

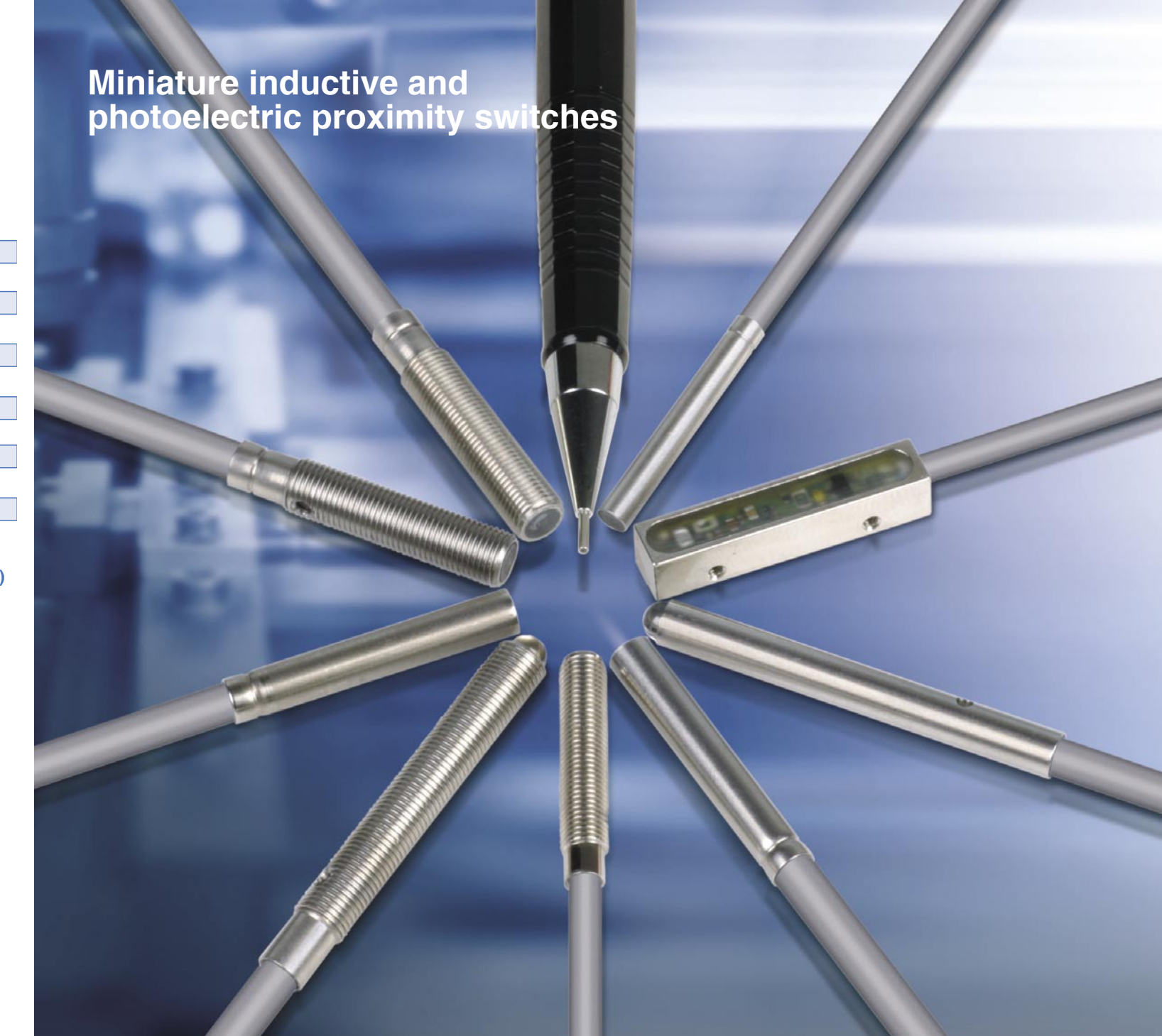
| Size  | Ø 3                 |                     | Ø 3                      |                     | M4                  |                     | M4                       |                     | Ø 4                 |                     |                          |                     | Ø 4                 |                     | M5                  |                     | M5                  |                     | □ 5x5               |                     | □ 5x5               |                     |                            |                |                |
|---|---------------------|---------------------|--------------------------|---------------------|---------------------|---------------------|--------------------------|---------------------|---------------------|---------------------|--------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------------|----------------|----------------|
| Operating distance mm   | 0.6                 | 0.6                 | 1.0                      | 1.0                 | 0.6                 | 0.6                 | 1.0                      | 1.0                 | 0.8                 | 0.8                 | 0.8                      | 0.8                 | 1.5                 | 1.5                 | 0.8                 | 0.8                 | 1.5                 | 1.5                 | 0.8                 | 0.8                 | 1.5                 | 1.5                 |                            |                |                |
| Housing material  | Stainless steel V2A |                     | Stainless steel V2A      |                     | Stainless steel V2A |                     | Stainless steel V2A      |                     | Stainless steel V2A |                     | Stainless steel V2A      |                     | Stainless steel V2A |                     | Stainless steel V2A |                     | Stainless steel V2A |                     | Nickel-plated brass |                     | Nickel-plated brass |                     | Nickel-chrome-plated brass |                |                |
| Connection <sup>1)</sup>  | PUR cable           |                     | PUR cable + connector S8 |                     | PUR cable           |                     | PUR cable + connector S8 |                     | PVC cable           |                     | PVC cable + connector S8 |                     | Connector S8        |                     | Single wires        |                     | PVC cable           |                     | Connector S8        |                     | PUR cable           |                     | PUR cable + connector S8   |                |                |
| Degree of protection  | IP 67               |                     | IP 67                    |                     | IP 67               |                     | IP 67                    |                     | IP 67               |                     | IP 67                    |                     | IP 67               |                     | IP 67               |                     | IP 67               |                     | IP 67               |                     | IP 67               |                     | IP 67                      |                |                |
| Mounting  | Embeddable          |                     | Embeddable               |                     | Embeddable          |                     | Embeddable               |                     | Embeddable          |                     | Embeddable               |                     | Embeddable          |                     | Embeddable          |                     | Embeddable          |                     | Embeddable          |                     | Embeddable          |                     | Embeddable                 |                |                |
