



Micro Detectors

Italian Sensors Technology



M30 Cylindrical Ultrasonic Sensor UT



Ultrasonic Sensors
Catalogue

Cod. CAT3EUT1376502

Datasheet - UT - English - Ed.02/2013





Products

M30
with Teach-in button

Series UT

M30
with Teach-in button



www.microdetectors.com



market sectors and applications

construction equipments
storage systems
ceramic industry
waste collecting systems
general manufacturing



features

M30 ultrasonic sensor with standard housing and with large front with high performances and high sensing distances

Models with both analog and digital output to streamline the codes

Adjustable hysteresis function: models with double digital programmable output specific for level detection

Models with voltage or current output: programmable slope to optimize resolution

Adjustable working area (window mode or object mode) by Teach-in button on all models for a quick and easy installation

Two multifunction LED indicators: orange LED for adjustment procedure and output state and green LED for target alignment

Temperature compensation on all working range

approvals



protection degree

IP67





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UT M30 cylindrical ultrasonic sensor

UT1 products are M30 ultrasonic sensors with standard housing that work in **direct diffuse mode in a working range of 250 mm ÷ 3,500 mm.**

UT2 ones are ultrasonic sensors characterized by M30 housing and large front that work in **direct diffuse mode reaching 6,000 mm of maximum distance with a transducer of only 38.8 mm of diameter.**

The products have a compact plastic housing and they are available with both cable exit and M12 plug exit. Through the use of Teach-in button it is possible to set the working distance, the output status (NO/NC) and the slope of analog output and to change function on the model with hysteresis function. Two LEDs visible through the transparent cable and plug holder, indicates the output, the Teach-in status (orange LED) and the echo detection (green LED), making easier the alignment with the target. All products of UT series are temperature compensated, to guarantee a reliable detection on all temperature working range.

pack content

Installation manuals (English + italian) : CAT8BUT1260401 (UT1) and CAT8BUT1364901 (UT2).

n° 2 plastic nuts

n° 2 flexible washers

further commercial and technical documents available

Datasheet (Italian CAT3IUT1370502)

High resolution pictures

Application note:

- coils distance detection (English: CAT3EUT1260801, Italian: CAT3IUT1260401 and Spanish: CAT3SUT1261601)
- filling level detection in silos for liquids and powders (English: CAT3EUT1261001, Italian: CAT3IUT1260901 and Spanish: CAT3SUT1261701)
- presence and height detection of plants in agricultural machines (English: CAT3EUT1261201, Italian CAT3IUT1261101 and Spanish: CAT3SUT1261801)

customization already tested

-

minimum quantity that can be ordered

1 piece

[illegible]

(*) The two functions switching is possible pressing the Teach-in button.

available models (cULus certified)

dimension	function	max. distance	output	analogue output 0...10 V	analogue output 4...20 mA	1 x PNP NO/NC	1 x NPN NO/NC	2 x PNP (adjustable hysteresis MD std. window)	2 x NPN (adjustable hysteresis MD std. window)	1 x PNP NO/NC + 4...20 mA	1 x NPN NO/NC + 4...20 mA	1 x PNP NO/NC + 0...10 V	1 x NPN NO/NC + 0...10 V
M30	direct diffuse	3.500 mm	M12 plug	UT1B/E1-0EUL	UT1B/E2-0EUL	UT1B/EP-0EUL	UT1B/EN-0EUL	UT1B/EW-0EUL	UT1B/EM-0EUL	UT1B/E6-0EUL	UT1B/E4-0EUL	UT1B/E7-0EUL	UT1B/E9-0EUL
			cable	UT1B/E1-0AUL	UT1B/E2-0AUL	UT1B/EP-0AUL	UT1B/EN-0AUL	UT1B/EW-0AUL	UT1B/EM-0AUL	UT1B/E6-0AUL	UT1B/E4-0AUL	UT1B/E7-0AUL	UT1B/E9-0AUL
		6.000 mm	M12 plug	-	-	-	-	UT2F/EW-0EUL	UT2F/EM-0EUL	UT2F/E6-0EUL	UT2F/E4-0EUL	UT2F/E7-0EUL	UT2F/E9-0EUL
			cable	-	-	-	-	UT2F/EW-0AUL	UT2F/EM-0AUL	UT2F/E6-0AUL	UT2F/E4-0AUL	UT2F/E7-0AUL	UT2F/E9-0AUL

