



Our Expertise, Your Values

DH SERIES

PORTABLE TANK GAUGE & DENSITY METER



JOYO M&C TECHNOLOGY CO., LTD

Add: 1602, Shifeng Guoji Building, No.19 Yacheng Yili,
Chaoyang District, Beijing China 100123
Tel: +86-10-65421356
Email: info@joyotec.com
www.joyo-mc.com

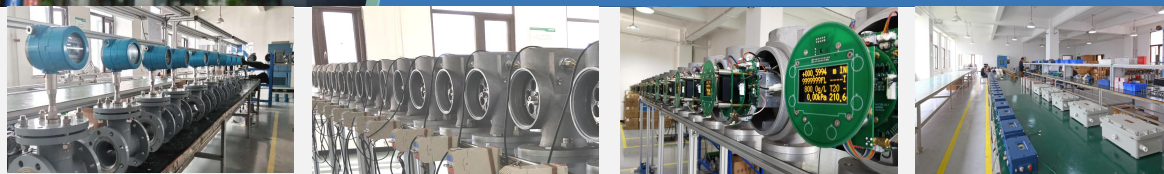
Joyo M&C Technology Co., Ltd

Our Expertise, Your Values



20+ Years Experience

Dedicated in the innovation and explorations of the up-to-date technologies, and manufacturing high-end quality metering and control products



Provide Higher Values Products By Our expertise In Liquid Measurement and Control Technologies

JOYO M&C is a high-tech company dedicated to developing and manufacturing measurement and control instruments and solutions for product storage and transfer.

Based on 20 years experiences in the industry, JOYO M&C had developed many products.

Our products and solutions are proven to be of high competence in terms of functions and performances. JOYO M&C was awarded 'Sinopec technology innovation awards 2017' for its innovative TGS technologies for bulk liquid storage and custody transfer used in Sinopec tank-farms and terminals, which is turned out to facilitate customer operations and solve many problems for customers.

JOYO M&C is one of the TOP suppliers for SINOPEC and PETROCHINA for over ten years. We also supplied our products to oil companies in Russia, Mongolia, Kazakstan, South Asia, Middle east and other countries in the world.

Joyo M&C Technology Co., LTD, has been fully dedicated in the innovation and explorations of the up-to-date technologies, and manufacturing high-end quality metering and control products. JOYO M&C will still adhering to the mission and provide higher values to his users worldwide with our expertise.

OVERVIEW

Density can be used to identify substances, to determine their quality or purity and to measure their concentration of the products.

DH series portable density meter is mainly designed for precise and convenient measurement of the density of the liquid in an precise and efficient standard. Density is proportional to the resonance period according to the resonance mechanism by which the density of the liquid will be measured.

DH series portable density meters are available for 3 models. DH-50 is typical portable density meter used for density and temperature measurement in bulk liquid storage tank instead of using the manual sampling method. DH-60 is an upgrade design which integrating density, temperature and liquid level measurement in one. DH-08 is used to measure density which is sampled from the truck before the petroleum product loaded to the stations. The portable design makes DH series of density meter very easy and convenient to take along to any sites by hand for a measurement.

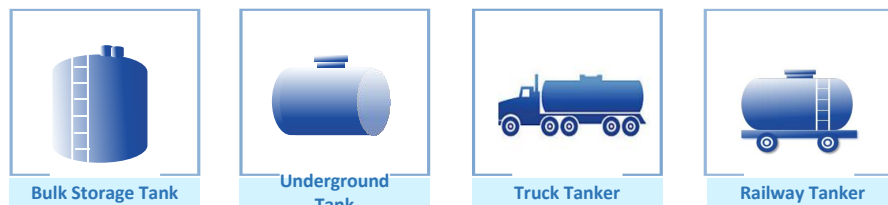
DENSITY METER ARCHITECTURE

DH portable density meter is mainly consist of density meter, sensor, bluetooth module and density software. The system architecture is demonstrated in the following figure.



APPLICATION

- It is applicable to various liquid products, such as oil products, petrochemicals, liquid chemicals, edible oil or liquid foods;
- Used for measurement of the density and temperature of the liquid in the vertical tanks, underground tanks, truck tankers and train tankers.



