MV18 SERIES (EDITION 2025 WITH IMPROVED FOCUS MECHANICS)

FLEXPOINT® Machine Vision Laser

THE RUGGEDIZED MACHINE VISION MODULE WITH M18 THREADED HOUSING FOR EASY INTEGRATION

The MV18 series comes with M18 threaded housing for easy intergration and M12 connector for quick electrical connection. The module is available in various wavelengths of 405 – 850 nm with output powers up to 100 mW.

The MV18 can now also be ordered with improved focus mechanics (Edition 2025) with increased dust- and moisture proofness, an even shorter design and an improved beam drift while focusing the laser. The established, easy focusing method will remain untouched. The focus can also be fixed at our factory to a defined working distance.

A variety of options of optics provide the right combination of line thickness and depth of focus for various applications.

FEATURES

/ M18 threaded housing for easy integration
/ Fixed and adjustable focus available
/ Improved focus mechanics for the adjustable focus
/ Ruggedized housing and M12 electrical connector
/ Many optics options for the right match of line thickness and depth of focus
/ 24 V Modulation available

APPLICATIONS

/ 3D machine vision
/ Industrial inspection
/ Structured lighting
/ Food inspection
/ Timber industry

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beyond borders

09/24 / V1 / KS-MaL / laser-modules/flexpoint-mv18-machine-vision-laser-2025

SPECIFICATIONS

Model	Line laser with uniform power distribution (FOV correction available)								
Wavelength [nm]	405	450	520	640	660	685	785	830	845
Wavelength tolerance (typ.) [nm]	± 5	± 10	± 10	± 5	± 5	± 10	± 10	± 10	± 10
Output power [mW][1]	1 – 100	1 – 50	1 – 80	1 – 100	1 – 100	1 – 40	1 – 100	1 – 80	1 – 40
Power stability at 25 °C (after warm up) [%]	≤ 5								
Operating voltage [VDC][2]	10 – 30 [2]			4.5 – 30					
Operating temperature (housing temp.) [°C][3]	-20 to +50								
Fan angle [°][4]	1, 5, 10, 15, 20, 30, 45, 60, 75, 90								
Focussing range [mm]	50 – 5000								
Line intensity variation (typ) [%][5]	±20 (optional ±10) related to average power (80 % of the line)								
Line straightness [%][5]	±0.1 (optional ±0.05)								
Pointing stability [µrad/K]	≤ 10 (improved pointing stability on request)								
Boresight deviation [mrad]	≤ 10 (optional ≤ 3 or 5)								

Shock tolerance	30 G, 6 ms 75 G, 4 ms
Housing	Aluminium (blue anodized, potential free)
	Fixed focus (fixed at factory to defined working distance) or adjustable focus
Accesories available (optional, order separately)	Power Supply with M12 connector
Connector	M12 connector Pin1: +VDC Pin2: digital Modulation (M/MI) Pin3: GND Pin4: analog Modulation (D/DI)

Foot Note
1 Output power: The output power is defined behind optics which means at the beam exit of the laser module
2 5 V Option available for 405 nm, 450 nm and 520 nm with increased effort, no standard product but available on request
3 Below 0 °C condensate formation must be avoided (due to optical and electronic components)
4 Fan angle: Defined by the ends of the laser line using FWHM based on the average power (within 80 % of line)
5 Line intensity variation and line straightness are measured at 80 % of the fan angle

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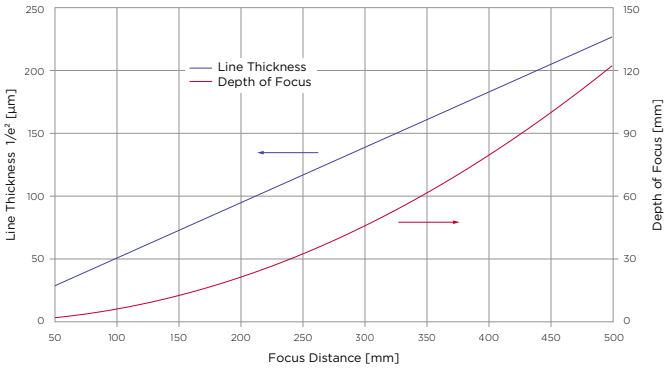
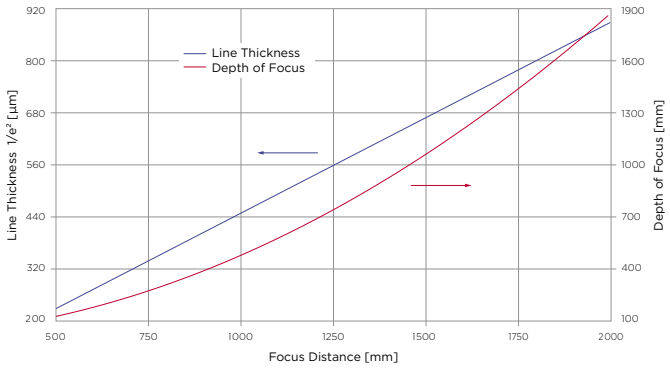
Line Thickness and Depth of Focus (DOF) for Standard (STD) Focus Option at 660 nm



