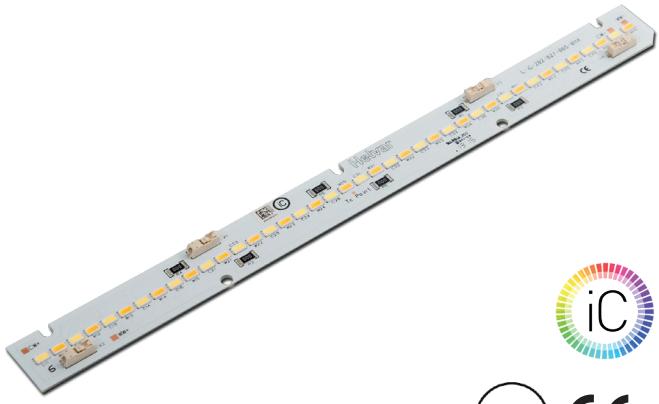
L-iC-282

Tunable White Linear **LED Module**, L-iC-Series

Helvar
freedom in lighting

- Tunable White module, adjustable colour temperature 2700 K to 6500 K
- High efficacy, up to 160 lm/W
- Accurate colour matching (SDCM), 4-step MacAdam
- High colour rendering index CRI > 80
- Easy connection with push-in connectors
- Easy installation

450 mA, 14.8 V



	Colour	Luminous flux Φv			Forward voltage						Power consumption	Efficacy	CRI
		Tc= 50 °C			Tc= 25 °C			Tc= 50 °C			Tc= 50 °C	Tc= 50 °C	
	(K)	Min. (lm)	Nom. (lm)	Max (lm)	Typ (V)	Min. (V)	Max. (V)	Typ (V)	Min. (V)	Max. (V)	Typ. (W)	Typ. (lm/W)	(Ra)
Nominal @ 450 mA													
	2700	960	990	1020	15.1	14.4	15.6	14.9	14.2	15.4		150	
L-iC-827-865-011A	TW *	990 - 1060			15.1	-	-	14.9	-	-	6,60 *	155*	>80
	6500	1030	1060	1100	15.1	14.4	15.6	14.9	14.2	15.4		160	

*) *Tunable white on dynamic range typical values*

Electrical specifications

at Tc = 50 °C	L-iC-282 Min.	Nom.	Max
Operating Current (mA)*	-	450	600
Operating Voltage /ch (V)	-	14.9	-
Power Consumption (W)	-	6.6	-

*) *Direct current supply only*

Maximum rated voltage in circuit	250 V (r.m.s) *(addtional information on p.4)*
Insulation test voltage	1.5 kV
Max. permissible peak current	1.2 A (Duty 1/10 pulse width 10ms)
IP rating	IP00

Colour specification

Colour consistency at initial time	4 MacAdam steps
Colour Rendering Index	> 80 RA

Operating Conditions and Characteristics

Max.temperature at tc point	75 °C
Operating temperature range	-20...+50 °C
Humidity	no condensation
Life time (L70B50)	50 000 h, at Tp= 65 °C

Connections and Mechanical Data

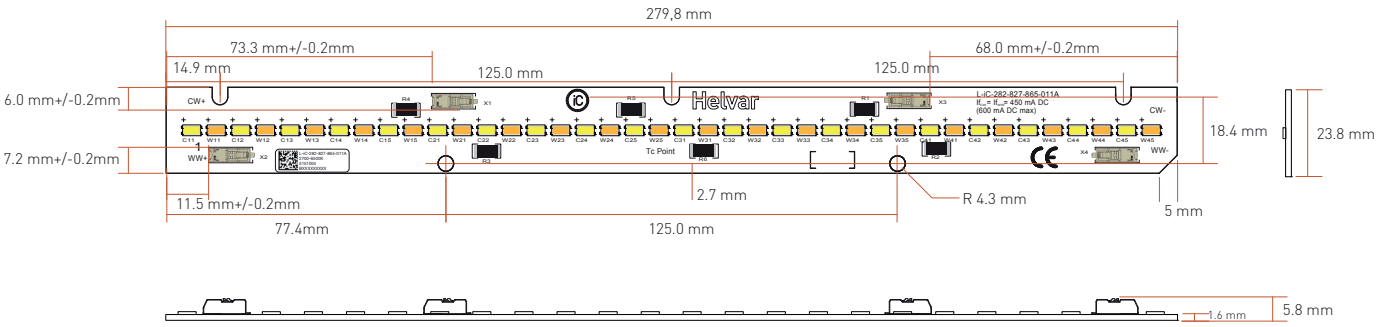
Wire size	0.2 - 0.75 mm² , solid core 0.2 - 0.34 mm² , stranded
Wire strip length	7-9 mm
Wire type	solid core and fine-stranded
PCB material	CEM-3 type, PLC3, UL94V-0

