



# DM series

M12 cylindrical photoelectric sensors



## features

- Models diffuse reflection, polarized and through-beam
- Local and remote teach-in function
- Light-on / Dark-on selectable outputs
- IP67 protection degree
- Multifunction LED status indicator
- Complete protection against electrical damages
- Approvals: CE and cULus listed



## web contents

- Application notes
- Photos
- Catalogue / Manuals



M12 cylindrical

## code description (\*)

DM 2 / 0 N - 1 A

|                    |           |  |
|--------------------|-----------|--|
| series             | <b>DM</b> | M12 cylindrical photoelectric sensor                     |
| type               | <b>2</b>  | Diffuse reflection 100 mm without sensitivity adjustment |
|                    | <b>3</b>  | Diffuse reflection 100 mm with sensitivity adjustment    |
|                    | <b>7</b>  | Diffuse reflection 300 mm with sensitivity adjustment    |
|                    | <b>P</b>  | Polarized 2 m with sensitivity adjustment                |
|                    | <b>E</b>  | Emitter 4 m with power emission adjustment               |
| emitter / receiver | <b>R</b>  | Receiver 4 m   |
|                    | <b>0</b>  | Emitter without check - Receiver LO/DO selectable        |
| function           | <b>X</b>  | Emitter with check                                       |
|                    | <b>0</b>  | Emitter  |
|                    | <b>N</b>  | NPN output   |
| housing            | <b>P</b>  | PNP output   |
|                    | <b>1</b>  | Metal housing  |
| cable              | <b>A</b>  | Axial cable exit   |
|                    | <b>H</b>  | M12 plug cable exit                                      |
| version            | <b>25</b> | DMP and DME without sensitivity adjustment               |
|                    |           | Standard version   |

(\*) ATEX models available, contact our Sales Dept. for further information.

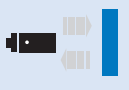




M12 cylindrical

## available models

| model          | distance | adjustment | 4 wires LO / DO NPN |            | 4 wires LO / DO PNP |            |
|----------------|----------|------------|---------------------|------------|---------------------|------------|
|                |          |            | cable               | plug       | cable               | plug       |
| direct diffuse | 100 mm   | -          | DM2/0N -1A          | DM2/0N -1H | DM2/0P -1A          | DM2/0P -1H |
|                | 100 mm   | ●          | DM3/0N -1A          | DM3/0N -1H | DM3/0P -1A          | DM3/0P -1H |
|                | 300 mm   |            | DM7/0N -1A          | DM7/0N -1H | DM7/0P -1A          | DM7/0P -1H |
| polarized      | 2 m      |            | DMP/0N -1A          | DMP/0N -1H | DMP/0P -1A          | DMP/0P -1H |
| emitter        | 4 m      | -          | DME/00 -1A          | DME/00 -1H | DME/00 -1A          | DME/00 -1H |
| receiver       |          |            | DMR/0N -1A          | DMR/0N -1H | DMR/0P -1A          | DMR/0P -1H |

