

BEZBEDNOŠNA TEHNOLOGIJA  
ZA ZAŠTITU ŽIVOTNE SREDINE

SAFETY AND  
ENVIRONMENTAL  
TECHNOLOGY

**E.L.B.**  
FÜLLSTANDSGERÄTE

13-01-01E

## Ultrasonic sensor nivoa NUK-4-T

Ultrasonični senzor nivoa transmituje ultrasonične impulse koji se brzo smenjuju i reflektuje ih površina supstance. Vremenski interval od transmisije do recepcije reflektovanog signala se meri vrlo tačno. Prolazno vreme impulsa je direktno proporcionalno razdaljini između senzora nivoa i površine supstance. Mikroprocesor procenjuje signal odjeka i meri nivo ispunjavanja. Promene ultrasonične brzine izazvane promenama temperature se kompenzuju. Intergisan softver omogućava da se koristan odjek filtrira i procenjuje, čak i u nepovoljnim uslovima. Na taj način je moguće napraviti tačne i pouzdane procene u blizini do tačke neposredno pre senzora.

Elektronski uređaji se nalaze u vodootpornom plastičnom kucištu. Kucište je otporno na korozivne materijale i može da izdrži visoke temperaturne fluktuacije.

- Merenje bez kontakta
- Lako za održavanje i otporno na trošenje i habanje (nema mehanickih delova)
- Temperatura je kompenzovana
- Laka kalibracija

## Detalji o sistemu

Sistem za merenje sastoji se iz : ultrasoničnog senzora nivoa NUK-4-T i displeja AD-312/313 (vidite sekciju 13)

## Ultrasonic Level Sensor NUK-4-T

The ultrasonic level sensor transmits ultrasonic pulses in quick succession which are reflected from the medium's surface. The time interval from transmission to reception of the reflected signal is measured exactly. The impulse running time is directly proportional to the distance between the level sensor and the medium surface. A microprocessor evaluates the echo signals and measures the filling level. Changes in the ultrasonic speed caused by changing temperatures are compensated. The integrated software enables the useful echo to be filtered out and evaluated, even under unfavourable conditions. Thus it is possible to make reliable measurements in the vicinity up to a point just before the sensor.

The electronics are accommodated in a waterproof plastic casing. The casing is resistant to corrosive materials and can tolerate high temperature fluctuations.

- Contactless measurement
- Maintenance free and wear resistant (no mechanical parts)
- Temperature-compensated
- Easy calibration

## System Details

A measuring system consists of: an ultrasonic level sensor NUK-4-T and a display AD-312/313 (see section 13).



CE

NUK-4-T

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## Tehnicki podaci

Sistem zaštite EN 60529	IP 65
Merni obimi	0,3 ... 4 m sa tecnostima
Tacnost	0.5% od pune skale
Rezolucija	2 mm
Napajanje	
Voltaža napajanja	DC 10 ... 30 V
Talas	$\pm 10\%$ ss, $U_B = 33V$
Utrošnja struje $P_L$	$\leq 1200$ mW
Izlaz	
Struja	4...20 mA, $R_L \leq 500 \Omega$
Voltaža	0...10 V, $R_L \geq 1 k\Omega$
Indikator	
Operacija	LED zeleno
Greška	LED crveno, 2Hz svetluca
Struja izlaza	$\geq 21$ mA
Voltaža izlaza	$\geq 10,5$ V
Uslovi okoline	
Temperatura	-25...+70°C
Skladišta	-40...+85°C
Uslovi procesa	
Temperatura	-25...+70°C
Pritisak	Atmosferski
Elektricna veza	V15-utikac (M12x1)
Veza procesa NUK-4-T	Navoj G 1 1/2" A,
Površina mem- brane NUK-4-T	Polipropilen PTFE
Utikac za kalibraciju i konfiguraciju	
A1	Kompenzacija "prazno"
E2/E3	Razmena / supresija fiksne mete
A2	Kompenzacija "puno"
T	operacija
Materijal kucišta	PBT
Ugradnja	Ultrasonični impulsi moraju biti ugradjeni vertikalno u odnosu na nivo supstance

