



ULT20 - ULTRASONIC LEVEL TRANSDUCER

- Level measurement of liquid and powdery materials up to 8 m with automatic temperature compensation.
- Calculation of filling in the tank or flow in open channels.
- Standard galvanic separated analog output 0/4...20 mA.
- Digital interface RS-485 with Modbus RTU protocol.
- 2 alarm relays.
- Internal data and setup memory.
- Two 32-points individual characteristic (recalculate functions).



EXAMPLE OF APPLICATION

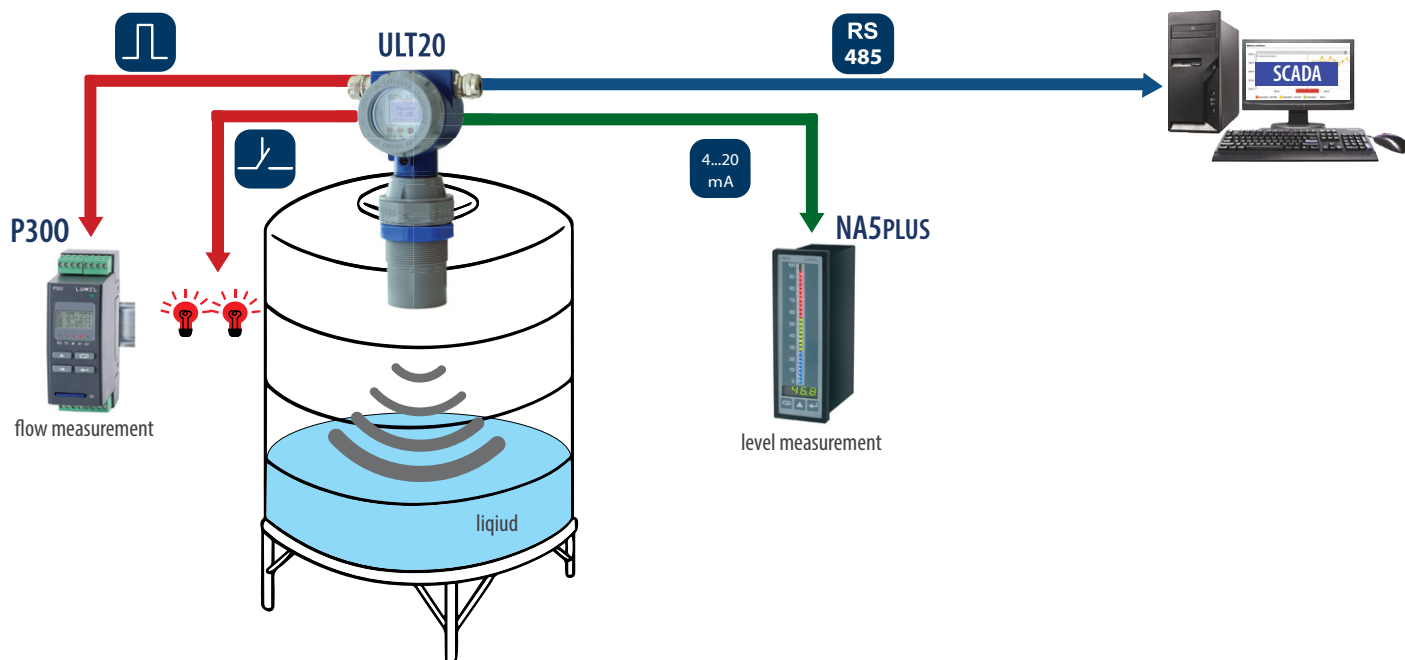


Fig.1. Level measurement with visualisation and recording.

FEATURES

- MOD BUS
- IP65
- eCon software
- LCD Display
- Password protection

INPUT

ultrasonic waves

OUTPUTS

- RS 485
- 0/4...20 mA
- USB

GALVANIC ISOLATION

- Supply
- RS 485

TECHNICAL DATA

MEASUREMENT	
Range of distance measurement	0,5...8 m (see comment below)
Beam width	12°
Ultrasound frequency	50 kHz
Measurement resolution	0.001 m
Measurement basic error	±1 % of the range

The **measuring range** is strongly dependent on the environment in which the measurements are made and the surface from which the ultrasonic wave is reflected. A typical reduction of the measuring range depending on the suppression of the ultrasonic wave is shown in Figure 2.

