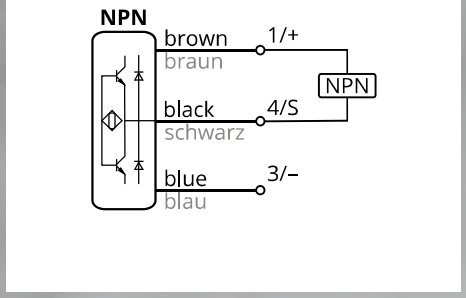
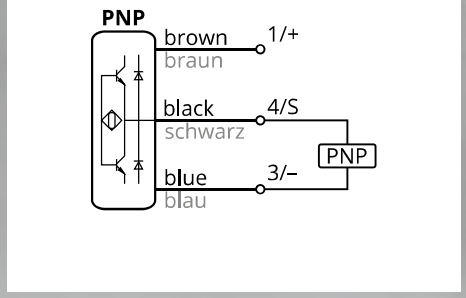
Benefits:

- Adjustable detection sensitivity
- Connector parallel or in right angle for optimal conduit routing
- Contamination-resistant and impact-resistant

Vorteile:

- Einstellbare Ansprechempfindlichkeit
- Parallele und rechtwinklige Stecker für eine optimale Leitungsführung
- Schmutz- und schlagunempfindlich





Data sheets are available on http://xecro.com.

Datenblätter sind auf http://xecro.com verfügbar.

All devices of this section may not be used if the safety of persons rely on their faultless function!

Alle Geräte dieses Abschnittes dürfen nicht verwendet werden, wenn die Sicherheit von Personen von deren fehlerlosen Funktion abhängt!

Capacitive Sensors
3-Wire DC Ring Sensors

XECRO's capacitive ring sensors with static principle supervise liquids, e.g. in hoses and non-metallic tubes. The ring diameters from 6 to 21 mm include most of the common pipes of plastics or glass. The detection sensitivity can be adjusted, so that different materials and thicknesses can be cut off in a wide range. XECRO's capacitive ring sensors have a contamination-resistant and impact-resistant housing made of Polyamid 6.6 of the protection class IP67. For an optimal conduit routing, the M12 connector is mounted in a right angle or parallel to the direction of the conduit.

XECROs kapazitive Ringsensoren mit statischem Arbeitsprinzip überwachen Flüssigkeiten, zum Beispiel in Schläuchen und nichtmetallischen Rohren. Mit 6—21 mm Ringdurchmesser umfassen sie die meisten marktüblichen Leitungen aus Kunststoff oder Glas. Die Ansprechempfindlichkeit kann eingestellt werden, so dass sich unterschiedliche Materialien und Wandstärken in weiten Bereichen ausblenden lassen. XECROs kapazitive Ringsensoren haben ein schmutz- und schlagunempfindliches Gehäuse aus Polyamid 6.6 der Schutzklasse IP67. Für eine optimale Leitungsführung ist der M12-Stecker rechtwinklig oder parallel zum Leitungsverlauf angebracht.

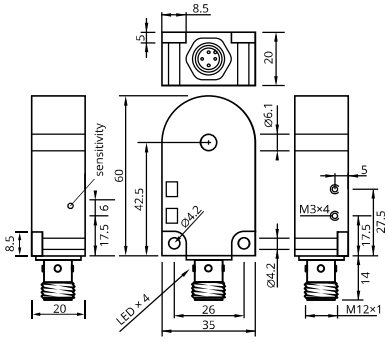
Capacitive Proximity Switch
3-Wire Ring Sensors

