

## Sensors SOE..., opto-electronic

Product overview

**FESTO**



- Diffuse sensors and retro-reflective sensors
- Sensors with background suppression
- Fibre-optic units
- Distance sensors
- Laser contrast sensors, diffuse sensors and retro-reflective sensors
- Colour sensors
- Ranges up to 20 m
- Adjustment using teach-in or potentiometer

Detailed product information

→ [www.festo.com/catalogue/soe](http://www.festo.com/catalogue/soe)

| Product overview                          |   |                                  |               |                 |                       |                 |
|---|---|----------------------------------|---------------|-----------------|-----------------------|-----------------|
| Variant                                   | Type                                    | Operating voltage                | Switch output | Analogue output | Design                | → Page/Internet |
| Diffuse sensor                            | SOEG-RT<br>Basic version                | 10 ... 36 V DC<br>10 ... 30 V DC | PNP<br>NPN    | –               | Round<br>Block-shaped | 3               |
|   | SOEG-RTZ<br>With cylindrical light beam |                                  | PNP<br>NPN    | –               | Round                 | 5               |
| Sensor with back-ground suppression       | SOEG-RTH                                | 10 ... 36 V DC<br>10 ... 30 V DC | PNP<br>NPN    | –               | Round<br>Block-shaped | 6               |
| Retro-reflective sensor                   | SOEG-RSP<br>Basic version               | 10 ... 36 V DC<br>10 ... 30 V DC | PNP<br>NPN    | –               | Round<br>Block-shaped | 8               |
|   | SOEG-RSG<br>For transparent objects     |                                  | PNP<br>NPN    | –               | Block-shaped          | 10              |
| Through-beam sensor                       | SOEG-S<br>Transmitter                   | 10 ... 36 V DC<br>10 ... 30 V DC | –             | –               | Round<br>Block-shaped | 11              |
|   | SOEG-E<br>Receiver                      | 10 ... 36 V DC<br>10 ... 30 V DC | PNP<br>NPN    | –               | Round<br>Block-shaped | 11              |
| Fibre-optic unit                          | SOEG-L<br>Basic version                 | 10 ... 30 V DC                   | PNP<br>NPN    | –               | Block-shaped          | 13              |
| Distance sensor                           | SOEG-RTD                                | 15 ... 30 V DC                   | PNP           | 0 ... 10 V      | Block-shaped          | 14              |
| Laser diffuse sensor                      | SOEL-RT<br>Contrast sensor              | 10 ... 30 V DC                   | PNP<br>NPN    | –               | Block-shaped          | 15              |
| Laser sensor with back-ground suppression | SOEL-RTH                                |                                  | PNP<br>NPN    | –               | Block-shaped          | 15              |
| Laser retro-reflective sensor             | SOEL-RSP                                | 10 ... 30 V DC                   | PNP<br>NPN    | –               | Block-shaped          | 16              |
| Laser distance sensor                     | SOEL-RTD                                | 16 ... 30 V DC                   | 2x PNP        | 4 ... 20 mA     | Block-shaped          | 17              |
|   |   | 18 ... 28 V DC                   | –             | 0 ... 10 V      |                       |                 |
| Colour sensor                             | SOEC-RT                                 | 10 ... 30 V DC                   | 3x PNP        | –               | Block-shaped          | 18              |

## Sensors SOE..., opto-electronic

Type codes

|                                 |   | SOE | G | RSP | Q20 | PP | K | 2L | TI |  |
|---------------------------------|---|-----|---|-----|-----|----|---|----|----|--|
| <b>Type</b>                     |   |     |   |     |     |    |   |    |    |  |
| SOE                             | Opto-electronic sensors                                     |     |   |     |     |    |   |    |    |  |
| <b>Design</b>                   |   |     |   |     |     |    |   |    |    |  |
| G                               | Standard sensor   |     |   |     |     |    |   |    |    |  |
| L                               | Laser sensor  |     |   |     |     |    |   |    |    |  |
| C                               | Colour sensor   |     |   |     |     |    |   |    |    |  |
| <b>Function</b>                 |   |     |   |     |     |    |   |    |    |  |
| RT                              | Diffuse sensor  |     |   |     |     |    |   |    |    |  |
| RSP                             | Retro-reflective sensor                                     |     |   |     |     |    |   |    |    |  |
| S                               | Through-beam sensor, transmitter                            |     |   |     |     |    |   |    |    |  |
| E                               | Through-beam sensor, receiver                               |     |   |     |     |    |   |    |    |  |
| L                               | Fibre-optic unit  |     |   |     |     |    |   |    |    |  |
| RTH                             | Sensor with background suppression                          |     |   |     |     |    |   |    |    |  |
| RTZ                             | Diffuse sensor with cylindrical light beam                  |     |   |     |     |    |   |    |    |  |
| RTD                             | Distance sensor   |     |   |     |     |    |   |    |    |  |
| RSG                             | Retro-reflective sensor for transparent objects             |     |   |     |     |    |   |    |    |  |
| <b>Design, size, version</b>    |   |     |   |     |     |    |   |    |    |  |
| 4                               | Round, dia. 4 mm  |     |   |     |     |    |   |    |    |  |
| M5                              | Round, M5   |     |   |     |     |    |   |    |    |  |
| M12                             | Round, M12  |     |   |     |     |    |   |    |    |  |
| M18                             | Round, M18, beam exit straight                              |     |   |     |     |    |   |    |    |  |
| M18W                            | Round, M18, beam exit angled                                |     |   |     |     |    |   |    |    |  |
| Q20                             | Block design, 20x32x12 mm                                   |     |   |     |     |    |   |    |    |  |
| Q30                             | Block design, 30x30x15 mm                                   |     |   |     |     |    |   |    |    |  |
| Q50                             | Block design, 50x50x17 mm                                   |     |   |     |     |    |   |    |    |  |
| <b>Switch output</b>            |   |     |   |     |     |    |   |    |    |  |
| PS                              | PNP, normally open  |     |   |     |     |    |   |    |    |  |
| NS                              | NPN, normally open  |     |   |     |     |    |   |    |    |  |
| PA                              | PNP, antivalent   |     |   |     |     |    |   |    |    |  |
| NA                              | NPN, antivalent   |     |   |     |     |    |   |    |    |  |
| PP                              | PNP, switchable   |     |   |     |     |    |   |    |    |  |
| NP                              | NPN, switchable   |     |   |     |     |    |   |    |    |  |
| PU                              | Analogue 0 ... 10 V   |     |   |     |     |    |   |    |    |  |
| <b>Electrical connection</b>    |   |     |   |     |     |    |   |    |    |  |
| K                               | Cable   |     |   |     |     |    |   |    |    |  |
| S                               | Plug  |     |   |     |     |    |   |    |    |  |
| <b>Indication</b>               |   |     |   |     |     |    |   |    |    |  |
| L                               | 1 LED   |     |   |     |     |    |   |    |    |  |
| 2L                              | 2 LEDs  |     |   |     |     |    |   |    |    |  |
| 3L                              | 3 LEDs  |     |   |     |     |    |   |    |    |  |
| 7L                              | 7 LEDs  |     |   |     |     |    |   |    |    |  |
| <b>Options</b>                  |   |     |   |     |     |    |   |    |    |  |
|                                 | Standard version  |     |   |     |     |    |   |    |    |  |
| TI                              | Teach-in by means of a button and via electrical connection |     |   |     |     |    |   |    |    |  |
| <b>Position measuring range</b> |   |     |   |     |     |    |   |    |    |  |

