



eloProtect M - Sensor de segurança magnético 165MSK

O sensor de segurança magnético da família eloProtect M oferece maiores distâncias de comutação proporcionando maior flexibilidade durante a instalação e alta estabilidade durante sua operação. A carcaça deste sensor é robusta e resistente à choques mecânicos e produtos químicos.

Esta família de sensores foi desenvolvida e aprovada para aplicação de produtos de limpeza (ECOLAB). A alta classe de proteção IP6K9K e a resistência à altas temperaturas até +80 ° C o tornam ideal para aplicação na indústria de alimentos e embalagens, bem como na indústria química e farmacêutica.

Especificação Técnica

- Dupla opção de fixação permite que seja montado de qualquer lado da porta
- Sinal de saída à cabo ou conector M12
- Diagnóstico simples através de LED (opcional) e contato de controle
- As tampas dos parafusos evitam o acúmulo de sujeira
- Classe de proteção IP6K9K (ISO 20653)

Desenho técnico

IMAGE 1/4

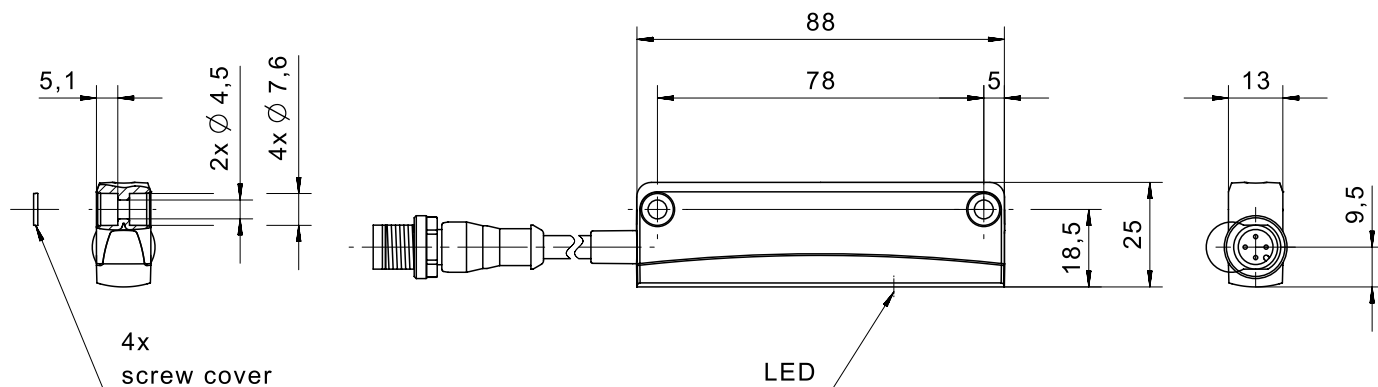
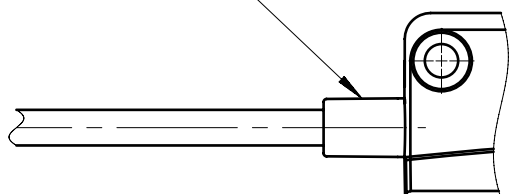
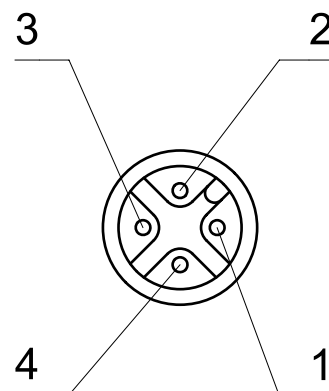


IMAGE 2/4

grommet



male M12



male M12

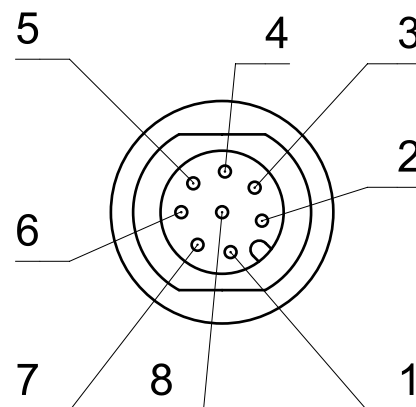
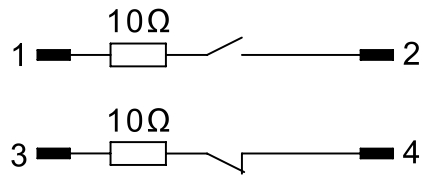
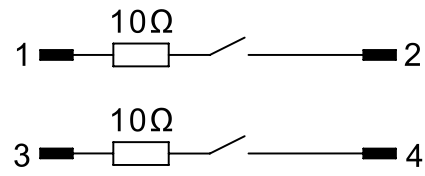