Kapazitive Näherungsschalter
3-Leiter Ringsensoren

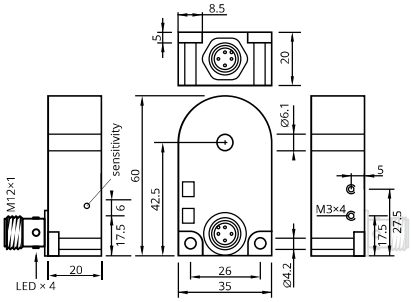
adjustable
einstellbar
Ø 6.1 mm

adjustable
einstellbar
Ø 6.1 mm

static
statisch



static
statisch

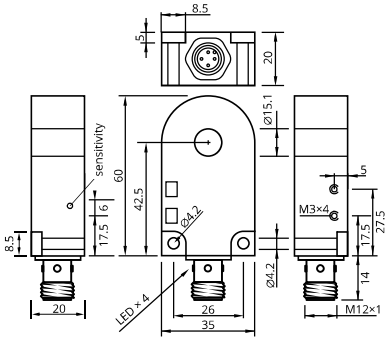


Resolution	Auflösung	adjustable		adjustable	
Operating voltage	Betriebsspannung	10...30 V_{DC}		10...30 V_{DC}	
Reverse polarity protection	Verpolungsschutz	built-in	integriert	built-in	integriert
Current consumption	Stromverbrauch	<10 mA		<10 mA	
Current load capability	Ausgangsbelastbarkeit	200 mA		200 mA	
Short circuit protection	Kurzschlussschutz	built-in	integriert	built-in	integriert
Voltage drop	Spannungsabfall	<2 V @ 200 mA		<2 V @ 200 mA	
Adjustment	Einstellung	multiturn pot	Mehrgangpoti	multiturn pot	Mehrgangpoti
Operating temperature	Betriebstemperatur	–25...+70 °C		–25...+70 °C	
Protection class	Schutzklasse	IP67		IP67	
Ring material	Ringwerkstoff	PBT		PBT	
Housing material	Gehäusewerkstoff	PA 6.6		PA 6.6	
Switching indicator	Schaltanzeige	built-in	integriert	built-in	integriert
Connection	Anschluss	connector M12	M12-Stecker	connector M12	M12-Stecker
Article code PNP, NO	⎍	CR06S-PO-A12		CR06S-PO-RA12	
Article code PNP, NC	⎍	CR06S-PC-A12		CR06S-PC-RA12	
Article code NPN, NO	⎍	CR06S-NO-A12		CR06S-NO-RA12	
Article code NPN, NC	⎍	CR06S-NC-A12		CR06S-NC-RA12	

Mind O ≠ 0, I ≠ l ≠ 1, S ≠ 5, B ≠ 8. O ≠ 0, I ≠ l ≠ 1, S ≠ 5, B ≠ 8 beachten.

adjustable
einstellbar
Ø 10.1 mm

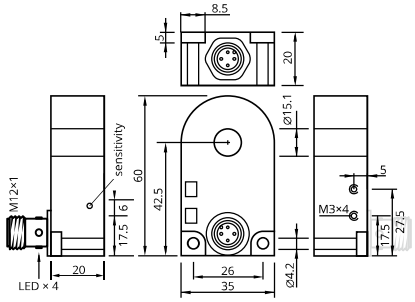
static
statisch



adjustable	
10...30 V_{DC}	
built-in	integriert
<10 mA	
200 mA	
built-in	integriert
<2 V @ 200 mA	
multiturn pot	Mehrgangpoti
–25...+70 °C	
IP67	
PBT	
PA 6.6	
built-in	integriert
connector M12	M12-Stecker
CR10S-PO-A12	
CR10S-PC-A12	
CR10S-NO-A12	
CR10S-NC-A12	

adjustable
einstellbar
Ø 10.1 mm

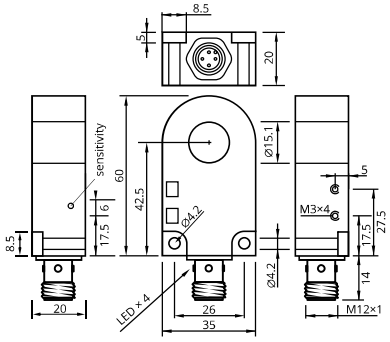
static
statisch



adjustable	
10...30 V_{DC}	
built-in	integriert
<10 mA	
200 mA	
built-in	integriert
<2 V @ 200 mA	
multiturn pot	Mehrgangpoti
–25...+70 °C	
IP67	
PBT	
PA 6.6	
built-in	integriert
connector M12	M12-Stecker
CR10S-PO-RA12	
CR10S-PC-RA12	
CR10S-NO-RA12	
CR10S-NC-RA12	

adjustable
einstellbar
Ø 15.1 mm

static
statisch



adjustable	
10...30 V_{DC}	
built-in	integriert
<10 mA	
200 mA	
built-in	integriert
<2 V @ 200 mA	
multiturn pot	Mehrgangpoti
–25...+70 °C	
IP67	
PBT	
PA 6.6	
built-in	integriert
connector M12	M12-Stecker
CR15S-PO-A12	
CR15S-PC-A12	
CR15S-NO-A12	
CR15S-NC-A12	