# Diffuse sensors SOEG-RT

Technical data

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| General technical data |          |    |               |                 |               |  |               |
|------------------------|----------|----|---------------|-----------------|---------------|--|---------------|
| Size                   | ∅ 4 mm   | M5 | M12x1         | M18x1, straight | M18x1, angled | 20x32x12 mm                                    | 30x30x15 mm   |
| Working range [mm]     | 50       |    | 70 ... 300    | 40 ... 600      | 0 ... 600     | 10 ... 300                                     | 0 ... 600     |
| Light type             | Infrared |    | Red           |                 |               | Red  | Infrared      |
| Setting options        | –        |    | Potentiometer |                 |               | Teach-in<br>Teach-in via electrical connection | Potentiometer |

| Electrical data                      |                                |             |            |                 |               |              |             |             |
|--------------------------------------|--------------------------------|-------------|------------|-----------------|---------------|--------------|-------------|-------------|
| Size                                 | ∅ 4 mm                         | M5          | M12x1      | M18x1, straight | M18x1, angled | 20x32x12 mm  | 30x30x15 mm |             |
| Electrical connection                | Cable                          | 3-wire      |            |                 | 4-wire        | 3-wire       | 4-wire      | 3-wire      |
|                                      | Plug                           | M8x1, 3-pin |            | M12x1, 3-pin    | M12x1, 4-pin  | M12x1, 3-pin | M8x1, 4-pin | M8x1, 3-pin |
| Operating voltage range [V DC]       | 10 ... 30                      |             | 10 ... 36  |                 |               | 10 ... 30    |             |             |
| Max. output current [mA]             | 100                            |             | 200        |                 |               | 100          | 200         |             |
| Max. switching frequency [Hz]        | 250                            |             | 1,000      |                 |               | 1,000        |             |             |
| Protection against short circuit     | Pulsed                         |             |            |                 |               |              |             |             |
| Protection against polarity reversal | For all electrical connections |             |            |                 |               |              |             |             |
| Protection class                     | IP67                           |             | IP65, IP67 |                 |               | IP67         | IP65        |             |








| Operating and environmental conditions                    |                                     |    |             |                 |               |             |             |
|---|-------------------------------------|----|-------------|-----------------|---------------|-------------|-------------|
| Size  | ∅ 4 mm                              | M5 | M12x1       | M18x1, straight | M18x1, angled | 20x32x12 mm | 30x30x15 mm |
| Ambient temperature [°C]                                  | 0 ... 55                            |    | –25 ... +55 |                 |               | –20 ... +60 | –25 ... +55 |
| Ambient temperature with flexible cable installation [°C] | 0 ... 55                            |    | –5 ... +55  |                 |               | –5 ... +60  | –5 ... +55  |
| CE mark (see declaration of conformity)                   | In accordance with EU EMC directive |    |             |                 |               |             |             |
| Certification   | c UL us - Listed (OL)<br>C-Tick     |    |             |                 |               |             |             |

| Materials    |                            |    |                      |                 |               |                           |  |
|--------------|----------------------------|----|----------------------|-----------------|---------------|---------------------------|--|
| Size         | ∅ 4 mm                     | M5 | M12x1                | M18x1, straight | M18x1, angled | 20x32x12 mm               | 30x30x15 mm                            |
| Housing      | High-alloy stainless steel |    | Brass, chrome-plated |                 |               | Acrylic butadiene styrene | Polybutylene terephthalate, reinforced |
| Cable sheath | Polyurethane               |    |                      |                 |               |                           |  |

# Diffuse sensors SOEG-RT

Technical data

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| Ordering data   |                    |                            |               |                       |                        |          |                        |
|---|--------------------|----------------------------|---------------|-----------------------|------------------------|----------|------------------------|
| Size  | Working range [mm] | Switching element function | Switch output | Electrical connection |                        |          |                        |
|   |                    |                            |               | Cable                 |                        | Plug     |                        |
|   |                    |                            |               | Part No.              | Type                   | Part No. | Type                   |
| <b>∅ 4 mm</b>   |                    |                            |               |                       |                        |          |                        |
|    | 50                 | Light switching            | PNP           | 537 671               | SOEG-RT-4-PS-K-L       | 537 673  | SOEG-RT-4-PS-S-L       |
|   |                    |                            | NPN           | 537 674               | SOEG-RT-4-NS-K-L       | 537 676  | SOEG-RT-4-NS-S-L       |
| <b>M5</b>   |                    |                            |               |                       |                        |          |                        |
|    | 50                 | Light switching            | PNP           | 537 677               | SOEG-RT-M5-PS-K-L      | 537 679  | SOEG-RT-M5-PS-S-L      |
|   |                    |                            | NPN           | 537 680               | SOEG-RT-M5-NS-K-L      | 537 682  | SOEG-RT-M5-NS-S-L      |
| <b>M12</b>  |                    |                            |               |                       |                        |          |                        |
|    | 70 ... 300         | Light switching            | PNP           | 547 908               | SOEG-RT-M12-PS-K-2L    | 547 909  | SOEG-RT-M12-PS-S-2L    |
|   |                    |                            | NPN           | 547 906               | SOEG-RT-M12-NS-K-2L    | 547 907  | SOEG-RT-M12-NS-S-2L    |
| <b>M18, beam exit straight</b>  |                    |                            |               |                       |                        |          |                        |
|   | 40 ... 600         | Antivalent                 | PNP           | 547 912               | SOEG-RT-M18-PA-K-2L    | 547 913  | SOEG-RT-M18-PA-S-2L    |
|   |                    |                            | NPN           | 547 910               | SOEG-RT-M18-NA-K-2L    | 547 911  | SOEG-RT-M18-NA-S-2L    |
| <b>M18, beam exit angled</b>  |                    |                            |               |                       |                        |          |                        |
|  | 0 ... 600          | Light switching            | PNP           | 537 701               | SOEG-RT-M18W-PS-K-2L   | 537 702  | SOEG-RT-M18W-PS-S-2L   |
|   |                    |                            | NPN           | 537 717               | SOEG-RT-M18W-NS-K-2L   | 537 718  | SOEG-RT-M18W-NS-S-2L   |
| <b>20x32x12 mm</b>  |                    |                            |               |                       |                        |          |                        |
|  | 10 ... 300         | Switchable                 | PNP           | 537 732               | SOEG-RT-Q20-PP-K-2L-TI | 537 731  | SOEG-RT-Q20-PP-S-2L-TI |
|   |                    |                            | NPN           | 537 734               | SOEG-RT-Q20-NP-K-2L-TI | 537 733  | SOEG-RT-Q20-NP-S-2L-TI |
| <b>30x30x15 mm</b>  |                    |                            |               |                       |                        |          |                        |
|  | 0 ... 600          | Light switching            | PNP           | 165 350               | SOEG-RT-Q30-PS-K-2L    | 165 351  | SOEG-RT-Q30-PS-S-2L    |
|   |                    |                            | NPN           | 165 348               | SOEG-RT-Q30-NS-K-2L    | 165 349  | SOEG-RT-Q30-NS-S-2L    |

# Diffuse sensors SOEG-RTZ, with cylindrical light beam



Technical data

| General technical data |          |    |
|------------------------|----------|----|
| Size                   | ∅ 4 mm   | M5 |
| Working range [mm]     | 10       |    |
| Light type             | Infrared |    |
| Setting options        | -        |    |

| Electrical data                      |                                |    |
|--------------------------------------|--------------------------------|----|
| Size                                 | ∅ 4 mm                         | M5 |
| Electrical connection                | Cable, 3-wire                  |    |
| Operating voltage range [V DC]       | 10 ... 30                      |    |
| Max. output current [mA]             | 100                            |    |
| Max. switching frequency [Hz]        | 250                            |    |
| Protection against short circuit     | Pulsed                         |    |
| Protection against polarity reversal | For all electrical connections |    |
| Protection class                     | IP67                           |    |

| Operating and environmental conditions                    |                                     |    |
|---|-------------------------------------|----|
| Size  | ∅ 4 mm                              | M5 |
| Ambient temperature [°C]                                  | 0 ... 55                            |    |
| Ambient temperature with flexible cable installation [°C] | 0 ... 55                            |    |
| CE mark (see declaration of conformity)                   | In accordance with EU EMC directive |    |
| Certification   | c UL us - Listed (OL)<br>C-Tick     |    |

| Materials    |                            |    |
|--------------|----------------------------|----|
| Size         | ∅ 4 mm                     | M5 |
| Housing      | High-alloy stainless steel |    |
| Cable sheath | Polyurethane               |    |

| Ordering data   |                    |                            |               |                       |                    |
|---|--------------------|----------------------------|---------------|-----------------------|--------------------|
| Size  | Working range [mm] | Switching element function | Switch output | Electrical connection |                    |
|   |                    |                            |               | Cable                 |                    |
|   |                    |                            |               | Part No.              | Type               |
| ∅ 4 mm  |                    |                            |               |                       |                    |
|  | 10                 | Light switching            | PNP           | 537 672               | SOEG-RTZ-4-PS-K-L  |
|   |                    |                            | NPN           | 537 675               | SOEG-RTZ-4-NS-K-L  |
| M5  |                    |                            |               |                       |                    |
|  | 10                 | Light switching            | PNP           | 537 678               | SOEG-RTZ-M5-PS-K-L |
|   |                    |                            | NPN           | 537 681               | SOEG-RTZ-M5-NS-K-L |