Conformity & Standards

Photobiological safety of lamps and lamp systems	IEC TR 62778:2014
Led modules for general lighting - safety specifications	IEC 62031:2008 + A1:2012 + A2:2014

Compliant with relevant EU directives, CE marked, ROHS compliant

Dimensions



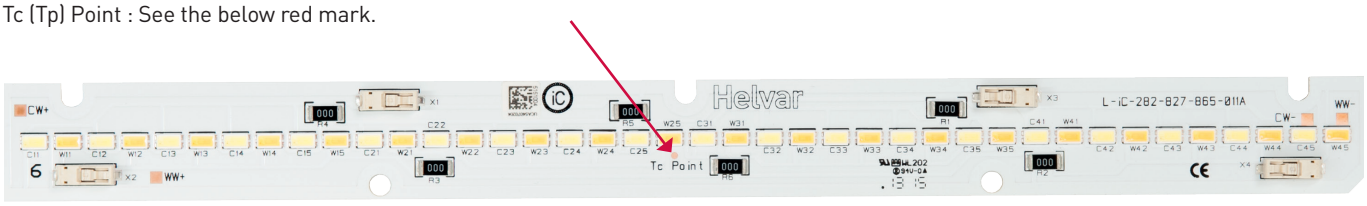
Length	279.8 mm +/- 0.2 mm
Width	23.8 mm +/- 0.2 mm
Thickness of PCB	1.6 mm +/- 0.1 mm
Height	5.8 mm +/- 0.3 mm
Height excl. connector	2.3 mm +/- 0.2 mm

Packing details	1 Tray	1 Box
Num. of modules	60	300

ESD foam trays, antistatic bag and carton box

Thermal Management

Tc (Tp) Point : See the below red mark.

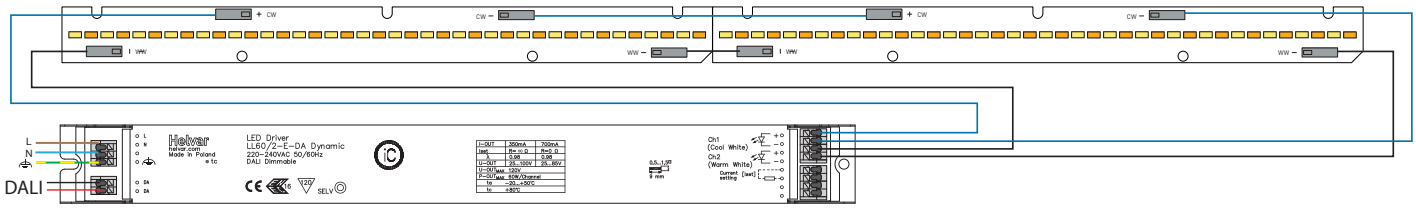


Connection

Following diagram show examples how to connect multiple L-iC-282 LED modules with Helvar LED drivers.

