MVmicro SERIES

FLEXPOINT® Machine Vision Laser

THE OPTIMAL STAND-ALONE MODULE FOR MACHINE VISION APPLICATIONS

The FLEXPOINT® MVmicro series was developed for stand alone machine vision applications, primarly in combination with industrial cameras in 3D triangulation measurements. It is available in various wavelengths of 405 – 830 nm with output powers up to 100 mW. Please contact us for other wavelengths or higher output power.

The MVmicro comes with a M12 connector for quick electronic integration or optional with a cable with open leads. Different optics provide the right combination of line thickness and depth of focus for various applications. The focus can be fixed at the factory to the defined working distance or the module is available with adjustable focus with a sophisticated focusing mechanism.

In the red wavelength range (640 – 660 nm) the machine vision module is available with multiple parallel lines (5 and 11).

FEATURES

/ Superior line quality for a variety of wavelengths
/ Fixed and adjustable focus available
/ Superior focusing quality and focusing mechanism
/ M12 electrical connector available
/ Different optics options for the right match of line thickness and depth of focus
/ Digital and analog modulation available

APPLICATIONS

/ 3D Machine Vision
/ 3D Triangulation
/ Industrial inspection
/ Structured lighting

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beyond borders

02/25 / V14 / KS-MaL / laser-modules/flexpoint-mvmicro-machine-vision-laser

SPECIFICATIONS

Model	Line laser with uniform power distribution (FOV correction available)							
Wavelength [nm]	405	450	520	640	660	685	785	830
Wavelength tolerance (typ.) [nm]	± 10	± 10	± 10	± 10	± 10	± 10	± 10	± 10
Wavelength Drift [nm/°C]	≤ 0.25							
Output power [mW][1]	1 – 100	5 – 70	1 – 40	1 – 40	1 – 100	1 – 30	1 – 40	1 – 100
Power stability at 25 °C (after warm up) [%]	≤ 5							
Operating voltage [VDC]	10 – 30			4.5 – 30				
Operating temperature (housing temp.) [°C][2]	-20 to +50							
Fan angle [°][3]	5, 10, 15, 20, 30, 45, 60, 75, 90							
Focusing range [mm]	50 – 5000							
Line intensity variation (typ)[4] [%]	±20 related to average power (80 % of the line)							
Pointing stability [µrad/K]	≤ 10 (improved pointing stability on request)							
Boresight deviation [mrad]	≤ 10							
Multiple lines (only available for 640 nm and 660 nm; red wavelength)	5 lines with 1.54° interbeam angle 11 lines with 1.6° interbeam angle							

Additional protections	IP54 (IP67 as option) ESD Over-voltage Reverse polarity
Housing	Aluminium (red anodized, potential free)
	Fixed focus or adjustable focus
Accessories available (optional, order separately)	Mount; Power Supply; Connector Cable; 5V and 12V mobile power packs
Connector	M12 connector
	Pin1: +VCC Pin2: Option M/MI or D/DI if one modulation option was ordered, Option D/DI if both modulation options are required Pin3: GND Pin4: Option D/DI if both modulation options are ordered otherwise not used
	Option: 2 m cable with open leads (instead of M12 connector)

Foot Notes
1 Output power: The output power is defined behind optics which means at the beam exit of the laser module
2 Below 0 °C condensate formation must be avoided (due to optical and electronic components)
3 Fan angle: Defined by the ends of the laser line using FWHM based on the average power (within 80 % of line)
4 Line intensity variation and line straightness are measured at 80 % of the fan angle

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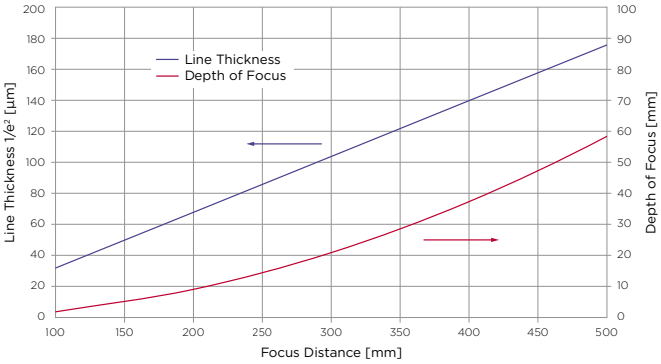
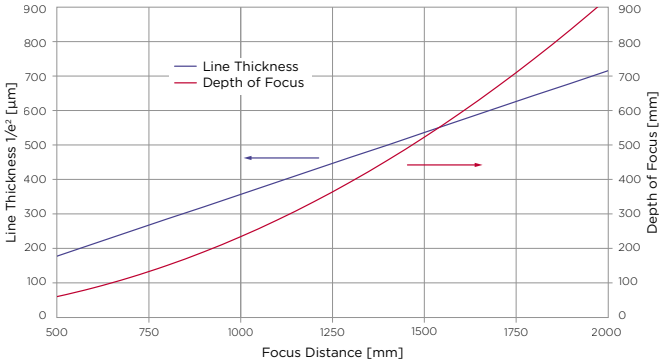
Line Thickness and Depth of Focus (DOF) for Standard (STD) Focus Option