| Max. switching frequency  | 5,000 Hz            | 10,000 Hz           | 5,000 Hz                 | 10,000 Hz           | 3,000 Hz            | 3,000 Hz            | 5,000 Hz                 | 10,000 Hz           | 5,000 Hz            | 10,000 Hz           | 5,000 Hz                 | 10,000 Hz           | 10,000 Hz           | 3,000 Hz            | 3,000 Hz            | 5,000 Hz            | 10,000 Hz           | 5,000 Hz            | 10,000 Hz           | 3,000 Hz            | 3,000 Hz            | 5,000 Hz            | 10,000 Hz                  | 3,000 Hz       | 3,000 Hz       |
| Technical data  | Table 3             | Table 2             | Table 3                  | Table 2             | Table 3             | Table 3             | Table 3                  | Table 2             | Table 3             | Table 2             | Table 3                  | Table 2             | Table 2             | Table 1             | Table 2             | Table 1             | Table 2             | Table 1             | Table 2             | Table 1             | Table 2             | Table 1             | Table 2                    | Table 1        | Table 1        |
| Wiring  | Diagram 1           | Diagram 2           | Diagram 1                | Diagram 2           | Diagram 1           | Diagram 1           | Diagram 1                | Diagram 2           | Diagram 1           | Diagram 1           | Diagram 1                | Diagram 2           | Diagram 2           | Diagram 1           | Diagram 1           | Diagram 1           | Diagram 2           | Diagram 1           | Diagram 2           | Diagram 1           | Diagram 2           | Diagram 1           | Diagram 2                  | Diagram 1      | Diagram 1      |
| LED   | Built-in            | ---                 | Built-in                 | ---                 | Built-in            | ---                 | Built-in                 | ---                 | Built-in            | ---                 | Built-in                 | ---                 | ---                 | Built-in            | ---                 | Built-in            | ---                 | Built-in            | ---                 | Built-in            | ---                 | Built-in            | ---                        | Built-in       | ---            |
| Supply voltage range  | 10 ... 30 VDC       | 7.7 ... 9 VDC       | 10 ... 30 VDC            | 7.7 ... 9 VDC       | 10 ... 30 VDC       | 10 ... 30 VDC       | 10 ... 30 VDC            | 7.7 ... 9 VDC       | 10 ... 30 VDC       | 7.7 ... 9 VDC       | 10 ... 30 VDC            | 7.7 ... 9 VDC       | 7.7 ... 9 VDC       | 10 ... 30 VDC       | 10 ... 30 VDC       | 10 ... 30 VDC       | 7.7 ... 9 VDC       | 10 ... 30 VDC       | 7.7 ... 9 VDC       | 10 ... 30 VDC       | 7.7 ... 9 VDC       | 10 ... 30 VDC       | 7.7 ... 9 VDC              | 10 ... 30 VDC  | 10 ... 30 VDC  |
| Ambient temperature range   | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C           | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C           | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C           | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C      | -25 ... +70 °C             | -25 ... +70 °C | -25 ... +70 °C |
| Output current  | ≤ 100 mA            | ≤ 1/≥ 2.2 mA*       | ≤ 100 mA                 | ≤ 1/≥ 2.2 mA*       | ≤ 100 mA            | ≤ 100 mA            | ≤ 100 mA                 | ≤ 1/≥ 2.2 mA*       | ≤ 100 mA            | ≤ 100 mA            | ≤ 200 mA                 | ≤ 1/≥ 2.2 mA*       | ≤ 200 mA            | ≤ 200 mA            | ≤ 200 mA            | ≤ 1/≥ 2.2 mA*       | ≤ 200 mA            | ≤ 1/≥ 2.2 mA*       | ≤ 200 mA            | ≤ 1/≥ 2.2 mA*       | ≤ 200 mA            | ≤ 1/≥ 2.2 mA*       | ≤ 200 mA                   | ≤ 1/≥ 2.2 mA*  | ≤ 200 mA       |
