

IMM PHOTONICS – OPTOELECTRONIC COMPONENTS

engineered for your success

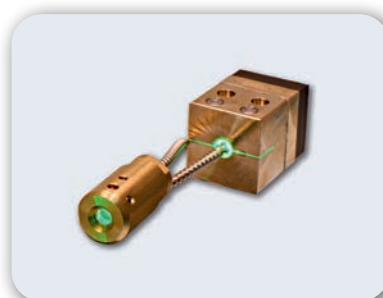
ilumVISION industrial



ilumVISION



ilumFIBER VISION



OUR PRODUCT GROUPS



MAXIMUM PRECISION – FROM STANDARD TO INDIVIDUALLY DEVELOPED PRODUCTS

IMM Photonics produces innovative optical and optoelectronic components and modules for a diverse range of technological fields – from measuring technology and analytics, biophotonics and medical devices to optical data transfer and security engineering.

What makes our portfolio special: Our **standard products** in laser technology, fibre optics, UV & UVC and optics can be refined on request and tailored to the customer's specific needs. We also produce complete **individual solutions** to meet our customers' budgets and deadlines as well as the high quality standards they demand. Both types of product can be easily integrated into existing customer systems.

IMM PHOTONICS – EXPERTISE SINCE 1992

With our well established presence on the market, for more than 30 years we at IMM Photonics have provided trust-based and successful support to customers from a range of technological fields with the production of innovative components and modules. Our standard optical and optoelectronic products are produced in-house at our two German business locations and by selected partner manufacturers – for truly high-tech products made in Germany.



ilum**VISION** industrial

Machine vision laser module

ilumVISION industrial is a ruggedized laser module for machine vision applications.

The laser is offered as a fixed focus product with different optical patterns (diffractive optics) or as a homogeneous line.

An insulated structure as well as an integrated electronic protection circuit allow safe operation in harsh industrial environments.

In its basic configuration the laser can be operated with continuous wave mode or digitally modulated.

Optionally, a positive or negative analog modulation can be offered.

If required, the laser can be reliably integrated into moving systems thanks to its drag chain cable.

General	Value	Comment
Wavelength	405 nm, 450 nm, 520 nm, 660 nm ($\Delta\lambda$ max. 10 nm)	Additional on request
Output power (max.)	See page 3	Additional on request
Beam adjustment	Focus distance: 300 mm	Collimated beam & other focus distances on request
Fan angle	See page 3	
Line width (focussed @300 mm)	See page 3	
Operation temperature	0°C to +60°C	
Storage temperature	-40°C to +70°C	
Electronics	Value	Comment
Supply voltage	5 V to 36 V (660 nm), 9 V - 36 V (405/450/520 nm)	
Operating current	300 mA max. (@5 V)	
Modulation digital	Digital (5 V), max. 500 kHz	
Modulation analog		On request
ESD Rating	±8 kV contact discharge	61000-4-2 (Level 4)
Protection circuit	Reverse polarity protection, surge protection	
Cable	4 wires (AWG22), grey, Ø = 4.9 mm	Suitable for drag chains „Supertronic PURö“
Cable length / Connection	2 m (Standard), open end with stripped and tinned wires	Customized connector on request
Mechanics	Value	Comment
Module length	65 mm	
Diameter	12 mm	
Material	Aluminium, black anodized	



APPLICATIONS

- Machine vision
- Measuring systems

FEATURES






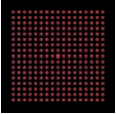
- **Patterns (Fan angles see table):**
 - > Cross
 - > Parallel lines
 - > Concentric rings
 - > Dot matrix
 - > Viewfinder
 - > More on request
- **Homogeneous laser line:**
 - > Homogeneity: $\leq 30\%$
 - > Fan angle: 60° (more on request)
- **Fixed focus**
- **Compact design for integration into larger systems**
- **Isolated module:** level 4
- **Operation mode:**
 - > Continuous operation (cw)
 - > Digital modulation (analog modulation optional)
- **Input voltage:** 5 - 36 V
- **Suitable for industrial use:**
 - > Robust design for harsh environments
 - > Cable suitable for drag chains

NOTES

The above product specifications are subject to change without notice.



