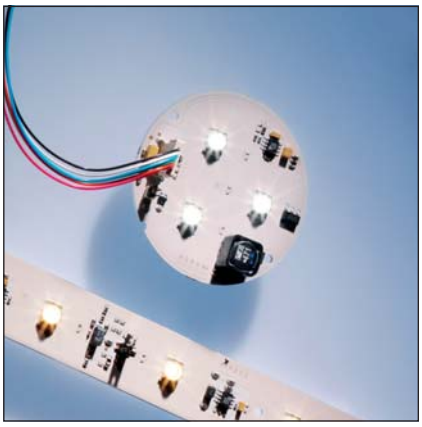
A New Lighting Experience



- **very high luminous flux**
- **simple plug and play connection technology**
- **long service lifetime due to optimal thermal management**
- **various light distribution options using optic modules**
- **dimmable**

High Power Mono / White 24V CA-System

Triple | Line | Flood

Typical Applications

Assembly Modules for
- General lighting
- Architectural illumination
- Light advertising
- Entertainment, shop design
- Decorative lighting

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High Power Mono / White 24V CA-System

Technical Notes

- Voltage supply: 24V DC
- Aluminum-PCB for optimum thermal management
- Increased ESD-protection

Electrical Characteristics

at ambient temperature t_a = 25 °C

Type	Ref. No.	Colour	Number of LEDs	Operation Voltage V	Inrush Current A	Nominal Current A	Nominal Power consumption (W) typ.	max.
Triple Modules								
WU-M-360-W1	**536747**	Cool white	3	24	0.86	0.42	7.5	10
WU-M-360-W2	**538149**	Cool white	3	24	0.86	0.42	7.5	10
WU-M-360-WW1	**536748**	Warm white	3	24	0.86	0.42	7.5	10
WU-M-360-WW2	**538150**	Warm white	3	24	0.86	0.42	7.5	10
WU-M-360-SO	**536749**	Red	3	24	0.75	0.31	4.5	7.5
WU-M-360-SG	**536751**	Green	3	24	0.86	0.42	7.5	10
WU-M-360-SB	**536750**	Blue	3	24	0.86	0.42	7.5	10
Line Modules								
WU-M-361-W1	**536752**	Cool white	6	24	1.66	0.83	15	20
WU-M-361-W2	**538151**	Cool white	6	24	1.66	0.83	15	20
WU-M-361-WW1	**536753**	Warm white	6	24	1.66	0.83	15	20
WU-M-361-WW2	**538152**	Warm white	6	24	1.66	0.83	15	20
WU-M-361-SO	**536754**	Red	6	24	1.50	0.63	9	15
WU-M-361-SG	**536755**	Green	6	24	1.66	0.83	15	20
WU-M-361-SB	**536756**	Blue	6	24	1.66	0.83	15	20
Flood Modules								
WU-M-362-W1	**536757**	Cool white	10	24	1.1	0.83	16	20
WU-M-362-W2	**538153**	Cool white	10	24	1.1	0.83	16	20
WU-M-362-WW1	**536758**	Warm white	10	24	1.1	0.83	16	20
WU-M-362-WW2	**538154**	Warm white	10	24	1.1	0.83	16	20
WU-M-362-SO	**536759**	Red	10	24	1.4	0.73	14	17.5
WU-M-362-SG	**536761**	Green	10	24	1.1	0.83	16	20
WU-M-362-SB	**536760**	Blue	10	24	1.1	0.83	14	20

Limits

Exceeding the maximum ratings can lead to reduction of lifetime or destruction of the module.

Type	Voltage DC V min.	V max.	Operation temperature range at t_c point °C min.	°C max.	Storage temperature range °C min.	°C max.
All types	23	25	–30	+85	–40	+85

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High Power Mono / White 24V CA-System