| <sup>1)</sup> Standard cable length 2 m. Non-standard cable lengths and types on request. |                     |                     |                          |                     |                     |                     |                          |                     |                     |                     |                          |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                            |                |                |
| Dimensions:   |                     |                     |                          |                     |                     |                     |                          |                     |                     |                     |                          |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                     |                            |                |                |
| Part references:<br><b>(bold):</b> preferred types  | <b>DW-AD-301-03</b> | <b>DW-AS-301-03</b> | <b>DW-AD-621-03</b>      | <b>DW-AS-621-03</b> | <b>DW-AD-301-M4</b> | <b>DW-AS-301-M4</b> | <b>DW-AD-621-M4</b>      | <b>DW-AS-621-M4</b> | <b>DW-AD-401-04</b> | <b>DW-AS-401-04</b> | <b>DW-AD-401-04</b>      | <b>DW-AS-401-04</b> | <b>DW-AD-621-04</b> | <b>DW-AS-621-04</b> | <b>DW-AD-401-M5</b> | <b>DW-AS-401-M5</b> | <b>DW-AD-621-M5</b> | <b>DW-AS-621-M5</b> | <b>DW-AD-401-C5</b> | <b>DW-AS-401-C5</b> | <b>DW-AD-621-C5</b> | <b>DW-AS-621-C5</b> |                            |                |                |
| NPN N.O.  | DW-AD-302-03        | DW-AS-302-03        | DW-AD-622-03             | DW-AS-622-03        | DW-AD-302-M4        | DW-AS-302-M4        | DW-AD-622-M4             | DW-AS-622-M4        | DW-AD-402-04        | DW-AS-402-04        | DW-AD-402-04             | DW-AS-402-04        | DW-AD-622-04        | DW-AS-622-04        | DW-AD-402-M5        | DW-AS-402-M5        | DW-AD-622-M5        | DW-AS-622-M5        | DW-AD-402-C5        | DW-AS-402-C5        | DW-AD-622-C5        | DW-AS-622-C5        |                            |                |                |
| PNP N.O.  | <b>DW-AD-303-03</b> | <b>DW-AS-303-03</b> | <b>DW-AD-623-03</b>      | <b>DW-AS-623-03</b> | <b>DW-AD-303-M4</b> | <b>DW-AS-303-M4</b> | <b>DW-AD-623-M4</b>      | <b>DW-AS-623-M4</b> | <b>DW-AD-403-04</b> | <b>DW-AS-403-04</b> | <b>DW-AD-403-04</b>      | <b>DW-AS-403-04</b> | <b>DW-AD-623-04</b> | <b>DW-AS-623-04</b> | <b>DW-AD-403-M5</b> | <b>DW-AS-403-M5</b> | <b>DW-AD-623-M5</b> | <b>DW-AS-623-M5</b> | <b>DW-AD-403-C5</b> | <b>DW-AS-403-C5</b> | <b>DW-AD-623-C5</b> | <b>DW-AS-623-C5</b> |                            |                |                |
| PNP N.C.  | DW-AD-304-03        | DW-AS-304-03        | DW-AD-624-03             | DW-AS-624-03        | DW-AD-304-M4        | DW-AS-304-M4        | DW-AD-624-M4             | DW-AS-624-M4        | DW-AD-404-04        | DW-AS-404-04        | DW-AD-404-04             | DW-AS-404-04        | DW-AD-624-04        | DW-AS-624-04        | DW-AD-404-M5        | DW-AS-404-M5        | DW-AD-624-M5        | DW-AS-624-M5        | DW-AD-404-C5        | DW-AS-404-C5        | DW-AD-624-C5        | DW-AS-624-C5        |                            |                |                |
| NAMUR   | <b>DW-AD-305-03</b> | DW-AS-305-03        |                          |                     | <b>DW-AD-305-M4</b> | DW-AS-305-M4        |                          |                     | <b>DW-AD-405-04</b> | <b>DW-AS-405-04</b> | <b>DW-AD-405-04K</b>     |                     |                     | <b>DW-AD-405-M5</b> | <b>DW-AS-405-M5</b> |                     |                     | DW-AD-405-C5        | DW-AS-405-C5        |                     |                     |                     |                            |                |                |

