

LED SOLUTIONS READYLINE S-E

DRIVER-ON-BOARD
TECHNOLOGY



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Built-in self ballasted LED solutions for direct connection to mains voltage

With so-called Driver-on-Board technology (DoB), the control gear unit is directly integrated into the LED module, which permits direct connection to mains voltage (220–240 V, 50/60 Hz).

The built-in LED solutions of the ReadyLine series are suitable for residential and furniture lighting, as a replacement for halogen, energy-saving and compact fluorescent lamps and get more freedom for creative design process.

Typical applications

- Replacement for compact fluorescent lamps (ideal for wall-mounted and ceiling-mounted luminaires)
- Integration in luminaires
- Residential lighting
- Architectural lighting
- Retail lighting
- Furniture lighting



ReadyLine S-E

- **DIRECT MAINS CONNECTION**
- **ACC. TO EU REGULATION 2019/2020 AND 2019/2015 (ECODESIGN)**
- **HIGH POWER FACTOR**
- **LONG SERVICE LIFE**
- **GLUED COVER TO PROTECT AGAINST ELECTRICAL SHOCK**

LED Solutions ReadyLine S-E

Built-in LED solutions with integrated driver for direct connection to mains voltage

Technical notes

Mains voltage: 220–240 V, 50/60 Hz

Power factor: > 0.97

Surge protection: ≥ 1 kV

Push-in terminals with push-button:

0.2–0.75 mm² (24–18AWG)

Initially colour accuracy: 3SDCM

Protection cover: PC, UV-glued or rivetted

(module with heat sink)

Fixation for modules

with heat sink: fixing holes for screws M4
or self-tapping screws 3.9

with cover: fixing holes for screws M3
or self-tapping screws 2.9

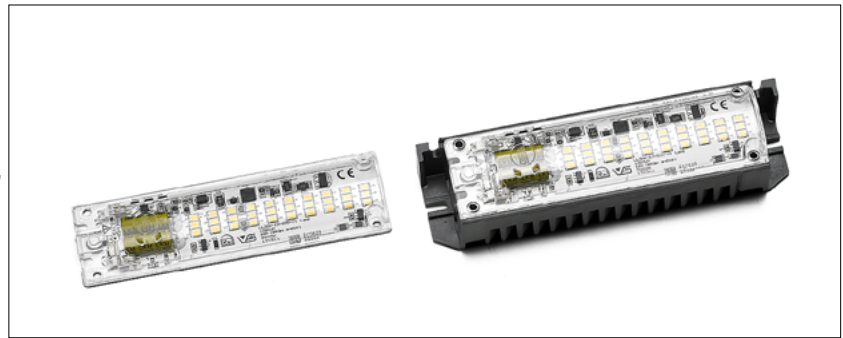
For luminaires of protection class I

RFI suppressed

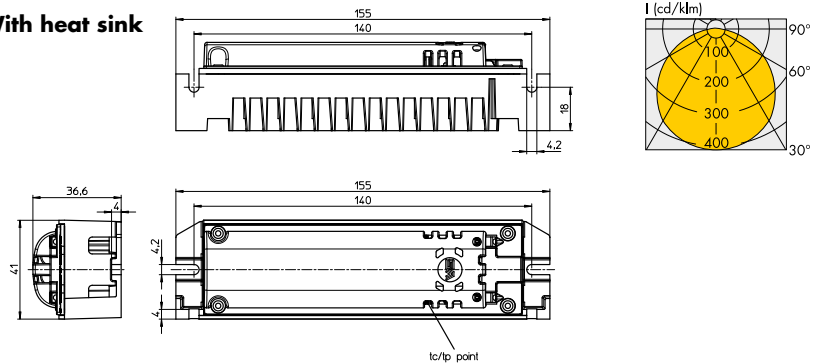
THD: < 20%

Weight: 35/140 g (without/with heat sink)

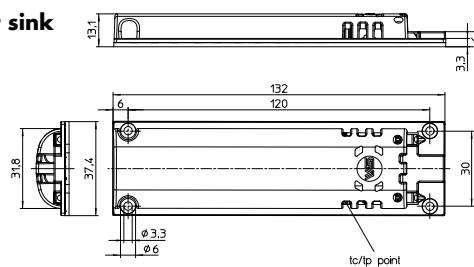
Packaging unit: 80/40 pcs. (without/with heat sink)



With heat sink



Without heat sink



Electrical Characteristics

at $t_p = 55^\circ\text{C}$

Type	Typ. supply voltage AC V	Operation frequency Hz	Inrush current mA	Typ. power consumption at 230 V (W)	Total harmonic distortion (THD) %	SVM	P_{sLM}	Percent flicker %
LL30W-8W-C	230	50/60	0.65	8	<20	<0,01	<0,1	<2
LL30W-13W-C	230	50/60	0.65	13	<20	<0,01	<0,1	<2

* Average value (not for specification purpose) | ** Optional for use in luminaires of protection class I | *** Mandatory for use in luminaires of protection class II

Maximum Ratings

Exceeding the maximum ratings can lead to reduction of service life or destruction of the modules.

