yellow<br>B = Blue<br>W = White<br><br>HR = Hyper Bright Red<br>HG = Hyper Bright Green<br>HY = Hyper Bright Yellow<br>HB = Hyper Bright Blue<br>HW = Hyper Bright White<br><br>RG = Red/Green<br>RY = Red/Yellow<br>GY = Green/Yellow<br><br>RYG = Red/Yellow/Green | 02 = 2VDC<br>06 = 6VDC<br>12 = 12VDC<br>12A = 12VAC/DC<br>24 = 24VDC<br>24A = 24VAC/DC<br>28 = 28VDC<br>28A = 28VAC/DC | E = IP67 (Standard) |

**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