DH DENSITY METER VS MANUAL DENSITY SAMPLING

Item	DH-60	DH-50	DH-08	Manual Sampling
No need manual Sampling	✓	✓	✗	✗
Field Measurement	✓	✓	✓	✗
Auto Recording	✓	✓	✓	✗
Auto Report	✓	✓	✓	✗
Data Objativity	✓	✓	✓	✗

TECHNICAL SPECIFICATION

Parameter	Specification
Measuring Accuracy	
Measuring accuracy of density	±0.3kg/m ³
Measuring accuracy of temperature	±0.2°C
Measuring accuracy of level	±1mm (For DH60 only)
Measuring accuracy of water interface	±2mm (For DH60 only)
Measuring Range	
Measure density range	650~1200kg/m ³
Max level range	30 meters (For DH-60)
Max Viscosity	5 Cst
Temperature measuring range	-40°C ~ +70°C
Instrument Parameters	
Ambient Temperature	-40°C ~ +70°C
Allowed Humidity	15%~90%RH
Temperature compensation	Automatic
Communication	433MHz wireless communication/bluetooth
Material of the measurement parts	Stainless steel 316; Hastelloy
Data Storage	2024
Weight	DH50: 3.5kg (net) ; DH60: 4kg (net)
Display	OLED 8*16 dot-matrix
Hazardous Rating	
Protect Class	Sensor: IP68; Other parts: IP65
Explosion-proof Rating	Ex ia IIC T6 Ga (DH-08) Ex ia IIC T4 Ga (DH-50, DH-60)

DH-08 CUP DENSITY METER

It is a cup type of portable density meter, which provides automatic temperature compensation and measures the density digitally, it is used for density measurement for sampling products manually taken from a tanker truck or from a tank in station or a terminal to determine the quality or purity of the products.



FEATURES

- ✓ Electronic measuring density and temperature
 - ✓ Electronic reading measurement data
 - ✓ Instant calculation of ref density
- Put sampling of liquid inside of cup
 - Instant and electronic reading density data;
 - Compact and convenient to be carried to the field site;
 - Easy operation thanks to the well arranged user interface and touch screen display
 - Convenient transfer of data measured to the PC;
 - Data is available to be exported into a Excel format and to be printed.

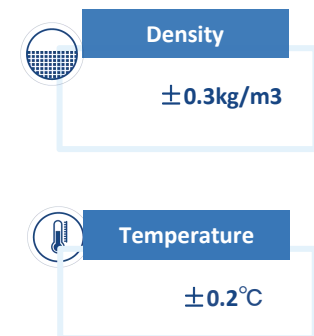
FUNCTIONS

DH-08 has the basic measurement functions for density and temperature and will automatically make temperature compensation on density volume to get the standard density.

- ✓ Obs Density
- ✓ Temperature
- ✓ Ref density

Observed Density is measured by the density sensor upon the resonance period of the liquid. Temperature compensation will be made to get an Reference Density of product.

Temperature is measured by the temperature sensor PT100 inside of sensor of DH-08. Temperature will be used to calculate the standard density of the liquid.

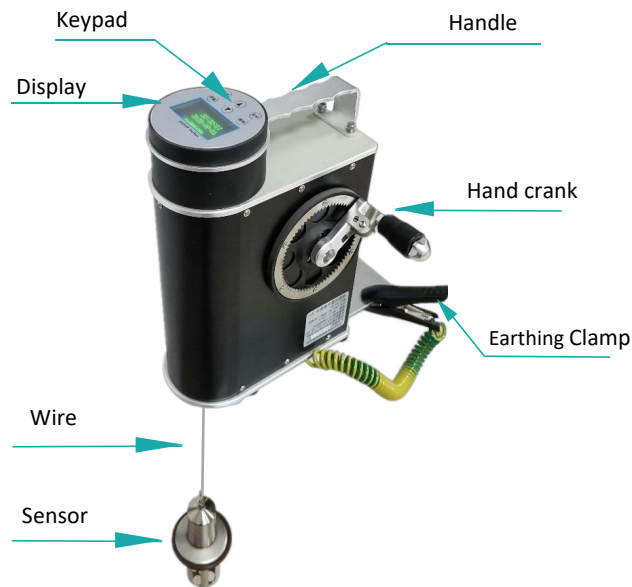


DH-08 WORKING PROCESS

- STEP 1**
- Sampling**
- Take out the liquid sample by using the measuring cup, and then put the sensor inside the cup.
- STEP 2**
- Measuring**
- Select Tank Number, press 'OK' on the keypad to start measurement. 'SAVE' after measurement is completed for one tank, it is available for continuous measurement of other tanks.
- STEP 3**
- Data Reports**
- Using wireless bluetooth module to download measurement data from DH-08 to PC, all the measurement data will be managed easily and are available to be exported and printed. You can have the density meter calibrated and adjusted in the software.

