NORMALIT

Markt

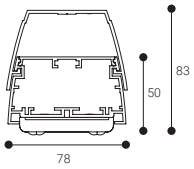
Markt is a linear lighting system for supermarkets and malls.

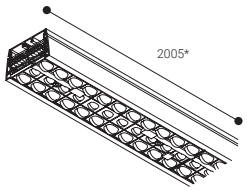
It has a connection system that allows continuous lighting line of pieces of two meters.

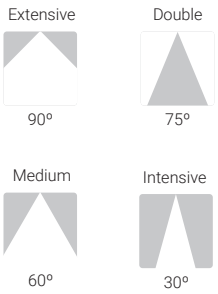
There are four different optics available that allows to direct the light wherever it is more convenient: Intensive (30º), medium (60º), extensive (90º) and double asymetric (75º).

LED CE DALI

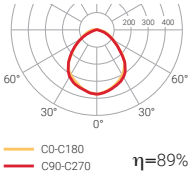
Markt





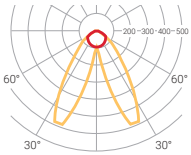


Extensive optics



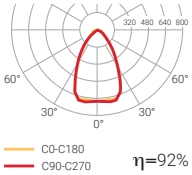
η=89%

Double optics



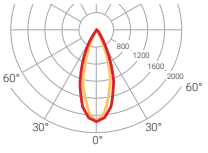
η=96%

Medium optics



η=92%

Intensive optics



η=95%

Sede central / Headquarters: Parque Tecnológico de Asturias. C/ Ablanal, 1. 33428 Llanera (Asturias). España / Spain. **Normagrup UK** Unit 5 Ninian Park. Ninian Way. Tame Valley. Tamworth. B77 5ES / **Normagrup Netherlands** Korte Huifakkerstraat 18. 4815 PS Breda, The Netherlands / **Normagrup Francia** 27 Rue Edouard Lang. 76600 Le Havre. France / **Normagrup México** Gral. Mariano Escobedo 353-A of.502. Col. Polanco Sección V. Del. Miguel Hidalgo, CDMX. C.O. 11570, México. **normagrup.com**

Normagrup

Markt

Industrial

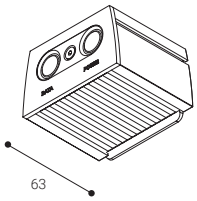
	Markt
Installation	Ceiling suspended mounted Ceiling surface mounted
Diffuser	
Light source	LED
Photobiological safety	1
UGR	19
CRI	>80
MacAdam ellipse	3
Beam angle range	30-90
Power range (W)	76,4-112,7
Consumption range (W)	84,1-124
Colour temperature (ºK)	3000 | 4000
Light range	12320-18410
Power factor	0,95
Efficiency (%)	89-96
Expectancy	60000 h L70B10
DALI Option	✓
Continuous function 24h	✓
IP	40
Class	I

PMMA lens

Accessories

Power supply

		COLOUR
	MKIB	○
	MKIN	●
DALI	MKIDB	○
DALI	MKIDN	●

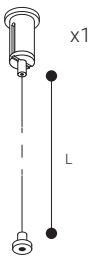


End cover

	COLOUR
MKFB	○
MKFN	●

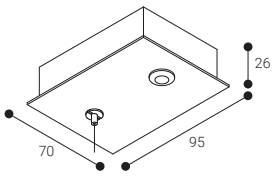
Suspension accessory

	L (m)
1029L2	2
1029L4	4



Connection box and power supply cable

		POWER SUPPLY CABLE LENGHT	COLOUR
	ETC1029B	2	○
	ETC1029N	2	●
	ETC10294MB	4	○
	ETC10294MN	4	●
DALI	ETC10295PB	2	○
	ETC10295PN	2	●
	ETC10295P4MB	4	○
	ETC10295P4MN	4	●