# Sensors SOEG-RTH, with background suppression

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Technical data

| General technical data |                 |               |  |               |               |
|------------------------|-----------------|---------------|--|---------------|---------------|
| Size                   | M18x1, straight | M18x1, angled | 20x32x12 mm                                    | 30x30x15 mm   | 50x50x17 mm   |
| Working range [mm]     | 10 ... 120      | 10 ... 120    | 25 ... 100                                     | 15 ... 150    | 30 ... 300    |
| Light type             | Red             |               |  |               |               |
| Setting options        | Potentiometer   |               | Teach-in<br>Teach-in via electrical connection | Potentiometer | Potentiometer |

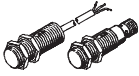
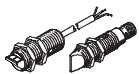
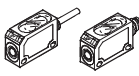
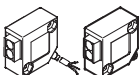

| Electrical data                      |                                |               |             |             |              |
|--------------------------------------|--------------------------------|---------------|-------------|-------------|--------------|
| Size                                 | M18x1, straight                | M18x1, angled | 20x32x12 mm | 30x30x15 mm | 50x50x17 mm  |
| Electrical connection                | Cable                          | 3-wire        |             | 4-wire      | 3-wire       |
|                                      | Plug                           | M12x1, 3-pin  |             | M8x1, 4-pin | M12x1, 3-pin |
| Operating voltage range [V DC]       | 10 ... 36                      |               | 10 ... 30   | 10 ... 36   | 10 ... 30    |
| Max. output current [mA]             | 200                            |               | 100         | 200         |              |
| Max. switching frequency [Hz]        | 500                            |               | 1,000       | 500         | 1,000        |
| Protection against short circuit     | Pulsed                         |               |             |             |              |
| Protection against polarity reversal | For all electrical connections |               |             |             |              |
| Protection class                     | IP65, IP67                     |               | IP67        | IP65        | IP67         |

| Operating and environmental conditions                    |                                     |               |  |                                     |  |
|---|-------------------------------------|---------------|--|-------------------------------------|--|
| Size  | M18x1, straight                     | M18x1, angled | 20x32x12 mm  | 30x30x15 mm                         | 50x50x17 mm  |
| Ambient temperature [°C]                                  | -25 ... +55                         |               | -20 ... +60  | -25 ... +55                         | -20 ... +60  |
| Ambient temperature with flexible cable installation [°C] | -5 ... +55                          |               | -5 ... +60   | -5 ... +55                          | -5 ... +60   |
| CE mark (see declaration of conformity)                   | In accordance with EU EMC directive |               | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive | In accordance with EU EMC directive | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive |
| Certification   | c UL us - Listed (OL)<br>C-Tick     |               |  |                                     |  |

| Materials    |                      |               |                           |  |                           |
|--------------|----------------------|---------------|---------------------------|--|---------------------------|
| Size         | M18x1, straight      | M18x1, angled | 20x32x12 mm               | 30x30x15 mm                            | 50x50x17 mm               |
| Housing      | Brass, chrome-plated |               | Acrylic butadiene styrene | Polybutylene terephthalate, reinforced | Acrylic butadiene styrene |
| Cable sheath | Polyurethane         |               |                           |  |                           |

# Sensors SOEG-RTH, with background suppression

Technical data

| Ordering data   |                    |                            |               |                       |                         |          |                         |
|---|--------------------|----------------------------|---------------|-----------------------|-------------------------|----------|-------------------------|
| Size  | Working range [mm] | Switching element function | Switch output | Electrical connection |                         |          |                         |
|   |                    |                            |               | Cable                 |                         | Plug     |                         |
|   |                    |                            |               | Part No.              | Type                    | Part No. | Type                    |
| <b>M18, beam exit straight</b>  |                    |                            |               |                       |                         |          |                         |
|    | 10 ... 120         | Antivalent                 | PNP           | 537 687               | SOEG-RTH-M18-PS-K-2L    | 537 689  | SOEG-RTH-M18-PS-S-2L    |
|   |                    |                            | NPN           | 537 705               | SOEG-RTH-M18-NS-K-2L    | 537 707  | SOEG-RTH-M18-NS-S-2L    |
| <b>M18, beam exit angled</b>  |                    |                            |               |                       |                         |          |                         |
|    | 10 ... 120         | Light switching            | PNP           | 537 688               | SOEG-RTH-M18W-PS-K-2L   | 537 690  | SOEG-RTH-M18W-PS-S-2L   |
|   |                    |                            | NPN           | 537 706               | SOEG-RTH-M18W-NS-K-2L   | 537 708  | SOEG-RTH-M18W-NS-S-2L   |
| <b>20x32x12 mm</b>  |                    |                            |               |                       |                         |          |                         |
|    | 25 ... 100         | Switchable                 | PNP           | 537 724               | SOEG-RTH-Q20-PP-K-2L-TI | 537 723  | SOEG-RTH-Q20-PP-S-2L-TI |
|   |                    |                            | NPN           | 537 726               | SOEG-RTH-Q20-NP-K-2L-TI | 537 725  | SOEG-RTH-Q20-NP-S-2L-TI |
| <b>30x30x15 mm</b>  |                    |                            |               |                       |                         |          |                         |
|   | 15 ... 150         | Light switching            | PNP           | 537 719               | SOEG-RTH-Q30-PS-K-2L    | 537 720  | SOEG-RTH-Q30-PS-S-2L    |
|   |                    |                            | NPN           | 537 721               | SOEG-RTH-Q30-NS-K-2L    | 537 722  | SOEG-RTH-Q30-NS-S-2L    |
| <b>50x50x17 mm</b>  |                    |                            |               |                       |                         |          |                         |
|  | 30 ... 300         | Light switching            | PNP           | 537 771               | SOEG-RTH-Q50-PA-K-3L    | 537 773  | SOEG-RTH-Q50-PA-S-3L    |
|   |                    |                            | NPN           | 537 772               | SOEG-RTH-Q50-NA-K-3L    | 537 774  | SOEG-RTH-Q50-NA-S-3L    |

# Retro-reflective sensors SOEG-RSP

Technical data

| General technical data |               |                 |               |  |               |             |
|------------------------|---------------|-----------------|---------------|--|---------------|-------------|
| Size                   | M12x1         | M18x1, straight | M18x1, angled | 20x32x12 mm  | 30x30x15 mm   | 50x50x17 mm |
| Working range [mm]     | 1,500         | 2,000           | 2,000         | 0 ... 2,500  | 0 ... 2,000   | 0 ... 5,500 |
| Light type             | Red polarised |                 |               |  |               |             |
| Setting options        | –             |                 |               | Teach-in<br>Teach-in via electrical connection <sup>1)</sup> | Potentiometer |             |

1) Low-cost variants without the teach-in and programming functionality available

| Electrical data                      |                                |                 |               |             |             |              |
|--------------------------------------|--------------------------------|-----------------|---------------|-------------|-------------|--------------|
| Size                                 | M12x1                          | M18x1, straight | M18x1, angled | 20x32x12 mm | 30x30x15 mm | 50x50x17 mm  |
| Electrical connection                | Cable                          | 3-wire          |               | 4-wire      | 3-wire      | 4-wire       |
|                                      | Plug                           | M12x1, 3-pin    |               | M8x1, 4-pin | M8x1, 3-pin | M12x1, 4-pin |
| Operating voltage range [V DC]       | 10 ... 36                      |                 |               | 10 ... 30   |             |              |
| Max. output current [mA]             | 200                            |                 |               | 100         | 200         |              |
| Max. switching frequency [Hz]        | 1,000                          |                 |               |             |             |              |
| Protection against short circuit     | Pulsed                         |                 |               |             |             |              |
| Protection against polarity reversal | For all electrical connections |                 |               |             |             |              |
| Protection class                     | IP65, IP67                     |                 |               | IP67        | IP65        | IP67         |