MVmicro laser line characteristics (short range)



MVmicro laser line characteristics (long range)

Focus Options

MVmicro series is available with different focus options to achieve the right combination of line thickness and depth of focus depending on the application.

The values shown in the table below are the factors which should be used in combination with the graph above.

P_{out} and λ			Focus options (conversion factor related to diagram above left side - optimized for thin line / right side - optimized for high DOF)					
λ	P_out	Δλ	DL		STD		TS1	
[nm]	[mW]	[nm]	LT	DOF	LT	DOF	LT	DOF
405	1–100	±5	0.84	0.13	1.65	0.53	2.35	1.07
450	5–70	±10	0.84	0.16	0.88	0.18	2.90	1.94
520	1–7	±10	1.63	0.11	1.80	0.13	5.98	1.47
520	40	±10	1.63	0.11	1.73	0.12	5.68	1.31
635	1–7	±5	1.18	0.23	1.18	0.23	3.80	2.38
640	8–30	±5	1.18	0.23	1.30	0.28	2.84	1.33
650	1–4	±10	0.67	0.43	0.67	0.43	1.78	3.05
660	5–20	±5	0.67	0.44	0.67	0.44	1.80	3.10
660	21–40	±5	0.67	0.44	0.94	0.84	1.80	3.10
660	41–70	±5	0.68	0.44	1.47	2.05	2.33	5.15
660	71–100	±5	1.22	0.24	2.08	0.69	2.96	1.38
685	1–30	±10	2.16	0.62	2.16	0.62	3.92	2.03
785	1–40	±10	1.46	0.29	2.16	0.62	3.92	2.03
830	1–100	±10	1.54	0.30	2.14	0.58	4.14	2.15

Foot Note / Abbreviations
DL = Thin Line STD = Standard, good compromise for Line Thickness and Depth of Focus TS1 = Enhanced Depth of Focus
LT = Line Thickness DOF = Depth of Focus

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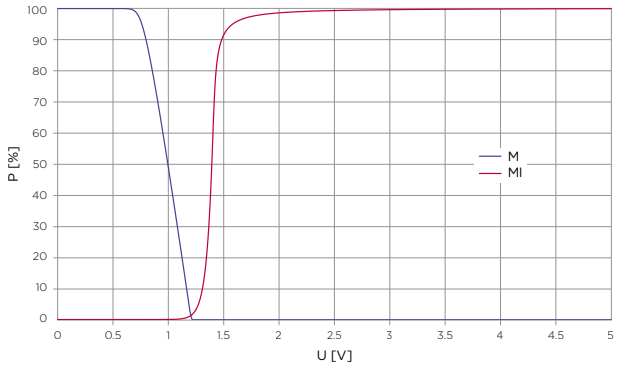
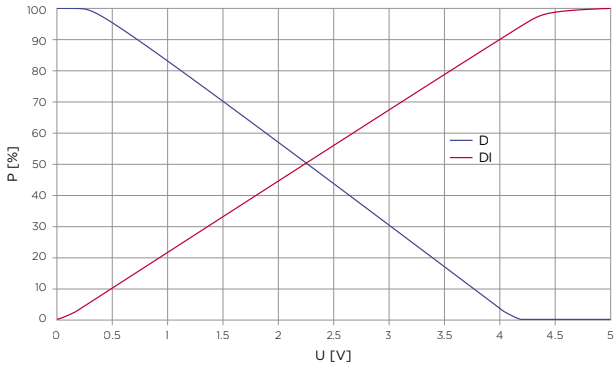
Modulation Options



Digital Modulation
(for voltages between 0.8 and 2.0 V the state of the laser is not defined)



Analog Modulation (typical behavior)

	Digital Modulation 0 – 1 MHz active high and active low available 0 – 5 V 24 V Version available (0 – 24 V)		**Analog Modulation** high/low by control wire 0 – 5 V	
	M active low	MI active high	D active low	DI active high
Rise Time / Fall Time [ns]				
On [V]	0 – 0.8	2 – 5	0	5
Off [V]	2 – 5	0 – 0.8	5	0