Standard laser line characteristics (short range)



Standard laser line characteristics (long range)

Focus Options

MV18 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 reference laser marked in red left side - optimized for thin line / right side - optimized for high DOF)											
λ	P_out	Δλ	DLSE		DLE		DL		STD		TS1		TS2	
[nm]	[mW]	[nm]	LT	DOF	LT	DOF	LT	DOF	LT	DOF	LT	DOF	LT	DOF
405	1 – 30	±5	0.27	0.12	0.35	0.20	0.49	0.39	0.71	0.81	1.04	1.76	1.53	3.80
405	30 – 100	±6	0.27	0.12	0.35	0.20	0.49	0.39	0.71	0.81	1.04	1.76	1.53	3.80
450	1 – 50	±10	0.25	0.10	0.33	0.16	0.45	0.30	0.69	0.69	1.49	3.25	2.20	7.06
520	1 – 10	±10	0.29	0.11	0.39	0.19	0.53	0.36	0.78	0.78	1.71	3.69	2.55	8.23
520	11 – 40	±10	0.29	0.11	0.39	0.19	0.53	0.36	0.78	0.78	1.71	3.69	2.55	8.23
640	1 – 20	±5	0.39	0.16	0.51	0.27	0.69	0.48	1.02	1.07	1.65	2.79	2.43	6.08
640	21 – 30	±5	0.39	0.16	0.51	0.27	0.69	0.48	1.02	1.07	1.47	2.23	2.18	4.87
640	31 – 100	±5	0.47	0.23	0.59	0.36	0.80	0.67	1.20	1.47	1.65	2.79	2.43	6.08
660	1 – 30	±5	0.39	0.15	0.49	0.24	0.67	0.44	**1.00**	**1.00**	1.51	2.27	2.25	5.07
660	31 – 100	±5	0.51	0.26	0.65	0.42	0.88	0.78	1.31	1.72	1.51	2.27	2.25	5.07
685	1 – 40	±10	0.45	0.20	0.57	0.31	0.76	0.56	1.14	1.24	1.43	1.97	2.12	4.31
785	1 – 10	±10	0.35	0.10	0.45	0.17	0.61	0.31	0.90	0.68	1.65	2.28	2.43	4.96
785	11 – 100	±10	0.65	0.35	0.82	0.57	1.12	1.05	1.65	2.28	2.00	3.36	2.98	7.45
830	1 – 40	±10	0.69	0.37	0.88	0.62	1.22	1.17	1.78	2.53	2.29	4.18	3.39	9.13
845	1 – 40	±10	0.35	0.10	0.45	0.16	0.61	0.29	0.90	0.63	1.63	2.05	2.41	4.51

Foot Note / Abbreviations
DLSE = Thin Line Super Enhanced DLE = Thin Line Enhanced DL = Thin Line
STD = Standard, good compromise for Line Thickness and Depth of Focus LT = Line Thickness DOF = Depth of Focus
TS1 = Enhanced Depth of Focus TS2 = Enhanced Depth of Focus, higher factor

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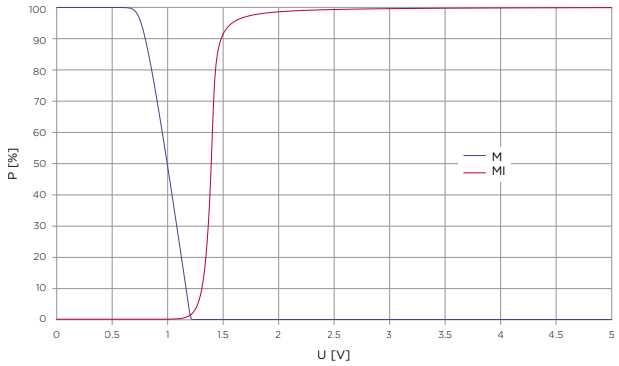
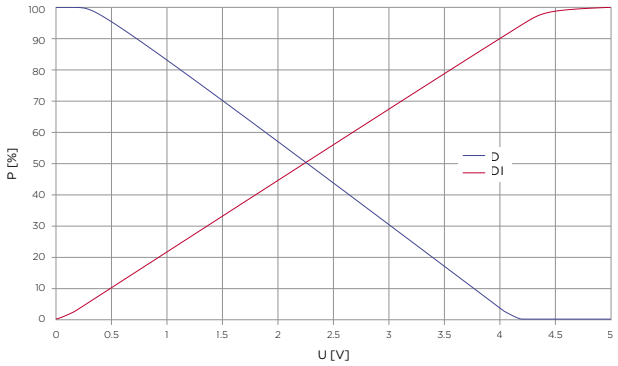
Modulation Options



Digital Modulation (typical TTL)



Analog Modulation

	Digital Modulation < 10 kHz 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 24 V Version available (0 – 24 V)	
	M active low	MI active high	D active low	DI active high
Delay + Rise time (max.) [µs]	10	10		
On [V]	0 – 0.8	2 – 5	0	5
Off [V]	2 – 5	0 – 0.8	5	0

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Available combinations of options M and D are listed in the table below.

