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We Measure

L-Cryogenic Series
CORIOLIS MASS
FLOWMETER

ETRANS - CMASS008LU LNG
Datasheet

Precise Measurement,
Ultimate Control

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Document 00000049

Coriolis mass flowmeter
MODEL CMASS008LU LNG

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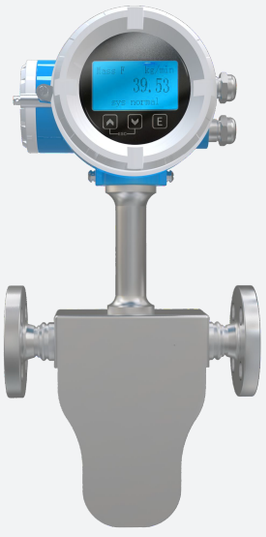
Application Areas

LNG Terminals & Storage
Refueling Stations
Marine & Bunkering
Cryogenic Chemical Processing
Liquefaction Plants



Features

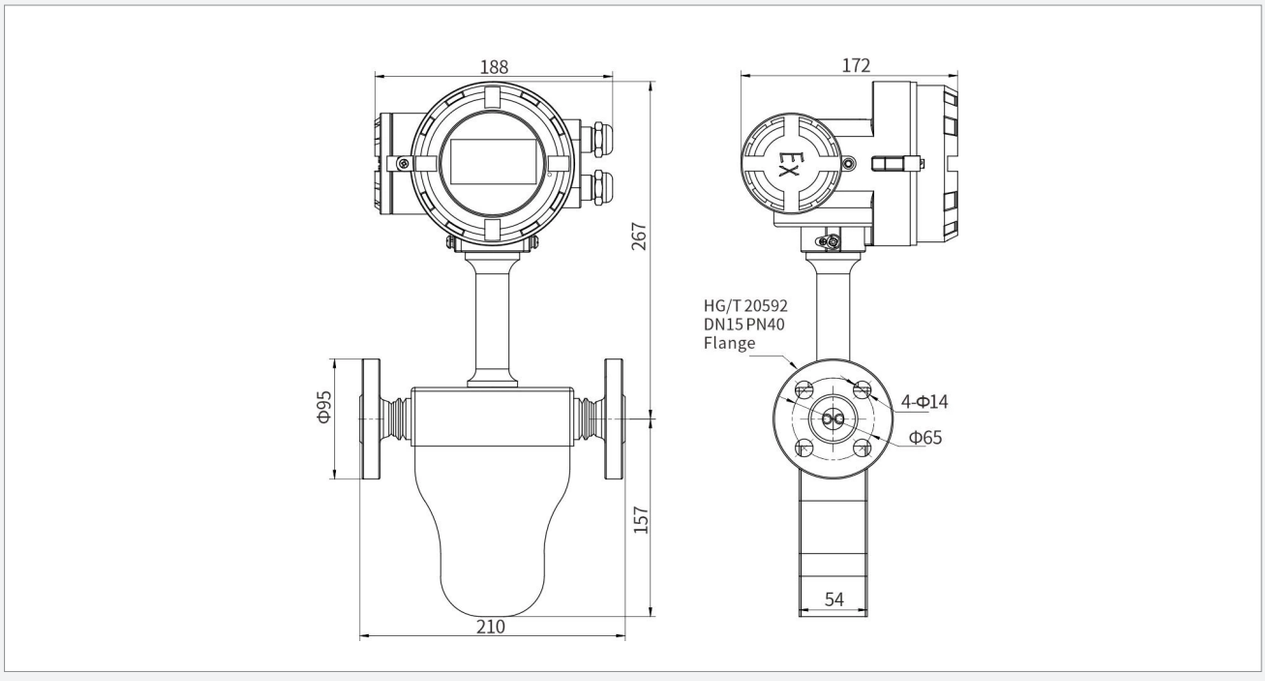
- Cryogenic Excellence: Specifically optimized for ultra-low temperature media down to -200°C.
- Direct Mass Measurement: Provides real-time data for mass flow, density, and temperature simultaneously.
- High Accuracy: Offers precision levels ranging from ±0.1% to ±0.5% depending on specific process requirements.
- Wide Rangeability: Features a 100:1 turndown ratio, maintaining accuracy from minimum venting to maximum recovery flows.
- Compact Installation: Requires minimal straight pipe runs (upstream/downstream), saving significant installation space.
- Rugged Construction: No moving parts and U-tube design ensure zero wear and long-term maintenance-free operation.
- Safety Certified: Fully compliant with ATEX, IECEx, and CCS standards for hazardous area safety.
- Versatile Connectivity: Supports Modbus RTU/RS-485, HART, and 4-20mA signals for seamless system integration.