Optical Characteristics

at junction temperature t_j = 25 °C

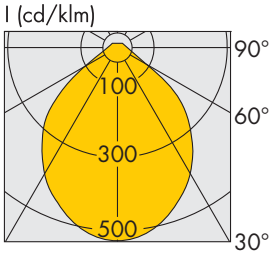
Type	Ref. No.	Colour	Colour temperature K	Dom. wavelength nm	Luminous flux (lm) min.	typ.	Radiation angle* °
Triple Modules							
WU-M-360-W1	**536747**	Cool white	5650–6950	–	374	421	90
WU-M-360-W2	**538149**	Cool white	5650–6950	–	465	497	90
WU-M-360-WW1	**536748**	Warm white	2720–3040	–	272	310	90
WU-M-360-WW2	**538150**	Warm white	2720–3040	–	343	359	90
WU-M-360-SO	**536749**	Red	–	620–635	138	158	100
WU-M-360-SG	**536751**	Green	–	520–535	282	325	100
WU-M-360-SB	**536750**	Blue	–	465–480	109	126	100
Line Modules							
WU-M-361-W1	**536752**	Cool white	5650–6950	–	725	815	90
WU-M-361-W2	**538151**	Cool white	5650–6950	–	900	963	90
WU-M-361-WW1	**536753**	Warm white	2720–3040	–	511	581	90
WU-M-361-WW2	**538152**	Warm white	2720–3040	–	687	718	90
WU-M-361-SO	**536754**	Red	–	620–635	266	306	100
WU-M-361-SG	**536755**	Green	–	520–535	524	603	100
WU-M-361-SB	**536756**	Blue	–	465–480	197	227	100
Flood Modules							
WU-M-362-W1	**536757**	Cool white	5650–6950	–	967	1087	90
WU-M-362-W2	**538153**	Cool white	5650–6950	–	1100	1177	90
WU-M-362-WW1	**536758**	Warm white	2720–3040	–	681	775	90
WU-M-362-WW2	**538154**	Warm white	2720–3040	–	886	927	90
WU-M-362-SO	**536759**	Red	–	620–635	459	528	100
WU-M-362-SG	**536761**	Green	–	520–535	840	966	100
WU-M-362-SB	**536760**	Blue	–	465–480	294	338	100

* On account of the complex manufacturing process of the modules the above values only represent statistical variables.
The values do not necessarily correspond exactly to the actual parameters of every single product which can vary from the typical specification.

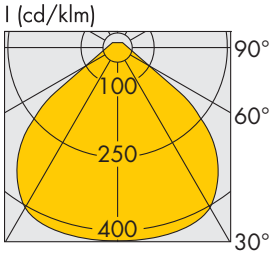
Operating Life – Cool white / Warm white

50,000 hrs. (lumen maintenance at 70 %, t_c = 65 °C)
This value does not refer to the colour temperature.

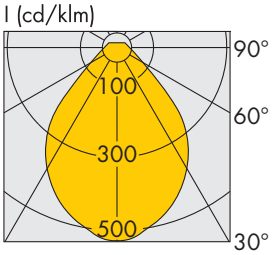
Light Distribution Curves



White/ Warm white



Green / Blue



Red

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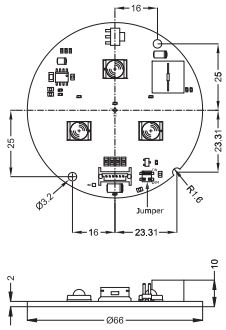
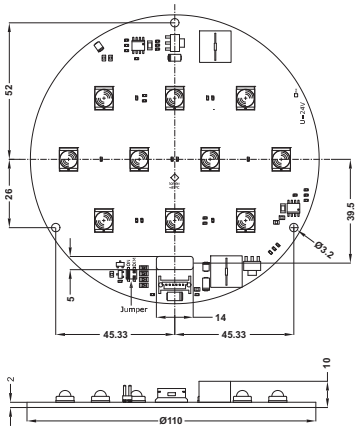
High Power Mono / White 24V CA-System

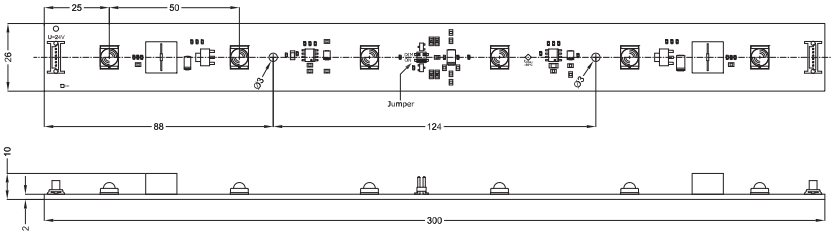
Mechanical Dimensions



Triple Module



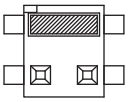
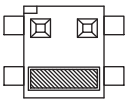
Flood Module



Line Module

Dimming function via jumper

By default LED modules are designed for direct operation by applying 24 V to the + and – terminals of the two-strand feed-in cable (red and black; Order No. 542267). In addition to this, the LED modules can be dimmed using a DigiLED CA by resetting the X1 jumper from "ON" to "DIM". In such cases, a six-strand cable must be used (Order No. 535900).