## technical specification

|                             | diffuse reflection   |           |  | polarized  | through-beam                       |           |
|-----------------------------|--|-----------|--|--|------------------------------------|-----------|
|                             | DM2/0*-1*  | DM3/0*-1* | DM7/0*-1*  | DMP/0*-1*  | DMR/0*-1*                          | DME/0*-1* |
| nominal sensing distance    | <br>100 mm <sup>(1)</sup>   300 mm <sup>(2)</sup> |           | <br>2.5 m <sup>(3)</sup> | <br>4 m |                                    |           |
| emission                    | infrared (880 nm)  |           |  | red (660 nm)   | infrared (880 nm)                  |           |
| tolerance                   | + 15 % / - 5 %   |           |  |  |                                    |           |
| hysteresis                  | ≤ 10 %   |           |  |  | ≤ 20 %                             |           |
| repeatability               | 5 %  |           |  |  |                                    |           |
| operating voltage           | 10...30 Vdc  |           |  |  |                                    |           |
| ripple                      | ≤ 10 %   |           |  |  |                                    |           |
| no-load current             | ≤ 30 mA  |           |  |  |                                    |           |
| load current                | 100 mA   |           |  |  |                                    |           |
| leakage current             | ≤ 10 µA  |           |  |  |                                    |           |
| output voltage drop         | 2 V max. IL = 100 mA   |           |  |  |                                    |           |
| output type                 | NPN o PNP - LO / DO selectable   |           |  |  |                                    |           |
| switching frequency         | 400 Hz   |           |  |  | 250 Hz                             |           |
| response time               | 1.1 ms   |           |  |  | 2 ms                               |           |
| power on delay              | 150 ms   |           |  |  |                                    |           |
| power supply protections    | polarity reversal, transient   |           |  |  |                                    |           |
| EMC                         | in conformity with the EMC Directive according to EN 60947-5-2   |           |  |  |                                    |           |
| output protection           | short circuit (autoreset)  |           |  |  |                                    |           |
| temperature range           | - 25°C...+ 70°C  |           |  |  |                                    |           |
| temperature drift           | 10 % Sr  |           |  |  |                                    |           |
| protection degree           | IP67 (EN60529) <sup>(4)</sup>  |           |  |  |                                    |           |
| check input                 | -  |           |  |  | decoupled input supply 10...30 Vdc |           |
| external light interference | 3000 lux (incandescent lamp), 10000 lux (sunlight)   |           |  |  |                                    |           |
| LEDs                        | yellow   |           |  |  |                                    |           |
| sensitivity adjustment      | -  | ●         |  |  | -                                  | ●         |
| housing material            | nickel-plated brass  |           |  |  |                                    |           |
| optic material              | plastic  |           |  |  |                                    |           |
| tightening torque           | 10 Nm  |           |  |  |                                    |           |
| weight (approximate)        | 28 g connector / 60 g cable  |           |  |  |                                    |           |

<sup>(1)</sup> With 100x100 mm white paper <sup>(2)</sup> With 200x200 mm white paper <sup>(3)</sup> With RL 110 reflector <sup>(4)</sup> Protection guaranteed only with plug cable well mounted

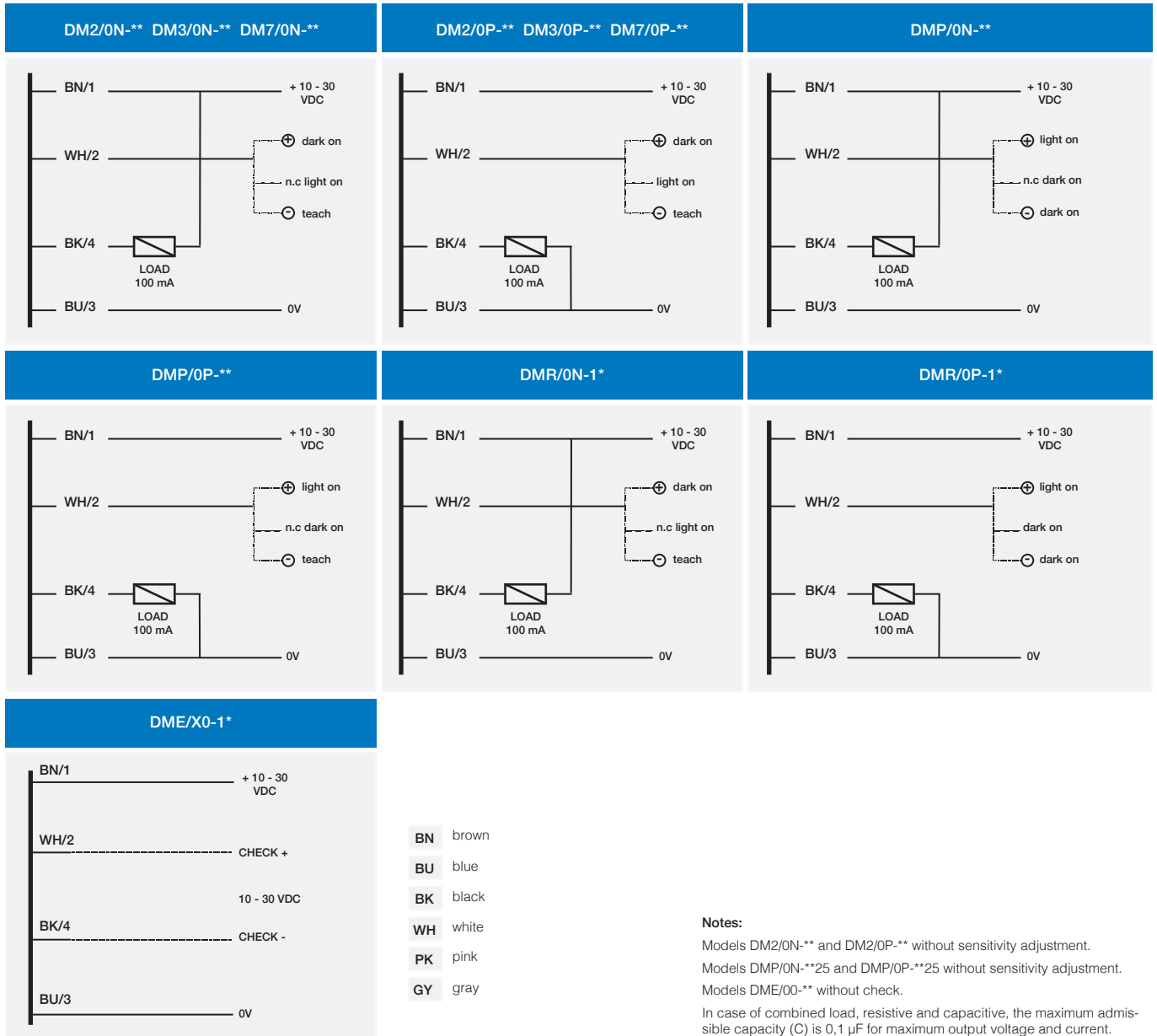
DM SERIES.

