

LA AT020MIT

LED module Mid infrared (940 nm)



Important safety advice

Depending on the mode of operation, these devices emit highly concentrated light which can be hazardous to the human eye. Do not expose eyes or skin directly and/or through optical lenses. When handling the modules wear appropriate safety glasses.

Light Avenue's Sevensine LED module series is a highly efficient LED source with optimized thermal management and low viewing angle based on TIR technology. Modules can be connected in series up to 300 V and can be equipped with secondary lenses. The middle LED can be addressed separately per design, but in this case the same chip is placed there.



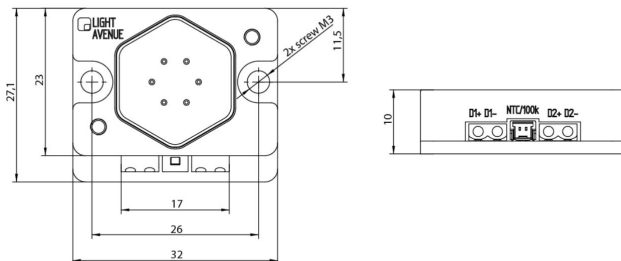
Features

- Leading edge of light engine technology
- Viewing angle $\pm 10^\circ$
- Ultra-high-brightness performance
- NTC monitoring

Applications

- Illumination
- Projection
- Architectural lighting
- Gesture recognition
- Night vision

Dimensions



All dimensions in mm.

Material data

DESCRIPTION	MATERIAL
LED chip	AlGaAs
Package	Aluminum
Lens system	Silicone TIR lens system
PCB	Metal core with aluminum core
NTC	100k thermistor

LA AT020MIT

LED module Mid infrared (940 nm)



Electro-optical characteristics ($T_A = 25^\circ\text{C}$)²

PARAMETER	SYMBOL	CONDITION	MIN.	TYP. ¹	MAX.	UNIT
Forward voltage	V_F	$I_F = 1000\text{ mA}$		24		V
Reverse voltage	V_R	not designed for reverse operation				
Centroid wavelength	$\lambda_{\text{centroid}}$	$I_F = 1000\text{ mA}$	925	940	955	nm
Radiant power	Φ_e	$I_F = 1000\text{ mA}$		4000		mW
Beam divergence angle	Θ	$I_F = 1000\text{ mA}$		20		°

Maximum ratings ($T_A = 25^\circ\text{C}$)³

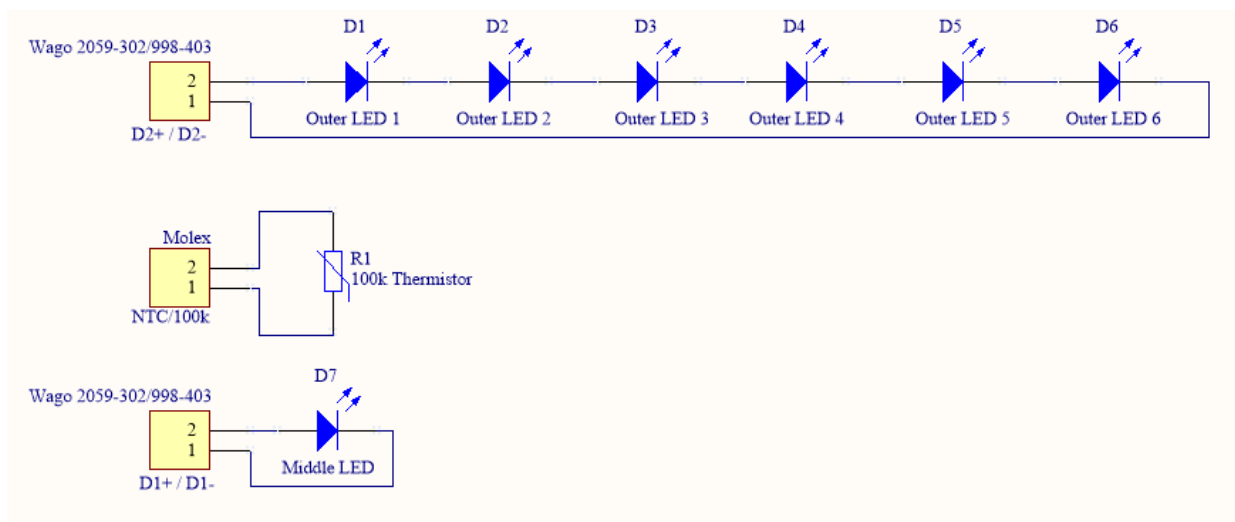
PARAMETER	SYMBOL	CONDITION	MINIMUM	MAXIMUM	UNIT
Operating current	$I_{f,\text{max}}$			1000	mA
Operating pulse current	$I_{fp,\text{max}}$	$t_p = 10\mu\text{s}$, $D = 2\%$		4000	mA
Operating temperature	T_{op}		-40	100	°C
Storage temperature	T_{st}		-40	100	°C