P_{out} and λ		Modulation options							
λ [nm]	P_out [mW]	D	DI	M	MI	MD	MID	MDI	MIDI
405	1-30	■ a	–	■ a	■ b, e	■	■ b, e	–	–
405	30 – 100	■ a, c, d	■ b, c, d	■ a, e	■ b, e	■ c, e	■ c, e	■	■ c, e
450	1 – 50	■ a, c, d	■ b, c, d	■ a, e	■ b, e	■ c, e	■ c, e	■	■ c, e
520	1 – 10	■ a, c, d	■ b, c, d	■ a, e	■ b, e	■ c, e	■ c, e	■	■ c, e
520	11 – 40	■ a, c, d	■ b, c, d	■ a, e	■ b, e	■ c, e	■ c, e	■	■ c, e
640	1 – 20	■ a	–	■ a, e	■ b, e	■	■ b, e	–	–
640	21 – 30	■ a	–	■ a, e	■ b, e	■	■ b, e	–	–
640	31 – 100	■ a, c, d	■ b, c, d	■ a, e	■ b, e	■ c, e	■ c, e	■	■ c, e
660	1 – 30	■ a	–	■ a	■ b, e	■	■ b, e	–	–
660	31 – 100	■ a	■	■ a	■ b, e	■	■ b, e	■	■
685	1 – 40	■ a, c, d	■ b, c, d	■ a, e	■ b, e	■ c, e	■ c, e	■	■ c, e
785	1 – 10	■ a	–	■ a	■ b, e	■	■ b, e	–	–
785	11 – 100	■ a, c, d	■ b, c, d	■ a, e	■ b, e	■ c, e	■ c, e	■	■ c, e
830	1 – 40	■ a	■	■ a	■ b, e	■	■ b, e	■	■
845	1 – 40	■ a	–	■ a	■ b, e	■	■ b, e	–	–

Foot Note / Abbreviations

■ = Standard availability ■ = Available with modification

a = On@float (if the modulation cable or pin is not connected the module is on (cable is loose))

b = Off@float (if the modulation cable or pin is not connected the module is off (cable is loose). a and b are not possible at the same time)

c = Non-linear respone (the curve in the diagram for D and DI indiactes an ideal line / linear behaviour but in reality the response is not linear)

d = No Off (module is always glowing / always on at least with very low intensity)

e = TTL (TTL Logic: TTL 5 V has two threshold values - 0.8 V and 2.0 V)

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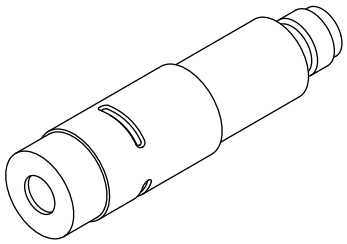
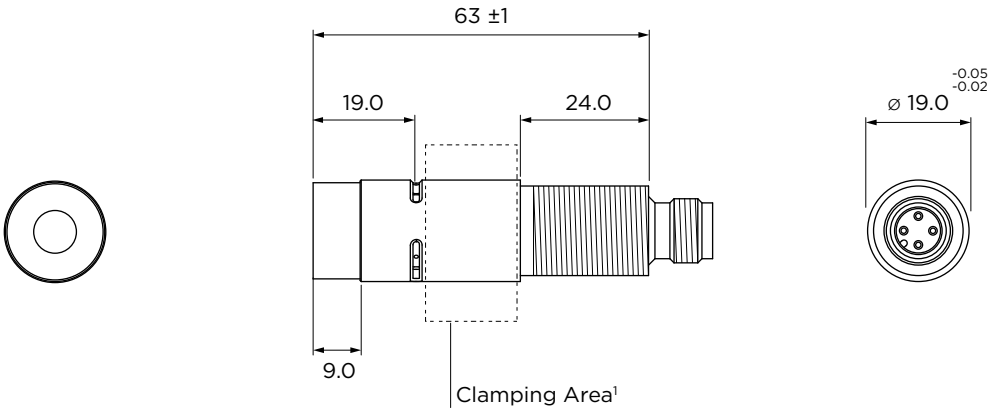
TECHNICAL DRAWING

MV18 2025 standard housing, focusable (ST-F)





MV18 ST-F

[1] For optimal heat dissipation in a mount, we recommend to apply thermal paste on the surface overlap.

Units: mm

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ORDERING CODE

	Housing	Wavelength [nm]	Output Power [mW]	Modulation / Power Adjustment	Fan Angle [°]	Focus [mm]	Optics
FP-MV18 -	X -	X -	X -	X -	X -	X -	X
	ST	**405** **450** **520** **640** **660** **685** **785** **830** **845**	**1–100**	**M** | Digital Modulation, active low **MI** | Digital Modulation inverted, active high **D** | Dimmable, active low **DI** | Dimmable inverted, active high	**1** **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** **DLE** **DLSE** **TS1** **TS2**

Example: FP-MV18-ST-785-50M-30-F-DL

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