



# 512 SERIES PANEL INDICATOR LED



## FEATURES

- Ø12.7mm (½") mounting
- Nickel plated brass housing
- Sealed to IP67 - weatherproof
- Wide viewing angle - smoked lens
- Internal potting
- Reverse protection diode fitted in all voltage models
- Range of LED colour options
- Range of voltage options

## BENEFITS

- Standard industrial mounting size
- Suitable for industrial applications
- Suitable for external applications
- Smoked lens gives good on/off contrast ratio
- 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 | Typical LED Luminous Intensity | Typical LED Wavelength λp | Operating Temp Topr * | Storage Temp Tstg |
|------------------|------------|------------------------|-------------------------|--------------------------------|---------------------------|-----------------------|-------------------|
| 512-501-04       | Red        | 2.0 **                 | 20                      | 458                            | 625                       | -40 to +75            | -40 to +100       |
| 512-521-04       | Yellow     | 2.0 **                 | 20                      | 440                            | 590                       | -40 to +75            | -40 to +100       |
| 512-532-04       | Green      | 3.4 **                 | 20                      | 2157                           | 520                       | -40 to +75            | -40 to +100       |
| 512-930-04       | Blue       | 3.4 **                 | 20                      | 452                            | 470                       | -40 to +75            | -40 to +100       |
| 512-997-04       | Cool White | 3.4 **                 | 20                      | 1359                           | See Below                 | -40 to +75            | -40 to +100       |
| 512-501-20       | Red        | 5-6                    | 20                      | 458                            | 625                       | -40 to +75            | -40 to +100       |
| 512-521-20       | Yellow     | 5-6                    | 20                      | 440                            | 590                       | -40 to +75            | -40 to +100       |
| 512-532-20       | Green      | 5-6                    | 20                      | 2157                           | 520                       | -40 to +75            | -40 to +100       |
| 512-930-20       | Blue       | 5-6                    | 20                      | 452                            | 470                       | -40 to +75            | -40 to +100       |
| 512-997-20       | Cool White | 5-6                    | 20                      | 1359                           | See Below                 | -40 to +75            | -40 to +100       |
| 512-501-21       | Red        | 12                     | 20                      | 458                            | 625                       | -40 to +75            | -40 to +100       |
| 512-521-21       | Yellow     | 12                     | 20                      | 440                            | 590                       | -40 to +75            | -40 to +100       |
| 512-532-21       | Green      | 12                     | 20                      | 2157                           | 520                       | -40 to +75            | -40 to +100       |
| 512-930-21       | Blue       | 12                     | 20                      | 452                            | 470                       | -40 to +75            | -40 to +100       |
| 512-997-21       | Cool White | 12                     | 20                      | 1359                           | See Below                 | -40 to +75            | -40 to +100       |
| 512-501-23       | Red        | 24-28                  | 15                      | 346                            | 625                       | -40 to +75            | -40 to +100       |
| 512-521-23       | Yellow     | 24-28                  | 15                      | 330                            | 590                       | -40 to +75            | -40 to +100       |
| 512-532-23       | Green      | 24-28                  | 15                      | 1815                           | 520                       | -40 to +75            | -40 to +100       |
| 512-930-23       | Blue       | 24-28                  | 15                      | 364                            | 470                       | -40 to +75            | -40 to +100       |
| 512-997-23       | Cool White | 24-28                  | 15                      | 1063                           | See Below                 | -40 to +75            | -40 to +100       |
| 512-501-24       | Red        | 48                     | 12                      | 236                            | 625                       | -40 to +75            | -40 to +100       |
| 512-521-24       | Yellow     | 48                     | 12                      | 217                            | 590                       | -40 to +75            | -40 to +100       |
| 512-532-24       | Green      | 48                     | 12                      | 1360                           | 520                       | -40 to +75            | -40 to +100       |
| 512-930-24       | Blue       | 48                     | 12                      | 270                            | 470                       | -40 to +75            | -40 to +100       |
| 512-997-24       | Cool White | 48                     | 12                      | 743                            | See Below                 | -40 to +75            | -40 to +100       |
| 512-501-75       | Red        | 110 Vac                | 9                       | 236 @ 12mA                     | 625                       | -40 to +75            | -40 to +100       |
| 512-521-75       | Yellow     | 110 Vac                | 9                       | 217 @ 12mA                     | 590                       | -40 to +75            | -40 to +100       |
| 512-532-75       | Green      | 110 Vac                | 9                       | 1360 @ 12mA                    | 520                       | -40 to +75            | -40 to +100       |
| 512-930-75       | Blue       | 110 Vac                | 9                       | 270 @ 12mA                     | 470                       | -40 to +75            | -40 to +100       |
| 512-997-75       | Cool White | 110 Vac                | 9                       | 743 @ 12mA                     | See Below                 | -40 to +75            | -40 to +100       |
|                  |            | Vdc (unless stated) mA |                         | mcd                            | nm                        | °C                    | °C                |

