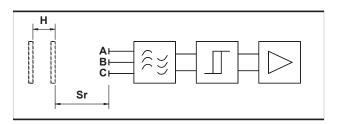


Capacitive Proximity Switches

Capacitive proximity switches consist of an RC-oscillator with a special multi-part sensing electrode. The electrode and the oscillator circuit have a tube connected with earth potential for lateral shielding. This enables flush mounting of the sensor in metal, since the electrical field is only present in front of the sensing electrode. This field is the active zone of the sensor. When the conductive material is removed from the active zone, the oscillator is undamped and the oscillation amplitude decreases. The amplifier of the oscillator voltage and the sensitivity of the sensor can be altered by the built-in potentiometer.

The middle electrode together with the built-in re-coupling gives very effective compensation under conditions of humidity, dust or icing. Special circuitry automatically compensates for these influences. The preset sensing distance remains nearly constant. The electrode design, along with the compensating circuitry of capacitive sensors, is a unique design, and provides performance advantages far superior to other capacitive sensors.



A indicates SENSOR ELECTRODE
B AND C indicates COMPENSATION ELECTRODES

Applications

The capacitive switches may be used to limit the level in tanks and containers. The contents may be fluids, pulverized or granulated materials such as PVC powder, dyes, flour, sugar, powdered milk etc.Further applications are as end and limit switches for checking and regulating machinery setting, (even if the materials are non-metallic as in conveyor belt positioning and material stacking); checking drive belts and paper reels for sag and tear. Additionally they may be used as detectorsfor counting metal and non-metal components.

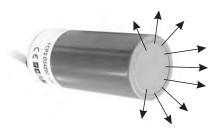
Shielded Configuration

Sensors with a straight-line electrical field. These units scan solids (e.g. wafers, components, PCB's, hybrids, cartons, paper piles,bottles, plastic blocks and stacks of paper) at a distance, or liquids through a separatingwall (glass or plastic up to a max. of 4 mm thick).



Non-shielded Configuration

Sensors with a spherical electrical field. These units are designed to touch the product, bulk goods or liquids (e.g. granulate, sugar, flour, corn, sandor oil and water) with their active surface



Sensing Distance

The data was obtained using a 1 mm thick square steel plate(st37) as an actuator, with a side length equal to 3xSn. The steel plate was grounded. Ambient temperature was 25°C . The largest possible sensing distance is defined as the nominal sensing distance with a Tolerance ±10%Sn.

The sensing distance depends upon shape, size and nature of the object concerned. If the plate is made from a different material or has a smaller diameter, the sensing distance will be reduced.

Size Correction Factor

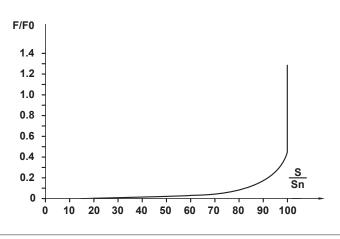
For objects which are not flat and are smaller in relation to the active sensor surface, the following sensing distances are obtained depending on the scaled object surface F/F0, where:

F = sensor front surface (active surface), and F0 = front surface of the object being scanned. The figures in the table below refer to flush sensors, and objects in the form of long thin

Notes:

The three right-hand columms of the table reflect the application example for a C1NF18A08A sensor; The diagram below shows in graphic form the data from the table.

Scaled Object Surface (F/F0)	Sensing Distance (Sn: mm)	C of Object (mm)	F (mm²)	S (mm)
1.50	100	22.0	380.0	8.0
1.24	100	20.0	314.0	8.0
0.80	100	16.0	201.0	8.0
0.61	100	10.0	154.0	8.0
0.31	94.0	14.0	79.0	7.5
0.20	85.0	8.0	50.0	6.8
0.15	82.5	7.0	38.0	6.6
0.05	67.5	4.0	13.0	5.4
0.03	57.5	3.0	7.0	4.6





Material Correction Factor

If the material of the object in question is not metal or water, the sensing distance is reduced.

The reduction factors for the different materials are shown in the table below.

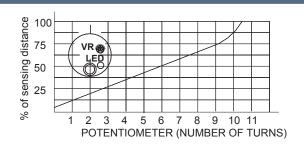
Actuating Material	Sensi ng Distance(compared to a surface of water)				
	20mm	10mm	15mm	10mm	
Hand	20	10	15	10	
Square steel plate (100 x100x1)	20	10	15	10	
Round Steel Plate (Ø30 x1)	11	6	4	2	
Stone (marble)	18	8.5	8	5	
Wood	13	5	5	3	
Glass	12	4	6	2.5	
Carbon	19	9	12	9	
PVC-b lock (30x 30x 5)	8	4	1.5	1	
Lup ulin granu late 180 0H	8	3	2.5	Head approx. 2mm immersed	
Polystyrene 454 H	9.5	3	4	1	
Host alen GC 896 0H	8.2	1.5	2	Head approx. 1mm immersed	
Vestyron 719-50	7.9	1.2	2	Head approx. 3mm immersed	
Host yren	8.2	3	3	Head approx. 1mm immersed	
BM scrap material (Z)	6.7	1.4	1	Head surrounded	
Host alen GC coarse powde r	8	2	1.5	Head approx. 3mm immersed	
Lup ulin fine granu late	7.7	1.5	1	Head approx. 3mm immersed	
Host aform C	9.8	3.5	4	1	
Host yren (polystyrene)	7.4	2	2.5	Head approx. 2mm immersed	
Host alit S	7.5	2	2.5	Head surrounded	
Host alen PP	5	1.5	1.5	Head surrounded	
Host alit E	7.2	1	1	Head approx.4mm immersed	
Styropo r unf oamed	8.1	3	3	0.5	
Styropor(Ø1.5)	1	1	1	/	
Antimony-trioxide	6.2	0.9	2.5	Direct contact	
Oil	9	3	5	3	
Maximum sensing-distance Critical point	55	55	110	1	

Conditions:

- Tu=25°C; V_A=24 VDC
- In each case, the measurements were made from a level surface.

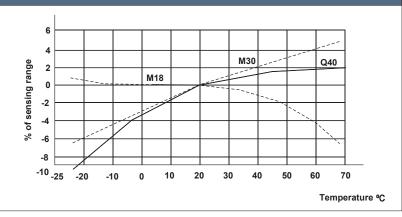
Sensitivity Adjustment

Capacitive proximity sensors have a fourteen turn potentiometer. The potentiometer must be adjusted to suit most applications. Turn clockwise to increase sensitivity. From the original setting of 0.7-0.8xSn(Sn=norminal range), the norminal sensing range is reached after 2-3 clockwise turns. This, however, leads to nonlinearity of the curve and oversensitivity, which may lock on the sensor. If this occurs, decrease sensitivity by turning the potentiometer 2-3 turns counter clockwise.



Temperature

Capacitive proximity switches will function within a temperature range of -25 °C to +70 °C . The switching distance deviation is 20% provided that the switching distance is not greater than the nominal switching distance (taking into consideration the reduction factors of the material).





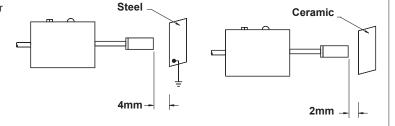
Sensors For Shielded Mounting

Normally, the linear field of shielded sensors scans block materials for distance. In order to obtain faultless switching of sensors, check the maximum switching gap as described below before putting the device into operation:

Example:

To be scanned by a DC capacitive mini C1AE12A04A and its' amplifier CP-700N-ACU. Set the sensor to the maximum switching gap Sn of 4mm over steel or hand using its amplifier. After setting a gap of 4mm, move the sensor over the ceramic plate. approximately 2mm.

The distance of 2mm is now the maximum switching gap on theceramic plate. Optimum switching ensured if the sensor scans the ceramic plate under 2mm and the calibration is not exceeded.



Ceramic

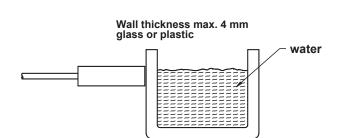
4mm

Note:

The sensors are set to a greater switching gap than the rated switching gaps Sn specified in the catalog to ensure operation within the technical specifications. If the operator in-creases the switching gap to 4 mm over the ceramic plate as described above, the sensor will be operating outside its range. This may lead to faulty switching in the sensor due to temperature effects and voltage transients in the power source.

Example:

A liquid e.g. water, is to be scanned through a partition wall by a flush sensor type C1NF34A25A. The partition wall made of glass or plastic with a max. thickness of 4 mm. To calculate the wall thickness, the thickness in mm will be 10...20% of the switching gap of the sensor but a max. of 4 mm.



The face (active surface) of the sensor is bonded to the glass or plastic wall. The vessel is filled with water until approx. 75% of the active surface of the sensor is covered. Turn the potentiometer of the sensor counterclockwise (reduce sensitivity) until the LED and the output signal turn off.

Turn the potentiometer clockwise (increase sensitivity) until the LED and the output signal switch on.

Using the calibration process described ensures that the sensor does not detect the wall or the water residue on the wall.

It only switches when the liquid has reached the 75% level described above.

