

LED P 212

High efficient and high luminous flux powerLED chain



- high flux powerLED chain
- small CCT tolerance band
- colour temperature white:
 - warm white (ww): 3000K
 - neutral white (nw): 4200K
 - daylight white (dl): 6500K
- 40° and 140° light distribution pattern
- compact design including lens
- homogeneous light distribution
- excellent thermal management
- low thermal resistance $R_{thj-b} < 11 \text{ K/W}$
- pre-mounted thermal conductive adhesive tape
- integrated protection against reversed polarity
- coated with protective varnish for applications where condensation occurs
- typical applications:
 - task lighting
 - signs and channel letter
 - edge lit signs
 - architectural lighting
 - shelf illumination

LED

type	article number	colour	colour temp. wavelength	power W	luminous flux		supply current mA	ta °C	tc max. °C ⊕	length L mm	packing unit
					min.	typ.					
LED P 212 R 140°	89600260	red	619–629 nm	6.0	71.0	101.0	350.0	-25 → +45	75	ca. 500	5
LED P 212 A 140°	89600261	amber	584–594 nm	6.0	64.0	96.9	350.0	-25 → +45	75	ca. 500	5
LED P 212 G 140°	89600263	green	tba	6.0	tba	tba	350.0	-25 → +45	75	ca. 500	5
LED P 212 B 140°	89600262	blue	455–465 nm	6.0	20.0	25.0	350.0	-25 → +45	75	ca. 500	5
LED P 212 WW warm 140°	89600266	warm white	3000 K	6.0	49.5	75.0	350.0	-25 → +45	75	ca. 500	5
LED P 212 NW neutral 140°	89600264	neutral white	4200 K	6.0	66.5	100.0	350.0	-25 → +45	75	ca. 500	5
LED P 212 DL daylight 140°	89600265	daylight white	6500 K	6.0	82.5	125.0	350.0	-25 → +45	75	ca. 500	5
LED P 212 R 40°	89600267	red	619–629 nm	6.0	71.0	101.0	350.0	-25 → +45	75	ca. 500	5
LED P 212 A 40°	89600268	amber	584–594 nm	6.0	64.0	96.9	350.0	-25 → +45	75	ca. 500	5
LED P 212 G 40°	89600270	green	tba	6.0	tba	tba	350.0	-25 → +45	75	ca. 500	5
LED P 212 B 40°	89600269	blue	455–465 nm	6.0	20.0	25.0	350.0	-25 → +45	75	ca. 500	5
LED P 212 WW warm 40°	89600273	warm white	3000 K	6.0	49.5	75.0	350.0	-25 → +45	75	ca. 500	5
LED P 212 NW neutral 40°	89600271	neutral white	4200 K	6.0	66.5	100.0	350.0	-25 → +45	75	ca. 500	5
LED P 212 DL daylight 40°	89600272	daylight white	6500 K	6.0	82.5	125.0	350.0	-25 → +45	75	ca. 500	5

all values at $t_a = 25^\circ\text{C}$ and supply current = 350 mA

⊕ The powerLED spot module LED P 213 needs to be mounted onto a heat sink.

However, it is allowed to operate the LED P 212 without heat sink for a short period of time.

For details please refer to thermal design and heat sink information in this data sheet.

Choice of control gear/protection functions

powerLED modules from TridonicAtco are not protected against overvoltages, overcurrents, overloads or short-circuit currents. Safe and reliable operation can only be guaranteed in conjunction with control gear that complies with the relevant standards. The use of powerLED converters from TridonicAtco in combination with powerLED modules guarantees the necessary protection for safe and reliable operation of the powerLED modules.

If control gear other than TridonicAtco powerLED control gear is used, it must provide the following protection:

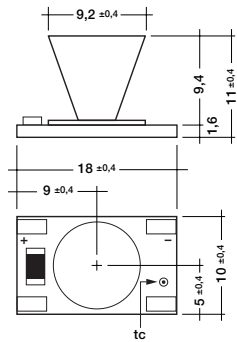
- SELV
- Short-circuit protection
- Overload protection
- Overtemperature protection

Electrical connection

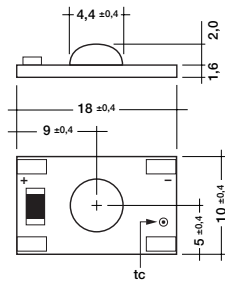
The powerLED chain LED P 213 shall be supplied by a constant current converter with an output current of 350 mA max.

