Micro Detectors

Italian Sensors Technology

M30 Cylindrical Ultrasonic Sensor UT1

Ultrasonic Sensors Catalogue

Cod. CAT3EUT1260501
Datasheet - UT1 - English - Ed.01/2012

Products

M30
with Teach-in button

Series
UT1

M30
with Teach-in button

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market sectors and applications

construction equipments
storage systems
ceramic industry
waste collecting systems
general manufacturing

features

M30 compact ultrasonic sensors with high performances and high sensing distances

Models with adjustable digital output: models with two programmable outputs and with single output

Adjustable hysteresis output: model with double digital programmable designed 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: Teach-in function and NO/NC selection (orange) and echo detection (green)

Temperature compensation on all working range

approvals

CE cULus

protection degree

IP67





Products

M30
with Teach-in button

UT1 M30 cylindrical Ultrasonic Sensor

UT1 M30 ultrasonic sensor is a **direct diffuse sensor with a working range from 250 mm to 3,500 mm.** The product has a compact plastic housing and it is available with both cable exit and M12 plug exit. Through the Teach-in button it is possible to adjust the sensing distance, the output status (NO/NC) and the analogic output slope. 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 the UT1 family is temperature compensated, for granting a reliable detection on all temperature working range.

pack content

Installation manual (English + italian) : CAT8BUT1260401

n° 2 plastic nuts

n° 2 flexible washers

further commercial and technical documents available

Datasheet (Italian CAT3IUT1260401 and Spanish CAT3SUT1260601)

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)

custom models already tested

-

minimum quantity that can be ordered

1 piece

code description

UT	1	B	/	E	1	-	0	E	UL

- **UT** M30 ultrasonic sensor
- **1** Standard body lenght
- **B** 250 - 3,500 mm direct diffuse
- **E** Sensitivity adjustment and NO/NC selection by Teach-in button
- **1** 0...10 V single voltage analogue output (*)
- **2** 4...20 mA single current analogue output (*)
- **P** PNP NO/NC single digital output (*)
- **N** NPN NO/NC single digital output (*)
- **W** PNP - NO/NC two digital outputs with standard window and adjustable hysteresis functions (**)
- **M** NPN - NO/NC two digital outputs with standard window and adjustable hysteresis functions (**)
- **5** PNP - NO/NC two digital outputs coded window output (***)
- **3** NPN - NO/NC two digital outputs coded window output (***)
- **6** PNP - NO/NC digital output + 4 ... 20 mA current analogue output (*)
- **4** NPN - NO/NC digital output + 4 ... 20 mA current analogue output (*)
- **7** PNP - NO/NC digital output + 0 ... 10 V voltage analogue output (*)
- **9** NPN - NO/NC digital output + 0 ... 10 V voltage analogue output (*)
- **0** Plastic housing
- **E** M12 plug cable exit
- **A** 2 m PVC Axial cable exit
- **UL** with cULus certification

(*) Sensing distance, NO/NC selection and analogue output slope adjustment takes possible by Teach-in button

(**) The two functions switching is possible pressing the Teach-in button. The state choice may be done by logic reversing during the sensor check (e.g. PLC)

(***) Specific model for detecting moving targets along the sensor axis

models

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 NO/NC (MD double coded output)	2 x NPN NO/NC (MD double coded output)	2 x PNP NO/ NC (adjustable hysteresis MD stnd. window)	2 x NPN NO/NC (adjustable hysteresis MD stnd. 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/E5-0EUL	UT1B/E3-0EUL	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/E5-0AUL	UT1B/E3-0AUL	UT1B/EW-0AUL	UT1B/EM-0AUL	UT1B/E6-0AUL	UT1B/E4-0AUL	UT1B/E7-0AUL	UT1B/E9-0AUL

technical specifications

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

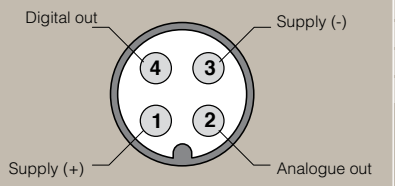
models	UT1B/E*-0*UL
	
nominal sensing distance Sn	3,500 mm (1)
minimum operating distance (blind zone)	250 mm
beam angle	12° ± 2°
switching frequency (digital output)	2 Hz
response time (digital output)	250 ms
differential travel H	0,5%
repeat accuracy	0,2%
linearity error	0,5%
operating temperature	-20° ...+70°C
temperature compensation	yes
thermal drift of Sr	5%
rated operational voltage Ue	12 - 30 Vcc; 15 - 30 Vdc: voltage supply for voltage analogue output (0-10 V)
maximum ripple content	5%
leakage current	≤ 10 µA (Vdc max)
output voltage drop	2.2 V max (IL=100mA)
No-Load supply current	50 mA max
maximum load current (digital output)	100 mA
minimum load resistance	3 k Ω (analogue voltage drop)
sensitivity adjustment	Teach-in button
supply electrical protections	polarity reversal, overvoltage pulses
digital output electrical protections	short circuit, 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(2)
housing material	PBT
active head material	epoxy-glass resin
weight	90 g (plug exit) - 150 g (cable exit)
storage temperature	-35°...+70°C (without freeze)