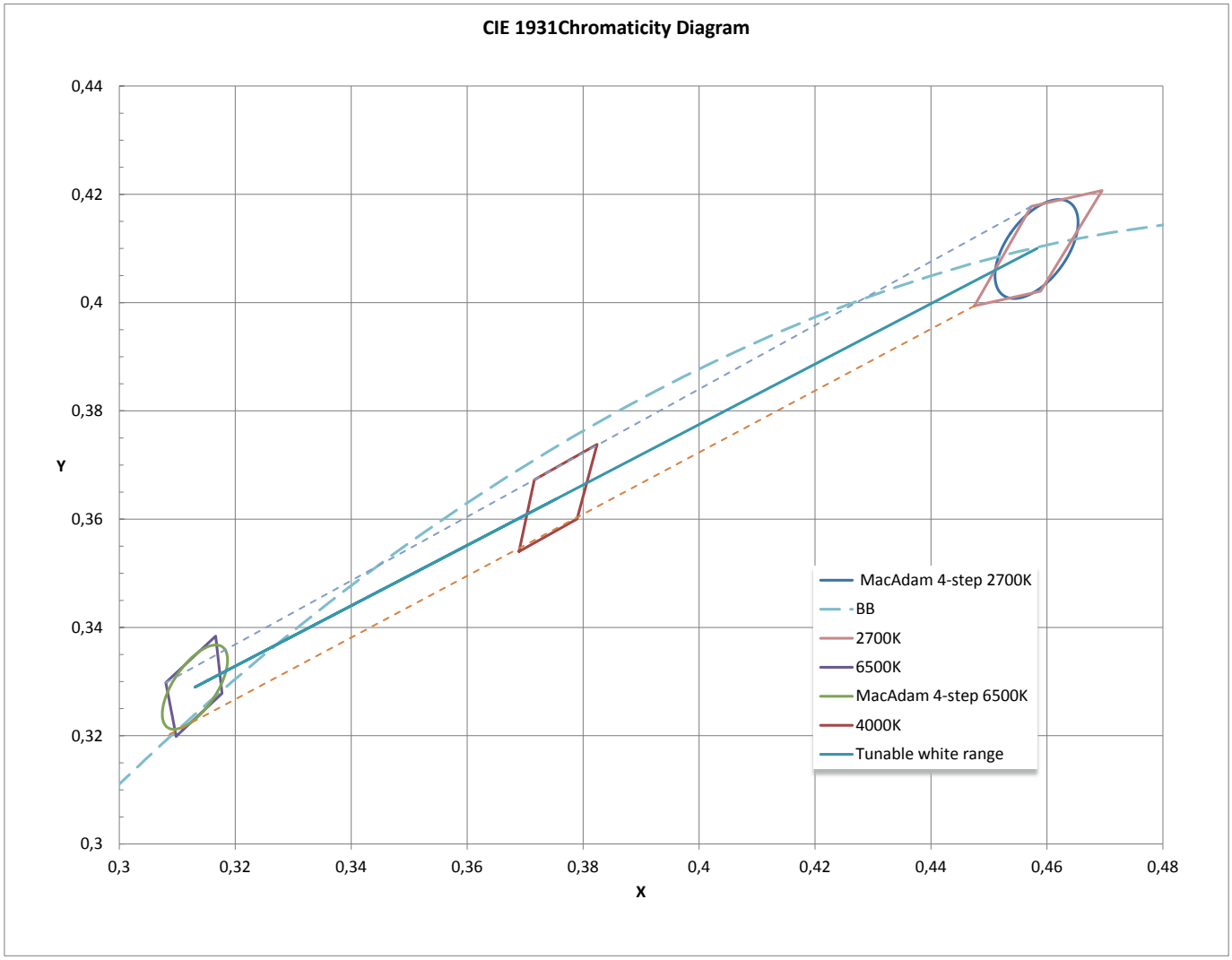
SELV < 120 V solution examples

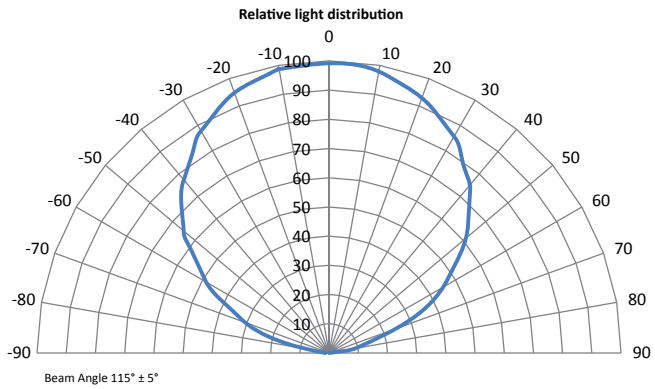
L-iC-282 modules series connected with Helvar LL60/2-E-DA-iC LED driver @ 450 mA

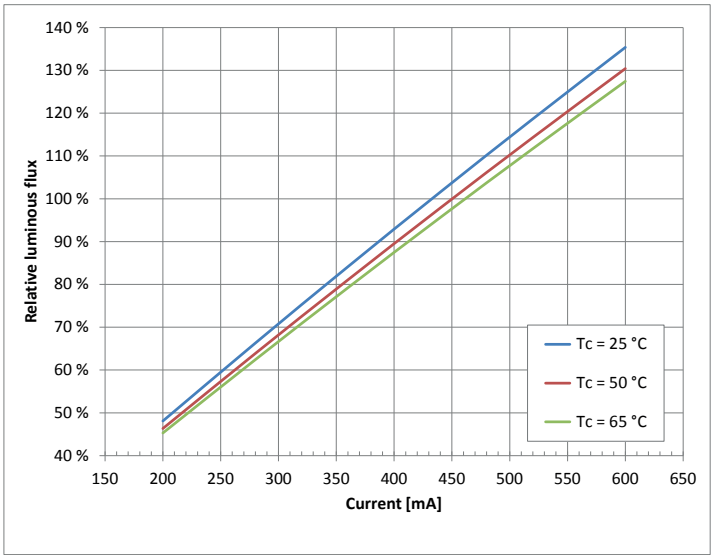


		No. Of modules					
	I_fv	**1**	**2**	**3**	**4**	**5**	**6**
Vf	450mA	14,8 V	29,6 V	44,4 V	59,2 V	74,0 V	88,8 V
	600mA	15,4 V	30,7 V	46,1 V	61,4 V	76,8 V	92,1 V
	350mA	14,4 V	28,8 V	43,2 V	57,6 V	72,0 V	86,4 V
Flux	450mA	1055 lm	2110 lm	3165 lm	4220 lm	5275 lm	6330 lm
	600mA	1370 lm	2740 lm	4110 lm	5480 lm	6850 lm	8220 lm
	350mA	830 lm	1660 lm	2490 lm	3320 lm	4150 lm	4980 lm
LL35/2-E-DA-iC	450mA	-	series	series	series	-	-
	600mA	-	series	series	-	-	-
	350mA	-	series	series	series	series	series
LL60/2-E-DA-iC	450mA	-	series	series	series	series	series
	600mA	-	series	series	series	series	series
	350mA	-	series	series	series	series	series

