



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Technical Information

Prosonic S FMU95

Transmitter in housing for field or top-hat rail mounting
for up to 10 ultrasonic sensors FDU91/91F/92/93/95/96



Application

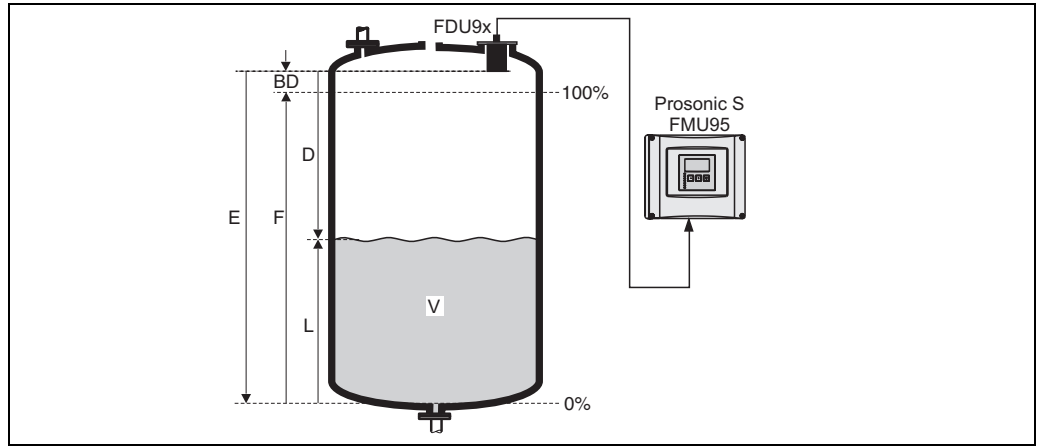
- Continuous, non-contact level measurement of fluids, pastes, sludge and powdery to coarse bulk materials with up to 5 or 10 ultrasonic sensors
- Measuring range up to 70 m (depending on sensor and material measured)
- Calculation of average values or sums

Your benefits

- Simple, menu-guided operation with 6-line plain text display
- Envelope curves on the display for quick and simple diagnosis
- Easy operation, diagnosis and measuring point documentation with the supplied "ToF-Tool - FieldTool Package" or "FieldCare" operating program.
- Temperature dependent time-of-flight correction via the integrated temperature measurement in the sensors
- Linearisation (up to 32 points, freely configurable)
- System integration via PROFIBUS DP with up to 20 measured values
- Automatic detection of the sensors FDU91/91F/92/93/95/96
- The sensors of the former series FDU8x can be connected (for certificates see note on page 5)
- adjustable to the individual requirements via product structure

Function and system design

Measuring principle



BD: blocking distance; **D:** distance from sensor membrane to fluid surface; **E:** empty distance **F:** span (full distance); **L:** level; **V:** volume (or mass)

The sensor transmits ultrasonic pulses in the direction of the product surface. There, they are reflected back and received by the sensor. The transmitter Prosonic S measures the time t between pulse transmission and reception. From t (and the velocity of sound c) it calculates the distance D from the sensor membrane to the product surface:

$$D = c \cdot t / 2$$

From D results the desired measuring value:

- level L
- volume V

Blocking distance

The span F may not extend into the blocking distance BD . Level echos from the blocking distance can not be evaluated due to the transient characteristics of the sensor. The blocking distances of the individual sensors are given in the following documents:

- TI 396F for the sensors FDU 91/91F/92/93/95/96
- TI 189F for the sensors FDU 80/80F/81/81F/82/83/84/85/86

Time-of-flight correction

In order to compensate for temperature dependent time-of-flight changes, a temperature sensor is integrated in the ultrasonic sensors.

Interference echo suppression

The interference echo suppression feature of the Prosonic S ensures that interference echos (e.g. from edges, welded joints and installations) are not interpreted as a level echo.

Linearisation

Pre-programmed linearisation curves for specific types of vessels

- horizontal, cylindrical tank
- spherical tank
- tank with pyramidal bottom
- tank with conical bottom
- tank with flat, inclined bottom

The pre-programmed linearisation curves are calculated on-line.

Linearisation table

consisting of up to 32 linearisation points; to be entered manually or half-automatically.

Datalog functions

Basic version

- Peak hold indicator of the min./max. levels and the min./max. temperatures at the sensors
- Recording of the last 10 alarms
- Indication of the operating status
- Indication of the operating hours

Ordering information

Product structure

10	Approval	
	R	Non-hazarous area
	J	ATEX II 3D
	N	CSA General Purpose
20	Application	
	1	Level
30	Housing, material	
	1	Field mounting PC, IP66 NEMA 4x
	2	DIN rail mounting PBT, IP20
40	Operation	
	C	Illuminated display + keypad
	E	Illuminated display + keypad, 96x96, panel mounting, front IP65
	K	w/o display, via communication
50	Power supply	
	A	90-253 VAC
	B	10,5-32 VDC
60	Level input	
	A	5x sensor FDU9x/8x
	B	10x sensor FDU9x/8x
80	Output	
	3	PROFIBUS DP
110	Language (*)	
	1	de, en, nl, fr, es, it, pt
	2	en, ru, pl, cs
	3	en, zh, ja, ko, th, id
120	Additional option	
	A	Basic version
FMU95 -		complete product designation

(*): meaning of the language code:

cs: Czech; de: German; en: English; es: Spanish; fr: French; id: Bahasa (Indonesia, Malaysia); it: Italian; ja: Japanese; ko: korean; nl: Dutch; pl: Polish; pt: Portuguese; ru: Russian; th: Thai; zh: Chinese

Scope of delivery

- Instrument according to the version ordered
- Operating program: "ToF Tool - FieldTool Package" or "FieldCare"
- Operating Instructions (depending on communication version, see chapter "Supplementary documentation")
- for certified instrument versions: Safety Instructions (XAs) or Control Drawings (ZDs) (s. chapter "Supplementary documentation")

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