IMAGE 3/4

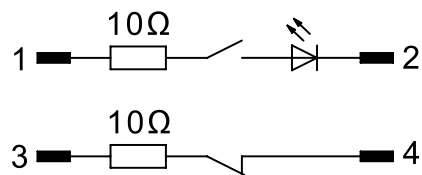
165MSK.0H1G, 165MSK.0H1K



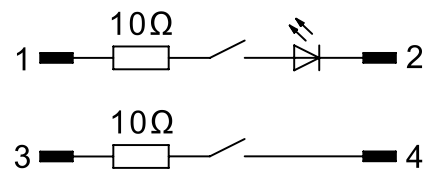
165MSK.0H1A, 165MSK.0H1E



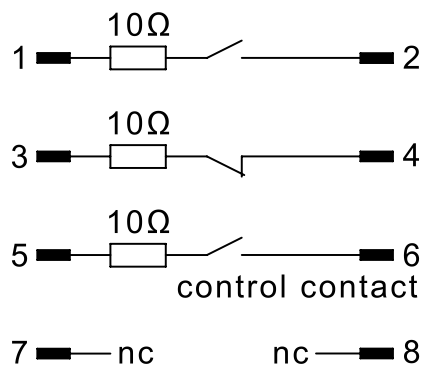
165MSK.0H1H



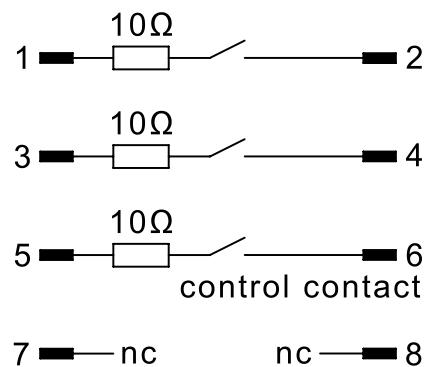
165MSK.0H1B



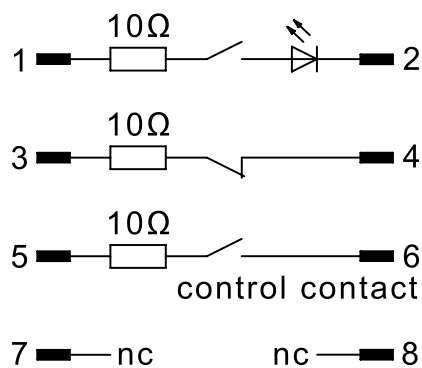
165MSK.0J1I



165MSK.0J1C



165MSK.0J1J



165MSK.0J1D

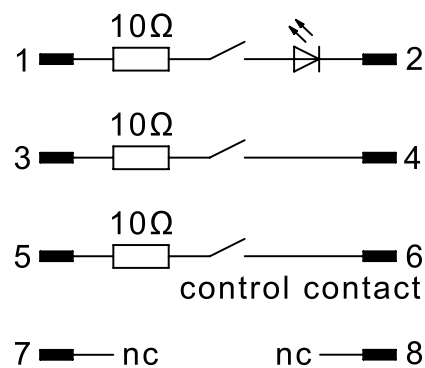
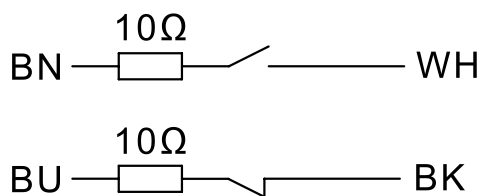
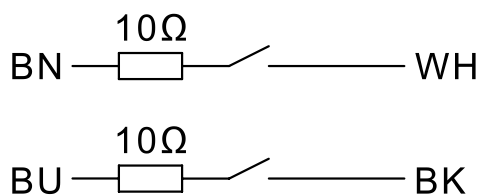