### Typical Emission Colours Cool White LED

|   |       |      |      |
|---|-------|------|------|
| X | 0.275 | 0.28 | 0.29 |
| Y | 0.27  | 0.28 | 0.30 |

## OPTIONAL FLYING LEAD TERMINATORS

| Marl Part No Suffix | Wire Length | Wire Colour     | No/Diameter of Conductors | Diameter of Insulation | Wire Specification                      |
|---------------------|-------------|-----------------|---------------------------|------------------------|---|
| 512-501-04-15       | 150mm       | Red - Anode     | 19/0.16mm                 | 1.2mm                  | Type 44, 22 Gauge High Performance Wire |
| 512-501-04-19       | 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.

\* 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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# 512 SERIES PANEL INDICATOR LED

## TECHNICAL CHARACTERISTICS

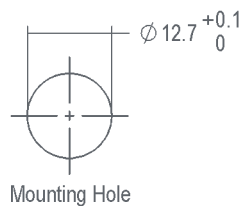
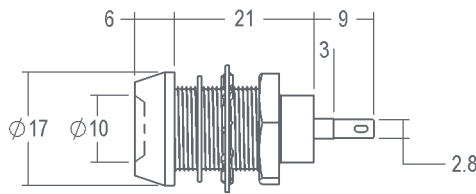
| Series | Max. Power Dissipation | Max. Reverse Voltage | Panel Cutout | Nut Mounting Torque | Min. Mounting Centres | Min. - Max. Panel Thickness |
|--------|------------------------|----------------------|--------------|---------------------|-----------------------|-----------------------------|
| 512    | 1000                   | 3*/1000 <sup>^</sup> | 12.7         | 1.0                 | 19.5                  | 1.5 - 8.0                   |
|        | mW                     | Vdc                  | mm           | Nm                  | mm                    | mm                          |

\* = Current version    ^ = Voltage version

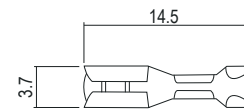
## TECHNICAL DRAWING

Weight (g): 22.4

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

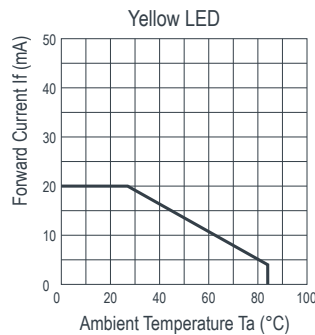
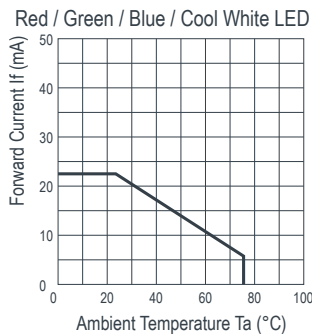


### PUSH ON CONNECTOR



925-000-00 is brass tin plated - for use with 512 series lamps. Dimensions in mm (typical). Not to scale.

## DE-RATING GRAPHS



## MATERIALS

|               |                           |
|---------------|---------------------------|
| Body          | Nickel Plated Brass       |
| Nut           | Nickel Plated Brass       |
| Panel Seal    | Viton                     |
| Lens          | Polycarbonate             |
| Encapsulation | Black Polyurethane        |
| Lock Washer   | Spring Steel              |
| Termination   | Silver Flash Coated Brass |

## 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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