\*damped/non-damped

\*damped/non-damped

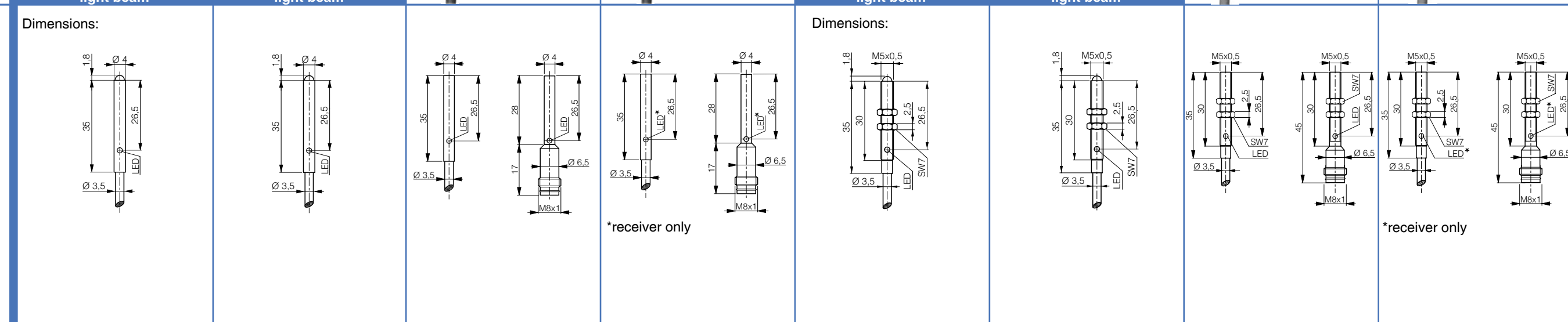
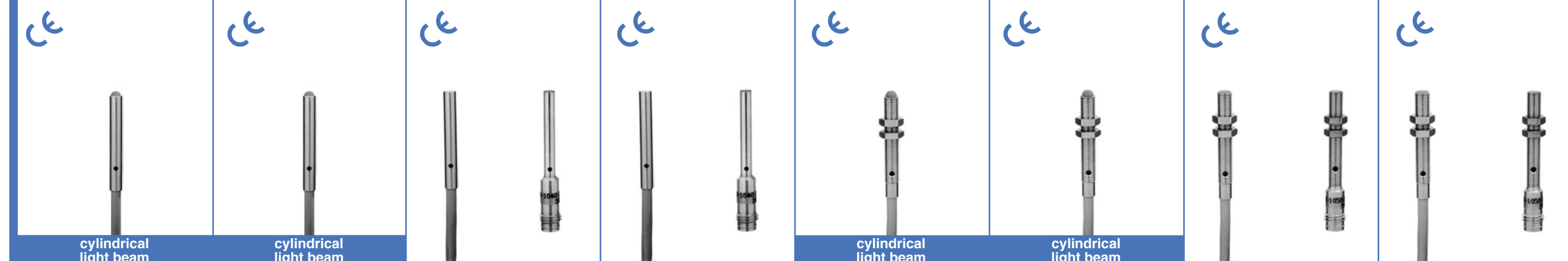
\*damped/non-damped

\*damped/non-damped



| Size                      | Ø 4                       | Ø 4                       | Ø 4                                  | Ø 4                                  | M5                        | M5                        | M5                                   | M5                                   |
|---------------------------|---------------------------|---------------------------|--------------------------------------|--------------------------------------|---------------------------|---------------------------|--------------------------------------|--------------------------------------|
| Type                      | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic            | Through-beam sensor                  | Diffuse sensor, energetic | Diffuse sensor, energetic | Diffuse sensor, energetic            | Through-beam sensor                  |
| Operating distance mm     | 10 mm                     | 20 mm                     | 50 mm                                | 250 mm                               | 10 mm                     | 20 mm                     | 50 mm                                | 250 mm                               |
| Housing material          | Stainless steel V2A       | Stainless steel V2A       | Stainless steel V2A                  | Stainless steel V2A                  | Stainless steel V2A       | Stainless steel V2A       | Stainless steel V2A                  | Stainless steel V2A                  |
| Connection <sup>1)</sup>  | PVC cable                 | PVC cable                 | PVC cable (LTK) / connector S8 (LTS) | PVC cable (LLK) / connector S8 (LLS) | PVC cable                 | PVC cable                 | PVC cable (LTK) / connector S8 (LTS) | PVC cable (LLK) / connector S8 (LLS) |
| Degree of protection      | IP 67                     | IP 67                     | IP 67                                | IP 67                                | IP 67                     | IP 67                     | IP 67                                | IP 67                                |
