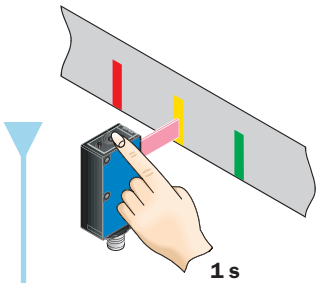
# Color sensors for the detection of a single color in restricted space conditions

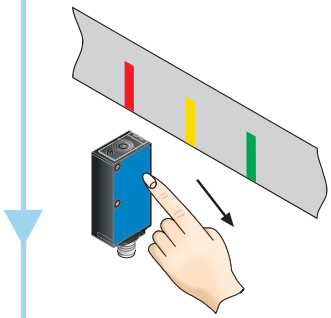
Due to its compact design, the CSM can be used in the most confined of spaces.

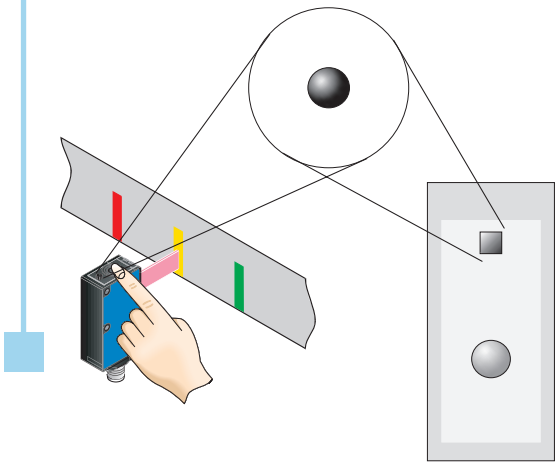
The choice of color tolerance is determined during the Teach procedure. The CSM offers the choice between “medium”, “fine” and “coarse” settings. Upon pressing the Teach-in button, the transmission light changes from “green” to “blue” and then to “red”. Depending upon which color of the Teach process is triggered, the corresponding color tolerance is automatically set. The simplicity of this procedure characterises the CSM.

Even its switching frequency can be impressive: with 1.5 kHz it compares well to its “larger rivals”.

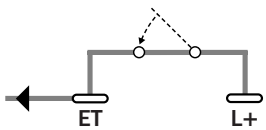
## Teach-in: Setting the switch threshold





or




## Status

- Upon successfully completing the Teach process, the Receive indicator illuminates.

## Notes

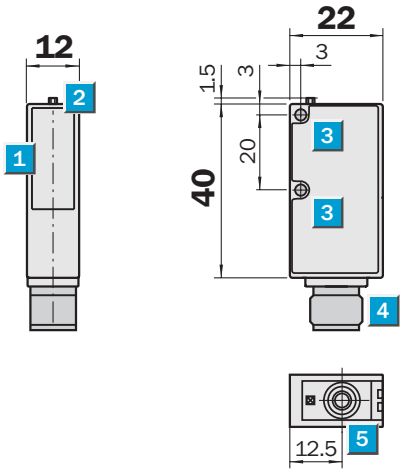
- If the Receive indicator and the red transmitting light flash, the Teach process was unsuccessful. Change the color tolerance.
- During Teach-in using the external control wire, the last color tolerance set by means of the operating console (manual operation) or the factory setting at “medium” is chosen.(i.e., setting of the color tolerance is only possible at the operating console.)
- Upon pressing the Teach-in button, the green transmitting led illuminates for 2 seconds. If in this time the Teach-in button is pressed, the Teach-in process is initiated and the “medium” color tolerance is selected. In the event that the button is not pressed the green light of the transmitting lamp will turn off and the blue light of the transmitting lamp will illuminate for approx. 1 second. If during this time the Teach-in button is pressed, the Teach process will be initiated with the selected color tolerance set to “fine”. If the Teach-in button is not pressed, the blue transmitting light will turn off and the red transmitting light will illuminate for 1 sec. In this time, the Teach-in process will be initiated with the selected color tolerance set to “coarse”.

**Scanning distance 12.5 mm**

Color sensors scanning principle

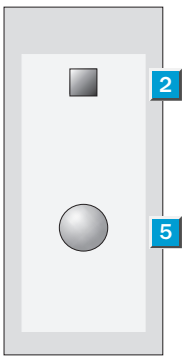
- Color tolerance adjustable
- Static Teach-in for objects via means of the control wire or operating console
- Switching frequency 1500/s
- Plug M12

