

FLEXPOINT® Machine Vision Lasers MV18 Series (Edition 2017)

The Ruggedized Module with an M18 Thread

The new MV18 series uses the latest 2017-edition focusing mechanism and comes with an M18 thread for easy mounting of the module. The module is equipped with an M12 connector for electrical connection. Output powers up to 200 mW @ 450 nm are available.

Features

- Superior line quality
- Many focus / optics options
- Improved focusing mechanism
- Ruggedized housing

Applications

- 3D machine vision
- Industrial inspection
- Structured lighting

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Specifications

Spectral range	405 nm, 450 nm, 520 nm, 640 nm, 660 nm, 685 nm, 785 nm, 850 nm (other wavelengths on request)
Wavelength stability	< 0.25 nm / °C
Output power	< 1 mW – 200 mW (depending on wavelength; higher power on request)
Power stability	≤ 5% (after warm up at 25 °C)
Beam profile	laser line with uniform power distribution, FOV/COS ⁴ correction available
Fan angle	5°, 10°, 15°, 20°, 30°, 45°, 60°, 75°, 90°
Line thickness	Standard, DL, DLE, DLSE, TS1, TS2
Line intensity variation	± 20% related to average power (within 80% of the line)
Line straightness	± 0.1% (± 0.05% as option)
Boresight deviation	≤ 10 mrad (≤ 3 mrad as option)
Pointing stability	≤ 10 µrad/°C (improved pointing stability as option)
Operating voltage	4.5 – 30 V (10 – 30 V for 405/450/520 nm) (405/520 nm available with 5 V electronics on request) reverse voltage protection
Current consumption	< 400 mA
Modulation options	digital (low/high active, 0 – 10 kHz, higher frequency on request), dimmable (low/high active by 0 – 5 V signal)
Operating temperature	-20 °C bis +50 °C (case temperature, depending on wavelength and heat sink)
Storage temperature	-20 °C bis +60 °C (depending on wavelength and heat sink)
Housing size	Ø = 19/M18 × l = 65 mm (excl. M18 nuts and connector) >20 mm M18 × 1 thread on the backside of the housing for M18 nuts
Housing material	Aluminum (blue anodized, potential free)
Pin definition	M12 connector Pin1: +VDC, Pin2: dig. modulation, Pin3: GND, Pin4: power adjustment
Laser class	DIN EN 60825-1:2014

Focus Options

MV18 lasers are available with different focus options to achieve the right combination of line thickness and depth of focus for the application.

The individual options are:

- STD: Standard, good compromise for line thickness vs. depth of focus
- DL: Thin line
- DLE: Thin line enhanced
- DLSE: Thin line super enhanced
- TS1: Enhanced depth of focus
- TS2: Enhanced depth of focus, factor 2

(Abbreviations: LT = line thickness / DOF = depth of focus)

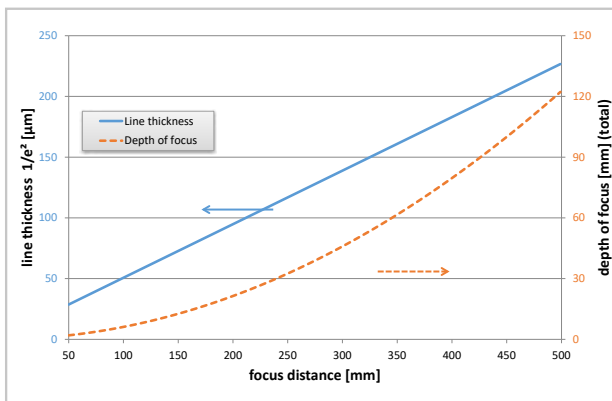


Fig. 1:
Standard laser line characteristics
(short range)

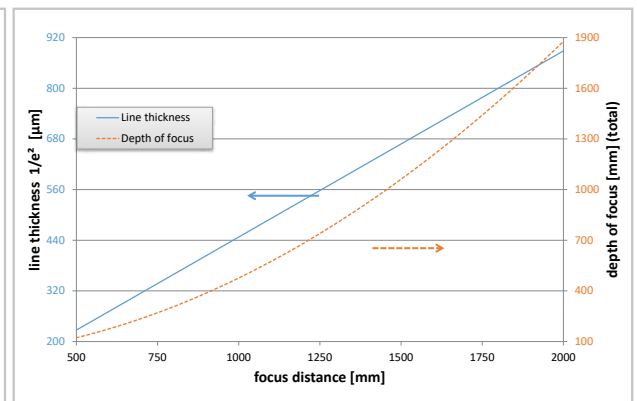


Fig. 2:
Standard laser line characteristics
(long range)

To calculate line thickness and DOF, note the value in the graphs above and multiply them by the factors for your requested wavelength, output power, and focus option listed in the following table.