IMAGE 4/4

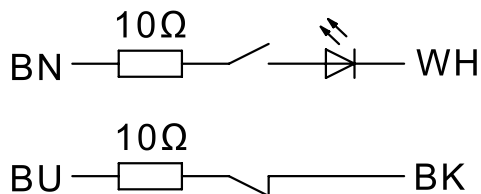
165MSK.0K1G, 165MSK.0K1K



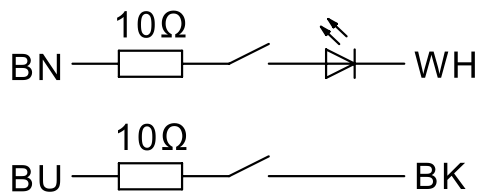
165MSK.0K1A, 165MSK.0K1E



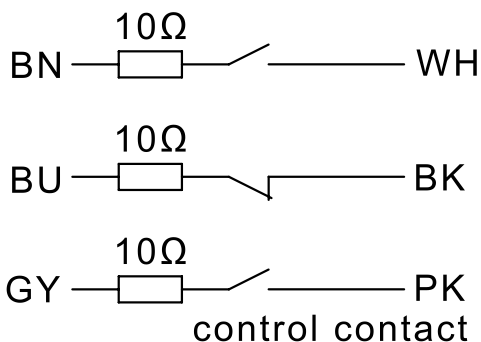
165MSK.0K1H



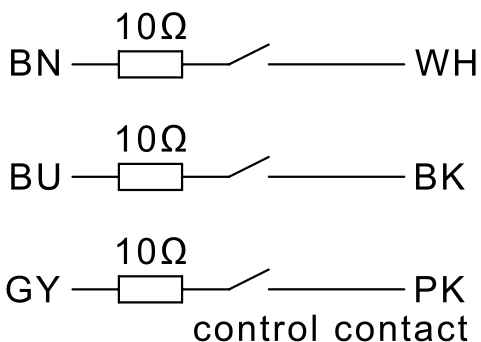
165MSK.0K1B



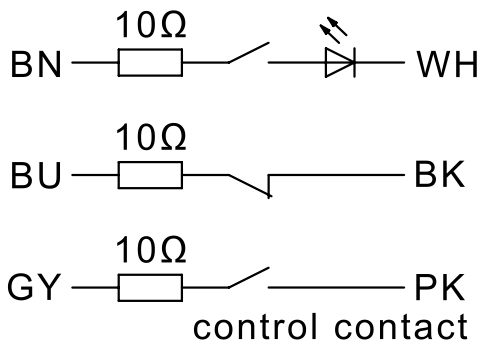
165MSK.0K1I



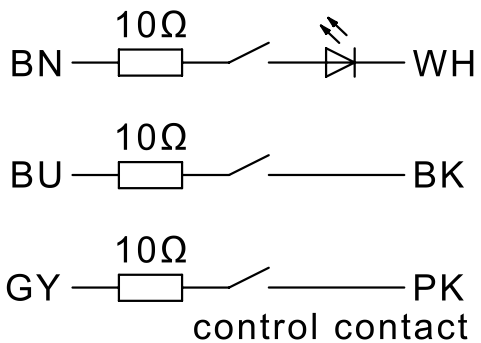
165MSK.0K1C



165MSK.0K1J

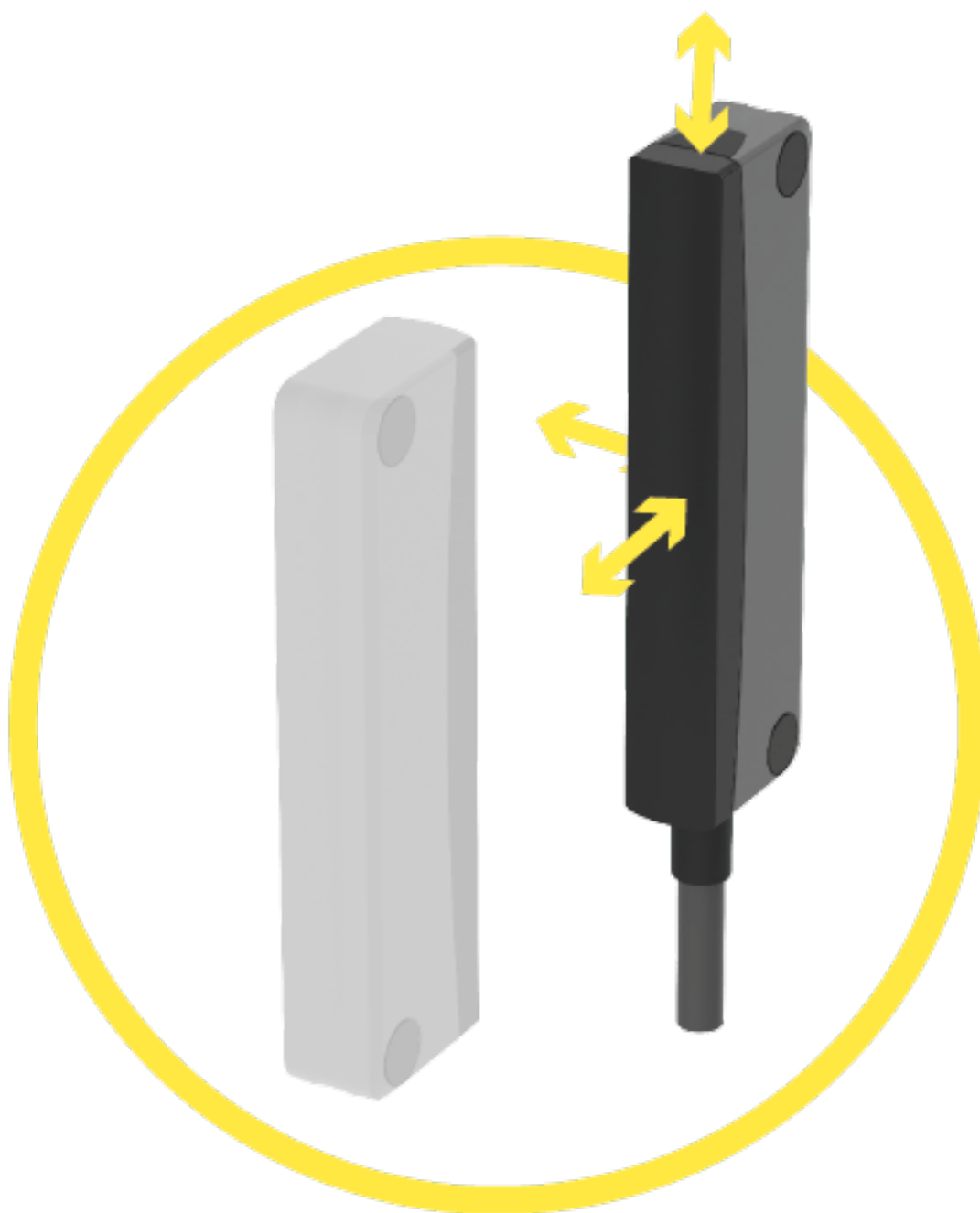


165MSK.0K1D



Product options

IMAGE 1/3



Suitable for front, side and 90° actuation. Operating distance (Sao) from 5 to 14 mm. Assured switch-off distance (Sar) from 8 to 18 mm.

IMAGE 2/3

ORDERING KEY

| 165MSK | 00 | | | | Safety sensor, rectangular, plastic |
|--------|----|----|---|-----|--|
| | | K1 | | | Connection cable – PVC - 1m |
| | | H1 | | | Connection pigtail – PVC – M12, 4-pin |
| | | J1 | | | Connection pigtail – PVC – M12, 8-pin |
| | | | A | | N.O./N.O. – front actuation |
| | | | B | | N.O./N.O. – LED – front actuation |
| | | | C | | N.O./N.O./control contact – front actuation |
| | | | D | | N.O./N.O./control contact – LED – front actuation |
| | | | E | | N.O./N.O. – side actuation |
| | | | F | | N.O./N.O. – LED – side actuation |
| | | | G | | N.O./N.C. – front actuation |
| | | | H | | N.O./N.C. – LED – front actuation |
| | | | I | | N.O./N.C./control contact – front actuation |