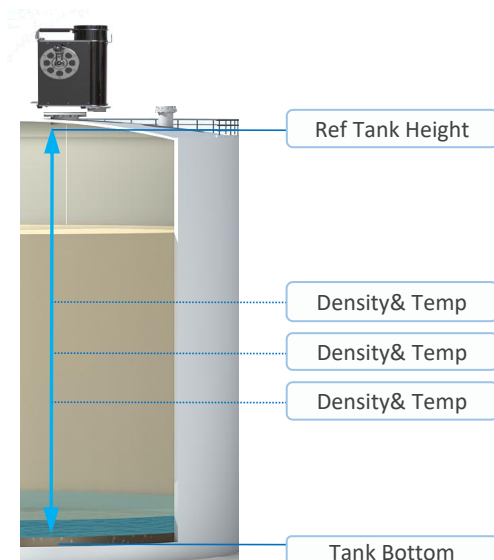
DH-50 DENSITY METER

DH-50 is a taking-along type of portable density meter, provides automatic temperature compensation and measures the density digitally, it is available to be taken along with to any field site to use to measure the density of liquid inside of the storage tank, and to determine the quality or purity of the products.



FEATURES

- No need sampling product;
- Electronic measurement of density and temperature of liquid inside of tank
- Compact and easy to be carried to the field site;
- Easy operation thanks to the well arranged user interface and touch screen display;
- Real time measuring and electronic displaying the measurement values;
- Recording of 2000 measurements data;
- Easy loading of measurement data to the PC software;
- Data is available to be exported into a Excel format and to be printed.



FUNCTIONS

DH-50 has the fundamental measurement functions of density and temperature and will automatically make temperature compensation to get the standard density.

- ✓ Obs Density
- ✓ Temperature
- ✓ Average density
- ✓ Ref density

Product Observed Density is measured by the density sensor upon the resonance period of the liquid. Upon several points of density and Temperature measured, temperature compensation will be made to get an reference Density of the liquid.

Temperature is measured by the temperature sensor PT100 inside of sensor of DH-08. Temperature will be used to calculate the standard density of the liquid.

Density

$\pm 0.3\text{kg/m}^3$

Temperature

$\pm 0.2^\circ\text{C}$

DH-50 WORKING PROCESS

STEP 1

Positioning
DH-50

Put the DH-50 on the top of tank nozzle and fix it to make sure it is vertical, make grounding of DH50 by the grounding clamp of it.

STEP 2

Measurin
g

Roll the handle to move down the sensor into the liquid and lock it in a position. Select Tank Number and press 'OK' on the keypad to start measurement. 'SAVE' after measurement is completed for one tank, it is available for continuous measurement of other tanks.

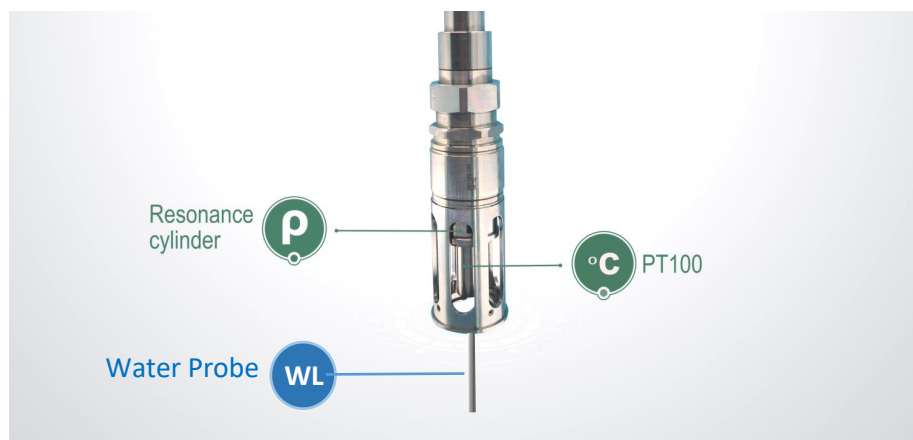
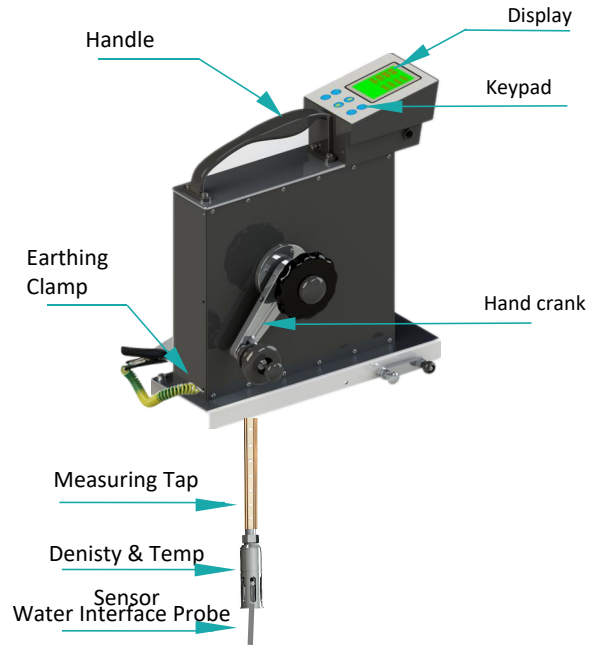
STEP 3

