

Densitometry

Applications

The DDM 2909 Density Meter, with high precision Peltier temperature control of sample, has the features to meet the needs of today's industries.



PETROLEUM

- Measure API Values in accordance with ASTM D1250, ASTM D4052, ASTM D5002 and DIN 51757
- QC incoming raw materials
- Research new products and additives
- Withstands harsh and heavy use environments
- Calibrate using petroleum standards



CHEMICAL

- Measure in units of Kg/m³, g/cm³, g/mL, pounds/gallon, specific gravity, Baumé and more
- Determine concentrations in: %, molarity, normality, mole fraction, ppm, and more
- Check batch consistency and ensure proper blending ratios
- Wetted materials compatible with the most aggressive chemicals



PHARMACEUTICAL

- Capable of multiple measurements with standard deviation, min and max reading for true cGLP/GMP compliance
- Complete IQ/OQ/PQ documentation
- Checking of raw materials and product release
- 21CFR11 Compliance; Electronic Signature and Secure Data Storage
- Compliant with USP 29<841>, JP, BP and EP



BEVERAGE

- Measure both alcoholic and non-alcoholic beverages with easy bubble detection using VideoView™
- Direct and accurate means of °Brix determination, °Plato, Extract, % Solids
- Use apparent density function for proper filling volume monitoring

Flexible Method Management

Factory installed density meter measurement methods allow for immediate selection of the correct method to match the most common applications.

| NAME | TYPE | |
|--------------------|---------|---------------------|
| AOAC Ethanol | Factory | ADD |
| Brix | Factory | EDIT |
| Crude Oil | Factory | RENAME |
| Density | Factory | DELETE |
| Density Continuous | Factory | VIEW |
| Density VC | Factory | RESULTS |
| Factory QC Testing | Factory | PRINT CONFIGURATION |
| Fuel Oil | Factory | CLOSE |
| Lubricants | Factory | |
| OIML Ethanol | Factory | |
| | | |
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| | | |
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| | | |

For unique measurement applications, create a sample method using an unlimited number of Concentration Tables, Formulas, and Polynomials to match the measurement methods used in your laboratory. A few customized sample methods shown below:

- Baumé of Hydrochloric Acid
- Normality of Sulfuric Acid
- Density of Gasses and Aerosols
- Drug to Propellant Ratio
- Lead Content
- ppm Gold in Acid
- % Toluene in Heptane
- Fat in Lubricant
- Mole Fraction of Methanol
- % HNO₃
- Monomer Solutions
- Potassium Permanganate
- Hydrogen Peroxide
- Molar Solutions of EDTA
- SG of Urine
- Sweeteners
- Sodium Hydroxide

Setting up your custom method on your Density Meter is as simple as filling out a few screens like the one below:

| Method Settings [Density] | |
|--------------------------------|--|
| Measurement Mode | Single 1 |
| Measurement Stability | Predicted |
| Measurement Stability Criteria | Criteria 1 (+ or - 0.00002 g/cm ³ for 30 secs) |
| Temperature | 20.00 Deg C |
| Temperature Stability Criteria | Criteria 1 (+ or - 0.02 Deg C for 20 secs) |
| Air Pump Switch off mode | <input type="radio"/> Auto <input checked="" type="radio"/> Manual Timeout 100 secs |
| Pump terminates Measurement | <input checked="" type="radio"/> No <input type="radio"/> Yes |
| Density Input | Density NC |
| Sample Details | <input type="checkbox"/> Sample ID <input type="checkbox"/> Lot ID |

MEASUREMENT PARAMETERS DISPLAY PARAMETERS DISPLAY SETTINGS SAVE CANCEL

По вопросам продаж и поддержки обращайтесь:

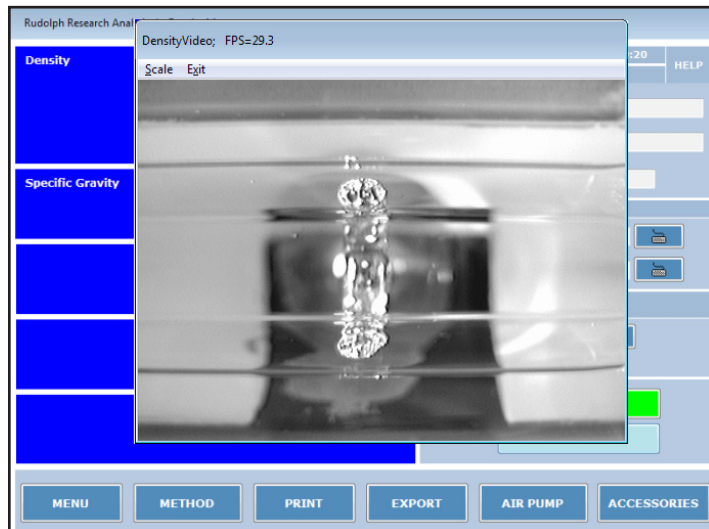
Астана +7(77172)727-132 Волгоград (844)278-03-48 Воронеж (473)204-51-73 Екатеринбург (343)384-55-89 Казань (843)206-01-48 Краснодар (861)203-40-90 Красноярск (391)204-63-61 Москва (495)268-04-70 Нижний Новгород (831)429-08-12 Новосибирск (383)227-86-73 Ростов-на-Дону (863)308-18-15 Самара (846)206-03-16 Санкт-Петербург (812)309-46-40 Саратов (845)249-38-78 Уфа (347)229-48-12

Единый адрес: rdl@nt-rt.ru Веб-сайт: www.rudolph.nt-rt.ru

The Simplicity of Touch Screen Measurement

Full Feature VideoView™

VideoView™ provides superior high resolution visual bubble detection within your samples with live on-screen video viewing. Rudolph's industry leading 10X magnification aids in identifying bubbles if present in the sample.

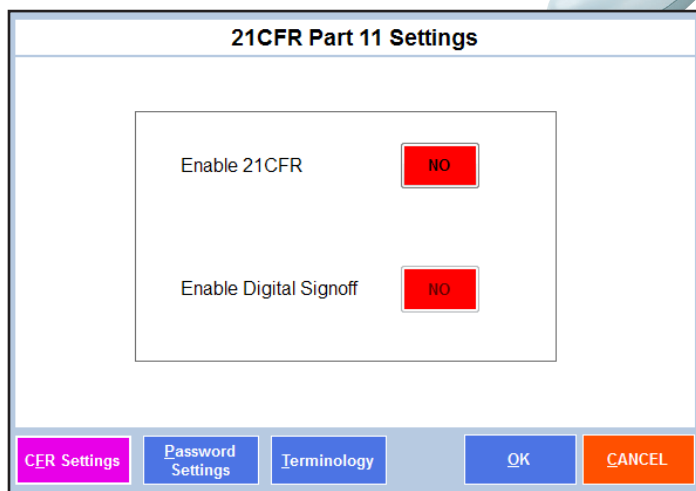


The video clarity, magnification, and resolution mean no more straining to see small difficult-to-detect air bubbles in your sample. Rudolph's exclusive VideoView™ is protected under Patent #7,437,909.

The Rudolph 2909 Density Meter offers 21CFR Part 11 Instrument Level Compliance

The DDM 2909 s 21CFR Part 11 software module is easily enabled through the user friendly touch screen. This module gives you full compliance with:

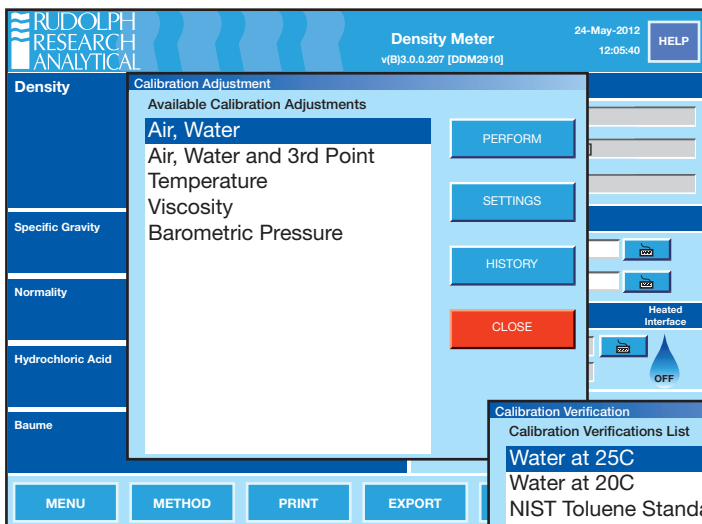
- Electronic signature
- Access levels
- Internal write protected storage
- Unique passwords
- Write protected documents sent directly to server



Oscillating U-Tube with Viscosity Correction and Reference Oscillator

The DDM 2909 Density Meter's oscillating U-tube with full range viscosity correction and reference oscillator allows long term calibration stability and measurement at all temperatures with a single calibration.



