Ultrasonic measurement
Time-of-Flight
Prosonic FDU91

Ultrasonic sensor for level and flow measurement for connection to FMU9x (measuring range up to 10m)

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: 10 m (33 ft), Solids: 5 m (16 ft)
- **Accuracy** +/- 2 mm + 0.17% of measured distance
- **Main wetted parts** PVDF (fully welded IP68 / NEMA6P)

Field of application: The FDU91 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

More information and current pricing: [www.us.endress.com/FDU91](http://www.us.endress.com/FDU91)
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 10m (33ft), solids 5m (16ft).

Features and specifications

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| **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 (fully welded IP68 / NEMA6P) |
| **Process connection** |
| G / NPT 1" |
### Continuous / Liquids

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### Continuous / Solids

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### Continuous / Solids

**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 (fully welded IP68 / NEMA 6P)

**Process connection**
G / NPT 1"

**Blocking distance**
0.3 m (1 ft)

**Max. measurement distance**
Liquids: 10 m (33 ft),
Solids: 5 m (16 ft)

**Communication**
Transmitter:
4 ... 20 mA HART
Profibus DP

**Certificates / Approvals**
ATEX, FM, CSA, IEC Ex, JPN Ex, INMETRO, NEPSI, EAC Ex
Continuous / Solids

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: 1mm

Measuring range
max measuring distance up to 10m / 32ft

Max. process pressure
atm.

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

Degree of protection
IP68

Display/Operation
Transmitter
Liquids

**Outputs**
Transmitter:
4...20mA HART
Option: second 4...20mA output

**Inputs**
Transmitter

**Digital communication**
HART, PROFIBUS DP

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

More information [www.us.endress.com/FDU91](http://www.us.endress.com/FDU91)