



# TFM Series

Time of flight miniaturized Sensor



Time of flight  
miniaturized Sensor

## features

- Completely filled with resin
- 2 Digital Outputs (Lon)
- Switching Frequency from 10 Hz to 80 Hz
- Infrared Laser emission (class 1)
- Wide angle emission
- Output selectable : PNP or Pushpull
- Resolution from 1 to 3 mm
- IP67 protection degree and complete protection against electrical damages

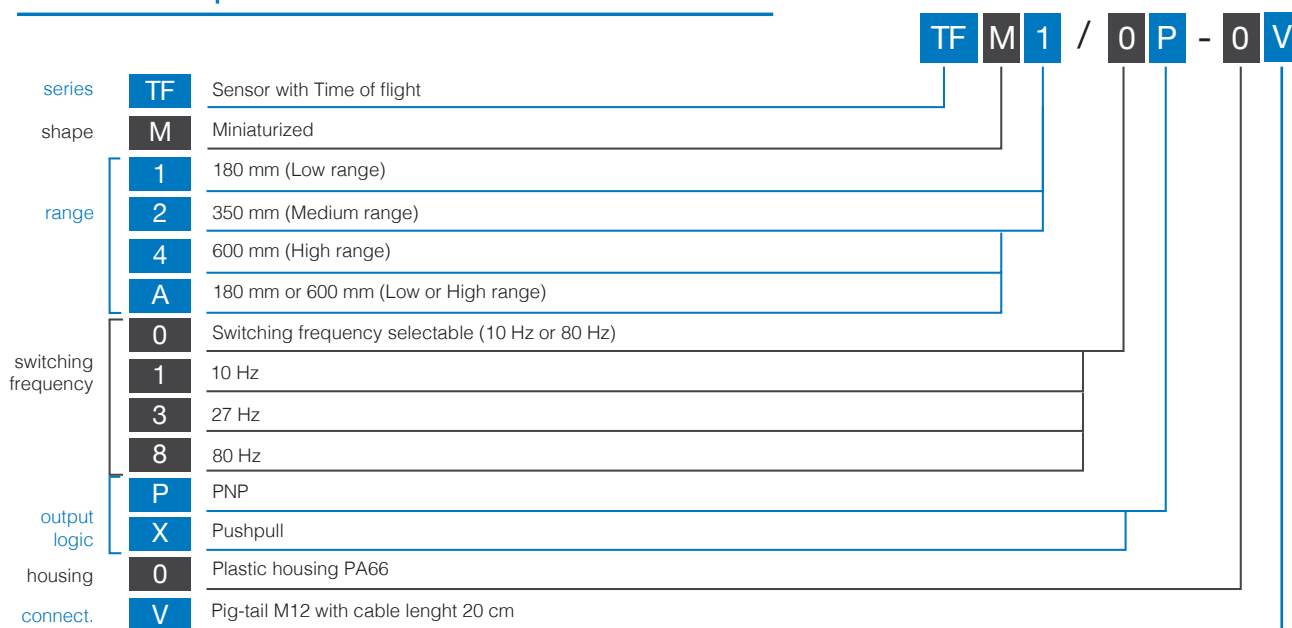
## web contents



- Application notes
- Photos
- Catalogue / Manuals



## code description



## available models

| distance                           | output type | switching frequency   | code       |
|------------------------------------|-------------|-----------------------|------------|
| 0...180 mm (default)<br>0...600 mm | pushpull    | 810 (default) / 80 Hz | TFMA/0X-0V |
|                                    | PNP         |                       | TFMA/0P-0V |
| 0...180 mm                         | pushpull    | 10 Hz                 | TFM1/1X-0V |
|                                    |             |                       | TFM4/1X-0V |
| 0...180 mm                         | PNP         | 80 Hz                 | TFM1/8X-0V |
|                                    |             |                       | TFM1/1P-0V |
| 0...600 mm                         | PNP         | 10 Hz                 | TFM4/1P-0V |
|                                    |             |                       | TFM1/8P-0V |
| 0...180 mm                         | pushpull    | 27 Hz                 | TFM2/3X-0V |
|                                    |             |                       | TFM2/3P-0V |