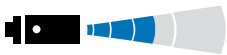
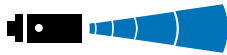


Products

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technical specifications (cULus certified models)

according to IEC EN 60947-5-2 and IEC EN 60947-5-7

		
models	UT1B/E*-0*UL	UT2F/E*-0*UL
		
nominal sensing distance S_n	3,500 mm ⁽¹⁾	6,000 mm ⁽²⁾
minimum operating distance (blind zone)	250 mm	350 mm
beam angle	$\pm 7^\circ$	$15^\circ \pm 2^\circ$
switching frequency (digital output)	2 Hz	1 Hz
response time (digital output)	250 ms	500 ms
differential travel	1% of full scale value	
repeat accuracy	1% of full scale value	0.5% of full scale value
linearity error	1% of full scale value	
operating temperature	$-20^\circ \dots +70^\circ\text{C}$	
temperature compensation	yes	
thermal drift	$\leq 7\%$	$\pm 5\%$
rated operational voltage U_e	12..30 Vdc; 15.. 30 Vdc for model with analog voltage output (0-10 V)	
maximum ripple content	5%	
leakage current	$\leq 10 \mu\text{A}$ ($V_{dc} = 30 \text{ Vdc}$)	
output voltage drop	2.2 V max ($I_L = 100\text{mA}$)	
No-Load supply current	$\leq 50 \text{ mA}$	
maximum load current (digital output)	100 mA	
minimum load resistance (analog voltage output)	3 k Ω	
sensitivity adjustment	Teach-in button	
supply electrical protections	polarity reversal, transient	
digital output electrical protections	short circuit (auto reset), overvoltage pulses	
EMC	Conforming to the EC Directive 2004/108/EC requirements according to EN 60947-5-2	
electrical protections (analogue output)	overvoltage pulses	
protection degree	IP67 (EN 60529) NEMA 4X ⁽³⁾	IP67 (EN 60529) ⁽³⁾
housing material	PBT	
active head material	epoxy-glass resin	
weight	104 g (plug exit) - 167 g (cable exit)	130 g (plug exit) - 199 g (cable exit)
storage temperature	$-35^\circ \dots +70^\circ\text{C}$ (without freeze)	

⁽¹⁾ Metallic target 200 x 200 mm

⁽²⁾ Metallic target 400 x 400 mm

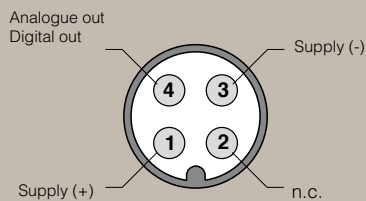
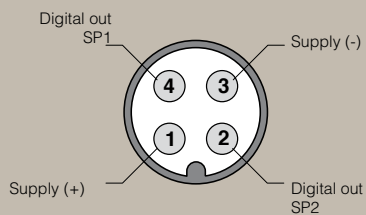
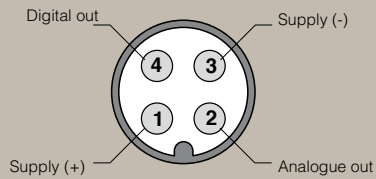
⁽³⁾ Protection granted only by plug mounted in a correct way

BN	brown
BU	blue
BK	black
WH	white

electrical diagrams of connections

M12

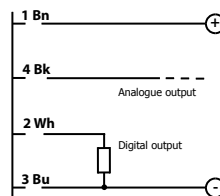
UT*/E4-0EUL
UT*/E6-0EUL
UT*/E7-0EUL
UT*/E9-0EUL