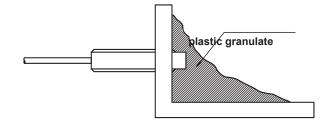
Sensors For Non-shielded Mounting

Due to their spherical fields, capacitive sensors are suitable for applications such as filling level indicators and plastic granulate or powder.

Example:

A granulate in a vessel is to be scanned by a non-shielded mounted sensor type C1ME30A10A. The sensor is mounted so its active surface (free zone at head) proects into the product in the vessel, as shown below, the sensor must be completely covered by the product before calibration.

Turn the potentiometer of the sensor counterclockwise (reduce sensitivity) until the LED and the output signal turn off. Turn the potentiometer clockwise (increase sensivity) until the LED and the output signal switch on. Make an additional 14 turn (90 turn) in the clockwise direction. This is to compensate for temperature fluctuations or changes in the humidity of the product scanned.

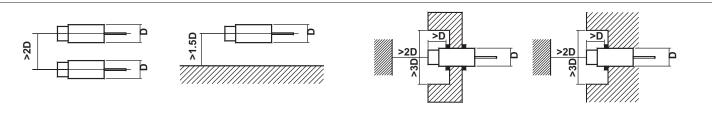


Sensors For Non-shielded Mounting

Installation Requirements

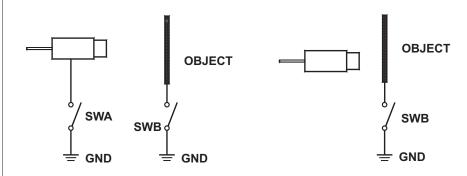
Surrounding obects will affect capacitive proximity switches by affecting switch capacitance or sensing the object. It is necessary to maintain a standard distance between a capacitive proximity switches and the surrounding objects when installing the capacitive proximity switch.

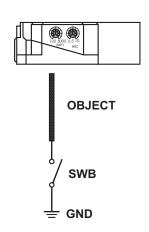




Connection Ground

Connected to ground, both the standard sensing object(60x60x1t iron) and capacitive proximity switch, affects the change of operating distance.





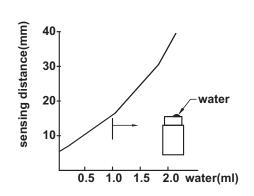
GND	switch a	ON	OFF	ON	OFF
	switch b	ON	ON	OFF	OFF
sensing distance		20	20	12	12

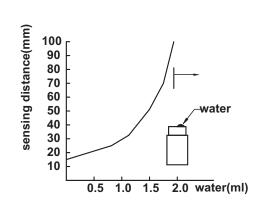
GND switch b	ON	OFF
sensing distance	15	8

GND switch b	ON	OFF
sensing distance	30	17

Influence to sensing face covered with drops of water

The following figures show the changes to operating distance caused by drops of water on the sensing face of capacitive proximity switches. If the water drops are 0.2 ml (about 2-3 drops), the operating distance will be increased about 20%, as the attached water drops on the sensing face cover the surface and is flowing operating distance is increased over 300%.



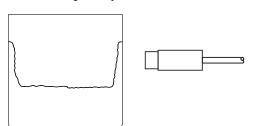


Caution

If ice, frost, moisture, oil or dust is on the active surface, it will cause faultly operation.

The detecting of liquid or powder on non-metallic tanks, if the liquids or powders are attached to tank wall, it will cause faulty operation.

The application of a DC capacitive proximity switch, connected to a heavy load current (current over 200 mA, (electric motor, electrical-magnetic contact) the output transistor will break down. It should be connected through a relay.



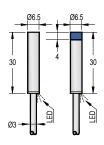


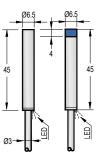
- Features

 Ø6.5mm diameter

 Sn=1mm,shielded
- 2mm,non-shielded

 Brass housing case
 PBT housing case
- Short circuit protection
 Overload protection
 Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function
- Cable version





■ Lable version ■ IP67 protection	ın					
	C€		(Unit: mm)		(Unit: mm)	
		Shielded	Non-shielded	Shielded	Non-shielded	
	NPN-NO	C1BC6.5C01A	C1BD6.5C02A	C1BE6.5C01A	C1BF6.5C02A	
	NPN-NC	C1BC6.5D01A	C1BD6.5D02A	C1BE6.5D01A	C1BF6.5D02A	
Brass Case	PNP-NO	C1BC6.5A01A	C1BD6.5A02A	C1BE6.5A01A	C1BF6.5A02A	
Drass Case	PNP-NC	C1BC6.5B01A	C1BD6.5B02A	C1BE6.5B01A	C1BF6.5B02A	
	NPN-NO+NC					
	PNP-NO+NC					
	NPN-NO	C1NC6.5C01A	C1ND6.5C02A	C1NE6.5C01A	C1NF6.5C02A	
	NPN-NC	C1NC6.5D01A	C1ND6.5D02A	C1NE6.5D01A	C1NF6.5D02A	
	PNP-NO	C1NC6.5A01A	C1ND6.5A02A	C1NE6.5A01A	C1NF6.5A02A	
PBT Case	PNP-NC	C1NC6.5B01A	C1ND6.5B02A	C1NE6.5B01A	C1NF6.5B02A	
	NPN-NO+NC	0 11100.020 171	0 114B 0.5B 0271	0.11420.020.171	0111 0.05027	
	PNP-NO+NC					
General Data	FINE-NOTING					
		ac.	5mm	Ø6	5mm	
Housing size					_	
Installation type		Shielded	Non-shielded	Shielded	Non-shielded	
Sensing distance(S		1mm	2mm	1mm	2mm	
Standard sensing of		Steel 6.5x6.5x1mm	Steel 6.5x6.5x1mm	Steel 6.5x6.5x1mm	Steel 6.5x6.5x1mm	
Effective sensing d	listance (Sr: mm)		0% of Sn	90 110% of Sn		
Assured operating	distance(Sa: mm)	0 80	9% of Sn	0 80	% of Sn	
Hysteresis		<1	<15%		5%	
Housing material		Nickel plated b	orass/PBT Resin	Nickel plated b	erass/PBT Resin	
Operating voltage		10	30VDC	10 30VDC		
Electrical Data						
Rated operating vo	oltage	24	VDC	24	VDC	
Repeated accuracy	y	±1	0%	±10%		
Ripple		<1	10%	<1	0%	
No load current		10	0mA	10mA		
Max. Load current		20	0mA	20	OmA	
Leakage current			1mA		1mA	
Voltage drop		<2VDC	<2VDC	<2VDC	<2VDC	
Switching frequency	NV	100Hz	100Hz	100Hz	100Hz	
Response time	,,y	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	
	ltana		VDC		VDC	
Rated insulation vo						
Operating tempera			+70°C		+70°C	
Storage temperatu	re		+80°C		+80°C	
Temperature drift			10%	<10%		
Power indicator			No		No	
Function indicator			w LED		w LED	
Reverse polarity pr		Y	′es		'es	
Short-circuit protect	ction	Υ	'es	Υ	'es	
Overload trip point		22	0mA	22	DmA	
Correction factors		Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appr	approx. 0.85/brass approx. 0.5/ ox. 0.4	Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/ copper approx. 0.4		
Mechanical Data						
Sensing surface m	aterial	Р	ОВ	Р	OB	
Protection		IF	P67	IF	267	
Shock rating		Shock, half-sir	nus, 30gn, 11ms	Shock, half-sir	nus, 30gn, 11ms	
Vibration rating		55Hz, 1mm a	mpl., 3x30min.	55Hz, 1mm a	mpl., 3x30min.	
EMC		IEC 60	0947-5-2	IEC 60	947-5-2	
			<i>1</i>		1	
Accessary	- 11			/ · · · · · · · · · · · · · · · · · · ·		
Accessary Connection		2m PVC cable	(Ø3 3x0.15mm²)	2m PVC cable	(Ø3 3x0.15mm²)	



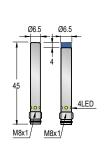
- Features

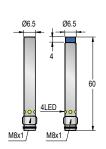
 Ø6.5mm diameter

 Sn=1mm,shielded
- Sn=Imm, snielded
 2mm, non-shielded

 Brass housing case
 PBT housing case

 Short circuit protection
 Overload protection
 Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function
- M8 connector version
 IP67 protection





