

APEM

QRM - Rear Mounting LED Indicators

QRM-NV - NVG Compatible Rear Mounting LED Indicators

NVIS Compliant to MIL Std 3009



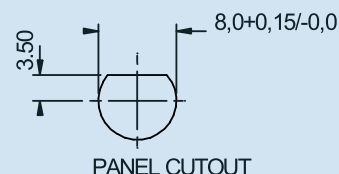
QRM SERIES

8mmØ Rear Mounting LED Indicators

Features and Specifications

FEATURES

- 8mmØ rear mounting LED indicator
- 5mm flush diffused LEDs, standard intensity or hyper bright (sunlight readable)
- Bi-colour and Tri-colour LEDs also available
- Black chrome finish
- 2VDC – 28VAC/DC
- 200mm wires or pin terminations
- IP67 sealed (EN60529)
- Rear end epoxy sealed
- Supplied with fixing nut, spring washer and O-ring (Dress nut available as an option - contact Apem)



OPTICAL SPECIFICATIONS

Voltage	Operating Voltage (Min to Max)	Operating Current (Typical All Types)
2VDC (No resistor)	1.8 to 2.5VDC	20mA*
12VDC	10.8 to 13.2VDC	20mA
24VDC	21.6 to 26.4VDC	20mA
28VDC	25.2 to 30.8VDC	20mA
Luminous Intensity (Typical)	Standard Diffused LED/Forward Voltage (all voltages)	Hyper Bright LED/Forward Voltage (all voltages)
HE Red	10mcd/2.0V	980mcd/2.2V
Green	8mcd/2.2V	300mcd/3.2V
Yellow	6mcd/2.1V	250mcd/2.2V
Blue	50mcd/3.3V	200mcd/3.8V
White	25mcd/3.8V	500mcd/3.3V
Bi-colour (Typical) (Red/Green)	10/8mcd/2.0V/2.2V	-
Tri-colour (Typical) (Red/Green/Yellow)	10/8/6mcd/2.0V/2.2V/2.1V	110/30/20mcd/1.9/2.2/2.1V
Bi-colour - The colour is changed by reversing the polarity of the supply voltage		
Tri-colour - The indicator has red and green LEDs when both connected yellow is produced		
*Customer to supply resistor for desired operating current		
When using an indicator with "No Resistor" please pay attention to the forward voltage		

TECHNICAL CHARACTERISTICS

- Max reverse voltage: 5V
- Viewing angle: 60°
- Life expectancy: 100,000 hours
- Operating temperature range: -40° to 85°C
- Storage temperature: -55° to 100°C
- Max panel thickness: 3.5mm
- Torque: 60cNm

MATERIAL

- 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

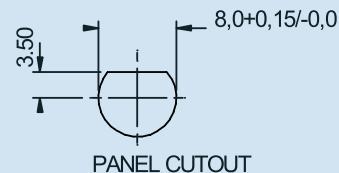
QRM-NV SERIES

NVIS Compatible 8mmØ Rear Mounting LED Indicator

Features and Specifications

FEATURES

- 8mmØ rear mounting LED indicator
- NVIS Green A, NVIS Green B, NVIS Yellow, NVIS Red, NVIS White
- High temperature NVG filters
- NVIS compliant to MIL Std 3009
- Black chrome finish
- 2VDC – 28VDC
- 200mm wires or rigid pin (1.00mm) terminations
- IP67 sealed (EN60529)
- Rear end epoxy sealed
- Supplied with fixing nut, spring washer and O-ring (Dress nut available as an option - contact Apem)



OPTICAL SPECIFICATIONS

LED Colour	NVIS Radiance	NVIS Chromaticity	Dominant Wavelength (nm) Typical	Luminous Intensity/ Forward Voltage Typical
NW1S Green A	$NR_A \leq 1.7E-10 @ 0.1fL$	$r \leq .037$	530nm	150mcd/3.3V
NW1S Green B	$NR_A \leq 1.7E-10 @ 0.1fL$	$r \leq .057$	555nm	150mcd/3.3V
NW1S Yellow Class A	$5.0E-8 \leq NR_A \leq 1.5E-7 @ 15fL$	$r \leq .083$	—	150mcd/3.3V
NW1S Yellow Class B	$4.7E-8 \leq NR_B \leq 1.4E-7 @ 15fL$	$r \leq .083$	585nm	150mcd/3.3V
NW1S Red	$4.7E-8 \leq NR_B \leq 1.4E-7 @ 15fL$	$r \leq .060$	605nm	110mcd/2.1V
NW1S White	$NR_A \leq 1.0E-9 @ 0.1fL$	$r \leq .040$	(x).33/(y).33	150mcd/3.3V