| | | | J | | N.O./N.C./control contact – LED – front actuation |
| | | | K | | N.O./N.C. – side actuation |
| | | | L | | N.O./N.C. – LED – side actuation |
| | | | | | |
| | | | | | Other available cable lengths (only with "K" at 9th position) |
| | | | | -3 | 3 m |
| | | | | -5 | 5 m |
| | | | | -10 | 10 m |
| | | | | | Other cable materials, cable lengths and connector types on request |

IMAGE 3/3

MATCHING ACTUATORS

| Actuators | Actuation direction | 165MSK00.1A 165MSK00.1G | | | 165MSK00.1E 165MSK00.1K | | | 165MSK00.1B 165MSK00.1H | | |
|--------------------|---------------------|----------------------------|-----------------|-----------------|----------------------------|-----------------|-----------------|----------------------------|-----------------|-----------------|
| | | S _{0 min} | S _{ao} | S _{ar} | S _{0 min} | S _{ao} | S _{ar} | S _{0 min} | S _{ao} | S _{ar} |
| 165 MBK 001 | Front | 0.5 | 5 | 14 | - | - | - | 0.5 | 5 | 14 |
| 165 MBK 101 | | 0.5 | 8 | 18 | - | - | - | 0.5 | 8 | 18 |
| 165 MBK 201 | Front 90° | 0.5 | 5 | 14 | - | - | - | 0.5 | 5 | 14 |
| 165 MBK 301 | | 0.5 | 8 | 18 | - | - | - | 0.5 | 8 | 18 |
| 165 MBK 001 | Side | - | - | - | 0.5 | 5 | 14 | - | - | - |
| 165 MBK 101 | | - | - | - | - | 8 | 18 | - | - | - |
| 165 MBK 201 | Side 90° | - | - | - | 0.5 | 5 | 14 | - | - | - |
| 165 MBK 301 | | - | - | - | - | 8 | 18 | - | - | - |