## Dimensional drawing




## Adjustments possible

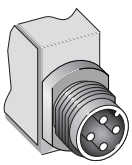
CSM 1-P 1114
CSM 1-N 1114




1 Centre of optical axis
2 Receive indicator
3 Mounting hole ø 3.2 mm
4 M12 plug, 4-pin
5 Teach-in button

## Connection type

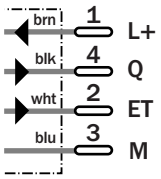
CSM 1-P 1114
CSM 1-N 1114



## Accessories

Cables and connectors

4-pin, M12



| Technical data | CSM 1- | P 1114 | N 1114 |
|---|---|---|---|
| **Scanning distance,** from front edge of lens | 12.5 mm | ■ | ■ |
| Color tolerance | ± 2 mm | ■ | ■ |
| **Light source[1]; light type** | LED; green, red, blue | ■ | ■ |
| Light spot dimension | 1.5 x 6.5 mm | ■ | ■ |
| **Supply voltage $V_S$** | 24 V DC ±20 % | ■ | ■ |
| Ripple[2] | < 5 $V_{SS}$ | ■ | ■ |
| Current consumption[3] | < 35 mA | | ■ |
| **Switching outputs** | NPN: HIGH = $V_S$ / LOW = < 2 V | ■ | |
| | PNP: HIGH = $V_S$ - < 2 V / LOW = approx. 0 V | ■ | ■ |
| Output current $I_A$ max. | 100 mA | ■ | ■ |
| Response time[4] | 500 µs | ■ | ■ |
| Switching frequency[5] | 1500/s | ■ | ■ |
| Time delay optional | 20 ms | ■ | |
| **Teach-in input ET** | PNP: Teach > 10 V ... < $V_S$ | | ■ |
| | NPN: Teach 0 V ... < 2 V | ■ | ■ |
| **Connection type** | Plug M12, 4-pin | ■ | ■ |
| **VDE protection class[6]** | ⧈ | ■ | ■ |
| **Enclosure rating** | IP 67 | ■ | ■ |
| **Circuit protection[7]** | A, B, C | ■ | ■ |
| **Ambient temperature $T_A$** | Operation –10 ... +55 °C | ■ | ■ |
| | Storage –20 ... +75 °C | ■ | ■ |
| **Shock load** | To IEC 68 | ■ | ■ |
| **Weight** | Approx. 11 g | ■ | ■ |
| **Housing material** | ABS | | |

1) Average service life 100,000 h at $T_A$ = + 25 °C

2) May not exceed or fall short of $V_S$ tolerances

3) Without load

4) Signal transit time with resistive load

5) With light/dark ratio 1:1

6) Reference voltage 50 V DC

7) A = $V_S$ connections reverse-polarity protected
B = Output Q short-circuit protected
C = Interference pulse suppression

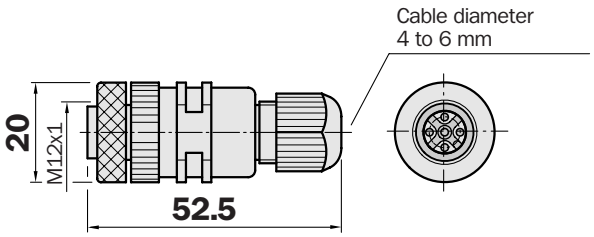
| Order information | |
|---|---|
| **Type** | **Part no.** |
| CSM 1-P 1114 | 1 022 569 |
| CSM 1-N 1114 | 1 018 514 |

## Dimensional drawings and order information

### SENSICK screw-in system M12, 4- or 5-pin, enclosure rating IP 67

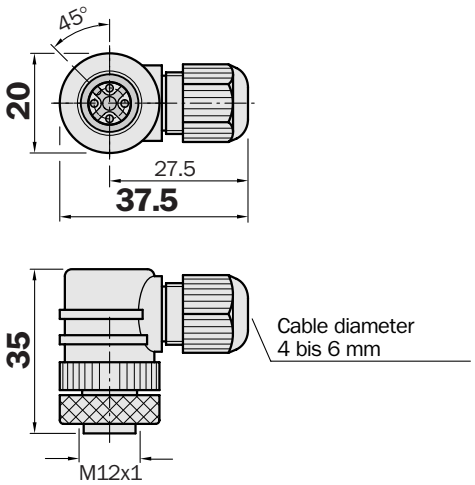
**Female connector M12, 4- or 5-pin, straight**

| Type | Part no. | Contacts |
|---|---|---|
| DOS-1204-G | 6 007 302 | 4 |
| DOS-1205-G | 6 009 719 | 5 |



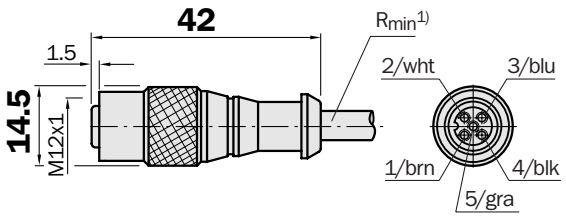

**Female connector M12, 4- or 5-pin, right angle**

| Type | Part no. | Contacts |
|---|---|---|
| DOS-1204-W | 6 007 303 | 4 |
| DOS-1205-W | 6 009 720 | 5 |



