

Promass 83I



More information and current pricing:

www.apsc.endress.com/83I

Benefits:

- Energy-saving – full bore design enables minimal pressure loss
- 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): $\pm 0.1\%$ Volume flow (liquid): $\pm 0.1\%$ Mass flow (gas): $\pm 0.5\%$ Density (liquid): $\pm 0.0005 \text{ g/cm}^3$
- **Measuring range** 0 to 180 000 kg/h (0 to 6600 lb/min)
- **Medium temperature range** -50 to $+150 \text{ }^\circ\text{C}$ (-58 to $+302 \text{ }^\circ\text{F}$)
- **Max. process pressure** PN 100, Class 600, 63K
- **Wetted materials** Measuring tube: Titanium grade 9 Connection: Titanium grade 2

Field of application: The straight single-tube design of the Promass 83I, provides the regular Coriolis flowmeter outputs of mass flow, density and temperature, additionally it provides in-line viscosity measurement as an optional output. It offers premium accuracy in measurement of liquids and gases. It will be the preferred solution for customers using extended functionality like software options for filling and dosing, concentration measurement or advanced diagnostics.

Features and specifications

Liquids

Measuring principle

Coriolis

Liquids

Product headline

Combines in-line viscosity and flow measurement with extended transmitter functionality. Measuring liquids and gases in applications requiring low pressure loss and gentle fluid treatment.

Sensor features

Energy-saving – full bore design enables minimal pressure loss. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space-saving installation – no in/outlet run needs. Straight, easy cleanable single-tube system. TMB technology.

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 80 ($\frac{3}{8}$ to 3")

Wetted materials

Measuring tube: Titanium grade 9
Connection: Titanium grade 2

Measured variables

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

Max. measurement error

Mass flow (liquid): ± 0.1 %
Volume flow (liquid): ± 0.1 %
Mass flow (gas): ± 0.5 %
Density (liquid): ± 0.0005 g/cm³

Measuring range

0 to 180 000 kg/h (0 to 6600 lb/min)

Liquids

Max. process pressure

PN 100, Class 600, 63K

Medium temperature range

-50 to +150 °C (-58 to +302 °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

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

Liquids

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

PED, CRN

3-A

Product safety

CE, C-tick, EAC marking

Functional safety

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

Metrological approvals and certificates

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

Pressure approvals and certificates

PED, CRN

Material certificates

3.1 material

Hygienic approvals and certificates

3-A, EHEDG

Gas

Measuring principle

Coriolis

Gas

Product headline

Combines in-line viscosity and flow measurement with extended transmitter functionality. Measuring liquids and gases in applications requiring low pressure loss and gentle fluid treatment.

Sensor features

Energy-saving – full bore design enables minimal pressure loss. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space-saving installation – no in/outlet run needs. Straight, easy cleanable single-tube system. TMB technology.

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 80 ($\frac{3}{8}$ to 3")

Wetted materials

Measuring tube: Titanium grade 9

Connection: Titanium grade 2

Measured variables

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

Max. measurement error

Mass flow (liquid): ± 0.1 %

Volume flow (liquid): ± 0.1 %

Mass flow (gas): ± 0.5 %

Density (liquid): ± 0.0005 g/cm³

Measuring range

0 to 180 000 kg/h (0 to 6600 lb/min)

Max. process pressure

PN 100, Class 600, 63K

Gas

Medium temperature range

-50 to +150 °C (-58 to +302 °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

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

Gas

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

PED, CRN

3-A

Product safety

CE, C-tick, EAC marking

Functional safety

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

Metrological approvals and certificates

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

Pressure approvals and certificates

PED, CRN

Material certificates

3.1 material

Hygienic approvals and certificates

3-A, EHEDG

Density

Measuring principle

Coriolis

Density

Characteristic / Application

Balanced single-tube system, "Fit-and-Forget" installation

Design:

Easy to clean, hygienic, careful handling of the medium
- chemically resistant material

Ambient temperature

-20...+65°C
(-4...+140°F)

Process temperature

-50...+150°C
(-58...+302°F)

Process pressure

PN 16...100
CI 150...600
JIS 10...63K

Wetted parts

Titan

Output

4...20mA
Pulse/Frequency (10KHz), active/passiveRelays/Status

Certificates / Approvals

ATEX
FM
CSA

Density/Concentration

Measuring principle

Coriolis

Density/Concentration

Product headline

Combines in-line viscosity and flow measurement with extended transmitter functionality. Measuring liquids and gases in applications requiring low pressure loss and gentle fluid treatment.

Sensor features

Energy-saving – full bore design enables minimal pressure loss. Fewer process measuring points – multivariable measurement (flow, density, temperature). Space-saving installation – no in/outlet run needs. Straight, easy cleanable single-tube system. TMB technology.

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 80 ($\frac{3}{8}$ to 3")

Wetted materials

Measuring tube: Titanium grade 9

Connection: Titanium grade 2

Measured variables

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

Max. measurement error

Mass flow (liquid): ± 0.1 %

Volume flow (liquid): ± 0.1 %

Mass flow (gas): ± 0.5 %

Density (liquid): ± 0.0005 g/cm³

Measuring range

0 to 180 000 kg/h (0 to 6600 lb/min)

Max. process pressure

PN 100, Class 600, 63K

Density/Concentration

Medium temperature range

-50 to +150 °C (-58 to +302 °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

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

Density/Concentration**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

Product safety

CE, C-tick, EAC marking

Functional safety

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

Metrological approvals and certificates

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

Pressure approvals and certificates

PED, CRN

Material certificates

3.1 material

Hygienic approvals and certificates

3-A, EHEDG

Viscosity**Measuring principle**

Coriolis

Main features

Balanced single-tube system, "Fit-and-Forget" installation, viscosity measurement

Design:

Easy to clean, hygienic, careful handling of the medium

Viscosity

Diameter

DN 8...80

5/16"...3"

Measuring range

0...180'000 kg/h

0... 20'000 cP (viscosity)

Process temperature

-50...+150°C

(-58...+302°F)

Pressure range

PN 16...100

CI 150...600

JIS 10...63K

Measurement error

Mass flow: +-0.1%

Volume flow: +-0.5%

Viscosity: $\pm 5\% \pm 0.5 \text{ mPa}\cdot\text{s}$ (Newtonian fluids)

Density: +- 0.004g/cc

Display/Operation

Four line backlit

Touch control

Inputs

Status

Current input

Outputs

0/4...20mA

Pulse Frequency (10KHz), active/passive

Relays/Status

Viscosity

Communication

HART
PROFIBUS PA
Profibus DP
FOUNDATION Fieldbus

Ex-Approvals

ATEX
FM
CSA

Protection electronic

IP 67
NEMA 4x

Features

S-DAT, T-DAT, F-Chip
Validation
Quick Set-up
3 Totalizers
Pulsating Flow
Advanced diagnostics
Batching
Concentration measurement

Advantages

Balanced single-tube system.
Dual mode for independent viscosity measurement.
High vibration immunity.
Easy and cost-effective mounting.
Measurement is independent of fluid properties.
Promass 83 with "Touch Control": Operation from outside without opening the house.
Software packages may be updated for:
- Dosage applications
- Concentration measurement
- Advanced diagnostics
"Quick Setup" menus for straightforward commissioning in the field.

Viscosity

More information www.apsc.endress.com/83I