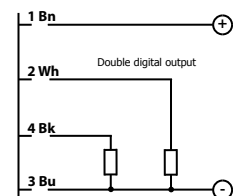
UT*/EM-0EUL
UT*/EW-0EUL

UT1*/E1-0EUL
UT1*/E2-0EUL
UT1*/EP-0EUL
UT1*/EN-0EUL

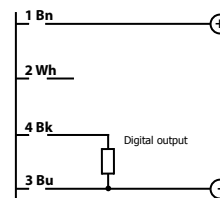
PNP NO/NC + analogue output



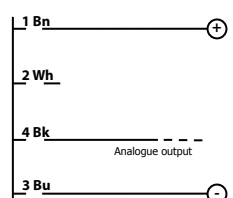
models with double PNP output



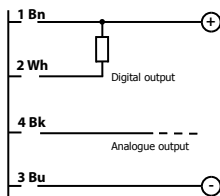
models with PNP NO/NC single digital output



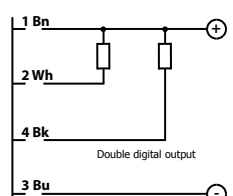
models with single analogue output



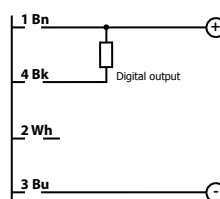
NPN NO/NC models + analogue output



models with NPN double digital outputs



models with NPN NO/NC single digital output





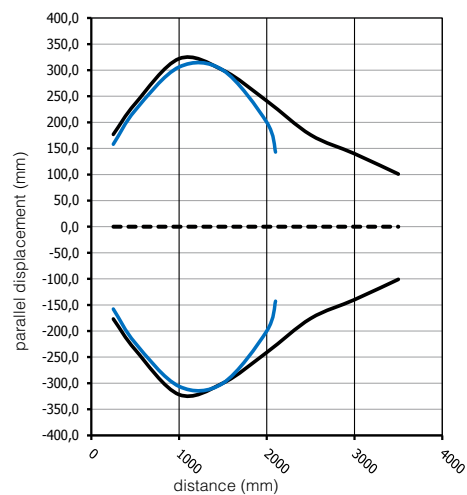
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response diagram

