

L-Cryogenic Series CORIOLIS MASS FLOWMETER

ETRANS – CMASS040LU LNG Datasheet

Precise Measurement,
Ultimate Control

www.enelean.com



Coriolis mass flowmeter

MODEL CMASS040LU LNG



Application Areas

- LNG Receiving Terminals
- LNG Refueling Stations
- Liquefaction Plants
- Cryogenic Storage Systems
- Chemical Processing
- Marine & Offshore

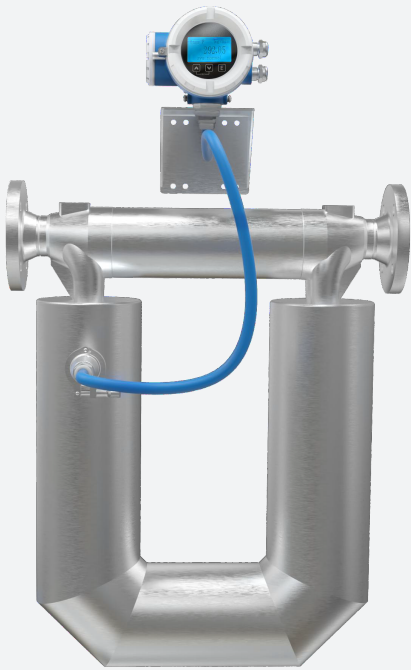
Features

- Cryogenic Precision: Optimized for ultra-low temperature media down to -200°C.
- Direct Mass Measurement: Provides accurate mass flow without needing temperature or pressure compensation.
- High Flow Capacity: Supports a maximum flow rate of 450 kg/min (DN40 diameter).
- Superior Accuracy: Delivers $\pm 0.15\%$ accuracy with 0.075% repeatability for critical trade.
- Advanced DSP Technology: Digital signal processing effectively suppresses vibration and signal interference.
- Explosion-Proof Safety: Certified with Ex d ib IIC T6 Gb for hazardous environment operations.
- Robust & Maintenance-Free: Features a U-shaped tube design with no moving parts to ensure long-term durability.
- Versatile Connectivity: Supports Modbus RTU/RS-485, HART, and 4-20mA output signals.

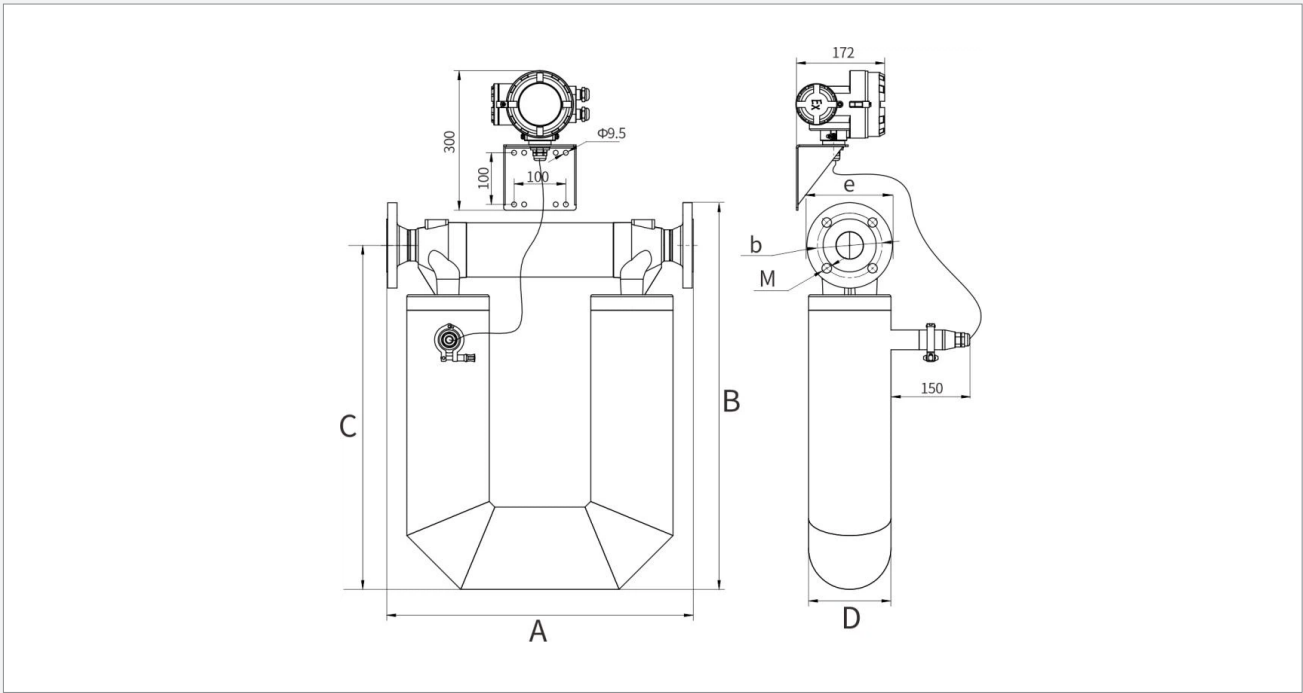
Description

The CMASS040LU LNG Coriolis Mass Flowmeter, offered under the Enelsan brand philosophy of precision and reliability, represents a pinnacle in cryogenic flow measurement technology. Engineered to handle the extreme challenges of Liquefied Natural Gas (LNG) applications, this device ensures high-accuracy performance even at temperatures as low as -200°C. By integrating advanced digital signal processing with a robust U-shaped tube design, Enelsan provides a solution that eliminates the complexities of temperature and pressure compensation, delivering direct mass flow data with unmatched stability.

