LineMAX

R1B54

48 LEDs linear module, ZHAGA standard

5 YEARS WARRANTY

CC CONSTANT CURRENT

FEATURES

- PCB dimension: 280x20mm
- Up to 3227 lm
- Up to 207 lm/W
- CRI 80, 90
- Max Electrical Insulation 250Vdc
- Max 6 LED boards in series
- Connection type: WAGO 2060 1P/ WAGO Reverse 2070 1P
- Long lifetime up to 72000h (LED LM80 available on request)

APPLICATIONS

Office

Indoor

Commercial

Industrial

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Performance type HEF

Code	CCT	CRI	Current [mA]	Voltage [V]	Power [W]	Total Lumen [lm]	Lm/W	Energy Efficiency
R1B54113080	3000K	80	300	31.9	9.6	1833	191	C
			500	32.8	16.4	2974	181	C
R1B54114080	4000K		300	31.9	9.6	1990	207	B
			500	32.8	16.4	3227	197	C

Flux tolerance +/- 10%
Vf Tolerance +/- 5%

Ask for more information about available LED and other options.

Performance type STD

Code	CCT	CRI	Current [mA]	Voltage [V]	Power [W]	Total Lumen [lm]	Lm/W	Energy Efficiency
R1B54113080	3000K	80	300	32.6	9.8	1769	180	C
			500	33.7	16.8	2838	169	D
R1B54114080	4000K		300	32.6	9.8	1841	188	C
			500	33.7	16.8	2953	176	C

Flux tolerance +/- 10%
Vf Tolerance +/- 5%

Ask for more information about available LED and other options.

Performance type ECO

Code	CCT	CRI	Current [mA]	Voltage [V]	Power [W]	Total Lumen [lm]	Lm/W	Energy Efficiency
R1B54113080	3000K	80	300	32.9	9.9	1658	167	D
			500	34	17	2602	153	D
R1B54114080	4000K		300	32.9	9.9	1756	177	C
			500	34	17	2755	162	D

Flux tolerance +/- 10%
Vf Tolerance +/- 5%

Ask for more information about available LED and other options.

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LED and board features	
LED number	48
LED type	2835
Circuit	S12P4
Material	FR4
Solder	White/Black
Connections	
Cable	On request
Connector	WAGO 2060 1P/ 2070 Reverse 1P
Power	
Abs. Max Input current CC	900mA
Mechanical Data	
L x H	279x19.8mm
Thickness	6.1mm
Conditions	
Max. temp. (Tp)	+95°C
Max. temp. (Tc)	+85°C
Operating temp. Range	-35 +60°C

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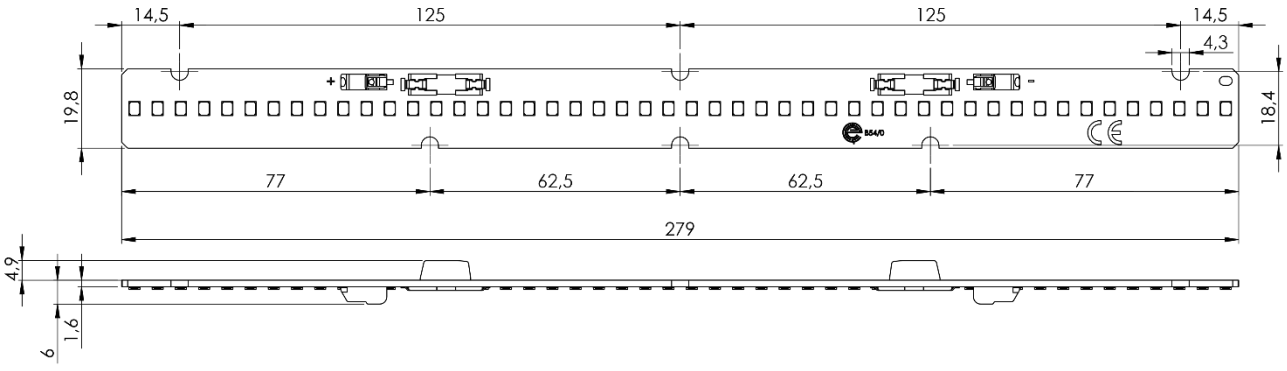
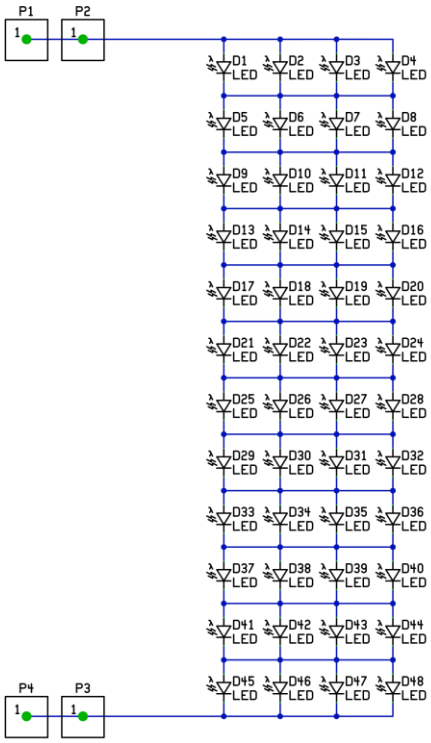
MECHANICAL DRAWING