DM

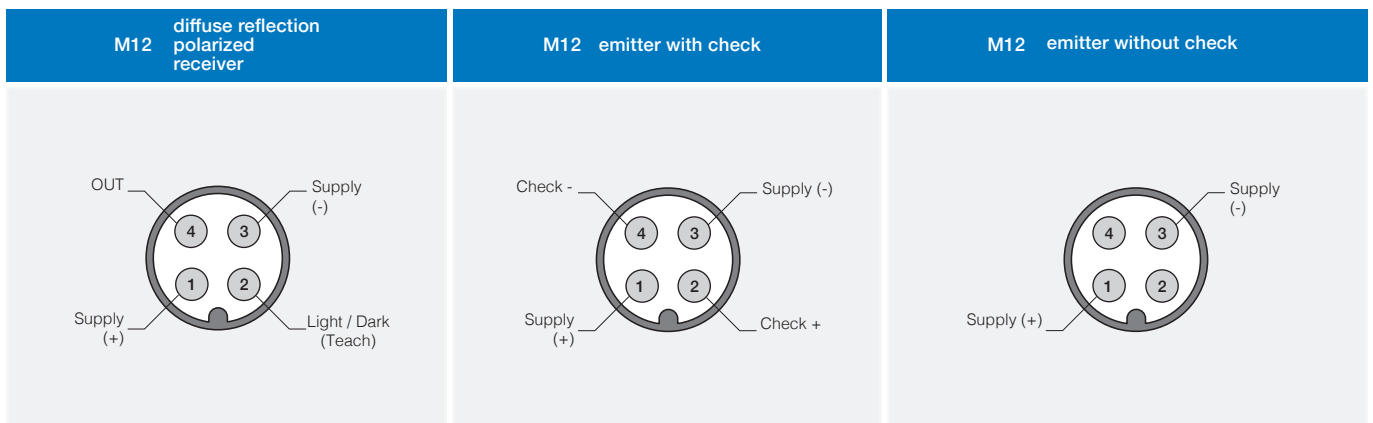
# electrical diagrams of the connections



