

The Ultrasonic Sensor *ulm/s12me* and the *ulm/...* controller and evaluation unit measure distance in liquids using the pulse echo method. A typical application is to determine the piston position in a hydraulic accumulator.

The ultrasonic pulse emission, required to measure the transit time, is optimized for use in hydraulic fluids and water with special impedance matching.

Picture: *ulm/s12me* Ultrasonic Sensor

With the reference reflector connected to the sensor, the unknown measured distance is compared with the distance to the reflector, so influence of temperature or pressure changes on the impulse transit time are eliminated.

The only materials on the mounted sensor that are in contact with the fluid medium are the sealing ring, stainless steel and a special water and oil resistant epoxy resin.

Features:

Recommended Ultrasonic Frequency	500kHz
Typical Input Voltage	approx. $\pm 15V_{ss}$
Maximum Output Parameters of Connected Circuit:	U = 30V I = 100mA P = 750mW
Maximum Measuring Distance	approx. 5m (depending on medium characteristics and installation environment)
Pressure Resistance	> 500bar
Operating & Storage Conditions	-20 to +60°C
Cable Length	1m (refer also to connection note below)

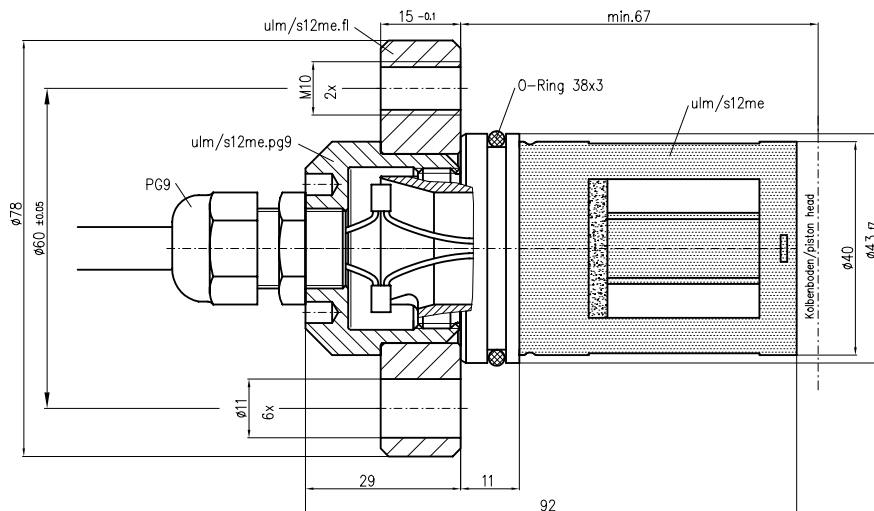
Application Note:

The reliability and range of the method to measure the distance of the surface reflecting the ultrasonic waves greatly depends on the homogeneity of the medium and on the characteristics of the controller and evaluation electronics. Conditions of installation should be discussed with marco in detail prior to initial operation.

Our separate application notes must be observed prior to operation!

Refer to *doc:D/ulm/man/003*

Connection:



Picture: *ulm/s12me* mounted with flange and screw connection

If the distance between sensor and electronics is over 1m the sensor cable must be shortened as necessary and connected to an extension cable, refer to cable type below.

Mounting with flange *ulm/s12me.fl* and screw connection *ulm/s12me.pg9*:

- Put the flange onto the screw connection
- Insert the cable through the screw connection
- Shorten the sensor cable
- Connect the cable to the sensor cable (e.g. by crimping or soldering)
- Screw connection onto the sensor

Cable Recommendation:

- Length: Cable Type:
- < 30m IBM Twinax, 2 symmetrical leads, shielded
 - < 5m Telephone grade twisted pair
 - < 1m Directly connect sensor cable

Order Number	Release	Description
<i>ulm/s12me</i>	1.0	Ultrasonic Sensor
<i>ulm/s12me.fl</i>	1.0	Flange
<i>ulm/s12me.pg9</i>	1.0	Screw Connection
<i>ka/ulm.twinax</i>	1.0	IBM Twinax Cable