- connection method: supply wires 200 mm
- identification of polarity:
 - + red
 - black

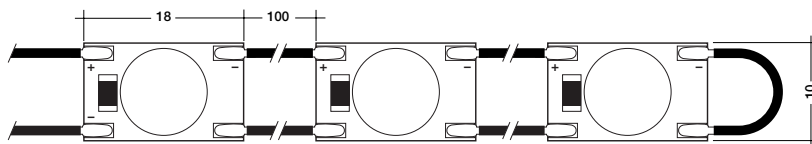
Mechanical dimensions



single module LED P 212 with lens



single module LED P 212 without lens



complete chain LED P 212 consisting of five single modules

Thermal design and heat sink

The rated life of the powerLED products depends to a large extent on the temperature. If the permissible temperature limits are exceeded, the life of the powerLED module will be greatly reduced or the powerLED module may be destroyed.

Therefore the powerLED chain LED P 212 needs to be mounted onto a heat sink. However, it is allowed to operate the LED P 212 without heat sink for a short period of time.

TridonicAtco's excellent thermal design for the powerLED products provides the lowest thermal resistance and therefore allowing new compact designs without sacrificing quality, safety and life time.

Basic rule:

The better the cooling of a powerLED module, the longer its life expectancy.
The better the cooling of a powerLED module, the higher its luminous flux.

powerLED modules from TridonicAtco which have to be installed on a heat sink are equipped as standard with thermally conductive adhesive tape on the back of the pc board.

These powerLED products must be installed with this adhesive tape. To ensure permanent adhesion the fixing/cooling surface must be cleaned before installing the powerLED modules to remove all dirt, dust and grease. For further information please refer to TridonicAtco "powerLED Installation guidelines".

Temperature and service life, Tc point, ambient temperature Ta

Compliance with the maximum permissible reference temperature at the Tc point must be checked under operating conditions in a thermally stable state. The maximum value must be determined under worst-case conditions for the relevant application.

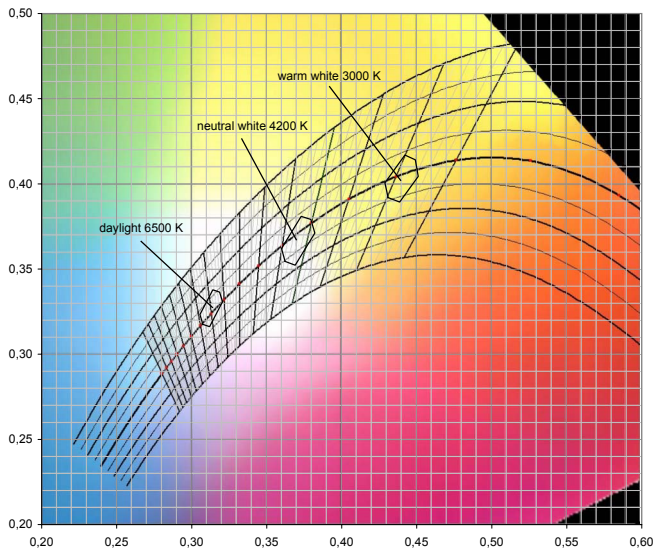
Recommended heat sink size

values for aluminium > 1 mm thick, tc = 75 °C, ta = 45 °C

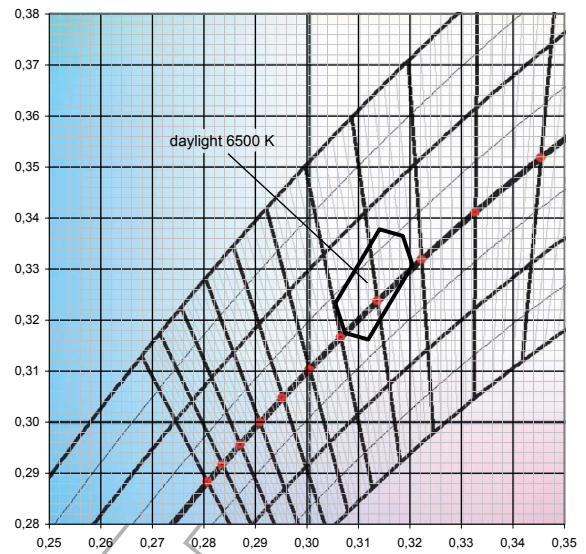
Type	A	Rth
single module LED P 212	23.0 cm ²	22 K/W
full chain LED P 212	115.0 cm ²	4.4 K/W

It has to be ensured that tc max. value is not exceeded within the specific application.

