

SSI Technologies – Application Note DT-AN5

Digital Fluid-Trac™ (DFT-110) Multi-Unit Drum Gauge

Product Overview



Product Description

Digital Fluid-Trac™ Model DFT-110 multi unit drum level gauge is a cost competitive non-contact liquid level drum gauge. The DFT-110 drum gauge was designed for usage on ANSI MH2-2004 vertical drums (≤ 32 inch depths). The DFT-110 drum gauge allows the user to easily select between the following vertical drum settings:

- 15 gallon
- 30 gallon
- 55 gallon
- 57 liter
- 114 liter
- 208 liter

Product Features

- **Multiple Selectable Units:** 15, 30, 55 gallons or 57, 114, 208 liters
- **Resolution:** +/- 0.5 gallon or +/- 1 liter
- **Automatic Shutoff To Prolong Battery Life**
- **NEMA 4 Packaging**
- **Static Display Useful for Usage Consumption Calculations:** The static level reading can be used for manual rate calculations – i.e. daily or weekly consumption.
- **Low Level Warning Light:** A red LED will flash once every second when the volume is at 10% or below the maximum volume.
- **Easy to install:** Digital Fluid-Trac™ DFT-110 has no components to protrude into the drum.
- **Standard:** Fits NPT openings (2" or 3/4")
- **More Reliable:** No components to chemically corrode inside liquid media.
- **Chemical compatibility:** Digital Fluid-Trac™ DFT-110 drum gauge works with a wide variety of media such as water, waste water, motor oil, hydraulic fluid and diesel fuel.
- **Angle Performance:** Digital Fluid-Trac™ DFT-110 is rated @ +/- 2 Degrees when using the 3/4 Inch Adaptor and +/- 3 Degrees when used in the 2" hole.

The Digital Fluid-Trac™ DFT-110 drum level gauge is NOT intended for use with gasoline.

SSI can customize the drum level gauge for other sizes for large volume OEM orders.

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RoHS

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Measurement Technology

The Digital Fluid-Trac™ DFT-110 drum level gauge uses ultrasonic technology to generate a high-frequency sound wave and measures the time for the echo to reflect off the target fluid's surface and return. The distance from the Digital Fluid-Trac's sensor to the liquid is calculated based on the speed of sound.

The Digital Fluid-Trac™ DFT-110 has a LCD which displays the liquid level pictorially as well as in gallon (or liter) units. The display shows the level reading from the last time the Refresh/Select button was pressed.

When the Refresh/Select button is pressed and released, the DFT-110's back-light is illuminated and 8.8.8. is displayed for 4 seconds to indicate the unit is in test mode. The unit continuously monitors the media in the vertical drum for 7 seconds and then displays the liquid level. The level reading will remain static until the Refresh/Select button is depressed again.

20 seconds after the button was pressed, the unit will go into a battery saver mode where the back-light is shut off. The liquid level reading will be displayed for 5 minutes before the display turns off.

A low level warning light (red LED located on the bottom left of the LCD display), will flash once every second when the liquid level is $\leq 10\%$ the maximum volume. Note: This warning light does not operate once the unit has powered down in battery saver mode.

Electrical Interface

The Digital Fluid-Trac™ DFT-110 drum gauge is powered by two 9 volt batteries (not included). The unit can run on alkaline or lithium batteries.

If the battery life is low (voltage is below 14.2 volts), "LoB " will continuously flash to notify the user to replace the batteries.

Displaying the DFT-110 Setting

- a) ***Press and hold the Refresh/Select button down for 7 seconds.*** The drum size will be displayed, and the selected units (Liter or Gallon) will be flashing.
- b) ***Release the Refresh/Select button*** and the unit will automatically go back into test mode (indicated by 8.8.8) in 20 seconds.



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Selecting the Display Units

The Digital Fluid-Trac™ DFT-110 multi-unit drum gauge can set to display the level reading in one of six different configurations - gallons (15, 30, 55) or liters (57, 114, 208).

- b) **Enter the Select Mode:** Press and hold the Refresh/Select button down for 7 seconds to enter the Select Mode. The unit will display Liter and Gallon. One of the units will be flashing.

Note: If you release the button too soon, the DFT-110 will be in test mode.

- c) **Switch the Desired Units:** Press and release the Refresh/Select button to switch between the units.
- d) **Select the Desired Units:** When the units (Liter or Gallon) desired is flashing, press and hold the Refresh/Select button for 7 seconds to select the units. The units will stop flashing and the drum size will start flashing.
- e) **Switch the Desired Drum Size:** Press and release the Refresh/Select button to switch between the drum size.
- f) **Select the Desired Drum Size:** When the drum size desired is flashing, press and hold the Refresh/Select button for 7 seconds to select the drum size. The drum size will stop flashing

- g) **Return to Test Mode:** Press and hold the

button until 8.8.8. is displayed – this indicates test mode.

Testing With The DFT-110

- a) After you have selected the proper units and drum size for your application, **Press and release the Refresh/Select button.**
- b) The DFT-110's back-light is illuminated and 8.8.8. is displayed for 4 seconds to indicate the unit is in **test mode**.
- c) The DFT-110 continuously monitors the media in the vertical drum for 7 seconds and then displays this liquid level.
- d) **Battery Saver Mode:** 20 seconds after the button was pressed, the back-light is shut off. The static liquid level reading will be displayed for 5 minutes before the display turns off.

Note: This liquid level displayed is a static value. You must depress the Refresh/Select button to update the liquid level reading.

- e) A **low level warning light** (red LED located on the bottom left of the LCD display), will flash once every second when the liquid level is $\leq 10\%$ the maximum volume.

Note: This warning light does not operate once the unit has powered down in battery saver mode.



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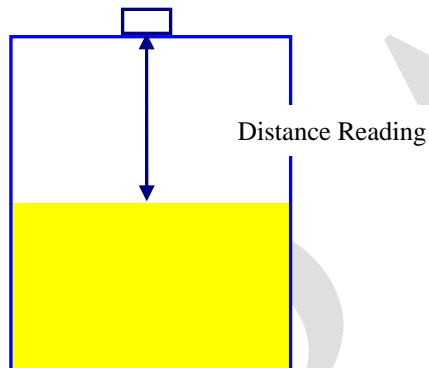
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Mounting

Digital Fluid-Trac™ works well on ANSI MH2 standard 55 gallon drums as it mates with closed-head standardized bunghole arrangements. The 55 gallon drum gauge mounts on top of the drum with a standard 2" NPT thread connector. A ¾ inch NPT threaded adapter is included with each Digital Fluid-Trac™ Model DFT-110 so either bung opening can be used on the drums.

When using the Digital Fluid-Trac™, it is important to keep the mounting perpendicular to the liquid level by storing the drums in an upright position.



Electrical Specifications

Resolution (Gallons)	0.5 gallons
Resolution (Liters)	1 Liter
Operating Temperature	0°C to 50°C
Battery Life*	6 months (Alkaline) 1 year (Lithium)
Low Level Warning Activation (Red LED)	<= 10 % Max Volume
Low Battery Level (Lob)	<= 14.2 Volts combined

* Battery Life will vary dependant on operator's usage. Battery specification is based on two level readings per day.