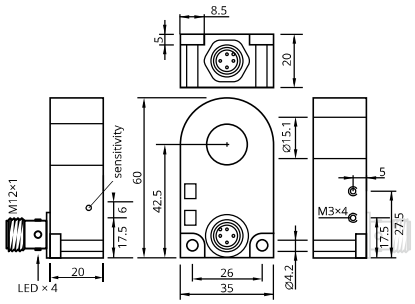
Capacitive Proximity Switch
3-Wire Ring Sensors

Kapazitive Näherungsschalter
3-Leiter Ringsensoren

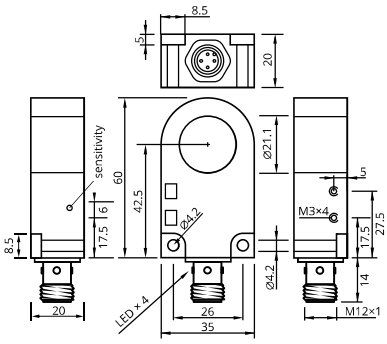
adjustable
einstellbar
Ø 15.1 mm

adjustable
einstellbar
Ø 21.1 mm

static
statisch



static
statisch

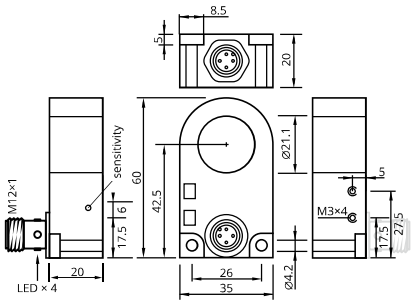


Resolution	Auflösung	adjustable		adjustable	
Operating voltage	Betriebsspannung	10...30 V_{DC}		10...30 V_{DC}	
Reverse polarity protection	Verpolungsschutz	built-in	integriert	built-in	integriert
Current consumption	Stromverbrauch	<10 mA		<10 mA	
Current load capability	Ausgangsbelastbarkeit	200 mA		200 mA	
Short circuit protection	Kurzschlussschutz	built-in	integriert	built-in	integriert
Voltage drop	Spannungsabfall	<2 V @ 200 mA		<2 V @ 200 mA	
Adjustment	Einstellung	multiturn pot	Mehrgangpoti	multiturn pot	Mehrgangpoti
Operating temperature	Betriebstemperatur	–25...+70 °C		–25...+70 °C	
Protection class	Schutzklasse	IP67		IP67	
Ring material	Ringwerkstoff	PBT		PBT	
Housing material	Gehäusewerkstoff	PA 6.6		PA 6.6	
Switching indicator	Schaltanzeige	built-in	integriert	built-in	integriert
Connection	Anschluss	connector M12	M12-Stecker	connector M12	M12-Stecker
Article code PNP, NO	⎍	CR15S-PO-RA12		CR21S-PO-A12	
Article code PNP, NC	⎍	CR15S-PC-RA12		CR21S-PC-A12	
Article code NPN, NO	⎍	CR15S-NO-RA12		CR21S-NO-A12	
Article code NPN, NC	⎍	CR15S-NC-RA12		CR21S-NC-A12	

Mind O ≠ 0, I ≠ l ≠ 1, S ≠ 5, B ≠ 8. O ≠ 0, I ≠ l ≠ 1, S ≠ 5, B ≠ 8 beachten.

adjustable
einstellbar
Ø 21.1 mm

static
statisch



adjustable	
10...30 V_{DC}	
built-in	integriert
<10 mA	
200 mA	
built-in	integriert
<2 V @ 200 mA	
multiturn pot	Mehrgangpoti
–25...+70 °C	
IP67	
PBT	
PA 6.6	
built-in	integriert
connector M12	M12-Stecker
CR21S-PO-RA12	
CR21S-PC-RA12	
CR21S-NO-RA12	
CR21S-NC-RA12	

