



CORIOLIS MASS FLOW AND DENSITY METER FOR MARINE FUEL CONSUMPTION MANAGEMENT

- Customized installation length
- Direct mass flow measurement
- Real time density measurement for fuel quality control
- Maintenance free
- No moving parts
- Replaces all kind of volume based flow meters
- Excellent repeatability in order to determine actions for process/engine optimization
- Recommended 5 year meter recalibration

ACCURACY¹⁾

Basic Accuracy (Mass Flow) ²⁾ :	$\pm 0.3 \%$ (option: up to $\pm 0.15 \%$) of flow rate
Repeatability (Mass Flow):	$\pm 0.05 \%$ of flow rate
Basic Accuracy (Volume Flow) ²⁾ :	$\pm 0.3 \%$ (option: up to $\pm 0.2 \%$) of flow rate
Repeatability (Volume Flow):	$\pm 0.05 \%$ of flow rate
Zero Stability:	$\pm 0.015 \%$ of full scale

DENSITY

Density Range:	up to $2,500 \text{ kg/m}^3$ [2.5 g/cm^3]
Density Accuracy ²⁾ :	$\pm 1.0 \text{ kg/m}^3$ [$\pm 0.001 \text{ g/cm}^3$]
Density Repeatability:	$\pm 0.5 \text{ kg/m}^3$ [$\pm 0.0005 \text{ g/cm}^3$]

TEMPERATURE

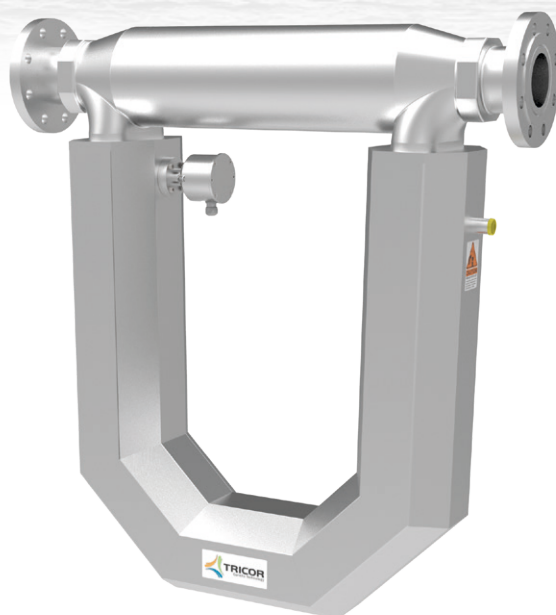
Process Temperature Range:	$-40 \text{ }^\circ\text{C} \dots +100 \text{ }^\circ\text{C}$ [$-40 \text{ }^\circ\text{F} \dots +212 \text{ }^\circ\text{F}$] Option ³⁾ : $-60 \text{ }^\circ\text{C} \dots +150 \text{ }^\circ\text{C}$ [$-76 \text{ }^\circ\text{F} \dots +302 \text{ }^\circ\text{F}$] $-60 \text{ }^\circ\text{C} \dots +200 \text{ }^\circ\text{C}$ [$-76 \text{ }^\circ\text{F} \dots +392 \text{ }^\circ\text{F}$]
Temperature Accuracy:	$\pm 1 \text{ }^\circ\text{C}$ $\pm 0.5 \%$ of reading [$\pm 1.8 \text{ }^\circ\text{F}$ $\pm 0.5 \%$ of reading]
Temperature Repeatability:	$\pm 0.2 \text{ }^\circ\text{C}$ [$\pm 0.36 \text{ }^\circ\text{F}$]

MATERIALS (WETTED PARTS)

Tubes:	1.4404 [AISI 316L]
Case:	1.4404 [AISI 316L]
Flow Splitter:	CF3M [1.4409]
Option:	NACE MR 0175/0103 compliant

TYPICAL SPECIFICATION:

Nominal Meter Size:	DN80 [3"]
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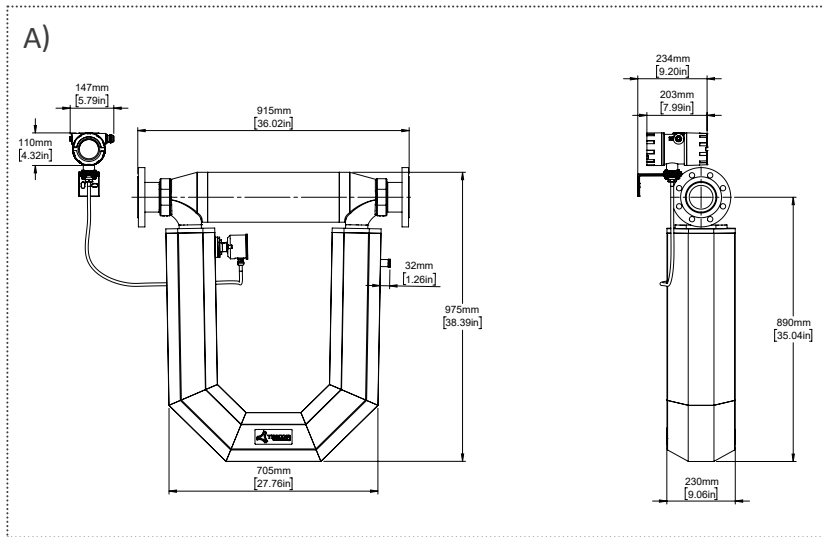
¹⁾ Stated flow accuracy combines the effects of repeatability, linearity and hysteresis.

