

## 250 SERIES

DM-250.2N - Density Meter

DM-250.2L - Density & Level

VM-250.2N - Viscosity Meter

VDM-250.2N - Density & Viscosity



# Portable Submersible Viscosity Meter

## VM-250.2N



# VM-250.2N OVERVIEW

## Principle of Determination

### Viscosity

Viscosity measurements employ the vibrating element sensor. This consists of a compact cylindrical sensor which is vibrated in the hoop mode which delivers balanced drive. This means that the sensor is virtually unique in being capable of being installed not just with a rigid mounting but also suspended on cables or using tape measures.

Viscosity is determined using the well established resonant frequency principle. By alternately driving the sensor into vibration at the upper and lower half power (3dB) frequencies the bandwidth can be determined, which is also a function of the dynamic viscosity of the fluid.

Thus a single sensor will report the dynamic viscosity and temperature (from an integral RTD sensor) and thus kinematic viscosity can also be determined.

By using calculations based on the ASTM D341 equations, the kinematic viscosity can be calculated at a reference temperature. Base viscosity can be calculated based on the methods defined in the Manual of Petroleum Measurement Standards.

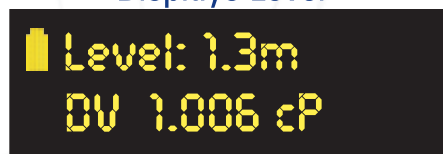
## Easy Measurement Visualization



Displays Viscosity and Temperature



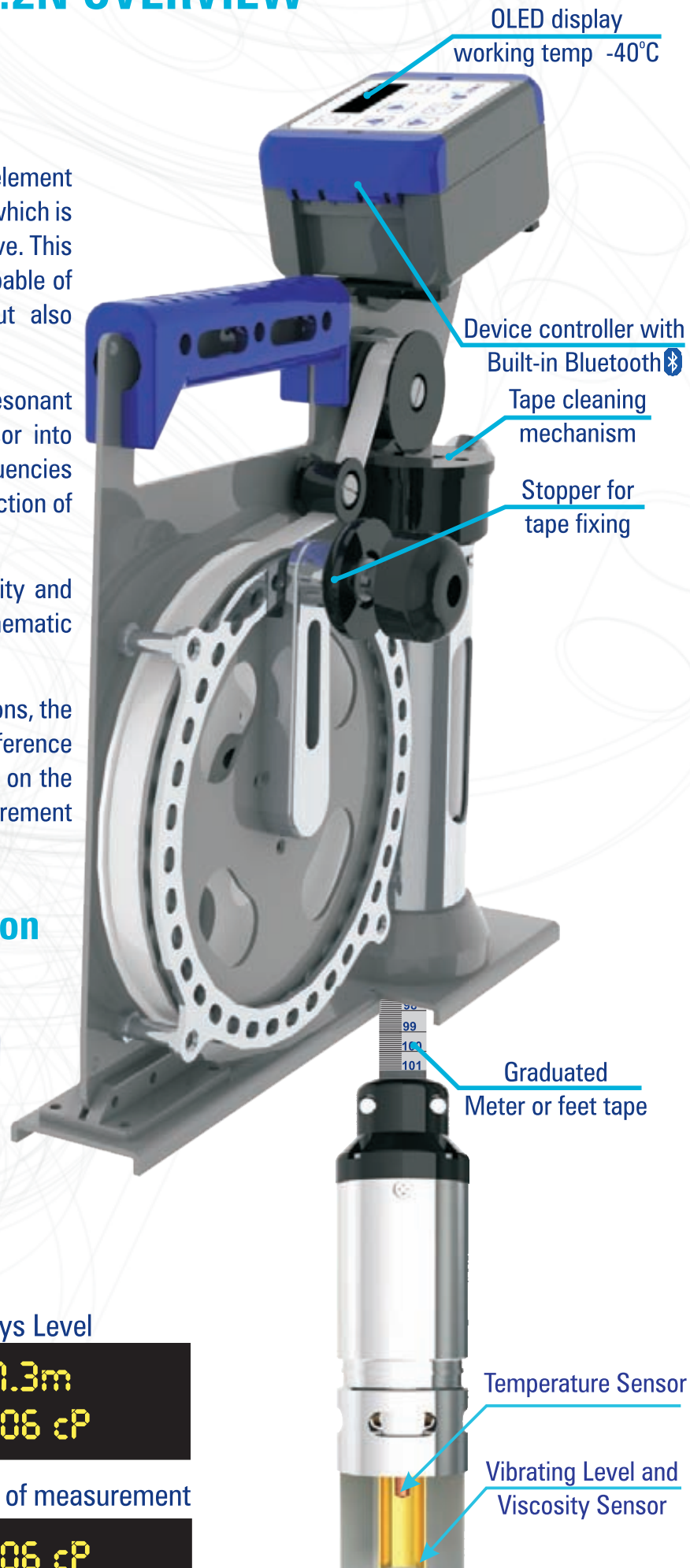
Displays Level



Displays Different Viscosity units



Displays Date of measurement

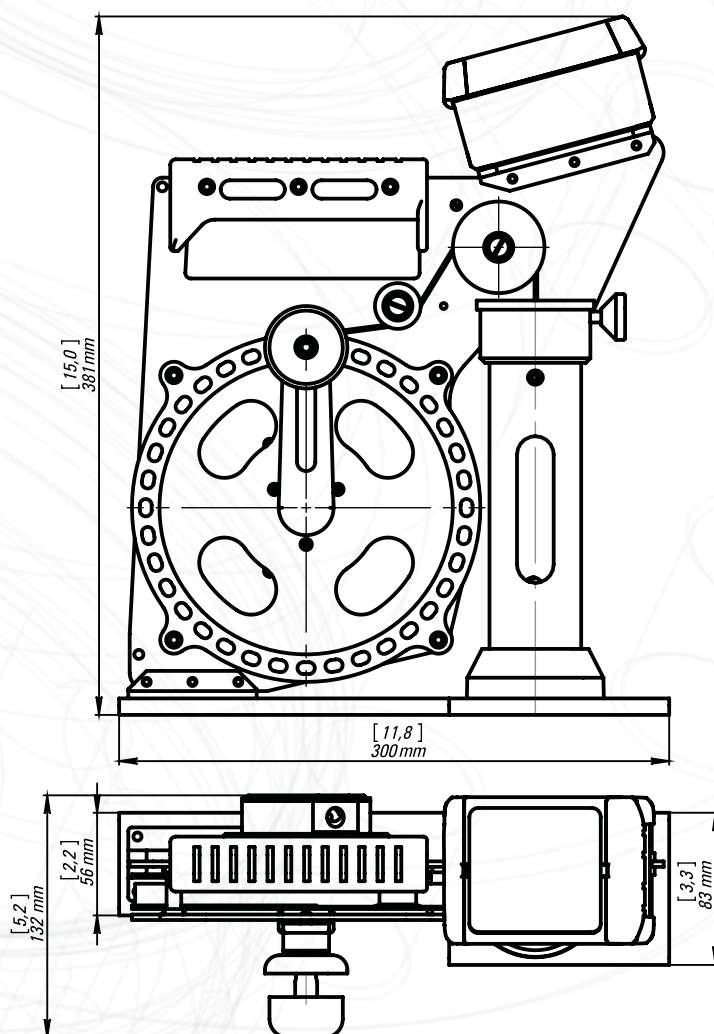




The portable viscosity meter VM-250.2N is designed for viscosity and level measurements of any pure liquids directly in tanks, without sampling, at the depth up to **30 meters**.



## Dimensions

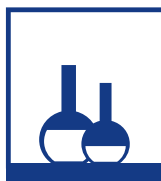


## Advantages

- Direct viscosity measurement
- Record spot viscosity and average per tank
- Automatic temperature compensation
- No sampling required
- ATEX, IEC Hazloc certification
- Safe operation, low maintenance
- At any depths up to 30 meters
- Economical and easy to operate
- Measures highly viscous liquids up to 2000 cP
- Rigid construction for heavy duty outdoor operation
- Local results storage and Bluetooth and USB data transfer

## Applications

- Petroleum industry
- Ethanol production
- Food & Beverages
- Chemical industry



# Specifications

## Measuring range:

|                       |   |