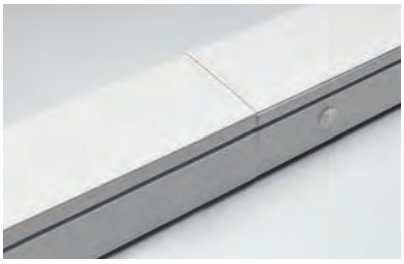


Sede central / Headquarters: Parque Tecnológico de Asturias. C/ Ablanal, 1. 33428 Llanera (Asturias). España / Spain. **Normagrup UK** Unit 5 Ninian Park. Ninian Way. Tame Valley. Tamworth. B77 5ES / **Normagrup Netherlands** Korte Huifakkerstraat 18. 4815 PS Breda, The Netherlands / **Normagrup Francia** 27 Rue Edouard Lang. 76600 Le Havre. France / **Normagrup México** Gral. Mariano Escobedo 353-A of.502. Col. Polanco Sección V. Del. Miguel Hidalgo, CDMX. C.O. 11570, México. **normagrup.com**

Normagrup

Markt

Industrial



Sede central / Headquarters: Parque Tecnológico de Asturias. C/ Ablanal, 1. 33428 Llanera (Asturias). España / Spain. **Normagrup UK** Unit 5 Ninian Park. Ninian Way. Tame Valley. Tamworth. B77 5ES / **Normagrup Netherlands** Korte Huifakkerstraat 18. 4815 PS Breda, The Netherlands / **Normagrup Francia** 27 Rue Edouard Lang. 76600 Le Havre. France / **Normagrup México** Gral. Mariano Escobedo 353-A of.502. Col. Polanco Sección V. Del. Miguel Hidalgo, CDMX. C.O. 11570, México. **normagrup.com**

Normagrup

Photobiological security

The European Norm for photobiological security (EN 62471) establishes a number of criteria to determine if a luminaire entails any risk of eye or skin damages.

This regulation determines four photobiological risk groups:

GROUP OF RISK	
RG0	Risk free
RG1*	Low risk
RG2	Moderate risk
RG3	High risk

* Time under 3 h.

Flickering

Also known as **periodical blinking or the light source of a luminaire** (stroboscopic effect), it is present in alomost all the artificial light sources and is caused by the looping ouf the output current in the LED driver.

This rate below makes it possible to measure the significance of the problem:

- A flickering under 15% prevents dizziness, nausea and headaches.
- Under 8% this flickering is not considered to be harmful (according to IEEESA-1789-2015).

Led expectation

The expectation of useful life of the LED has been defined by an indicator such as the one shown at the right of this page. In the mentioned example, at 60,000h, 90% of the luminaires will have an output equal to or greater than 70% of the nominal value.

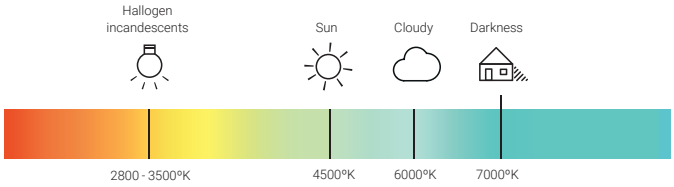
60.000 h · L70 B10

Hours | **% of incidences**

% of light against the initial value

Colour temperature

The colour emitted by a light source in comparison with the light that a black body heated at a specific temperature would emit. For this reason, this colur temperature is expressed in kelvin, in spite of not reflecting specifically a temperature. There are basically three groups:



Warm light
3500ºK or lower temperature colour.
It is equivalent to the light produced by incandescent and hallogen lamps in the past. It is recommendable for retail stores, fruit shops, bakeries, groceries and butcheries (in these two latests it is even more common a light in a pink tone). For domestic lighting it is recommended to use this type of light in rooms such as the living room or the bedrooms, places for **rest and relax**.

Neutral light
Temperature ranges from 3800ºK and 4500ºK.
According to the experts this is the most natural light. It can be installed in any environment not requiring any special tone that the other two categories could provide.

Cold light
Colour temperatures above 5000ºK.
It is equivalent to the light in a very sunny or cloudy day. One of the advantages of the cold light is the higher lumen output, which creates a perception of higher luminosity. This type of light is recommended for fish markets and jeweleries. For homes, it is very common to find it in kitchens and toilets. However the experts in make up always recommend cold lights as they offer an advantage, which is that they provide a better chromatic range.

Light performance η

It indicates the real flux. Defines the luminic efficiency of a luminaire.

ELIT (ref. EL23)

1930 lm | η 95% | **REAL FLUX** 1,833.5 lm

HAT (ref. EH23)

2300 lm | η 75% | **REAL FLUX** 1,725 lm

Lower lumen output, better efficiency