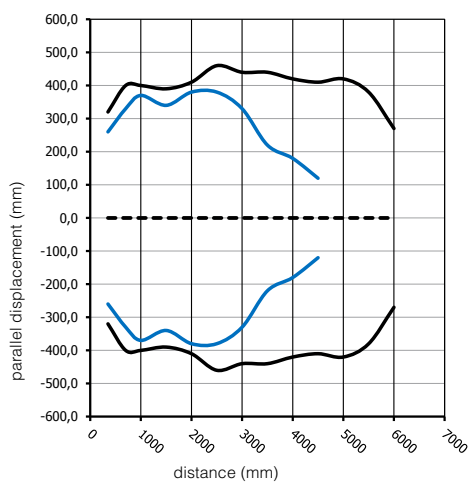
UT1B/**_**



— Target 200 x 200 mm

— Barra Ø 25 mm

UT2F/**_**

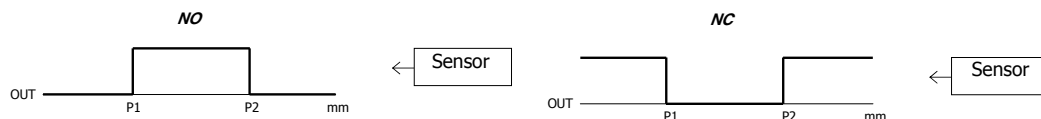


— Target 400 x 400 mm

— Target 200 x 200 mm

available outputs

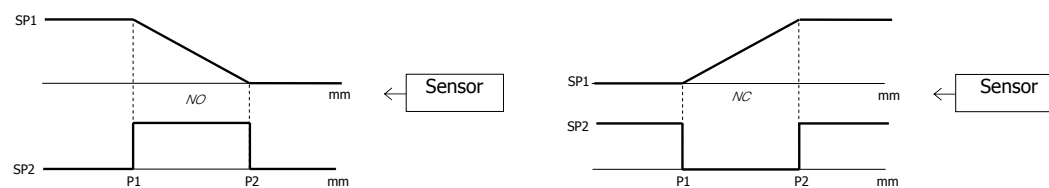
models with single digital output



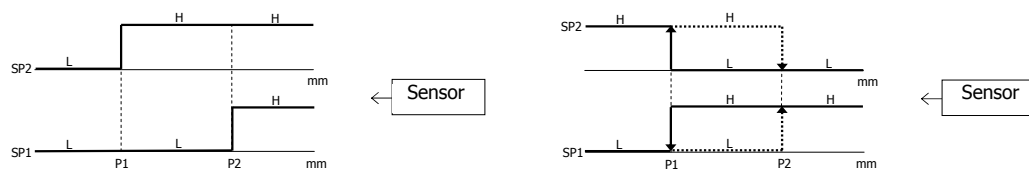
models with single analogue output



models with digital output + analogue output^(*)



models with double output, hysteresis + standard window^(**)



^(*) Suitable, also, as single model output.

^(**) In the double digital output model with the standard window and adjustable hysteresis functions if the target is removed from sensor detection range, the output state switches. These models are not foreseen with NO/NC function.



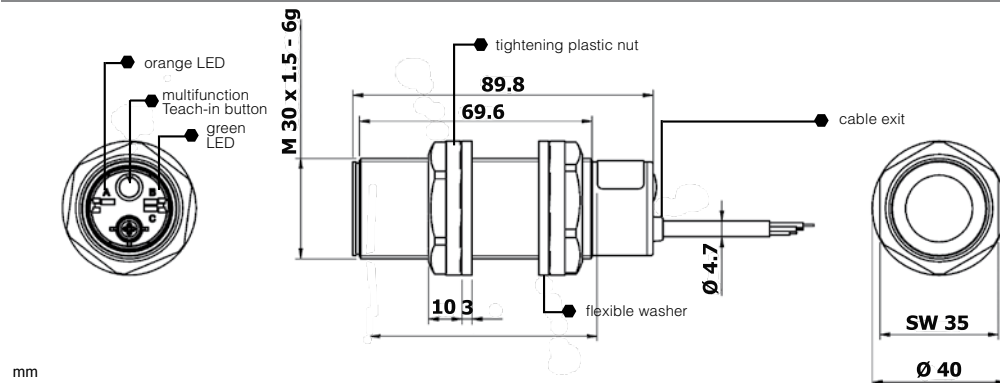
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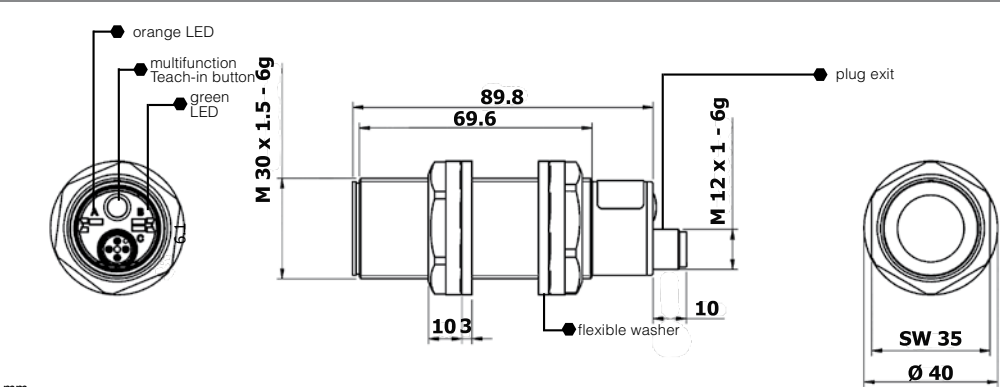
dimensions

