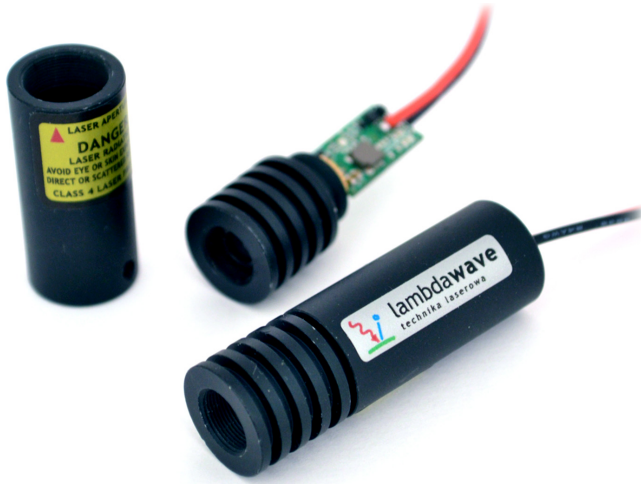


# LW-405-500-C16-DM

500mW violet dot, line or cross laser module



## Description

LW-405-500-C16-DM is a high power violet semiconductor laser module which provides a stable continuous light output of 500mW with emission wavelength of 405nm. Product incorporates a high efficiency constant current laser diode driver, allowing operation in a wide range of input voltages, while keeping the dimensions of laser module itself relatively small at the same time.

## Applications

- Laboratory equipment
- Biomedical applications
- Cutting line indicator for carpentry, stone masonry, woodworking and other material processing
- Industrial positioning
- Industrial alignment
- Industrial inspection
- Assembly lines
- Night vision illumination
- Astronomy
- Metrology

- Spectral sensing
- Display systems
- Stage lighting
- Laser projection
- Laser shows
- Other applications

## Features

- Small size
- Compact design
- High output power
- Integrated high efficiency constant current laser diode driver
- Wide input voltage range
- Wide operating temperature range
- Integrated overvoltage, overtemperature, reverse voltage and ESD protection
- Case connected to negative terminal
- Single-mode semiconductor laser diode
- Externally adjustable optics
- Variant with line or cross generation optics available
- Variant with TTL modulation input available

## Available accessories

- Line generation lens - 35, 45, 60, 90 and 120 degrees divergence
- Cross generation lens - 15, 45, 60, and 90 degrees divergence
- Laboratory 3-axis holder
- Power supply

## Optical characteristics

| Parameter                            | Min. | Typ. | Max. | Unit  |
|--------------------------------------|------|------|------|-------|
| Peak wavelength                      |      | 405  |      | nm    |
| Light output power without lens      | 425  | 500  | 575  | mW    |
| Light output power with lens         | 340  | 400  | 460  | mW    |
| Lens power loss                      | -    | 20   | -    | %     |
| Minimal spot size at 50mm distance   | -    | 0.05 | -    | mm    |
| Beam divergence angle                | -    | 0.6  | -    | mrad  |
| Beam size at output                  | -    | 3    | -    | mm    |
| Output power temperature coefficient | -    | TBD  | -    | %/°C  |
| Wavelength temperature coefficient   | -    | TBD  | -    | nm/°C |

## Electrical characteristics

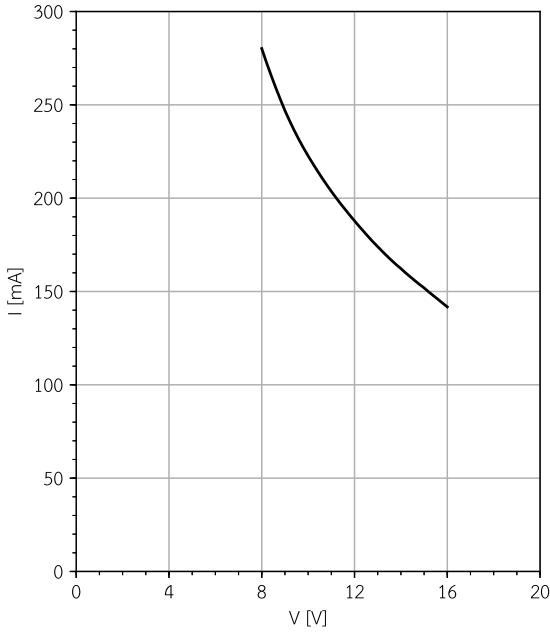
| Parameter                      | Min. | Typ. | Max.    | Unit |
|--------------------------------|------|------|---------|------|
| Supply voltage                 | 8    | -    | 16      | V    |
| Input current                  | 110  | -    | 340     | mA   |
| TTL input high level threshold | 2.0  | -    | -       | V    |
| TTL input low level threshold  | -    | -    | 0.8     | V    |
| TTL input voltage              | -0.3 | -    | VCC+0.3 | V    |
| TTL input impedance            | 10   | -    | -       | kΩ   |
| TTL high to output enable      | -    | 400  | -       | μs   |
| TTL low to output disable      | -    | 100  | -       | μs   |
| TTL modulation frequency       | -    | -    | 1       | kHz  |