Thermal characteristics

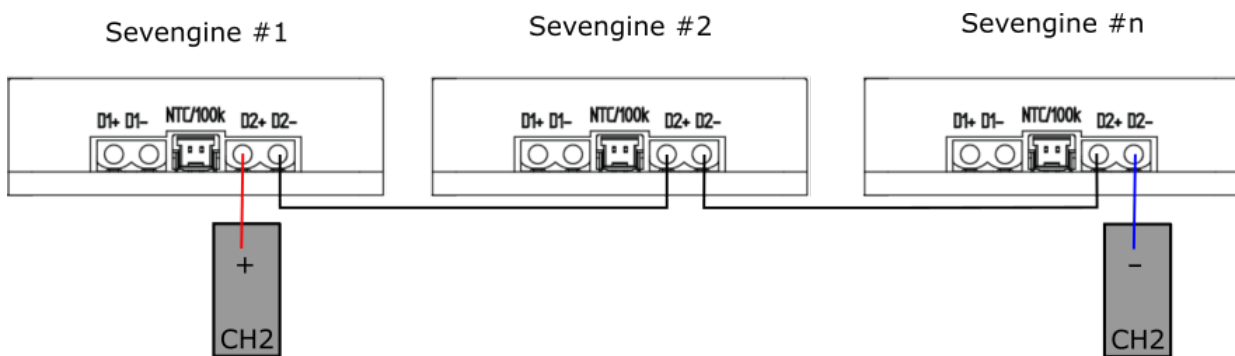
PARAMETER	SYMBOL	VALUE	UNIT
Thermal resistance junction ambient	$R\Theta_{JA}$	0.3	K/W

Electrical connection

The outer LED chips of a Sevensine LED are connected in series and can be controlled via the Wago 2059-302/998-403 connector D2+ and D2-. It is controlled by directly plugging in fine-stranded conductors. The middle LED chip can be addressed separately per design via the wago 2059-302/998-403 connector D1+ and D1-. This connection is also contacted with fine-stranded conductors. The temperature sensor can be read out via the Molex connector with a suitable PicoBlade connector. The PicoBlade connectors with the following partnumber are suitable for this applications (Partnumber: 151340200, 151340201, 151340202, 151340203, 151340205, 151340206). A readout graph for the thermistor can be found on page 5. The schematic of a Sevensine is shown in the figure below.

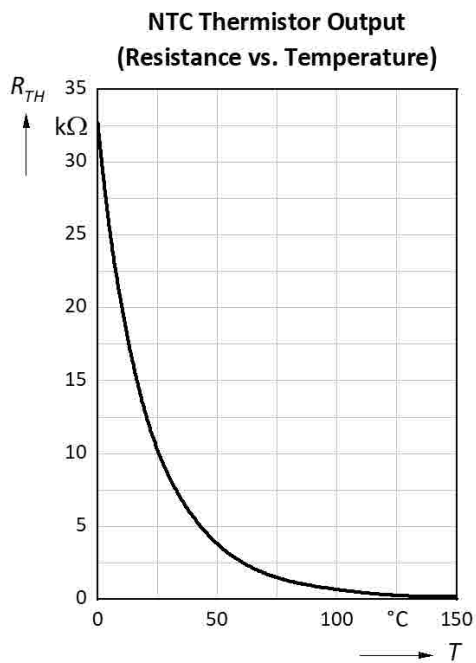
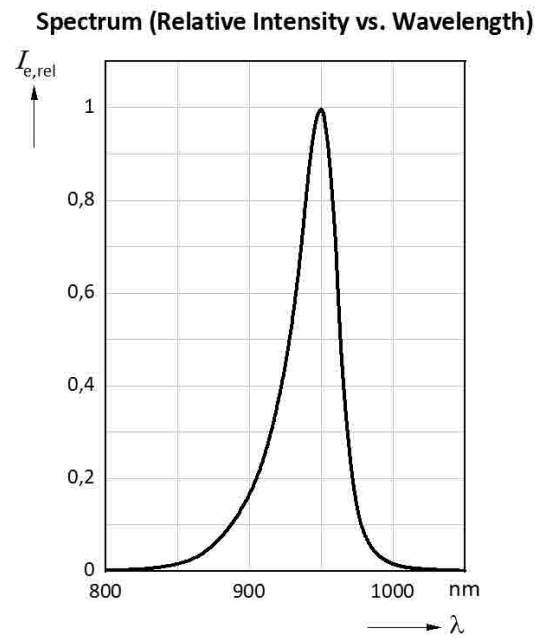
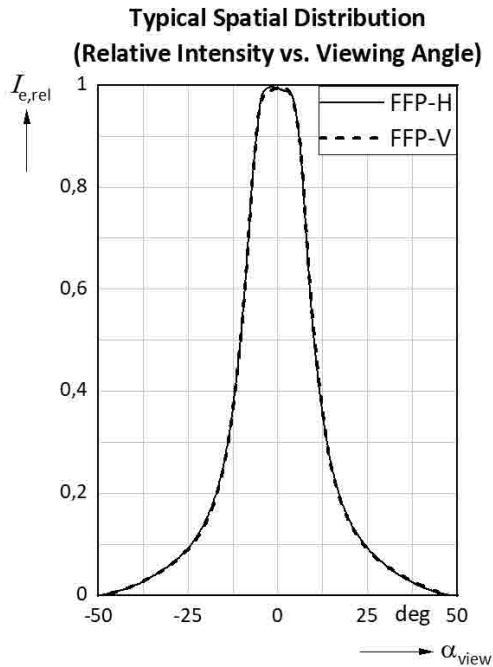