PRODUCT VARIANTS

No.	1	2	3	4	5	6
Pattern						
Description	Single homogeneous line	Cross	5 parallel lines	5 concentric rings	Viewfinder	17 x 17 dot matrix
Wavelength [nm]	405, 450, 520, 660	660	660	660	660	660
Typ. power [mW] (@exit aperture)	85 (405 nm) 50 (450 nm) 80 (520 nm) 85 (660 nm)	60	55	55	55	55
Fan angle [°]	60 ± 3% @ 660 nm	37	30.2	2.8	37.7 x 27.9	15.2
Beam adjustment	focussed	focussed	focussed	focussed	focussed	focussed
Focus distance [mm]	300	300	300	300	300	300
Line width (1/e²) (@Focus) [mm]	0.2 ± 0.1	not applicable	not applicable	not applicable	not applicable	not applicable
Operation modulation	cw / digital	cw / digital	cw / digital	cw / digital	cw / digital	cw / digital
Cable length [m]	2	2	2	2	2	2

All specifications @ T=25°C

Image Sources:

Cross: Standard DOE (Plastics) – HOLOEYE Photonics AG DE-R 299

5 parallel lines: Standard DOE (Plastics) – HOLOEYE Photonics AG DE-R 250

5 concentric rings: Standard DOE (Plastics) – HOLOEYE Photonics AG DE-R 259

Viewfinder: Standard DOE (Plastics) – HOLOEYE Photonics AG DE-R 288

17 x 17 dot matrix: Standard DOE (Plastics) – HOLOEYE Photonics AG DE-R 206

HOMOGENEOUS LINE – EXAMPLE OF AN INTENSITY PROFILE

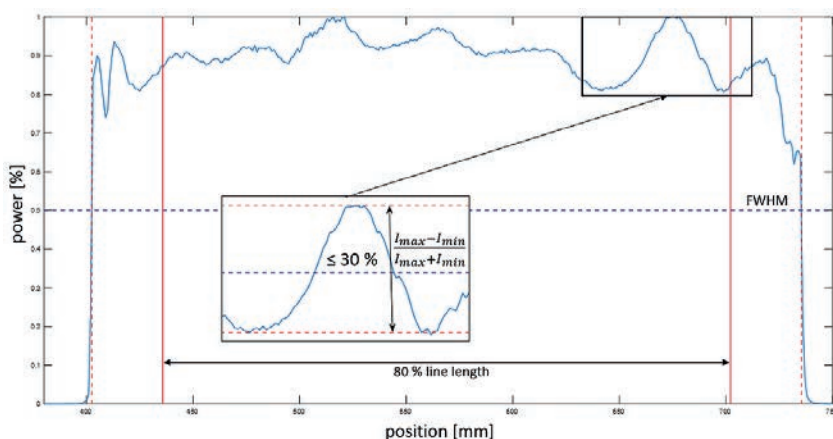


Figure 1: Calculation of homogeneity:

- Condition 1: $\leq 30\%$
- Condition 2: $80\% \pm 5\%$ laser power within 80% line length





Machine vision laser diode module

The ilumVISION laser diode module is designed for illumination in machine vision applications. With its homogeneous line it serves applications which needs a homogeneous illumination. The options “thin line” or “high depth of focus” offer the possibility for either a high resolution for small structures or for having a high operating range.

Specifications mechanical

Material	Aluminium anodized
Length	95 mm
Length of cable	n. s.
Diameter	17.9 mm

Specifications optical

Wavelength	520 or 660 nm
Optical output power (max.)	50 or 130 mW
min. line thickness (typ.@300 mm distance)	100 µm
Line Homogeneity	± 20 %
Line options	Thin line or high depth of focus
Focus distance typ.	300 mm to 1000 mm
Laser safety class	3B
Beam divergence	n. s.
Beam deviation	10 mrad
Fan angle	30° or 60° (other on request)

Specifications electrical

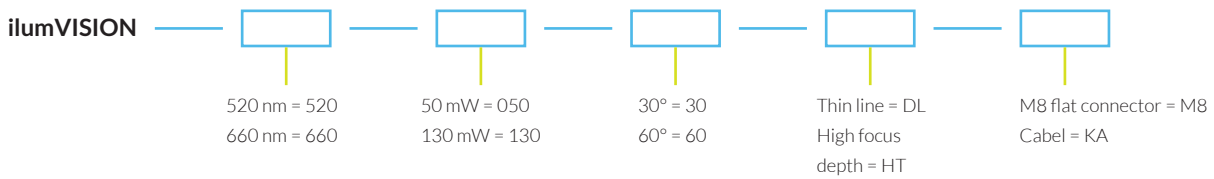
Galvanic isolation	Yes (VCC and modulation input)
Operating voltage Vcc	4.5 VDC to 30 VDC (reverse voltage protection, for all wavelengths)
Operating current	350 mA max.
Modulation voltage	3 VDC - 5 VDC
Modulation	1 MHz
Switch-on delay	150 ns typ.
Switch-off delay	110 ns typ.
Rise time	45 ns max., 37 ns typ.
Fall time	25 ns max., 19 ns typ.
Connection options	M8 flange plug or cable

