



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

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			
520-301-04-19	1000mm	Black - Cathode	19/0.16mm	1.2mm	Type 44, 22 Gauge High Performance Wire

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 stated 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

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

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TECHNICAL CHARACTERISTICS

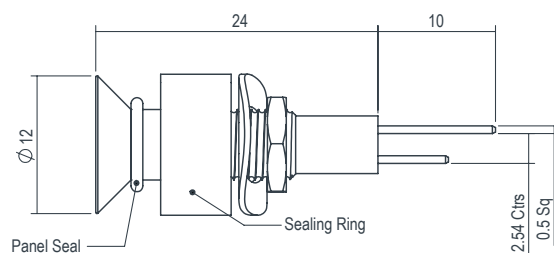
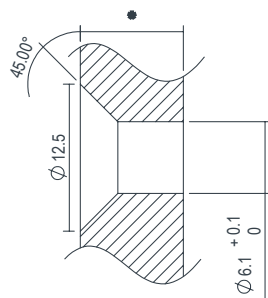
Series	Max. Power Dissipation	Panel Cutout	Nut Mounting Torque	Min. Mounting Centres	Min - Max. Panel Thickness
520	500	6.1	0.65	15.0	3.0 - 6.5
	mW	mm	Nm	mm	mm

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.



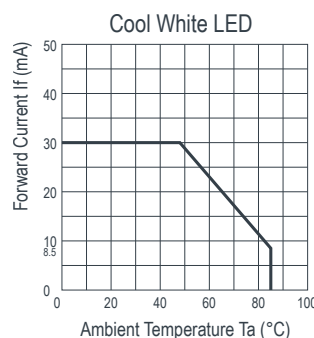
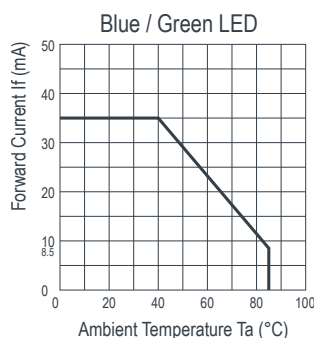
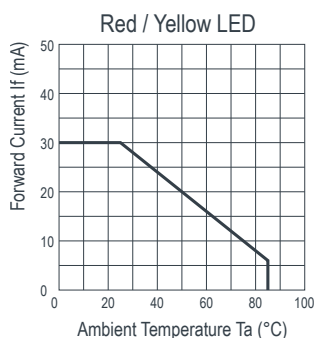
PUSH ON CONNECTOR



909-000-00 is gold plated, 910-000-00 is tin plated - for use with 520 series lamps.

Dimensions in mm (typical). Not to scale.

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 despatch. 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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