| Emitter                   | IR LED 880 nm             | IR LED 880 nm             | IR LED 880 nm                        | IR LED 880 nm                        | IR LED 880 nm             | IR LED 880 nm             | IR LED 880 nm                        | IR LED 880 nm                        |
| Max. switching frequency  | 250 Hz                    | 250 Hz                    | 250 Hz                               | 250 Hz                               | 250 Hz                    | 250 Hz                    | 250 Hz                               | 250 Hz                               |
| Technical data            | Table 4                   | Table 4                   | Table 4                              | Table 5                              | Table 4                   | Table 4                   | Table 4                              | Table 5                              |
| Wiring                    | Diagram 1                 | Diagram 1                 | Diagram 1                            | Diagram 1 (R) / Diagram 3 (E)        | Diagram 1                 | Diagram 1                 | Diagram 1                            | Diagram 1 (R) / Diagram 3 (E)        |
| LED                       | Built-in                  | Built-in                  | Built-in                             | Built-in (R) / --- (E)               | Built-in                  | Built-in                  | Built-in                             | Built-in (R) / --- (E)               |
| Supply voltage range      | 10 ... 30 VDC             | 10 ... 30 VDC             | 10 ... 30 VDC                        | 10 ... 30 VDC                        | 10 ... 30 VDC             | 10 ... 30 VDC             | 10 ... 30 VDC                        | 10 ... 30 VDC                        |
| Ambient temperature range | 0 ... + 55 °C             | 0 ... + 55 °C             | 0 ... + 55 °C                        | 0 ... + 55 °C                        | 0 ... + 55 °C             | 0 ... + 55 °C             | 0 ... + 55 °C                        | 0 ... + 55 °C                        |
| Output current            | ≤ 100 mA                  | ≤ 100 mA                  | ≤ 100 mA                             | ≤ 100 mA                             | ≤ 100 mA                  | ≤ 100 mA                  | ≤ 100 mA                             | ≤ 100 mA                             |