Data
Management

Using wireless bluetooth module to download measurement data from DH-08 to PC, all the measurement data will be managed easily and are available to be exported and printed. You can have the density meter calibrated and adjusted in the software.

DH-60 PORTABLE TANK GAUGE

DH-60 is designed for portable tank gauging, including multifunction in one single instrument. It is featured by electronic level gauging, and providing electronic density and temperature measurement and detecting oil-water interface.



FUNCTIONS AND PRINCIPLE

DH-60 has the multifunctions measurement of level, density and temperature, it works as an portable ATG.

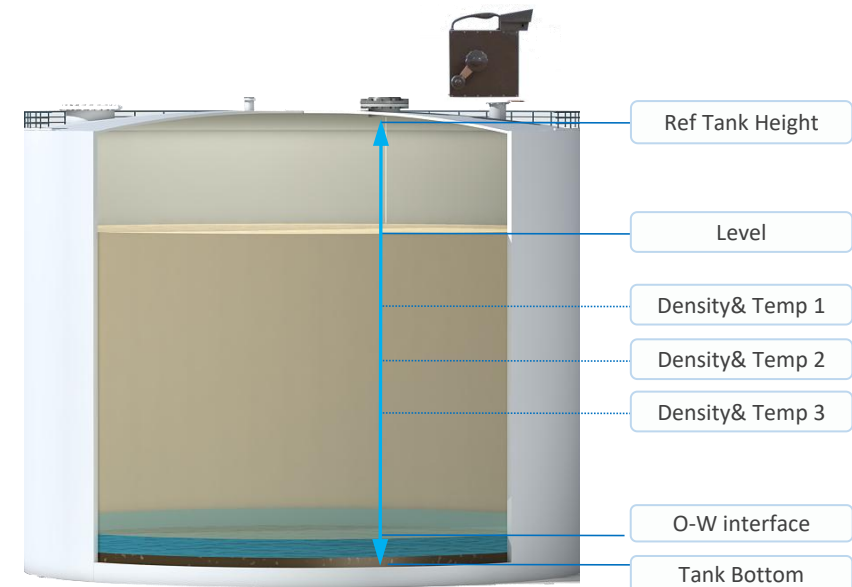
Product level is identified due to the difference between air and liquid and detected by the sensor inside of probe when it is reach the liquid level.

Product Observed Density is measured by the density sensor upon the resonance period of the liquid. Upon several points of density and Temperature measured, temperature compensation will be made to get an reference Density of the liquid.

Temperature is measured by the temperature sensor PT100 inside of sensor of DH-08. Temperature will be used to calculate the standard density of the liquid.

Oil-Water interface can be detected by the sensor according to the density difference of two liquid.

