

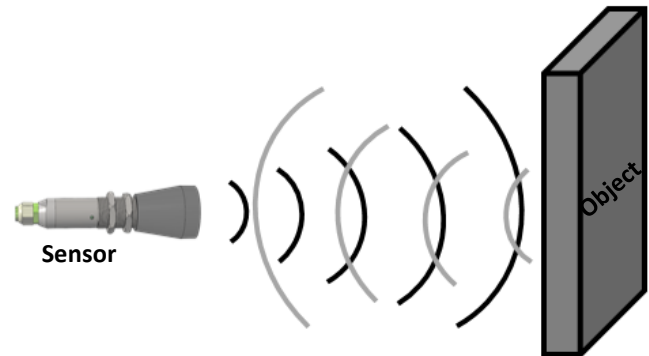


GENERAL FEATURES

- Ultrasonic working principle
- 0.15 - 4 meters measuring range
- $10^{\circ} \pm 2$ ultrasonic taper angle
- 316L stainless steel housing
- Non-contact and high precision measurement
- Measurement independent of the targets material, surface or color
- $\pm 0.2\%$ FS accuracy
- RS-232, RS-485, CANopen serial connection options
- 4-20 mA, 0-20 mA, 0-10V analog output options
- 2 x PNP Open Collector outputs
- IP67 high protection class suitable for harsh environment conditions
- Small, economical and maintenance-free design
- Easy installation

The ultrasonic sensors send and detect high-frequency ultrasonic sound with a piezoelectric transducer. A part of the reflected sound wave by hitting the measuring surface is detected by the transducer, depending on the speed of the signal in the air, the distance of the objects is determined. When the specified switching point is reached, the output is switched. The measured value is given as analog (0 ... 10 V, 0...20 mA, 4 ... 20 mA) or CANopen signal.

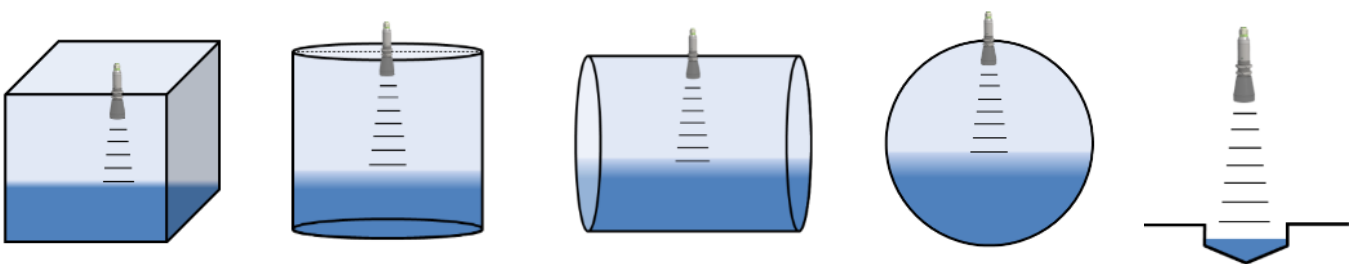
With ultrasonic sensors, objects can be reliably detected and measured regardless of material, color, transparency and surface properties.



ULT series ultrasonic sensors, designed and manufactured by Atek Sensors R&D engineers, are used in contactless and level measurements of liquid and solid materials in open and closed tanks. It is very easy to install with its small body structure.

APPLICATION AREAS

- Level measurement, pump control in tank, warehouse etc.
- Occupancy rate calculation in product warehouses
- Treatment plants
- Food industry
- Chemical industry



TECHNICAL SPECIFICATIONS

Operating range	0.15 - 4m
Housing material	316L stainless steel
Ultrasonic taper angle	10°±2
Measurement frequency	75 KHz
Blind area	0.15 meters
Accuracy	±%0.2 FS
Supply voltage	16...30 VDC
Power consumption	2,4 Watt max.
Current consumption	100 mA max. @24 VDC
Sampling rate	4 Hz
Minimum resolution	1 mm
Relay outputs (optional)	2 x PNP Open Collector
Serial connection (optional)	RS-232, RS-485, CANopen
Analog outputs (optional)	0-10 V, 4-20 mA, 0-20 mA
Analog output load	500 Ω
Analog output resolution	16 Bit (better than 1 mm)
Reverse connection protection	Yes
Temperature compensation	Yes
Watchdog	Yes
Electrical connection	M12 / 8 pin male or M12 / 5 pin female sockets (standard) 8 x 0,14 mm ² shielded cable or 5 x 0,14 mm ² shielded cable (optional)
Cable length	Standard 1m, Optional other lengths
Operating temperature	-40 °C ... 75 °C
Storage temperature	-40 °C ... 85 °C
Protection class	IP67
Weight	~400 gr