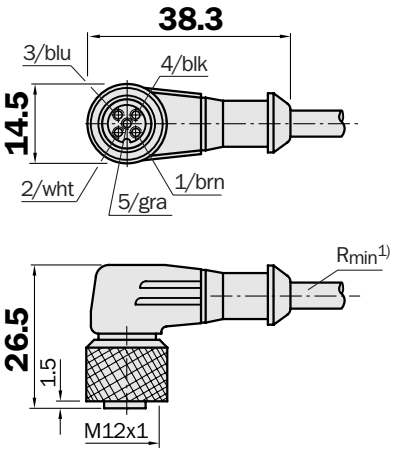

**Female connector M12, 4- or 5-pin, straight**
**Cable 6 mm, 5 x 0.25 mm², sheath PVC**

| Type | Part no. | Contacts | Cable length |
|---|---|---|---|
| DOL-1204-G02M | 6 009 382 | 4 | 2 m |
| DOL-1204-G05M | 6 009 866 | 4 | 5 m |
| DOL-1204-G10M | 6 010 543 | 4 | 10 m |
| DOL-1204-G15M | 6 010 753 | 4 | 15 m |
| DOL-1205-G02M | 6 008 899 | 5 | 2 m |
| DOL-1205-G05M | 6 009 868 | 5 | 5 m |
| DOL-1205-G10M | 6 010 544 | 5 | 10 m |




**Female connector M12, 4- or 5-pin, right angle**
**Cable 6 mm, 5 x 0.25 mm², sheath PVC**

| Type | Part no. | Contacts | Cable length |
|---|---|---|---|
| DOL-1204-W02M | 6 009 383 | 4 | 2 m |
| DOL-1204-W05M | 6 009 867 | 4 | 5 m |
| DOL-1204-W10M | 6 010 541 | 4 | 10 m |
| DOL-1205-W02M | 6 008 900 | 5 | 2 m |
| DOL-1205-W05M | 6 009 869 | 5 | 5 m |
| DOL-1205-W10M | 6 010 542 | 5 | 10 m |



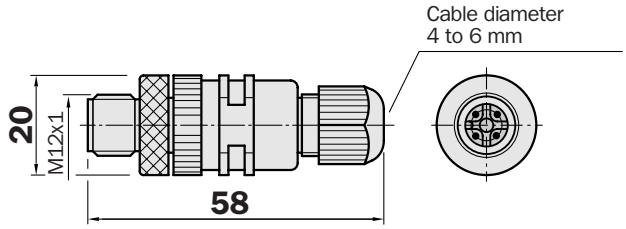

1) Minimum bend radius in dynamic use
$R_{min}$ = 20 x cable diameter

## Dimensional drawings and order information

### SENSICK screw-in system M12, 4- or 5-pin, enclosure rating IP 67

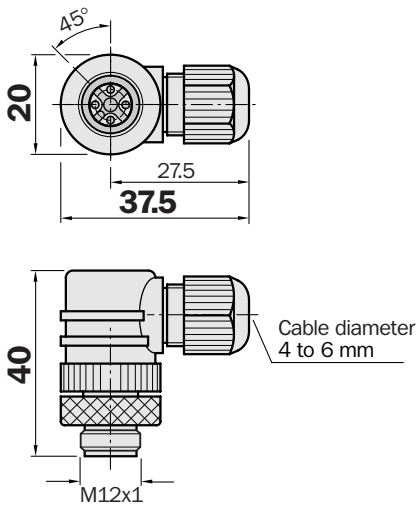
**Male connector M12, 4- or 5-pin, straight, pre-assembled**

| Type | Part no. | Contacts |
|---|---|---|
| STE-1204-G | 6 009 932 | 4 |
| STE-1205-G | 6 022 083 | 5 |




**Male connector M12, 4- or 5-pin, right angle, pre-assembled**

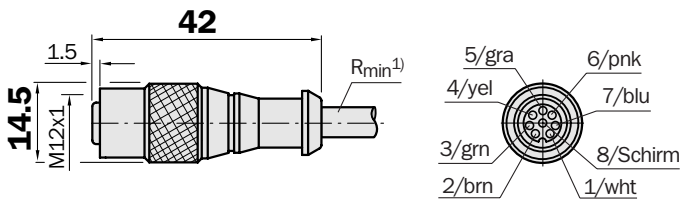
| Type | Part no. | Contacts |
|---|---|---|
| STE-1204-W | 6 022 084 | 4 |
| STE-1205-W | 6 022 082 | 5 |




### SENSICK screw-in system M12, 8-pin, enclosure rating IP 67

**Female connector M12, 8-pin, straight, shielded**
**Cable 6 mm, 7 x 0,25 mm², sheath PUR**

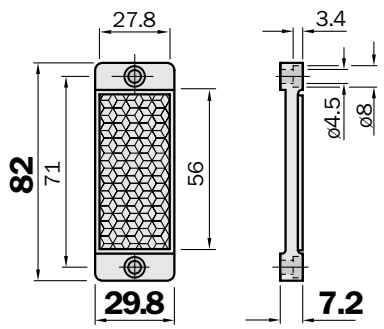
| Type | Part no. | Cable length |
|---|---|---|
| DOL-1208-G02MB | 6 010 748 | 2 m |




### Reflectors, plastic design for temperatures up to 65 °C

**Reflector 30 x 50 mm²**

| Type | Part no. |
|---|---|
| PL 30 A | 1 002 314 |




**Reflector 80 x 80 mm²**

| Type | Part no. |
|---|---|
| PL 80 A | 1 003 865 |