UT1B/**-AUL (cable)



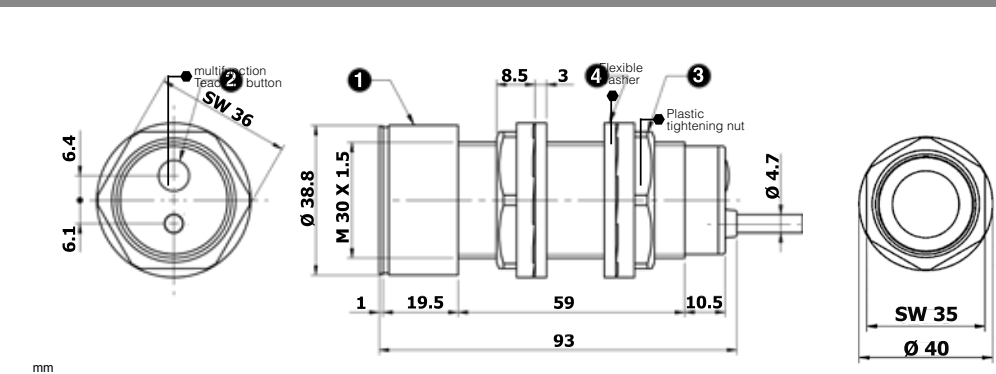
mm

UT1B/**-EUL (plug)



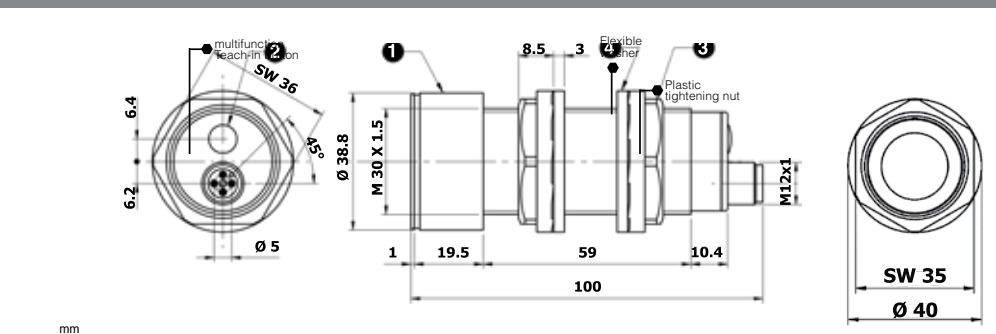
mm

UT2F/**-AUL (cable)



mm

UT2F/**-EUL (plug)



mm

accessories

code	description
ST 13	Metal swing bracket with threaded holes for M30 ultrasonic sensors. Mounting with M6 screws from beneath the surface or through the wall
ST 14	Plastic swing bracket for M30 ultrasonic sensor. Mounting with M6 screws from upper side
ST 30-A	Metal axial mount bracket for M30 ultrasonic sensors. Mounting with M5 screws
ST 30-C	Metal right angle mount bracket for M30 ultrasonic sensors. Mounting with M5 screws
ST 30-D-U	Beam deflector bracket for M30 ultrasonic sensors
ST 30-D-U-F	Focusing beam deflector bracket for M30 ultrasonic sensors
ST 55-U	Plastic M30 ultrasonic sensors beam deflector
CD12/0B-***A1US	Connectors with PVC cable and cCSAus certification. Axial
CD12/0B-***C1US	Connectors with PVC cable and cCSAus certification. Right angle
CD12/0B-***A5US	Connectors with PUR cable and cCSAus certification. Axial
CD12/0B-***C5US	Connectors with PUR cable and cCSAus certification. Right angle

***= 050 (5 m) / ***= 100 (10 m) / ***= 150 (15 m)



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