M12 cylindrical



## plug



DM

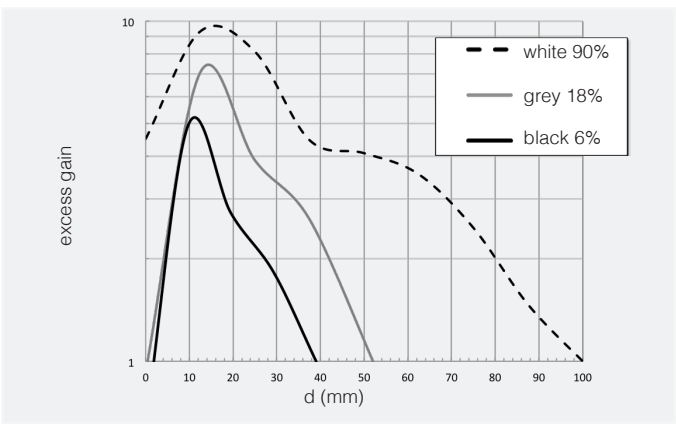


# response diagrams

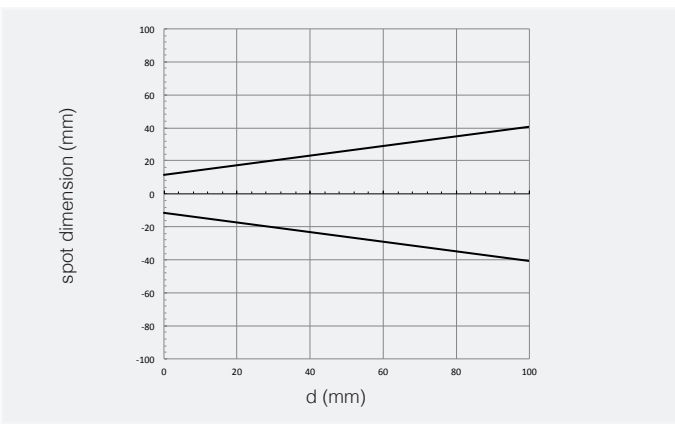
## direct reflection models

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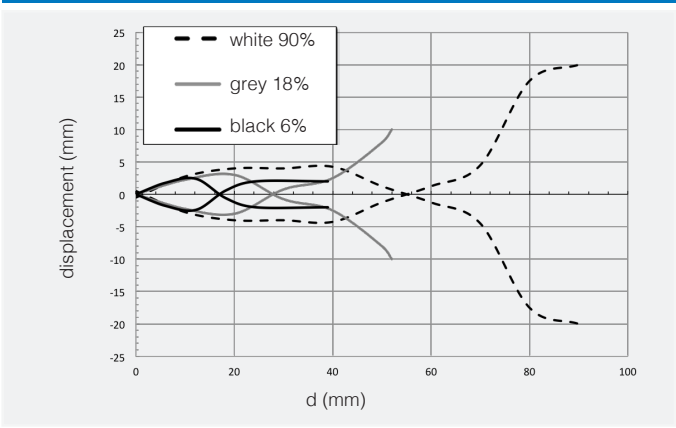
### DM2/\*\*-\*\* excess gain



