Density & Viscosity Meters

APPLICATIONS

Spot density and viscosity or density/viscosity/level profile in storage tanks
Products consistency and adulteration check
Density, viscosity and level control at outlets and delivery points
Level gauges calibration
In-tank blending and mixing control
Molasses density control in ethanol production
Food, milk and diary products
% alcohol check in beverages industry
Petroleum products, fuels, lubricants

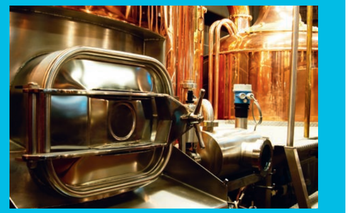


ADVANTAGES

Direct density and viscosity measurement
Density, reference density, specific gravity, API, …
Automatic temperature compensation
No sampling required operation
ATEX Hazloc certification transfer
Safe operation, low maintenance
At any depths up to 30 meters
Record level density and viscosity; average per tank
Record level of liquid
Rigid construction for heavy duty outdoor operation
Local results storage and Bluetooth data transfer

PRINCIPLE OF OPERATION

The operating principle of VDM series is resonant method (vibration element) of measurement. It is based on the changing of frequency characteristics of the sensitive unit and resistance of the built-in temperature sensor in dependence of characteristics of the measured liquid. The oscillation period of the sensitive unit is mainly depends on density, temperature and viscosity of the measured liquid. Density and temperature graduated coefficients are determined in results of calibration by the standard liquids at definite temperature and stored in the EEPROM…

For more information, please, visit LEMIS process web site!

www. lemis-process.com

LEMIS process use the proven vibrating element technique which is widely accepted as the most accurate method of continuous online density and viscosity measurements, **LEMIS process** engineers made new developments by the introducing unique proprietary design of resonant tube sensor allowing accurate measurement of liquid density and viscosity. An integral high accuracy Pt-1000 probe continuously monitors liquid temperature allowing temperature compensation and future calculation of reference density, viscosity, concentration or specific gravity. The technology proves high accuracy of measurement and long term calibration stability even in severs operation conditions. It is insensitive to plant vibration, high variation of temperatures, level, mix or turbulence. A choice of wetted parts materials: from stainless steel for general industrial use, Ni-Span-C for most demanding applications, and Hastelloy for applications where ultimate corrosion resistance is required.

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LEMIS® process

VDM-250 SERIES

PORTABLE SUBMERSIBLE

DENSITY & VISCOSITY METERS

→ *Density...* → *Viscosity...* → *Concentration...*

IN PROCESS TO EXCELLENCE

Portable Density & Viscosity Meters

VDM-250.1, VDM-250.2 and VDM-250.3

Submersible resonant tube sensor

Density and viscosity measurements directly in the tank - from 6 up to 30 meters depth - or in the measuring chamber with accuracy ±0.0003 g/cm³ (density) and ±1% of span (viscosity)

- ➔ Forget Sampling for VDM-250.1 and VDM-250.2!
- ➔ Quickly measure density and viscosity of liquid products in the tank.
- ➔ Measures level of liquid products in the tank.
- ➔ They're economical and easy to operate.
- ➔ Calibration couldn't be simpler - just use distilled water.
- ➔ Select a VDM version according to the testing depths you require.
- ➔ VDM-250.1 plunges to 6 meters, while VDM-250.2 reports real density, viscosity and temperature measurements at 30 meter depths in seconds.
- ➔ Measures highly viscous liquids up to 1200 cP.
- ➔ The received measurements (real density: g/cm, kg/m, lb/gal, lbm/ft, and temperature: °C or °F) are instantly converted to relative density (Specific gravity): 15°C, 20°C, 60°F, API; % of alcohol; BRIX, Baume and other.

Portable Submersible ViscoDens meters VDM-250.1 and VDM-250.2 are best suited for liquid density, viscosity, concentration and temperature measurements directly in the storage or process tanks (up to 30 meters depth). No labor extensive and errors critical sampling required. Instead, the sensors of VDM-250.1 and VDM-250.2 are submersed at any required level and record spot density/viscosity and real temperature at that point directly in the liquid. The operation personal can get in minutes the average density/viscosity in the tank and its density / viscosity / temperature / level profile, for example, at every meter. Hundreds of measurements can be stored locally and future transferred to a PC or printer via built-in bluetooth connectivity. The DVM has robust design for heavy duty year round indoor or outdoor operation, even in severe climatic conditions at –40°C to +85°C (-40°F to +185°F). Backlighted LCD facilitates nighttime operation.