Sevensine LEDs of the same type can be connected in series. The following figure shows an example of how several Sevensines are connected in series.



To connect the middle LED (D1+ / D1-) of the various Sevensines in series, please proceed in the same way as for the outer LEDs (CH2).

Typical characteristics graphs



Important usage and application information

Lead free product - RoHS compliant. All products, product specifications and data to improve reliability, function, design or otherwise are subject to change without notice. The information describes the type of component and shall not be considered as assured characteristics. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization. The light output of the products may cause injuries to human eyes in circumstances where the products are viewed directly with unshielded eyes. LEDs can emit highly concentrated light which can be hazardous to the human eye. Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 and IEC 62471. When using this product, please stay within the maximum ratings, pay attention to the other instructions, conditions and precautions described in this datasheet. We will assume no responsibility for any damages resulting from improper use of this product.

Handling and storage conditions

The package is a not hermetic package. Please be careful by using this product in humid atmosphere or atmosphere containing caustic or corrosive gases as this may cause the product to fail.

Packing

LED Modules are arranged in ESD safe bags. For shipment the bags are placed into a packaging box. Please use the recycling operators familiar to you. If required you can ask for our help. Please get in touch with your nearest sales office. By agreement we will take packing material back, if sorted. Transport costs of any kind must be paid by customers. For packing material that is returned to us unsorted or which we are not obliged to accept, any costs incurred will be invoiced to you.

Returns and Complaints

For complaints and returns of material a RMA-number is necessary. Samples for analysis purposes can be send to us without credit.

Shipping Conditions

If not otherwise arranged, the "General Terms of Business of Light Avenue GmbH" apply for any shipment. If this document is not familiar to you, please request it at our nearest sales office.

Disclaimer

Attention please!

- **Components used in life-support devices or systems must be expressly authorized for such purpose!**

Critical components⁴ may only be used in life-support devices⁵ or systems with the express written approval by us.

- All products, product specifications and data to improve reliability, function, design or otherwise are subject to change without notice .
- Light Avenue, its affiliates, agents, and employees, and all persons acting on its or their behalf, disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product. Light Avenue makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Light Avenue disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability. Statements regarding the suitability of products for certain types of applications are based on Light Avenue's knowledge of typical requirements that are often placed on Light Avenue's products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Light Avenue's terms and conditions of business, including but not limited to the warranty expressed therein. Except as expressly indicated in writing, Light Avenue's products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Light Avenue product could result in personal injury or death. Customers using or selling Light Avenue products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Light Avenue personnel to obtain written terms and conditions regarding products designed for such applications. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Light Avenue. Product names and markings noted herein may be trademarks of their respective owners.
- The information describes the type of component and shall not be considered as assured characteristics. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.
- Lead free product - RoHS compliant.
- The quality level of the final visual inspection shall comply to an AQL of 1.0 (according to MIL-STD-105E, level II), if the customer performs an incoming visual inspection of a shipment.

- All chips are checked according to the producer's specification of the visual inspection. If this document is not familiar to you, please request it at our nearest sales office.

Changes

VERSION	DATE	CONTENT
1.0	08.12.2019	Preliminary data.
2.0	18.10.2022	New address and technical graphs have been added (page 5).

Published by:
Light Avenue GmbH
Am Kuehlen Kasten 8
93161 Sinzing
Germany
www.light-avenue.com
info@light-avenue.com
© All Rights Reserved

¹Due to the special conditions of the manufacturing processes of LED, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.

²Measurements are done with an accuracy of $\pm 15\%$. Correlation to customer's equipment and products is required.

³Maximum ratings are package dependent and may differ between packages. The forward current is not limited by the die but by the effect of the LED junction temperature on the package. If you need more information on pulsed operation, please contact your next sales office about possible driving conditions. If not otherwise specified the maximum pulse current may not exceed the maximum current in continuous mode.

⁴A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

⁵Life support devices or systems are intended(a) to be implanted in the human body, or(b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health and the life of the user may be endangered.