Specifications MV18

P _{out} & λ			Focus options (conversion factor related to the reference laser)											
λ [nm]	P _{out} [mW]	Δ λ [nm]	Std		DL		DLE		DLSE		TS1		TS2	
			LT	DOF	LT	DOF	LT	DOF	LT	DOF	LT	DOF	LT	DOF
405	1-30	±5	0,71	0,81	0,49	0,39	0,35	0,20	0,27	0,12	1,04	1,76	1,53	3,80
405	30-100	±6	0,71	0,81	0,49	0,39	0,35	0,20	0,27	0,12	1,04	1,76	1,53	3,80
450	1-50	±10	0,69	0,69	0,45	0,30	0,33	0,16	0,25	0,10	1,49	3,25	2,20	7,06
520	1-10	±10	0,78	0,78	0,53	0,36	0,39	0,19	0,29	0,11	1,71	3,69	2,55	8,23
520	11-40	±10	0,78	0,78	0,53	0,36	0,39	0,19	0,29	0,11	1,71	3,69	2,55	8,23
640	1-20	±5	1,02	1,07	0,69	0,48	0,51	0,27	0,39	0,16	1,65	2,79	2,43	6,08
640	21-30	±5	1,02	1,07	0,69	0,48	0,51	0,27	0,39	0,16	1,47	2,23	2,18	4,87
640	31-100	±5	1,20	1,47	0,80	0,67	0,59	0,36	0,47	0,23	1,65	2,79	2,43	6,08
660	1-30	±5	1,00	1,00	0,67	0,44	0,49	0,24	0,39	0,15	1,51	2,27	2,25	5,07
660	31-100	±5	1,31	1,72	0,88	0,78	0,65	0,42	0,51	0,26	1,51	2,27	2,25	5,07
685	1-40	±10	1,14	1,24	0,76	0,56	0,57	0,31	0,45	0,20	1,43	1,97	2,12	4,31
785	1-10	±10	0,90	0,68	0,61	0,31	0,45	0,17	0,35	0,10	1,65	2,28	2,43	4,96
785	11-100	±10	1,65	2,28	1,12	1,05	0,82	0,57	0,65	0,35	2,00	3,36	2,98	7,45
850	1-40	±10	0,90	0,63	0,61	0,29	0,45	0,16	0,35	0,10	1,63	2,05	2,41	4,51

Abbreviations

- Reference laser (for LT and DOF)
- Laser with standard availability
- Laser available with modification
- Laser available on request

Modulation Options

MV18 lasers can either be ordered with digital modulation or analog power adjustment (both of which are optional).

The digital option is referred to as option 'M', and power adjustment is referred to as option 'D'.

The individual options are:

- M: digital modulation, active low
- MI: digital modulation (inverted), active high
- D: Dimmable, active low
- DI: Dimmable (inverted), active high

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

P _{out} & λ			Modulation options							
λ [nm]	P _{out} [mW]	Δλ [nm]	D	DI	M	MI	MD	MID	MDI	MIDI
405	1-30	±5			1), no TTL	2), TTL				
405	30-100	±6	1), 3), 4)	2), 3), 4)	1), no TTL	2), TTL	4)			1), no TTL
450	1-50	±10	1), 3), 4)	2), 3), 4)	1), no TTL	2), TTL	4)			1), no TTL
520	1-10	±10			1), no TTL	2), TTL				
520	11-40	±10			1), no TTL	2), TTL				
640	1-20	±5			1), no TTL	2), TTL				
640	21-30	±5			1), no TTL	2), TTL				
640	31-100	±5	1), 3), 4)	2), 3), 4)	1), no TTL	2), TTL	4)			1), no TTL
660	1-30	±5			1), no TTL	2), TTL				
660	31-100	±5	1), 3), 4)	2), 3), 4)	1), no TTL	2), TTL	4)			1), no TTL
685	1-40	±10			1), no TTL	2), TTL				
785	1-10	±10			1), no TTL	2), TTL				
785	11-100	±10	1), 3), 4)	2), 3), 4)	1), no TTL	2), TTL	4)			1), no TTL
850	1-40	±10			1), no TTL	2), TTL				

