LS-282A

Linear **LED Module**, LS Series

350 mA, 23.6 V

- Gen 2, high efficacy up to 163 lm/W
- Homogenous light distribution, 11.5 mm pitch between LEDs
- Accurate colour matching (SDCM), 3-step MacAdam
- High colour rendering index CRI > 80
- Easy connection with push-in connectors
- Modular product platform for design flexibility
- Easy installation
- Zhaga compliant dimensions
- Compatible with LEDiL optics*

See page 5 for details

	Nominal CCT	Useful luminous flux Φv			Forward voltage						Power consumption	Efficacy	CRI
		Tc= 65 °C			Tc= 25 °C			Tc= 65 °C			Tc= 65 °C	Tc= 65 °C	
	(K)	Min. (lm)	Typ. (lm)	Max (lm)	Min. (V)	Typ. (V)	Max. (V)	Min. (V)	Typ. (V)	Max. (V)	Typ. (W)	Typ. (lm/W)	(Ra)
Efficient @ 250 mA													
LS-282-830-011A	3000	850	890	930	22.1	23.4	24.5	21.4	22.8	23.8	5.7	155	> 80
LS-282-840-011A	4000	900	940	980	22.1	23.4	24.5	21.4	22.8	23.8	5.7	163	> 80
Nominal @ 350 mA													
LS-282-830-011A	3000	1180	1230	1280	23.0	24.1	25.4	22.3	23.6	24.7	8.2	149	> 80
LS-282-840-011A	4000	1240	1290	1340	23.0	24.1	25.4	22.3	23.6	24.7	8.2	156	> 80
Maximum @ 450 mA													
LS-282-830-011A	3000	1490	1550	1610	23.8	24.7	26.2	23.1	24.3	25.5	10.9	141	> 80
LS-282-840-011A	4000	1560	1620	1680	23.8	24.7	26.2	23.1	24.3	25.5	10.9	148	> 80

Electrical Specifications

at Tc = 65 °C	LS-282A Min.	Nom.	Max
Operating Current (mA)*	-	350	450
Operating Voltage (V)	-	23.6	25.5
Power Consumption (W)	-	8.2	-

*) *Direct current supply only*

Maximum rated voltage in circuit	400 V (r.m.s)
Insulation test voltage	1.8 kV
Max. permissible peak current	900 mA (Duty 1/10 pulse width 10ms)
IP rating	IP00

Photometric Specifications

Colour consistency at initial time	3 MacAdam steps
Colour Rendering Index	> 80 RA
Photobiological risk group	RG1 unlimited
Energy efficiency class (2019/2015)	D

Lifetime specifications

Operating current	Tc Temp.	L70B50	L70B20	L70B10	L80B50	L80B10	L90B50
Efficient 250 mA	65 °C	>50 000	>50 000	>50 000	>50 000	>50 000	>36 000
	80 °C	>50 000	>50 000	>50 000	>50 000	>46 000	>31 000
Nominal **350 mA**	65 °C	>50 000	>50 000	>50 000	>50 000	>49 000	>35 000
	80 °C	>50 000	>50 000	>50 000	>50 000	>45 000	>30 000
Maximum **450 mA**	65 °C	>50 000	>50 000	>50 000	>50 000	>48 000	>34 000
	80 °C	>50 000	>50 000	>50 000	>50 000	>44 000	>29 000

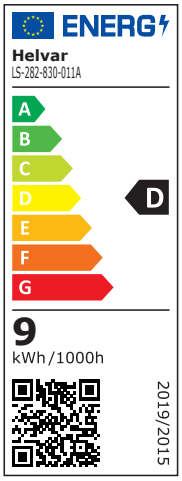
Lumen depreciation estimations in hours

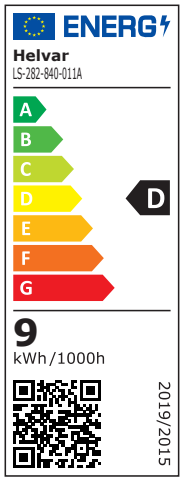
Operating Conditions and Characteristics