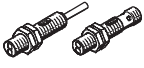
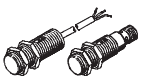
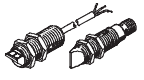
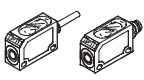
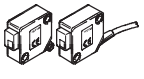
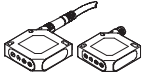
| Operating and environmental conditions                    |                                     |                 |               |  |                                     |  |
|---|-------------------------------------|-----------------|---------------|--|-------------------------------------|--|
| Size  | M12x1                               | M18x1, straight | M18x1, angled | 20x32x12 mm  | 30x30x15 mm                         | 50x50x17 mm  |
| Ambient temperature [°C]                                  | –25 ... +55                         |                 |               | –20 ... +60  | –25 ... +55                         | –20 ... +60  |
| Ambient temperature with flexible cable installation [°C] | –5 ... +55                          |                 |               | –5 ... +60   | –5 ... +55                          | –5 ... +60   |
| CE mark (see declaration of conformity)                   | In accordance with EU EMC directive |                 |               | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive | In accordance with EU EMC directive | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive |
| Certification   | c UL us - Listed (OL)<br>C-Tick     |                 |               |  |                                     |  |

| Materials    |                      |                 |               |                           |  |                           |
|--------------|----------------------|-----------------|---------------|---------------------------|--|---------------------------|
| Size         | M12x1                | M18x1, straight | M18x1, angled | 20x32x12 mm               | 30x30x15 mm                            | 50x50x17 mm               |
| Housing      | Brass, chrome-plated |                 |               | Acrylic butadiene styrene | Polybutylene terephthalate, reinforced | Acrylic butadiene styrene |
| Cable sheath | Polyurethane         |                 |               |                           |  |                           |



# Retro-reflective sensors SOEG-RSP

Technical data

| Ordering data   |                    |                            |               |                       |                                    |          |                         |
|---|--------------------|----------------------------|---------------|-----------------------|------------------------------------|----------|-------------------------|
| Size  | Working range [mm] | Switching element function | Switch output | Electrical connection |                                    |          |                         |
|   |                    |                            |               | Cable                 |                                    | Plug     |                         |
|   |                    |                            |               | Part No.              | Type                               | Part No. | Type                    |
| <b>M12</b>  |                    |                            |               |                       |                                    |          |                         |
|    | 1,500              | Dark switching             | PNP           | 537 683               | SOEG-RSP-M12-PS-K-2L               | 537 684  | SOEG-RSP-M12-PS-S-2L    |
|   |                    |                            | NPN           | 537 685               | SOEG-RSP-M12-NS-K-2L               | 537 686  | SOEG-RSP-M12-NS-S-2L    |
| <b>M18, beam exit straight</b>  |                    |                            |               |                       |                                    |          |                         |
|    | 2,000              | Dark switching             | PNP           | 537 697               | SOEG-RSP-M18-PS-K-2L               | 537 699  | SOEG-RSP-M18-PS-S-2L    |
|   |                    |                            | NPN           | 537 713               | SOEG-RSP-M18-NS-K-2L               | 537 715  | SOEG-RSP-M18-NS-S-2L    |
| <b>M18, beam exit angled</b>  |                    |                            |               |                       |                                    |          |                         |
|    | 2,000              | Dark switching             | PNP           | 537 698               | SOEG-RSP-M18W-PS-K-2L              | 537 700  | SOEG-RSP-M18W-PS-S-2L   |
|   |                    |                            | NPN           | 537 714               | SOEG-RSP-M18W-NS-K-2L              | 537 716  | SOEG-RSP-M18W-NS-S-2L   |
| <b>20x32x12 mm</b>  |                    |                            |               |                       |                                    |          |                         |
|   | 2,500              | Switchable                 | PNP           | 537 750               | SOEG-RSP-Q20-PP-K-2L-TI            | 537 749  | SOEG-RSP-Q20-PP-S-2L-TI |
|   |                    |                            | NPN           | 537 752               | SOEG-RSP-Q20-NP-K-2L-TI            | 537 751  | SOEG-RSP-Q20-NP-S-2L-TI |
|   | 2,500              | Switchable                 | PNP           | 537 784               | SOEG-RSP-Q20-PS-S-2L <sup>1)</sup> | -        |                         |
| <b>30x30x15 mm</b>  |                    |                            |               |                       |                                    |          |                         |
|  | 0 ... 2,000        | Dark switching             | PNP           | 165 330               | SOEG-RSP-Q30-PS-K-2L               | 165 331  | SOEG-RSP-Q30-PS-S-2L    |
|   |                    |                            | NPN           | 165 328               | SOEG-RSP-Q30-NS-K-2L               | 165 329  | SOEG-RSP-Q30-NS-S-2L    |
| <b>50x50x17 mm</b>  |                    |                            |               |                       |                                    |          |                         |
|  | 0 ... 5,500        | Antivalent                 | PNP           | 537 763               | SOEG-RSP-Q50-PA-K-3L               | 537 765  | SOEG-RSP-Q50-PA-S-3L    |
|   |                    |                            | NPN           | 537 764               | SOEG-RSP-Q50-NA-K-3L               | 537 766  | SOEG-RSP-Q50-NA-S-3L    |

1) Low-cost variants without the teach-in and programming functionality

# Retro-reflective sensors SOEG-RSG, for transparent objects



Technical data

| General technical data |  |           |
|------------------------|--|-----------|
| Size                   | 20x32x12 mm                                    |           |
| Working range          | [mm]   | 5 ... 500 |
| Light type             | Red polarised                                  |           |
| Setting options        | Teach-in<br>Teach-in via electrical connection |           |

| Electrical data                      |                                |             |
|--------------------------------------|--------------------------------|-------------|
| Size                                 | 20x32x12 mm                    |             |
| Electrical connection                | Cable                          | 4-wire      |
|                                      | Plug                           | M8x1, 4-pin |
| Operating voltage range              | [V DC]                         | 10 ... 30   |
| Max. output current                  | [mA]                           | 100         |
| Max. switching frequency             | [Hz]                           | 1,000       |
| Protection against short circuit     | Pulsed                         |             |
| Protection against polarity reversal | For all electrical connections |             |
| Protection class                     | IP67                           |             |

| Operating and environmental conditions               |  |             |
|--|--|-------------|
| Size   | 20x32x12 mm  |             |
| Ambient temperature                                  | [°C]   | -20 ... +60 |
| Ambient temperature with flexible cable installation | [°C]   | -5 ... +60  |
| CE mark (see declaration of conformity)              | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive |             |
| Certification  | c UL us - Listed (OL)<br>C-Tick  |             |

| Materials    |                           |  |
|--------------|---------------------------|--|
| Size         | 20x32x12 mm               |  |
| Housing      | Acrylic butadiene styrene |  |
| Cable sheath | Polyurethane              |  |

| Ordering data |                    |                            |               |                       |                         |          |                         |
|---------------|--------------------|----------------------------|---------------|-----------------------|-------------------------|----------|-------------------------|
| Size          | Working range [mm] | Switching element function | Switch output | Electrical connection |                         |          |                         |
|               |                    |                            |               | Cable                 |                         | Plug     |                         |
|               |                    |                            |               | Part No.              | Type                    | Part No. | Type                    |
| 20x32x12 mm   |                    |                            |               |                       |                         |          |                         |
|               | 5 ... 500          | Switchable                 | PNP           | 537 754               | SOEG-RSG-Q20-PP-K-2L-TI | 537 753  | SOEG-RSG-Q20-PP-S-2L-TI |

# Through-beam sensors SOEG-S/E

Technical data

| General technical data |      |                 |               |  |               |             |
|------------------------|------|-----------------|---------------|--|---------------|-------------|
| Size                   |      | M18x1, straight | M18x1, angled | 20x32x12 mm                                    | 30x30x15 mm   | 50x50x17 mm |
| Working range          | [mm] | 20,000          | 20,000        | 6,000  | 2,000         | 15,000      |
| Light type             |      | Red             |               |  | Infrared      |             |
| Setting options        |      | -               |               | Teach-in<br>Teach-in via electrical connection | Potentiometer |             |

| Electrical data                      |             |                                |               |             |             |              |
|--------------------------------------|-------------|--------------------------------|---------------|-------------|-------------|--------------|
| Size                                 |             | M18x1, straight                | M18x1, angled | 20x32x12 mm | 30x30x15 mm | 50x50x17 mm  |
| Electrical connection                | Transmitter | Cable                          | 3-wire        | 4-wire      | 3-wire      | 4-wire       |
|                                      |             | Plug                           | M12x1, 3-pin  | M8x1, 4-pin | M8x1, 3-pin | M12x1, 4-pin |
|                                      | Receiver    | Cable                          | 4-wire        | 4-wire      | 3-wire      | 4-wire       |
|                                      |             | Plug                           | M12x1, 4-pin  | M8x1, 4-pin | M8x1, 3-pin | M12x1, 4-pin |
| Operating voltage range              | [V DC]      | 10 ... 36                      |               | 10 ... 30   |             |              |
| Max. output current                  | [mA]        | 200                            |               | 100         | 200         |              |
| Max. switching frequency             | [Hz]        | 1,000                          |               | 500         | 1,000       |              |
| Protection against short circuit     |             | Pulsed                         |               |             |             |              |
| Protection against polarity reversal |             | For all electrical connections |               |             |             |              |
| Protection class                     |             | IP65, IP67                     |               | IP67        | IP65        | IP67         |

