

# Promass 83F



More information and current pricing:

[www.endress.com/83F](http://www.endress.com/83F)

## Benefits:

- Highest process safety – immune to fluctuating and harsh environments
- Fewer process measuring points – multivariable measurement (flow, density, temperature)
- Space-saving installation – no in/outlet run needs
- Quality – software for filling & dosing, density & concentration, advanced diagnostics
- Flexible data transfer options – numerous communication types
- Automatic recovery of data for servicing

## Specs at a glance

- **Max. measurement error** Mass flow (liquid):  $\pm 0.1\%$  (standard),  $0.05\%$  (option) Volume flow (liquid):  $\pm 0.1\%$  Mass flow (gas):  $\pm 0.35\%$  Density (liquid):  $\pm 0.0005 \text{ g/cm}^3$
- **Measuring range** 0 to 2 200 000 kg/h (0 to 80 840 lb/min)
- **Medium temperature range** Standard:  $-50$  to  $+200^\circ\text{C}$  ( $-58$  to  $+392^\circ\text{F}$ ) High temperature:  $-50$  to  $+350^\circ\text{C}$  ( $-58$  to  $+662^\circ\text{F}$ )
- **Max. process pressure** PN 100, Class 600, 63K
- **Wetted materials** Measuring tube: 1.4539 (904L); 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022) Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

**Field of application:** Promass F has a long standing reputation as a highly accurate device under varying process conditions. It is suited for a broadest range of applications. Combined with the Promass 83 transmitter with touch control, four line display and extended functionality like software options for filling and dosing, concentration measurement or advanced diagnostics, Promass 83F offers premium accuracy in measurement of liquids and gases.

## Features and specifications

## Liquids

### Measuring principle

Coriolis

### Product headline

The flowmeter with premium accuracy, robustness and extended transmitter functionality. Highest measurement performance for liquids and gases under varying, demanding process conditions.

### Sensor features

Highest process safety – immune to fluctuating and harsh environments. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space-saving installation – no in/outlet run needs. Mass flow: measurement error  $\pm 0,05$  % (PremiumCal). pressure-rated sensor housing up to 40 bar (580 psi).

### Transmitter features

Quality – software for filling & dosing, density & concentration, advanced diagnostics. Flexible data transfer options – numerous communication types. Automatic recovery of data for servicing. 4- line backlit display with touch control. Device in compact or remote version.

### Nominal diameter range

DN 8 to 250 ( $\frac{3}{8}$  to 10")

High temperature: DN 25 (1"), DN 50 (2"), DN 80 (3")

### Wetted materials

Measuring tube: 1.4539 (904L); 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

### Measured variables

Mass flow, density, temperature, volume flow, corrected volume flow, reference density, concentration

## Liquids

**Max. measurement error**

Mass flow (liquid):  $\pm 0.1$  % (standard), 0.05 % (option)

Volume flow (liquid):  $\pm 0.1$  %

Mass flow (gas):  $\pm 0.35$  %

Density (liquid):  $\pm 0.0005$  g/cm<sup>3</sup>

**Measuring range**

0 to 2 200 000 kg/h (0 to 80 840 lb/min)

**Max. process pressure**

PN 100, Class 600, 63K

**Medium temperature range**

Standard:  $-50$  to  $+200$  °C ( $-58$  to  $+392$  °F)

High temperature:  $-50$  to  $+350$  °C ( $-58$  to  $+662$  °F)

**Ambient temperature range**

Standard:  $-20$  to  $+60$  °C ( $-4$  to  $+140$  °F)

Option:  $-40$  to  $+60$  °C ( $-40$  to  $+140$  °F)

**Sensor housing material**

1.4301/1.4307 (304L), corrosion resistant

**Transmitter housing material**

Powder-coated die-cast aluminium

1.4301 (304), sheet

CF3M (316L), cast

**Degree of protection**

IP67, type 4X enclosure. Remote transmitter: IP67, type 4X enclosure

**Display/Operation**

4-line backlit display with touch control (operation from outside)