| Actuators | Actuation direction | 165MSK00.1F 165MSK00.1L | | | 165MSK00.1C 165MSK00.1I | | | 165MSK00.1D 165MSK00.1J | | |
|--------------------|---------------------|----------------------------|-----------------|-----------------|----------------------------|-----------------|-----------------|----------------------------|-----------------|-----------------|
| | | S _{0 min} | S _{ao} | S _{ar} | S _{0 min} | S _{ao} | S _{ar} | S _{0 min} | S _{ao} | S _{ar} |
| 165 MBK 001 | Front | - | - | - | 0.5 | 5 | 14 | 0.5 | 5 | 14 |
| 165 MBK 101 | | - | - | - | 0.5 | 8 | 18 | 0.5 | 8 | 18 |
| 165 MBK 201 | Front 90° | - | - | - | 0.5 | 5 | 14 | 0.5 | 5 | 14 |
| 165 MBK 301 | | - | - | - | 0.5 | 8 | 18 | 0.5 | 8 | 18 |
| 165 MBK 001 | Side | 0.5 | 5 | 14 | - | - | - | - | - | - |
| 165 MBK 101 | | - | 8 | 18 | - | - | - | - | - | - |
| 165 MBK 201 | Side 90° | 0.5 | 5 | 14 | - | - | - | - | - | - |
| 165 MBK 301 | | - | 8 | 18 | - | - | - | - | - | - |

S_{0 min} = minimum switching distance (mm), S_{ao} = operating distance (mm), S_{ar} = assured switch-off distance (mm)

Características do artigo

| Attribute | 165MSK00H1A | 165MSK00H1B | 165MSK00H1F | 165MSK00H1G | 165MSK00H1H | 165MSK00H1K ▶ |
|-------------------------------------|--------------------------------------|-----------------|-------------|-------------|-----------------|---------------|
| Min. switching voltage | 19.2 V DC | | | | | |
| Max. switching voltage | 28.8 V DC | | | | | |
| Max. switching current | 0.2 A | | | | | |
| Max. switching current with LED | - | 0.01 A | | - | 0.01 A | - |
| Max. switching power | 3 W | | | | | |
| Switching frequency | 5 Hz | | | | | |
| Assured switching distance (Sao) | 5 mm | | | | | |
| Assured switch-off distance (Sar) | 14 mm | | | | | |
| Minimum switching distance (S0 min) | 0.5 mm | | | | | |
| LED display | No | single-coloured | | No | single-coloured | No |
| Actuation | front | | side | front | | side |
| Switching principle | magnetic | | | | | |
| Series resistor | 10 Ohm | | | | | |
| Technology | Reed | | | | | |
| Contact form | NO/NO | | | NO/NC | | |
| Coding acc. to EN ISO 14119 | Low | | | | | |
| B10d acc. to EN ISO 13849-1 | 20000000 | | | | | |
| Type acc. to EN ISO 14119 | 4 | | | | | |
| Mission time in years | 20 a | | | | | |
| Structure acc. to EN ISO 13849-1 | Two-channel | | | | | |
| Housing colour | grau, schwarz | | | | | |
| Housing design | rectangular | | | | | |
| Dimensions | 25 x 88 x 13 mm | | | | | |
| cannot be mounted flush | yes | | | | | |
| Housing material | PBT, PC | | | | | |
| Cable material | PVC | | | | | |
| Pollution degree | 3 | | | | | |
| Protection class | III | | | | | |
| Protection class | IP67 DIN EN 60529 - IP6K9K ISO 20653 | | | | | |

