LumiLeds

A Philips Lighting and Agilent Technologies Joint Venture

Technical Data Sheet

76-0090 76-0000
76-0050 76-0070
76-0060 76-0080

Low Voltage DC Traffic Signal Module

Features

- **Clustered High-Flux LEDs as Light Source**
- **Sealed for Life Unit**
- **Durable Materials**
- **Rim Dimensions Matching Existing Housings**
- **Removable Front Lens**

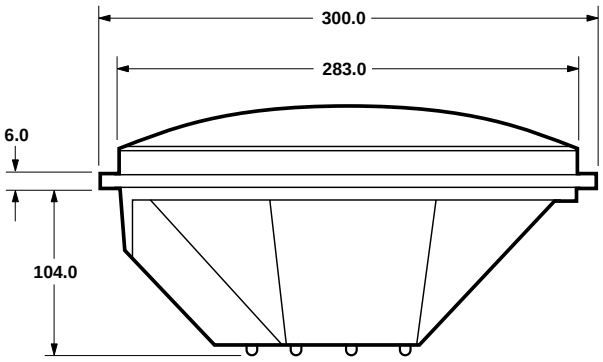
Benefits

- **Low Energy Consumption – Between 6 W and 17 W Depending on Temperature**
- **Uniform Luminance of the Front Lens**
- **Long and Reliable Service Life**
- **Easy Installation in the Door of a Signal Housing**
- **Easy Replacement of Front Lens**
- **Easy Fit of Arrow Mask**

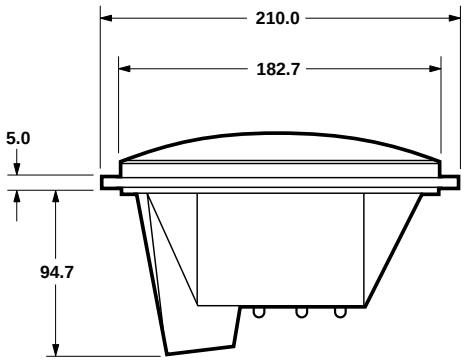
Description

A fully contained low wattage High Flux LED-DC Traffic Signal Module-meeting European specification prEN 12368 class A2/1 type W. The module is primarily intended to be used as a retrofit unit for traffic signals that are currently equipped with incandescent, low voltage Krypton or Halogen light sources. Comprising a High Flux LED light source, Fresnel lens and tinted front lens. The Fresnel lens is sealed to the housing to create a dust and waterproof system. The front lens is detachable to facilitate positioning of an arrow mask underneath this lens. The module is a very low wattage DC execution that through an appropriate driver can interface with the loadswitch of a traffic controller. The optics and the LED wiring are designed such that with proper drive electronics the failure of a single LED will not create a dark spot, nor will it reduce the signal intensity.

Dimensions



300 mm SIGNAL MODULE



210 mm SIGNAL MODULE

Optical Characteristics at T_A = 25°C (Typical Values Unless Otherwise Stated)

Parameter	Symbol	Red	Amber	Green	Units
Beam (prEN 12368)		A2/1 type W	A2/1 type W	A2/1 type W	
Minimum Initial Intensity[1]	I_V	250	250	286	Cd
Maximum Initial Intensity[2]	I_V	800	800	800	Cd
Characteristic Temperature[3]	T_o	95	55	840	°C
Dominant Wavelength	λ	615-631.5	585-597	498.5-508	nm
Chromaticity Coordinates[4]	x, y	0.660, 0.320 0.680, 0.320 0.710, 0.290 0.690, 0.290	0.536, 0.444 0.547, 0.452 0.613, 0.387 0.593, 0.387	0.009, 0.720 0.284, 0.520 0.209, 0.400 0.028, 0.400	
Temperature Coefficient of Dominant Wavelength		+0.05	+0.13	+0.027	mm/°C
Luminance Uniformity[5]		<10	<10	<10	L_{MAX}/L_{MIN}
Phantom Class[6]		1	1	1	I_S/I_P

Notes:
1. Measured at center of the beam.
2. Measured at center of the beam.
3. The temperature dependency of the Intensity can be calculated as follows: $I_T = I_{25}.e^{-(T-25)/T_o}$.
4. The chromaticity coordinates are derived from the CIE 1931 Chromaticity Diagram and represent the perceived color of the device.
5. Measured at an aperture of 25 mm.
6. Measured on basis of minimum initial Intensity.