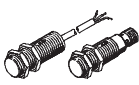
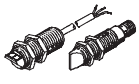
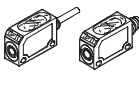
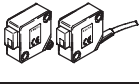
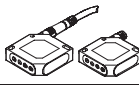
| Operating and environmental conditions               |      |                                     |               |  |                                     |  |
|--|------|-------------------------------------|---------------|--|-------------------------------------|--|
| Size   |      | M18x1, straight                     | M18x1, angled | 20x32x12 mm  | 30x30x15 mm                         | 50x50x17 mm  |
| Ambient temperature                                  | [°C] | -25 ... +55                         |               | -20 ... +60  | -25 ... +55                         | -20 ... +60  |
| Ambient temperature with flexible cable installation | [°C] | -5 ... +55                          |               | -5 ... +60   | -5 ... +55                          | -5 ... +60   |
| CE mark (see declaration of conformity)              |      | In accordance with EU EMC directive |               | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive | In accordance with EU EMC directive | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive |
| Certification  |      | c UL us - Listed (OL)<br>C-Tick     |               |  |                                     |  |

| Materials    |  |                      |               |                           |  |                           |
|--------------|--|----------------------|---------------|---------------------------|--|---------------------------|
| Size         |  | M18x1, straight      | M18x1, angled | 20x32x12 mm               | 30x30x15 mm                            | 50x50x17 mm               |
| Housing      |  | Brass, chrome-plated |               | Acrylic butadiene styrene | Polybutylene terephthalate, reinforced | Acrylic butadiene styrene |
| Cable sheath |  | Polyurethane         |               |                           |  |                           |

# Through-beam sensors SOEG-S/E

Technical data

FESTO

| Ordering data   |                    |             |                            |               |                       |                       |          |                       |
|---|--------------------|-------------|----------------------------|---------------|-----------------------|-----------------------|----------|-----------------------|
| Size  | Working range [mm] | Function    | Switching element function | Switch output | Electrical connection |                       |          |                       |
|   |                    |             |                            |               | Cable                 |                       | Plug     |                       |
|   |                    |             |                            |               | Part No.              | Type                  | Part No. | Type                  |
| <b>M18, beam exit straight</b>  |                    |             |                            |               |                       |                       |          |                       |
|    | 20,000             | Transmitter | –                          | –             | 537 691               | SOEG-S-M18-K-L        | 537 703  | SOEG-S-M18-S-L        |
|   |                    | Receiver    | Antivalent                 | PNP           | 537 692               | SOEG-E-M18-PA-K-2L    | 537 704  | SOEG-E-M18-PA-S-2L    |
|   |                    |             |                            | NPN           | 537 709               | SOEG-E-M18-NA-K-2L    | 537 711  | SOEG-E-M18-NA-S-2L    |
| <b>M18, beam exit angled</b>  |                    |             |                            |               |                       |                       |          |                       |
|    | 20,000             | Transmitter | –                          | –             | 537 693               | SOEG-S-M18W-K-L       | 537 695  | SOEG-S-M18W-S-L       |
|   |                    | Receiver    | Antivalent                 | PNP           | 537 694               | SOEG-E-M18W-PA-K-2L   | 537 696  | SOEG-E-M18W-PA-S-2L   |
|   |                    |             |                            | NPN           | 537 710               | SOEG-E-M18W-NA-K-2L   | 537 712  | SOEG-E-M18W-NA-S-2L   |
| <b>20x32x12 mm</b>  |                    |             |                            |               |                       |                       |          |                       |
|    | 6,000              | Transmitter | –                          | –             | 537 744               | SOEG-S-Q20-K-L-TI     | 537 743  | SOEG-S-Q20-S-L-TI     |
|   |                    | Receiver    | Switchable                 | PNP           | 537 746               | SOEG-E-Q20-PP-K-2L-TI | 537 745  | SOEG-E-Q20-PP-S-2L-TI |
|   |                    |             |                            | NPN           | 537 748               | SOEG-E-Q20-NP-K-2L-TI | 537 747  | SOEG-E-Q20-NP-S-2L-TI |
| <b>30x30x15 mm</b>  |                    |             |                            |               |                       |                       |          |                       |
|   | 2,000              | Transmitter | –                          | –             | 165 352               | SOEG-S-Q30-K-L        | 165 353  | SOEG-S-Q30-S-L        |
|   |                    | Receiver    | Dark switching             | PNP           | 165 322               | SOEG-E-Q30-PS-K-2L    | 165 323  | SOEG-E-Q30-PS-S-2L    |
|   |                    |             |                            | NPN           | 165 320               | SOEG-E-Q30-NS-K-2L    | 165 321  | SOEG-E-Q30-NS-S-2L    |
| <b>50x50x17 mm</b>  |                    |             |                            |               |                       |                       |          |                       |
|  | 15,000             | Transmitter | –                          | –             | 537 779               | SOEG-S-Q50-K-L        | 537 781  | SOEG-S-Q50-S-L        |
|   |                    | Receiver    | Antivalent                 | PNP           | 537 780               | SOEG-E-Q50-PA-K-3L    | 537 782  | SOEG-E-Q50-PA-S-3L    |

# Fibre-optic units SOEG-L

Technical data

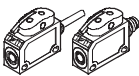
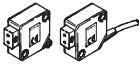
**FESTO**

| General technical data |  |               |
|------------------------|--|---------------|
| Size                   | 20x32x12 mm                                    | 30x30x15 mm   |
| Working range [mm]     | 0 ... 250                                      | 0 ... 120     |
| Light type             | Red  |               |
| Setting options        | Teach-in<br>Teach-in via electrical connection | Potentiometer |

| Electrical data                      |                                |             |
|--------------------------------------|--------------------------------|-------------|
| Size                                 | 20x32x12 mm                    | 30x30x15 mm |
| Electrical connection                | Cable                          | 4-wire      |
|                                      | Plug                           | M8x1, 4-pin |
| Operating voltage range [V DC]       | 10 ... 30                      |             |
| Max. output current [mA]             | 100                            | 200         |
| Max. switching frequency [Hz]        | 1,000                          |             |
| Protection against short circuit     | Pulsed                         |             |
| Protection against polarity reversal | For all electrical connections |             |
| Protection class                     | IP67                           | IP65        |

| Operating and environmental conditions                    |  |                                     |
|---|--|-------------------------------------|
| Size  | 20x32x12 mm  | 30x30x15 mm                         |
| Ambient temperature [°C]                                  | 0 ... 60   | -25 ... +55                         |
| Ambient temperature with flexible cable installation [°C] | 0 ... 60   | -5 ... +55                          |
| CE mark (see declaration of conformity)                   | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive | In accordance with EU EMC directive |
| Certification   | c UL us - Listed (OL)<br>C-Tick  |                                     |

| Materials    |                           |  |
|--------------|---------------------------|--|
| Size         | 20x32x12 mm               | 30x30x15 mm                            |
| Housing      | Acrylic butadiene styrene | Polybutylene terephthalate, reinforced |
| Cable sheath | Polyurethane              |  |

| Ordering data   |                    |                            |               |                       |                       |          |                       |
|---|--------------------|----------------------------|---------------|-----------------------|-----------------------|----------|-----------------------|
| Size  | Working range [mm] | Switching element function | Switch output | Electrical connection |                       |          |                       |
|   |                    |                            |               | Cable                 |                       | Plug     |                       |
|   |                    |                            |               | Part No.              | Type                  | Part No. | Type                  |
| 20x32x12 mm   |                    |                            |               |                       |                       |          |                       |
|  | 0 ... 250          | Switchable                 | PNP           | 537 740               | SOEG-L-Q20-PP-K-2L-TI | 537 739  | SOEG-L-Q20-PP-S-2L-TI |
|   |                    |                            | NPN           | 537 742               | SOEG-L-Q20-NP-K-2L-TI | 537 741  | SOEG-L-Q20-NP-S-2L-TI |
| 30x30x15 mm   |                    |                            |               |                       |                       |          |                       |
|  | 0 ... 120          | Antivalent                 | PNP           | 165 326               | SOEG-L-Q30-P-A-K-2L   | 165 327  | SOEG-L-Q30-P-A-S-2L   |
|   |                    |                            | NPN           | 165 324               | SOEG-L-Q30-NA-K-2L    | 165 325  | SOEG-L-Q30-NA-S-2L    |

