

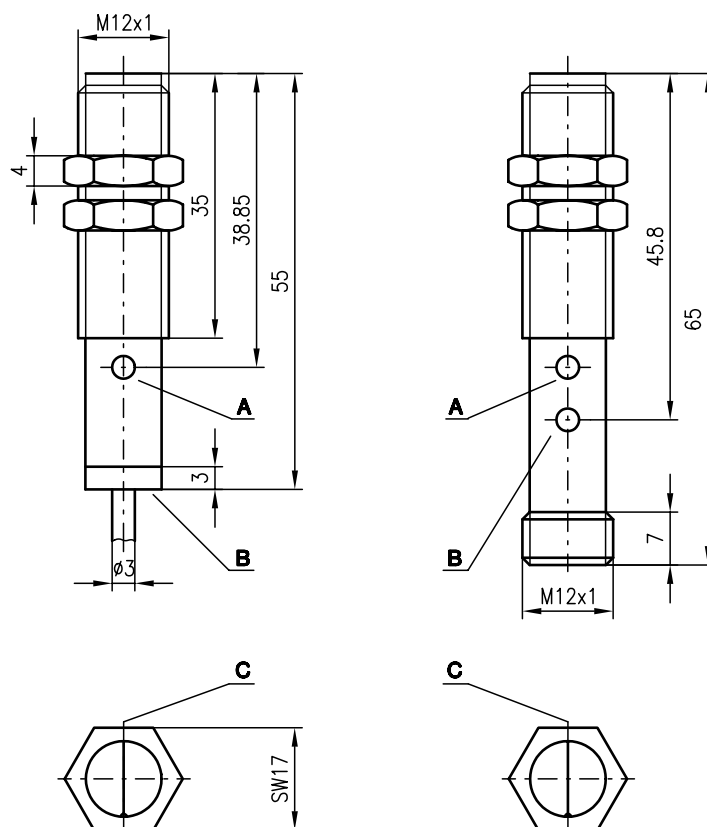
**LS 412**
**Throughbeam photoelectric sensors**

**8m**


- Throughbeam photoelectric sensors using visible red light
- Slim and short cylindrical metal housing M12x1
- Sensitivity adjustment for optimal adaptation to the application
- Light/dark switching via control line


**Accessories:**
*(available separately)*

- M12 connectors (KD ...)
- Ready-made cables (KB ...)
- 90° deflection head

**Dimensioned drawing**


- A** Sensitivity adjustment at receiver only  
**B** Indicator diode  
**C** Optical axis

**Electrical connection**
**LSS 412M-S12**

10-30V DC +	1	br/BN
NC	2	
GND	3	bl/BU
NC	4	

**LSE 412M/P-S12**

10-30V DC +	1	br/BN
GND	2	ws/WH
GND	3	bl/BU
●	4	sw/BK

**LSS 412M**

10-30V DC +	br/BN
GND	bl/BU
NC	ws/WH
NC	sw/BK

**LSE 412M/P**

10-30V DC +	br/BN
GND	bl/BU
●	sw/BK
GND	ws/WH

### Specifications

#### Optical data

Typ. operating range limit <sup>1)</sup>	0 ... 8m
Operating range <sup>2)</sup>	0 ... 6m
Light source	LED (modulated light)
Wavelength	660nm (visible red light)

#### Timing

Switching frequency	500Hz
Response time	1 ms
Delay before start-up	≤ 25ms

#### Electrical data

Operating voltage $U_B$	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 10% of $U_B$
Bias current	≤ 20mA
Switching output	PNP transistor output
Function characteristics <sup>3)</sup>	light/dark switching via control line
Signal voltage high/low	≥ ( $U_B - 3V$ ) / ≤ 3V
Output current	max. 200mA
Sensitivity	adjustable

#### Indicators

LED green (transmitter)	ready
LED yellow (receiver)	switching state

#### Mechanical data

Housing	nickel-faced brass
Optics cover	plastic
Weight	18g
Connection type	M12 connector 4-pin, cable 2m, 4x0.14 mm <sup>2</sup>

#### Environmental data

Ambient temp. (operation/storage)	-25°C ... +55°C / -40°C ... +70°C
Protective circuit <sup>4)</sup>	2, 3
VDE safety class	III
Protection class	IP 67
Standards applied	IEC 60947-5-2

- 1) Typ. operating range limit: max. attainable range without performance reserve  
 2) Operating range: recommended range with performance reserve  
 3) Light switching for control line (ws/WH): not connected or connected to  $U_B$   
 Dark switching for control line (ws/WH): connected to GND  
 4) 2=polarity reversal protection, 3=short-circuit protection for all outputs

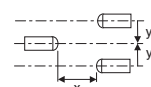
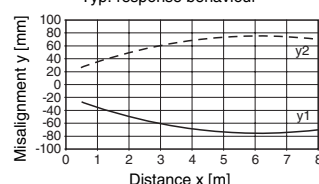
### Tables

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	Operating range [m]
	Typ. operating range limit [m]

### Diagrams

Typ. response behaviour



### Order guide

	Designation	Part No.
<b>With M12 connector</b>		
Transmitter and receiver	LS 412M/P-S12	500 81431
<b>With cable connection</b>		
Transmitter and receiver	LS 412M/P	500 81432

### Remarks

- Models with NPN transistor output on request.