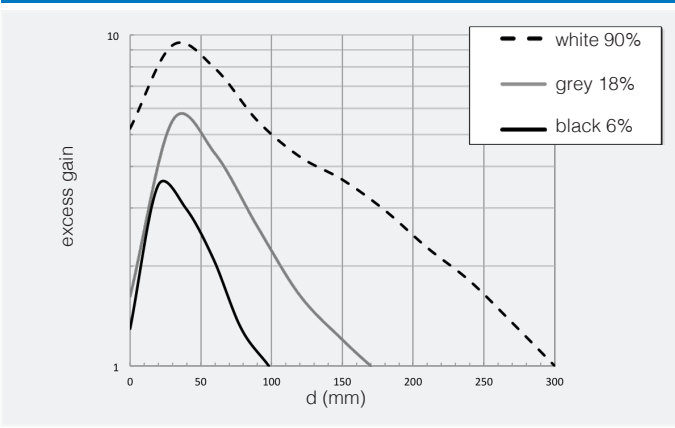
### DM2/\*\*-\*\* spot dimension



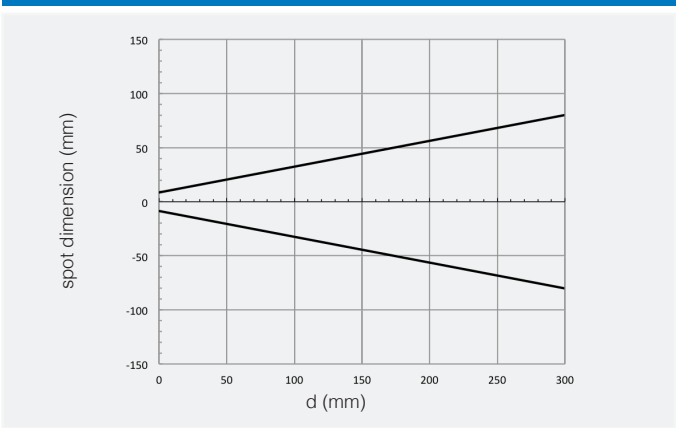
### DM2/\*\*-\*\* parallel displacement



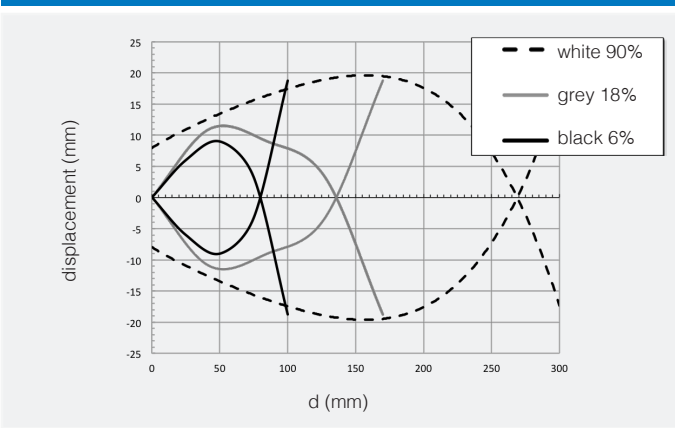
### DM5/\*\*-\*\* excess gain



### DM5/\*\*-\*\* spot dimension



### DM5/\*\*-\*\* parallel displacement



DM

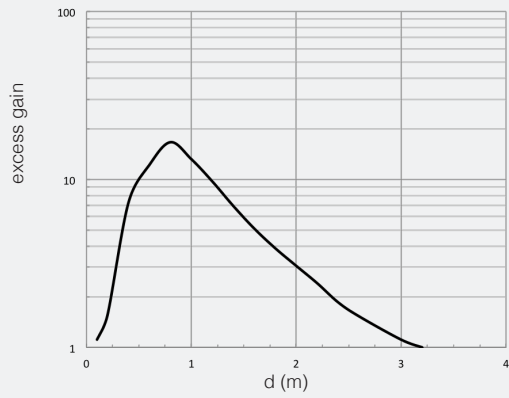
## response diagrams

polarized models (diagrams calculated with RL110)

