

Product Data Sheet

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Micro Motion® MVD™ Direct Connect™ Coriolis Meters with MVD™ Technology

The Micro Motion® MVD™ Direct Connect™ solution combines the accuracy, reliability, and performance of Micro Motion Coriolis meters with the simplicity of a direct Modbus® interface. The MVD Direct Connect I.S. barrier option enables installation of the meter into hazardous areas and provides the same power conditioning benefits that a transmitter offers.



ELITE® Peak performance Coriolis meter

F-Series High performance compact drainable Coriolis meter

H-Series Hygienic compact drainable Coriolis meter

T-Series Straight tube full-bore Coriolis meter

R-Series General purpose flow-only Coriolis meter

Features and Benefits

- Unique MVD Direct Connect architecture simplifies installation and reduces cost and complexity through direct integration into a Modbus host
- Complete solution provides access to all Micro Motion process variables, embedded diagnostics, and full sensor configuration
- Optional compact DIN rail barrier allows hazardous-area installation and provides power conditioning



Micro Motion MVD Direct Connect Meters

Micro Motion Coriolis meters from Emerson Process Management meet a vast range of application needs, ranging from extreme low-flow up to high-flow, high-capacity lines. Cryogenic, hygienic, high-temperature, and high-pressure — Micro Motion meters can handle them all. Micro Motion meters are available with a variety of wetted parts to ensure the best material compatibility.

Coriolis meters. Coriolis meters offer dramatic benefits over traditional volumetric measurement technologies. Coriolis meters:

- Deliver accurate and repeatable process data over a wide range of flow rates and process conditions.
- Provide direct inline measurement of mass flow and density, and also measure volume flow and temperature — all from a single device.
- Have no moving parts, so maintenance costs are minimal.
- Have no requirements for flow conditioning or straight pipe runs, so installation is simplified and less expensive.
- Provide advanced diagnostic tools for both the meter and the process.

Micro Motion MVD Direct Connect Coriolis meters. The unique architecture of Micro Motion MVD technology lowers the power requirements and distributes safe DC power to the sensor, dramatically lowering installed costs compared to traditional analog meters. The MVD Direct Connect I.S. barrier conditions the power and provides intrinsically safe DC power and Modbus communications to the sensor in the field.

In a typical Micro Motion MVD meter, the core processor performs the Coriolis signal processing functions. The transmitter then transduces the digital data to traditional analog or frequency outputs for use by the control system. Without the transmitter, you still have all the sensor and flow rate data, plus management controls such as events, two-phase flow limits, and totalizers — accessible via Modbus communications.

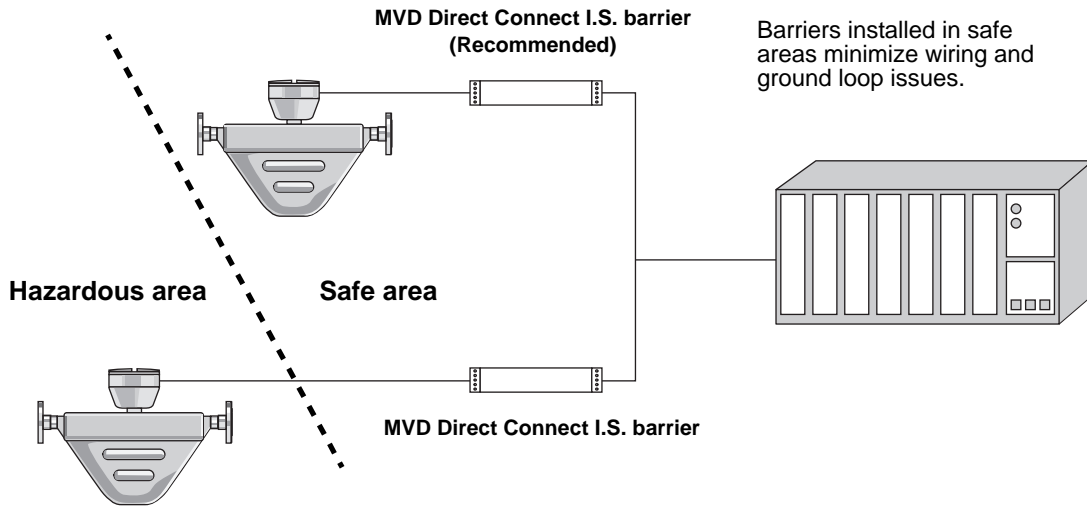
Micro Motion MVD Direct Connect meters are the ideal solution for systems integrators and OEMs looking for the most efficient and cost-effective way to provide MVD technology to their customers for a variety of fluids including toothpaste, vegetable oils, vinegar, ketchup, mayonnaise, and additives, in applications like:

- Material blending skids
- Juice blending
- CNG dispensers
- Remote flow monitoring

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MVD Direct Connect architecture



Easy on space

MVD Direct Connect architecture eliminates transmitters, interface cards, wiring, and cabinet space.