<sup>1)</sup> Standard cable length 2 m. Non-standard cable lengths and types on request.

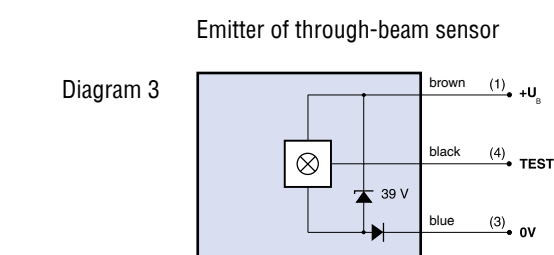
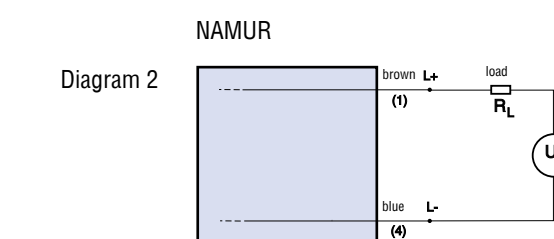
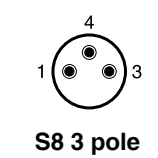
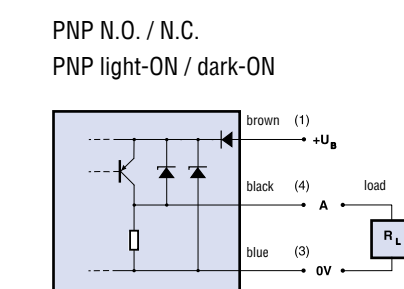
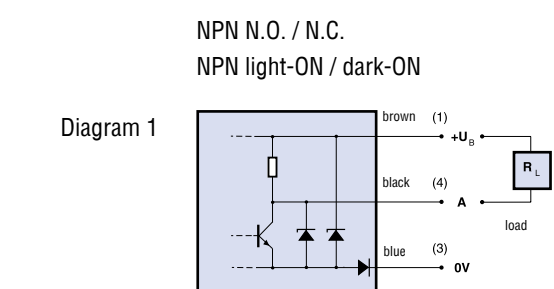