## Other specifications

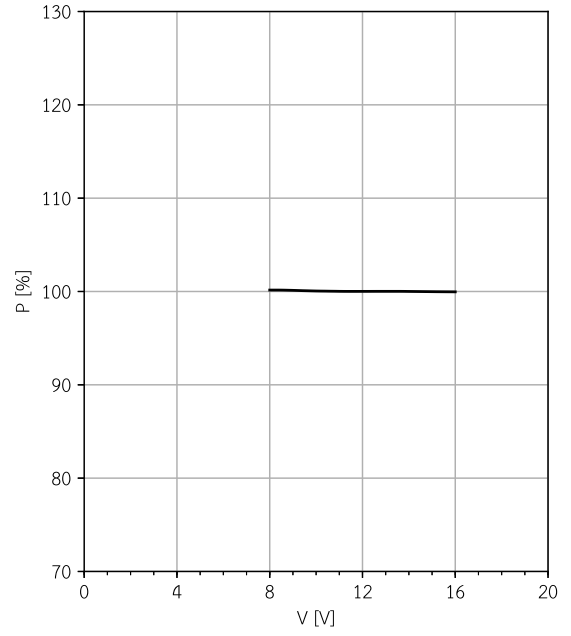
| Parameter                | Min.  | Typ. | Max. | Unit |
|--------------------------|-------|------|------|------|
| Operating temperature    | -10   | -    | 50   | °C   |
| Storage temperature      | -40   | -    | 85   | °C   |
| Lifetime                 | 20000 | -    | -    | h    |
| Lens adjustment position | 0     | -    | 5    | mm   |

## Typical performance curves

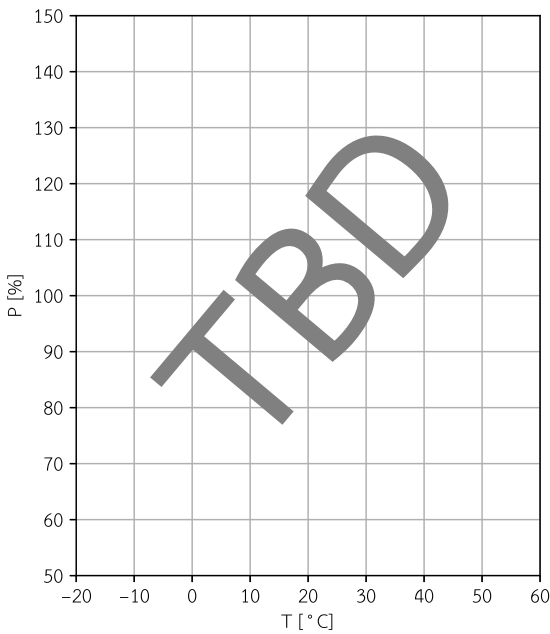
LW-405-500-C16-DM  
Input current vs. input voltage



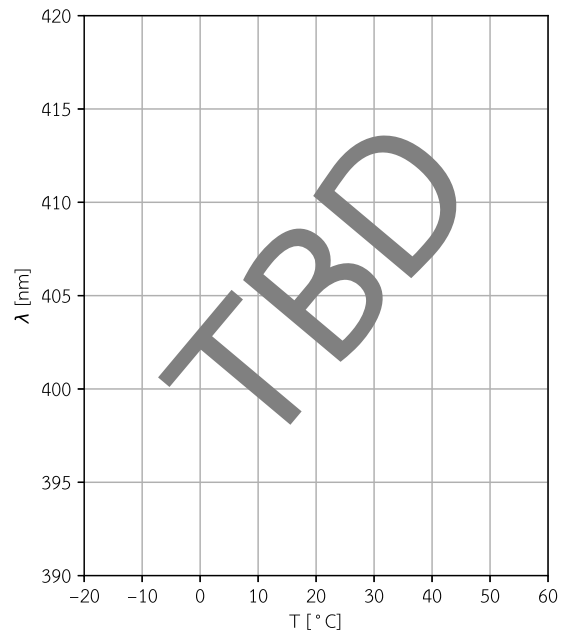
LW-405-500-C16-DM  
Relative output power vs. input voltage