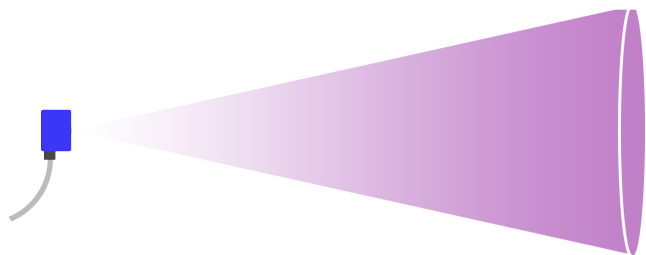


## technical specifications

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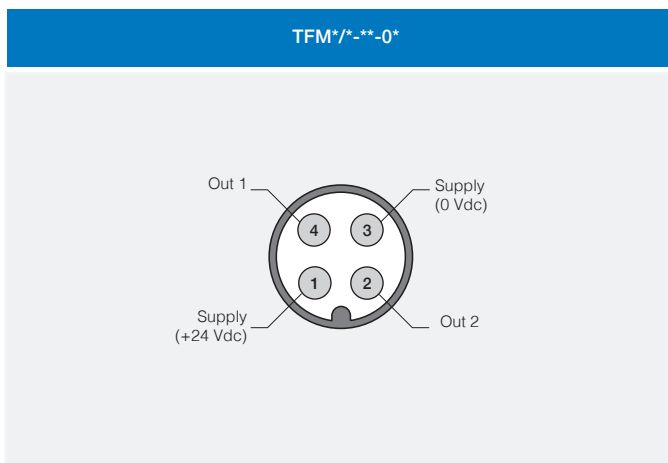
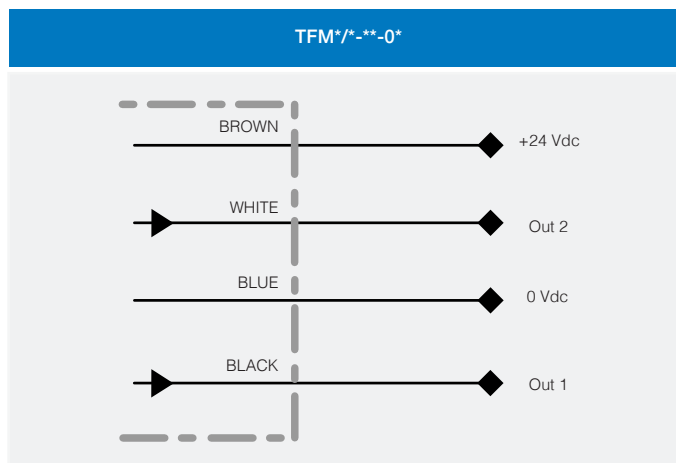
|                                | TFM1/1*-0V   | TFM4/1*-0V   | TFM2/3*-0V   | TFM1/8*-0V   |
|--------------------------------|--|--|--|--|
| detection range                | 0...180 mm<br>(white 90% - gray 18% -<br>black 6%)   | 0...600 mm (white 90%)<br>0...350 mm (gray 18%)<br>0...300 mm (black 6%) | 0...360 mm (white 90%)<br>0...240 mm (gray 18%)<br>0...200 mm (black 6%) | 0...180 mm (white 90%)<br>0...140 mm (gray 18%)<br>0...110 mm (black 6%) |
| resolution                     | 1 mm   | 3 mm   | 2 mm   | 1 mm   |
| hysteresis                     | ± 4 mm   | ± 6 mm   | ± 12 mm  | ± 12 mm  |
| emission                       | LASER infrared 850 nm (LASER class1)   |  |  |  |
| spot dimension                 | divergent (25°) wide angle   |  |  |  |
| operating voltage              | 24 Vdc ± 20%   |  |  |  |
| ripple                         | < 10%  |  |  |  |
| no-load current                | < 40 mA  |  |  |  |
| output current                 | 50 mA  |  |  |  |
| leakage current                | ≤ 10 µA (Vdc max.)   |  |  |  |
| output voltage drop            | 2.0 V max. (II = 50 mA)  |  |  |  |
| output type                    | 2 outputs selectable: PNP / Pushpull   |  |  |  |
| switching frequency            | ≤ 10 Hz  |  | ≤ 27 Hz  | ≤ 80 Hz  |
| supply electrical protections  | polarity reversal, transient   |  |  |  |
| output electrical protections  | short circuit (auto reset), over voltage pulses  |  |  |  |
| temperature range              | -10°...+50° C  |  |  |  |
| temperature storage            | -30°...+90° C  |  |  |  |
| umidity                        | < 80%  |  |  |  |
| interference to external light | TBD  |  |  |  |
| standard conformity            | EN60947-5-2  |  |  |  |
| housing material               | plastic (PA66) + ABS   |  |  |  |
| optic material                 | glass  |  |  |  |
| LED indicators                 | Green : RUN (sensor working, target inside the detection distance)<br>Orange 1 : OUTPUT 1<br>Red: WARNING : target out of operative range<br>Yellow 2 : OUTPUT 2 |  |  |  |
| protection degree              | IP67   |  |  |  |
| weight                         | 26 g (pig-tail version)  |  |  |  |