The MVD Direct Connect barrier snaps onto a 35 mm DIN rail, and measures less than 5 x 5 x 1 inches (105 x 110 x 25 mm).



Easy on cabling

Use 4-wire cable between the core processor and the barrier, and use standard RS-485 cable between the barrier and the host.

Easy on installation

Streamlined installation procedures make it easy to put your Micro Motion meter in your pipeline and integrate it with your control system.

Easy on the network

Up to 15 MVD Direct Connect meters can be connected per segment.

Micro Motion meters and the MVD Direct Connect solution



Micro Motion leads the industry with the widest selection of meter types and sizes available. Match the meter to your requirements: sanitary, improved surface finish, hazardous area, high temperature, secondary containment, explosion-proof, and more.

MVD Direct solutions can be installed with any Micro Motion meter that accepts an integral core processor.

For meters that cannot accept an integral core processor, the MVD Direct Connect solution can be installed with a remote core processor, as long as hazardous area approvals are not required.

Micro Motion is continually expanding its meter line. For information on a specific meter, consult the meter product data sheet or contact Micro Motion.

Modbus communications and MVD Direct Connect

ProLink® II software

For configuration, management, and viewing process variables, Micro Motion offers ProLink® II, a Windows-based software program.

ProLink II automatically recognizes the meter it is connected to, retrieves process data, reports status and alarms, and provides data logging and meter fingerprinting capabilities.

ProLink II provides full support for MVD Direct Connect installations with or without the barrier.

Custom software

Your custom process management software can perform the same functions and then translate process data into process control. Using industry-standard Modbus protocol, you can read flow rates and totals, start and stop batches, and respond to process fluctuations and error conditions.

Micro Motion has published its Modbus interface, providing complete access to meter functionality.

Specifications



MVD Direct Connect I.S. Barrier	Electrical	Supply voltage	24 VDC ± 20%		
		Maximum consumption	3.5 W		
		Protection	Polarity		
		Isolation test voltage			
		• Supply to safe side	500 VAC		
		• I.S. to supply/safe side	3750 VAC		
		Sensor supply voltage	15.3 V nominal		
		Sensor current limit	145 mA nominal		
		Communications	Power LED	✓	
	RS-485 LED		✓		
	Baud half-duplex		1200 to 38,400		
	Protocol		TIA/EIA-485 (RS-485)		
	Physical	Dimensions (H × W × D)	4.291" × 0.925" × 4.095" (109 × 23.5 × 104 mm)		
		Weight	0.34 lb (152 g)		
		Tightness enclosure	IP50		
Tightness terminal		IP20			
Screw terminal torsion		0.5 N-m			
Environmental	Temperature	−40 to +140 °F (−40 to +60 °C)			
	Relative humidity	< 95% (non-condensing)			
Meter system	Cable	Cable type	Wire size	Max length	
					Core processor to host or barrier ⁽¹⁾
			Power wire ⁽²⁾	22 AWG (0.35 mm ²)	300 feet (90 meters)
				20 AWG (0.5 mm ²)	500 feet (150 meters)
				18 AWG (0.8 mm ²)	500 feet (150 meters)
		Barrier to host	Signal wire (RS-485)	22 to 18 AWG (0.35 to 0.8 mm ²)	1000 feet (300 meters)
		Barrier to power supply	Power wire	As required	1000 feet (300 meters)
		Communications	Autodetects incoming signal and switches to match.		
			Protocol	Modbus RTU (8-bit) Modbus ASCII (7-bit)	
			Baud	1200 to 38,400	
			Parity	Even, odd, none	
			Stop bits	1, 2	
		Physical	See product data sheet for selected sensor.		
		Environmental	See product data sheet for selected sensor.		

(1) Micro Motion recommends using Micro Motion 4-wire cable.

(2) Wire must be sized to provide a minimum of 15 V at the core processor. See the installation manual for details.

Hazardous area classifications

ATEX

DEMKO 02ATEX131507 X	 II (2) G [EEEx ib] IIB or [EEEx ib] IIC  II 3 (2) G EEx nA [ib] IIB T4 or EEx nA [ib] IIC T4
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For installation in areas where category 3G equipment is required, the module must be mounted in an enclosure which is in accordance with EN 60079-15.