| Part ref.: ( <b>bold</b> : preferred types) |                         |                         | (R) receiver / (E) emitter |  |                         |                         | (R) receiver / (E) emitter |  |
|---|-------------------------|-------------------------|----------------------------|--|-------------------------|-------------------------|----------------------------|--|
| NPN light-ON / cable                        | <b>LTK-1040-301-505</b> | <b>LTK-1040-301-506</b> | <b>LTK-1040-301</b>        | -  | <b>LTK-1050-301-505</b> | <b>LTK-1050-301-506</b> | <b>LTK-1050-301</b>        | -  |
| NPN dark-ON / cable                         | -                       | -                       | -                          | <b>LLK-1040-202 (R) / LLK-1040-200 (E)</b> | -                       | -                       | -                          | <b>LLK-1050-202 (R) / LLK-1050-200 (E)</b> |
| NPN light-ON / connector S8                 | -                       | -                       | <b>LTS-1040-301</b>        | -  | -                       | -                       | <b>LTS-1050-301</b>        | -  |
| NPN dark-ON / connector S8                  | -                       | -                       | -                          | <b>LLS-1040-202 (R) / LLS-1040-200 (E)</b> | -                       | -                       | -                          | <b>LLS-1050-202 (R) / LLS-1050-200 (E)</b> |
| PNP light-ON / cable                        | <b>LTK-1040-303-505</b> | <b>LTK-1040-303-506</b> | <b>LTK-1040-303</b>        | -  | <b>LTK-1050-303-505</b> | <b>LTK-1050-303-506</b> | <b>LTK-1050-303</b>        | -  |
| PNP dark-ON / cable                         | -                       | -                       | -                          | <b>LLK-1040-204 (R) / LLK-1040-200 (E)</b> | -                       | -                       | -                          | <b>LLK-1050-204 (R) / LLK-1050-200 (E)</b> |
| PNP light-ON / connector S8                 | -                       | -                       | <b>LTS-1040-303</b>        | -  | -                       | -                       | <b>LTS-1050-303</b>        | -  |
| PNP dark-ON / connector S8                  | -                       | -                       | -                          | <b>LLS-1040-204 (R) / LLS-1040-200 (E)</b> | -                       | -                       | -                          | <b>LLS-1050-204 (R) / LLS-1050-200 (E)</b> |

### Technical data

|                                    | Table 1             | Table 2             | Table 3             | Table 4      | Table 5                  |
|------------------------------------|---------------------|---------------------|---------------------|--------------|--------------------------|
| Permissible ripple content         | ≤ 20%               | ≤ 20%               | ≤ 20%               | ≤ 20%        | ≤ 20%                    |
| No-load supply current             | ≤ 10 mA             | ---                 | ≤ 10 mA             | ≤ 15 mA      | ≤ 5 mA (R) / ≤ 10 mA (E) |
| Leakage current at output          | ≤ 0.1 mA            | ---                 | ≤ 0.1 mA            | ≤ 0.1 mA     | ≤ 0.1 mA                 |
| Voltage drop, switched state       | ≤ 2.0 V             | ---                 | ≤ 2.0 V             | ≤ 2.0 V      | ≤ 2.0 V                  |
| Temperature drift % s <sub>v</sub> | ≤ 10 %              | ≤ 10 %              | ≤ 10 %              | ≤ 0.3 % / °C | ≤ 0.3 % / °C             |
| Hysteresis % s <sub>v</sub>        | 1 ... 15% (5% typ.) | ---                 | 1 ... 15% (5% typ.) | ≤ 10 % typ.  | ≤ 10 % typ.              |
| Repeat accuracy                    | ≤ 5% s <sub>v</sub> | ≤ 5% s <sub>v</sub> | ≤ 5% s <sub>v</sub> | ---          | ---                      |
| (according to IEC 60947-5-2)       |                     |                     |                     |              |                          |
| Short-circuit protection           | built-in            | built-in            | built-in            | built-in     | built-in                 |
| Polarity reversal protection       | built-in            | ---                 | built-in            | built-in     | built-in                 |
| Power-on reset                     | built-in            | ---                 | built-in            | built-in     | built-in                 |

### Wiring diagrams



These devices **must not be used** in applications where the **safety of people** is dependent on their functioning. Terms of delivery and rights to change design reserved.



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### Features

- World's smallest fully self-contained inductive and photoelectric proximity switches
- Housing diameters 3 mm to M5
- Cuboid 5 x 5 x 25 mm
- Diffuse sensors with spherical optics for cylindrical light beam
- Electrical characteristics equivalent to larger proximity switches
- All usual protection functions built in (short-circuit and voltage reversal protection, EMC)
- Mechanically robust (no brittle ceramic, vacuum potted)
- Operating distances from 0.6 mm to 250 mm
- Stainless-steel housings