■ IP67 protection					
	(€		(Unit: mm)		(Unit: mm)
		Shielded	Non-shielded	Shielded	Non-shielded
	NPN-NO	C1BC6.5C01F	C1BD6.5C02F	C1BE6.5C01F	C1BF6.5C02F
	NPN-NC	C1BC6.5D01F	C1BD6.5D02F	C1BE6.5D01F	C1BF6.5D02F
D	PNP-NO	C1BC6.5A01F	C1BD6.5A02F	C1BE6.5A01F	C1BF6.5A02F
Brass Case	PNP-NC	C1BC6.5B01F	C1BD6.5B02F	C1BE6.5B01F	C1BF6.5B02F
	NPN-NO+NC				
	PNP-NO+NC				
	NPN-NO	C1NC6.5C01F	C1ND6.5C02F	C1NE6.5C01F	C1NF6.5C02F
	NPN-NC	C1NC6.5D01F	C1ND6.5D02F	C1NE6.5D01F	C1NF6.5D02F
	PNP-NO	C1NC6.5A01F	C1ND6.5A02F	C1NE6.5A01F	C1NF6.5A02F
PBT Case	PNP-NC	C1NC6.5B01F	C1ND6.5B02F	C1NE6.5B01F	C1NF6.5B02F
	NPN-NO+NC				
	PNP-NO+NC				
General Data					
Housing size		Ø6.5	5mm	Ø6.	5mm
Installation type		Shielded	Non-shielded	Shielded	Non-shielded
Sensing distance(S	Sn: mm)	1mm	2mm	1mm	2mm
Standard sensing	· · · · · · · · · · · · · · · · · · ·	Steel 6.5x6.5x1mm	Steel 6.5x6.5x1mm	Steel 6.5x6.5x1mm	Steel 6.5x6.5x1mm
Effective sensing d		90 110	0% of Sn	90 11	0% of Sn
Assured operating		0 809	% of Sn	0 80	% of Sn
Hysteresis	, ,	<15			5%
Housing material		Nickel plated br	Nickel plated brass/PBT Resin		rass/PBT Resin
Operating voltage		10 3			30VDC
Electrical Data					
Rated operating vo	oltage	24V	'DC	24\	/DC
Repeated accurac		±10		±10%	
Ripple	,	<10		<10%	
No load current		10r		10mA	
Max. Load current		200		200mA	
Leakage current		0.01			1mA
Voltage drop		<2VDC	<2VDC	<2VDC	<2VDC
Switching frequence	cv	100Hz	100Hz	100Hz	100Hz
Response time	,	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
Rated insulation vo	oltage	75V			/DC
Operating tempera		-25°C	. +70°C	-25°C .	+70°C
Storage temperatu		-40°C +80°C			+80°C
Temperature drift			<10%		0%
Power indicator		N		No	
Function indicator		Yellow		Yellow LED	
Reverse polarity pr	rotection	Ye			es
Short-circuit protect		Ye			es
Overload trip point		220)mA
Correction factors		Fe37 steel=1/stainless steel ap	pprox. 0.85/brass approx. 0.5/	Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/	
Mechanical Data		Al. Approx. 0.45/ copper appro	x. 0.4	Al. Approx. 0.45/ copper appro	ox. U.4
Sensing surface m	naterial	PC	DB	P	OB
Protection		IPG			67
Shock rating		Shock, half-sinu			us, 30gn, 11ms
Vibration rating		55Hz, 1mm an			mpl., 3x30min.
EMC		IEC 609	· · · · · · · · · · · · · · · · · · ·		947-5-2
Accessary		1.20 000		120 00	<u> </u>
Connection		Pico-style 3 Pin	M8 Connector	Pica-style 3 Pi	n M8 Connector
		Approx		•	
Weight		Аррго	^. ITY	Approx. 15g	

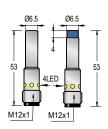


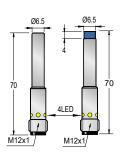
- Features

 Ø6.5mm diameter

 Sn=1mm,shielded
- 2mm,non-shielded

 Brass housing case
 PBT housing case
- Short circuit protection
 Overload protection
 Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function
- M12 connector version
- IP67 protection





-					
			(Unit: mm)		(Unit: m
	C€	Shielded	Non-shielded	Shielded	Non-shielded
	NPN-NO	C1BC6.5C01H	C1BD6.5C02H	C1BE6.5C01H	C1BF6.5C02H
	NPN-NC	C1BC6.5D01H	C1BD6.5D02H	C1BE6.5D01H	C1BF6.5D02H
	PNP-NO	C1BC6.5A01H	C1BD6.5A02H	C1BE6.5A01H	C1BF6.5A02H
Brass Case	PNP-NC	C1BC6.5B01H	C1BD6.5B02H	C1BE6.5B01H	C1BF6.5B02H
	NPN-NO+NC				
	PNP-NO+NC				
	NPN-NO	C1NC6.5C01H	C1ND6.5C02H	C1NE6.5C01H	C1NF6.5C02H
	NPN-NC	C1NC6.5D01H	C1ND6.5D02H	C1NE6.5D01H	C1NF6.5D02H
	PNP-NO	C1NC6.5A01H	C1ND6.5A02H	C1NE6.5A01H	C1NF6.5A02H
BT Case	PNP-NC	C1NC6.5B01H	C1ND6.5B02H	C1NE6.5B01H	C1NF6.5B02H
	NPN-NO+NC				
	PNP-NO+NC				
Seneral Data					
lousing size		Ø6.5	mm	Ø6.	5mm
nstallation type		Shielded	Non-shielded	Shielded	Non-shielded
Sensing distance(S	Sn: mm)	1mm	2mm	1mm	2mm
tandard sensing o	object	Steel 6.5x6.5x1mm	Steel 6.5x6.5x1mm	Steel 6.5x6.5x1mm	Steel 6.5x6.5x1mm
ffective sensing di	istance (Sr: mm)	90 110	% of Sn	90 11	0% of Sn
ssured operating	distance(Sa: mm)	0 80%	of Sn	0 80	% of Sn
ysteresis		<15	%	<15%	
lousing material		Nickel plated bra	ass/PBT Resin	Nickel plated b	rass/PBT Resin
perating voltage		10 30	OVDC	10 ;	30VDC
Electrical Data					
Rated operating vo	ltage	24VI	oc	24\	/DC
Repeated accuracy	/	±10	%	±10%	
Ripple		<10	%	<10%	
lo load current		10m	nA	10mA	
lax. Load current		200n	nA	200mA	
eakage current		0.01r	mA	0.0	1mA
/oltage drop		<2VDC	<2VDC	<2VDC	<2VDC
witching frequency	у	100Hz	100Hz	100Hz	100Hz
Response time		1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
ated insulation vo	ltage	75VI	DC	75VDC	
perating temperat	ture	-25°C	+70°C	-25°C +70°C	
torage temperatur	re	-40°C +80°C		-40°C +80°C	
emperature drift		<10	%	<10%	
ower indicator		No		No	
unction indicator		Yellow	LED	Yellow LED	
everse polarity pro		Yes	s	Y	es
hort-circuit protec	tion	Ye	S		es
Overload trip point		220r		220mA	
Correction factors		Fe37 steel=1/stainless steel app Al. Approx. 0.45/ copper approx	orox. U.85/brass approx. 0.5/ :. 0.4	Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appro	pprox. 0.85/brass approx. 0.5/ ox. 0.4
lechanical Data					
ensing surface ma	aterial	PO			OB
rotection		IP6	7	IP67	
hock rating		Shock, half-sinu	s, 30gn, 11ms	Shock, half-sin	us, 30gn, 11ms
ibration rating		55Hz, 1mm am	pl., 3x30min.	55Hz, 1mm a	mpl., 3x30min.
MC		IEC 609	47-5-2	IEC 60	947-5-2
ccessary		/			I
Connection		Euro-style 4 Pin I	M12 Connector	Euro-style 4 Pin	M12 Connector
				-	ox. 25g

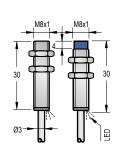


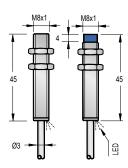
- Features

 M8mm diameter

 Sn=1mm,shielded
- 2mm,non-shielded

 Brass housing case
 PBT housing case
- Short circuit protection
 Overload protection
 Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function
- Cable version
- IP67 protection





