

520 SERIES PANEL INDICATOR LED



FEATURES

- Ø6.1mm counter sunk mounting
- Stainless steel housing
- Sealed to IP67 - weatherproof
- Coloured diffused lens
- Internal potting
- Reverse protection diode fitted in all voltage models
- Range of LED colour options
- Range of voltage options

BENEFITS

- Flush styling
- Suitable for harsh environments
- Suitable for external applications
- Diffused lens gives wide viewing angle
- Suitable for high vibration applications
- Protects against wrong polarity installation (voltage models)
- Suitable for status panel indication
- Manufactured with internal resistor
- Outstanding reliability
- Vandal resistant

| Marl Part Number | LED Colour | Typical Voltage Vopr | Typical Current DC Iopr | Max. Reverse Voltage | Typical LED Luminous Intensity | Typical LED Wavelength λp | Operating Temp Topr * | Storage Temp Tstg |
|------------------|------------|----------------------|-------------------------|----------------------|--------------------------------|---------------------------|-----------------------|-------------------|
| 520-301-04 | Red | 1.85 ** | 20 | 3 | 33 | 660 | -40 to +85 | -40 to +85 |
| 520-325-04 | Yellow | 2.0 ** | 20 | 3 | 401 | 590 | -40 to +85 | -40 to +85 |
| 520-324-04 | Green | 3.2 ** | 20 | 3 | 1010 | 525 | -30 to +85 | -40 to +100 |
| 520-934-04 | Blue | 3.2 ** | 20 | 3 | 225 | 465 | -30 to +85 | -40 to +100 |
| 520-998-04 | Cool White | 3.2 ** | 20 | 3 | 1194 | See Below | -30 to +85 | -40 to +100 |
| 520-301-20 | Red | 5-6 | 12-18 | 1000 | 18-33 | 660 | -40 to +85 | -40 to +85 |
| 520-325-20 | Yellow | 5-6 | 11-17 | 1000 | 208-308 | 590 | -40 to +85 | -40 to +85 |
| 520-324-20 | Green | 5-6 | 8-18 | 1000 | 615-1010 | 525 | -30 to +85 | -40 to +100 |
| 520-934-20 | Blue | 5-6 | 8-18 | 1000 | 125-225 | 465 | -30 to +85 | -40 to +100 |
| 520-998-20 | Cool White | 5-6 | 8-18 | 1000 | 648-1194 | See Below | -30 to +85 | -40 to +100 |
| 520-301-21 | Red | 12 | 20 | 1000 | 33 | 660 | -40 to +85 | -40 to +85 |
| 520-325-21 | Yellow | 12 | 20 | 1000 | 401 | 590 | -40 to +85 | -40 to +85 |
| 520-324-21 | Green | 12 | 20 | 1000 | 1010 | 525 | -30 to +85 | -40 to +100 |
| 520-934-21 | Blue | 12 | 20 | 1000 | 225 | 465 | -30 to +85 | -40 to +100 |
| 520-998-21 | Cool White | 12 | 20 | 1000 | 1194 | See Below | -30 to +85 | -40 to +100 |
| 520-301-23 | Red | 24-28 | 14-17 | 1000 | 27 | 660 | -40 to +85 | -40 to +85 |
| 520-325-23 | Yellow | 24-28 | 14-17 | 1000 | 308 | 590 | -40 to +85 | -40 to +85 |
| 520-324-23 | Green | 24-28 | 13-16 | 1000 | 830 | 525 | -30 to +85 | -40 to +100 |
| 520-934-23 | Blue | 24-28 | 13-16 | 1000 | 175 | 465 | -30 to +85 | -40 to +100 |
| 520-998-23 | Cool White | 24-28 | 13-16 | 1000 | 932 | See Below | -30 to +85 | -40 to +100 |
| | | Vdc | mA | V | 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 |

OPTIONAL FLYING LEAD TERMINATORS

| Marl Part No. Suffix | Wire Length | Wire Colour | No/Diameter of Conductors | Diameter of Insulation | Wire Specification |
|----------------------|-------------|-----------------|---------------------------|------------------------|---|
| 520-301-04-15 | 150mm | Red - Anode | 19/0.16mm | 1.2mm | Type 44, 22 Gauge High Performance Wire |
| 520-301-04-19 | 1000mm | Black - Cathode | | | |

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.