Abbreviations

- Reference laser (for LT and DOF)
- Laser with standard availability
- Laser available with modification
- Laser available on request

1. ON@float
2. OFF@float
3. Non-linear response
4. No OFF

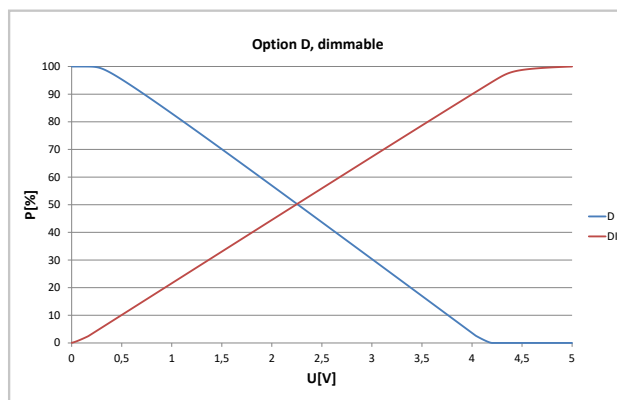


Fig. 3: Typical graph of an active high/low logic for option D/DI (dim function/power adjustment).

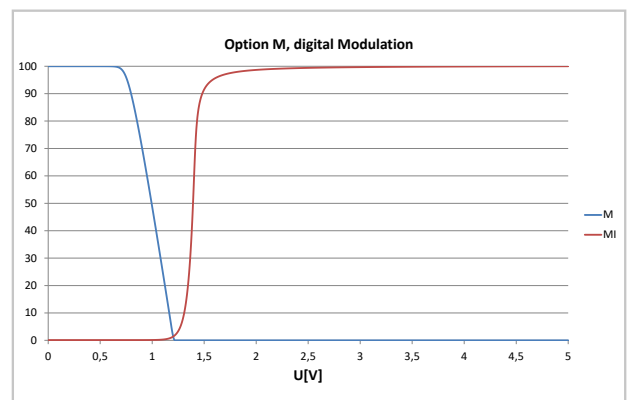


Fig. 4: Typical graph of an active high/low logic for option M/MI (digital modulation).

Housing Drawing

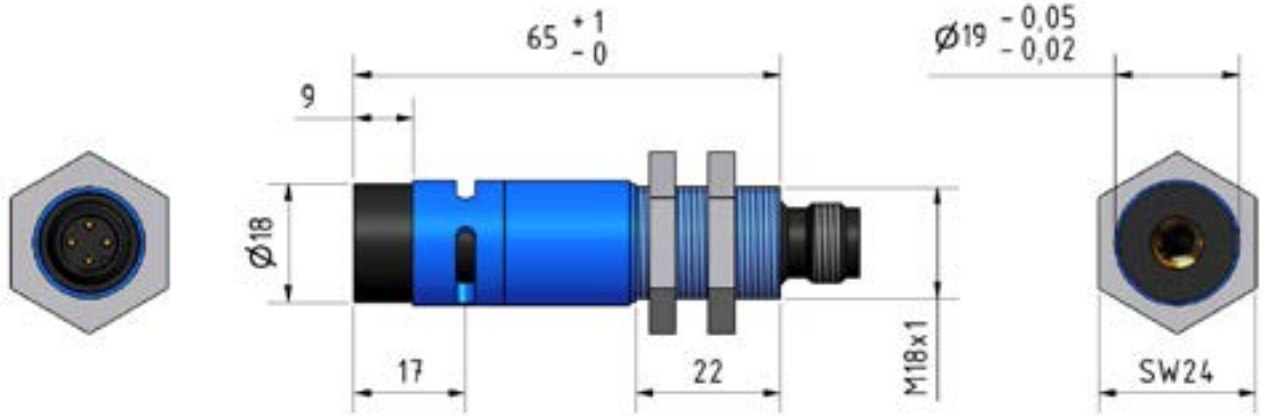


Fig. 5: MV18 housing

Ordering Code MV18 Series

Series	Housing	Wavelength (nm)	Output Power (mW)	Modulation/ Power adjustment	Fan angle (degree)	Focus (mm)	Optics
FP	MV18	ST	XXX	XXX	X	XX	XXX
		405 450 520 640 660 685 785 850	1 to 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, but still focusable FIXYYY = fix focused to YYY	STD TS1 TS2 DL DLE DLSE