

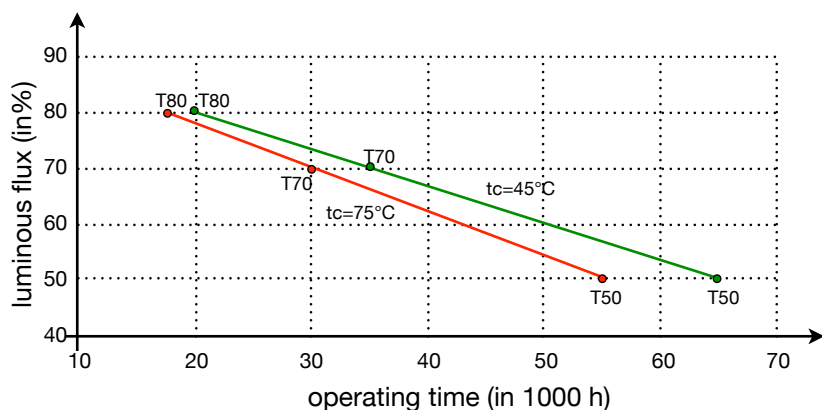
General Product's Data Sheet

1. Expected lifetime.

All values mentioned in the Technical Datasheets of the individual products are measured at an ambient temperature of 25 degrees Celsius. According to the information provided by the manufacturer, the lifetime of the LED modules is about 60.000 hours (at ambient temperature $t_a=25^\circ$) - i.e. roughly about 7 years of continuous operation. That is about 15 years when the lights are on within a period of 12 hours a day. However, we have to keep in mind, that this parameter significantly depends of the ambient temperature, and can decrease if the heating exceeds 50 °C (122°F) - for example during operation in hot climates in direct sunlight.

If lumen maintenance is used to define the lifetime of an LED module, the figures relate to the number of hours of operation after which the luminous flux of the LED module is 80% (T80), 70% (T70) or 50% (T50) of the rated value. Lumen maintenance is determined mainly by the temperature at the "tc point" (reference point) on the LED module measured under normal conditions of use.

The following diagrams enable the lumen maintenance and associated operating time to be determined for different tc temperatures. Intermediate values can be found with sufficient accuracy by interpolating between the reference curves.



tc, C°	luminous flux, %	expected lumen maintenance, h
45	80	22'000 (T80)
	70	35'000 (T70)
	50	65'000 (T50)
75	80	19'000 (T80)
	70	30'000 (T70)
	50	55'000 (T50)

2. Water and dust resistance: IP68.

Note: During operation under water (in fountain, lake, pond, etc.) on the surface of the products lime scale layers may occur. This can not be considered as a malfunction, and depends on the chemical composition of the water. To remove the lime scale you can use an appropriate cleaning agent, the most common of one is a vinegar solution.

3. Voltage: 12 Volt DC.

In low voltage systems, the mains voltage is reduced through a converters to 12 Volt DC, which is a voltage incapable of giving a fatal shock and therefore allows the use of flexible cables around any sensitive area, rather than the fixed cabling required for mains voltage systems.

4. Barcol Hardness: 35-40.

5. Chemical resistance.

Our products are formulated to exhibit good hydrolytic stability and are resistant to neutral and acidic salts and weak non-oxidizing acids.

Chemical Resistance Guide - long immersion time.

Chemical Environment	Conc. %	C°
Water, Distilled	ALL	40
Water, Sea	ALL	40
Sodium Hydroxide (caustic soda)		NR
Crude Oil, Sour or Sweet	100	40
Detergents, Organic	100	-
Detergents, Sulfonated	ALL	-
Kerosene	100	-
Ethyl Acrylate, Ethyl Acrylate	100	NR
Ethyl Alcohol (Ethanol)	01 - 50	25
Ethyl Alcohol (Ethanol)	100	NR
Motor Oil	100	40
Ethyl Benzene/Benzene Blends	100	NR
Eucalyptus Oil	100	-
FattyAcids	ALL	25
Fuel Oil	100	25
Gasoline Regular Leaded, Unlesded	100	25
Gasoline, Alcohol Containing	100	-
Glycerine	100	-

“NR” - Not recommended

“-” - No limitations

“40” - maximum recommended temperature

ASTM C 581 has been developed to assist in determining if there is deterioration of a thermo set material when it is immersed in a corrosive medium. Long-term exposure and experience supports the data that has been obtained from laboratory tests carried out in accordance with ASTM C581.

The content of this Chemical Resistance Guide provides general guidelines intended to assist customers in determining whether the products are suitable for their applications. All products are intended for sale to knowledgeable industrial and commercial customers. Customers are required to inspect and test products before use and satisfy themselves as to the suitability for their specific end-use. These general guidelines are not intended to be a substitute for customer testing.

6. Environment resistance:

In general products showing sufficient endurance to atmospheric precipitation, direct sunlight and cold/hot temperatures. Nevertheless to ensure the long lasting and reliable operation, the product's body temperature should not exceed 65°C.

7. Mechanical endurance: Static load test up to 2000 kg.

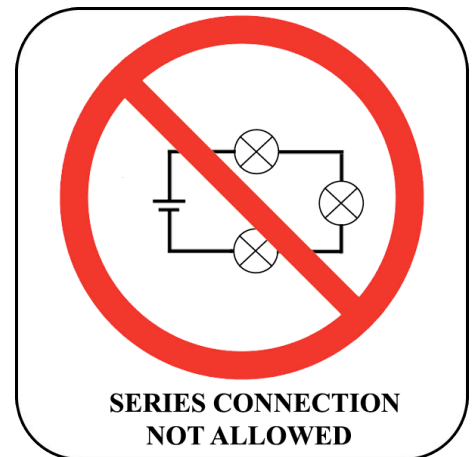
8. Wiring: Products are fitted with cable type H05RN-F suitable for outdoor installation.

9. **Power consumption:** Thanks to the low power consumption of the products an additional advantage achieved by means of a smaller amount of voltage converters required to supply the units.

The table below showing **an example** of how many particular products that can be connected to one 10, 35 or 100 W converter.

Model	W/unit	Units per one 10W converter	Units per one 35W converter	Units per one 100W converter
Alfa	0.84	11	41	119
Beta	1.68	5	20	59
Magnum	0.84	11	41	119
Glam	0.24-0.48	37 - 20	145 - 72	416 - 208
Natur	0.24-0.48	37 - 20	145 - 72	416 - 208
Boulder 1, 2	0.84	11	41	119

10. Installation have to be performed taking into consideration the following restrictions:



11. **Changes:** This General Product's Data Sheet is subject to change without notice in an effort to provide the most up-to- date data.

Prague, 25.05.2011