Department for Transport

GT50/197/0006

ROAD TRAFFIC REGULATION ACT 1984 – SECTIONS 64 AND 65

APPROVAL OF TYPE OF STUD

The Secretary of State for Transport, in exercise of his powers under sections 64 and 65 of the Road Traffic Regulation Act 1984 and of all other enabling powers, in accordance with the requirements of direction 57(3) of the Traffic Signs General Directions 2002 (Part II of SI 2002 No. 3113) and having regard to direction 59, hereby

1) approves the road stud specified below for the purposes of carrying out road tests in accordance with the provisions of British Standard BS EN 1463-1:2000 (as required by draft Standard BS EN 1463-3 pt2) on the A3 Trunk Road at Hindhead Tunnel, and

2) directs that this approval shall expire on 1st February 2020.

SPECIFICATION

Product identification	Philips Lighting - On Road Marker series - Inductive and Solar Active Road Stud ORM-##-#, TLM-##-#, OR+-##-#, OSM-##
Description	Unidirectional or Bidirectional road stud with LED illumination
LED manufacturer's identification numbers	White – 2S-4000W30N16-5NFZ (4150k-4500k) Red – 2S-620R30N9-5NFZ Amber – 2S-592Y30N11-5NFZ Blue – 2S-470B30N11-5NFZ
LED to comply with the chromaticity requirements of	prEN 1463-3 pt1 (Draft)
LED flash rate	100 Hz minimum, with each flash equally spaced
To be of the size and type shown on the drawing marked with the Department's number	GT50/197/0006

CERTIFIED TRUE COPY

[redacted]

Department for Transport

Date: 8/08/2018

Dated: 1st August 2018

Signed by authority of the Secretary of State

[redacted] ..... A Delegated Official of the Department for Transport

TUNNEL LANE MARKER

Department for Transport

Date: 1 August 2018

Number: GT50/197/0006

Product Code: TLM-□□-□

Inductively Powered, Intelligent Tunnel Lane Marker.
Ideal for on road lighting, including lane delineation, road edge and tidal flow applications.

Features

- Less than 4 mm above road surface
- No physical wire connection between power source (buried cable) and ONROADLED marker
- Visible up to 2 km (1.2 miles) away
- Dimmable, switchable
- Uniquely addressable
- Fully programmable
- High impact UV stable polycarbonate housing
- Self-cleaning design
- Patented 2-way communication and diagnosis capabilities available
- Integrated optics (one part housing)

Product data

• Functionality

Light Direction	Uni-Directional with 8 high intensity LEDs facing one direction Bi-Directional with 16 high intensity LEDs facing both directions
LED Colours	Blue, Green, Red, White, Yellow (Other available on Request)
Marker Shell Colour	Black (White available on Request)

• Electrical Specification

Electrical Input

Power Consumption	2 Watt

Electrical Output

Power Transfer Method	Inductive (no direct electrical connection)
Frequency of operation	38.4 kHz for power conversion ± 1.5% for data communication

Other

Individual LED Aperture Angle	30°
Life Span of LEDs *(LED manufacture Specification)*	100 000 h (L70F10)
Individual LED Brightness	Blue = 9 000 mcd Green = 20 000 mcd Red = 12 500 mcd White = 16 000 mcd Yellow = 11 500 mcd
Chromaticity	Blue = 460 – 463 nm Green = 520 – 523 nm Red = 620 – 625 nm White = 4000 – 4500 K (neutral) Yellow = 589 – 592 nm

• Compliance

CE marking	YES
RoHS	YES

• Operating Environment

Ingress Protection Rating	IP68 and IP69K
Operating Temperature	-15°C to 100°C
Compressive Load	Up to 18 000kg

• Physical Construction

Housing Material	Polycarbonate certified to UL 94 V0

• Installation

Orientation	Long (cross available)
Method of Attachment	Smart10.2 – Two Part Polyurethane adhesive