²⁾ The specifications refer to standard conditions (for further information see TCM CLASSIC series manual).

³⁾ Ex-Version compact: $-40 \text{ }^\circ\text{C} \dots +70 \text{ }^\circ\text{C}$, $-40 \text{ }^\circ\text{F} \dots +158 \text{ }^\circ\text{F}$.



CLASSIC Series | TCM 230K Coriolis Mass Flow Meter



METER DIMENSIONS⁴⁾ AND WEIGHTS

A) Remote Version

Weight: 87 kg [191.8 lb]

With junction box and remote field mount

Process Connection:

standard meter connection according table

APPROVALS & CERTIFICATIONS

Hazardous area (Ex)

ATEX	Zone 1: Group IIC or IIB, T2...T4
	Zone 2: II 3G Ex nA IIC T2...T4 Gc
IECEX	Zone 1: Group IIC or IIB, T2...T4
cCSAus ⁷⁾	Class 1, Division 1: Group A, B, C, D or C, D, T2...T4
ATEX + IECEX + cCSAus triple approval ^{7) 8)}	Zone 1: Group IIC or IIB, T2...T4
	Class 1, Division 1: Group A, B, C, D or C, D, T2...T4
EAC (TR-CU) ⁷⁾	Group IIC or IIB, T2 ... T4

Product Type Approval

American Bureau of Shipping	Certificate Number: 14-HS1223473-PDA-DUP
RMRS	Russian Maritime Register of Shipping

PANEL MOUNT⁵⁾



REMOTE MOUNT⁶⁾



ELECTRONICS

Power Supply:	24 V DC $\pm 20\%$ or 90 ... 264 V AC
Outputs:	Analog, Frequency, Pulse, Status
Interfaces:	RS485 RTU (Modbus), HART®
Cable Gland:	M20 1/2" NPT

⁴⁾ Drawing of the Meter Dimensions reflects one standard connection, other connections on request (Installation length can vary depending on selected connection).

⁵⁾ Weight: 0.4 kg [0.88 lb].

⁶⁾ Weight with aluminum diecast housing: 3.8 kg [8.4 lb] with 3 m cable.

⁷⁾ For Ex1, Ex3, EAC (TR-CU) the electronic is only available in aluminum housing.

⁸⁾ Only with remote electronics.

www.tricorflow.com



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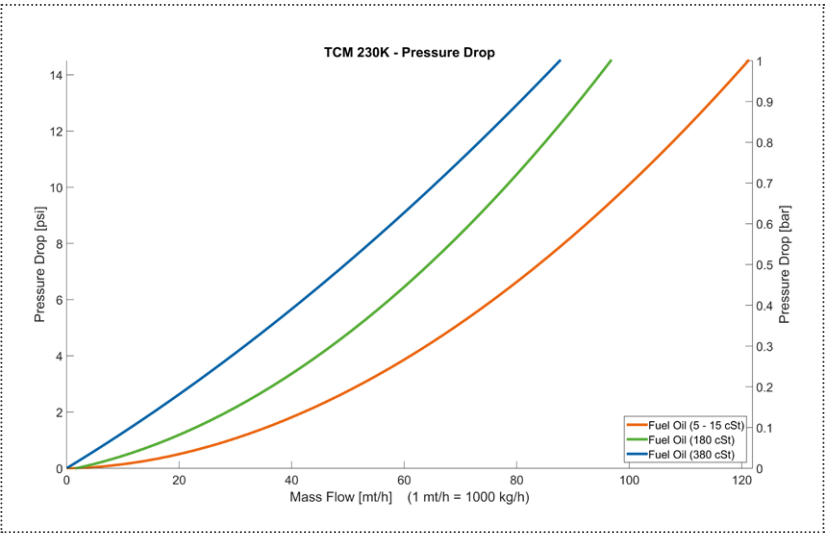
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PROCESS CONNECTION

Model Code	ANSI B16.5 or DIN EN 1092-1 Form B	Face-to-Face (mm)	Flange - Ø (mm)	Screws QTY	Hole - Ø for screws (mm) or screw dim.
AS	3.0" CL 150 ANSI	915	190	4	19
AT	3" CL 300 ANSI	915	210	8	22
AU	3" CL 600 ANSI	915	210	8	22
AW	4" CL 150 ANSI	915	230	8	19
AX	4" CL 300 ANSI	915	255	8	22
DJ	DN80 PN40 EN 1092-1 Form B1	915	200	8	M16
DK	DN80 PN100 EN 1092-1 Form B1	915	230	8	M24
DL	DN100 PN40 EN 1092-1 Form B1	915	235	8	M20



PRESSURE DROP

Range	Fuel Oil		
Viscosity (cSt)	5-15	180	380
Density (kg/m³)	900	900	900
Flow Rate (mt/h)	122.0	97.6	88.0
Pressure Drop (bar/psi)	1 [14.5]		

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