Density and viscosity determination directly in the tanks is faster, easier, more precise and cost effective comparing with conventional technique requiring sampling and use of glass hydrometers and glass capillary viscometers by qualified personal. That is why the portable ViscoDens meters from LEMIS process have found wide application, first of all in oil industry upstream and downstream operations where control of quality (density/viscosity) and quantity (mass) of petroleum products at movement and storage is very critical. Continually, the DVM series gain success in other industries proving obvious advantages and cost effectiveness compare to traditional methods.

VDM-250.3 is best for situation when VDM-250.1 and VDM-250.2 could not be installed. Just take some hundreds millilitres of sample and give results in seconds!

Specifications

Density range	0…2 g/cm³ (0…2000 kg/m³)
Resolution	±0.0001 g/cm³ (0.1 kg/m³)
Accuracy	±0.0003…±0.0005 g/cm³ (0.3 or 0.5 kg/m³)
Viscosity range	0…1200 cSt
Accuracy	±1% of span
Temperature range	-40… +85°C
Repeatability	±0.1°C
Reproducibility	±0.2°C
Ambient temperature	-40… +85°C
Depth of submersion	up to 6 meters
Intrinsically safe: controller sensor	 ATEX II (2G) EEx ib [ia] IIB T4 ATEX II 1G EEx ia IIB T4
Power supply	NiMH 3.6V-1200 mAh
Operating time without charging	Appr. 12 hours
Dimensions: controller sensor	 180 x 80 x 40 mm, 0.6 kg 220 x 42 mm, 1 kg
Temperature compensation	Automatic
Reporting formats	Real density: g/cm , kg/m , lb/gal, lbm/ft; relative density (specific gravity): 15°C, 20°C, 60°F; API gravity; % of alcohol; kinematic viscosity in cSt; temperature in °C or °F
Data handling	Backlighted LCD display Local memory for 998 results with date/time stamped Build in bluetooth for data transfer to printer or PC Optional Windows - based software
Delivery	Delivered in compact carrying case

VDM-250.1

VDM-250.2

Density range	0…2 g/cm³ (0…2000 kg/m³)
Resolution	±0.0001 g/cm³ (0.1 kg/m³)
Accuracy	±0.0003…±0.0005 g/cm³ (0.3 or 0.5 kg/m³)
Viscosity range	0…1200 cSt
Accuracy	±1% of span
Temperature range	-40… +85°C
Repeatability	±0.1 °C
Reproducibility	±0.2 °C
Level range	Up to 30 meters
Accuracy	±10 cm (0.01 m)
Ambient temperature	-40… +85 °C
Intrinsically safe: controller sensor	 ATEX II (2G) EEx ib [ia] IIB T4 ATEX II 1G EEx ia IIB T4
Power supply	NiMH 3.6V-1200 mAh
Operating time without charging	Appr. 12 hours
Dimensions: level block with density/viscosity meter controller sensor	 420 x 245 x 140 mm, 4 kg 180 x 80 x 40 mm, 0.6 kg 220 x 42 mm, 1 kg
Temperature compensation	Automatic
Reporting formats	Real density: g/cm , kg/m , lb/gal, lbm/ft; relative density (specific gravity): 15°C, 20°C, 60°F; API gravity; % of alcohol; kinematic viscosity in cSt; temperature in °C or °F
Data handling	Backlighted LCD display Local memory for 998 results with date/time stamped Build in bluetooth for data transfer to printer or PC Optional Windows - based software
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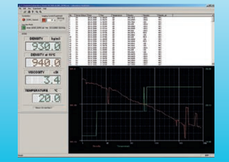
Power supply	NiMH 3.6V-1200 mAh
Operating time without charging	Appr. 12 hours
Dimensions: controller measuring chamber	 180 x 80 x 40 mm, 0.6 kg 162 x 94 x 80 mm, 1.2 kg
Temperature compensation	Automatic
Reporting formats	Real density: g/cm , kg/m , lb/gal, lbm/ft; relative density (specific gravity): 15°C, 20°C, 60°F; API gravity; % of alcohol; kinematic viscosity in cSt; temperature in °C or °F
Data handling	Backlighted LCD display Local memory for 998 results with date/time stamped Build in bluetooth for data transfer to printer or PC Optional Windows - based software
Delivery	Delivered in compact carrying case

VDM-250.3

Accessories

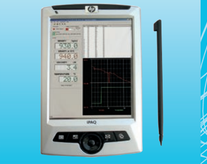
SOFTWARE:

- ➔ Able to download the measurements to PC;
- ➔ Multifunctional software allows to proceed the measurements results in user-convenient form;
- ➔ Compatible for a Windows 98/ME/2000/NT/XP.



POCKET PC

- ➔ Remote data transfer;
- ➔ Useful in field conditions;
- ➔ Software for data processing.



PRINTER BLUETOOTH:

- ➔ Immediately printout the measurements;
- ➔ No need for PC.