| Attribute | 165MSK00H1A | 165MSK00H1B | 165MSK00H1F | 165MSK00H1G | 165MSK00H1H | 165MSK00H1K ▶ |
|--|-------------------|-------------|-------------|-------------|-------------|---------------|
| Protection class, connector | IP67 DIN EN 60529 | | | | | |
| Operating temperature min. | -25 °C | | | | | |
| Max. operating temperature | 80 °C | | | | | |
| Min. cable temperature range, moving | -5 °C | | | | | |
| Max. cable temperature range, moving | 80 °C | | | | | |
| Min. cable temperature range, fixed installation | -30 °C | | | | | |
| Max. cable temperature range, fixed installation | 80 °C | | | | | |
| Shock resistance (Norm) | 30g / 11ms | | | | | |
| Vibration resistance (Norm) | 10 - 55Hz | | | | | |
| Min. storage temperature | -25 °C | | | | | |
| Max. storage temperature | 80 °C | | | | | |
| Mounting type | screwed | | | | | |
| Detent present | no | | | | | |
| Connector type | M12x1 - 4 polig | | | | | |
| Cable length | 0.15 m | | | | | |
| Number of strands | 4 | | | | | |
| Wire cross section | 0.25 mm² | | | | | |
| Certified in accordance with | - | UL | | | | |
| CE label | yes | | | | | |
| Possible actuators | 165MBK001 | | | | | |

| Attribute | 165MSK00H1L | 165MSK00J1C | 165MSK00J1D | 165MSK00J1I | 165MSK00J1J | 165MSK00K1A ▶ |
|-------------------------------------|--------------------------------------|----------------------------|-----------------|-------------|-----------------|---------------|
| Min. switching voltage | 19.2 V DC | | | | | |
| Max. switching voltage | 28.8 V DC | | | | | |
| Max. switching current | 0.2 A | | | | | |
| Max. switching current with LED | 0.01 A | – | 0.01 A | – | 0.01 A | – |
| Max. switching power | 3 W | | | | | |
| Switching frequency | 5 Hz | | | | | |
| Assured switching distance (Sao) | 5 mm | | | | | |
| Assured switch-off distance (Sar) | 14 mm | | | | | |
| Minimum switching distance (S0 min) | 0.5 mm | | | | | |
| LED display | single-coloured | No | single-coloured | No | single-coloured | No |
| Actuation | side | front | | | | |
| Switching principle | magnetic | | | | | |
| Series resistor | 10 Ohm | | | | | |
| Technology | Reed | | | | | |
| Contact form | NO/NC | NO/NO/NO (Kontrollkontakt) | | NO/NC/NO | | NO/NO |
| Coding acc. to EN ISO 14119 | Low | | | | | |
| B10d acc. to EN ISO 13849-1 | 20000000 | | | | | |
| Type acc. to EN ISO 14119 | 4 | | | | | |
| Mission time in years | 20 a | | | | | |
| Structure acc. to EN ISO 13849-1 | Two-channel | | | | | |
| Housing colour | grau, schwarz | | | | | |
| Housing design | rectangular | | | | | |
| Dimensions | 25 x 88 x 13 mm | | | | | |
| cannot be mounted flush | yes | | | | | |
| Housing material | PBT, PC | | | | | |
| Cable material | PVC | | | | | |
| Pollution degree | 3 | | | | | |
| Protection class | III | | | | | |
| Protection class | IP67 DIN EN 60529 - IP6K9K ISO 20653 | | | | | |
| Protection class, connector | IP67 DIN EN 60529 | | | | | – |

| Attribute | 165MSK00H1L | 165MSK00J1C | 165MSK00J1D | 165MSK00J1I | 165MSK00J1J | 165MSK00K1A ▶ |
|--|-----------------|-----------------|-------------|-------------|-------------|---------------|
| Operating temperature min. | -25 °C | | | | | |
| Max. operating temperature | 80 °C | | | | | |
| Min. cable temperature range, moving | -5 °C | | | | | |
| Max. cable temperature range, moving | 80 °C | | | | | |
| Min. cable temperature range, fixed installation | -30 °C | | | | | |
| Max. cable temperature range, fixed installation | 80 °C | | | | | |
| Shock resistance (Norm) | 30g / 11ms | | | | | |
| Vibration resistance (Norm) | 10 - 55Hz | | | | | |
| Min. storage temperature | -25 °C | | | | | |
| Max. storage temperature | 80 °C | | | | | |
| Mounting type | screwed | | | | | |
| Detent present | no | | | | | |
| Connector type | M12x1 - 4 polig | M12x1 - 8 polig | | | | - |
| Cable length | 0.15 m | | | | | 1 m |
| Number of strands | 4 | 8 | | | | 4 |
| Wire cross section | 0.25 mm² | | | | | |
| Certified in accordance with | UL | | | | | |
| CE label | yes | | | | | |
| Possible actuators | 165MBK001 | | | | | |