Series	Housing size	Special feature — only IR: operating principle		Mounting	Sensing distance	Special feature — only IHT and IA: max. temp., current, voltage	Output polarity	Output function	Overall length	Special feature — only IHP: maximum pressure	Special feature — only IPS88: sensing face position
1	**2**	**3**		**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
IPS	D3	‹none›	-	S	06	‹none›	P	O	18	‹none›	‹none›
IMF	4	D		N	08	A	N	C	22	S	C
IWI	D4	S			1	B	A	CO	30		
IHT	5				1.5	C	D	S	32		
IHP	55				2	I	NA	‹none›	...		
IA	D6				3	V	‹none›		94		
IR	8				...				138		
	88				22				010		
	12	D: dynamic S: static		S: shielded, semi-shielded N: unshielded	25	A: 120 °C B: 150 °C C: 180 °C I: current V: voltage	P: PNP N: NPN A: 250 V_{AC} D: 55 V_{DC} NA: NAMUR U: Universal AC and DC	O: normally open C: normally closed CO: normally closed + open (2 outputs) S: switch between normally closed or open (1 output)	020	‹none›: 500 bar C: center S: 1000 bar	
	18				30				420		
	1628				40				L		
	30				50				S		
	40				06: 0.6mm 08: 0.8mm				‹none›		
	D: threadless										

↑ Legend of the article codes

The article code consists of 8–16 parameters and two hyphens. Not all parameters are applied in each article code. "..." means more numeric values. You cannot generate new article codes from the legend. In particular, only the connection suffixes shown in the list on the right side exist. Mind O ≠ 0, I ≠ l ≠ 1, S ≠ 5, B ≠ 8.

↓ Series overview

The possible values of some parameters of the sensors of a serie are written in columns. Their order corresponds to that in the article code (exception: special features), so that an article code can be composed vertically. The blue numbers on the left side are equal to the column numbers of the legend of the article codes. Explications and parameters which are no component of an article code are gray.

	Series	3-wire DC Miniature	3-wire DC					3-wire DC Metal Face
1	**Series prefix**	IPS						IMF
2	**Housing size Ø (▱ cuboid) [mm]**	4, 5, 55, D3, D4 (D: threadless, 55: 5×5▱)	D6, 8, 88, 12, 18, 30 (D: threadless, 88: 8×8▱)			1628 (16×28▱)	40 (40×40▱)	8, 12, 18, 30
4	**Mounting**	S shielded	S shielded	S semi-shielded	N unshielded	S shielded or semi-shielded, N unshielded	S shielded, N unshielded	
5	**Sensing distance [mm]**	0.6, 0.8, 1, 1.5	1, 2, 3, 4, 5, 8, 10, 16	3, 4, 6, 8, 12, 15, 22	2, 4, 6, 8, 10, 15, 16, 25, 40, 50	1, 2, 3, 4, 6	15, 20, 30, 40	2, 4, 6, 8, 10, 15
7	**Output polarity**	P PNP, N NPN						
8	**Output function**	C normally closed, O normally open	C normally closed, O normally open, CO normally closed + open (2 outputs)			C normally closed, O normally open	CO normally closed + open (2 outputs)	O normally open, C normally closed
	Sensing face material	POM	POM, SS304			PBT		SS304
	Housing material	SS304, brass	SS304, brass			PBT		SS304
9	**Overall length [mm]**	26, 40	18, 22, 30, 32, 35, 40, 45, 48, 50, 55, 60, 68, 70, 79	18, 22, 30, 32, 35, 45, 48, 50, 55, 60, 68, 70	18, 30, 32, 45, 50, 53, 55, 60, 68, 70, 79	S 28	L 142	30, 35, 45, 48, 50, 55, 60, 68, 70, 79
12–16	**Connection**	M8, 300 mm PUR cable	M8, M12, 300 mm PUR cable, PVC ultra-flex cable			M8, 300 mm PUR cable, PVC ultra-flex cable	PG13	M8, M12, PVC ultra-flex cable
3, 6, 10, 11	**Special features**	—						
	Operating voltage	10...30 V_{DC}						

