P-50

50 Watt Underwater Ultra Rad-Hard LED Luminaire

Product flyer, Preliminary Version 0.0, November 2021

Nuclear grade Underwater LED Luminaire

P-50 is latest generation of high radiation resistant LED Luminaires, proudly created and made by DITO Lighting, Slovenia, EU.

P-50 is nuclear grade Underwater LED Luminaire, designed for continuous operation under the water up to depth of 20 meters. The Luminaire is based on proven **H** Series of Ultra Rad-Hard LED products, sharing the same radiation resistance properties.

Complete electronics (driver) is located inside the Luminaire. The unit is connected directly to the mains, without any external boxes mounted elsewhere outside radiation area.

The housing is made of aluminium. The unit is small, compact and very lightweight, therefore easy to handle. Despite small form factor, overall system efficacy is more than 150 lm/W.

P-50 is preferred choice for less demanding underwater nuclear applications. The Luminaire is primarily designed for lighting inside the pools of scientific research reactors, their spent fuel storage and gamma irradiation facilities.

P-50 uses silicone optics. Silicone optics is flexible, has operational temperature range of over 200 °C, is 100 % shatterproof and chemically stable.

Default holder enables simple installation and tilting of the unit. The Luminaire is equipped with 20 meters of high performance, radiation tested underwater cable.

The Luminaire is fully potted, with special silicone based compound. There is no air trapped inside the housing. Beside excellent protection against water, soft potting also protects internal electronics against shocks and vibrations.

For latest, up to date information please visit:

www.dito-lighting.com
info@dito-lighting.com

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Specifications:

Rated power:	50 W
Rated voltages:	100-277 V AC or DC
Power factor:	> 0.9
Luminous flux:	> 7500 lm
CCT:	5000 K
CRI:	> 70
Luminaire efficacy:	> 150 lm/W
Electronics location:	internal
Housing material:	Aluminium
Optics material:	Silicone
Ingress protection:	IP 68, continuous, 20 m
Impact protection:	IK 07
Water temperature:	4 °C to 50 °C
Cable length:	20 m
Weight:	1.8 kg w/o cable
Dimensions inc. holder:	dia. 120 × 160 mm
Warranty:	5 years

In compliance with (partial list):

MIL-STD-883, Method 1017 neutrons
MIL-STD-883, Method 1019 gamma
ESA ESCC No. 22900 gamma
IEEE 344 -2013
IEC 60980
2014/30/EU (EMC)
2014/35/EU (LVD)

Radiation tolerance:

Gamma:	5×10^5 Gy
Neutrons 1MeV (Si):	5×10^{14} n/cm^2

Reliability (environment: GB @ 50 °C):

Calculation method:	MIL-217F N2
MTBF:	3.758.857 h
Predicted lifetime:	> 22 years
Confidence level:	95 %

Notes:

Irradiation tests performed inside the core of the TRIGA MkII research reactor with the representative NPP gamma spectrum.

The product is available with different input voltages ranging from 100 to 277 VAC or VDC, 50 or 60 Hz.

Custom cable length and custom Luminaire holder are available on request.

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