• Product Dimensions

Diameter	83mm
Above road	Less than 4mm
Height	31mm
Total Height	Less than 35mm

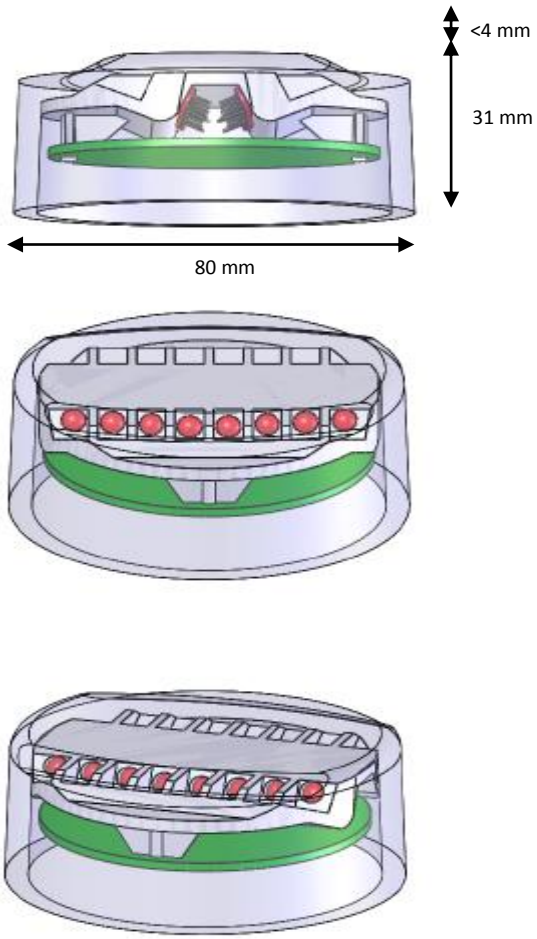
• Product Data

Full product code	TLM
Full product name	Tunnel Lane Marker
Pieces per pack	10
Packing configuration	Horizontal
Packs per outerbox	1
Net weight per piece	250g
Made in New Zealand	

ONROADLED

Tunnel Lane Marker

Dimensional drawing



ONROADLED

Tunnel Lane Marker

Product Options

Symbol	Order Code	Description
	TLM-YX-L	Uni-Directional Yellow Long
	TLM-RX-L	Uni-Directional Red Long
	TLM-WX-L	Uni-Directional White Long
	TLM-GX-L	Uni-Directional Green Long
	TLM-BX-L	Uni-Directional Blue Long
	TLM-YY-L	Bi-Directional Yellow Yellow Long
	TLM-RR-L	Bi-Directional Red Red Long
	TLM-WW-L	Bi-Directional White White Long
	TLM-GG-L	Bi-Directional Green Green Long
	TLM-BB-L	Bi-Directional Blue Blue Long
	TLM-WB-L	Bi-Directional White Blue Long
	TLM-WR-L	Bi-Directional White Red Long
	TLM-WG-L	Bi-Directional White Green Long
	TLM-WY-L	Bi-Directional White Yellow Long

Rev 2.3. 2 June 2015

ONROADLED

ON ROAD MARKER

Product Code: ORM-□□-□

Inductively Powered, Intelligent On Road Marker.
Ideal for on road lighting, including lane delineation, road edge and tidal flow applications.

Features

- Less than 4 mm above road surface
- No physical wire connection between power source (buried cable) and On Road Marker
- Visible up to 2 km (1.2 miles) away
- Dimmable, switchable
- Uniquely addressable
- Fully programmable
- High impact UV stable polycarbonate housing
- Self-cleaning design
- Patented 2-way communication and diagnosis capabilities available
- Integrated optics (one part housing)

Department for Transport

Date: 1 August 2018

Number: GT50/197/0006

Product data

• Functionality

Light Direction	Uni-Directional with 8 high intensity LEDs facing one direction Bi-Directional with 16 high intensity LEDs facing both directions
LED Colours	Blue, Green, Red, White, Yellow (Other available on Request)
Marker Shell Colour	Black (White available on Request)

