Ultrasonic measurement Time-of-Flight Prosonic FDU90

Ultrasonic sensor for level and flow measurement for connection to FMU9x (measuring range up to 3m)

More information and current pricing:
www.endress.com/FDU90

Benefits:

- Integrated temperature sensor for Time-of-Flight correction. Accurate measurements are possible, even if temperature changes are present
- Hermetically welded PVDF sensor for highest chemical resistance
- Suited for rough ambient conditions thanks to separate installation from the transmitter (up to 300m)
- Reduced build-up formation because of the self-cleaning effect
- Integrated automatic sensor detection for transmitters FMU90 / FMU95 for simple commissioning
- Weather resistant and flood-proof (IP 68)
- Integrated heating against a build-up of ice at the sensor (optional) ensures reliable measurement

Specs at a glance

- **Process temperature** -40 °C ... 80 °C (-40 °F ... 176 °F)
- **Process pressure / max. overpressure limit** 0.7 bar ... 4 bar abs (10 psi ... 58 psi)
- **Max. measurement distance** Liquids: 3 m (9.8 ft), Solids: 1.2 m (3.9 ft)
- **Accuracy** +/- 2mm + 0.17% of measured distance
- **Main wetted parts** PVDF (IP68 / NEMA6P)

Field of application: The FDU90 ultrasonic sensor for continuous, non-contact and maintenance-free level measurement of fluids, pastes, sludges and powdery to coarse bulk materials. But also for flow measurement in open channels and measuring weirs. The measurement

is unaffected by dielectric constant, density or humidity and also unaffected by build-up due to the self-cleaning effect of sensors. Suited for explosion hazardous areas. Maximum measuring range in liquids 3m (9.8ft), solids 1.2m (3.9ft).

Features and specifications

Continuous / Liquids

Measuring principle
Ultrasonic

Characteristic / Application
Separated version with field housing or top hat rail housing for control cabinet instrumentation, 300m in-between sensor and transmitter

Specialities
Floating protection tube

Supply / Communication
4-wire (HART, Profibus DP)

Accuracy
+/- 2mm + 0.17% of measured distance

Ambient temperature
-40 °C ... 80 °C
(-40 °F ... 176 °F)

Process temperature
-40 °C ... 80 °C
(-40 °F ... 176 °F)

Process pressure / max. overpressure limit
0.7 bar ... 4 bar abs
(10 psi ... 58 psi)

Main wetted parts
PVDF (IP68 / NEMA6P)

Continuous / Liquids

Process connection

Front side thread:
G / NPT 1 1/2"
Rear side thread:
G / NPT 1"
Ceiling mounting

Blocking distance

0.07 m (0.23 ft)

Max. measurement distance

Liquids: 3 m (9.8 ft),
Solids: 1.2 m (3.9 ft)

Communication

Transmitter:
4 ... 20 mA HART
Profibus DP

Certificates / Approvals

ATEX, FM, CSA, IEC Ex, INMETRO, NEPSI, EAC Ex

Options

Second 4...20mA output

Components

Transmitter:
FMU90, FMU95

Application limits

Foam / high turbulence possible:
FDU92
Flange-flush assembly:
FDU91F
For tank farms scanner:
FMU95

Continuous / Solids

Measuring principle
Ultrasonic

Characteristic / Application
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Supply / Communication
4-wire (HART, PROFIBUS DP)

Accuracy
+/- 2mm + 0.17% of measured distance

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(-40 °F ... 176 °F)

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Transmitter:
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ATEX, FM, CSA, IEC Ex, INMETRO, NEPSI, EAC Ex

Options
Second 4...20mA output

Components
Transmitter:
FMU90

Liquids

Measuring principle
Ultrasonic

Product headline
Version with separate transmitter in field housing or top hat rail housing
Cost effective solution for open channel flow measurement in water / wastewater plants

Max. measurement error
accuracy:
distance measurement: +/- 2mm + 0.17%
resolution:
distance measurement: 1m

Measuring range
max measuring distance up to 3 m / 9.8 ft

Liquids

Max. process pressure
atm.

Medium temperature range
-40 °C ... 80 °C
(-40 °F ... 176 °F)

Degree of protection
IP68

Display/Operation
Transmitter

Outputs
Transmitter:
4 ... 20 mA HART
PROFIBUS DP

Inputs
Transmitter

Digital communication
HART, PROFIBUS DP

Hazardous area approvals
ATEX, FM, CSA, IEC Ex, INMETRO, NEPSI, EAC Ex

More information **www.endress.com/FDU90**