



# Micro Detectors

Italian Sensors Technology



Application:  
Coils distance detection

UT1 - M30 Ultrasonic Sensors



**Ultrasonic Sensors**

Application note

CAT3EUT1260801

Application note - UT1 - English - Ed.01/2012



## MARKET SECTORS

Paper factories

On the machines for "tissue" manufacturing and packaging, the production process includes the unwinding, wrapping, storage, cutting through different tools realizing packaging, wrapping, bagging, handle and many other diverter. The start up phase of the "unwinding", needs the use of large size "tissue" coils, where it is mandatory the coil diameter check, for replacing the reel once it starts to be over.

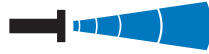
## PROBLEM DESCRIPTION

The ideal solution consists in using the Ultrasonic Sensor of the series UT1, which being completely independent from the type, color and shape of the used material, can grant excellent detecting performances. The UT1 sensor measures the distance from the coil, while uncoiling, reduces its diameter. The analog output, either current or voltage, provides a signal proportional to the detected distance, that means, from an application point of view, it checks the variation of the coil diameter

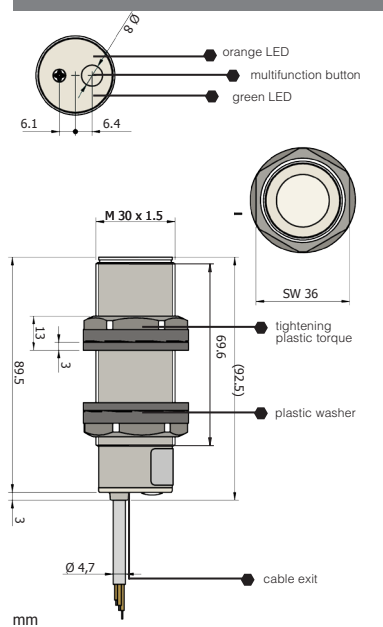
## GENERAL DESCRIPTION

- 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 eco detection (green)
- Temperature compensation on all working range

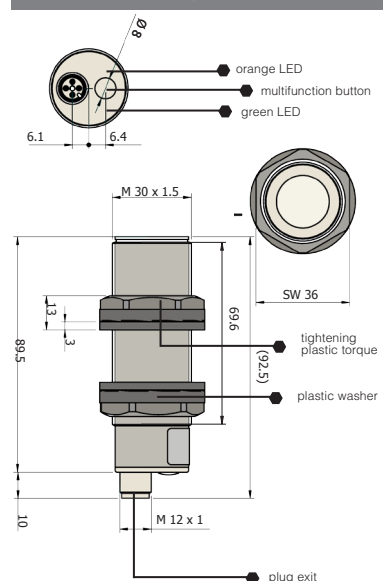
## TECHNICAL SPECIFICATIONS & DIMENSIONS

models	UT1B/E*-0*UL
	
Nominal sensing distance Sn	3,500 mm <sup>(1)</sup>
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 Ud	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 <sup>(2)</sup>
housing material	PBT
active head material	epoxy-glass resin
weight	90 g (plug exit) - 160 g (cable exit)
storage temperature	-35° ...+70°C (without freeze)

### UT1B/\*\*\_\*\* (cable)



### UT1B/\*\*\_\*\* (plug)



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<sup>(1)</sup> Metallic target 200 x 200 mm

<sup>(2)</sup> Protection granted only by plug mounted in a correct way