Type	Power consumption W	Operation voltage range AC (V)		Operation temperature range at t_p point		Storage temperature range	
		min.	max.	$^\circ\text{C}$ min.	$^\circ\text{C}$ max.	$^\circ\text{C}$ min.	$^\circ\text{C}$ max.
LL30W-8W-C	8	220	240	-30	+85	-40	+85
LL30W-13W-C	13	220	240	-30	+85	-40	+85

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ReadyLine S-E – LED Solutions for Direct Connection to Mains 220–240 V

Operating Life

in hours at measured temperature at t_p point

Lumen maintenance	50 °C in hrs.	60 °C in hrs.	70 °C in hrs.	80 °C in hrs.	50 °C in hrs.	60 °C in hrs.	70 °C in hrs.	80 °C in hrs.
	LL30W-8W-C				LL30W-13W-C			
L90/B10	40,000	40,000	35,000	30,000	40,000	35,000	80,000	25,000
L80/B10	> 50,000	50,000	45,000	40,000	50,000	45,000	40,000	35,000
L70/B10	> 50,000	> 50,000	50,000	45,000	> 50,000	50,000	45,000	40,000

Lifetime L70/B50, >50,000 hrs at $t_p = 70\text{ °C}$

Optical Characteristics

Max. output W	Type	Ref. No.		Colour	Correlated colour temperature K	Cover	Luminous flux (lm) and typ. efficiency (lm/W)*				CRI
		with heat sink	without heat sink				at T _p =25°C		at T _p =55°C		
							lm	lm/W	lm	lm/W	R _a
8	LL30W-8W-C-927	571902	571891	warm white	2700	clear	695	87	660	83	90
		571903	571892			diffuse	645	81	615	77	90
	LL30W-8W-C-930	571904	571893	warm white	3000	clear	695	87	660	83	90
		571905	571895			diffuse	645	81	615	77	90
	LL30W-8W-C-940	571906	571897	neutral white	4000	clear	730	91	700	88	90
		571907	571900			diffuse	680	85	650	81	90
13	LL30W-13W-C-927	571914	571908	warm white	2700	clear	1075	83	1025	79	90
		571915	571909			diffuse	995	77	950	73	90
	LL30W-13W-C-930	571916	571910	warm white	3000	clear	1075	83	1025	79	90
		571917	571911			diffuse	995	77	950	73	90
	LL30W-13W-C-940	571918	571912	neutral white	4000	clear	1130	87	1080	83	90
		571919	571913			diffuse	1050	81	1000	77	90

Accessories	Description	Tape thickness	Thermal conductivity	Breakdown voltage**
553427***	Thermally conductive transfer tape, non-adhesive	0.25 mm	2 W/mK	3 kV
555008****	Thermally conductive transfer tape, adhesive on both sides	0.19 mm	0.9 W/mK	10.3 kV

* Production tolerance of luminous flux and efficiency: $\pm 10\%$ - CRI ± 3

** Average value (not for specification purpose) | *** Optional for use in luminaires of protection class I | **** Mandatory for use in luminaires of protection class II
Other colour temperature or CRI values on request - Minimum order quantity: ???

Selection of automatic cut-outs

Type	Automatic cut-out type and possible no. of VS drivers / pcs.)					
	B 10 A	B 16 A	B 20 A	C 10 A	C 16 A	C 20 A
LL30W-8W-C	285	455	570	285	455	570
LL30W-13W-C	175	280	350	175	280	350

Logistics information

Type	Packaging dimensions LxVxH (mm)	Packaging unit/ minimum order quantity			Weight single g	Gross Weight package g
		pcs.	pcs./tray	trays/box		
LL30W-xxW-C without heatsink	600x400x80	80	20	4	35	3860
LL30W-xxW-C with heatsink	600x400x80	40	20	2	145	6560

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Thermal Tapes for ReadyLine S-E Solutions

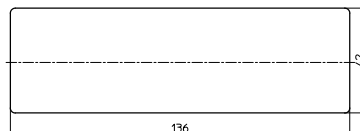
Thermally conductive transfer tape, non-adhesive

Ref. No.: 553427



Thermally conductive transfer tape, adhesive on both sides

Ref. No.: 555008



ReadyLine S-E – tested dimmers

LED modules ReadyLine S are dimmable with common phase-cut dimmers. The minimum dimming load has to be respected. The compatibility of the LED modules with the dimmer has to be confirmed prior to installation.

- Relco DimLED 34/65
- Relco DT/ACR
- Relco LT 1 UN
- Relco SNELLO/ACR (RL7180 – RL7190)
- Relco RONDO/CR (RL7181 – RL7191)
- Zano ZANOWH250

ReadyLine S-E

Assembly and Safety Information

The LED modules are designed for direct mains operation (230 V AC). Installation must be carried out under observation country specific relevant safety regulations and standards.