* Characteristics at Ta = 25°C. For operating temperature derating graphs, please refer to sheet 2.

** These are Current models and the voltage shown is Vf at 20mA, not Vopr. Additionally, there is no reverse protection diode in Current models.

To order please contact us on +44 (0) 1229 582 430
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520 SERIES PANEL INDICATOR LED



TECHNICAL CHARACTERISTICS

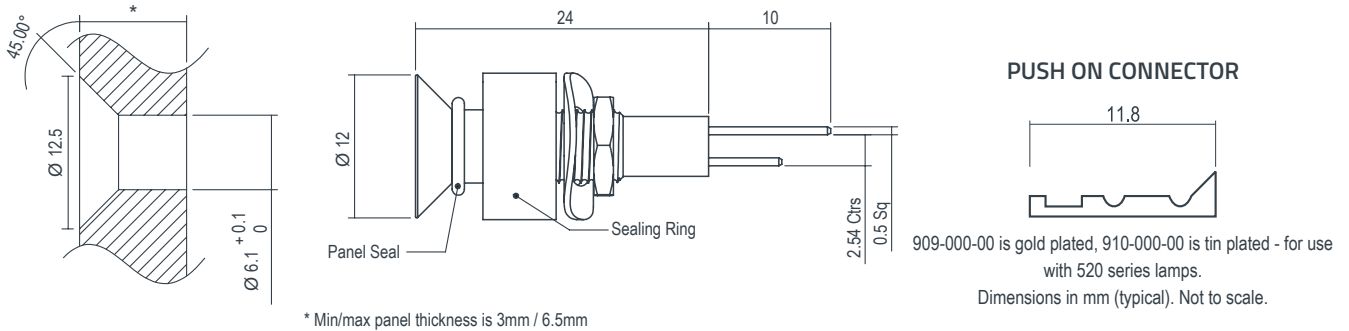
| Series | Max. Power Dissipation | Panel Cutout | Nut Mounting Torque | Min. Mounting Centres | Min - Max. Panel Thickness |
|--------|------------------------|--------------|---------------------|-----------------------|----------------------------|
| 520 | 500 | 6.1 | 0.65 | 15.0 | 3.0 - 6.5 |
| | mW | mm | Nm | mm | mm |

TECHNICAL DRAWING

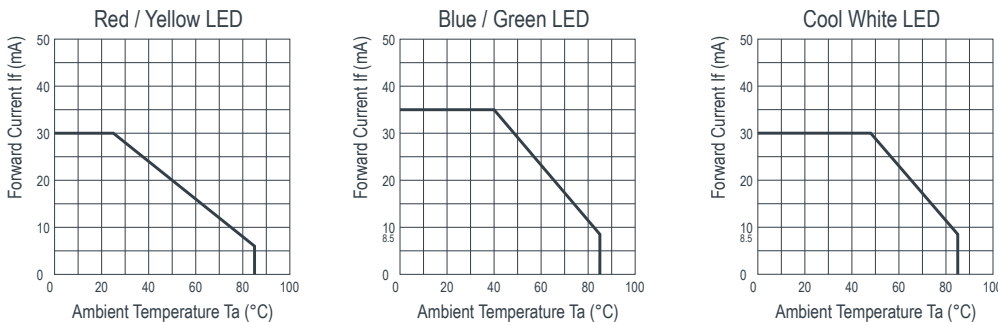
Weight (g): 10.0

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

Rubber panel seal to be positioned on rear of panel.



DE-RATING GRAPHS



MATERIALS

| | |
|---------------|---|
| Body | Stainless Steel Grade 303 |
| Nut | Stainless Steel Grade 303 |
| Panel Seal | Nitrile |
| Lens | Polycarbonate |
| Encapsulation | Black Polyurethane |
| Lock Washer | Stainless Steel |
| Termination | Phosphor bronze with tin on nickel finish |

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 dispatch. Marl recommend all users of LED based products follow the current BSI guidelines for protection of electronic devices from electrostatic phenomena.

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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