

# Ultrasonic measurement Time-of-Flight Prosonic FDU91F

Hygienic 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 sensors (316L, 1.4404, 1.4435) 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)
- Hygienic process connections available

More information and current pricing:

[www.at.endress.com/FDU91F](http://www.at.endress.com/FDU91F)

## Specs at a glance

- **Process temperature** -40 °C ... 105 °C (-40 °F ... 221 °F) 30 min: 135 °C / 275 °F)
- **Process pressure absolute / max. overpressure limit** 0.7 bar ... 4 bar abs (10 psi ... 58 psi)
- **Max. measurement distance** 5 m (16 ft)
- **Accuracy** +/- 2mm + 0.17% of measured distance
- **Main wetted parts** 316L (fully welded IP68 / NEMA 6P)

**Field of application:** The FDU91F ultrasonic sensor for continuous, non-contact and maintenance-free level measurement of fluids, pastes, sludges and powdery to coarse bulk materials. Also for flow measurement in open channels and at weirs. Measurement is unaffected

by dielectric constant, density or humidity and also unaffected by build-up due to the self-cleaning effect of sensors. Fully welded 316L with hygienic process connection available. Maximum measuring range in liquids 10m (33ft), solids 5m (16ft).

## Features and specifications

### Continuous / Solids

#### 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

#### Supply / Communication

4-wire (HART, Profibus DP)

#### Accuracy

+/- 2mm + 0.17% of measured distance

#### Ambient temperature

-40 °C ... 105 °C  
(-40 °F ... 221 °F)

#### Process temperature

-40 °C ... 105 °C  
(-40 °F ... 221 °F)  
30 min: 135 °C / 275 °F)

#### Process pressure absolute / max. overpressure limit

0.7 bar ... 4 bar abs  
(10 psi ... 58 psi)

#### Main wetted parts

316L (fully welded IP68 / NEMA 6P)

#### Process connection

G / NPT 1", DN80 / 100, ASME 3" / 4"

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**Continuous / Solids****Process connection hygienic**Tri-Clamp ISO2852, DN80 (3 1/2"), DN100 (4")

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

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**Max. measurement distance**5 m (16 ft)

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**Communication**

Transmitter:

4 ... 20 mA HART

Profibus DP

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

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**Design approvals**EN 10204-3.1

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**Options**Second 4...20 mA output

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**Components**

Transmitter:

FMU90

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**Continuous / Liquids****Measuring principle**Ultrasonic

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

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**Specialities**Specialities

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

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

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**Ambient temperature**

-40 °C ... 105 °C

(-40 °F ... 221 °F)

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**Process temperature**

-40 °C ... 105 °C

(-40 °F ... 221 °F)

CIP: 30 min: 135 °C

(30 min: 275 °F)

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**Process pressure absolute / max. overpressure limit**

0.7 bar ... 4 bar abs

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**Main wetted parts**316L (fully welded IP68 / NEMA 6P)

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**Process connection**G / NPT 1", DN80 / 100, ASME 3" / 4"

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**Process connection hygienic**Tri-Clamp ISO2852, DN80 3 1/2", DN100 4"

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

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**Application**Application

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## Continuous / Liquids

**Max. measurement distance**

Max. measurement distance

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**Communication**

Transmitter:

4 ... 20 mA HART

Profibus DP

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**Certificates / Approvals**

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

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**Design approvals**

EN 10204-3.1

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**Hygienic approvals**

3A

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**Options**

Options

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**Components**

Transmitter:

FMU90, FMU95

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**Application limits**

Application limits

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More information [www.at.endress.com/FDU91F](http://www.at.endress.com/FDU91F)