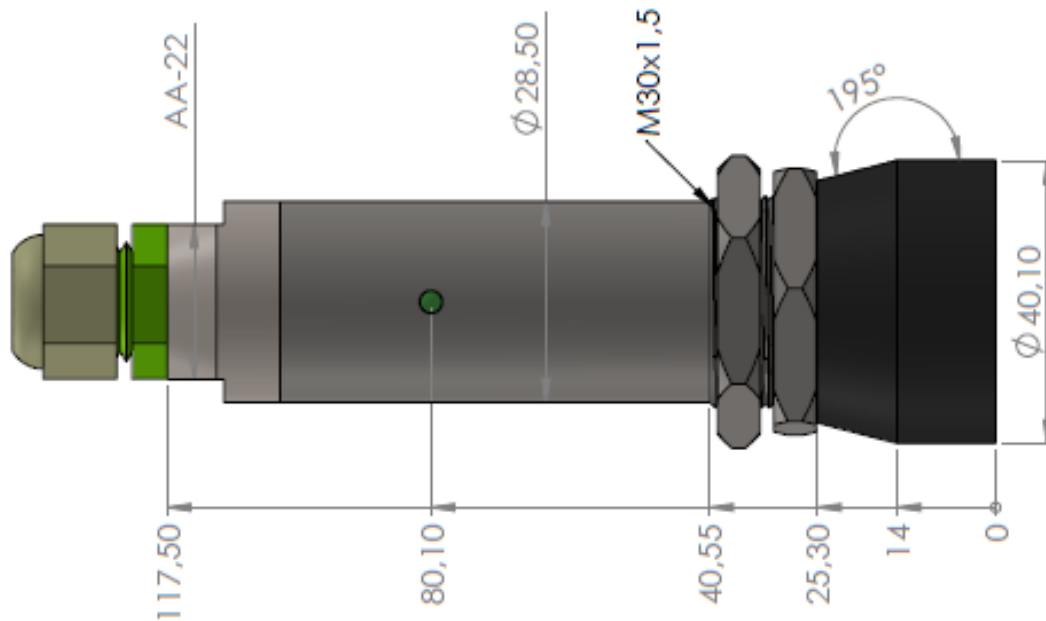
CANopen SPECIFICATIONS

Communication Profile	CiA 301
Cevaplama Frekansı	100 Hz.
Device Type	CANopen, CiA 301
Node ID	Between 1 and 127, configurable via LSS or SDO.
Baud Rate	10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 Mbit/s
PDO Data Rate	100 ms
Error Check	Heartbeat, Emergency Message
PDO	1 Tx PDO
PDO Modes	Event/Time triggered, Synch/Asynch
SDO	1 server
Position data	Object Dictionary 6004
Terminating Resistor	Optional

RS-232 / RS-485 SPECIFICATIONS

Communication Protocols	ASCII, Modbus RTU, Modbus ASCII
Baud Rate	600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200
Parity	None, Odd, Even
Address	Between 1 and 247

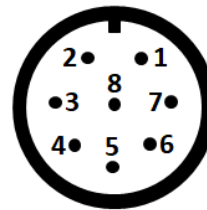
MECHANICAL DIMENSIONS (in mm)



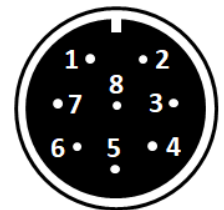
ELECTRICAL CONNECTIONS

CN1 (M12 / 8 Pin socket or 8x0,14 mm² cable)

Pin No	Signal	Cable Color
1	16...30VDC supply input	Red
2	GND – 0V	Black
3	Analog Out -	Green
4	Serial Communication (RS232 - Tx) (RS485 - B) (CAN - L)	Blue
5	Serial Communication (RS232 - Rx) (RS485 - A) (CAN - H)	White
6	Analog Out +	Yellow
7	Open Collector Output 1	Grey
8	Open Collector Output 2	Pink



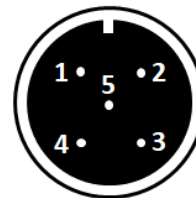
M12/8 Pin male socket
(front view of the socket
on the sensor)



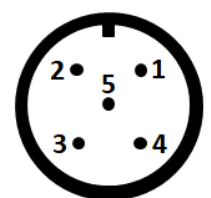
M12/8 Pin female socket
(front view of the cable-
mounted socket)

CN2 (M12 / 5 Pin socket veyá 5x0,14 mm² cable)

Pin No	Signal	Cable Color
1	16...30VDC supply input	Red
2	GND – 0V	Black
3	Analog Out +	Green
4	Analog Out -	Yellow
5	-	Pink



M12/5 Pin female socket
(front view of the socket
on the sensor)

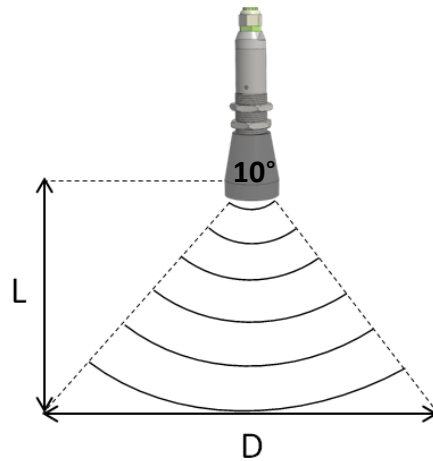


M12/5 Pin male socket
(front view of the cable-
mounted socket)