For a more detailed explanation of digital and analog Modulation as well as active high and active low please refer to the manual

https://www.lasercomponents.com/fileadmin/user_upload/home/Datasheets/manuals/laser-modules/manual-flexpoint-laser-modules.pdf

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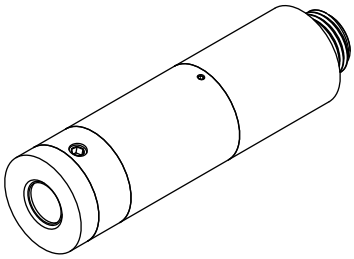
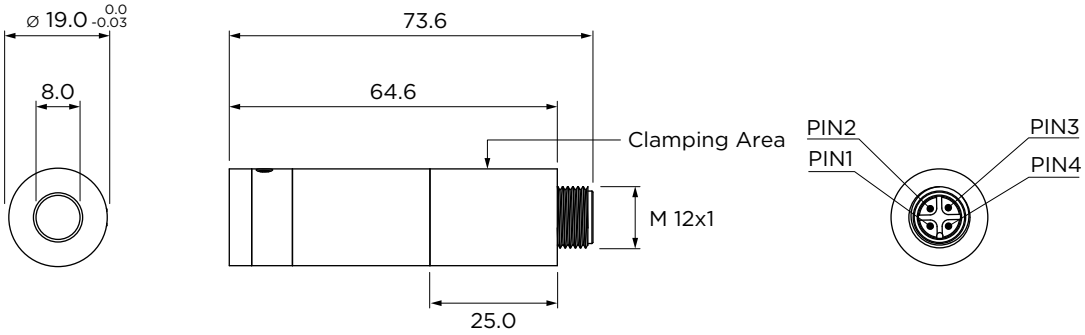
TECHNICAL DRAWING

MVmicro standard housing with M12 thread, focusable
(for STD and TS1, longer for DL +25 mm as well as for some modulation options)





Housing length = 90 mm for the following modules:
Focus option -DL, Modulation options D, M with 1 MHz, MI and DI,
any Modulation for 405 - 520 nm, combined Modulations MD, MID, MDI and MIDI

MVmicro F

Units: mm

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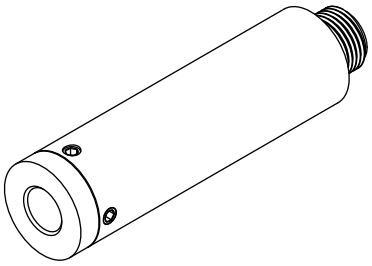
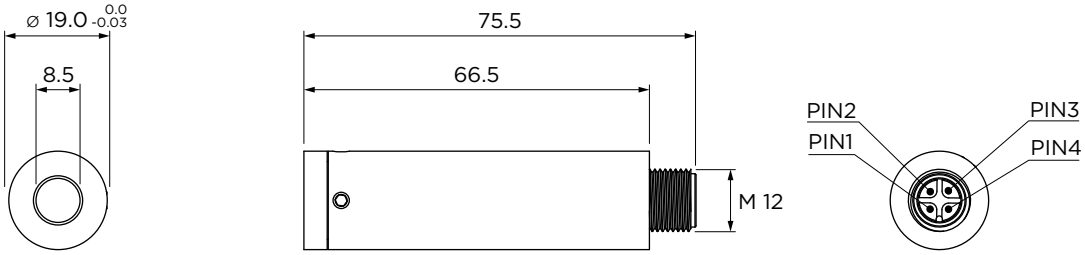
TECHNICAL DRAWING

MVmicro standard housing with M12 thread, fixed focus (for STD and TS1, longer for DL as well as for some modulation options)





Housing length = 90 mm for the following modules:
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MVmicro FIX

Units: mm

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ORDERING CODE

	Wavelength [nm]		Output Power [mW]	Modulation / Power Adjustment		Fan Angle [°]		Focus [mm]		Optics		Options
FP-MVmicro	X	-	X	X	-	X	-	X	-	X	-	X
	405 **450** **520** **635** **640** **650** **660** **685** **785** **830**		**1–100**	**M** | Digital Modulation, active low **MI** | Digital Modulation inverted, active high **D** | Dimmable, active low **DI** | Dimmable inverted, active high		**5** **10** **15** **20** **30** **45** **60** **75** **90**		**F** | Focusable **FYYY** | Prefocused to YYY mm, but still focusable **FIXYYY** | Fixed focus to YYY mm		**STD** **DL** **TS1**		**Examples:** Cable length, Multiple lines (e.g. 5L1.54)

Example: FP-MVmicro-785-100MI-5-F-STD

PRODUCT CHANGES

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Custom designed products are available on request.

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