• IP6/ protection	n				
			(110:4:		/I In it, man
	C€	Objected	(Unit: mm)	Objection	(Unit: mn
	NPN-NO	Shielded C1AC08C01A	Non-shielded C1AD08C02A	Shielded C1AE08C01A	Non-shielded C1AF08C02A
	NPN-NC	C1AC08C01A	C1AD08C02A C1AD08D02A	C1AE08C01A C1AE08D01A	C1AF08D02A
Brass Case	PNP-NO	C1AC08A01A	C1AD08A02A	C1AE08A01A	C1AF08A02A
-	PNP-NC	C1AC08B01A	C1AD08B02A	C1AE08B01A	C1AF08B02A
	NPN-NO+NC				
	PNP-NO+NC				
	NPN-NO	C1MC08C01A	C1MD08C02A	C1ME08C01A	C1MF08C02A
	NPN-NC	C1MC08D01A	C1MD08D02A	C1ME08D01A	C1MF08D02A
PBT Case	PNP-NO	C1MC08A01A	C1MD08A02A	C1ME08A01A	C1MF08A02A
	PNP-NC	C1MC08B01A	C1MD08B02A	C1ME08B01A	C1MF08B02A
	NPN-NO+NC				
	PNP-NO+NC				
General Data					
Housing size		M8m	m	M8r	nm
nstallation type		Shielded	Non-shielded	Shielded	Non-shielded
Sensing distance(S	Sn: mm)	1mm	2mm	1mm	2mm
Standard sensing o	bject	Steel 8x8x1mm	Steel 8x8x1mm	Steel 8x8x1mm	Steel 8x8x1mm
Effective sensing di	istance (Sr: mm)	90 110	% of Sn	90 110)% of Sn
Assured operating of	distance(Sa: mm) 0 80% of Sn		of Sn	0 80% of Sn	
Hysteresis		<15	%	<1:	5%
lousing material		Nickel plated bra	ass/PBT Resin	Nickel plated b	rass/PBT Resin
Operating voltage		10 3	10 30VDC		BOVDC
Electrical Data					
Rated operating vol	Itage	24V	oc III	24\	/DC
Repeated accuracy		±10	%	±10%	
Ripple		<10		<10%	
No load current		10n		10mA	
Max. Load current		200r		200mA	
Leakage current		0.01		0.01	
Voltage drop		<2VDC	<2VDC	<2VDC	<2VDC
Switching frequency	v	100Hz	100Hz	100Hz	100Hz
Response time	,	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
Rated insulation vol	Itane	75V		75\	
Operating temperat		-25°C +70°C		-25°C +70°C	
Storage temperature		-40°C +80°C		-40°C +80°C	
Temperature drift				<10%	
Power indicator		<10% No		No	
Function indicator		Yellow			
	otootion	Ye		Yellow LED Yes	
Reverse polarity pro Short-circuit protect					
	lion	Ye 220r			es A
Overload trip point				220mA Fe37 steel=1/stainless steel approx. 0.85/brass :	
		Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/ copper approx. 0.4		Al. Approx. 0.45/ copper appro	x. 0.4
Correction factors		Ai. Approx. 0.43/ copper approx	0.4		
		лі. дриох. 0.43/ соррег арріол			
Mechanical Data	aterial	PO		PC	DB
Mechanical Data Sensing surface ma	aterial		В	P(IP	
Mechanical Data Sensing surface ma Protection	aterial	PO	B 7		67
Mechanical Data Sensing surface ma Protection Shock rating	aterial	PO IPE	B 7 s, 30gn, 11ms	IP Shock, half-sin	67
Mechanical Data Sensing surface ma Protection Shock rating //ibration rating	aterial	PO IP6 Shock, half-sinu	B 7 , 30gn, 11ms pl., 3x30min.	IP Shock, half-sin 55Hz, 1mm ai	67 us, 30gn, 11ms
Correction factors Mechanical Data Sensing surface ma Protection Shock rating //ibration rating EMC Accessary	aterial	PO IP6 Shock, half-sinu 55Hz, 1mm am	B 7 , s, 30gn, 11ms , pl., 3x30min. 47-5-2	IP Shock, half-sin 55Hz, 1mm ai	67 us, 30gn, 11ms npl., 3x30min. 947-5-2
Mechanical Data Sensing surface ma Protection Shock rating //ibration rating	aterial	PO IP6 Shock, half-sinu 55Hz, 1mm an IEC 609	B 7 , s, 30gn, 11ms , jpl., 3x30min. 47-5-2 , tts	IP Shock, half-sin 55Hz, 1mm ar IEC 60: 2 n	67 us, 30gn, 11ms npl., 3x30min. 947-5-2

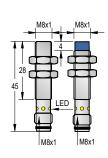


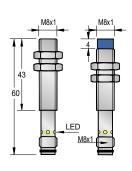
- Features

 M8mm diameter

 Sn=1mm,shielded
- 2mm,non-shielded

 Brass housing case
 PBT housing case
- Short circuit protection
 Overload protection
 Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function
- M8 connector version
- IP67 protection





	(Unit: mm)	(Unit: mm)		
Shielded	Non-shielded	Shielded	Non-shielded	

	(6	(Unit: mm)			(Unit: mm)
	(€	Shielded	Non-shielded	Shielded	Non-shielded
	NPN-NO	C1AC08C01F	C1AD08C02F	C1AE08C01F	C1AF08C02F
	NPN-NC	C1AC08D01F	C1AD08D02F	C1AE08D01F	C1AF08D02F
D 0	PNP-NO	C1AC08A01F	C1AD08A02F	C1AE08A01F	C1AF08A02F
Brass Case	PNP-NC	C1AC08B01F	C1AD08B02F	C1AE08B01F	C1AF08B02F
	NPN-NO+NC				
	PNP-NO+NC				
	NPN-NO	C1MC08C01F	C1MD08C02F	C1ME08C01F	C1MF08C02F
	NPN-NC	C1MC08D01F	C1MD08D02F	C1ME08D01F	C1MF08D02F
PBT Case	PNP-NO	C1MC08A01F	C1MD08A02F	C1ME08A01F	C1MF08A02F
FB1 Case	PNP-NC	C1MC08B01F	C1MD08B02F	C1ME08B01F	C1MF08B02F
	NPN-NO+NC				
	PNP-NO+NC				

General Data				
Housing size	M8mm		M8mm	
Installation type	Shielded	Non-shielded	Shielded	Non-shielded
Sensing distance(Sn: mm)	1mm	2mm	1mm	2mm
Standard sensing object	Steel 8x8x1mm	Steel 8x8x1mm	Steel 8x8x1mm	Steel 8x8x1mm
Effective sensing distance (Sr: mm)	90 110% of Sn		90 110% of Sn	
Assured operating distance(Sa: mm)	0 80% of Sn		0 80% of Sn	
Hysteresis	<15%		<15%	

Hysteresis	<15%	<15%
Housing material	Nickel plated brass/PBT Resin	Nickel plated brass/PBT Resin
Operating voltage	10 30VDC	10 30VDC

Electrical Data				
Rated operating voltage	24'	VDC	24VDC	
Repeated accuracy	±1	10%	±1	0%
Ripple	<1	10%	<1	0%
No load current	10	DmA	10	mA
Max. Load current	20	0mA	20	DmA
Leakage current	0.0	1mA	0.0	1mA
Voltage drop	<2VDC	<2VDC	<2VDC	<2VDC
Switching frequency	100Hz	100Hz	100Hz	100Hz
Response time	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
Rated insulation voltage	75'	VDC	75VDC	
Operating temperature	-25°C .	+70°C	-25°C +70°C	
Storage temperature	-40°C .	+80°C	-40°C +80°C	
Temperature drift	<1	10%	<10%	
Power indicator	1	No	1	No
Function indicator	Yello	w LED	Yello	w LED
Reverse polarity protection	Yes		Yes	
Short-circuit protection	Yes		Y	res es
Overload trip point	220	0mA	220	DmA
Correction factors	Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appr	approx. 0.85/brass approx. 0.5/ rox. 0.4	Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appr	pprox. 0.85/brass approx. 0.5/ ox. 0.4

Correction factors	Al. Approx. 0.45/ copper approx. 0.4	Al. Approx. 0.45/ copper approx. 0.4
Mechanical Data		
Sensing surface material	РОВ	POB
Protection	IP67	IP67
Shock rating	Shock, half-sinus, 30gn, 11ms	Shock, half-sinus, 30gn, 11ms
Vibration rating	55Hz, 1mm ampl., 3x30min.	55Hz, 1mm ampl., 3x30min.
EMC	IEC 60947-5-2	IEC 60947-5-2
Accessary	2 nuts	2 nuts
Connection	Pico-style 3 Pin M8 connector	Pico-style 3 Pin M8 connector
Weight	Approx. 13g/11g	Approx. 15g/12g

N-09

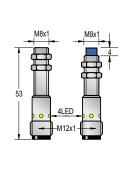


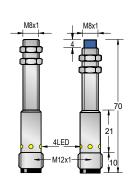
- M8mm diameter
 Sn=1mm,shielded
- 2mm,non-shielded

 Brass housing case
 PBT housing case
- Short circuit protection Overload protection Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function
- M8 connector version

NPN-NO NIDNI NIC

■ IP67 protection





Nickel plated brass/PBT Resin

10 ... 30VDC

(((Unit: mm)		(Unit: mm)
7	Shielded	Non-shielded	Shielded	Non-shielded
	C1AC08C01H	C1AD08C02H	C1AE08C01H	C1AF08C02H
	C1AC08D01H	C1AD08D02H	C1AE08D01H	C1AF08D02H
	C1AC08A01H	C1AD08A02H	C1AE08A01H	C1AF08A02H
	C1AC08B01H	C1AD08B02H	C1AE08B01H	C1AF08B02H

	INPIN-INC	CIACUODUIN	CIADUODUZH	CIAEUODUIN	CIAFUODUZH
	PNP-NO	C1AC08A01H	C1AD08A02H	C1AE08A01H	C1AF08A02H
Brass Case	PNP-NC	C1AC08B01H	C1AD08B02H	C1AE08B01H	C1AF08B02H
	NPN-NO+NC				
	PNP-NO+NC				
	NPN-NO	C1MC08C01H	C1MD08C02H	C1ME08C01H	C1MF08C02H
	NPN-NC	C1MC08D01H	C1MD08D02H	C1ME08D01H	C1MF08D02H
PBT Case	PNP-NO	C1MC08A01H	C1MD08A02H	C1ME08A01H	C1MF08A02H
FB1 Case	PNP-NC	C1MC08B01H	C1MD08B02H	C1ME08B01H	C1MF08B02H
	NPN-NO+NC				
	PNP-NO+NC				