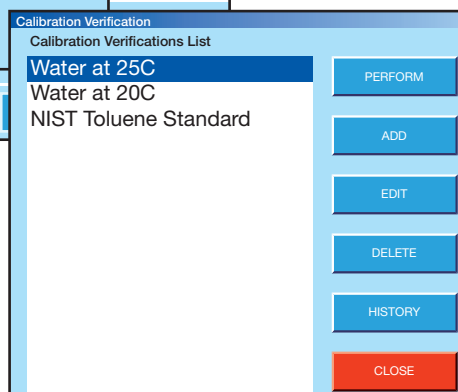


cGMP/GLP Calibration

- Calibrate the DDM 2909 with 2 or 3 Traceable Standards – calibrating with merely air and water appears inconsistent with cGMP/GLP compliance regulations.
- Can print out complete method configuration, communication settings, as well as calibration verification and calibration adjustment data/history.

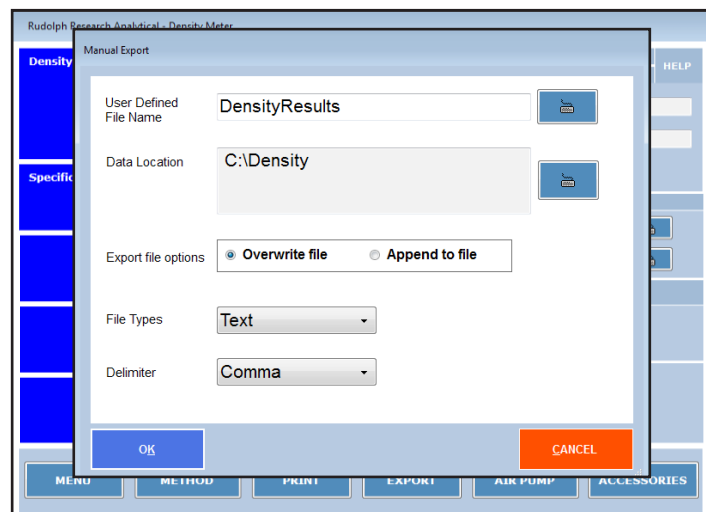
- Measured values can be shown continuously as temperature stability is being reached or, at the discretion of the user, measured values will only be displayed once the final answer is reached and completely stable.

- Unlimited number of customized calibration adjustments and calibration verifications possible.
- Complete History of Calibration Adjustments and Verifications are available to View, Print, and/or Export
- Possible to set calendar reminders as to when Calibrations are due



Computer Windows Based Flexibility

- 2 gigabytes of internal Compact Flash Memory .
- The DDM 2909 Density Meter is network ready and data may also be saved directly to your server or to any directory desired.
- Internet access is possible directly from the DDM 2909 s touch screen.
- Disk Protection feature protects the operating system against malware infections in networked environments.
- Windows based navigation architecture is so intuitive that most operators will never read the manual. But should you wish to reference the manual, it is stored right on the DDM 2909 s internal memory
- Copy methods, transfer concentration tables, download data, etc., via the USB ports.
- Three USB ports allow for quick and easy connection to a mouse, keyboard, printer, bar code scanner, or memory stick.



Full cGMP/GLP Compliance



Versatile Communication Capability

The DDM 2909 s standard communication package includes:

- Touch Screen User Interface
- 3 USB ports (2 Rear, 1 Front)
- 1 – Ethernet Cat 5 Port

Allowing the capability to:

- Connect Directly to Rudolph Service and Technical Support
- Connect to any Windows® based Printer via USB or direct to the server via Windows® Print Library
- Save measurement data locally and directly to your Network/Server.