Electrical Characteristics at T_A = 25°C (Typical Values Unless Otherwise Stated)

Parameter	Symbol	Red	Amber	Green	Units
Current[7]	I	750	750	700	mA
Forward Voltage (minimum-maximum)	V_F	11.7-17.9	11.6-17.8	16.2-22.5	V
Temperature Coefficient of Forward Voltage[8]		-10.8	-13.2	-11.2	mV/°C
Minimum Reverse Voltage @ 100 µA	V_R	30	30	5.4	V
Maximum Current	I_{MAX}	1125	1125	1050	mA
Maximum Crest Factor		1.5	1.5	1.5	I_{MAX}/I_{AV}
Maximum Initial Overshoot Current[9]		1.45	1.45	1.45	I_I/I_{MAX}
Capacitance	C	115	115	80	pF
Impedance of Array	Z	4.9	4.9	5.1	Ω
Temperature Sensor[10]		10	10	2.2	kΩ

Notes:
7. For LED array with 3 LEDs parallel, 6 LEDs in series for Red and Yellow, 2 LEDs in parallel and 6 in series for Green.
8. At 5 mA and between 25°C and 75°C.
9. Maximum duration two cycles or 20 msec; overshoot may be on top of allowance as per Crest Factor.
10. 10 kΩ NTC at 25°C, Siemens type C620 10 K, ± 5 %, for Red/Yellow, Green 2.2 K, ± 1 %, standard fixed resistor in 0805 case.

Environmental (All Executions)

Relative Humidity[11]	95%
Vibration	IEC 68-2-34
Impact Front Lens	EN 60598-1, clause 4.13.4 IR3
Ingress Protection	IP66, EN 60529 test 13 and 14

Note:
11. Non-condensing.

Temperatures (All Executions)

Maximum Board Temperature	T_B	105	°C
Operating Temperature[12]	T_{OP}	–40 to +65	°C
Storage Temperature	T_S	–40 to +100	°C

Note:
12. Refers to the ambient temperature range when power is applied to the module.

Thermal Resistance

Housing Dimension	∅	210	300	mm
From Board to Ambient	$R\theta_{B-A}$	2.3	1.8	K/W

Mechanical Data

Gasket	None
Cable	500 mm length external cable acc to ISO 2578 and UL 1581, including breathing tube. Color Scheme: Red wire — Positive pole White wire — Return Black wire — NTC/resistor Black wire — NTC/resistor The wires each terminated with a 2.8 x 0.5 faston.
Packaging	210 mm signals 8 per box, box dimension 60 x 40 x 22 cm 240 signals on a pallet of 120 x 100 x 10 cm 300 mm signals 5 per box, box dimension 60 x 40 x 32 cm 100 signals on a pallet of 120 x 100 x 10 cm

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Traceability (All Executions)

Description	Product Identification Number
210 mm European Red	76-0090
210 mm Yellow	76-0050
210 mm Green	76-0060
300 mm European Red	76-0000
300 mm Yellow	76-0070
300 mm Green	76-0080

Label (on Signal)	Corportate Identity:	LumiLeds logo
	Part Number:	76-00x0
	Date of Production:	dd/mm/yy
	Current Rating:	750 mA at 16 V_{DC} (Red and Yellow)
	Current Rating:	700 mA at 19 V_{DC} (Green)
	Class:	Beam A2/1 W
	Phantom:	class 1 (Red, Yellow and Green, Green 300 mm T.B.D.)
	Impact:	IR3
	Ingress Protection:	IP66
	Environmental Class:	A, B, C
	Max. Order Number:	
	Country of Manufacture:	the Netherlands
	Barcode:	Unique product serial number
Label (on Box)	Type:	Traffic Signal, Module Red, Yellow or Green
	Corporate Identity:	LumiLeds logo
	Part Number:	76-00x0
	Production Code:	
	Diameter:	210 mm or 300 mm
	Number of Products:	8 (210 mm signals)
	Number of Products:	5 (300 signals)
	Max. Order Number:	
	Country of Manufacture:	the Netherlands

LumiLeds Lighting:
The Revolution of Lighting.

LumiLeds Lighting is a joint venture between Philips Lighting and Agilent Technologies.

Agilent Technologies, an $8 billion startup, is the result of the strategic realignment of Hewlett-Packard, producer of the world's brightest red and amber LEDs, as well as state-of-the-art, high-brightness LEDs in blue, green, white and other colors.

Philips is a global leader in developing, manufacturing and marketing innovative lighting products worldwide.

LumiLeds Lighting is changing the future of lighting. In the next century, LED-based lighting will quickly replace conventional lighting for a wealth of commercial, industrial, institutional and consumer applications. By combining the lighting expertise of Philips and the LED technology strength of Agilent, our products will bring irresistible value to lighting solutions of all kinds. LumiLeds Lighting will reduce waste and power consumption worldwide by developing long-lasting, energy-efficient products.

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www.lumileds.com

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