| Attribute | 165MSK00K1B | 165MSK00K1C | 165MSK00K1D | 165MSK00K1F | 165MSK00K1G | 165MSK00K1H ▶ |
|-------------------------------------|--------------------------------------|----------------------------|-----------------|-------------|-------------|-----------------|
| Min. switching voltage | 19.2 V DC | | | | | |
| Max. switching voltage | 28.8 V DC | | | | | |
| Max. switching current | 0.2 A | | | | | |
| Max. switching current with LED | 0.01 A | - | 0.01 A | | - | 0.01 A |
| Max. switching power | 3 W | | | | | |
| Switching frequency | 5 Hz | | | | | |
| Assured switching distance (Sao) | 5 mm | | | | | |
| Assured switch-off distance (Sar) | 14 mm | | | | | |
| Minimum switching distance (S0 min) | 0.5 mm | | | | | |
| LED display | single-coloured | No | single-coloured | | No | single-coloured |
| Actuation | front | | | side | front | |
| Switching principle | magnetic | | | | | |
| Series resistor | 10 Ohm | | | | | |
| Technology | Reed | | | | | |
| Contact form | NO/NO | NO/NO/NO (Kontrollkontakt) | | NO/NO | NO/NC | |
| Coding acc. to EN ISO 14119 | Low | | | | | |
| B10d acc. to EN ISO 13849-1 | 20000000 | | | | | |
| Type acc. to EN ISO 14119 | 4 | | | | | |
| Mission time in years | 20 a | | | | | |
| Structure acc. to EN ISO 13849-1 | Two-channel | | | | | |
| Housing colour | grau, schwarz | | | | | |
| Housing design | rectangular | | | | | |
| Dimensions | 25 x 88 x 13 mm | | | | | |
| cannot be mounted flush | yes | | | | | |
| Housing material | PBT, PC | | | | | |
| Cable material | PVC | | | | | |
| Pollution degree | 3 | | | | | |
| Protection class | III | | | | | |
| Protection class | IP67 DIN EN 60529 - IP6K9K ISO 20653 | | | | | |
| Protection class, connector | - | | | | | |

| Attribute | 165MSK00K1B | 165MSK00K1C | 165MSK00K1D | 165MSK00K1F | 165MSK00K1G | 165MSK00K1H ▶ |
|--|-------------|-------------|-------------|-------------|-------------|---------------|
| Operating temperature min. | -25 °C | | | | | |
| Max. operating temperature | 80 °C | | | | | |
| Min. cable temperature range, moving | -5 °C | | | | | |
| Max. cable temperature range, moving | 80 °C | | | | | |
| Min. cable temperature range, fixed installation | -30 °C | | | | | |
| Max. cable temperature range, fixed installation | 80 °C | | | | | |
| Shock resistance (Norm) | 30g / 11ms | | | | | |
| Vibration resistance (Norm) | 10 - 55Hz | | | | | |
| Min. storage temperature | -25 °C | | | | | |
| Max. storage temperature | 80 °C | | | | | |
| Mounting type | screwed | | | | | |
| Detent present | no | | | | | |
| Connector type | - | | | | | |
| Cable length | 1 m | | | | | |
| Number of strands | 4 | 6 | | 4 | | |
| Wire cross section | 0.25 mm² | | | | | |
| Certified in accordance with | UL | | | | | |
| CE label | yes | | | | | |
| Possible actuators | 165MBK001 | | | | | |

| Attribute | 165MSK00K1I | 165MSK00K1J | 165MSK00K1K | 165MSK00K1L | 165MSK00K1H31 | 165MSK00H1A31 |
|-------------------------------------|--------------------------------------|-----------------|-------------|-----------------|---------------|---------------|
| Min. switching voltage | 19.2 V DC | | | | | |
| Max. switching voltage | 28.8 V DC | | | | | |
| Max. switching current | 0.2 A | | | | | |
| Max. switching current with LED | - | 0.01 A | - | 0.01 A | - | |
| Max. switching power | 3 W | | | | | |
| Switching frequency | 5 Hz | | | | | |
| Assured switching distance (Sao) | 5 mm | | | | | |
| Assured switch-off distance (Sar) | 14 mm | | | | | |
| Minimum switching distance (S0 min) | 0.5 mm | | | | | |
| LED display | No | single-coloured | No | single-coloured | No | |
| Actuation | front | | side | | front | |
| Switching principle | magnetic | | | | | |
| Series resistor | 10 Ohm | | | | | |
| Technology | Reed | | | | | |
| Contact form | NO/NC/NO | | NO/NC | | NO/NO | |
| Coding acc. to EN ISO 14119 | Low | | | | | |
| B10d acc. to EN ISO 13849-1 | 20000000 | | | | | |
| Type acc. to EN ISO 14119 | 4 | | | | | |
| Mission time in years | 20 a | | | - | 20 a | |
| Structure acc. to EN ISO 13849-1 | Two-channel | | | | | |
| Housing colour | grau, schwarz | | | | | |
| Housing design | rectangular | | | | | |
| Dimensions | 25 x 88 x 13 mm | | | | | |
| cannot be mounted flush | yes | | | | | |
| Housing material | PBT, PC | | | | | |
| Cable material | PVC | | | | | |
| Pollution degree | 3 | | | | | |
| Protection class | III | | | | | |
| Protection class | IP67 DIN EN 60529 - IP6K9K ISO 20653 | | | | | |