# Distance sensors SOEG-RTD

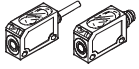
Technical data

| General technical data  |  |           |
|-------------------------|--|-----------|
| Size                    | 20x32x12 mm                                    |           |
| Working range           | [mm]   | 20 ... 80 |
| Displacement resolution | [mm]   | 0.5       |
| Light type              | Red  |           |
| Setting options         | Teach-in<br>Teach-in via electrical connection |           |

| Electrical data                      |                                |             |
|--------------------------------------|--------------------------------|-------------|
| Size                                 | 20x32x12 mm                    |             |
| Analogue output                      | [V]                            | 0 ... 10    |
| Electrical connection                | Cable                          | 4-wire      |
|                                      | Plug                           | M8x1, 4-pin |
| Operating voltage range              | [V DC]                         | 15 ... 30   |
| Max. output current                  | [mA]                           | 100         |
| Max. switching frequency             | [Hz]                           | 200         |
| Protection against short circuit     | Pulsed                         |             |
| Protection against polarity reversal | For all electrical connections |             |
| Protection class                     | IP67                           |             |

| Operating and environmental conditions               |  |          |
|--|--|----------|
| Size   | 20x32x12 mm  |          |
| Ambient temperature                                  | [°C]   | 0 ... 60 |
| Ambient temperature with flexible cable installation | [°C]   | 0 ... 60 |
| CE mark (see declaration of conformity)              | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive |          |
| Certification  | c UL us - Listed (OL)<br>C-Tick  |          |

| Materials    |                           |  |
|--------------|---------------------------|--|
| Size         | 20x32x12 mm               |  |
| Housing      | Acrylic butadiene styrene |  |
| Cable sheath | Polyurethane              |  |

| Ordering data   |                    |                            |               |                       |                         |          |                         |
|---|--------------------|----------------------------|---------------|-----------------------|-------------------------|----------|-------------------------|
| Size  | Working range [mm] | Switching element function | Switch output | Electrical connection |                         |          |                         |
|   |                    |                            |               | Cable                 |                         | Plug     |                         |
|   |                    |                            |               | Part No.              | Type                    | Part No. | Type                    |
| 20x32x12 mm   |                    |                            |               |                       |                         |          |                         |
|  | 20 ... 80          | Switchable                 | PNP           | 537 758               | SOEG-RTD-Q20-PP-K-2L-TI | 537 757  | SOEG-RTD-Q20-PP-S-2L-TI |

# Laser sensors SOEL-RT...

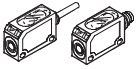
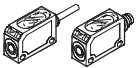

Technical data

| General technical data |  |  |               |
|------------------------|--|--|---------------|
| Method of measurement  | Contrast sensor (diffuse)                      | With background suppression                    |               |
| Size                   | 20x32x12 mm                                    | 20x32x12 mm                                    | 50x50x17 mm   |
| Working range [mm]     | 10 ... 150                                     | 30 ... 110                                     | 50 ... 300    |
| Light type             | Laser, red                                     |  |               |
| Laser protection class | 2  |  |               |
| Setting options        | Teach-in<br>Teach-in via electrical connection | Teach-in<br>Teach-in via electrical connection | Potentiometer |

| Electrical data                      |                                |                             |              |
|--------------------------------------|--------------------------------|-----------------------------|--------------|
| Method of measurement                | Contrast sensor (diffuse)      | With background suppression |              |
| Size                                 | 20x32x12 mm                    | 20x32x12 mm                 | 50x50x17 mm  |
| Electrical connection                | Cable                          | 4-wire                      | 4-wire       |
|                                      | Plug                           | M8x1, 4-pin                 | M12x1, 4-pin |
| Operating voltage range [V DC]       | 10 ... 30                      | 10 ... 30                   |              |
| Max. output current [mA]             | 100                            | 100                         | 200          |
| Max. switching frequency [Hz]        | 4,000                          | 1,000                       | 2,500        |
| Protection against short circuit     | Pulsed                         |                             |              |
| Protection against polarity reversal | For all electrical connections |                             |              |
| Protection class                     | IP67                           |                             |              |

| Operating and environmental conditions                    |  |                             |             |
|---|--|-----------------------------|-------------|
| Method of measurement                                     | Contrast sensor (diffuse)  | With background suppression |             |
| Size  | 20x32x12 mm  | 20x32x12 mm                 | 50x50x17 mm |
| Ambient temperature [°C]                                  | -20 ... +60  | -20 ... +60                 | -20 ... +45 |
| Ambient temperature with flexible cable installation [°C] | -5 ... +60   | -5 ... +60                  | -5 ... +45  |
| CE mark (see declaration of conformity)                   | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive |                             |             |
| Certification   | c UL us - Listed (OL)<br>C-Tick  |                             |             |

| Materials    |                           |
|--------------|---------------------------|
| Housing      | Acrylic butadiene styrene |
| Cable sheath | Polyurethane              |

| Ordering data   |                    |                            |               |                       |                         |          |                         |
|---|--------------------|----------------------------|---------------|-----------------------|-------------------------|----------|-------------------------|
| Size  | Working range [mm] | Switching element function | Switch output | Electrical connection |                         |          |                         |
|   |                    |                            |               | Cable                 |                         | Plug     |                         |
|   |                    |                            |               | Part No.              | Type                    | Part No. | Type                    |
| 20x32x12 mm, contrast sensor (diffuse)  |                    |                            |               |                       |                         |          |                         |
|  | 10 ... 150         | Switchable                 | PNP           | 537 736               | SOEL-RT-Q20-PP-K-2L-TI  | 537 735  | SOEL-RT-Q20-PP-S-2L-TI  |
|   |                    |                            | NPN           | 537 738               | SOEL-RT-Q20-NP-K-2L-TI  | 537 737  | SOEL-RT-Q20-NP-S-2L-TI  |
| 20x32x12 mm, with background suppression  |                    |                            |               |                       |                         |          |                         |
|  | 30 ... 110         | Switchable                 | PNP           | 537 729               | SOEL-RTH-Q20-PP-K-2L-TI | 537 727  | SOEL-RTH-Q20-PP-S-2L-TI |
|   |                    |                            | NPN           | 537 730               | SOEL-RTH-Q20-NP-K-2L-TI | 537 728  | SOEL-RTH-Q20-NP-S-2L-TI |
| 50x50x17 mm, with background suppression  |                    |                            |               |                       |                         |          |                         |
|  | 50 ... 300         | Antivalent                 | PNP           | 537 777               | SOEL-RTH-Q50-PA-K-3L    | 537 775  | SOEL-RTH-Q50-PA-S-3L    |
|   |                    |                            | NPN           | 537 778               | SOEL-RTH-Q50-NA-K-3L    | 537 776  | SOEL-RTH-Q50-NA-S-3L    |

# Laser retro-reflective sensors SOEL-RSP

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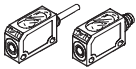

Technical data

| General technical data |  |               |
|------------------------|--|---------------|
| Size                   | 20x32x12 mm                                    | 50x50x17 mm   |
| Working range [mm]     | 100 ... 1,000                                  | 20,000        |
| Light type             | Laser, red polarised                           |               |
| Laser protection class | 2  | 1             |
| Setting options        | Teach-in<br>Teach-in via electrical connection | Potentiometer |

| Electrical data                      |                                |             |
|--------------------------------------|--------------------------------|-------------|
| Size                                 | 20x32x12 mm                    | 50x50x17 mm |
| Electrical connection                | Cable                          | 4-wire      |
|                                      | Plug                           | M8x1, 4-pin |
| Operating voltage range [V DC]       | 10 ... 30                      |             |
| Max. output current [mA]             | 100                            | 200         |
| Max. switching frequency [Hz]        | 4,000                          | 2,500       |
| Protection against short circuit     | Pulsed                         |             |
| Protection against polarity reversal | For all electrical connections |             |
| Protection class                     | IP67                           |             |

| Operating and environmental conditions                    |  |             |
|---|--|-------------|
| Size  | 20x32x12 mm  | 50x50x17 mm |
| Ambient temperature [°C]                                  | -20 ... +60  | -20 ... +45 |
| Ambient temperature with flexible cable installation [°C] | -5 ... +60   | -5 ... +45  |
| CE mark (see declaration of conformity)                   | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive |             |
| Certification   | c UL us - Listed (OL)<br>C-Tick  |             |