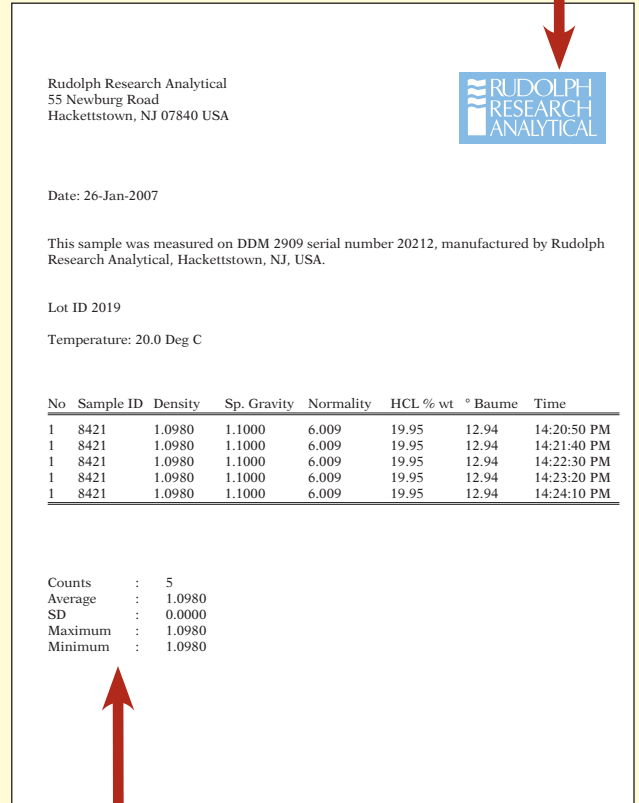


NIST Standards Available

cGMP/GLP Printing

Sample measurement reports are edited quickly and easily. Just import your logo to the DDM 2909 Density Meter and print your company's customized "C of A" directly.

Print your customized Certificate of Analysis including your company logo directly from the DDM 2909 touch screen



Capable of making multiple measurements on a single sample and reporting complete statistical data and all measurement results

Standard Accessories

The DDM 2909 standard accessories include:

- Quick Start Guide
- Rinse/Sample Waste Container
- Filling Nozzles
- IQOQPQ Documentation
- Luer Syringes
- Connecting Fittings & Tubing
- Manual

Automation Flexibility

- Rudolph's AutoSampler can be loaded with up to 240 samples
- Combine density and specific gravity measurements with a polarimeter, refractometer, and colorimeter for simultaneous measurements of:
 - Density/Specific Gravity
 - Refractive Index
 - Color
 - Optical Rotation/Specific Rotation
- Up to three different rinse solvents available for use; fully programmable

- Two sample loading modes; pressurized and suction; for optimizing sample transfer and measurement
- Customer's unique sample bottles may be used to eliminate the need to transfer samples into special sized test tubes.
- Emergency samples measured at any time without stopping the AutoSampler or moving sample vials.
- Numerous configurations and solutions. Call us today for the solution that is right for your application.



Specifications of the DDM 2909

Measurement Ranges:

Density: 0 to 3 g/cm³
Temperature: 15 °C to 30 °C (controlled via Peltier)
Pressure: 0 to 10 bars

Measurement Modes:

Continuous, Single, Multiple

Measurement Technique:

Mechanical Oscillator Method

Accuracy:

Density: 0.0003 g/cm³ with a single calibration and measurement through multiple temperatures
Density: 0.0002 g/cm³ with a single calibration at the measurement temperature
Temperature: 0.05 °C

Repeatability:

Density: 0.0001 g/cm³
Temperature: 0.02 °C

Resolution:

Density: 0.0001g/cm³
Temperature: 0.01 °C

Sample Volume: Wetted Materials:

Less than 1ml
Borosilicate glass, Teflon (PTFE, ECTFE)

Operating System: Embedded Windows; embedded software safe from malware and viruses

Display:

10.4 inch diagonal TFT type LCD with wide viewing angle, anti-glare flat panel touch screen, 300 nits brightness, 800 x 600 pixels, chemical and scratch resistant monitor, the industry's largest and most flexible interface

Communication Interface:

Touch Screen User Interface
3 – USB Ports (2 Rear – 1 Front)
2 – RS232 Ports
Ethernet Port for Network Connection, Keyboard, Bar Code Scanner, Mouse, Network Capabilities

Video & Magnification:

Video assisted, capable of approximately 10X magnification

Internal Memory:

2GB Non-removable Compact Flash

Operating Dimensions:

18.00 (L) 11.00 (W) 21.00 (H)
46cm (L) 28cm (W) 53cm (H)

Shipping Weight:

46 lbs. (22 Kg)

Power Supply:

85 to 260 VAC; 48 to 62 Hz

Power

Consumption:

150-200 Watts



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