Description

Enelsan CMASS008LU LNG Coriolis Mass Flowmeter represents the pinnacle of cryogenic measurement technology, specifically engineered to handle the extreme thermal and pressure demands of Liquid Natural Gas (LNG) operations. Designed with advanced U-shape sensor geometry and high-grade 316L stainless steel, this instrument provides direct mass flow measurement without the need for additional pressure or temperature compensation. Its ability to maintain exceptional accuracy at temperatures as low as -200°C makes it a vital component for ensuring trade fairness and operational efficiency in high-value fluid transfers.

The Enelsan series focuses on overcoming the limitations of traditional gas flow meters, such as turbine or vortex types, by offering a wide turndown ratio and superior sensitivity at low flow rates. By utilizing the Coriolis principle, the CMASS008LU is inherently immune to flow profile disturbances, allowing for flexible installation in space-constrained environments like ship bunkering or compact refueling skids. With its robust, maintenance-free design and explosion-proof certifications, Reinmeer provides a reliable and long-lasting solution for the most challenging cryogenic applications in the global energy market.

Structure



Model and diameter

MODEL	CMASS008
Nominal diameter	inch 1/4"
	mm DN08
Medium temp.	-200°C～+150°C
Max.W.P	≤4MPa
Max. flow-rate	kg/min 20
	Lb/min 44

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.
- 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.

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,Flange,Sanitary high-speed interface
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

1. Enables Accurate Trade Settlement and Prevents Financial Loss

This flow meter delivers unparalleled accuracy (typically up to ±0.1%) and directly measures mass flow (kg/h), the internationally recognized standard for LNG trade settlement. It provides the sole, trustworthy measurement basis for both buyers and sellers,☒底 eliminating financial risks and disputes caused by inaccurate metering.

2. Enhances Process Control and Ensures Production Safety

Real-time, accurate flow data serves as the foundation for DCS/SIS systems to execute equipment interlocking, load adjustment, and tank farm management. Precise control prevents safety hazards such as equipment overload or tank overfilling, ensuring stable and safe operation of the entire facility.

3. Enables Precise Energy Management and Cost Reduction

Provides precise cumulative mass data (in tons or kilograms), enabling enterprises to implement detailed energy management, accurately calculate costs and revenues, and optimize operational strategies.

4. Ensures Compliance with Regulations and Standards, Safeguarding Project Legitimacy

Cryogenic Coriolis flow meters are often the preferred solution to meet these stringent regulatory and certification requirements (such as ATEX explosion-proof and SIL safety ratings), ensuring full compliance and legal integrity for projects.

Core Operational Challenges Addressed

1. Compared to traditional gas flow meters (such as turbine, vortex, and differential pressure types), the advantages of Coriolis flow meters are decisive. The LNG return gas flow can fluctuate significantly, requiring accurate measurement from small venting flows to large recovery flows. The small DN8 diameter is well-suited for lower return gas flows. Flow meters like turbine types cannot start or have significant errors at low flow rates.

2. The Coriolis principle is sensitive to the mass of the fluid, not its flow velocity. Therefore, it maintains excellent measurement performance even at extremely low flow rates, with an extremely wide range ratio (up to 100:1), capable of fully covering the entire flow range that may occur during the gas return process.

3. Gas flow meters (such as orifice plates and vortex types) have demanding installation requirements, needing long straight pipe sections upstream and downstream to ensure fully developed flow for accurate measurement. This is often difficult to satisfy when on-site space is limited.

4. The Coriolis mass flow meter's measurement principle is largely unaffected by flow velocity distribution, thus requiring minimal straight pipe sections upstream and downstream. This greatly simplifies on-site installation, saves space, and reduces measurement errors caused by improper installation.

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