

## Italian Sensors Technology



Application: Coils distance detection

UT1 - M30 Ultrasonic Sensors

Utrasonic Sensors Application note CAT3EUT1260801 Application note - UT1 - English - Ed.01/2012





PROBLEM DESCRIPTION

GENERAL DESCRIPTION

TECHNICAL SPECIFICATIONS & DIMENSIONS

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M.D. Micro Detectors S.p.A. con Unico Socio

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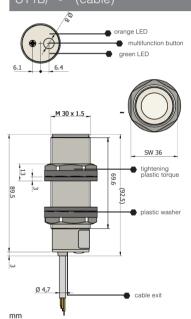
On the machines for "tissue" manufacturing and packaging, the production process includes the unwinding, wrapping, storage, cutting through different tools realizing packaging, wrapping, bagging, handle and many other diverter. The start up phase of the "unwinding", needs the use of large size "tissue"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

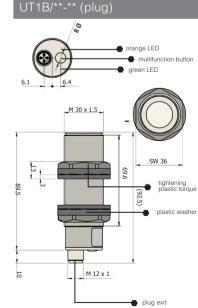
The ideal solution consists in using the Ultrasonic Sensor of the series UT1, which being completely independent from the type, color and shape of the used material, can grant excellent detecting performances. The UT1 sensor measures the distance from the coil, while uncoiling, reduces its diameter. 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

- 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

Paper factories

Nominal sensing distance Sn3,500 mm (1)minimum operating distance (blind zone)250 mmbeam angle12° ± 2°switching frequency (digital output)2 Hzresponse time (digital output)2 Hzdifferential travel H0,5%repeat accuracy0,2%inearity error0,5%operating temperature-20°+70°Ctemperature compensationyesthermal drift of Sr5%rated operational voltage Ue12 - 30 Vcc; 15 - 30 Vdc: voltage supply for voltage analogue output (0-10 V)maximum ripple content5%leakage currentS10 µA (Vdc max)output voltage drop Ud2.2 V max (IL=100mA)No-Load supply current50 mA maxmaximum load current (digital output)100 mAminimum load resistance3 k Ω (analogue voltage drop)sensitivity adjustmentshort circuit, overvoltage pulsescircuit protectionsshort circuit, overvoltage pulsescircuit protectionsshort circuit, overvoltage pulseselectrical protections (analogue output)overvoltage pulsesprotection degreeIP67 (EN 60529) NEMA 4X/9'housing materialepoxy-glass resinweight90 g (plug exit) - 160 g (cable exit)storage temperature-35°+70°C (without freeze)	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%     inearity error   0,5%     operating temperature   -20° +70°C     temperature compensation   yes     thermal drift of Sr   5%     rated operational voltage Ue   12 - 30 Vdc: 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 current (digital output)   Teach-in button     supply electrical protections   short circuit, overvoltage pulses     digital output electrical protections   short circuit, overvoltage pulses     digital output electrical protections   short circuit, overvoltage pulses     digital output electrical protections   short circuit, overvoltage pulses <th></th> <th></th>		
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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     mininum load current (digital output)   100 mA     sensitivity adjustment   5 k Ω (analogue voltage drop)     sensitivity adjustment   short circuit, overvoltage pulses     digital output electrical protections   short circuit, overvoltage pulses     fettor   [P67 (EN 60529) NEMA 4X <sup>69</sup> housing material   epoxy-glass resin     weight   90 g (plug exit) - 160 g (cable exit)	minimum operating distance (blind zone)	250 mm
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weight 90 g (plug exit) - 160 g (cable exit)	housing material	PBT
	active head material	epoxy-glass resin
storage temperature -35°+70°C (without freeze)	weight	90 g (plug exit) - 160 g (cable exit)
	storage temperature	-35°+70°C (without freeze)





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

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