General Data

Housing material

Housing size	M8mm		M8ı	mm	
Installation type	Shielded	Non-shielded	Shielded	Non-shielded	
Sensing distance(Sn: mm)	1mm	2mm	1mm	2mm	
Standard sensing object	Steel 8x8x1mm	Steel 8x8x1mm	Steel 8x8x1mm	Steel 8x8x1mm	
Effective sensing distance (Sr: mm)	90 110% of Sn		90 11	0% of Sn	
Assured operating distance(Sa: mm)	0 80% of Sn		0 80% of Sn		
Hysteresis	<15%		<1	5%	

Nickel plated brass/PBT Resin

10 ... 30VDC

r	
lectrical Data	

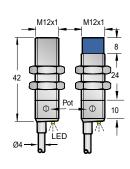
Rated operating voltage	24VDC		24VDC	
Repeated accuracy	±10%		±10%	
Ripple	<	10%	<1	0%
No load current	10	DmA	10	mA
Max. Load current	20	0mA	200	DmA
Leakage current	0.0)1mA	0.0	1mA
Voltage drop	<2VDC	<2VDC	<2VDC	<2VDC
Switching frequency	100Hz	100Hz	100Hz	100Hz
Response time	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
Rated insulation voltage	75	VDC	75VDC	
Operating temperature	-25°C	+70°C	-25°C +70°C	
Storage temperature	-40°C +80°C		-40°C +80°C	
Temperature drift	<10%		<10%	
Power indicator		No	1	No
Function indicator	Yello	ow LED	Yello	w LED
Reverse polarity protection	,	Yes	Y	es es
Short-circuit protection	Yes		Y	és
Overload trip point	220mA		220	0mA
Correction factors	Fe37 steel=1/stainless steel Al. Approx. 0.45/ copper app	approx. 0.85/brass approx. 0.5/ rox. 0.4	Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper approx	pprox. 0.85/brass approx. 0.5/ ox. 0.4

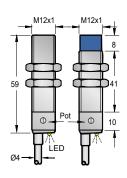
Mechanical Data		
Sensing surface material	POB	POB
Protection	IP67	IP67
Shock rating	Shock, half-sinus, 30gn, 11ms	Shock, half-sinus, 30gn, 11ms
Vibration rating	55Hz, 1mm ampl., 3x30min.	55Hz, 1mm ampl., 3x30min.
EMC	IEC 60947-5-2	IEC 60947-5-2
Accessary	2 nuts	2 nuts
Connection	Euro-style 4 Pin M12 connector	Euro-style 4 Pin M12 connector
Weight	Approx. 18g/17g	Approx. 23g/22g



- M12mm diameter Sn=1 ... 3mm,shielded
- 2 ... 6mm,non-shielded

 Brass housing case
 PBT housing case
- Short circuit protection
 Overload protection
 Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function
- Cable version
- IP67 protection





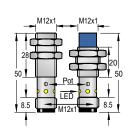
•					
	C€		(Unit: mm)		(Unit: mn
	77	Shielded	Non-shielded	Shielded	Non-shielded
	NPN-NO	C1AC12C03A	C1AD12C06A	C1AE12C03A	C1AF12C06A
	NPN-NC	C1AC12D03A	C1AD12D06A	C1AE12D03A	C1AF12D06A
D 0	PNP-NO	C1AC12A03A	C1AD12A06A	C1AE12A03A	C1AF12A06A
Brass Case	PNP-NC	C1AC12B03A	C1AD12B06A	C1AE12B03A	C1AF12B06A
	NPN-NO+NC				
	PNP-NO+NC				
	NPN-NO	C1MC12C03A	C1MD12C06A	C1ME12C03A	C1MF12C06A
	NPN-NC	C1MC12D03A	C1MD12D06A	C1ME12D03A	C1MF12D06A
	PNP-NO	C1MC12A03A	C1MD12A06A	C1ME12A03A	C1MF12A06A
PBT Case	PNP-NC	C1MC12B03A	C1MD12B06A	C1ME12B03A	C1MF12B06A
	NPN-NO+NC				
	PNP-NO+NC				
General Data					
Housing size		M12	mm	M12	2mm
Installation type		Shielded	Non-shielded	Shielded	Non-shielded
Sensing distance(S	Sn: mm)	13mm adjustable	26mm adjustable	13mm adjustable	26mm adjustable
Standard sensing of	· · · · · · · · · · · · · · · · · · ·	Steel 12x12x1mm	Steel 18x18x1mm	Steel 12x12x1mm	Steel 18x18x1mm
Effective sensing d	-	90 110			0% of Sn
Assured operating		0 80%			% of Sn
Hysteresis		<15			5%
Housing material		Nickel plated brass/PBT Resin		Nickel plated brass/PBT Resin	
Operating voltage		10 30VDC			BOVDC
Electrical Data		10 50	3420	10	5000
	ltage	24VI	DC.	24\	/DC
Rated operating voltage Repeated accuracy		±10%			
Ripple	,				
No load current		<10% 10mA			
Max. Load current		200r		10mA	
Leakage current		0.01		200mA 0.01mA	
		<2VDC	<2VDC	<2VDC	<2VDC
Voltage drop Switching frequence		100Hz	100Hz	100Hz	100Hz
	у				
Response time Rated insulation vo	ltana	1.5ms/1.5ms 75VI	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms /DC
	-	-25°C			
Operating tempera				-25°C +70°C	
Storage temperatur	ie	-40°C +80°C <10%		-40°C +80°C	
Temperature drift				<10%	
Power indicator		No.		No	
Function indicator		Yellow		Yellow LED	
Reverse polarity pr		Ye		Yes	
Short-circuit protec		Ye		Yes	
Overload trip point		220r		220mA	
Correction factors		Fe37 steel=1/stainless steel ap Al. Approx. 0.45/ copper approx	ргох. 0.00/brass approx. 0.5/ с. 0.4	Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appro	pprox. 0.85/brass approx. 0.5/ ox. 0.4
Mechanical Data					
Sensing surface ma	aterial	PB	Т	PI	ЗТ
Protection IP67		37	IP67		
Shock rating		Shock, half-sinu	ıs, 30gn, 11ms	Shock, half-sin	us, 30gn, 11ms
Vibration rating		55Hz, 1mm am	npl., 3x30min.	55Hz, 1mm a	mpl., 3x30min.
EMC		IEC 609	47-5-2	IEC 60	947-5-2
Accessary		2 nu	ıts	2 r	uts
Connection		2m PVC cable (£	Ø4 3x0.34mm²)	2m PVC cable ((Ø4 3x0.34mm²)
Connection Weight		Approx. 6	· · · · · · · · · · · · · · · · · · ·	Approx.	· · · · · · · · · · · · · · · · · · ·



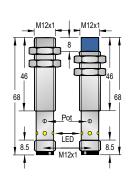
- M12mm diameter Sn=1 ... 3mm,shielded 2 ... 6mm,non-shielded
- Brass housing case PBT housing case
- Short circuit protection Overload protection Reverse-polarity protection

(€

- NPN, PNP Output
- NO,NC,NO+NC Function
- M12 Connector version
- IP67 protection



Shielded



(U	nit:	mm
----	------	----

(Unit: mm)		(Unit: mm)
Non-shielded	Shielded	Non-shielded
C1AD12C06H	C1AE12C03H	C1AF12C06H
C1AD12D06H	C1AE12D03H	C1AF12D06H
C1AD12A06H	C1AE12A03H	C1AF12A06H
C1AD12B06H	C1AE12B03H	C1AF12B06H

Brass Case

NPN-NO	C1AC12C03H	C1AD12C06H	C1AE12C03H	C1AF12C06H
NPN-NC	C1AC12D03H	C1AD12D06H	C1AE12D03H	C1AF12D06H
PNP-NO	C1AC12A03H	C1AD12A06H	C1AE12A03H	C1AF12A06H
PNP-NC	C1AC12B03H	C1AD12B06H	C1AE12B03H	C1AF12B06H
NPN-NO+NC				
PNP-NO+NC				
NPN-NO	C1MC12C03H	C1MD12C06H	C1ME12C03H	C1MF12C06H
NPN-NO NPN-NC	C1MC12C03H C1MC12D03H	C1MD12C06H C1MD12D06H	C1ME12C03H C1ME12D03H	C1MF12C06H C1MF12D06H
		0 11112 120011		
NPN-NC	C1MC12D03H	C1MD12D06H	C1ME12D03H	C1MF12D06H
NPN-NC PNP-NO	C1MC12D03H C1MC12A03H	C1MD12D06H C1MD12A06H	C1ME12D03H C1ME12A03H	C1MF12D06H C1MF12A06H