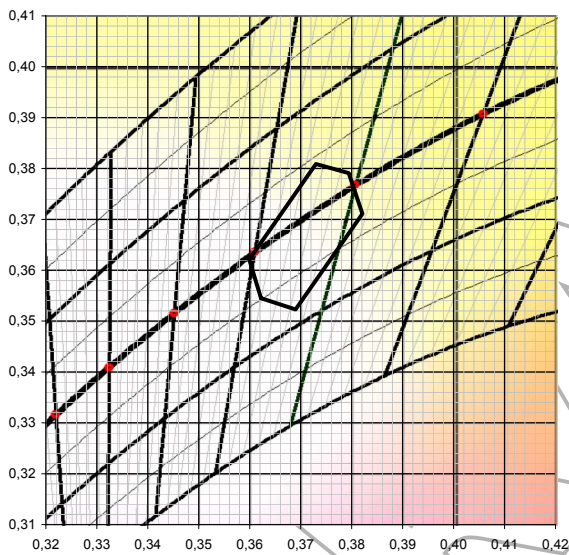
Corresponding colour temperatures and CIE coordinates



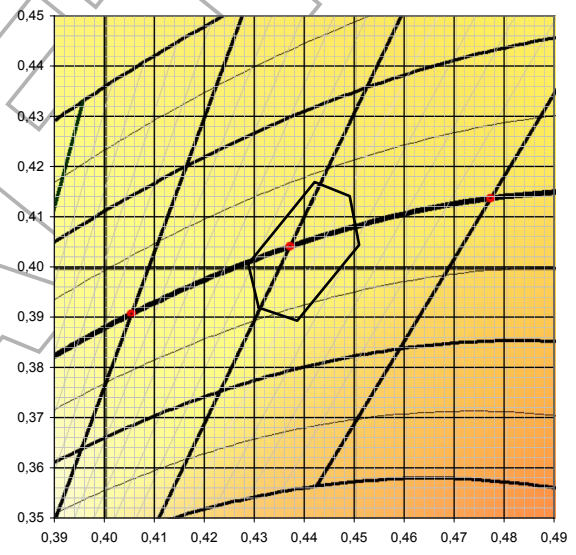
CIE coordinates overview



CIE coordinates detailed 6500 K



CIE coordinates detailed 4200 K

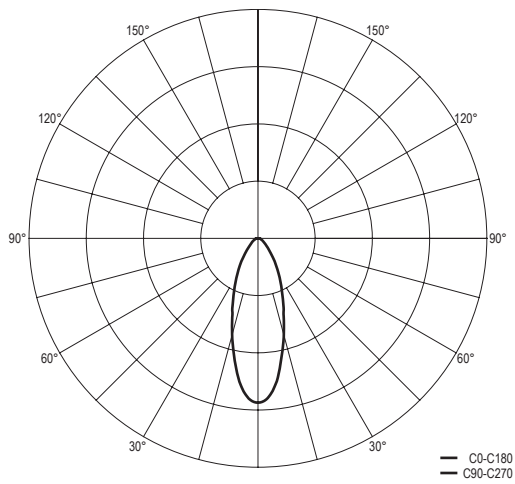


CIE coordinates detailed 3000 K

CIE coordinates nominal and tolerances

Corresponding colour temperature	CCT	nominal CIE coordinates		CIE tolerance area											
		x0	y0	x1	y1	x2	y2	x3	y3	x4	y4	x5	y5	x6	y6
warm white	3000 K	0.4400	0.4030	0.4309	0.3919	0.4288	0.4006	0.4421	0.4169	0.4491	0.4141	0.4510	0.4044	0.4386	0.3893
neutral white	4200 K	0.3710	0.3666	0.3622	0.3545	0.3599	0.3621	0.3730	0.3809	0.3794	0.3791	0.3821	0.3711	0.3690	0.3523
daylight	6500 K	0.3130	0.3270	0.3074	0.3175	0.3055	0.3233	0.3141	0.3378	0.3186	0.3365	0.3205	0.3308	0.3119	0.3162

Light distribution patterns



Light distribution pattern single module LED P 212 40° lens
Through the special design of the powerLED lens system an optimum of homogeneity for the light distribution is ensured.

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