(1) Metallic target 200 x 200 mm
(2) Protection granted only by plug mounted in a correct way

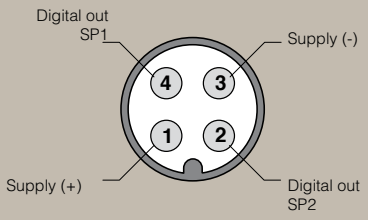
BN	brown
BU	blue
BK	black
WH	white

electrical diagrams of connections

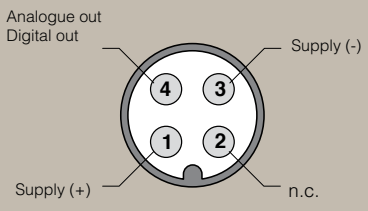
M12



UT1*/E4-0EUL
UT1*/E6-0EUL
UT1*/E7-0EUL
UT1*/E9-0EUL

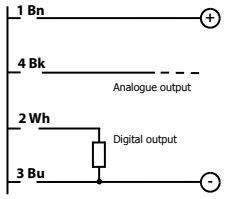


UT1*/E3-0EUL
UT1*/E5-0EUL
UT1*/EM-0EUL
UT1*/EW-0EUL

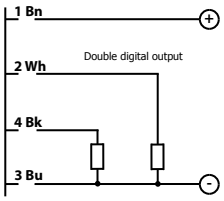


UT1*/E1-0EUL
UT1*/E2-0EUL
UT1*/EP-0EUL
UT1*/EN-0EUL

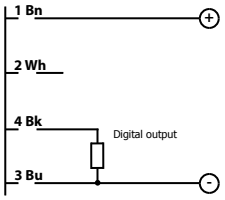
PNP NO/NC + analogue output



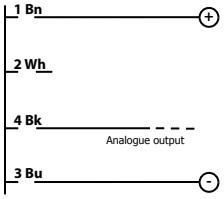
models with double PNP output



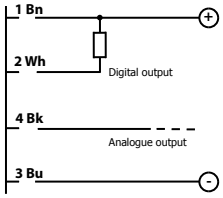
models with PNP NO/NC single digital output