General Data						
Housing size	M1:	2mm	M1	8mm		
Installation type	Shielded	Non-shielded	Shielded	Non-shielded		
Sensing distance(Sn: mm)	13mm adjustable	26mm adjustable	13mm adjustable	26mm adjustable		
Standard sensing object	Steel 12x12x1mm	Steel 18x18x1mm	Steel 12x12x1mm	Steel 18x18x1mm		
Effective sensing distance (Sr: mm)	90 11	0% of Sn	90 11	10% of Sn		

Assured operating distance(Sa: mm)	0 80% of Sn		0 80% of Sn	
Hysteresis	<1	5%	<15%	
Housing material	Nickel plated b	rass/PBT Resin	Nickel plated b	orass/PBT Resin
Operating voltage	10 30VDC		10	30VDC
Electrical Data				
Rated operating voltage	24VDC		24VDC	
Repeated accuracy	±10%		±10%	
Ripple	<10%		<10%	
No load current	10mA		10mA	
Max. Load current	200mA		200mA	
Leakage current	0.01mA		0.0	1mA
Voltage drop	<2VDC	<2VDC	<2VDC	<2VDC
Outital in a fee access	40011-	40011-	40011-	40011-

Leakage current	0.01mA		0.0	01mA	
Voltage drop	<2VDC	<2VDC	<2VDC	<2VDC	
Switching frequency	100Hz	100Hz	100Hz	100Hz	
Response time	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	
Rated insulation voltage	75VDC		75VDC		
Operating temperature	-25°C +70°C		-25°C +70°C		
Storage temperature	-40°C +80°C		-40°C	-40°C +80°C	
Temperature drift	<10%		<10%		
Power indicator	No		No		
Function indicator	Yellow LED		Yello	w LED	
Reverse polarity protection	Yes		Yes		

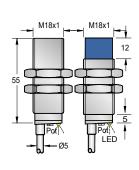
Reverse polarity protection	Yes	Yes	
Short-circuit protection	Yes	Yes	
Overload trip point	220mA	220mA	
Correction factors	Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/ copper approx. 0.4	Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/ copper approx. 0.4	
Mechanical Data			
Sensing surface material PBT		PBT	

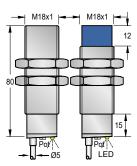
7 a. 7 approx. c. 107 copper approx. c. 1	7 ii. 7 ipproxi. c. 107 depper apprexi. c. 1					
Mechanical Data						
PBT	PBT					
IP67	IP67					
Shock, half-sinus, 30gn, 11ms	Shock, half-sinus, 30gn, 11ms					
55Hz, 1mm ampl., 3x30min.	55Hz, 1mm ampl., 3x30min.					
IEC 60947-5-2	IEC 60947-5-2					
2 nuts	2 nuts					
Euro-style 4 Pin M12 Connector	Euro-style 4 Pin M12 Connector					
Approx. 25g/523g	Approx. 31g/30g					
	PBT IP67 Shock, half-sinus, 30gn, 11ms 55Hz, 1mm ampl., 3x30min. IEC 60947-5-2 2 nuts Euro-style 4 Pin M12 Connector					



- M18mm diameter Sn=2 ... 8mm,shielded
- 2 ... 15mm,non-shielded

 Brass housing case
 PBT housing case
- Short circuit protection
 Overload protection
 Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function
- Cable version
- IP67 protection





(U	Ini	t٠ı	m	m
, ~				•••

		- 6 1 D2	ω.	LLD	
t: mm)					(Unit: mm

(6		(Unit: mm)		(Unit: mm)	
	(€	Shielded	Non-shielded	Shielded	Non-shielded
	NPN-NO	C1AC18C08A	C1AD18C15A	C1AE18C08A	C1AF18C15A
	NPN-NC	C1AC18D08A	C1AD18D15A	C1AE18D08A	C1AF18D15A
B 0	PNP-NO	C1AC18A08A	C1AD18A15A	C1AE18A08A	C1AF18A15A
Brass Case	PNP-NC	C1AC18B08A	C1AD18B15A	C1AE18B08A	C1AF18B15A
	NPN-NO+NC				
	PNP-NO+NC				
	NPN-NO	C1MC18C08A	C1MD18C15A	C1ME18C08A	C1MF18C15A
	NPN-NC	C1MC18D08A	C1MD18D15A	C1ME18D08A	C1MF18D15A
PBT Case	PNP-NO	C1MC18A08A	C1MD18A15A	C1ME18A08A	C1MF18A15A
FDI Case	PNP-NC	C1MC18B08A	C1MD18B15A	C1ME18B08A	C1MF18B15A
	NPN-NO+NC				
	PNP-NO+NC				

General Data							
Housing size	M18	8mm	M18mm				
Installation type	Shielded	Non-shielded	Shielded	Non-shielded			
Sensing distance(Sn: mm)	28mm adjustable	215mm adjustable	28mm adjustable	215mm adjustable			
Standard sensing object	Steel 24x24x1mm	Steel 45x45x1mm	Steel 24x24x1mm	Steel 45x45x1mm			
Effective sensing distance (Sr: mm)	90 110% of Sn		90 11	0% of Sn			
Assured operating distance(Sa: mm)	0 80	% of Sn	0 80	% of Sn			

Hysteresis	<15%	<15%
Housing material	Nickel plated brass/PBT Resin	Nickel plated brass/PBT Resin
Onesetine veltage	10 20\/DC(FF\/da ann also ha sustaminad)	10 20\/DC/FF\/de een elee he evetemin

Operating voltage	10 30VDC(55Vdc ca	an also be customized)	10 30VDC(55Vdc c	an also be customized)
Electrical Data				
Rated operating voltage	24\	/DC	24\	/DC
Repeated accuracy	±1	0%	±1	0%
Ripple	<1	0%	<1	0%
No load current	10	mA	10	mA
Max. Load current	200)mA	200)mA
Leakage current	0.0	1mA	0.0	1mA
Voltage drop	<2VDC	<2VDC	<2VDC	<2VDC
Switching frequency	100Hz	100Hz	100Hz	100Hz
Response time	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
Rated insulation voltage	75\	/DC	75\	/DC
Operating temperature	-25°C	+70°C	-25°C .	+70°C
Storage temperature	-40°C	+80°C	-40°C .	+80°C

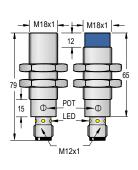
Switching frequency	100Hz	100Hz	100Hz	100Hz
Response time	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
Rated insulation voltage	75\	/DC	75	VDC
Operating temperature	-25°C	. +70°C	-25°C .	+70°C
Storage temperature	-40°C	. +80°C	-40°C .	+80°C
Temperature drift	<1	0%	<1	0%
Power indicator	N	lo	1	No
Function indicator	Yellov	v LED	Yello	w LED
Reverse polarity protection	Yes		Yes	
Short-circuit protection	Y	es	Y	es es
Overload trip point	220	lmA	220	DmA
Correction factors	Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appro		Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appr	pprox. 0.85/brass approx. 0.5/ ox. 0.4

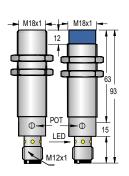
Correction factors	Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/ copper approx. 0.4	Fe37 steel=1/stainless steel approx. 0.85/brass approx. 0.5/ Al. Approx. 0.45/ copper approx. 0.4
Mechanical Data		
Sensing surface material	PBT	PBT
Protection	IP67	IP67
Shock rating	Shock, half-sinus, 30gn, 11ms	Shock, half-sinus, 30gn, 11ms
Vibration rating	55Hz, 1mm ampl., 3x30min.	55Hz, 1mm ampl., 3x30min.
EMC	IEC 60947-5-2	IEC 60947-5-2
Accessary	2 nuts	2 nuts
Connection	2m PVC cable (Ø5 3x0.5mm²/4x0.5mm²)	2m PVC cable (Ø5 3x0.5mm²/4x0.5mm²)
Weight	Approx. 110g/115g	Approx. 153g/144g



- M18mm diameter Sn=2 ... 8mm,shielded
- 2 ... 15mm,non-shielded

 Brass housing case
 PBT housing case
- Short circuit protection
 Overload protection
 Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function
- M12 connector version
- IP67 protection





