Technical Information

Prosonic S FMU95

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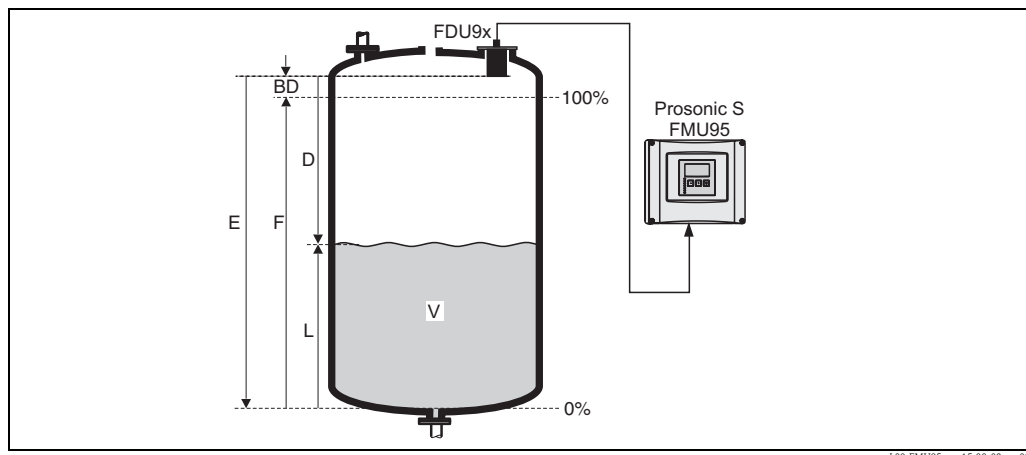for up to 10 ultrasonic sensors FDU91/91F/92/93/95/96

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

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Function and system design

Measuring principle

L00-FMU95xxx-15-00-08-xx-009

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")

广州晋合水处理设备有限公司

jinhe water ®

地　址：广东省广州市海珠区工业大道333号华新园区7幢218
电　话：020-88191905
传　真：020-61139917
邮　编：510300
邮　箱：jinhewater@jinhewater.com
网　址：http://www.jinhewater.com

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