TECHNICAL CHARACTERISTICS

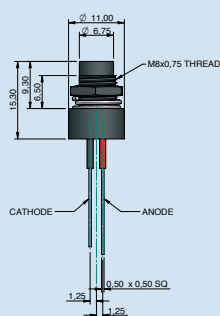
- Max reverse voltage: 5V
- Viewing angle: 60°
- Life expectancy: 100,000 hours
- Operating temperature range: -40° to 85°C
- Storage temperature: -55° to 100°C
- Max panel thickness: 3.5mm
- Torque: 60cNm

MATERIAL

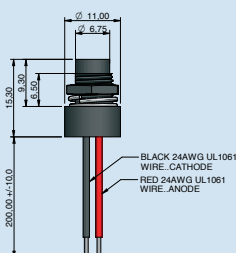
- Body: Black chrome plated brass
- Nut: Black chrome plated brass
- Panel seal: Nitrile O-ring
- Lock washer: Spring steel
- Terminal seal: Epoxy
- Wires: 24AWG high temperature TFE to UL1213

TECHNICAL DRAWINGS

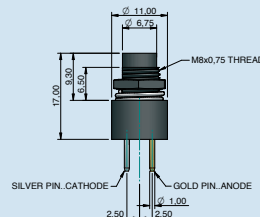
QRM Pins



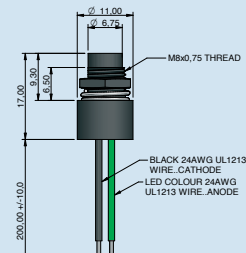
QRM Wires



QRM-NV Pins



QRM-NV Wires



QRM/QRM-NV SERIES

8mmØ Rear Mounting LED Indicator

Order Overview

QRM	-NV	8	5	B	XX	NV-GRA	12	E
SERIES	NVIS OPTION	MOUNTING HOLE	TERMINALS	BEZEL FINISH	TYPE OF ILLUMINATION	LED COLOUR	VOLTAGE	SEALING
QRM	NVIS Option	8 = 8mmØ	4 = Pins 5 = Wires	B = Black Chrome	XX = Fixed Light YY = Bi-colour ZZ = Tri-colour	QRM R = Red G = Green Y = Yellow B = Blue W = White HR = Hyper Red HG = Hyper Green HY = Hyper Yellow HB = Hyper Blue HW = Hyper White RG = Red/Green RY = Red/Yellow GY = Green/Yellow RYG = Red/Yellow/Green QRM-NV NV-GRA = NVIS Green A NV-GRB = NVIS Green B NV-YWA = NVIS Yellow A NV-YWB = NVIS Yellow B NV-RD = NVIS Red NV-WH = NVIS White	02 = 2VDC 06 = 6VDC 12 = 12VDC 12A = 12VAC/DC 24 = 24VDC 24A = 24VAC/DC 28 = 28VDC 28A = 28VAC/DC	E = IP67 (Standard)

TECHNICAL CHARACTERISTICS

- Standard wire length is 200mm
QRM- Series: red wire denotes Anode (+), black wire denotes Cathode (-)
QRM-NV Series: The colour of the NVIS LED is identified by colour of the positive wire
- Pin Terminals
QRM- Series: red insulated sleeving identifies the Anode (+) terminal
QRM-NV Series: The gold pin identifies the Anode (+) terminal
- Bi-colour LEDs, by connecting the Anode (+) one colour is produced, by reversing the supply voltage another colour is produced
- The Tri-colour LED has red and green LEDs, when both are connected yellow is produced
- Tri-colour wires are one red Anode (+), one green Anode (+) and one black Cathode (-)
- Tri-colour pins are one short pin (Anode green), one middle pin (Anode red) and one long pin (Cathode)

APEM product ranges



Switches



Joysticks



Switch Panels



Indicators



MANUFACTURING LOCATION
Apem Components Ltd
Drakes Drive, Long Crendon,
Bucks HP18 9BA United Kingdom
sales@apem.co.uk

Addresses of sales subsidiaries and distributors on
www.apem.com