			(Unit: mm)		(Unit: mn
	(€	Shielded	Non-shielded	Shielded	Non-shielded
	NPN-NO	C1AC18C08H	C1AD18C15H	C1AE18C08H	C1AF18C15H
	NPN-NC	C1AC18D08H	C1AD18D15H	C1AE18D08H	C1AF18D15H
	PNP-NO	C1AC18A08H	C1AD18A15H	C1AE18A08H	C1AF18A15H
Brass Case	PNP-NC	C1AC18B08H	C1AD18A15H	C1AE18B08H	C1AF18B15H
	NPN-NO+NC	CIACIOBUON	CIADIOBISH	CIAETOBOON	CIAFI6BISH
	PNP-NO+NC				
		C4MC49C0911	C4MD49C45H	C4ME40C00LL	C4ME40C4EU
	NPN-NO	C1MC18C08H	C1MD18C15H	C1ME18C08H	C1MF18C15H
	NPN-NC	C1MC18D08H	C1MD18D15H	C1ME18D08H	C1MF18D15H
PBT Case	PNP-NO	C1MC18A08H	C1MD18A15H	C1ME18A08H	C1MF18A15H
	PNP-NC	C1MC18B08H	C1MD18B15H	C1ME18B08H	C1MF18B15H
	NPN-NO+NC				
General Data	PNP-NO+NC				
Housing size		Mil	Bmm	M1	Bmm
		Shielded	Non-shielded	Shielded	Non-shielded
Installation type	>m. mam)		215mm adjustable	28mm adjustable	
Sensing distance(S		28mm adjustable Steel 24x24x1mm	,		215mm adjustable
Standard sensing of	-		Steel 45x45x1mm	Steel 24x24x1mm	Steel 45x45x1mm
Effective sensing d			0% of Sn		0% of Sn
	distance(Sa: mm)		% of Sn		% of Sn
Hysteresis			5%		5%
lousing material		<u>'</u>	rass/PBT Resin	<u>'</u>	rass/PBT Resin
Operating voltage		10 30VDC(55Vdc c	an also be customized)	10 30VDC(55Vdc c	an also be customized)
Electrical Data					
Rated operating vo	oltage		/DC		/DC
Repeated accuracy	у		0%	±1	0%
Ripple		<1	0%	<1	0%
No load current		10	mA	10	mA
Max. Load current		200)mA	200)mA
_eakage current		0.0	1mA	0.0	1mA
/oltage drop		<2VDC	<2VDC	<2VDC	<2VDC
Switching frequence	;y	100Hz	100Hz	100Hz	100Hz
Response time		1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
Rated insulation vo	oltage	75\	/DC	75\	/DC
Operating tempera	ture	-25°C .	+70°C	-25°C .	+70°C
Storage temperatu	re	-40°C .	+80°C	-40°C .	+80°C
Temperature drift		<1	0%	<1	0%
Power indicator		1	lo	N	lo
unction indicator		Yello	v LED	Yellov	w LED
Reverse polarity pr	otection	Y	es	Υ	es
Short-circuit protec	ction	Y	es	Y	es
Overload trip point		220	0mA	220)mA
Correction factors		Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appro	pprox. 0.85/brass approx. 0.5/	Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appro	pprox. 0.85/brass approx. 0.5/
Mechanical Data					
Sensing surface ma	aterial	P	зт	P	ВТ
Protection		IF	67	IP	67
Shock rating		Shock, half-sin	us, 30gn, 11ms	Shock, half-sin	us, 30gn, 11ms
/ibration rating		55Hz, 1mm a	mpl., 3x30min.	55Hz, 1mm a	mpl., 3x30min.
EMC			947-5-2		947-5-2
Accessary			uuts		nuts
Connection			M12 Connector		M12 Connector
Veight		<u> </u>	62g/60g	Approx.	



- M30mm diameter
 Sn=2 ... 20mm, shielded 2 ... 30mm,non-shielded
- Brass housing case PBT housing case
- Short circuit protection Overload protection Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function

(€

■ Cable version

Protection

EMC

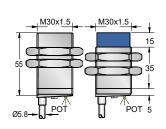
Accessary

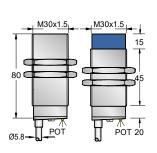
Weight

Connection

Shock rating Vibration rating

■ IP67 protection





- /	11	ni	t٠	m	m
١			٠.		

	Objected	Non-deleted d
nit: mm)		(Unit: mm)

		Shielded	Non-shielded	Shielded	Non-shielded
	NPN-NO	C1AC30C20A	C1AD30C30A	C1AE30C20A	C1AF30C30A
	NPN-NC	C1AC30D20A	C1AD30D30A	C1AE30D20A	C1AF30D30A
	PNP-NO	C1AC30A20A	C1AD30A30A	C1AE30A20A	C1AF30A30A
Brass Case	PNP-NC	C1AC30B20A	C1AD30B30A	C1AE30B20A	C1AF30B30A
	NPN-NO+NC				
	PNP-NO+NC				
	NPN-NO	C1MC30C20A	C1MD30C30A	C1ME30C20A	C1MF30C30A
	NPN-NC	C1MC30D20A	C1MD30D30A	C1ME30D20A	C1MF30D30A
	PNP-NO	C1MC30A20A	C1MD30A30A	C1ME30A20A	C1MF30A30A
PBT Case	PNP-NC	C1MC30B20A	C1MD30B30A	C1ME30B20A	C1MF30B30A
	NPN-NO+NC				
	PNP-NO+NC				
General Data	111111111111111111111111111111111111111				
Housing size		M30)mm	M30	mm
nstallation type		Shielded	Non-shielded	Shielded	Non-shielded
Sensing distance(Sn: mm)	220mm adjustable	230mm adjustable	220mm adjustable	230mm adjustable
Standard sensing		Steel 60x60x1mm	Steel 90x90x1mm	Steel 60x60x1mm	Steel 90x90x1mm
	distance (Sr: mm)	90 110		90 110	
	distance(Sa: mm)	0 809		0 80%	
-tysteresis	g distance(Oa. min)	<15		<15	
Housing material		Nickel plated br		Nickel plated br	
Operating voltage		10 30VDC(55Vdc ca		10 30VDC(55Vdc ca	
Electrical Data		10 00 12 0(00 140 00	arraise se edeternized)	10 00120(00140 04	n dioo be oddionii2dd)
Rated operating v	oltago	24V	/DC	24V	L DC
Repeated accurac	-	±10		±10	
Ripple	,у	<10		<10	
No load current		<10		<10	
Max. Load current	•	200		200	
		<0.0		<0.01	
Leakage current		<2VDC	<2VDC	<2VDC	<2VDC
Voltage drop		<2VDC 100Hz	<2VDC 100Hz	<2VDC 100Hz	100Hz
Switching frequen	су	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
Response time	- 14	75V		75V	
Rated insulation v	-		. +70°C	-25°C	
Operating tempera		-29 C -40°C		-23 C -40°C	
Storage temperatu	ıre				
Temperature drift		<10		<10	
Power indicator		N Valles		No.	
Function indicator		Yellow		Yellow	
Reverse polarity p		Ye		Ye	
Short-circuit prote		Ye		Ye	
Overload trip poin		220		2201	
Correction factors		Fe37 steel=1/stainless steel ap Al. Approx. 0.45/ copper appro	pprox. u.85/brass approx. 0.5/ ix. 0.4	Fe37 steel=1/stainless steel ap Al. Approx. 0.45/ copper approx	prox. u.85/brass approx. 0.5/ c. 0.4
Mechanical Data					
Sensing surface m	naterial	PE	ЗТ	PB	Т
				1	

IP67

Shock, half-sinus, 30gn, 11ms

55Hz, 1mm ampl., 3x30min.

IEC 60947-5-2

2 nuts

2m PVC cable (Ø5.8 3x0.5mm²/4x0.5mm²)

Approx. 231g/219g

IP67

Shock, half-sinus, 30gn, 11ms

55Hz, 1mm ampl., 3x30min.

IEC 60947-5-2

2 nuts

2m PVC cable (Ø5.8 3x0.5mm²/4x0.5mm²)

Approx. 217g/207g

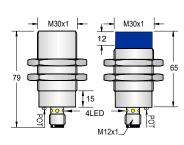


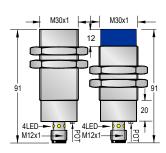
- reatures

 M30mm diameter

 Sn=2 ... 20mm, shielded
 2 ... 30mm, non-shielded

 Brass housing case
 PBT housing case
- Short circuit protection
 Overload protection
 Reverse-polarity protection
- NPN, PNP Output
- NO,NC,NO+NC Function
- M12 Connector version