# spot diameter

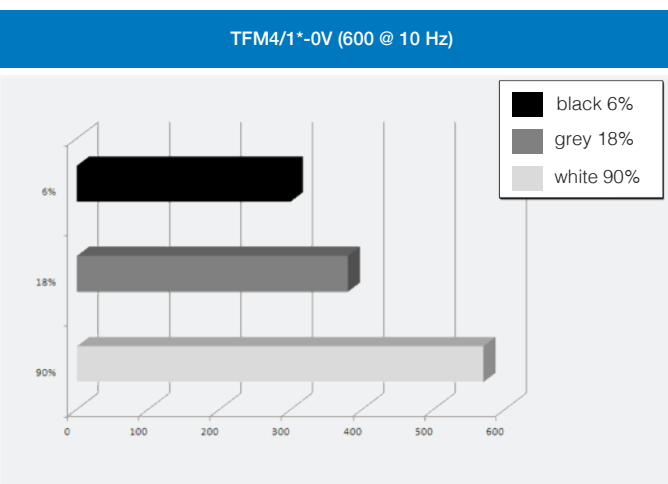
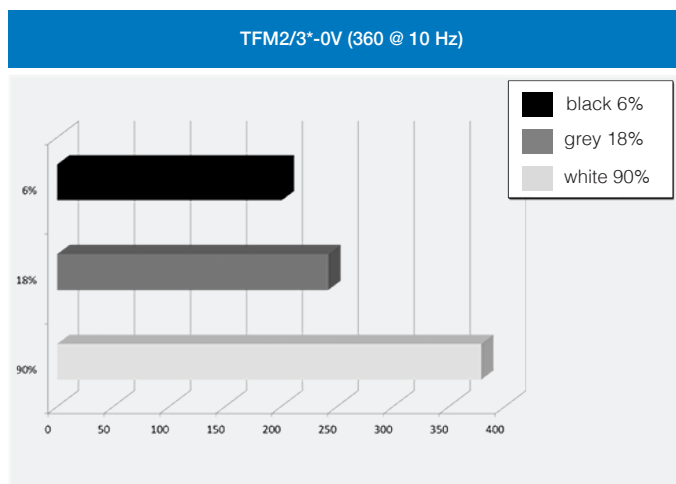
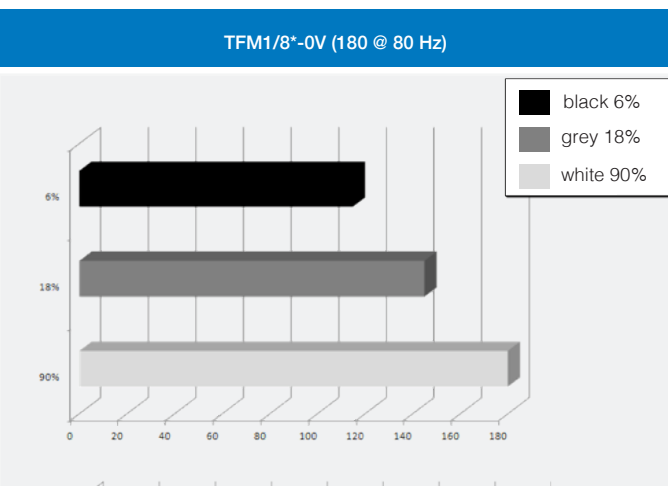
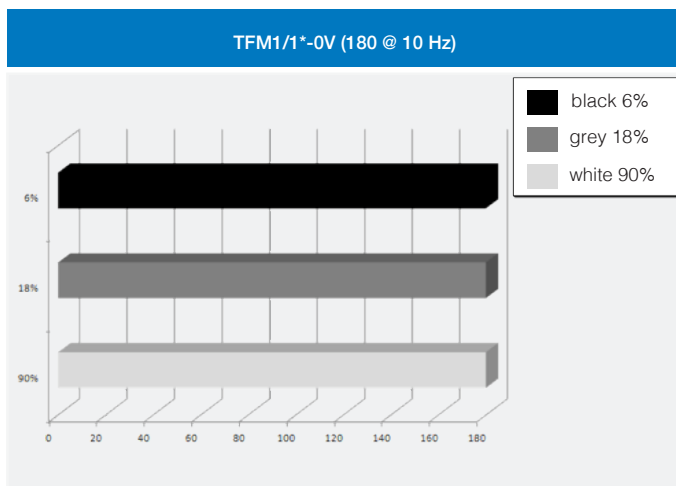


| distance (mm) | spot dimension (mm) |
|---------------|---------------------|
| 50            | 22                  |
| 100           | 44                  |
| 200           | 88                  |
| 300           | 133                 |
| 400           | 177                 |
| 500           | 222                 |
| 600           | 240                 |

