

# Ultrasonic measurement Time-of-Flight Prosonic FDU90

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



## Lợi ích:

- 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

Thông tin thêm và mức tính giá hiện tại:

[www.apsc.endress.com/FDU90](http://www.apsc.endress.com/FDU90)

## Tổng quan về thông số kỹ thuật

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

**Phạm vi ứng dụng:** 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).

## Tín năng và thông số kỹ thuật

### 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 ... 80 °C  
(-40 °F ... 176 °F)

#### Process temperature

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

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

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

#### Main wetted parts

PVDF (IP68 / NEMA6P)

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**Continuous / Solids****Process connection**

Front side thread:

G / NPT 1 1/2"

Rear side thread:

G / NPT 1"

Ceiling mounting

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**Blocking distance**

0.07 m (0.23 ft)

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**Max. measurement distance**

1.2 m (3.9 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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**Options**

Second 4...20mA output

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**Components**

Transmitter:

FMU90

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**Liquids****Measuring principle**

Ultrasonic

## Liquids

### 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

### 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

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

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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, 300m in-between sensor and transmitter

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**Specialities**Floating protection tube

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

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

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

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

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

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**Main wetted parts**PVDF (IP68 / NEMA6P)

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**Continuous / Liquids****Process connection**

Front side thread:

G / NPT 1 1/2"

Rear side thread:

G / NPT 1"

Ceiling mounting

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**Blocking distance**

0.07 m (0.23 ft)

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**Application**

Application

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**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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**Options**

Second 4...20mA output

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**Components**

Transmitter:

FMU90, FMU95

## Continuous / Liquids

### Application limits

Foam / high turbulence possible:

FDU91

For tank farms scanner:

FMU95

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Thông tin bổ sung [www.apsc.endress.com/FDU90](http://www.apsc.endress.com/FDU90)