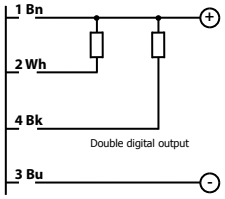
models with single analogue output



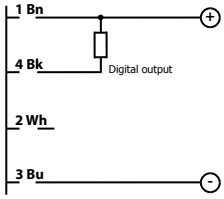
NPN NO/NC models + analogue output



models with NPN double digital outputs

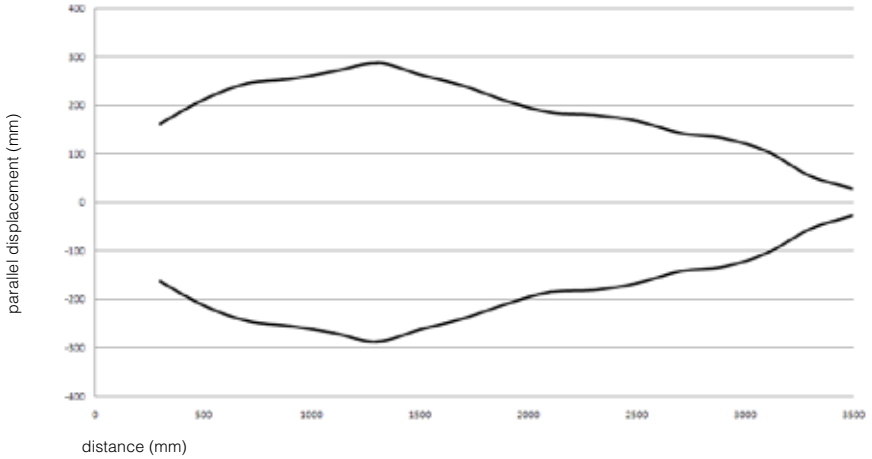


models with NPN NO/NC single digital output



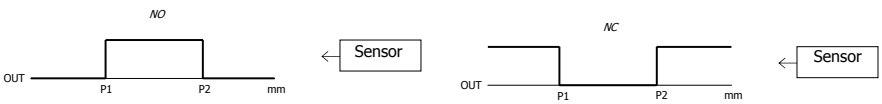
response diagram

UT1B/**-**



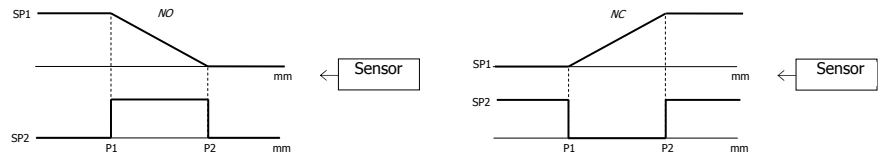
available outputs

models with single digital output

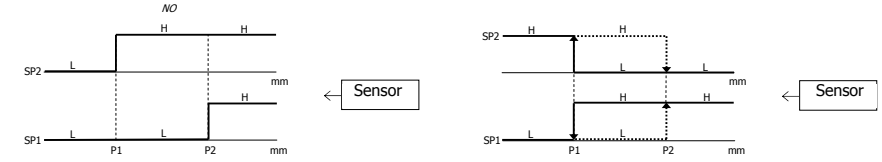


models with single analogue output

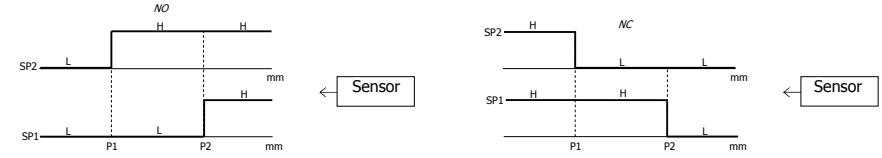
models with digital output + analogue output (*)



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



models with double digital output, coded window (***)



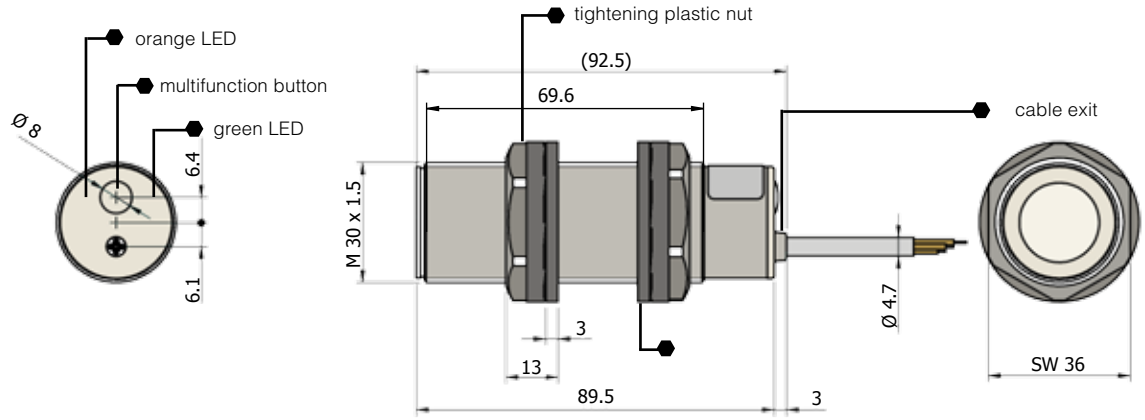
(*) Suitable, also, as single model output.

(**) 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 forseen with NO/NC function, which can be obtained through a logic reverse by control system (e.g. PLC)

(***) The double digital output model with the coded window is, particularly, designed for the target detection, moving along the longitudinal axis sensor: even removing the target, the sensor remains in the last stored ouput state, not receiving any echoes.

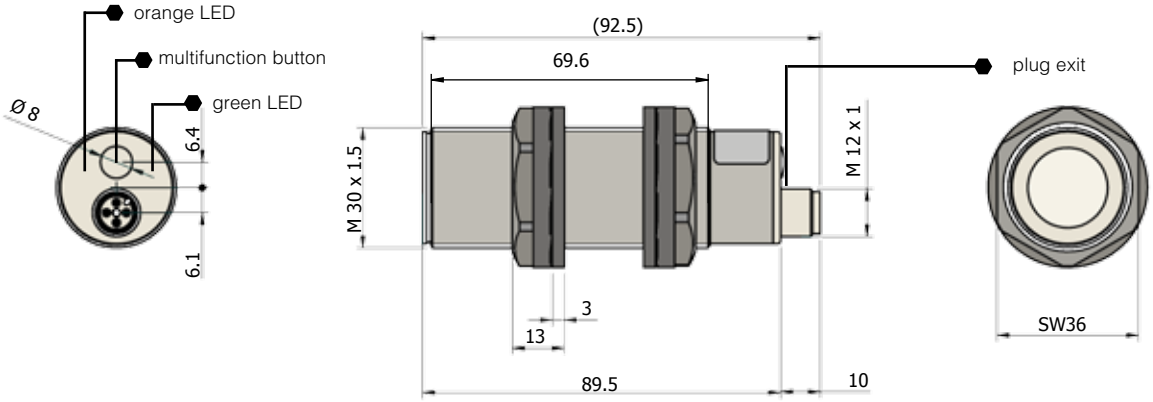
dimensions

UT1B/**-** (cable)



mm

UT1B/**-** (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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