LEMIS®
USA

40 SERIES

MULTI-POINT DENSITY METER

UP TO 16 SENSORS IN ONE DEVICE

MDM-40

IN PROCESS TO EXCELLENCE

Specifications

Measuring range:	
Density	0… 3 g/cm³ (0… 3000 kg/m³)
Density Standard	0.6… 1.2 g/cm³ (600… 1200 kg/m³)
Temperature	-40… +85°C (-40... +185°F)
Accuracy:	
Density	Up to ±0.00025 g/cm³ (up to ±0.25 kg/m³)
Temperature	±0.2°C (±0.4°F)
Repeatability:	
Density	Up to ±0.000125 g/cm³ (up to ±0.125 kg/m³)
Temperature	±0.1°C (±0.2°F)
Resolution:	
Density	0.0001 g/cm³ (0.1 kg/m³)
Temperature	0.01°C (0.02°F)
Supported measuring units	Real density: g/cm³, kg/m³, lb/gal, lb/ft³; API; SG Referred density: at 15°C, 20°C, 60°F; API60; SG60 Tables ASTM D1250 Alcohol tables Temperature in °C or °F
Ambient temperature	-40… +85°C (-40... +185°F)
Weather rating	IP68 for sensor and IP65 for other parts
Power voltage:	
Device	110-230V AC (50-60 Hz)
Sensor	6-14V DC (30 mA)
Implosion protection marking	**ATEX** II 1/2G Ex ia IIB T4; **IECEx** Ex ia IIB T4 Ga /Gb; CCE
Digital output	Standard: RS485, Modbus; user choice of signals and protocols
Temperature compensation	Automatic
Viscosity compensation	Automatic
Factory calibration	Calibration certificates supplied as standard

Advantages

- Density/concentration measurement up to 16 points
- Temperature measurement up to 16 points
- Measurement in tanks up to 35 meters
- Continuous measurements
- High accuracy
- Simple installation
- Suitable for very viscous liquids
- Wide range of applications
- Safe operation, low maintenance
- Easy cleaning
- Rigorous factory testing
- Compact design
- Automatic viscosity/temperature compensation

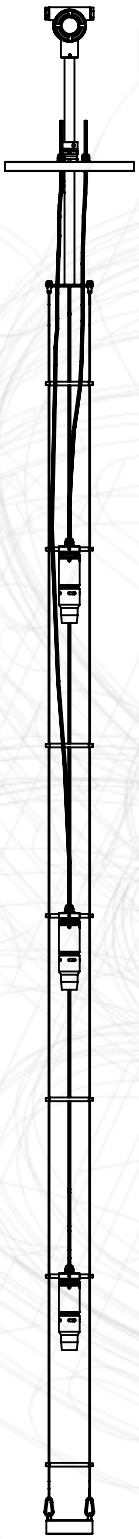
Applications

- Petroleum industry
- Ethanol production
- Food & Beverages
- Chemical industry
- Cosmetic industries
- Pharmaceutical industry

References:

1. VOPAK TERMINAL, UK (2008)
2. PETROCHINA, CHINA (2014)
3. HPCL, INDIA (2016)

Sensor

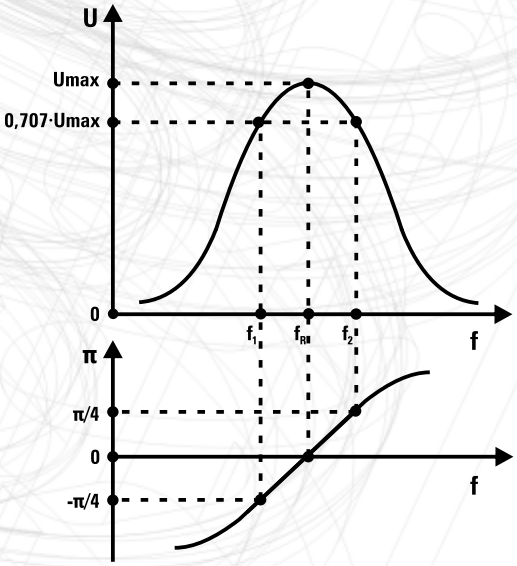


Principle of operation

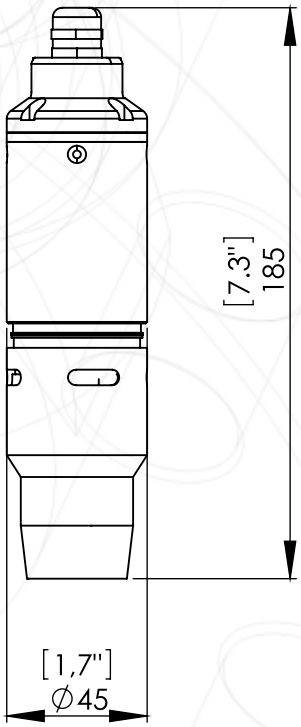
The **MDM-40** measuring principle allows accurate direct measurement liquid density with capability of automatic compensation for liquid's viscosity. This allows **MDM-40** density meter achieving ultimate precision of measurement.

The **MDM-40** sensing element is a specially designed streamlined resonant tube, which is washed on either side by measured liquid. The tube is excited and oscillated at resonant frequency. The oscillation period of the vibrating tube and its frequency characteristics depend on parameters of the measured liquid as its density and viscosity. An integral high accuracy Pt-1000 temperature sensor provides continuous liquid temperature that allows temperature compensation and future calculation of reference density. Calibration constants of the sensor are determined in results of rigorous factory calibration by means of the standard liquids and stored in the EEPROM.

The **MDM-40** series sensor made from stainless steel for general industrial use or from Ni-SpanC for most demanding applications asking for ultimate accuracy in wide temperature range or from Hastelloy for applications where ultimate corrosion resistance is required.



f = 1 / T
f - resonance phase
T - resonator oscillation period



Sensor dimensions

For more information please visit www.lemis-usa.com

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QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001