Tp point (performance measurements)	Tc = 65 °C
Max.temperature at tc point	80°C
Operating temperature range	-20...+50 °C
Humidity	no condensation

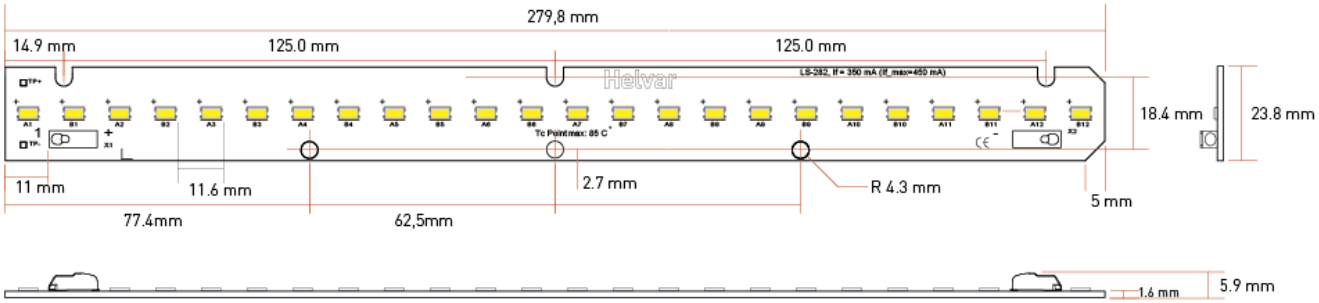
EPREL parameters

EPREL ID	1527900 (3000 K) 1527920 (4000 K)
Date of first placement on the market	01-07-2015
Angle for useful luminous flux	Sphere 360 degrees
Is the product equipped with an integrated light source?	No
Total luminous flux	1230 lm (3000 K) 1290 lm (4000 K)
Is this product a light source?	Yes
Beam angle in degrees	120
On-mode power Pon	8.2
Networked standby power Pnet	0
Lifetime L70B50	60000
Power Factor	—
Connected light source	No
Useful luminous flux Φuse	1230 lm (3000 K) 1290 lm (4000 K)
Non-directional or directional light source	NDLS
Mains or non-mains light source	NMLS
Colour-tuneable light source	No
Chromaticity coordinates x i y	x: 0.4343; y: 0,40286 (3000 K) x: 0.3825; y: 0,3798 (4000 K)
Dimmable	Yes (with dimmable control gear)
Peak luminous intensity	— cd
R9 colour rendering index value	4 (3000 K) 13 (4000 K)
Survival factor	> 0.9
Lumen maintenance factor X_{LMF}	> 0.96
Colour consistency in McAdam ellipses	3
Flicker metric PstLM	—
Standby power Psb	—
Stroboscopic effect metric SVM	—
Form of the product	Linear
Energy efficiency class 2019/2015	D (3000 K: 1230 lm / 8.2 W x 0.926 = 138.9 lm/W) D (4000 K: 1290 lm / 8.2 W x 0.926 = 145.7 lm/W)
Minimum purchase quantity	60 pcs
Displacement factor Df	—





Dimensions



Length	279.8 mm
Width	23.8 mm
Thickness of PCB	1.6 mm
Height	5.9 mm

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

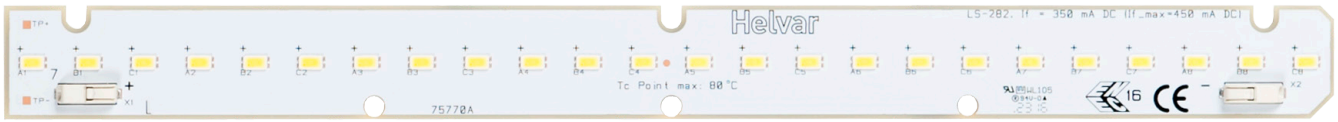
ESD foam trays, antistatic bag and carton box