- The LED module is a built-in lighting module to assemble into luminaires.
- Suitable for luminaires of protection class I, grounding is mandatory to comply with safety standards.
- In case of applications in luminaires of protection class II the safety regulations acc. to luminaire safety standards must be observed.
- Operation of the LED module is not allowed when it is not built-in into a luminaire. Depending on application, luminaire application specific safety standards have to be observed (e.g. EN 60598-1 for Europe). Depending on the use of the luminaire in different countries (export), the country specific safety standards have to be regarded (e.g. EN 60598-1 for Europe).
 - Regard to sufficient isolation acc. country specific standards.
 - Live parts must not be touched. Luminaire must be closed acc. country specific standards.Danger of life!!!
- Clearance and creepage distances of the module are designed for class I luminaires (basic insulation). For built-in of the module the required standards have to be observed (e.g. EN 60598-1).
- Do not exceed values given in this specification.
- Do not exceed max t_c temperature of 85 °C.



- The module must be fixed onto a thermally conductive surface. Heat sink must cover the entire backside surface of the module.
- For the operation of VS recommends to mount the module directly onto the metal heat sink or luminaire housing is mandatory to comply with immunity standards (e.g. EN 61547).
- When installing/screwing the module into a luminaire, please ensure that cables are not squeezed between luminaire/heat-sink and LED module.
- Please ensure standard ESD (electrostatic discharge) protection measures are employed when handling and installing LED modules. Electrostatic discharge can damage LEDs.
- Parallel connection is mandatory for safe electrical operation. Serial connection of LED modules is not allowed.
- Due to the used electronic parts on the module not all available phase-cutting dimmers are compatible. Dimmable with phase-cutting leading- and trailing-edge dimmer. Minimum dimmer load has to be observed. The compatibility of the dimmer and the modules has to be confirmed prior to installation to avoid flickering.
- To ensure problem-free operation, the specified maximum temperature at the t_c point (see "Operating Life") must be observed (measured in accordance with EN 60598-1). To satisfy this point, it is necessary to put measures in place to ensure any heat is dissipated from the LED module to the environment.

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ReadyLine S-E – LED Solutions for Direct Connection to Mains 220–240 V

- In the event of outdoor applications or applications in damp locations, care must be taken to protect LED assembly modules against humidity, splashes and jets of water. Any corrosion damage resulting from humidity or contact with condensation will not be recognised as a defect or manufacturing fault. LED assembly modules are not specially protected against foreign bodies or dust. Depending on the type of application, further protection must be ensured to prevent dust and foreign bodies from entering. Relevant country and application specific standards have to be regarded.
- Installation by qualified electrician only
- Do not add or change wires while circuit is active
- Do not make modifications on module
- Do not use adhesives to attach that outgas organic vapour
- Do not use together with material containing sulfur
- Do not operate module with AC generators
- Do not operate modules by DC
- LED modules must not be subjected to any undue mechanical stress, e. g.: LED module
 - handle modules carefully
 - avoid shear and compressive forces onto the modules during handling and installation
 - avoid vibrations of more than 2 kHz, 40 G
- If module is used in rooms with fast moving parts as the light modulation might cause stroboscopic effects.
- This LED module might interfere with displays and cameras due to modulation.
- The photobiological safety of the LED modules is classified into risk groups. Assessment in acc. with IEC/TR 62778
 - LL30W-xxW general lightingGiven a clearance of more than $d_{thr} > 2.10$ m within which the lighting intensity limit is $E_{thr} = 988$ lux is attained the classification goes down to Risk group 1.

Applied Standards

- EN 62031
LED modules for general lighting – Safety specifications
- EN 62471 and IEC TR 62778
Photobiological safety of lamps and lamp systems
- EN 55015
Radio disturbance emissions
- EN 61000-3-2
Limits for harmonic emissions
- EN 61547
Immunity requirements
- EN 61000-3-3
Limits for voltage fluctuations and flicker

Product Guarantee

- 5 years
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage (www.vossloh-schwabe.com).
We will be happy to send you these conditions upon request.

EPREL information

Readyline S-E is a containing product of LED modules:

- VS type: LL30W-8W-XXX
LL30W-13W-XXX

Light Source

Containing product ReadyLine S-E	Light Source		
Type	Type	EPREL Regi. No.	EE Class
LL30W-8W-C-927	LL30W-8-927-V1	995841	F
LL30W-8W-C-930	LL30W-8-930-V1	995906	F
LL30W-8W-C-940	LL30W-8-940-V1	995941	F
LL30W-13W-C-927	LL30W-13-927-V1	994929	F
LL30W-13W-C-930	LL30W-13-930-V1	995606	F
LL30W-13W-C-940	LL30W-13-940-V1	995750	F

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