Wavelength	Optical output		Fan angle		Line type			Connection type	
	50 mW	130 mW	30°	60°	Thin	High focus depth	M8 flat connector	Cabel	
520 nm	•		•	•	•	•	•	•	
660 nm		•	•	•	•	•	•	•	

FEATURES

- Laser diode module
- Ajustable focus
- Homogeneous line
- Different wavelength and angle available

ORDERING INFORMATION



For example

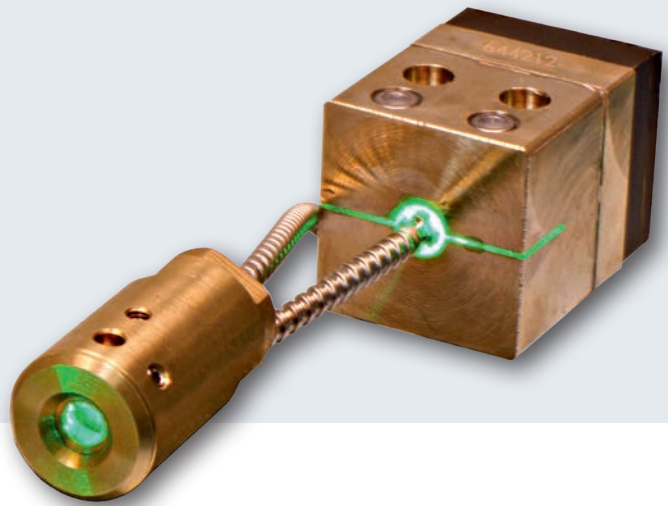
ilumVISION-520-050-60-DL-M8

ilumVISION-660-130-30-HT-KA

NOTES

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ilumFIBER VISION



Machine vision - fiber-coupled line laser

For machine vision applications, IMM Photonics now offers the ilumFIBER VISION fiber-coupled line laser.

This line laser with a uniform homogeneous beam profile was developed for special applications. It is offered primarily as a customer-specific solution. It is available with a variety of aperture angles, wavelengths, output power and line options. Due to the separation of the laser and the optics with a single-mode fiber, the laser can be used even at locations where environmental conditions are too harsh for the direct use of laser diodes. In many applications this also eliminates the need for elaborate cooling of the laser. With its compact and robust design, the ilumFIBER VISION is ideally suited for integration into existing measurement systems.

General	Value	Note
Wavelength	520 nm, 660 nm	
Output power (max.)	35 mW (520 nm) / 60mW (660 nm)	
Power stability	< 6 % (typ.)	Evaluated for the Laser Line Collimator over a range of -10 °C to +80 °C
Line options	Collimated / Focused	On request
Laser safety class	1 - 3B	Depending on laser diode
Line length (1 m distance)	1.3 m	Others on request
Line width (collimated / focused @0.5 m, @1 m, @1.5 m)	2 mm / 0.45 mm, 0.75 mm, 1 mm	
System storage temperature range	- 20 °C to +70 °C	

Electronic	Value	Note
Supply voltage	5 V / 9 V	
Operating current	240 mA max.	
Galvanically isolated		On request
Modulation	analog	

Fiber	Value	Note
Fiber connection	Permanently connected	
Fiber	SMF with OD = 3.4 mm stainless steel tubing	Others on request
Fiber length	> 1 m	Others on request
Fiber operating temperature range	-40 °C to +85 °C	Others on request

Singlemode Pigtail	Value	Note
Laser source operating temperature range	-10 °C to + 50 °C	
Housing dimensions	25.5 mm x 25.5 mm x 35 mm	
Distance mounting holes	12 mm	2 x M3 screw
Distance mounting threads	10 mm	2 x M2.5 thread

Laser line collimator	Value	Note
Collimator length	31.5 mm	
Collimator diameter	16 mm	
Aperture angle	60 °	Others on request
Collimator operating temperature range	-10 °C to +80 °C	

FEATURES

- Fiber coupled homogeneous line laser
- High beam quality ex fiber (TEM00-Mode)
- Passive cooled, robust and compact single-mode Pigtail
- Compact design for integration in larger systems
- Flexible: Separation between laser source and optics
- Collimated / Focused
- Application: harsh environments, measurement systems
- Custom: wavelength, aperture angle, output power and modulation

NOTES

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YOUR NOTES



EXPERIENCE MEETS EXPERTISE IN INNOVATION

We have been developing, manufacturing and distributing optical and optoelectronic standard products and individual solutions for more than 30 years, working as a reliable and capable partner with customers from many industrial sectors. Need someone you can trust with a complex task? The full extent of our experience and expertise in innovation is at your disposal. We look forward to developing prototypes and batch products for you at our two production sites in Germany – in keeping with the highest technical standards and with outstanding support from our large network of partners.

You get the **benefit** of advice, development and manufacturing all from a single source, designed and made in Germany.



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