Photometric characteristics







In order to have safe and reliable operation, the LED luminaires will need to comply with the relevant standards and regulations (e.g. IEC/EN 60598-1). The LED luminaire shall be designed to adequately protect the LED modules from dust, moisture and pollution. The luminaire manufacturer is responsible for the correct choice and installation of the LED module / LED driver combination according to the application and product datasheets. Specifications of the LED modules may never exceed the operating conditions as per the product datasheets.

HANDLING OF THE LED MODULES

LED modules contain components (LED packages, chips) that are sensitive for mechanical stress, electrostatic discharge (ESD) and chemical contaminants. Improper handling of the modules might cause damage or even destruction of the LED modules. Damaged LEDs may show some unusual characteristics such as increase in leakage current, lowered turn-on voltage, or abnormal lighting of LEDs at low current. Please follow following instructions and the precautions given in the product datasheets while handling and assembling Helvar LED modules.

Storage conditions

- Unused LED modules are recommended to stored carefully in an original sealed ESD package preventing moisture, pollutants or ESD to cause damage the module.
- Storage temperature range: -20...+80 °C

Opening the package / resealing

- LED modules are kept in stable protected environment in the packaging, open the package only when you are ready to use the LED modules. If resealing of the original package is required remove excess air from the packaging and place the moisture absorber (silica-gel bag) in to the packaging and seal the ESD back with adhesive tape.

ESD precautions at luminaire assembly site

The LEDs are sensitive to the electrostatic discharge (ESD) and surge current. If voltage exceeding the absolute maximum rating is applied to LEDs, it may cause damage or even destruction to LED devices.

- EN 61340-5-1: Protection of electronic devices from electrostatic phenomena – General Requirements describes procedures for protection for damage caused by electrostatic discharge while handling electronic devices, following list lists basic protective measures described in the standard.

ESD protection measures in handling and assembling LED modules

- Employee training for correct handling
- Personnel grounding via wrist band / footwear
- ESD protective clothing / shoes
- Handle LED modules only in ESD protected areas and workplaces

Chemical considerations

Chemical substances may cause damage the LED module by causing discoloration, loss of luminous flux or total failure of the module.
Avoid materials and substances containing:

- VOCs - Volatile Organic Compounds that may occur in adhesives, or sealings. Verify that the materials used in the luminaires are not causing VOCs.
- Halogen compounds
- Chlorine
- Acetates
- Sulphuric compounds

Never look directly into an operational LED module without suitable protective eye wear!

ELECTRIC & THERMAL CONSIDERATIONS

Wiring insulation

- According to recommendations in EN 60598

Wire connections

- Please refer to LED driver datasheets connections diagram
- Wrong polarity might damage the LED modules

Choosing the LED driver

- To guarantee the safe and reliable operation of the L-iC-series LED-modules the LED driver must be provided with open and short circuit protection.
- L-iC-Series modules are degined to be used with constant current output type LED driver

Electrical design, electrical safety

During the design it is luminaire manufacturers responsibility to follow the international and national electric design regulations and recommendations for the electric safety and luminaire protection. Electric safety classification and protection class is depending on:

- Actual luminaire design and safety classification
- LED driver insulation
- LED driver output isolation (safety isolating, non-isolated

ALWAYS CHECK AND FOLLOW EXACT REGULATIONS FROM LATEST RELEVANT IEC/EN STANDARDS.

Installation considerations

The L-iC-series modules are basic insulated up to 250 V (when mounted with plastic screws or clips or with combination of M4 metal screws and insulating washers) against ground and can be installed on earthed metal parts of the luminaire.
Please follow regulations from IEC60598-1 for creepage and clearance requirements.

Maximum tc & tp temperature

- Reliable operation is only guaranteed if the maximum tc point temperature is not exceeded under the conditions of use.
- Lifetime is only guaranteed if the maximum tp point temperature specified for lifetime is not exceeded under the conditions of use.

MECHANICAL CONSIDERATIONS

- While handling the modules avoid mechanical stress or pressure applied to light emitting surface.
- Avoid dropping of the LED modules
- Bending of the modules is not alloved
- Avoid touching the light emitting surface
- Mechanical modifications (drilling, milling, sawing and breaking of the module) are not permitted