Wiring specifications

Connector type	Push-in connector
Wire size	0.2 - 0.75 mm^2 , solid core
	0.2 - 0.34 mm^2 , stranded
Wire strip length	7-9 mm
Wire type	solid core and fine-stranded

Thermal Management

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

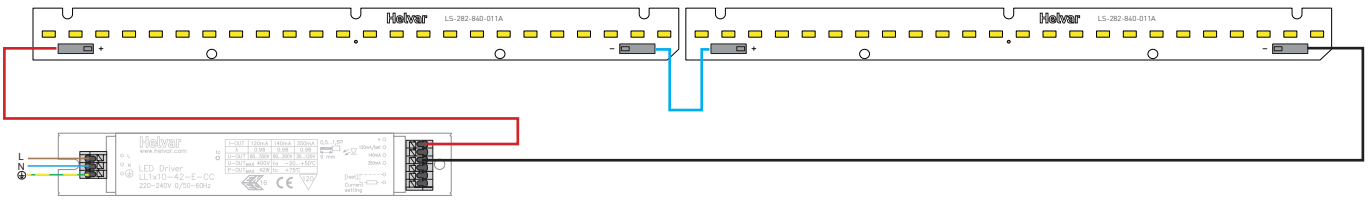


Connection

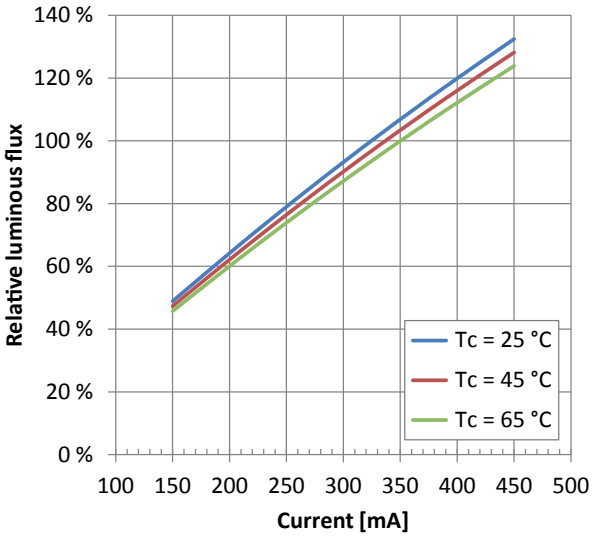
Following diagrams show examples how to connect multiple LED modules with Helvar Components LED drivers.

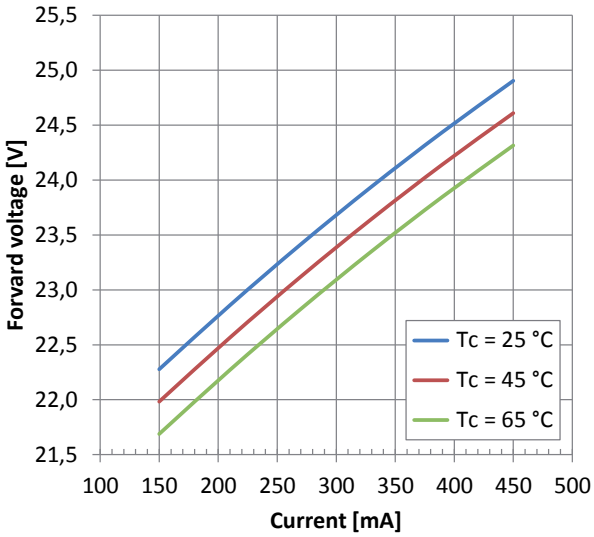
Non-isolated solution example

LS-282 modules series connected with Helvar Components LL10-42-E-CC LED driver @ 350 mA