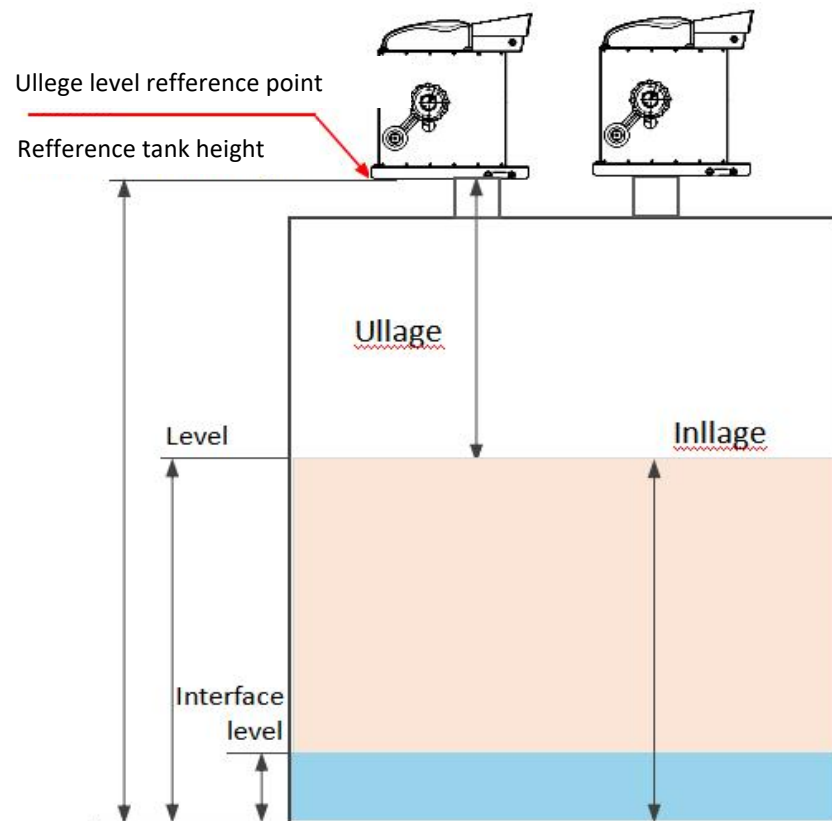
	Level ± 1.0 mm
	Density ± 0.3kg/m ³
	Temperature ± 0.2°C
	Oil-W Interface ± 1.0 mm



DH-60 Portable Tank Gauge

Performing Measurement

- Ullage Level
- Inllage Leve
- Interface level
- Temperature
- Observed Density
- Refference Density
- Tank bottom



MEASUREMENT MODES

Complex	Multi-functional measurement	Measuring Average Density and Inllage level or Ullage Level , Water interface in one process
Level	Level Measurement	Measuring Ullage Level
Density	Density Measurement	Measuring Spot Density
Water Interface	Water Measurement	Measuring Interface Level
Bottom	Tank Bottom	Enable inllage level

DH-60 WORKING PROCESS

STEP 1

Positioning
DH-60

Locate the DH-60 on the top of tank nozzle and fix it to make sure measuring tape is vertical, make grounding of DH60 by the grounding clamp of it. Choose the tank number and Input Tank Height calculating based on Ullage reference point into DH-60.

STEP 2

Measurin
g

Roll the handle to move down the sensor to measure Level and then moves down tank bottom to measure bottom, and then move up sensor to start Water Level measurement.

Move the sensor to the heights which density to be measured, and stop at the position for 2minutes then density will be measured, after measurement, the average of density and temperature liquid is available for 'Complex'Mode.

STEP 3

Reports

Using wireless bluetooth moudle to download measurement data from DH-08 to PC , all the measurement data will be managed easily and are availible to be exported and printed. You can have the level/water/density calibrated in the software.

DH-60 Portable Tank Gauge

- ✓ Electronic measuring density to replace sampling
- ✓ Electronic level gauging to replace manual dip level
- ✓ Electronic reading for all the measurements

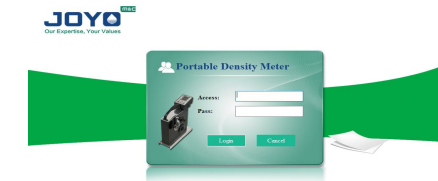
Date & Time ⇒	02/25 17:15 1	Serial number of Record
Tank number ⇒	Tank01 10.000	Level
	100mm	Water Level
	5mm	Tank bottom
	H(m) Pt T_ °C	
	1.67 834.6 23.5	1 st point of density and temp
	5.00 834.6 23.5	2 nd point of density and temp
	5.00 834.6 23.5	3 rd point of density and temp
Std density ⇒	p20=837.1	

FEATURES

- Portable electronic level gauging;
- Electronic measurement of density and temperature;
- Providing Oil-Water interface detection;
- Multi-functions in one single instrument;
- Easy and convenient operation;
- Providing high accuracy measurement;
- No need sampling product;
- Compact and convenient to be taken along to the field site;
- Easy operation thanks to the well arranged user interface and touch screen display;
- Real time measuring and displaying the measurement values;
- Recording of 2000 measurements data;
- Easy loading of measurement data to the PC software;

DH-60 SOFTWARE

All of the measurement records are available to be loaded into software, and inquired easily or you can export in Excel or PDF.



- ✓ Tank gauging inventory reports
- ✓ Calibration for level/ density
- ✓ Export reports in Excel, PDF



DIMENSION