| Attribute | 165MSK00K1I | 165MSK00K1J | 165MSK00K1K | 165MSK00K1L | 165MSK00K1H31 | 165MSK00H1A31 ▶ |
|--|-------------|-------------|-------------|-------------|---------------|--------------------|
| Protection class, connector | - | | | | | IP67 DIN EN 60529 |
| Operating temperature min. | -25 °C | | | | | |
| Max. operating temperature | 80 °C | | | | | |
| Min. cable temperature range, moving | -5 °C | | | | | |
| Max. cable temperature range, moving | 80 °C | | | | | |
| Min. cable temperature range, fixed installation | -30 °C | | | | | |
| Max. cable temperature range, fixed installation | 80 °C | | | | | |
| Shock resistance (Norm) | 30g / 11ms | | | | | |
| Vibration resistance (Norm) | 10 - 55Hz | | | | | |
| Min. storage temperature | -25 °C | | | | | |
| Max. storage temperature | 80 °C | | | | | |
| Mounting type | screwed | | | | | |
| Detent present | no | | | | | |
| Connector type | - | | | | | M12x1 - 4 polig |
| Cable length | 1 m | | | | | 0.15 m |
| Number of strands | 6 | 4 | | | | |
| Wire cross section | 0.25 mm² | | | | | |
| Certified in accordance with | UL | | | | | - |
| CE label | yes | | | | | |
| Possible actuators | 165MBK001 | | | | | |

| Attribute | 165MSK00H1E | 165MSK00K1E |
|-------------------------------------|--------------------------------------|-------------|
| Min. switching voltage | 19.2 V DC | |
| Max. switching voltage | 28.8 V DC | |
| Max. switching current | 0.2 A | |
| Max. switching current with LED | - | |
| Max. switching power | 3 W | |
| Switching frequency | 5 Hz | |
| Assured switching distance (Sao) | 5 mm | |
| Assured switch-off distance (Sar) | 14 mm | |
| Minimum switching distance (SO min) | 0.5 mm | |
| LED display | No | |
| Actuation | front | side |
| Switching principle | magnetic | |
| Series resistor | 10 Ohm | |
| Technology | Reed | |
| Contact form | NO/NO | |
| Coding acc. to EN ISO 14119 | Low | |
| B10d acc. to EN ISO 13849-1 | 20000000 | |
| Type acc. to EN ISO 14119 | 4 | |
| Mission time in years | 20 a | |
| Structure acc. to EN ISO 13849-1 | Two-channel | |
| Housing colour | grau, schwarz | |
| Housing design | rectangular | |
| Dimensions | 25 x 88 x 13 mm | |
| cannot be mounted flush | yes | |
| Housing material | PBT, PC | |
| Cable material | PVC | |
| Pollution degree | 3 | |
| Protection class | III | |
| Protection class | IP67 DIN EN 60529 - IP6K9K ISO 20653 | |
| Protection class, connector | IP67 DIN EN 60529 | - |
| Operating temperature min. | -25 °C | |
| Max. operating temperature | 80 °C | |

| Attribute | 165MSK00H1E | 165MSK00K1E |
|--|----------------------|-------------|
| Min. cable temperature range, moving | -5 °C | |
| Max. cable temperature range, moving | 80 °C | |
| Min. cable temperature range, fixed installation | -30 °C | |
| Max. cable temperature range, fixed installation | 80 °C | |
| Shock resistance (Norm) | 30g / 11ms | |
| Vibration resistance (Norm) | 10 - 55Hz | |
| Min. storage temperature | -25 °C | |
| Max. storage temperature | 80 °C | |
| Mounting type | screwed | |
| Detent present | no | |
| Connector type | M12x1 - 4 polig | - |
| Cable length | 0.15 m | 1 m |
| Number of strands | 4 | |
| Wire cross section | 0.25 mm ² | |
| Certified in accordance with | - | UL |
| CE label | yes | |
| Possible actuators | 165MBK001 | |