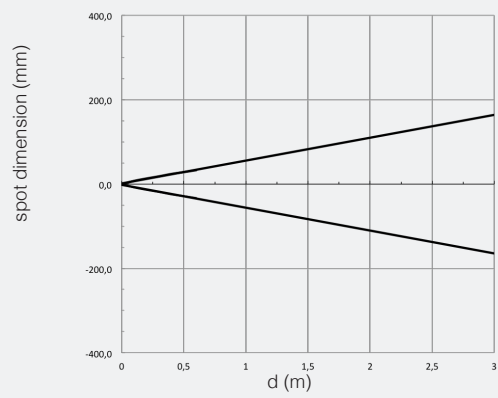


M12 cylindrical

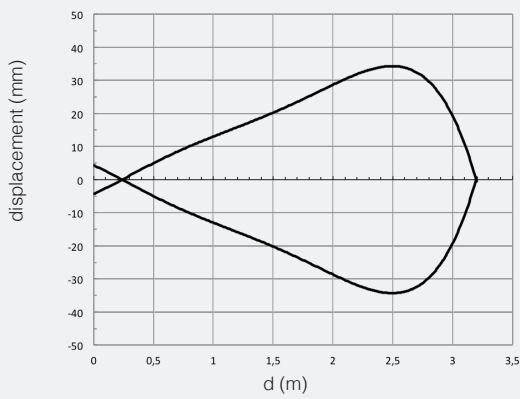
DM7/\*\*\_\*\* excess gain



DM7/\*\*\_\*\* spot dimension



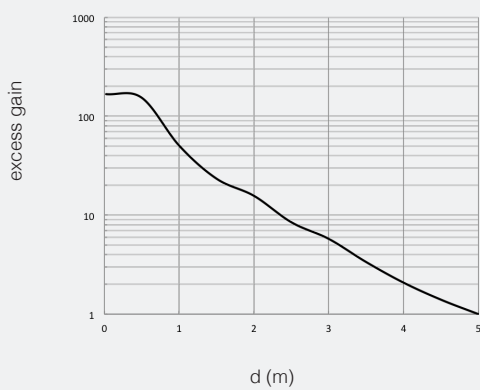
DM7/\*\*\_\*\* parallel displacement



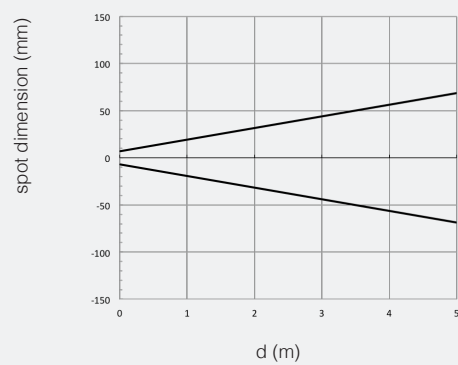
## response diagrams

through-beam models

DMP/\*\*\_\*\* excess gain



DMP/\*\*\_\*\* spot dimension



DM

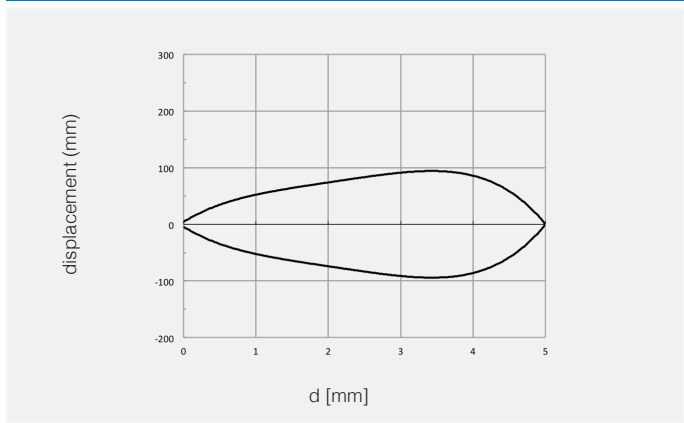


# response diagrams

through-beam models

M12 cylindrical

## DMP/\*\*-\*\* parallel displacement



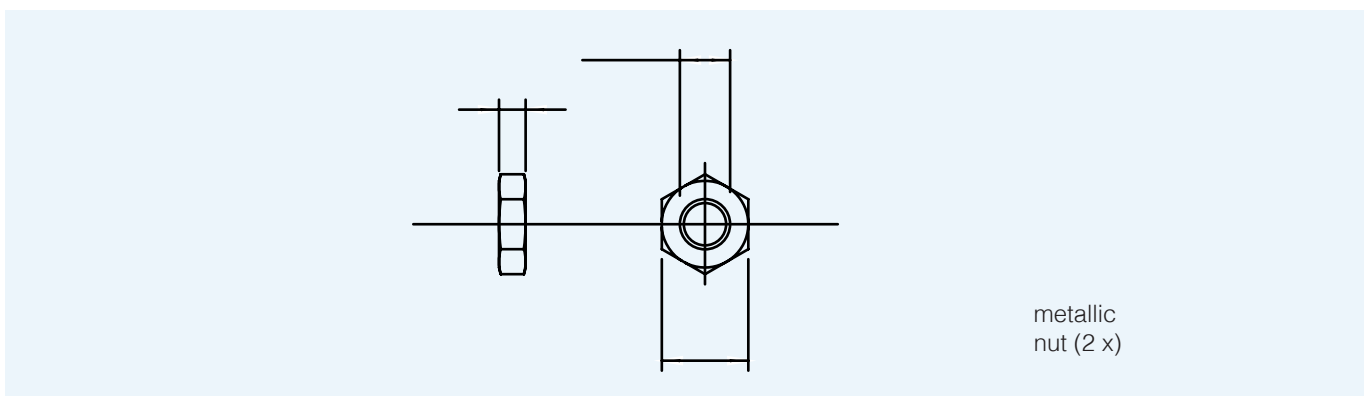
## dimensions (mm)

| DMP/**-1A | DM/**-1A | DMP/**-1H | DM/**-1H |
|-----------|----------|-----------|----------|
|           |          |           |          |

- 1 Teach-In button
- 2 LED

## dimensions (mm)

accessories included



DM