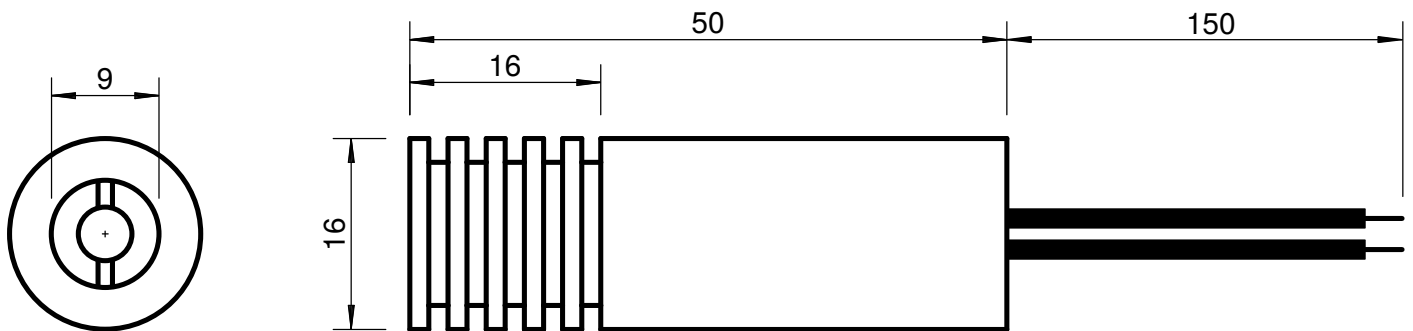
LW-405-500-C16-DM  
Relative output power vs. case temperature



LW-405-500-C16-DM  
Wavelength vs. case temperature



## Technical drawing



## Connection

Black - GND, red - VCC, white - TTL.

## Safety

This laser module emits highly concentrated visible or invisible light which can be extremely hazardous to human eye or body causing its irreparable damage. Do not expose the eye or skin to any laser light directly or through optical lens. When handling laser equipment, wear appropriate safety glasses to prevent laser light from entering to the eye. Never look into the beam directly or through optical instruments. Take extra precautions when using the laser module indoors, paying attention to any reflective surfaces. Never point the laser beam at people, animals, vehicles or airplanes.

This laser module is classified in **class 3B** of IEC 60825-1 *Safety of laser products*. Please note that even while complying with the above classifications, our laser modules itself are electronic components intended solely for incorporation or integration with final devices, and therefore are not subject of IEC 60825-1

and are not certified in accordance with IEC 60825-1.

Products incorporating our laser modules must follow the safety rules found in IEC 60825-1 or other equivalent standard in force. The way our laser modules are used in final product can change their original safety classification, therefore it is absolutely necessary to perform all required safety measurements for devices into which LAMBDAAWAVE laser modules are incorporated or integrated. Ensuring compliance of the final device with the relevant standards rests solely on its integrator.

## Disclaimer

The above specifications of the product are for reference purpose only and may be modified for improvement without prior notice.

Every possible effort has been made to ensure that the information described in this specification is fully accurate. However, LAMBDAAWAVE is not liable for any damage resulting from inaccuracies in these specifications. The data, charts and all other information described in these materials were correct at the time this

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LAMBDAWAVE constantly strives to increase the level of its products quality and reliability. Despite these efforts, there may be situations where our products suffer from failures or other problems. Design your product so that LAMBDAWAVE products are used in the operating ranges described above. Foreseeable failures or emergency modes should be considered in designed equipment to ensure that devices containing LAMBDAWAVE products do not cause injury, fire or other damage. Extensive assessments of each individual system as a whole should be made, with the customer taking full responsibility for design decisions and possible damage caused by the system. LAMBDAWAVE is not responsible for any defects or injuries that may be caused by the equipment using LAMBDAWAVE devices.

LAMBDAWAVE prohibits the buyer from reverse engineering, disassembling or taking other steps to obtain a product design.

Products described in these specifications have been designed and manufactured for use in general electronics. Please consult LAMBDAWAVE when considering using the products described in these specifications in any critical system requiring high reliability, including avia-

tion, military, nuclear, automotive or life support systems.

The latest version of this datasheet is available at the address given below.

<https://www.docs.lambdawave.eu/datasheets/LW-405-500-C16-DM.pdf>

## About LAMBDAWAVE

LAMBDAWAVE laser technology is a Polish manufacturer of laser equipment. Our goal is to allow easy use of laser technology in your products. We offer various laser solutions dedicated for use in science, industry and entertainment. Thanks to our experience in the field of electronics, optics and embedded software, we are able to meet your requirements by providing reliable and tailor-made laser solutions for your business. Our portfolio includes but is not limited to laser modules in a wide range of powers and wavelengths, laser pointers and various laser power supplies. For more information, please visit our website or write us an e-mail.

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