• Electrical Specifications

Electrical Input

Power Consumption	2 Watt

Electrical Output

Power Transfer Method	Inductive (no direct electrical connection)
Frequency of operation	38.4 kHz for power conversion ± 1.5% for data communication

Other

Individual LED Aperture Angle	30°
Life Span of LEDs *(LED manufacture Specification)*	100 000 h (L70F10)
Individual LED Brightness	Blue = 9 000 mcd Green = 20 000 mcd Red = 12 500 mcd White = 16 000 mcd Yellow = 11 500 mcd
Chromaticity	Blue = 460 – 463 nm Green = 520 – 523 nm Red = 620 – 625 nm White = 4000 – 4500 K (neutral) Yellow = 589 – 592 nm

• Compliance

CE marking	YES
RoHS	YES

• Operating Environment

Ingress Protection Rating	IP68 and IP69K
Operating Temperature	-20°C to 100°C
Compressive Load	Up to 18 000kg

• Physical Construction

Housing Material	Polycarbonate certified to UL 94 V0

• Installation

Orientation	Long (cross available)
Method of Attachment	Smart10.2 – Two Part Polyurethane adhesive

• Product Dimensions

Diameter	83mm
Above road	Less than 4mm
Height	31mm
Total Height	Less than 35mm

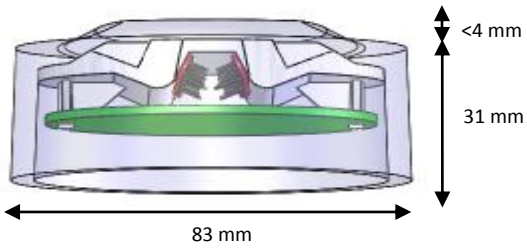
• Product Data

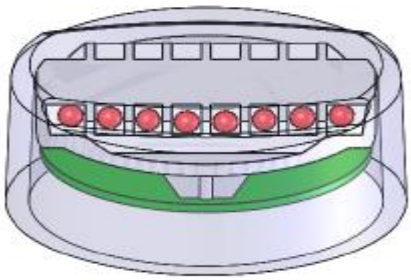
Full product code	ORM
Full product name	On Road Marker
Pieces per pack	10
Packing configuration	Horizontal
Packs per outerbox	1
Net weight per piece	250g
Made in New Zealand	

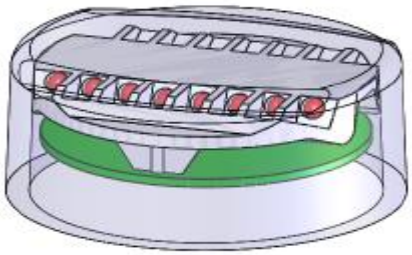
ONROADLED

ON ROAD MARKER

Dimensional drawing







ON ROAD MARKER

Product Options:

Symbol	Order Code	Description
	ORM-YX-L	Uni-Directional Yellow Long
	ORM-YX-C	Uni-Directional Yellow Cross
	ORM-RX-L	Uni-Directional Red Long
	ORM-RX-C	Uni-Directional Red Cross
	ORM-WX-L	Uni-Directional White Long
	ORM-WX-C	Uni-Directional White Cross
	ORM-GX-L	Uni-Directional Green Long
	ORM-GX-C	Uni-Directional Green Cross
	ORM-BX-L	Uni-Directional Blue Long
	ORM-BX-C	Uni-Directional Blue Cross
	ORM-RGB-L	Uni-Directional RGB Long
	ORM-RGB-C	Uni-Directional RGB Cross
	ORM-YY-L	Bi-Directional Yellow Yellow Long

ON ROAD MARKER

Symbol	Order Code	Description
	ORM-YY-C	Bi-Directional Yellow Yellow Cross
	ORM-RR-L	Bi-Directional Red Red Long
	ORM-RR-C	Bi-Directional Red Red Cross
	ORM-WW-L	Bi-Directional White White Long
	ORM-GG-L	Bi-Directional Green Green Long
	ORM-BB-L	Bi-Directional Blue Blue Long
	ORM-WB-L	Bi-Directional White Blue Long
	ORM-WR-L	Bi-Directional White Red Long
	ORM-WG-L	Bi-Directional White Green Long
	ORM-WY-L	Bi-Directional White Yellow Long