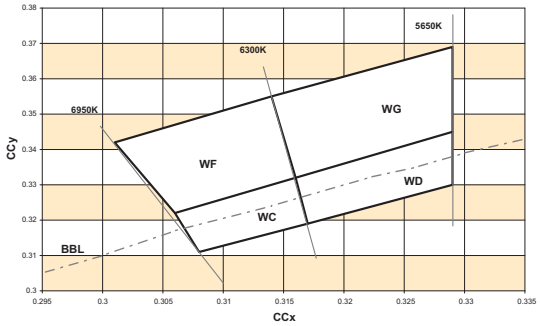
Jumper Position	
 ON / DIM	Dauerbetrieb / Operation
 ON / DIM	durch Steuergerät dimmbar/ dimmable via control unit

Bins

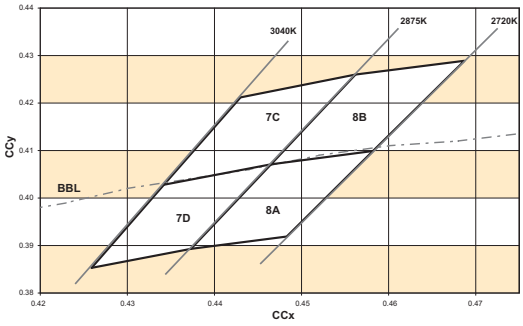
The standard shipping format regarding the reference numbers on page 2 includes all chromaticity coordinate groups.

The concrete delivered group is marked on each product packing. Reduction of orderable groups is possible only project-based.

White



Warm white



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High Power Mono / White 24V CA-System

Maximum quantity of 24V HighPower modules on VS converter 24V

LED modules Type	**Ref. No.**	Max. quantity of 24V HighPower modules on VS converter 24V EDXe110 10W/24V	 EDXe120 20W/24V	 EDXe130 30W/24V	 EDXe170 70W/24V	 EDXe1130 130W/24V
WU-M-360-SO	**all types**	1	2	4	5	9
WU-M-360-SB/SG/Wx/WWx	**all types**	1	2	4	5	9
WU-M-361-SO	**all types**	–	1	2	3	6
WU-M-361-SB/SG/Wx/WWx	**all types**	–	1	2	2	5
WU-M-362-SO	**all types**	–	1	2	3	5
WU-M-362-SB/SG/Wx/WWx	**all types**	–	1	2	3	7

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High Power Mono / White 24V CA-System

Assembly and Safety Information

Installation must be carried out under observation of the relevant regulations and standards. The LED modules of the 24V CA System are designed for operation within a casing or luminaire. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains). The following advice must be observed; non-observance can result in the destruction of the LED assembly modules, fire and/or other hazards.

- ESD (electrostatic discharge) protection measures must be observed when handling and installing the LED modules. See VS's application notes on ESD protection.
- LED assembly modules must not be subjected to any undue mechanical stress, e. g.:
  – do not treat as bulk cargo
  – avoid shear and compressive forces during handling and installation
  – do not damage circuit paths
  – avoid vibrations of more than 2 kHz, 40 G
- LED assembly modules are designed for attachment using a thermally conductive adhesive, an adhesive foil (Ref. No. 539625 for Triple; Ref. No. 539626 for Line; Ref. No. 539624 for Flood) or M3 screws. Please observe the manufacturer's technical data provided at www.3M.com/converter. Products equipped with adhesive transfer tape must only be applied to dry and clean surfaces that are free from grease, oil, silicone or other soiling. It is therefore recommended to clean the substrate with isopropyl alcohol (IPA). Please ensure a full-surface bond over the entire contact area when sticking the module to the substrate.
  The following substances are regarded as critical for creating an adhesive bond:
  – Polyefins (polyethylene, polypropylene)
  – Rubber
  – Powder-coated materials
  – Silicone rubber
  – Teflon