Configuration via local display and operating tools possible

## Liquids

### Outputs

4 modular outputs:

0-20 mA (active)/4-20 mA (active/passive)

Pulse/frequency/switch output (passive)

Relay

### Inputs

2 modular inputs:

Status

0-20 mA (active)/4-20 mA (active/passive)

### Digital communication

HART, PROFIBUS PA/DP, FOUNDATION Fieldbus, Modbus RS485, EtherNet/IP

### Power supply

DC 16 to 62 V

AC 85 to 260 V (45 to 65 Hz)

AC 20 to 55 V (45 to 65 Hz)

### Hazardous area approvals

ATEX, IECEx, FM, CSA, NEPSI

### Other approvals and certificates

3.1 material, calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025), NAMUR, SIL, marine

PED, CRN, AD 2000

3-A, FDA

NACE MR0175/MR0103, PMI; welding test acc. to EN, ASME, NORSOK

### Product safety

CE, C-tick, EAC marking

### Functional safety

CE, C-tick

### Metrological approvals and certificates

Calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025), NAMUR

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## Liquids

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### Marine approvals and certificates

Marine approval

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### Pressure approvals and certificates

PED, CRN, AD 2000

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### Material certificates

3.1 material

NACE MR0175/MR0103, PMI; welding test acc. to EN, ASME, NORSOK

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### Hygienic approvals and certificates

3-A, FDA

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## Gas

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### Measuring principle

Coriolis

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### Product headline

The flowmeter with premium accuracy, robustness and extended transmitter functionality. Highest measurement performance for liquids and gases under varying, demanding process conditions.

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### Sensor features

Highest process safety – immune to fluctuating and harsh environments. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space-saving installation – no in/outlet run needs. Mass flow: measurement error  $\pm 0,05$  % (PremiumCal). pressure-rated sensor housing up to 40 bar (580 psi).

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### Transmitter features

Quality – software for filling & dosing, density & concentration, advanced diagnostics. Flexible data transfer options – numerous communication types. Automatic recovery of data for servicing. 4- line backlit display with touch control. Device in compact or remote version.

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## Gas

**Nominal diameter range**DN 8 to 250 ( $\frac{3}{8}$  to 10")

High temperature: DN 25 (1"), DN 50 (2"), DN 80 (3")

**Wetted materials**

Measuring tube: 1.4539 (904L); 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

**Measured variables**

Mass flow, density, temperature, volume flow, corrected volume flow, reference density, concentration

**Max. measurement error**Mass flow (liquid):  $\pm 0.1$  % (standard), 0.05 % (option)Volume flow (liquid):  $\pm 0.1$  %Mass flow (gas):  $\pm 0.35$  %Density (liquid):  $\pm 0.0005$  g/cm<sup>3</sup>**Measuring range**

0 to 2 200 000 kg/h (0 to 80 840 lb/min)

**Max. process pressure**

PN 100, Class 600, 63K

**Medium temperature range**Standard:  $-50$  to  $+200$  °C ( $-58$  to  $+392$  °F)High temperature:  $-50$  to  $+350$  °C ( $-58$  to  $+662$  °F)**Ambient temperature range**Standard:  $-20$  to  $+60$  °C ( $-4$  to  $+140$  °F)Option:  $-40$  to  $+60$  °C ( $-40$  to  $+140$  °F)**Sensor housing material**

1.4301/1.4307 (304L), corrosion resistant

## Gas

**Transmitter housing material**

Powder-coated die-cast aluminium  
1.4301 (304), sheet  
CF3M (316L), cast

**Degree of protection**

IP67, type 4X enclosure. Remote transmitter: IP67, type 4X enclosure

**Display/Operation**

4-line backlit display with touch control (operation from outside)  
Configuration via local display and operating tools possible