ONROADLED

ON ROAD SOLAR MARKER

Department for Transport

Date: 1 August 2018

Number: GT50/197/0006

Product Code: OSM-□□

Solar Powered ONROADLED marker. On Road Solar markers are of particular benefit in rain, fog and on corners where conventional reflective marker performance is reduced. The On Road Solar marker is powered by an internal battery and solar cell system

Features

- Less than 4 mm above road surface
- High impact UV stable polycarbonate housing
- Self-cleaning design
- Integrated optics (one part housing)

Product data

• Functionality

Light Direction	Uni-Directional with 4 LEDs facing one direction Bi-Directional with 2 LEDs facing both directions
LED Colours	Blue, Green, Red, White, Yellow (Other available on Request)
Marker Shell Colour	Black

• Electrical Specification

Operating time	Unit shuts down when battery voltage level falls to 90% 90% battery voltage = 3 nights with no daytime charging
Full charge time	from 90% battery voltage = 4 hours
Minimum charge rate	¼ insolation (daylight)
Typical Light Output	1000-2000mcd
Life Span of LEDs	100 000 h (L70F10)

(LED manufacture Specification)

Chromaticity	Blue = 460 – 463 nm Green = 520 – 523 nm Red = 620 – 625 nm White = 4000 – 4500 K (neutral) Yellow = 589 – 592 nm

• Compliance

RoHS	YES

• Product Dimensions

Diameter	83mm
Installed Height	Less than 4mm
Total Height	35mm

• Physical Construction

Housing Material	Polycarbonate certified to UL 94 V0 Highly UV Stable

• Operating Environment

Ingress Protection Rating	IP68 and IP69K
Operating Temperature	-15°C to 65°C
Compressive Load	Up to 18 000kg

• Operating Characteristics

Active	from below ¼ insolation level
De-active	from above ¼ sun intensity
Response time (Start/stop)	10 seconds dependent on event frequency

• Installation

Method of Attachment	Smart10.2 – Two Part Polyurethane adhesive

• Product Data

Full product code	OSM
Full product name	On Road Solar Marker
Pieces per pack	10
Packing configuration	Horizontal
Packs per outerbox	1
Net weight per piece	250g
Made in New Zealand	

ONROADLED

ONROADLED SOLAR MARKER

Product Options

Symbol	Order Code	Description
	OSM-YX	Uni-Directional Yellow
	OSM-RX	Uni-Directional Red
	OSM-WX	Uni-Directional White
	OSM-BX	Uni-Directional Blue
	OSM-GX	Uni-Directional Green
	OSM-YY	Bi-Directional Yellow Yellow
	OSM-RR	Bi-Directional Red Red
	OSM-WW	Bi-Directional White White
	OSM-BB	Bi-Directional Blue Blue
	OSM-GG	Bi-Directional Green Green
	OSM-GR	Bi-Directional Green Red

ONROADLED

ON ROAD+ MARKER

Department for Transport

Date: 1 August 2018

Number: GT50/197/0006

Product Code: OR+-□□-□

Inductively Powered, Intelligent ONROADLED marker with vertical and horizontal lighting capabilities.
Ideal for on road lighting, including crosswalk warning lights, road edge, pedestrian, bus lane and cyclist lane lighting.

