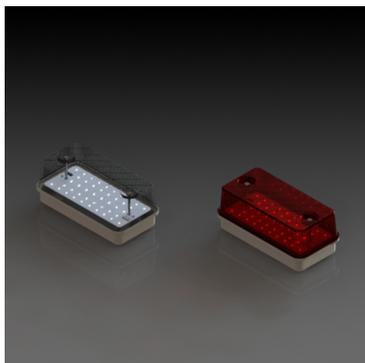


084 SERIES LED BULKHEAD UNIT



FEATURES

- Metal Base
- Polycarbonate Lens
- Vibration Resistant
- Sealed to IP65
- Range of LED colours
- High Intensity LEDs
- Range of Voltages

BENEFITS

- Robust construction
- Vandal resistant
- Suitable for harsh environments
- Suitable for outdoor use
- Wide variety of applications
- Readable in sunlight
- Direct replacement in many existing electrical circuits
- Outstanding reliability and optical performance
- Rail approved version available

Marl Part Number	LED Colour	Lens	Typical Voltage Vopr	Typical Current Iopr	Typical LED Luminous Intensity @ If=20mA	Typical LED Wavelength λp	Operating Temp Topr *	Storage Temp Tstg
084-501-22	Red	Red Diffused	24Vac/dc	175	640	635	-40 to +85	-40 to +100
084-501-75	Red	Red Diffused	110Vac/dc	35	640	635	-40 to +85	-40 to +100
084-501-76	Red	Red Diffused	230Vac	30	640	635	-40 to +85	-40 to +100
084-521-22	Amber	Water Clear	24Vac/dc	165	690	600	-40 to +85	-40 to +110
084-521-75	Amber	Water Clear	110Vac/dc	35	690	600	-40 to +85	-40 to +110
084-521-76	Amber	Water Clear	230Vac	40	690	600	-40 to +85	-40 to +110
084-532-22	Green	Water Clear	24Vac/dc	165	870	523	-40 to +85	-40 to +110
084-532-75	Green	Water Clear	110Vac/dc	35	870	523	-40 to +85	-40 to +110
084-532-76	Green	Water Clear	230Vac	40	870	523	-40 to +85	-40 to +110
084-930-75	Blue	Water Clear	110Vac/dc	35	310	465	-40 to +85	-40 to +110
084-930-76	Blue	Water Clear	230Vac	40	310	465	-40 to +85	-40 to +110
084-997-22	Cool White	Water Clear	24Vac/dc	165	1500	X 0.31 / Y 0.32	-40 to +85	-40 to +110
084-997-75	Cool White	Water Clear	110Vac/dc	35	1500	X 0.31 / Y 0.32	-40 to +85	-40 to +110
084-997-76	Cool White	Water Clear	230Vac	30	1500	X 0.31 / Y 0.32	-40 to +85	-40 to +110
			V	mA	mcd	nm	°C	°C

NOTES

Product features a cluster of 44 LEDs. Intensities (Iv) are per-LED. Intensities and colour shades of white (X-Y co-ordinates) may vary between LEDs within a batch. Additional LED Colours, Voltage Options and Reverse Polarity options available for semi-custom projects. Please contact our Sales Team. All LED components are supplied in anti-static packaging.

IP rating is void if unit is not fitted with suitable connector that at least maintains IP rating.
 * Characteristics at Ta = 25°C. For operating temperature derating graphs, please refer to sheet 2.

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Q 05480

084 SERIES LED BULKHEAD UNIT



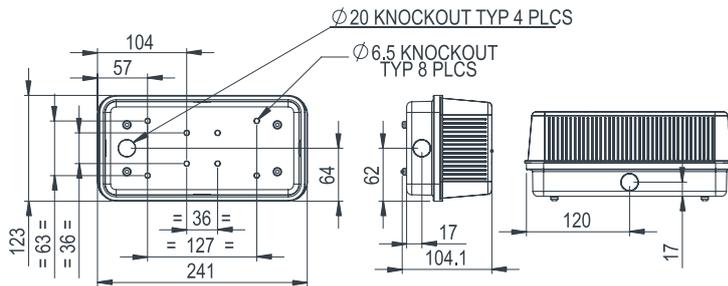
TECHNICAL CHARACTERISTICS

Series	Max. Power Dissipation
084	5
	W

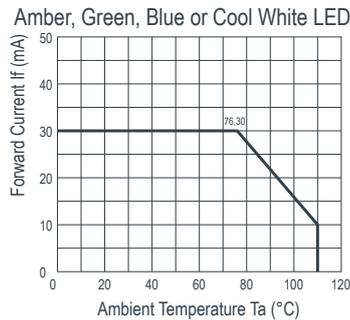
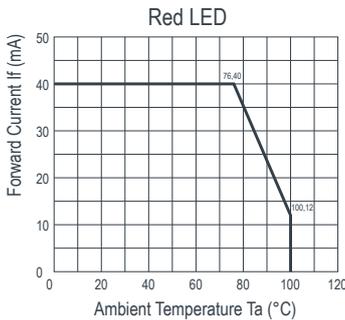
TECHNICAL DRAWING

Weight (g): 529

Dimensions in mm (typical). Not to scale.