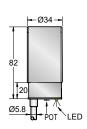


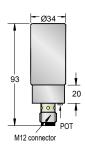


■ IP67 protection					
			(Unit, man)		(Units many
	C€	Shielded	(Unit: mm) Non-shielded	Shielded	(Unit: mm
	NPN-NO	C1AC30C20H	C1AD30C30H	C1AE30C20H	C1AF30C30H
	NPN-NC	C1AC30D20H	C1AD30D30H	C1AE30D20H	C1AF30D30H
	PNP-NO	C1AC30A20H	C1AD30A30H	C1AE30A20H	C1AF30A30H
Brass Case	PNP-NC	C1AC30B20H	C1AD30B30H	C1AE30B20H	C1AF30B30H
	NPN-NO+NC	CIACSUBZUIT	CIADSOBSOIT	CIALSOBZOII	CIAI 30B30II
	PNP-NO+NC				
		0.44400000014	04440000000	0445000011	0445000001
	NPN-NO NPN-NC	C1MC30C20H	C1MD30C30H	C1ME30C20H	C1MF30C30H
		C1MC30D20H	C1MD30D30H	C1ME30D20H	C1MF30D30H
PBT Case	PNP-NO	C1MC30A20H	C1MD30A30H	C1ME30A20H	C1MF30A30H
	PNP-NC	C1MC30B20H	C1MD30B30H	C1ME30B20H	C1MF30B30H
	NPN-NO+NC				
	PNP-NO+NC				
General Data					
Housing size		M30	0mm	M30	Omm .
Installation type		Shielded	Non-shielded	Shielded	Non-shielded
Sensing distance(Sn: mm)	220mm adjustable	230mm adjustable	220mm adjustable	230mm adjustable
Standard sensing	object	Steel 60x60x1mm	Steel 90x90x1mm	Steel 60x60x1mm	Steel 90x90x1mm
Effective sensing of	distance (Sr: mm)	90 110	0% of Sn	90 110	0% of Sn
Assured operating	distance(Sa: mm)	0 80	% of Sn	0 80	% of Sn
Hysteresis		<1:	5%	<1	5%
Housing material		Nickel plated b	ass/PBT Resin	Nickel plated b	rass/PBT Resin
Operating voltage		10 30VDC(55Vdc ca	an also be customized)	10 30VDC(55Vdc ca	an also be customized)
Electrical Data					
Rated operating vo	oltage	24\	'DC	24\	/DC
Repeated accurac		±11	0%	±1.	0%
Ripple	,	<1		<1	0%
No load current		<10	mA	<10)mA
Max. Load current		200	mA	200	0mA
Leakage current		<0.0			1mA
Voltage drop		<2VDC	<2VDC	<2VDC	<2VDC
Switching frequence	CV .	100Hz	100Hz	100Hz	100Hz
Response time	· y	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
Rated insulation vo	oltage	75\			/DC
Operating tempera			. +70°C		+70°C
Storage temperatu			. +80°C		+80°C
<u> </u>	ile .				
Temperature drift		<1			0%
Power indicator			0		lo
Function indicator		Yellov			v LED
Reverse polarity pr		Y			es
Short-circuit protect		Y			es
Overload trip point		220		220	
Correction factors		Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appro	prox. 0.85/brass approx. 0.5/ x. 0.4	Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper appro	pprox. 0.85/brass approx. 0.5/ ox. 0.4
Mechanical Data					
Sensing surface m	aterial	PE	ВТ	PI	ЗТ
Protection		IP	67	IP	67
Shock rating		Shock, half-sin	us, 30gn, 11ms	Shock, half-sin	us, 30gn, 11ms
Vibration rating		55Hz, 1mm ai			mpl., 3x30min.
3			947-5-2		947-5-2
EMC		I —		:_0 00	
		2 n	uts	2 n	iuts
EMC Accessary Connection		2 n Euro-style 4 Pin			M12 Connector



- Ø34mm diameter Sn=2 ... 25mm,shielded 2 ... 35mm,non-shielded
- PBT housing case
- Short circuit protection
 Overload protection
 Reverse-polarity protection
- NPN, PNP Output
- NO,NC Function,NO+NC Function
- Cable connector version
 Connector version





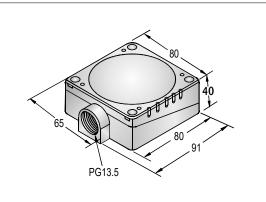
Connector ve				M12 CON	lector
■ IP67 protectio	on				
			(Unit: mm)		(Unit: mm)
	(€	Shielded	Non-shielded	Shielded	Non-shielded
	NPN-NO				
	NPN-NC				
	PNP-NO				
Brass Case	PNP-NC				
	NPN-NO+NC				
	PNP-NO+NC				
	NPN-NO	C1NC34C25A	C1ND34C35A	C1NE34C25H	C1NF34C35H
	NPN-NC	C1NC34D25A	C1ND34D35A	C1NE34D25H	C1NF34D35H
	PNP-NO	C1NC34A25A	C1ND34A35A	C1NE34A25H	C1NF34A35H
PBT Case	PNP-NC	C1NC34B25A	C1ND34B35A	C1NE34B25H	C1NF34B35H
	NPN-NO+NC				
	PNP-NO+NC				
General Data					
Housing size		Ø34	mm	Ø34	4mm
Installation type		Shielded	Non-shielded	Shielded	Non-shielded
Sensing distance(S	Sn: mm)	2 25mm adjustable	2 35mm adjustable	2 25mm adjustable	2 35mm adjustable
Standard sensing		Steel 75x75x1mm	Steel 105x105x1mm	Steel 75x75x1mm	Steel 105x105x1mm
Effective sensing of	distance (Sr: mm)	90 110	% of Sn	90 11	0% of Sn
Assured operating	distance(Sa: mm)	0 80%	6 of Sn	0 80	% of Sn
Hysteresis	, ,	<15	;%	<1	5%
Housing material		PBT F	Resin	PBT	Resin
Operating voltage		10 30VDC(55Vdc ca	n also be customized)	10 30VDC(55Vdc c	an also be customized)
Electrical Data				,	
Rated operating vo	oltage	24V	DC	24\	/DC
Repeated accurac		±10	1%	±1	0%
Ripple		<10)%	<1	0%
No load current		<10mA/10 30VDC,	<20mA/10 55VDC	<10mA/10 30VDC	, <20mA/10 55VDC
Max. Load current		200r	mA	200	0mA
Leakage current		0.01	mA	0.0	1mA
Voltage drop		<2VDC	<2VDC	<2VDC	<2VDC
Switching frequence	су	100Hz	100Hz	100Hz	100Hz
Response time	•	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms	1.5ms/1.5ms
Rated insulation vo	oltage	75V	DC	75\	/DC
Operating tempera		-25°C	+70°C	-25°C .	+70°C
Storage temperatu	ire	-40°C	+80°C	-40°C .	+80°C
Temperature drift		<10)%	<1	0%
Power indicator		No	5	1	lo
Function indicator		Yellow	LED	Yello	w LED
Reverse polarity pr	rotection	Ye	·s	Υ	es
Short-circuit protect		Ye			es
Overload trip point	:	220r	mA	220	0mA
Correction factors		Fe37 steel=1/stainless steel ap Al. Approx. 0.45/ copper approx		Fe37 steel=1/stainless steel a Al. Approx. 0.45/ copper approx.	pprox. 0.85/brass approx. 0.5/
Mechanical Data		тигтриях. от тот осррен арриел		ипрргом. о. тол осерног арри	5.1
Sensing surface m	aterial	PB	т	P	ВТ
Protection		IP6	57	IF	67
Shock rating		Shock, half-sinu	us, 30gn, 11ms	Shock, half-sin	us, 30gn, 11ms
Vibration rating		55Hz, 1mm an			mpl., 3x30min.
EMC		IEC 609	· · · · · · · · · · · · · · · · · · ·		947-5-2
		Brack			ckets
Accessarv					
Accessary Connection		2m PVC Cable(Ø5.83		Furo-style 4 Pir	M12 Connector



- Features

 80x80x40mm diameter

 Sn=2 ... 40mm,shielded
 2 ... 50mm,non-shielded
- ABS housing case
 Short circuit protection
 Overload protection Reverse-polarity protection
- NPN, PNP Output
- NO,NC Function,NO+NC Function
- PG connector version
 IP67 protection



		(Unit: mm)	
	C€	Shielded	Non-shielded
	NPN-NO	Snielded	Non-snielded
	NPN-NC		
Brass Case	PNP-NO		
	PNP-NC		
	NPN-NO+NC		
	PNP-NO+NC		
	NPN-NO	C1EE80C40T	C1EF80C50T
	NPN-NC	C1EE80D40T	C1EF80D50T
ABS Case	PNP-NO	C1EE80A40T	C1EF80A50T
	PNP-NC	C1EE80B40T	C1EF80B50T
	NPN-NO+NC		
	PNP-NO+NC		
General Data			
Housing size		80x80	0x40mm
Installation type		Shielded	Non-shielded
Sensing distance(S	n: mm)	40mm	50mm
Standard sensing o	bject	Steel 120x120x1mm	Steel 150x150x1mm
Effective sensing di	stance (Sr: mm)	90 11	10% of Sn
Assured operating	distance(Sa: mm)	0 80	0% of Sn
Hysteresis		<	15%
Housing material		ABS	Resin
Operating voltage		10 30VDC(55Vdc o	can also be customized)
Electrical Data		,	•
Rated operating vo	Itage	24	VDC
Repeated accuracy			10%
Ripple			10%
No load current			C, <20mA/10 55VDC
Max. Load current			0mA
			BmA
Leakage current			1
Voltage drop		<2VDC	<2VDC
Switching frequency	y	100Hz	100Hz
Response time		1.5ms/1.5ms	1.5ms/1.5ms
Rated insulation vo			VDC
Operating temperat			+70°C
Storage temperatur	е		+80°C
Temperature drift			10%
Power indicator			No
Function indicator		Yello	w LED
Reverse polarity pro	otection	,	/es
Short-circuit protect	tion	,	/es
Overload trip point			0mA
Correction factors		Fe37 steel=1/stainless steel a	approx. 0.85/brass approx. 0.5/ ox. 0.4
Mechanical Data		Ai. Approx. 0.45/ copper appr	OA. 0T
Sensing surface ma	aterial		MBS
Protection			P67
Shock rating			nus, 30gn, 11ms
Vibration rating			ampl., 3x30min.
			947-5-2
EMC		IEC 60	
Accessary			/
Connection			h PG13.5 Connector
Weight		Appro	ox. 262g