Connection

	Connector in right angle — only RA12	Switching indicator LED	Cable length [m], but 3 dm and 20 cm	cable material	connector type
	12	13	14	15	16
-	R	A	2	P	8
	‹none›	N	3	S	12
		‹none›	4*	T	PG13
			5*	U	F2
			6*	‹none›	‹none›
			10*		
			20		
			‹none›		
	R: connector in right angle	A: amber LED N: no LED	* On request for ≥10 units of the same article — only in PVC	P: polyvinyl chloride (PVC) S: silicone cable T: PTFE cable U: polyurethan cable (PUR)	8: M8 connector 12: M12 connector PG13: cable gland PG13.5 (terminal)

The following compositions of connection suffixes exist:
A8: metric screw thread M8, amber LED
N8: metric screw thread M8, no LED
A12: metric screw thread M12, amber LED
RA12: metric screw thread M12 in right angle, amber LED
N12: metric screw thread M12, no LED
A2P: 2 m PVC cable, amber LED
N2P: 2 m PVC cable, no LED
A2S: 2 m silicone cable, amber LED
N2S: 2 m silicone cable, no LED
A2T: 2 m PTFE cable, amber LED
N2T: 2 m PTFE cable, no LED
3P8: 300 mm PVC cable ("pigtail") with metric screw thread M8 connector
3U8: 300 mm PUR cable ("pigtail") with metric screw thread M8 connector
R3U8: 300 mm PUR cable ("pigtail") in right angle with metric screw thread M8 connector
3P12: 300 mm PVC cable ("pigtail") with metric screw thread M12 connector
PG13: cable gland PG13.5 (terminal)
20F2: two 200 mm stranded wires
A4P, A5P, A6P, A10P, N4P, N5P, N6P, N10P on request for ≥10 units of the same article.

↑ Artikelkodelegende

Der Artikelkode besteht aus 8–16 Parametern und zwei Bindestrichen. Nicht alle Parameter werden in jedem Artikelkode verwendet. »...« steht für weitere Zahlenwerte. Aus der Legende können Sie keinen neuen Artikelkode bilden. Insbesondere gibt es nur die Anschlusssuffixe, die in der Liste rechts stehen. O ≠ 0, I ≠ l ≠ 1, S ≠ 5, B ≠ 8 beachten.

↓ Baureihenübersicht

Die möglichen Werte einiger Parameter der Sensoren einer Baureihe stehen in Spalten. Ihre Reihenfolge entspricht der im Artikelkode (Ausnahme: Sondermerkmale), so dass ein Artikelkode senkrecht zusammengesetzt werden kann. Die blauen Zahlen links gleichen den Spaltennummern der Artikellegende. Grau sind Erklärungen und Parameter, die nicht Teil des Artikelkodes sind.

