ABB MEASUREMENT & ANALYTICS

CoriolisMaster

Accurate flow measurement of liquids and gases

CoriolisMaster
Measurement made easy

Highest measurement accuracy, easy installation and handling, compact and space-saving design.

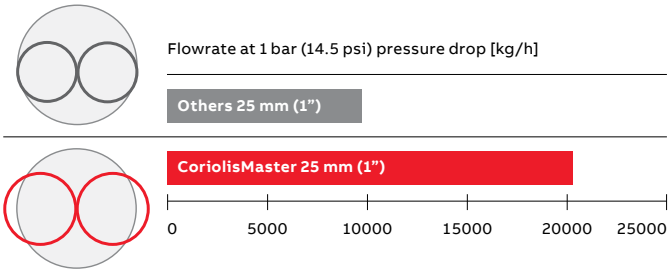
- **High-precision measurement** of mass and volume flow, density, temperature and concentration with just one device
- **Easy installation** due to a space-saving design
- **Easy reduction** of operating costs: minimal pressure loss, no moving parts and inherently maintenance-free
- **Easy integration** due to a modular transmitter concept and universal sensor design
- **Easy operation** through the standard ABB user interface
- **Inlet or outlet straight length sections** are not required

CoriolisMaster
Top performance

Accurate measurement – optimal design.

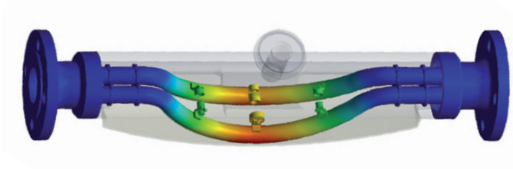
The excellent zero stability enables measuring spans of 100:1 or larger. Top measuring accuracy has been confirmed and certified by independent bodies.

ABB offers a variety of models with different accuracy and designs. Selectable accuracy classes allow for optimal tailoring to the required process conditions. Installation length and handling are identical for all models. The large tube diameter minimizes pressure losses to virtually zero. Allowing for up to 50 % pressure loss savings compared to other commercially available products.



CoriolisMaster
The sensors

The ideal combination of performance, compact size and low pressure drop.



Maintenance-free design
No moving parts in the fluid makes the design of the CoriolisMaster inherently maintenance-free.

Self-draining sensor design
No fluid or solid residues remain in the tubes.

FCBxxx: Universal Sensor
Featuring high savings potential for installation, lower required pump capacity and spare part costs. Compact size with low tare weight.

FCHxxx: Sensor for hygienic applications
The same advantages as the FCBxxx, additionally with EHEDG certification.

MS2: Sensor for low flow rates
For low flow rates with a process pressure of up to 500 bar; very compact size.

— FCBxxx

— FCHxxx

— MS2

CoriolisMaster
The transmitters

CoriolisMaster comes with a variety of transmitter series that are tailored for specific applications.

FCx100 – System integration flowmeter
The FCx100 transmitter is specifically designed to make system integration as easy as possible. It features a high speed Modbus RS485 output and additional digital outputs. This allows for easy and complete system integration with the measuring device even for quick filling applications.

FCx400 – Flowmeter with high-performance signal transmitter
The transmitter features up to five inputs/outputs. The modular concept offers maximum flexibility. Its sensor and application memory concept enables easy maintenance and utmost data security. Thanks to the digital SmartSensor technology, industry-standard cables can be used with remote mount technology.

—
ME2 transmitter
for remote mount design
for MS2 sensor

—
FCx400 transmitter
in single-compartment
housing for remote
mount design

—
FCx400 transmitter
in dual-compartment
housing for remote
mount design

—
FCx100 transmitter
for integral mount
design

—
FCx400 transmitter
in single-compartment
housing for integral
mount design

—
FCx400 transmitter
in dual-compartment
housing for integral
mount design

CoriolisMaster
The modular concept

Up to 5 modular inputs/outputs
- Optimal tailoring to the application

Digital SmartSensor technology
- Easy installation, industry-standard cables can be used for the remote mount design
- Intelligence of measuring devices close to the sensor

SensorApplicationMemory
- Maximum data security
- Plug and play replacement of transmitter electronic components

SensorApplicationMemory

Common ABB look and feel
- Quick commissioning with the Easy Set-up functionality
- Intuitive operation through the front glass using capacitive buttons

Easy Set-up

Infrared interface for easy diagnosis and verification

Integrated VeriMass
Device verification and diagnosis
- Predictive maintenance
- Extended maintenance cycles

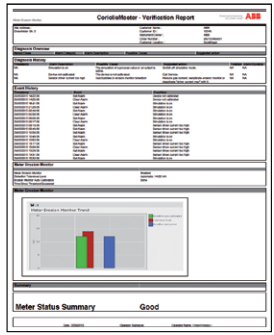
CoriolisMaster Software Tools
- DensiMass for concentration measurement, net mass and volume flow measurements
- FillMass for filling applications

For robust operating conditions
- Designed for ambient temperatures of up to 70 °C
- Resistant to high vibration

VeriMass
Integrated device verification and diagnosis

Comprehensive diagnosis in accordance with NAMUR standard NE107 is included in the base version. VeriMass offers more. The built-in erosion monitoring function creates a “fingerprint” of the measuring device in the specific application as a basis for automatic, continuous monitoring. As this feature focuses on erosion and coating of the meter, long term trends are identified.