ELECTRICAL CIRCUIT



ASSEMBLY AND SAFETY INFORMATION

The LED modules are designed to be incorporated in a final appliance. Installation must be carried out under observation of the relevant regulations and standards. Installation must be carried out in a voltage-free state (i.e. disconnected from the mains).
Additionally, the following advice must be observed; non-observance can result in electrical, mechanical and/or fire hazards.

- ESD (electrostatic discharge) protection measures must be observed when handling and installing the LED modules.
- Transient protection measures (as per IEC 61000-4-5), especially for outdoor applications, must be observed (e.g. SPD).
- Adequate anti-static electricity measures, including the use of conductive shoes, ionizers, work bench grounding, wrist straps, flooring and stools should be used.
- LED assembly modules must not be subjected to any undue mechanical stress, e.g.:
  - Do not treat as bulk cargo.
  - Avoid sharing and compressive forces during handling and installation.
  - Do not damage circuit paths.
  - Avoid any pressure on the light emitting surface.
- Safe operation is only possible using proper external sources (e.g: constant current sources - Imax. see table "Electrical Characteristics").
- Operate only with power supply units that feature the following protection:
  - Short-circuit protection
  - Overload protection
  - Overheating protection
- The module can be fixed with M3 screws. They are recommended to be fixed only with flat or cylinder head screws (M3) (no countersunk screws – if not differently specified). Max. torque: 1.2 Nm (M3)
- Please ensure the correct polarity of the leads prior to applying power. Reversed polarity can destroy the modules.
- For interconnection, the LED modules are usually equipped with push-in terminals. Custom connectors are available upon request during the project bidding stage.
- General Safety regulations acc. to IEC/EN 60598-1 (or specific standards related to different lighting applications) must be observed.
- The following points must be observed when connecting LED modules in parallel:
  - All LED strings that are wired in parallel must contain the same number of LEDs (symmetrical loading).
  - Owing to differing forward voltage, there can be a difference of up to 10% in brightness between modules connected in parallel.
  - For this installation setup, please notify us when placing your order.
- To ensure problem-free operation, the specified maximum temperature at the tp point (see "Operating Life") must be observed (and measured in accordance with IEC 62717 – Annex H).
- In the event of outdoor applications or applications in damp locations, care must be taken to protect LED modules against humidity, splashes and jets of water. Any corrosion damage resulting from humidity or contact with condensation will not be recognized as a defect or manufacturing fault. LED modules are not specifically protected against foreign bodies or dust. Depending on the type of application, further protection must be provided to prevent ingress.
- Due to the manufacturing process, the PCBs of the LED modules can have sharp edges and corners. Care must therefore be taken during handling and installation to avoid injury.
- Constant current drivers require for an optimal usage that the modules are connected in series. For this type of usage, there must be ensured that the quantity of LED modules is limited by the sum of forward voltage and the capacity of used constant current driver. Safety regulations acc. to IEC/EN 60598 must be observed if the sum of forward voltage exceeds the permitted touchable value.
- There is a list of chemical substances (as sulfur) that has been proved to make the LED module damaged. Also, in chemically enriched (aggressive) environments the LED module functionality can be compromised, or they can even cause total module failure. Keep attention to this aspect before installing the LED module.
- The photobiological safety of the LED modules must be classified into risk groups in accordance with IEC/EN 62471 and IEC/EN 62471-7.

APPLIED STANDARDS

IEC / EN 62031
LED modules for general lighting – Safety specifications

IEC 62717
LED modules for general lighting - Performance requirements

IEC/EN 60598-1
Luminaires – Part 1: General requirements and tests

IEC/EN 62471
Photobiological safety of lamps and lamp systems

IEC 61000-4-5
Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test

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