## Kljuc tipa

### Ultrasonični senzor nivoa neprekidni

Merni obimi	4=0,3...4 m
Materijal membrane	T=PTFE
Veza procesa PP bez indikacije = navoj G 1 1/2" A	
Materijal kucišta bez indikacije = PBT	
Izlaz bez indikacije =	4...20 mA / 0...10 V
Elektricna veza bez indikacije = V15	

NUK-□□□□□□

## Technical Data

Sys. of protection	EN 60529	IP 65
Measuring ranges	0,3...4 m, with liquids	
Accuracy	0,5 % from the full scale	
Resolution	2 mm	
<u>Supply:</u>		
Supply voltage	DC 10...30 V	
Ripple wave	$\pm 10\%$ ss, $U_B = 33V$	
Power consumption $P_L$	$\leq 1200$ mW	
<u>Output:</u>		
Current	4...20 mA, $R_L \leq 500 \Omega$	
Voltage	0...10 V, $R_L \geq 1 k\Omega$	
<u>Indicators:</u>		
Operation	LED green	
Fault	LED red, 2 Hz flashing	
Current output	$\geq 21$ mA	
Voltage output	$\geq 10,5$ V	
<u>Environmental conditions:</u>		
Temperature	-25...+70°C	
Storage	-40...+85°C	
<u>Process conditions:</u>		
Temperature	-25...+70°C	
Pressure	atmospheric	
Electrical connection	V15-plug (M12x1)	
Process connection		
NUK-4-T	Thread G1 1/2" A, Polypropylene	
Membrane surface		
NUK-4-T	PTFE	
<u>Calibration and configuration plug:</u>		
A1	Compensation "empty"	
E2/E3	Teach-in / fixed target suppression	
A2	Compensation "full"	
T	Operation	
Housing material	PBT	
Mounting	Ultrasonic pulses must be mounted perpendicular to the medium level	

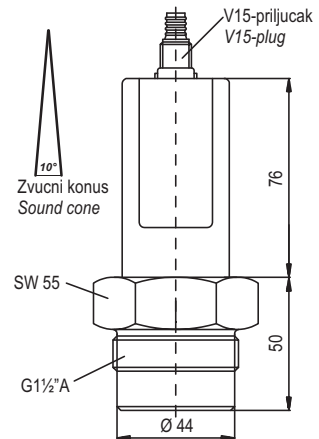
## Type Key

### Ultrasonic Level Sensor Continuous

Measuring Ranges	4=0,3...4 m
Material Membrane	T=PTFE
Process Connection PP without indication = Thread G 1 1/2" A	
Housing Material without indication = PBT	
Output without indication =	4...20 mA / 0...10 V
Electrical Connection without indication = V15	

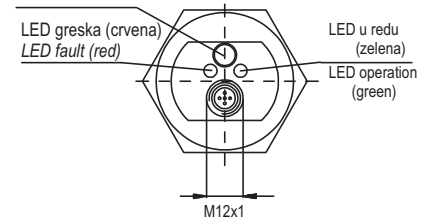
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## Dimenzioni crtez Dimensional Drawing



Dimenzije u mm / Dimensioning in mm

Kalibracija i konfiguracija prikljucka  
Calibration- and configuration plug



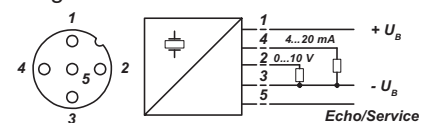
Pozicija utikaca:

- A1: kompenzacija "prazno"
- E2/E3: razmena/supresija fiksne mete
- A2: kompenzacija "puno"
- T: operacija

Plug positions:

- A1: Calibration "empty"
- E2/E3: Teach-in of the fixed target
- A2: Calibration "full"
- T: Operation

Veza utikaca V15  
Plug connection V15



Moguće izmene bez prethodne najave.  
Subject to change without prior notice,  
errors excepted.