	3-wire DC Weld-Field Immune	3-wire DC High Temperature	3-wire DC High Pressure	3-wire Analog Output	3-wire DC Ring Sensors	2-wire DC	2-wire AC	2-wire UC	2-wire NAMUR Intrinsic. Safe
	IWI	IHT	IHP	IA	IR	IPS			
	8, 12, 18, 30		12, 14	8, 12, 18, 30	06, 10, 15, 21 (ring diameters [mm]: 6.1, 10.1, 15.1 21.1)	8, 12, 18, 30, 40 (40: 40×40⌀)			D4, 5, 8, 12, 18, 30
	S shielded, N unshielded		S shielded	S shielded, N unshielded	—	S shielded, N unshielded			
	1, 2, 4, 5, 8, 10, 15	2, 4, 5, 8, 10, 15	1.5, 3	0.6...3, 1.1...6, 3.1...10, 7.3...20, 17.6...40	—	1, 2, 4, 5, 8, 10, 15, 16, 25, 30	2, 4, 5, 8, 10, 15, 16, 20, 25	2, 4, 5, 8, 10, 15, 16, 20, 25, 30	0.8, 1, 2, 4, 5, 8, 10, 15
	P PNP, N NPN			—	—	D 55 V_{DC}	A 250 V_{AC}	U Universal AC and DC	NA NAMUR
	C normally closed, O normally open			—	C norm.closed, O norm. open, S normally open or closed (switch)	C normally closed, O normally open			—
	PTFE		ceramic, SS304	POM	PBT (ring material)	POM, PBT			POM
	SS304, brass, PTFE coated	SS304		SS304, brass	PA 6.6	SS304, brass, PBT	brass, PBT		SS304, brass
	22, 30, 45, 50, 60	45, 50, 55	43, 47, 56, 57, 65, 69, 78, 93, 94, 138	voltage or current: 010, 020, 420	impulse lengthening: ‹none›, 150	45, 50, 50, 55, 60, 68, 70, 79, L	55, 60, 68, 79, L	35, 50, 55, 68, 79, L	9, 20, 25, 30, 40
	M8, M12, PUR ultraflex	PTFE, silicone	M12, PVC ultra-flex cable	M8, M12, PVC ultra-flex cable	M12	M8, M12, PVC ultra-flex cable, terminal	PVC ultra-flex cable, PG13.5	M12, PVC ultra-flex cable, terminal	PVC ultraflex, PUR ultraflex
	—	max. temperature: A 120 °C, B 150 °C, C 180 °C	max. pressure: ‹none› 500 bar, S 1000 bar	V 10...0 V, I 20...0 mA, I 20...4 mA	detection principle: S static, D dynamic	—			
	10...30 V_{DC}					10...55 V_{DC}	20...250 V_{AC}	24...255 V_{UC}	6...12 V_{DC}, NAMUR

Series	Housing size	Special feature — only CR: operating principle		Mounting	Sensing distance	Special feature — only CHT: maximal temperature	Output polarity	Output function	Overall length	Special feature: housing material
1	**2**	**3**		**4**	**5**	**6**	**7**	**8**	**9**	**10**
CS	06	‹none›	-	S	2	‹none›	P	O	7	‹none›
CHT	8	S		N	3	A	N	C	45	P
CR	10				4	B	A		60	
IHT	12				6	C			70	
IHP	15				8				80	
IA	18				10				90	
IR	21				12				L	
	30	S: static		S: shielded, semi-shielded	15	A: 120 °C	P: PNP	O: normally open		P: PBT
	3050			N: unshielded	20	B: 150 °C	N: NPN	C: normally closed		T: PTFE
	40				22		A: AC			Only 2-wire AC: ‹none›: brass
					25					
					30					
					35					

↑ Legend of the article codes

The article code consists of 8–16 parameters and two hyphens. Not all parameters are applied in each article code. You cannot generate new article codes from the legend. In particular, only the connection suffixes shown in the list on the right side exist. Mind O ≠ 0, I ≠ l ≠ 1, S ≠ 5, B ≠ 8.

↓ Series overview

The possible values of some parameters of the sensors of a serie are written in columns. Their order corresponds to that in the article code (exception: special features), so that an article code can be composed vertically. The blue numbers on the left side are equal to the column numbers of the legend of the article codes. Explications and parameters which are no component of an article code are gray.

	Series	3-wire DC	3-wire DC High Temperature	3-wire DC Chemical-Resistant	3-wire DC Ring Sensors	2-wire AC
1	**Series prefix**	CS	CHT	CS	CR	CS
2	**Housing size ⌀ (□ cuboid) [mm]**	8, 12, 30, 3050, 40 (3050: 30×50□, 40: 40×40□)	8, 12, 18, 30	18, 30	06, 10, 15, 21 (ring diameters [mm]: 6.1, 10.1, 15.1 21.1)	18, 30, 40 (40: 40×40□)
4	**Mounting**	S shielded, N unshielded			—	S shielded, N unshielded
5	**Sensing distance [mm]**	2, 4, 6, 8, 10, 12, 15, 20, 25, 30, 35	1, 2, 4, 8, 15, 20, 30,	12, 20, 25, 30	3, 4, 6, 8, 12, 15, 22	8, 15, 20, 30
7	**Output polarity**	P PNP, N NPN				A 250 V_{AC}
8	**Output function**	C normally closed, O normally open, CO normally closed + open (2 outputs)	C normally closed, O normally open			
	Sensing face material	POM	PTFE		PBT (ring material)	POM
	Housing material	SS304, brass, PBT	brass	PTFE	PA 6.6	brass, PBT
9	**Overall length [mm]**	7, 45, 60, 70, 80	60, 80	80	—	90, L
11–15	**Connection**	M8, M12, PVC ultra-flex cable, terminal	PTFE cable, silicone cable		M12	M12, PVC ultra-flex cable, terminal
3, 6, 10	**Special features**	housing material: ‹none› brass, P PBT	max. temperature: A 120 °C, B 150 °C	housing material: T PTFE	detection principle: S static	housing material: ‹none› brass, P PBT, T PTFE
	Operating voltage	10...30 V_{DC}				