Enelsan focuses on empowering industrial operations through innovation and durability. The CMASS040LU model is specifically crafted for high-flow environments, featuring a DN40 caliber that supports rates up to 450 kg/min. With a commitment to safety and international standards, Reinmeer ensures that every unit meets rigorous explosion-proof certifications, making it the preferred choice for global LNG terminals, bunkering stations, and large-scale cryogenic storage facilities where custody transfer accuracy is paramount.



Structure



Model and diameter

MODEL	A	B	C	D	e	b	F	M
RM-CMASS040	560	699	324	Ø140	Ø150	Ø110	Ø18	HG/T 20592 DN40 PN40 Flange
RM-CMASS050	592	747	665	Ø159	Ø165	Ø125	4-Ø16	HG/T 20592 DN50 PN40 Flange
RM-CMASS080	763	950	850	Ø219	Ø200	Ø160	8-Ø18	HG/T 20592 DN80 PN40 Flange

Typical Application Scenarios

- Unloading measurement and tank turnover at LNG receiving terminals
- Large-scale vehicle or ship bunkering at LNG refueling stations
- Custody transfer and trade measurement at liquefaction plants
- Leak detection and inventory management in cryogenic storage tanks
- Flow control of cryogenic media (e.g., liquid nitrogen, liquid oxygen) in chemical processes

Coriolis mass flowmeter
MODEL CMASS040LU LNG



Transmitter Specifications

Certification: Transmitter & Sensor Assembly	CCS Certification, CPA, Explosion proof certificate(ex)
Power Supply	220VAC/24VDC Self-adaption
Output signal	Hart,4 to 20mA current loop active, Modbus RTU/RS-485, Pulse active
Display;Operate	3-line backlight; Touch key control
Protection grade	IP66,IP67
Housing material	304 stainless steel, ZL401 (Transmitter)
Electrical connection	1/2 NPT,M20*1.5
Measuring Tube Material; Wetted Parts Surface Finish	316L (default), titanium/Ha C alloy/ tantalum (optional); polishable.
Process connection	Thread
Accuracy	±0.1%,±0.15%, ±0.2%, ±0.5 %, ±1.0%
Transmitter software	CLS100 (default), optional CLS200, CLS300
>>Other certifications	Explosion proof certificate, SIL, CCS, 3-A, EAC

Steady Flow, Massive Measurement, Cryogenic Precision – Coriolis Mass Flow Meter Optimized for High-Flow LNG Applications.

In LNG receiving terminals, storage and transportation hubs, and large-scale bunkering systems, achieving high-precision mass flow measurement under cryogenic and high-flow conditions is crucial for ensuring operational efficiency and trade fairness. Coriolis' DN40 cryogenic Coriolis mass flow meter, with its ultra-low temperature adaptability and high flow rate stability, is a reliable choice for the LNG industry.

Core Operational Challenges Addressed

1. Stable Measurement in Cryogenic Environments

Challenge: LNG's extremely low temperature ($\leq -162^{\circ}\text{C}$) can cause material embrittlement, signal drift, and measurement inaccuracies in traditional flow meters.
Solution:Designed specifically for cryogenic environments, both the sensor and transmitter offer ultra-low temperature resistance, ensuring long-term stable operation within a range of -200°C to $+150^{\circ}\text{C}$.

2. Maintaining Accuracy Under High Flow Rates

Challenge:High-flow impacts can cause pipeline vibration and signal interference, affecting measurement repeatability and accuracy.
Solution:Utilizing a U-shaped tube structure combined with digital signal processing (DSP) technology, it effectively suppresses fluid vibration interference. With a turndown ratio of 100:1 and a maximum flow rate of 450 kg/min, it maintains an accuracy of $\pm 0.15\%$.



3. Direct Mass Output Without Temperature or Pressure Compensation

Challenge: Frequent changes in density and temperature during LNG vaporization require constant compensation for volumetric flow meters, leading to complex systems and cumulative errors.

Solution: The Coriolis principle directly measures mass flow, unaffected by changes in medium properties, providing stable and reliable output while simplifying system structure.

4. High Pressure and Explosion-Proof Safety Requirements

Challenge: LNG processes often involve high-pressure conditions, requiring compliance with explosion-proof and pressure vessel standards.

Solution: With a maximum working pressure of 4MPa and Ex d ib IIC T6 Gb explosion-proof certification, it ensures safe operation.

Core Product Advantages

Cryogenic Expertise: Optimized for cryogenic media such as LNG, liquid nitrogen, and liquid oxygen, with materials and processes tailored for low-temperature environments.

High Accuracy for High Flow Rates: DN40 caliber supports a maximum flow rate of 450 kg/min, with $\pm 0.15\%$ accuracy and 0.075% repeatability.

Direct Mass Measurement: No temperature or pressure compensation required; outputs multiple parameters including mass flow, density, and temperature.

Robust Structure with No Moving Parts: U-shaped tube design ensures no wear, maintenance-free operation, and suitability for long-term use.

Explosion-Proof Safety Certification: Complies with international standards such as ATEX and IECEx, making it suitable for hazardous areas.

Contact us

Enelsan Istanbul Office Address

Şerifali, Barbaros Cd. No: 60, 34775 Ümraniye/İstanbul

Enelsan Factory 1 Address

Çerkeşli OSB Mahallesi İmes 4 Bulvarı No: 11 Dilovası/Kocaeli

Enelsan Factory 2 Address

Çerkeşli OSB Mahallesi İmes 14. Cadde No: 17 Dilovası/Kocaeli

Phone: +90 262 754 63 13

Fax: +90 262 754 93 93

sales@enelsan.com