|-----------------------|---|
| Dynamic Viscosity     | Up to 2000 mPa·s(cP)                                      |
| Viscosity calibration | 0,1-100 mPa·s(cP)<br>1-1000 mPa·s(cP)<br>1-2000 mPa·s(cP) |
| Temperature           | -40... +85°C (-40... +185°F)                              |

## Accuracy:

|                   |                                    |
|-------------------|------------------------------------|
| Dynamic viscosity | ±1% of span                        |
| Temperature       | ±0.1°C (±0.2°F) or ±0.2°C (±0.4°F) |

## Repeatability:

|                   |                 |
|-------------------|-----------------|
| Dynamic viscosity | ±0.5% of span   |
| Temperature       | ±0.1°C (±0.2°F) |

## Supported measuring units

Dynamic Viscosity: mPa·s; cP  
Kinematic Viscosity: mm<sup>2</sup>/s; cSt  
Temperature in °C or °F

## Ambient temperature

-40... +50°C (-40... +122°F)

## Depth of submersion

Up to 30 meters (100 ft.)

## Sensor:

|          |   |
|----------|---|
| Type     | Vibrating element (Resonance principle)           |
| Material | Stainless steel SS 316 L; NiSpan C; Hastelloy C22 |

## Weather rating

IP68

## Hazardous environment Approvals

|            |                                    |
|------------|------------------------------------|
| Controller | II 2G (1G) Ex ib [ia Ga] IIB T4 Gb |
| Sensor     | II 1G Ex ia IIB T4 Ga              |

## Charging device

USB with IP68 protected connector

## Power supply

NiMH 3.6V-2500mAh

## Operating time without charging

up to 24 hours

## Dimensions, weight:

Level block with sensor 376 x 300 x 104 mm (14.8 x 11.8 x 4.1 in), 3 kg (6.6 lb)

## Temperature compensation

Automatic

## Viscosity compensation

Automatic

## Data handling

OLED Display (2x12) with backlight  
Local memory up to 2000 results with date/time stamped  
Build in Bluetooth and USB for data transfer to printer or PC  
Optional Windows - based software

## Delivery

Delivered in compact carrying case



Multifunctional software allows to view results in a convenient user-friendly form;  
Compatible for a Windows 7/8/10\*



Immediate printout of the measurements by Bluetooth  
No need for PC\*\*



Delivered in compact carrying case



Options: \* Ordered separately

**For more information please visit [www.lemis-process.com](http://www.lemis-process.com)**



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