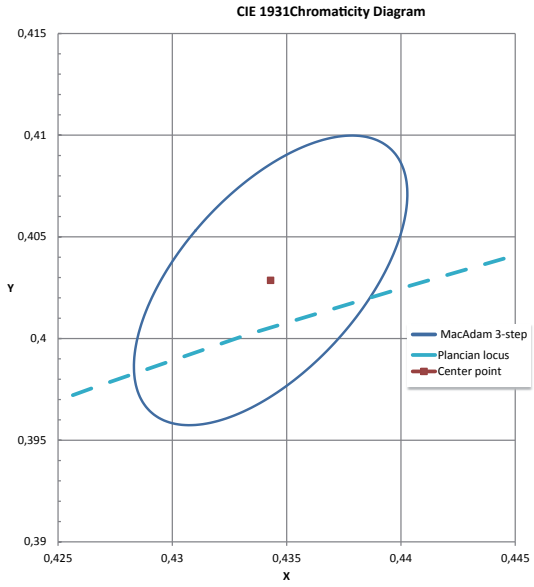
Specifications





Photometric characteristics

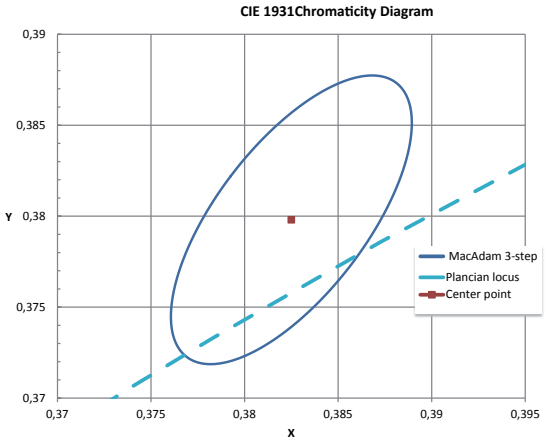
3000 K



3040 K	x0	y0
Center point	0,4343	0,40286

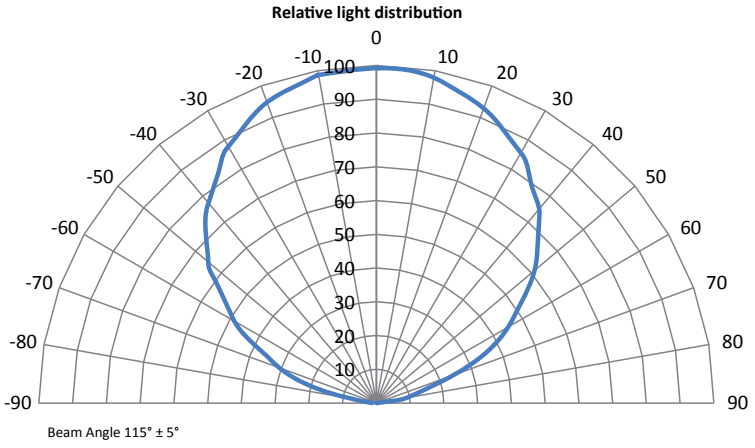
Tolerance Δx, Δy +/- 0.005

4000 K



3975 K	x0	y0
Center point	0,3825	0,3798

Tolerance Δx, Δy +/- 0.005



Beam Angle 115° ± 5°

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 Components 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 LS Series LED-modules the LED driver must be provided with open and short circuit protection.
- LS Series modules are designed 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 LS Series modules are basic isolated up to 400 V (when mounted with plastic screws or clips or with combination of M4 metal screws and insulating plastic 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. More information on LS Series installation guide ref 0220201A.

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

Conformity & standards

Led modules for general lighting - safety specifications	IEC / EN 62031
Photobiological safety of lamps and lamp systems	IEC / EN 62471 TR IEC / EN 62778
Compliant with relevant EU directives	
CE marked	
RoHS / REACH compliant	

All data were deemed correct at time of creation. Helvar Components is not liable for errors or omissions.

Compatible LEDiL optics

Following LEDiL optics are compatible with LS-282A LED module. More information about LEDiL optics is available at www.LEDiL.com.

F15523_LINNEA-90
F15524_LINNEA-60
F15756_LINNEA-O
F15860_LINNEA-Z2T25
F15861_LINNEA-ZT25
F16048_LINNEA-UP