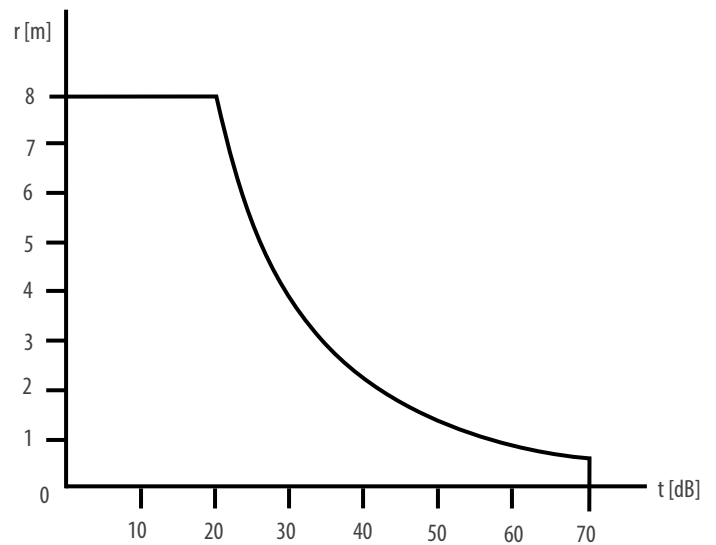

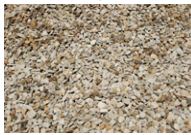







Fig. 2 Change of the measuring range r depending on the damping t of the measurement environment.

Typical damping for a given environment (reflective medium) is summarized in the table below.

FLUID		GRANULAR		DUST	
	Typical attenuation [dB]		Typical attenuation [dB]		Typical attenuation [dB]
Calm surface 	0	Hard, porous 	40	Low dust 	about 5
Wavy surface 	from 5 up to 10	Soft with strong damping (e.g. peat) 	from 40 up to 60	Large dust 	from 5 up to 20
Strong turbulence (agitators, etc.) 	from 10 up to 20				

OUTPUTS

Output type	Output signal	Maximum value at the output	Basic error	Error resulting from ambient temperature changes
analog	0/4...20 mA	24 mA	±0.2 % of the range	50 % of the basic error / 10K
Output type	Properties			
relay	2 NO outputs, maximum overload 100 mA / 300 V a.c./d.c.			
pulse	NPN transistor, U _{max} = 50 V; I _{max} = 50 mA, R _s = 100 Ω			

DIGITAL INTERFACES

Interface type	Properties
RS-485	Modbus RTU: 8N2, 8E1, 8O1, 8N1; baud rate 9600...115200 bit/s
USB	USB Device, v.2.0

RATED OPERATING CONDITIONS

Supply voltage	12...24...40 V d.c.
Power consumption	< 4W
Operating temperature	-20...23...55 °C (do not expose the meter to direct sunlight)
Storage temperature	-25...70 °C
Humidity	< 95% (water vapor condensation is not permissible)
Operating position	any

SAFETY AND COMPABILITY REQUIREMENTS

Electromagnetic compatibility	noise immunity	acc. to EN 61000-6-2
	noise emissions	acc. to EN 61000-6-4
Isolation between circuits	basic	acc. to EN 61010-1
Pollution level	2	acc. to EN 61010-1
Installation category	III	acc. to EN 61010-1
Maximal phase-to-earth voltage	<ul style="list-style-type: none"> 50 V (all circuits apart from alarm circuits), 300 V for alarm circuits 	acc. to EN 61010-1
Altitude a.s.l.	< 2000 m	

EXTERNAL FEATURES

Protection grade	IP65 acc. to EN 60529
Weight	1.4 kg
External dimensions	acc. to fig.3