**Outputs**

4 modular outputs:  
0-20 mA (active)/4-20 mA (active/passive)  
Pulse/frequency/switch output (passive)  
Relay

**Inputs**

2 modular inputs:  
Status  
0-20 mA (active)/4-20 mA (active/passive)

**Digital communication**

HART, PROFIBUS PA/DP, FOUNDATION Fieldbus, Modbus RS485,  
EtherNet/IP

**Power supply**

DC 16 to 62 V  
AC 85 to 260 V (45 to 65 Hz)  
AC 20 to 55 V (45 to 65 Hz)

**Hazardous area approvals**

ATEX, IECEx, FM, CSA, NEPSI

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## Gas

### **Other approvals and certificates**

3.1 material, calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025), NAMUR, SIL, marine PED, CRN, AD 2000  
3-A, FDA  
NACE MR0175/MR0103, PMI; welding test acc. to EN, ASME, NORSOK

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### **Product safety**

CE, C-tick, EAC marking

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### **Functional safety**

Functional safety according to IEC 61508, applicable in safety-relevant applications in accordance with IEC 61511

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### **Metrological approvals and certificates**

Calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025), NAMUR

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### **Marine approvals and certificates**

Marine approval

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### **Pressure approvals and certificates**

PED, CRN, AD 2000

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### **Material certificates**

3.1 material  
NACE MR0175/MR0103, PMI; welding test acc. to EN, ASME, NORSOK

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### **Hygienic approvals and certificates**

3-A, FDA

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## Steam

### **Measuring principle**

Coriolis



## Steam

### Product headline

The flowmeter with premium accuracy, robustness and extended transmitter functionality. Highest measurement performance for liquids and gases under varying, demanding process conditions.

### Sensor features

Highest process safety – immune to fluctuating and harsh environments. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space-saving installation – no in/outlet run needs. Mass flow: measurement error  $\pm 0,05$  % (PremiumCal). pressure-rated sensor housing up to 40 bar (580 psi).

### Transmitter features

Quality – software for filling & dosing, density & concentration, advanced diagnostics. Flexible data transfer options – numerous communication types. Automatic recovery of data for servicing. 4- line backlit display with touch control. Device in compact or remote version.

### Nominal diameter range

DN 8 to 250 ( $\frac{3}{8}$  to 10")

High temperature: DN 25 (1"), DN 50 (2"), DN 80 (3")

### Wetted materials

Measuring tube: 1.4539 (904L); 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

### Measured variables

Mass flow, density, temperature, volume flow, corrected volume flow, reference density, concentration

### Max. measurement error

Mass flow (liquid):  $\pm 0.1$  % (standard), 0.05 % (option)

Volume flow (liquid):  $\pm 0.1$  %

Mass flow (gas):  $\pm 0.35$  %

Density (liquid):  $\pm 0.0005$  g/cm<sup>3</sup>

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## Steam

### Measuring range

0 to 2 200 000 kg/h (0 to 80 840 lb/min)

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### Max. process pressure

PN 100, Class 600, 63K

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### Medium temperature range

Standard: -50 to +200 °C (-58 to +392 °F)

High temperature: -50 to +350 °C (-58 to +662 °F)

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### Ambient temperature range

Standard: -20 to +60 °C (-4 to +140 °F)

Option: -40 to +60 °C (-40 to +140 °F)

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### Sensor housing material

1.4301/1.4307 (304L), corrosion resistant

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### Transmitter housing material

Powder-coated die-cast aluminium

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CF3M (316L), cast

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### Degree of protection

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### Display/Operation

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Configuration via local display and operating tools possible

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### Outputs

4 modular outputs:

0-20 mA (active)/4-20 mA (active/passive)

Pulse/frequency/switch output (passive)

Relay

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### Inputs

2 modular inputs:

Status

0-20 mA (active)/4-20 mA (active/passive)

