

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 (ECODESIGN) AND 2019/2015 (ENERGY LABEL)**
- **HIGH POWER FACTOR**
- **LONG SERVICE LIFE: 50,000 HRS (L70/B10)**
- **GLUED COVER TO PROTECT AGAINST ELECTRICAL SHOCK**

LED Solutions ReadyLine S-E

**Built-in SELF ballasted LED Solutions
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

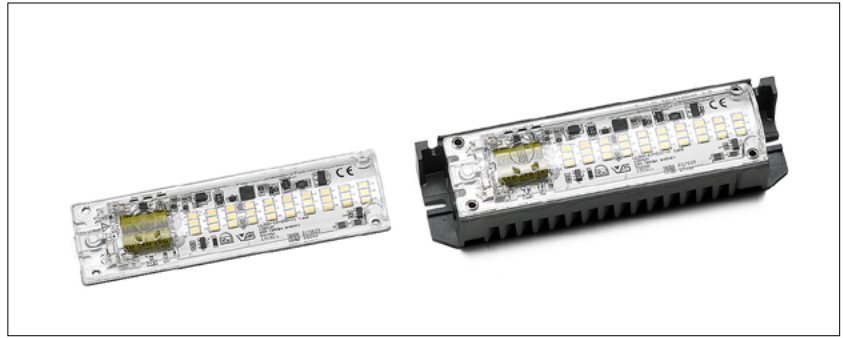
For luminaires of protection class I

RFI suppressed

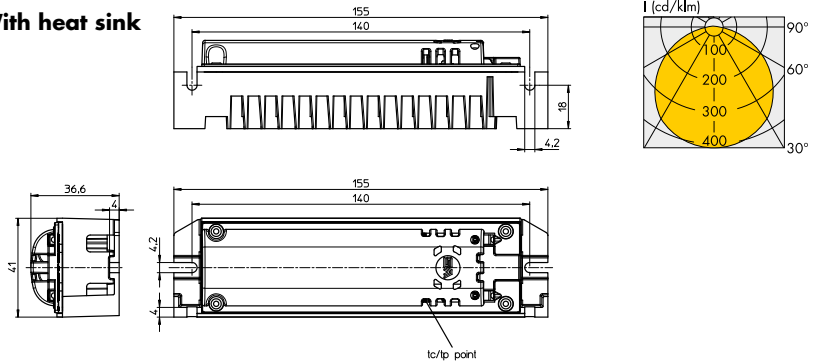
THD: < 20%

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

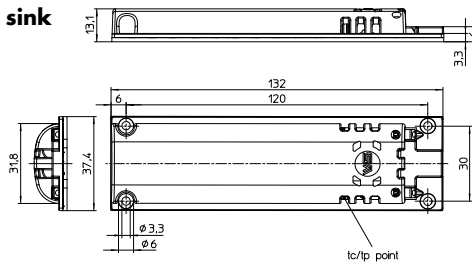
Packaging unit: 80/40 pcs. (without/with heat sink)



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 | <0.1 | <0.1 | <2 |
| LL30W-13W-C | 230 | 50/60 | 0.65 | 13 | <20 | <0.1 | <0.1 | <2 |

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 |

Operating Life In this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

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

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 $t_p = 70 °C$

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: +/-10% - CRI +/-3

** Average value (not for specification purpose) | Other colour temperature or CRI values on request - Minimum order quantity: 1120 pcs.

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 |
| Thermal Tapes | 125x35x125 | 80 | - | - | 3 | 320 |

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Thermal Tapes for ReadyLine S-E Solutions

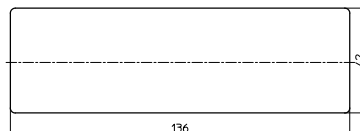
Thermally conductive transfer tape, non-adhesive

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
- Technel TE44895B
- Technel 7636
- VADSBO VD300
- BTICINO BTI-BBT4411N-IT

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.
- 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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- 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 $d_{thr} > 21$ cm 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 | EPREL Regi. No. | EE Class |
| LL30W-8W-C-927 | LL30W-8-927-V2 | 1171141 | G |
| LL30W-8W-C-930 | LL30W-8-930-V2 | 1171242 | G |
| LL30W-8W-C-940 | LL30W-8-940-V2 | 1171445 | F |
| LL30W-13W-C-927 | LL30W-13-927-V2 | 1171721 | G |
| LL30W-13W-C-930 | LL30W-13-930-V2 | 1171734 | G |
| LL30W-13W-C-940 | LL30W-13-940-V2 | 1171763 | G |

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