EXTERNAL DIMENSIONS

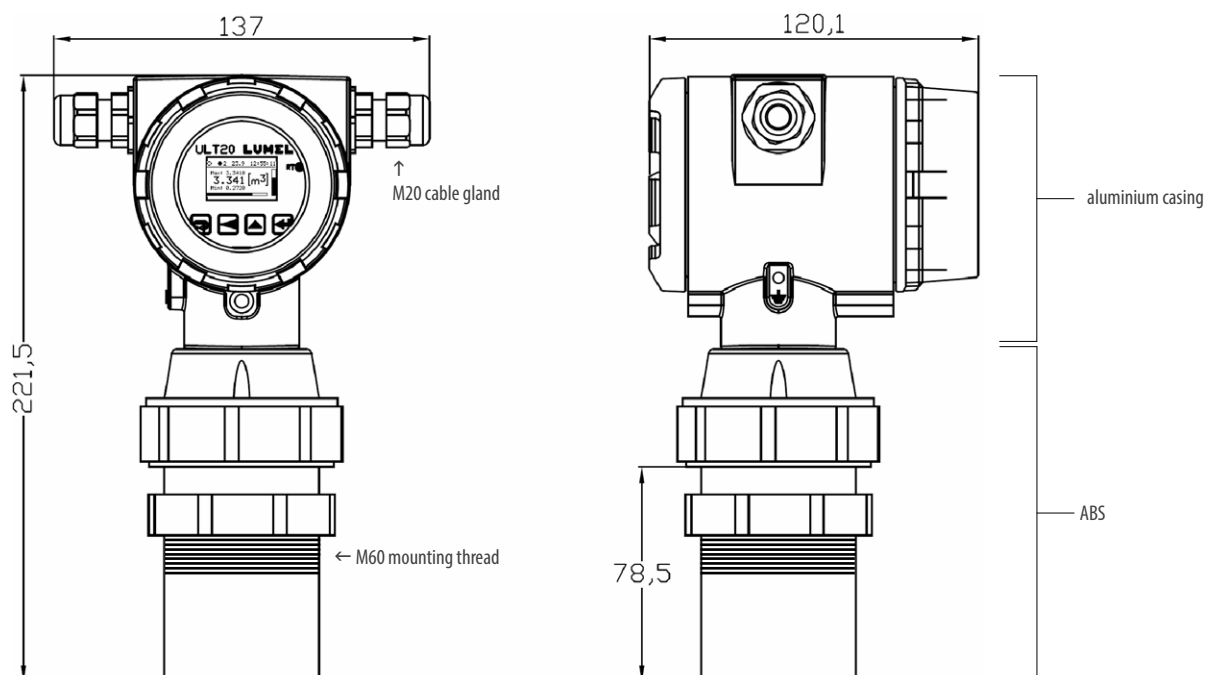
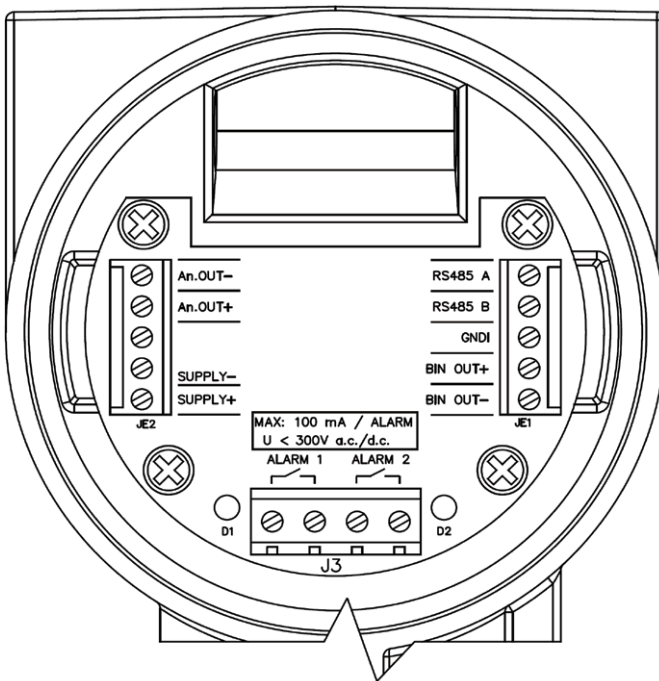


Fig.3. External dimensions of ULT20.

CONNECTION DIAGRAMS



Signal	Description
An.Out+, An.Out	Analog output: 0/4..20 mA.
SUPPLY+, SUPPLY-	Supply 12..40 V d.c.
RS485_A, RS485_B, GNDI	Interface RS485
BIN OUT+, BIN OUT-	Binary pulse output
ALARM 1	Relay output no. 1
ALARM 2	Relay output no. 2

ORDERING CODE

	ULT20 -	XX	X	X
Version:				
standard		00		
custom-made*		XX		
Language:				
Polish			P	
English			E	
other*			X	
Acceptance tests:				
without additional quality requirements				0
with an extra quality inspection certificate				1
acc.to customer's request*				X

* only after agreeing with the manufacturer

Order example:

The code: **ULT20- 00 E 0** means:

- ULT20-** ultrasonic level meter ULT20
- 00** - standard version
- E** - user's manual in English
- 0** - without additional quality requirements.

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ULT20-19_en