MECHANICAL MOUNTING

Measurement Distance and Diameter

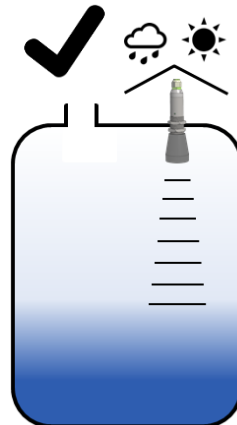
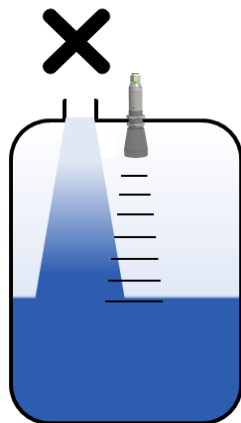
	OPTIMUM	MINIMUM
L	D	
1m	20 cm	20 cm
2m	40 cm	30 cm
3m	60 cm	40 cm
4m	80 cm	50 cm



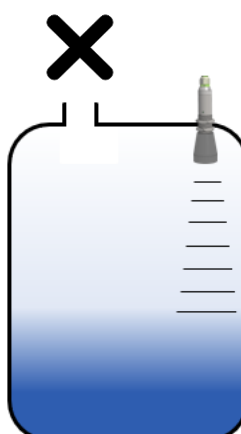
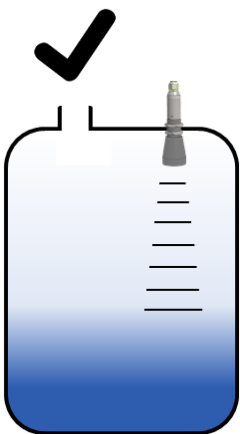
L indicates the mounting height and there should be no obstacle which blocks signals in D width. These values are optimally included in the table above. If optimum dimensions are not followed, level measurement is made, but measurement accuracy decreases.

If it is not possible to install in optimum dimensions, the minimum dimensions must be followed.

Mounting Warnings

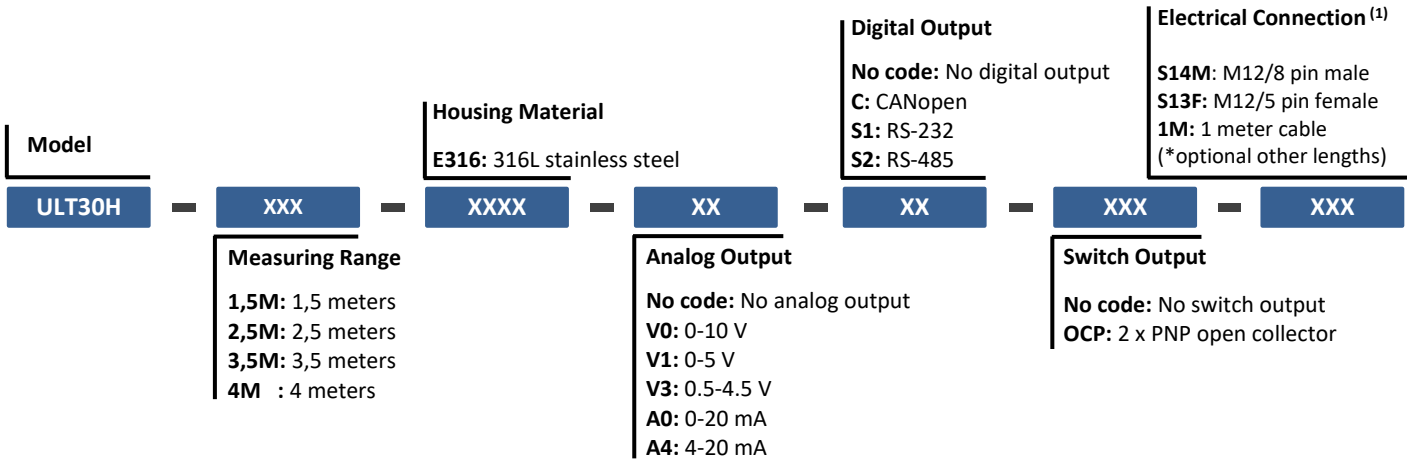


- For level measurement, the sensor must not be installed near the tank input.
- It is recommended that the sensor be protected against sun and rain.



- The sensor must be installed perpendicular to the surface to be measured and should not be placed close to the side surface.

ORDER CODE



(1) The product can be requested with cable or socket. In models with socket; S13F code socket should be selected only when product with analog output is desired. If different outputs are desired in addition to analog output, S14M code socket should be selected.

OPTIONAL PRODUCTS

Product	Code	Description
	S14F	M12/8 pin female socket (IP67) (For connection with M12/8 pin male socket on the sensor)
	S13M	M12/5 pin male socket (IP67) (For connection with M12/5 pin female socket on the sensor)
	CB8 XM / S14F	X meters 8x0,14 mm ² extension cable + M12/8 pin female socket (IP67) X = Max. 50 meters
	CB5 XM / S13M	X meters 5x0,14 mm ² extension cable + M12/5 pin male socket (IP67) X = Max. 50 meters

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