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## Steam

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### Digital communication

HART, PROFIBUS PA/DP, FOUNDATION Fieldbus, Modbus RS485, EtherNet/IP

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### Power supply

DC 16 to 62 V

AC 85 to 260 V (45 to 65 Hz)

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### Hazardous area approvals

ATEX, IECEx, FM, CSA, NEPSI

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### Other approvals and certificates

3.1 material, calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025), NAMUR, SIL, marine

PED, CRN, AD 2000

3-A, FDA

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### Metrological approvals and certificates

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### Marine approvals and certificates

Marine approval

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### Pressure approvals and certificates

PED, CRN, AD 2000

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**Steam****Material certificates**

3.1 material

NACE MR0175/MR0103, PMI; welding test acc. to EN, ASME, NORSOK

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**Hygienic approvals and certificates**3-A, FDA

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**Density****Measuring principle**Coriolis

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**Characteristic / Application**The universal and multivariable flowmeter for liquids and gases

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**Ambient temperature**

-20...65°C

(-4...+140°F)

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**Process temperature**

-50...+350°C

(-58...+662°F)

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**Process pressure**

PN 16...100

CI 150...600

JIS 10...63K

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**Wetted parts**

904L/1.4539

Alloy C-22/2.4602

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**Output**

4...20mA

Pulse/Frequency (10KHz, active/passive)

Relays/Status

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## Density

**Certificates / Approvals**

ATEX

FM

CSA

TIIS

## Density/Concentration

**Measuring principle**

Coriolis

**Product headline**

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**Sensor features**

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**Nominal diameter range**DN 8 to 250 ( $\frac{3}{8}$  to 10")

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Connection: 1.4404 (316/316L); Alloy C22, 2.4602 (UNS N06022)

## Density/Concentration

### Measured variables

Mass flow, density, temperature, volume flow, corrected volume flow, reference density, concentration

### Max. measurement error

Mass flow (liquid):  $\pm 0.1$  % (standard), 0.05 % (option)

Volume flow (liquid):  $\pm 0.1$  %

Mass flow (gas):  $\pm 0.35$  %

Density (liquid):  $\pm 0.0005$  g/cm<sup>3</sup>

### Measuring range

0 to 2 200 000 kg/h (0 to 80 840 lb/min)

### Max. process pressure

PN 100, Class 600, 63K

### Medium temperature range

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### Transmitter housing material

Powder-coated die-cast aluminium

1.4301 (304), sheet

CF3M (316L), cast

### Degree of protection

IP67, type 4X enclosure. Remote transmitter: IP67, type 4X enclosure

### Display/Operation

4-line backlit display with touch control (operation from outside)

Configuration via local display and operating tools possible

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**Density/Concentration****Outputs**

4 modular outputs:  
0-20 mA (active)/4-20 mA (active/passive)  
Pulse/frequency/switch output (passive)  
Relay

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**Inputs**

2 modular inputs:  
Status  
0-20 mA (active)/4-20 mA (active/passive)

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**Digital communication**

HART, PROFIBUS PA/DP, FOUNDATION Fieldbus, Modbus RS485,  
EtherNet/IP

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**Power supply**

DC 16 to 62 V  
AC 85 to 260 V (45 to 65 Hz)  
AC 20 to 55 V (45 to 65 Hz)

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**Hazardous area approvals**

ATEX, IECEx, FM, CSA, NEPSI

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**Product safety**

CE, C-tick, EAC marking

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**Functional safety**

CE, C-tick

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**Metrological approvals and certificates**

Calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025), NAMUR

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**Marine approvals and certificates**

Marine approval

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**Pressure approvals and certificates**

PED, CRN, AD 2000

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## Density/Concentration

### Material certificates

3.1 material

NACE MR0175/MR0103, PMI; welding test acc. to EN, ASME, NORSOK

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### Hygienic approvals and certificates

3-A, FDA

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