# electrical diagrams of the connections plug



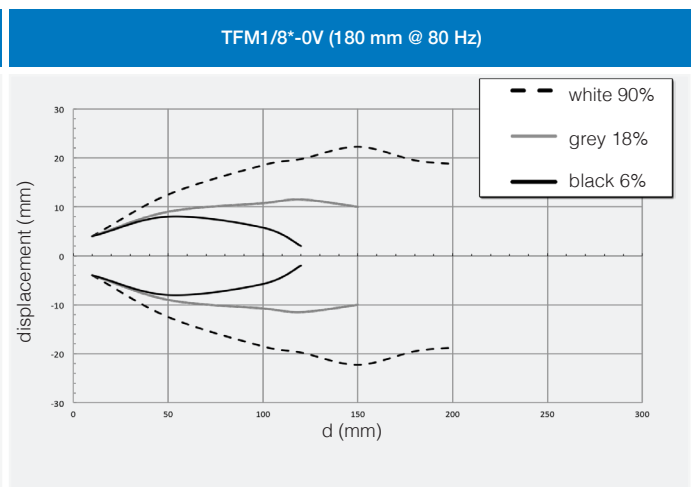
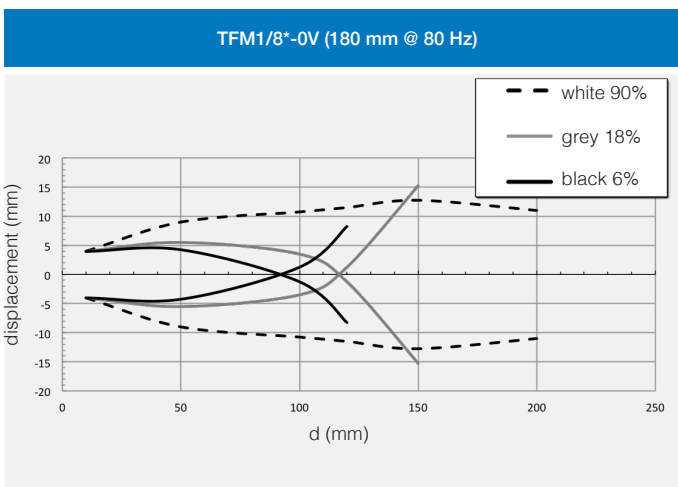
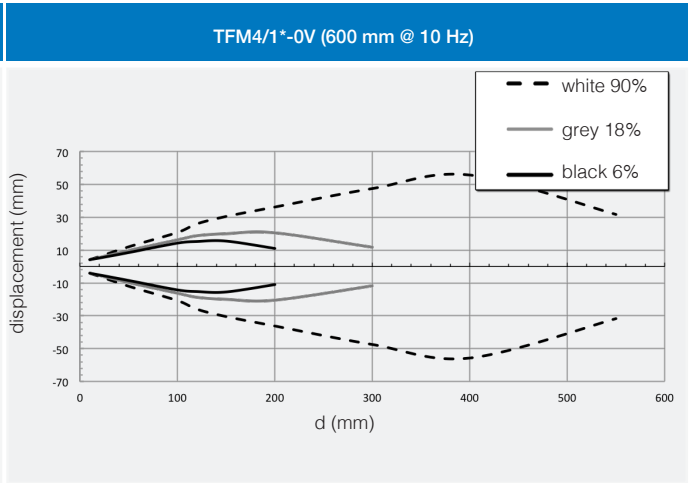
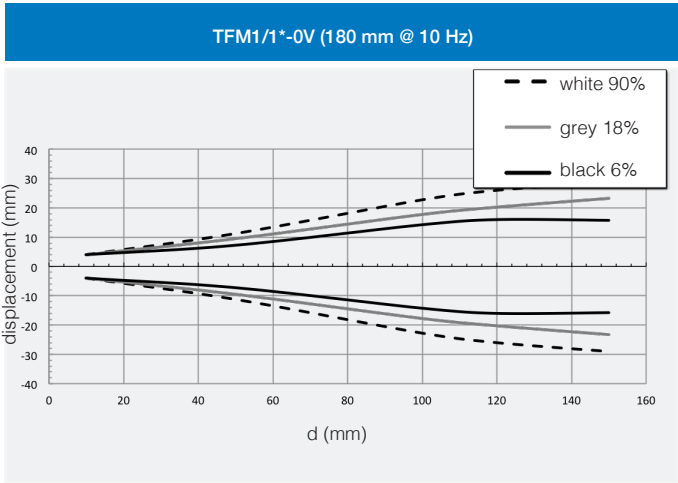
# response diagrams





# response diagrams

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# dimensions (mm)

