

## 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



## Specifications

|                          |   |
|--------------------------|---|
| Spectral range           | 405 nm, 450 nm, 520 nm, 640 nm, 660 nm, 685 nm, 785 nm, 850 nm<br>(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 <sup>4</sup> 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)<br>(405/520 nm available with 5 V electronics on request)<br>reverse voltage protection |
| Current consumption      | < 400 mA  |
| Modulation options       | digital (low/high active, 0 – 10 kHz, higher frequency on request),<br>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 x l = 65 mm (excl. M18 nuts and connector)<br>>20 mm M18 x 1 thread on the backside of the housing for M18 nuts        |
| Housing material         | Aluminum (blue anodized, potential free)  |
| Pin definition           | M12 connector<br>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)

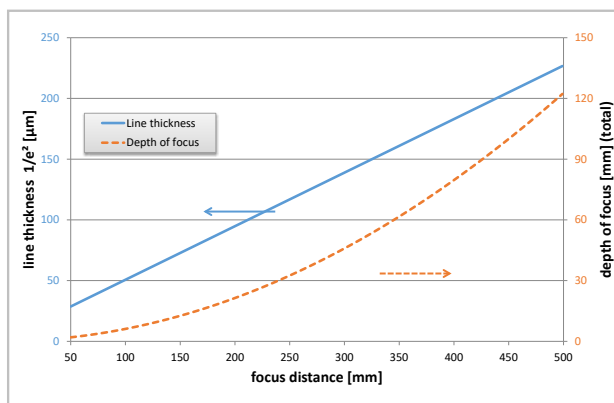


Fig. 1:  
Standard laser line characteristics  
(short range)

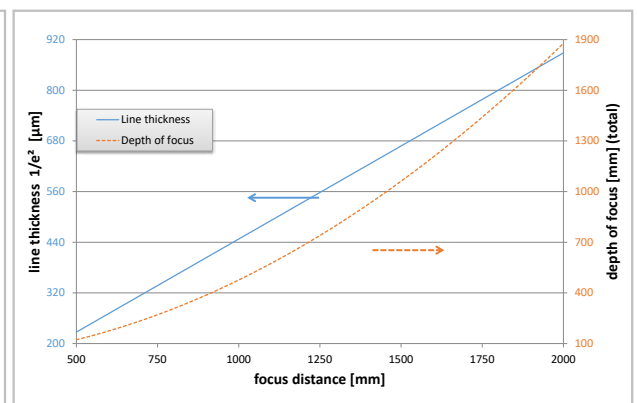


Fig. 2:  
Standard laser line characteristics  
(long range)

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 <sub>out</sub> & λ |                          |             | Focus options (conversion factor related to the reference laser) |      |      |      |      |      |      |      |      |      |      |      |
|----------------------|--------------------------|-------------|--|------|------|------|------|------|------|------|------|------|------|------|
| λ<br>[nm]            | P <sub>out</sub><br>[mW] | Δ λ<br>[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 <sub>out</sub> & λ |                       |         | Modulation options |            |            |         |    |     |     |            |
|----------------------|-----------------------|---------|--------------------|------------|------------|---------|----|-----|-----|------------|
| λ [nm]               | P <sub>out</sub> [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

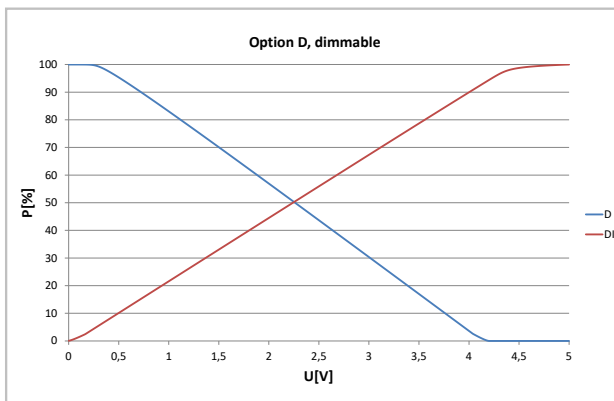


Fig. 3: Typical graph of an active high/low logic for option D/DI (dim function/power adjustment).

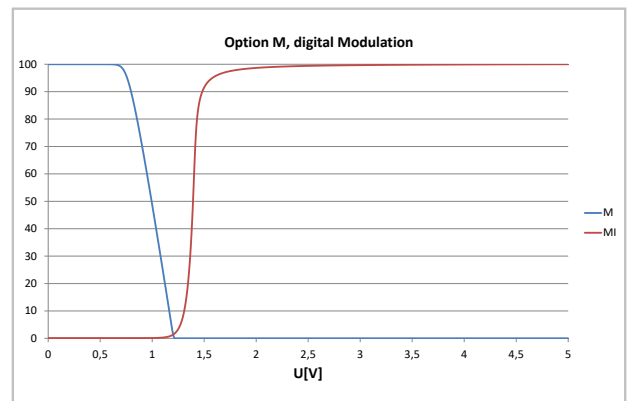


Fig. 4: Typical graph of an active high/low logic for option M/MI (digital modulation).

### Housing Drawing

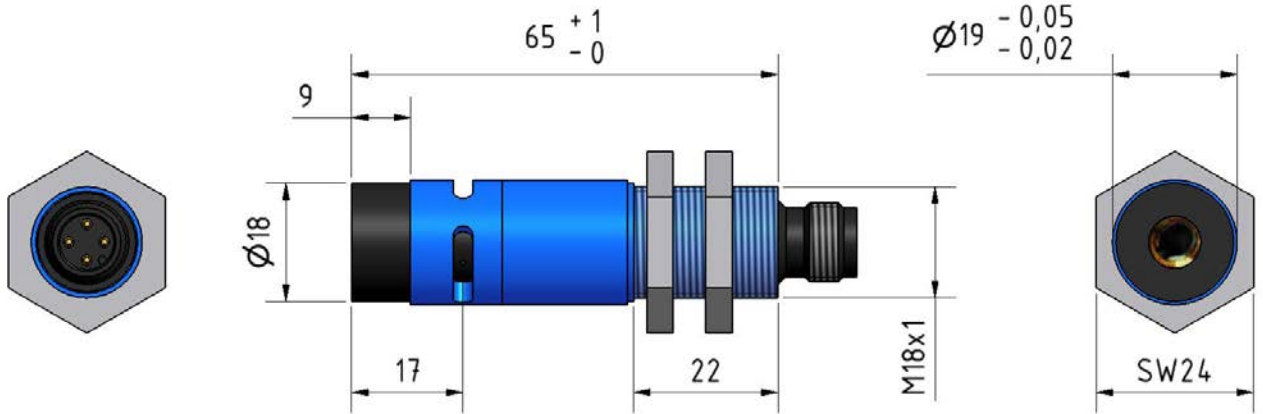


Fig. 5: MV18 housing

### Ordering Code MV18 Series