  Owing to the varying application options and different types of surface as well as ambient conditions, VS accepts no liability for the quality of the adhesive bond achieved when mounting these products. Prior to sticking a VS product, care must be taken to check whether the material in question is actually suitable for the intended purpose under consideration of all possible application-relevant influences. Supplementary holders must be used if necessary. If opting for screw attachment, plastic screws or suitably insulated, non-loosening metal screws must be used.
- For dimming LED assembly modules are designed for connection to PCB distributors or slave boards and for direct connection to DigiLED CA (colour control) modules.
  A reverse-polarity protected flatband cable system (in two lengths: 20 mm, Ref. No. 539476 and 100 mm, Ref. No. 539475) with pre-assembled connectors is available for connecting the PCB distributor.
  The LED assembly modules can be connected to a slave board or directly to a DigiLED CA colour control unit by alternatively using a 500 mm feed-in cable (Ref. No. 535900). The feed in cable is fitted with a pre-assembled connector that ensures reverse-polarity protected connection to the LED assembly modules; the other end of the cable is connected to the slave board or DigiLED CA colour control unit under observation of correct polarity (see respective colour coding of cables and terminals). The module will be dimmed via the respective colour channel. Further details on the DigiLED CA series can be found in the data sheets at www.vs-optoelectronic.com.
- 24V DC converters that comply with EN 61347-2-13 must be used for power supply purposes. For direct connection of LED modules to 24 V (without dimming function) a 2-pole feed-in cable has to be used (Ref. No. 542267). Vossloh-Schwabe recommends operating VS LED assembly modules with matching VS converters (SELV or SELV-equivalent, short-circuit-, overload- and temperature-protected).

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High Power Mono / White 24V CA-System

Assembly and Safety Information

- Due to the manufacturing process, the PCBs of the LED assembly modules can have sharp edges and corners. Care must therefore be taken during handling and installation to avoid injury.
- To ensure problem-free operation, the specified maximum temperature at the t_C point must be observed (and measured in accordance with EN 60598-1). To satisfy this point, it may be necessary to put measures in place to ensure any heat is dissipated from the PCB to the environment.
- 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.
- Provided that LED assembly modules are correctly installed and used, no additional eye protection is necessary. However, looking directly into the light source should still be avoided. When confronted with any source of bright light, e.g. LED light, the eyes protects themselves from harm by the lids' natural reflex to blink. If LED assembly modules are used in conjunction with other optical systems (e.g. lenses), the system must be checked in accordance with IEC 62471: 2006.
- Tests have shown the following chemicals to be harmful to LEDs used on the modules. It is recommended not to use the under-mentioned chemicals anywhere in an LED system.
  The fumes from even small amounts of these chemicals may damage the LEDs.
  - Chemicals that might outgas aromatic hydrocarbons (e.g., toluene, benzene, xylene)
  - Methyl acetate or ethyl acetate (i.e., nail polish remover)
  - Cyanoacrylates (i.e., "Superglue")
  - Glycol ethers (including Radio Shack®, Precision Electronics Cleaner – dipropylene glycol monomethyl ether)
  - Formaldehyde or butadiene (including Ashland PLIOBOND® adhesive)
  - Dymax 984-LVUF conformal coating
  - Loctite Sumo glue
  - Gorilla glue
  - Clorox bleach
  - Clorox Clean-Up cleaner spray
  - Loctite 384 adhesive
  - Loctite 7387 activator
  - Loctite 242 threadlocker

  Detailed information of handling of Cree LEDs can be found on www.cree.com.
- The photobiological safety of the LED modules must be classified into risk groups in accordance with EN 62471: 2008.
  - general lighting
    exempt group:
    WU-M-360/361/362 white, warm white, red, green
    risk group 2:
    WU-M-360/361/362 blue
  - other applications
    risk group 2:
    WU-M-360/361/362 white, warm white, red, green, blue

  Use of standard VS optics (535174; 535175; 538031; 536515) does not affect the need to classify LED modules into the above mentioned risk groups.

Applied Standards

EN 62031
LED modules for general lighting – Safety specifications

EN 61347–1
Lamp controlgear – Part 1: General and safety requirements

EN 61347–2–11
Lamp controlgear – Part 2–11:
Particular requirements for
miscellaneous electronic circuits used with luminaires
(IEC 61347–2–11:2001)

EN 62471
Photobiological safety of lamps and lamp systems; German version EN 62471:2008

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