Features

- Horizontal and vertical lighting
- Less than 4 mm above road surface
- No physical wire connection between power source (buried cable) and ONROADLED marker.
- Visible up to 2 km (1.2 miles) away
- Dimmable, switchable
- Uniquely addressable
- Fully programmable
- High impact UV stable polycarbonate housing
- Scratch resistant coating
- Self-cleaning design
- Patented 2-way communication and diagnosis capabilities available
- Integrated optics (one part housing)

Product data

• Functionality

Light Direction	Uni-Directional with 8 high intensity LEDs facing one direction. Bi-Directional (8 vertical & 8 horizontal facing one direction)
LED Colours	Blue, Green, Red, White, Yellow (Other available on Request)
Marker Shell Colour	Black

• Electrical Specification

Electrical Input

Power Consumption	2 Watt

Electrical Output

Power Transfer Method	Inductive (no direct electrical connection)
Frequency of operation	38.4 kHz for power conversion ± 1.5% for data communication

Other

Individual LED Aperture Angle	30°
Life Span of LEDs *(LED manufacture Specification)*	100 000 h (L70F10)
Individual LED Brightness	Blue = 9 000 mcd Green = 20 000 mcd Red = 12 500 mcd White = 16 000 mcd Yellow = 11 500 mcd
Chromaticity	Blue = 460 – 463 nm Green = 520 – 523 nm Red = 620 – 625 nm White = 4000 – 4500 K (neutral) Yellow = 589 – 592 nm

• Compliance

CE marking	YES
RoHS	YES

• Operating Environment

Ingress Protection Rating	IP68 & IP69K
Operating Temperature	-15°C to 100°C
Compressive Load	Up to 18 000kg

• Physical Construction

Housing Material	Polycarbonate certified to UL 94 V0

• Installation

Orientation	Long (cross available)
Method of Attachment	Smart10.2 – Two Part Polyurethane adhesive

• Product Dimensions

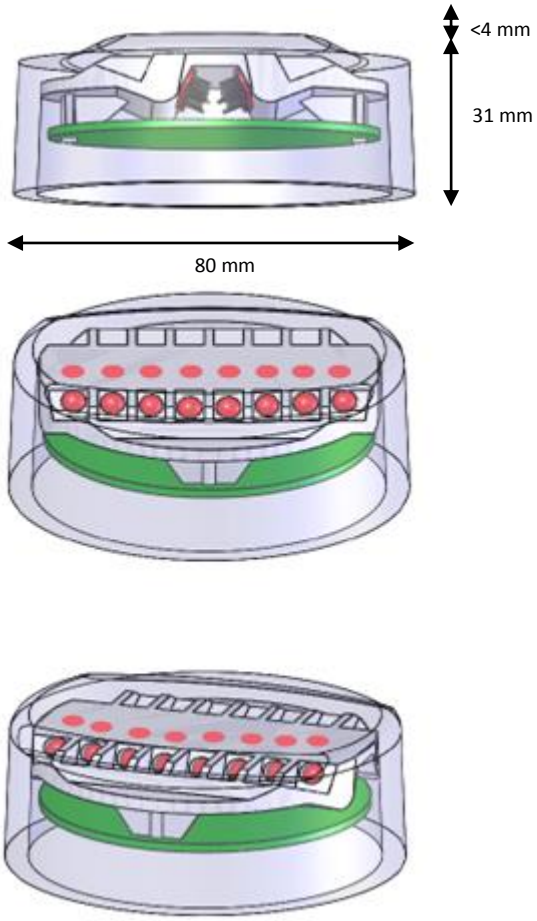
Diameter	83mm
Above road	Less than 4mm
Height	31mm
Total Height	Less than 35mm

• Product Data

Full product code	OR+
Full product name	On Road+ Marker
Pieces per pack	10
Packing configuration	Horizontal
Packs per outerbox	1
Net weight per piece	250g
Made in New Zealand	

ONROADLED

Dimensional drawing



Rev 2.4. 2 June 2015

OR+ MARKER

Product Options

Symbol	Full Code	Product full name
	OR+-YY-L	Bi-Directional Yellow Yellow Long
	OR+-YY-C	Bi-Directional Yellow Yellow Cross
	OR+-RR-L	Bi-Directional Red Red Long
	OR+-RR-C	Bi-Directional Red Red Cross
	OR+-WW-L	Bi-Directional White White Long
	OR+-GG-L	Bi-Directional Green Green Long
	OR+-BB-L	Bi-Directional Blue Blue Long

Rev 2.4. 2 June 2015

ONROADLED