The health status of the meter as well as the erosion monitor status can be combined in a verification report print out, documenting required meter checks.



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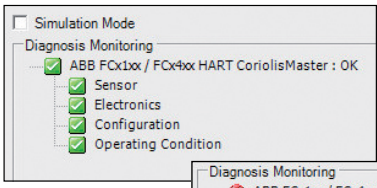
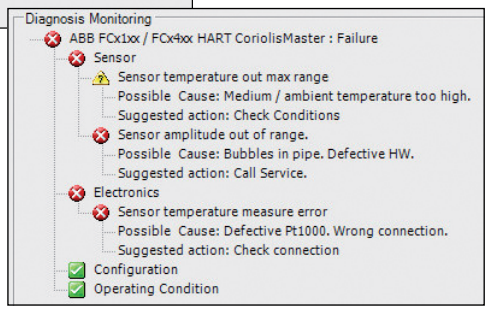
Diagnosis and VeriMass verification report





CoriolisMaster
Maximum versatility

Functional safety, special application software and extensive approvals – you can't ask for more.

Functional safety
The CoriolisMaster FCx400 devices are certified in accordance with SIL2 and therefore offer the highest safety standards. The special advantage of the CoriolisMaster technology is that the required proof tests can be conducted on-site without the need to remove the device.

DensiMass software
With the integrated DensiMass software, direct concentration measurements, Brix measurements or net oil calculations (water content) are possible. Even temperature-standardized calculations of density and volume, based on the extensive database stored in the measuring device, can be conducted.

FillMass Software
With the help of the integrated FillMass software, an independent filling function can be implemented. It allows for the direct control of the filling valve.

CoriolisMaster
The portfolio at a glance

Sensor*	Transmitter
FCBxxx Standard 	FCx100 – Modbus transmitter for integral mount design FCx400 – Top performance transmitter for integral mount design
FCHxxx Hygienic 	FCx400 – Sensor electronics for remote mount design FCx400 – Top performance transmitter for remote mount design
MS2 Sensor*	**ME2 Transmitter for remote mount design**

*Available only together with transmitters

CoriolisMaster
Simply fits your purpose

The most important data at a glance		
Nominal sizes		
1.5 mm	(MS2)	0 … 65 kg/h
3 mm	(MS2)	0 … 250 kg/h
6 mm	(MS2)	0 … 1,000 kg/h
DN 15	(FCBxxx)	0 … 8,000 kg/h
DN 25	(FCBxxx/FCHxxx)	0 … 35,000 kg/h
DN 50	(FCBxxx/FCHxxx)	0 … 90,000 kg/h
DN 80	(FCBxxx/FCHxxx)	0 … 250,000 kg/h
DN 100	(FCBxxx)	0 … 520,000 kg/h
DN 150	(FCBxxx)	0 … 860,000 kg/h
Wetted materials 1.4404/1.4435 (316L) or Hastelloy C		

CoriolisMaster FCXx30	CoriolisMaster FCXx50
Accuracy for liquids	
Mass: 0.4 % / 0.2 % o.r.	Mass: 0.15 % / 0.1 % o.r.
Volumes: 0.4 % / 0.2 % o.r.	Volumes: 0.15 % / 0.11 % o.r.
Density: 10 g/l	Density: 2 g/l or 1 g/l or 0.5 g/l
Accuracy for gases	
Mass: 1 % o.r.	Mass: 0.5 % o.r.
Measured medium temperature	
-50 … 160 °C	-50 … 205 °C

Approvals	
Explosion protection	IECEx, ATEX, cFMus, NEPSI Zone 0,1,2 or Div. 1,2
Marine, Offshore	DNV GL
Custody transfer	API, chapter 5.6 and AGA11, MID/OIML R117, many local approvals
Hygienic applications	EHEDG, FDA material conformity
Mechanical safety	DGRL, CRN and NACE
Functional safety	TÜV SIL2 Certificate

	Series FCx100	Series FCx400
LCD indicator	no	yes, illuminated
Outputs	Modbus 2 digital outputs (impulse, frequency contact output)	Up to 5 modular inputs/outputs freely selectable and adjustable*, HART, Modbus, PROFIBUS DP
Operation possible without opening the cover	no	yes
SmartSensor Concept	yes	yes
Ambient temperature	-40 … 70 °C	-40 … 70 °C
Custody transfer	yes, in accordance with MID/OIML R175	yes, in accordance with MID/OIML R175
SIL2	no	yes
Power supply	11 … 30 VDC	11 … 30 VDC 110/230 VAC
Max. power consumption	5 W (normal: 2… 3 W)	20 W (normal: 4 … 5 W)
DensiMass concentration	yes (Version FCx150)	yes (Version FCx450)
FillMass filling software	yes (Version FCx150)	yes (Version FCx450)
VeriMass verification	yes	yes

*Details available in the data sheet

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