| Materials    |                           |             |
|--------------|---------------------------|-------------|
| Size         | 20x32x12 mm               | 50x50x17 mm |
| Housing      | Acrylic butadiene styrene |             |
| Cable sheath | Polyurethane              |             |

| Ordering data   |                    |                            |               |                       |                         |          |                         |
|---|--------------------|----------------------------|---------------|-----------------------|-------------------------|----------|-------------------------|
| Size  | Working range [mm] | Switching element function | Switch output | Electrical connection |                         |          |                         |
|   |                    |                            |               | Cable                 |                         | Plug     |                         |
|   |                    |                            |               | Part No.              | Type                    | Part No. | Type                    |
| 20x32x12 mm   |                    |                            |               |                       |                         |          |                         |
|  | 100 ... 1,000      | Switchable                 | PNP           | 537 760               | SOEL-RSP-Q20-PP-K-2L-TI | 537 759  | SOEL-RSP-Q20-PP-S-2L-TI |
|   |                    |                            | NPN           | 537 762               | SOEL-RSP-Q20-NP-K-2L-TI | 537 761  | SOEL-RSP-Q20-NP-S-2L-TI |
| 50x50x17 mm   |                    |                            |               |                       |                         |          |                         |
|  | 20,000             | Antivalent                 | PNP           | 537 769               | SOEL-RSP-Q50-PA-K-3L    | 537 767  | SOEL-RSP-Q50-PA-S-3L    |
|   |                    |                            | NPN           | 537 770               | SOEL-RSP-Q50-NA-K-3L    | 537 768  | SOEL-RSP-Q50-NA-S-3L    |



## Laser distance sensors SOEL-RTD




Technical data

| General technical data   |             |           |           |  |
|--------------------------|-------------|-----------|-----------|--|
| Size                     | 50x50x17 mm |           |           |  |
| Working range            | [mm]        | 38 ... 58 | 44 ... 84 | 80 ... 300                                     |
| Position measuring range | [mm]        | 20        | 40        | 220  |
| Displacement resolution  | [mm]        | 0.007     | 0.02      | 0.3  |
| Light type               | Laser, red  |           |           |  |
| Laser protection class   | 2           |           |           |  |
| Setting options          | -           |           | -         | Teach-in<br>Teach-in via electrical connection |

| Electrical data                                  |                       |           |                       |                                |
|--|-----------------------|-----------|-----------------------|--------------------------------|
| Size   | 50x50x17 mm           |           |                       |                                |
| Working range                                    | [mm]                  | 38 ... 58 | 44 ... 84             | 80 ... 300                     |
| Analogue output                                  | [mA]                  | -         | -                     | 4 ... 20                       |
|  | [V]                   | 0 ... 10  | 0 ... 10              | -                              |
| Electrical connection                            | Plug M12x1, 4-pin     |           | Plug M12x1, 4-pin     | Plug M12x1, 8-pin              |
| Operating voltage range                          | [V DC]                | 18 ... 28 | 18 ... 28             | 16 ... 30                      |
| Max. load current on the analogue voltage output | [mA]                  | 3,0       | 3,0                   | -                              |
| Max. output current                              | [mA]                  | -         | -                     | 100                            |
| Measuring frequency                              | [Hz]                  | 40        | 40                    | -                              |
| Max. switching frequency                         | [Hz]                  | -         | -                     | 1,000                          |
| Protection against short circuit                 | Pulsed                |           |                       |                                |
| Protection against polarity reversal             | For operating voltage |           | For operating voltage | For all electrical connections |
| Protection class                                 | IP67                  |           |                       |                                |

| Operating and environmental conditions  |  |
|---|--|
| Size                                    | 50x50x17 mm  |
| Ambient temperature                     | [°C] 0 ... 45  |
| CE mark (see declaration of conformity) | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive |
| Certification                           | c UL us - Listed (OL)<br>C-Tick  |

| Materials |                           |
|-----------|---------------------------|
| Size      | 50x50x17 mm               |
| Housing   | Acrylic butadiene styrene |

| Ordering data   |                    |                            |               |                 |                       |   |
|---|--------------------|----------------------------|---------------|-----------------|-----------------------|---|
| Size  | Working range [mm] | Switching element function | Switch output | Analogue output | Electrical connection |   |
|   |                    |                            |               |                 | Plug                  | Part No. Type   |
| 50x50x17 mm   |                    |                            |               |                 |                       |   |
|  | 38 ... 58          | -                          | -             | 0 ... 10 V      | 549 315               | SOEL-RTD-Q50-PU-S-2L-20  New |
|   | 44 ... 84          | -                          | -             | 0 ... 10 V      | 549 316               | SOEL-RTD-Q50-PU-S-2L-40  New |
|   | 80 ... 300         | Switchable                 | 2x PNP        | 4 ... 20 mA     | 537 823               | SOEL-RTD-Q50-PP-S-7L  |

# Colour sensors SOEC


Technical data

| General technical data |  |
|------------------------|--|
| Size                   | 50x50x17 mm                                    |
| Working range [mm]     | 12 ... 32                                      |
| Light type             | White  |
| Setting options        | Teach-in<br>Teach-in via electrical connection |

| Electrical data                      |                                |
|--------------------------------------|--------------------------------|
| Size                                 | 50x50x17 mm                    |
| Electrical connection                | Plug M12x1, 8-pin              |
| Operating voltage range [V DC]       | 10 ... 30                      |
| Max. output current [mA]             | 100                            |
| Max. switching frequency [Hz]        | 500                            |
| Protection against short circuit     | Pulsed                         |
| Protection against polarity reversal | For all electrical connections |
| Protection class                     | IP67                           |

| Materials |                           |
|-----------|---------------------------|
| Size      | 50x50x17 mm               |
| Housing   | Acrylic butadiene styrene |

| Operating and environmental conditions  |  |
|---|--|
| Size                                    | 50x50x17 mm  |
| Ambient temperature [°C]                | -10 ... +55  |
| CE mark (see declaration of conformity) | In accordance with EU EMC directive<br>In accordance with EU Low Voltage Directive |
| Certification                           | c UL us - Listed (OL)<br>C-Tick  |

| Ordering data   |                    |                            |               |                       |                     |
|---|--------------------|----------------------------|---------------|-----------------------|---------------------|
| Size  | Working range [mm] | Switching element function | Switch output | Electrical connection |                     |
|   |                    |                            |               | Plug                  | Part No. Type       |
| 50x50x17 mm   |                    |                            |               |                       |                     |
|  | 12 ... 32          | Light switching            | 3x PNP        | 538 236               | SOEC-RT-Q50-PS-S-7L |

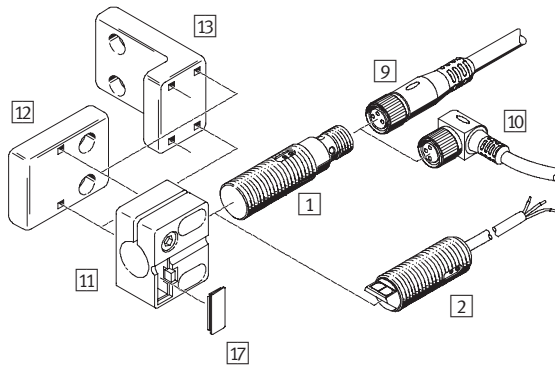
# Sensors SOE..., opto-electronic

Peripherals overview

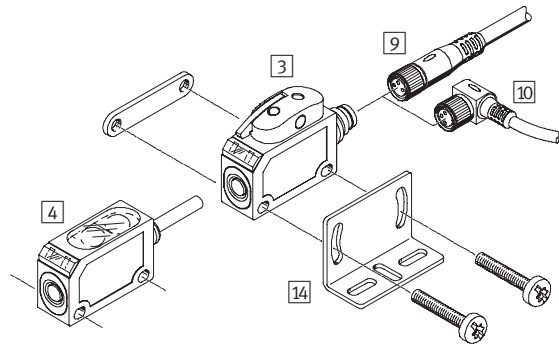
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## Peripherals overview