DE-RATING GRAPHS



DESIGN CONSIDERATIONS

Product Evaluation

Due to subjectivity, evaluation of the LED type is recommended. Care should be taken to correctly simulate operating ambient light conditions to ensure that the correct device has been selected to maximise viewing characteristics such as viewing angle, colour compatibility and on/ off contrast ratio.

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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084 SERIES - RAIL EDITION

LED BULKHEAD UNIT



FEATURES

- Network Rail certified product **
- Metal Base
- Polycarbonate Lens
- Vibration Resistant
- Sealed to IP65
- High Intensity LEDs

BENEFITS

- Suitable for Network Rail infrastructure
- Robust construction
- Vandal resistant
- Suitable for harsh environments
- Suitable for outdoor use
- Readable in sunlight
- Outstanding reliability and optical performance
- Suitable for use as a Buffer Stop Light or Barrow Crossing Indicator

Marl Part Number	Network Rail PADs No.	LED Colour	Lens	Typical Voltage Vopr	Typical Current Iopr	Typical LED Luminous Intensity @ If=20mA	Typical LED Wavelength λp	Operating Temp Topr *	Storage Temp Tstg
084-501-99-64	0055/050262	Red	Red Diffused	110Vac/dc	37	2700	660	-40 to +85	-40 to +85
084-501-76-65	0055/050263	Red	Red Diffused	230Vac 50Hz	30	2700	660	-40 to +85	-40 to +85
084-997-99-64	0055/050270	Cool White	Water Clear	110Vac/dc	40	27000	See Below	-30 to +85	-40 to +100
084-997-76-65	0055/560895	Cool White	Water Clear	230Vac 50Hz	48	27000	See Below	-30 to +85	-40 to +100
				V	mA	mcd	nm	°C	°C

Typical Emission Colours Cool White LED

X	0.296	0.287	0.330	0.330
Y	0.276	0.295	0.339	0.318

Network Rail Approval Certificate No: PA05/898

NOTES

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Two parallel branches of LEDs and independent drive circuitry provides the unit with a 50% redundancy factor. Typical current is total for the product (divide by 2 for the per-circuit figure).

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

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084 SERIES - RAIL EDITION LED BULKHEAD UNIT



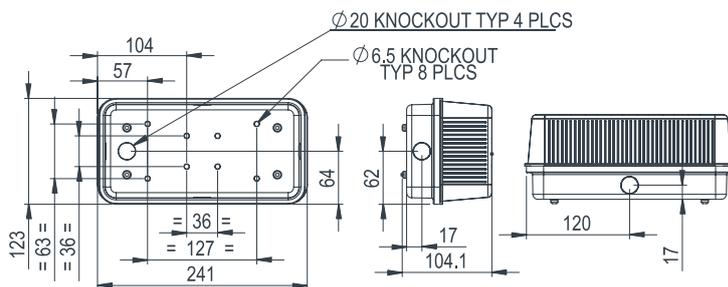
TECHNICAL CHARACTERISTICS

Series	Max. Power Dissipation
084	5
	W

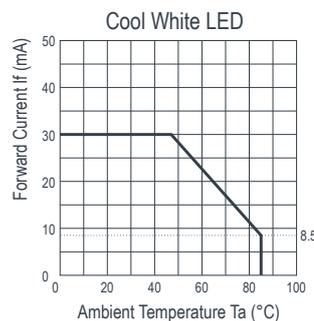
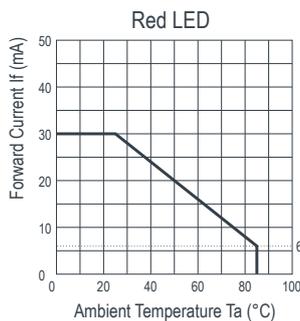
TECHNICAL DRAWING

Weight (g): 529

Dimensions in mm (typical). Not to scale.



DE-RATING GRAPHS



DESIGN CONSIDERATIONS

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