



FEATURES

- Ø5.0mm mounting
- Nickel plated brass housing
- Sealed to IP67 - weatherproof
- Wide viewing angle - flat smoked lens
- Internal potting
- 150mm flying leads as standard
- Range of LED colour options
- Range of voltage options

BENEFITS

- Our smallest mounting size in a metallic housing
- Suitable for industrial applications
- Suitable for external applications
- Smoked lens gives good on/off contrast ratio
- Suitable for high vibration applications
- Rapid installation
- Suitable for status panel indication
- Manufactured with internal resistor
- Outstanding reliability
- Vandal resistant

| Marl Part Number | LED Colour | Typical Voltage DC Vopr | Typical Current DC Iopr | Typical LED Luminous Intensity | Typical LED Wavelength λp | Operating Temp Topr * | Storage Temp Tstg |
|------------------|------------|-------------------------|-------------------------|--------------------------------|---------------------------|-----------------------|-------------------|
| 604-301-04 | Red | 1.85 ** | 20 | 900 | 660 | -40 to +85 | -40 to +85 |
| 604-325-04 | Yellow | 2.0 ** | 20 | 2800 | 590 | -40 to +85 | -40 to +85 |
| 604-324-04 | Green | 3.2 ** | 20 | 36100 | 525 | -30 to +85 | -40 to +100 |
| 604-934-04 | Blue | 3.2 ** | 20 | 6550 | 464 | -30 to +85 | -40 to +100 |
| 604-998-04 | Cool White | 3.2 ** | 20 | 12900 | See Below | -30 to +85 | -40 to +100 |
| 604-301-20 | Red | 5-6 | 14-19 | 630-855 | 660 | -40 to +85 | -40 to +85 |
| 604-325-20 | Yellow | 5-6 | 14-18 | 1960-2520 | 590 | -40 to +85 | -40 to +85 |
| 604-324-20 | Green | 5-6 | 10-16 | 21660-30000 | 525 | -30 to +85 | -40 to +100 |
| 604-934-20 | Blue | 5-6 | 10-16 | 3300-5200 | 464 | -30 to +85 | -40 to +100 |
| 604-998-20 | Cool White | 5-6 | 10-16 | 6600-10300 | See Below | -30 to +85 | -40 to +100 |
| 604-301-21 | Red | 12 | 18 | 810 | 660 | -40 to +85 | -40 to +85 |
| 604-325-21 | Yellow | 12 | 18 | 2520 | 590 | -40 to +85 | -40 to +85 |
| 604-324-21 | Green | 12 | 19 | 34300 | 525 | -30 to +85 | -40 to +100 |
| 604-934-21 | Blue | 12 | 19 | 6200 | 464 | -30 to +85 | -40 to +100 |
| 604-998-21 | Cool White | 12 | 19 | 12300 | See Below | -30 to +85 | -40 to +100 |
| 604-301-23 | Red | 24-28 | 12-15 | 540-675 | 660 | -40 to +85 | -40 to +85 |
| 604-325-23 | Yellow | 24-28 | 15-17 | 2100-2380 | 590 | -40 to +85 | -40 to +85 |
| 604-324-23 | Green | 24-28 | 13-16 | 26200-30000 | 525 | -30 to +85 | -40 to +100 |
| 604-934-23 | Blue | 24-28 | 14-17 | 4750-5500 | 464 | -30 to +85 | -40 to +100 |
| 604-998-23 | Cool White | 24-28 | 14-17 | 9000-11000 | See Below | -30 to +85 | -40 to +100 |
| | | Vdc | mA | mcd | nm | °C | °C |

| Typical Emission Colours Cool White LED | | | | |
|---|-------|-------|-------|-------|
| X | 0.296 | 0.283 | 0.330 | 0.330 |
| Y | 0.276 | 0.305 | 0.360 | 0.318 |

NOTES

Intensities (Iv) and colour shades of white (X-Y co-ordinates) may vary between LEDs within a batch. Additional LED Colours, Voltage Options and Flying Lead lengths available for semi-custom projects. Please contact our Sales Team. All LED components are supplied in anti-static packaging.

* For operating temperature derating graphs, please refer to sheet 2.