Connection

	Connector in right angle — only RA12	Switching indicator LED	Cable length [m], but 3 for 300 mm	cable material	connector type
	11	**12**	**13**	**14**	**15**
-	R	A	2	P	8
	‹none›	N	3	S	12
		‹none›	4*	T	PG13
			5*	U	‹none›
			6*	‹none›	
			10*		
			‹none›		
	R: connector in right angle	A: amber LED N: no LED	* On request for ≥10 pieces of the same article — only in PVC	P: polyvinyl chloride (PVC) S: silicone cable T: PTFE cable U: polyurethan cable (PUR)	8: M8 connector 12: M12 connector PG13: cable gland PG13.5 (terminal)

The following compositions of connection suffixes exist:
A8: metric screw thread M8, amber LED
N8: metric screw thread M8, no LED
A12: metric screw thread M12, amber LED
RA12: metric screw thread M12 in right angle, amber LED
N12: metric screw thread M12, no LED
A2P: 2 m PVC cable, amber LED
N2P: 2 m PVC cable, no LED
A2S: 2 m silicone cable, amber LED
N2S: 2 m silicone cable, no LED
A2T: 2 m PTFE cable, amber LED
N2T: 2 m PTFE cable, no LED
3P8: 300 mm PVC cable (“pigtail”) with metric screw thread M8 connector
3U8: 300 mm PUR cable (“pigtail”) with metric screw thread M8 connector
R3U8: 300 mm PUR cable (“pigtail”) in right angle with metric screw thread M8 connector
3P12: 300 mm PVC cable (“pigtail”) with metric screw thread M12 connector
PG13: cable gland PG13.5 (terminal)
A4P, A5P, A6P, A10P, N4P, N5P, N6P, N10P on request for ≥10 pieces of the same article.

↑ Artikelkodelegende

Der Artikelkode besteht aus 8–16 Parametern und zwei Bindestrichen. Nicht alle Parameter werden in jedem Artikelkode verwendet. Aus der Legende können Sie keinen neuen Artikelkode bilden. Insbesondere gibt es nur die Anschlusssuffixe, die in der Liste rechts stehen. O ≠ 0, I ≠ l ≠ 1, S ≠ 5, B ≠ 8 beachten.

↓ Baureihenübersicht (linke Seite unten)

Die möglichen Werte einiger Parameter der Sensoren einer Baureihe stehen in Spalten. Ihre Reihenfolge entspricht der im Artikelkode (Ausnahme: Sondermerkmale), so dass ein Artikelkode senkrecht zusammengesetzt werden kann. Die blauen Zahlen links gleichen den Spaltennummern der Artikellegende. Grau sind Erklärungen und Parameter, die nicht Teil des Artikelkodes sind.

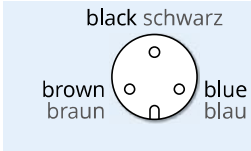
Pinout

Inductive and capacitive sensors

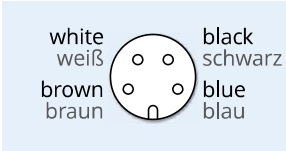
Belegung

Induktive und kapazitive Sensoren

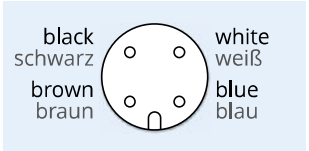
M8–3



M8–4



M12–4



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