

GE

Measurement & Control

Sentinel LCT4 High Accuracy Ultrasonic Flow Meter



Peace of Mind Performance

The Sentinel LCT4 is a new addition to the Panametrics line of ultrasonic flow meters. Designed specifically for high accuracy measurement of crude oil and other liquid refined products, it delivers extremely reliable and repeatable results and meets the strict performance requirements of OIML R117-1.

The LCT4 refines the high-reliability characteristics of its predecessor, the Sentinel LCT, into an aesthetically designed, compact meter body with integral cables, no extended buffers and no junction boxes. It continues to retain all of the advantages of ultrasonic flow measurement, including:

- No drifting or required periodic calibration
- No pressure drop
- No restriction in the pipe
- No moving parts and no filters or strainers

A True Multi-viscosity Meter

The LCT4 uses a number of proprietary algorithms to reduce viscosity effects, making it viscosity independent. No prover run or change of settings is required when viscosity changes. The meter retains its accuracy over the whole range between minimum and maximum viscosity, using only one calibration curve.

Applications

- Liquid custody transfer measurement
- Allocation measurement
- Pipeline leak detection
- Crude oil and refined products
- High temperature flow
- Cryogenic flow
- Any liquid requiring high accuracy and precision



GE imagination at work

Operation and Performance

Fluid Types

Liquid hydrocarbons, crude and refined products, other liquids

Linearity

± 0.15% of measured volume for flow rates between 1 and 33 ft/s (0.3 and 10 m/s)

Uncertainty

± 0.027% according to API MPMS 5.8

Viscosity Range

0 to 660 cSt

Reynolds Range

> Re 10,000, consult factory for lower Reynolds numbers

Process Temperature

-40° to +140°C (-40° to +248°F) standard

Ambient Temperature

-40° to +60°C (-40° to 140°F)

Storage Temperature

-40° to +85°C (-40° to +176°F)

Meter Body

Meter Body Materials

- Carbon steel SA216 Gr. WCB
- Low temperature carbon steel SA352 Gr. LCB
- Stainless steel SA351 Gr. CF8
- Stainless steel SA351 Gr CF8M

Pipe Sizes

3 in to 24 in

Flange Ratings

- 150 #
- 300 #
- 600 #

Pipe Schedules

- 40S • 80S • 10S
- STD • XS

PED Compliance

PED Cat III, module B + C1

Installation requirement = min. 10D upstream with flow conditioner; 5D downstream



Electronics

Electronics Enclosure Material

Epoxy coated aluminium
Stainless steel A351, Gr 316/316L (optional)

Environmental Protection

IP66

Power Supply

- 100 to 240 VAC
- 12 to 32 VDC

Power Consumption

7 watt

Display

High contrast 128 x 64 pixel LED graphical display

Outputs

- Two frequency/pulse outputs optically isolated from DC
- Two alarm relays
- One 4/20 mA output with HART®

Inputs

- Two 4/20 mA and one 100 ohm RTD input for temperature, pressure and density input (option).
- Three 4/20 mA inputs for temperature, pressure and density input (option).

Digital Interfaces

- HART® over 4/20 mA output
- PanaLink over RS232/485/USB
- Modbus RTU over RS232/485

Flow Computer Functionality

Integrated flow computer with full P and T volume corrections according to API 11.1

Hazardous Area Certifications

- USA/Canada: Class 1, Div 1, Groups B, C, & D
- Europe: ATEX II 2 G Ex de IIC (Ex d IIC as option)
- IEC Ex: Ex de IIC (Ex d IIC as option)

CE Compliance

2004/108/EC EMC Directive
2006/95/EC LVD

Custody Transfer Performance Approvals

OIML R117 Accuracy Class 0.3; NMI Certificate TC7595
Multiple country-specific approvals available upon request.

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