** These are Current models and the voltage shown is Vf at 20mA, not Vopr.

To order please contact us on +44 (0) 1229 582 430

F +44 (0) 1229 585 155 | E sales@marl.co.uk | www.leds.co.uk

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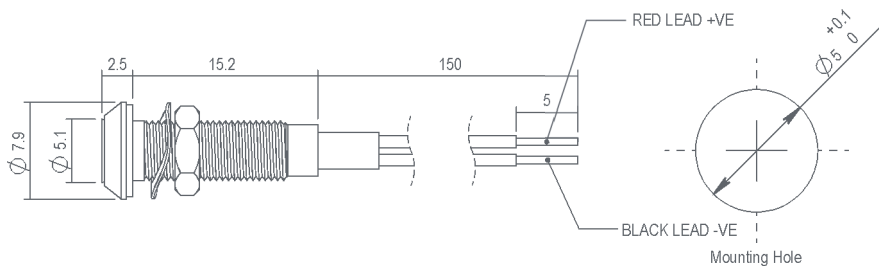
TECHNICAL CHARACTERISTICS

| Series | Max. Power Dissipation | Max. Reverse Voltage | Panel Cutout | Nut Mounting Torque | Min. Mounting Centres | Min - Max. Panel Thickness |
|--------|------------------------|----------------------|--------------|---------------------|-----------------------|----------------------------|
| 604 | 425 | 5 | 5.0 | 0.35 | 10.0 | 1.5 - 8.0 |
| | mW | Vdc | mm | Nm | mm | mm |

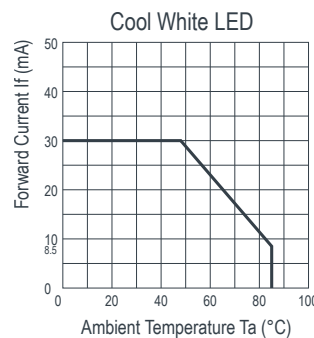
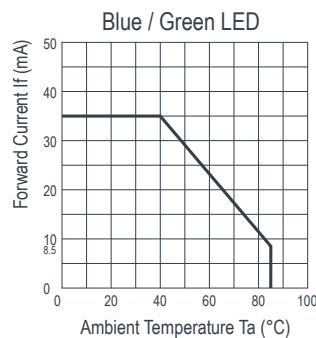
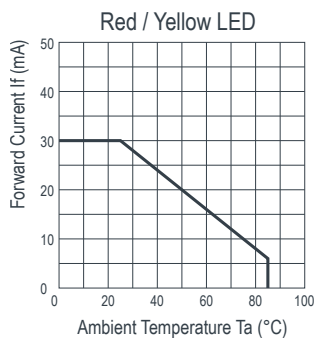
TECHNICAL DRAWING

Weight (g): 4.9

Dimensions in mm (typical). Not to scale. Mounting hole to be clean and burr free. Anode termination indicated by red flying lead.



DE-RATING GRAPHS



MATERIALS

| | |
|----------------------|--|
| Body | Bright Nickel Plated Brass |
| Nut | Bright Nickel Plated Brass |
| Panel Seal | Viton |
| Fresnel Lens | Polycarbonate |
| Encapsulation | Black Polyurethane |
| Lock Washer | Beryllium Copper |
| Termination | Defence Standard 61/12, Part 18 chemical & flame retardant 150mm colour coded flying leads |

DESIGN CONSIDERATIONS

Electro-Static Discharge (ESD)

Build up of electro-static discharge occurs in many situations involving people moving and handling products. The range of possible situations is very diverse but voltage levels as high as several thousand volts can and do arise in many individual situations. When an operator charged up to these levels handles a static sensitive device, there is a very probable likelihood that the device will be irreversibly damaged. It is essential that precautions are taken at all stages during manufacture and assembly of these products. Although LEDs were never considered to be static sensitive

devices, changes in manufacturing technology and materials used to produce higher intensity products over a large range of the wavelength spectrum have changed this. Marl has an approved system of ESD control from goods in, through production and into final packing and despatch. Marl recommend all users of LED based products follow the guidelines of BS 100015.

Voltage, Current and Temperature

The forward voltage / current value of an LED is dependent upon the ambient temperature of the environment in which

it is operated. Therefore, care must be taken to operate the LED at the correct voltage / current values, depending upon the ambient temperature.

Marl should be contacted if the device is to be operated outside the temperature range specified. Marl accept no liability for any product that is operated outside the stated voltage or temperature range.

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