IECEX

IECEX BVS 07.0024 X	[Ex ib] IIC (Zone 1) Ex nA [ib] IIC T4 (Zone 2)
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For installation in Zone 2, the module must be mounted in an enclosure which is in accordance with IEC 60079-15.

CSA

Suitable for installation in	Class I, Division 2, Group A, B, C, D
Providing intrinsically safe outputs for	Class I, Division 1, Group C, D and Class II, Division 1, Group E, F, G

UL

Suitable for installation in	Class I, Division 2, Group A, B, C, D
Providing intrinsically safe outputs for	Class I, Division 1, Group C, D and Class II, Division 1, Group E, F, G

NEPSI

GYJ071475	[Ex ib] IIC
GYJ071476U	Ex nA [ib] IIC T4

The MVD Direct Connect I.S. barrier must be installed in IP 54 (GB4208-1993) housing to be used in a hazardous location. The housing should observe the requirements of GB3836.1-2000 and GB3836.8-2003.

Provisions shall be made to prevent the rated voltage being exceeded by transient disturbances of more than 40%.

End users are not permitted to change any components inside. For installation, use, and maintenance of the MVD Direct Connect I.S. barrier, observe the instruction manual and the following standards:

- GB3836.13-1997 "Electrical apparatus for explosive gas atmospheres. Part 13: Repair and overhaul for apparatus used in explosive gas atmospheres"
 - GB3836.15-2000 "Electrical apparatus for explosive gas atmospheres. Part 15: Electrical installations in hazardous area (other than mines)"
 - GB3836.16-2006 "Electrical apparatus for explosive gas atmospheres. Part 16: Inspection and maintenance of electrical installation (other than mines)"
 - GB50257-1996 "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering"
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Ordering information

To order an MVD Direct Connect meter, specify the appropriate “direct host connection” electronics interface (code W, D, Y, E, 6, 7, 8, or 9) when ordering the sensor.

To order the MVD Direct Connect I.S. barrier with the meter, specify electronics interface code W, D, Y, E, 6, 7, 8, or 9, in combination with approval code C, A, U, Z, P, or I.

Example model number: CMF050M313NWBAEZZZ

Model	Product description
...	...
Code	Process connection
...	...
Code	Case options
...	...
Code	Electronics interface
...	...
W	Polyurethane-painted aluminum integral core processor for MVD Direct Connect installation
D	Stainless steel integral core processor for MVD Direct Connect installation
Y	Extended-mount polyurethane-painted aluminum integral core processor for MVD Direct Connect installation
E	Extended-mount stainless steel integral core processor for MVD Direct Connect installation
6 ⁽¹⁾	Polyurethane-painted aluminum integral enhanced core processor for MVD Direct Connect installation
7 ⁽¹⁾	Stainless steel integral enhanced core processor for MVD Direct Connect installation
8 ⁽¹⁾	Extended-mount polyurethane-painted aluminum integral enhanced core processor for MVD Direct Connect installation
9 ⁽¹⁾	Extended-mount stainless steel integral enhanced core processor for MVD Direct Connect installation
...	...
Code	Conduit connections
...	...
Code	Approvals
...	..
C	CSA (Canada only)
A	CSA C-US (U.S.A. and Canada)
U ⁽²⁾	UL
Z	ATEX
I ⁽²⁾	IECEX Zone 1
P ⁽²⁾	NEPSI (Only available in China)
...	...
Code	Language
...	...
Code	Future option
...	...
Code	Measurement application software
...	...
A ⁽³⁾	Petroleum measurement software
Z	No measurement application software
...	...
Code	Factory options
...	...

(1) Available only with sensors that are equipped with an enhanced core processor.

(2) Available only for certain product configurations. Consult factory for detailed information.

(3) Available only with CMF, F-Series, and T-Series sensors.

Micro Motion—The undisputed leader in flow and density measurement



World-leading Micro Motion measurement solutions from Emerson Process Management deliver what you need most:

Technology leadership

Micro Motion introduced the first reliable Coriolis meter in 1977. Since that time, our ongoing product development has enabled us to provide the highest performing measurement devices available.

Product breadth

From compact, drainable process control to high flow rate fiscal transfer—look no further than Micro Motion for the widest range of measurement solutions.

Unparalleled value

Benefit from expert phone, field, and application service and support made possible by more than 500,000 meters installed worldwide and 30 years of flow and density measurement experience.

 WWW.micromotion.com

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