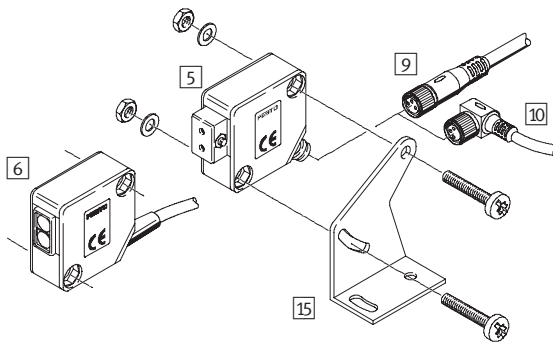
Round design, Ø 4 mm, M12, M18, M18W



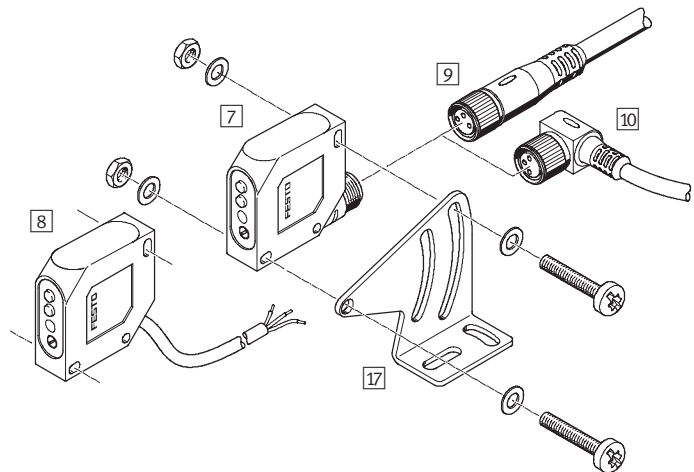
Block design, 20x32x12 mm



Block design, 30x30x15 mm



Block design, 50x50x17 mm



### Mounting attachments and accessories

#### Sensors

- |   |   |
|---|---|
| 1 | Round design, Ø 4 mm, M12, M18..., with plug  |
| 2 | Round design, Ø 4 mm, M12, M18..., with cable |
| 3 | Block design, 20x32x12 mm, with plug          |
| 4 | Block design, 20x32x12 mm, with cable         |
| 5 | Block design, 30x30x15 mm, with plug          |
| 6 | Block design, 30x30x15 mm, with cable         |
| 7 | Block design, 50x50x17 mm, with plug          |
| 8 | Block design, 50x50x17 mm, with cable         |

#### Connecting cables

- |    |                                |
|----|--------------------------------|
| 9  | NEBU-M...G...<br>SIM-M...-...G |
| 10 | NEBU-M...W...<br>SIM-M...-...W |

#### Sensor retainers

- |    |             |
|----|-------------|
| 11 | SIEZ-NB-... |
| 12 | SIEZ-UV     |
| 13 | SIEZ-UH     |

### Mounting attachments and accessories

#### Mounting brackets

- |    |             |
|----|-------------|
| 14 | SOEZ-HW-Q20 |
| 15 | SOEZ-HW-Q30 |
| 16 | SOEZ-HW-Q50 |

#### Inscription label

- |    |         |
|----|---------|
| 17 | SIEZ-LB |
|----|---------|

#### Fibre-optic cables, polymer

- |   |                                  |
|---|----------------------------------|
| - | SOEZ-LLK-RT, diffuse sensor      |
| - | SOEZ-LLK-SE, through-beam sensor |

#### Fibre-optic cables, glass fibre

- |   |                                  |
|---|----------------------------------|
| - | SOEZ-LLG-RT, diffuse sensor      |
| - | SOEZ-LLG-SE, through-beam sensor |



#### Reflectors



- |   |                           |
|---|---------------------------|
| - | Reflector                 |
| - | Reflector foil            |
| - | Reflector for laser light |






# Sensors SOE..., opto-electronic

Accessories




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| Ordering data – Connecting cables M8x1  |                 |                  |          |                     |
|---|-----------------|------------------|----------|---------------------|
| Technical data → Internet: nebu   |                 |                  |          |                     |
|   | Number of wires | Cable length [m] | Part No. | Type                |
| <b>Straight plug socket</b>   |                 |                  |          |                     |
|  | 3               | 2.5              | 541 333  | NEBU-M8G3-K-2.5-LE3 |
|   |                 | 5                | 541 334  | NEBU-M8G3-K-5-LE3   |
|   | 4               | 2.5              | 541 342  | NEBU-M8G4-K-2.5-LE4 |
|   |                 | 5                | 541 343  | NEBU-M8G4-K-5-LE4   |
| <b>Angled plug socket</b>   |                 |                  |          |                     |
|  | 3               | 2.5              | 541 338  | NEBU-M8W3-K-2.5-LE3 |
|   |                 | 5                | 541 341  | NEBU-M8W3-K-5-LE3   |
|   | 4               | 2.5              | 541 344  | NEBU-M8W4-K-2.5-LE4 |
|   |                 | 5                | 541 345  | NEBU-M8W4-K-5-LE4   |




| Ordering data – Connecting cables M12x1   |                 |                  |                  |                      |
|---|-----------------|------------------|------------------|----------------------|
| Technical data → Internet: nebu, sim  |                 |                  |                  |                      |
|   | Number of wires | Cable length [m] | Part No.         | Type                 |
| <b>Straight plug socket</b>   |                 |                  |                  |                      |
|  | 3               | 2.5              | 541 363          | NEBU-M12G5-K-2.5-LE3 |
|   |                 | 5                | 541 364          | NEBU-M12G5-K-5-LE3   |
|   | 4               | 5                | 541 328          | NEBU-M12G5-K-5-LE4   |
|   |                 | 8                | 2                | 525 616              |
|   | 5               | 525 618          | SIM-M12-8GD-5-PU |                      |
| <b>Angled plug socket</b>   |                 |                  |                  |                      |
|  | 3               | 2.5              | 541 367          | NEBU-M12W5-K-2.5-LE3 |
|   |                 | 5                | 541 370          | NEBU-M12W5-K-5-LE3   |
|   | 4               | 5                | 541 329          | NEBU-M12W5-K-5-LE4   |

| Ordering data – Mounting attachments  |                |          |             |
|---|----------------|----------|-------------|
|   | For design     | Part No. | Type        |
| <b>Mounting bracket</b>   |                |          |             |
|  | Q20            | 537 785  | SOEZ-HW-Q20 |
|   | Q30            | 165 355  | SOEZ-HW-Q30 |
|   | Q50            | 537 786  | SOEZ-HW-Q50 |
| <b>Sensor retainer</b>  |                |          |             |
|  | 4              | 538 343  | SIEZ-NB-4   |
|   |                |          |             |
|  | M12            | 538 347  | SIEZ-NB-12  |
|   | M18, M18W      | 538 349  | SIEZ-NB-18  |
|  | M12, M18, M18W | 538 354  | SIEZ-UH     |
|   |                |          |             |
|  | M12, M18, M18W | 538 355  | SIEZ-UV     |

| Ordering data – Mounting attachments |                     |          |         |
|--------------------------------------|---------------------|----------|---------|
|                                      | For design          | Part No. | Type    |
| <b>Inscription label</b>             |                     |          |         |
|                                      | M12, M18, M18W, M30 | 538 353  | SIEZ-LB |

| Ordering data – Fibre-optic cables   |                                |          |                    |
|--|--------------------------------|----------|--------------------|
|  | Use                            | Part No. | Type               |
| <b>Polymer</b>   |                                |          |                    |
|   | RT <sup>1)</sup>               | 165 358  | SOEZ-LLK-RT-2,0-M6 |
|  | S/E <sup>2)</sup>              | 165 360  | SOEZ-LLK-SE-2,0-M4 |
| <b>Glass fibre</b>   |                                |          |                    |
|   | RT <sup>1)</sup>               | 165 356  | SOEZ-LLG-RT-0,5-M6 |
|  | S/E <sup>2)</sup>              | 165 357  | SOEZ-LLG-SE-0,5-M4 |
| <b>Fibre-optic cable cutter</b>  |                                |          |                    |
|  | For polymer fibre-optic cables | 36 479   | SOEZ-LKS           |

- 1) Diffuse sensor
- 2) Through-beam sensor

| Ordering data – Reflectors  |           |          |              |
|---|-----------|----------|--------------|
|   | Size [mm] | Part No. | Type         |
| <b>Reflector</b>  |           |          |              |
|  | ∅ 20      | 165 363  | SOEZ-RFS-20  |
|   | ∅ 40      | 165 364  | SOEZ-RFS-40  |
|   | ∅ 84      | 165 365  | SOEZ-RFS-80  |
| <b>Reflector foil</b>   |           |          |              |
|  | 100 x 100 | 165 362  | SOEZ-RFF-100 |
| <b>Reflector for laser light</b>  |           |          |              |
|  | 50 x 50   | 537 788  | SOEZ-RFL-50  |
|   | 10 x 50   | 537 787  | SOEZ-RFL-10  |