FLUKE®
Calibration

E-DWT-H User Guide

① TEST port (DH500F)
② Reservoir cap
③ Priming pump plunger
④ Reservoir cap vent valve
⑤ Reference pressure monitor (RPM4-E-DWT)
⑥ Test shut off valve and fine pressure adjustment
⑦ 'Lo Q-RPT shut off' valve position prompt LED
⑧ Lo Q-RPT shut off valve
⑨ 'Lo Q-RPT active' valve position prompt LED
⑩ 'Lo Q-RPT active' caution indicator
⑪ Reservoir shut off valve
⑫ Variable volume (screw press)
⑬ Variable volume piston position indicator

Figure 1: E-DWT-H with Hi and Lo Q-RPT

Introduction

This demo guide is to assist customers and representatives to perform an effective demonstration or evaluation of E-DWT-H. It is written for the more complex case of a dual Q-RPT E-DWT-H model.

Preparation

❶ *Plug in the E-DWT-H to power up.*

❷ *Attach the four variable volume handles.*

❸ *Open the reservoir cap (vent port) by turning counter-clockwise.*

❹ *Open the reservoir shutoff valve.*

❺ *Back out the variable volume by turning counter-clockwise. Back it out all the way, then turn back in (clockwise) ½ turn.*

❻ *Set the Lo Q-RPT shutoff valve to the Hi Q-RPT (clockwise).*

❼ *Set the RPM4 to the Hi Q-RPT using the [7/Range] key.*

❽ *Open the test shutoff valve by turning counter-clockwise until it is fully backed out. Turn the handle back in (clockwise) 4 turns to bring the valve close to mid-stroke.*

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DUT Connection and Priming

❶ *Remove the shipping plug from the test port on top of the E-DWT-H enclosure.*

❷ *Connect the gauge to be tested loosely into the test port. One point in the DUT connection should remain loose enough to bleed some test fluid out through it. If there are multiple adaptors used to connect the DUT, leave the loose fitting at the highest point possible. If the DUT is a gauge with a built-in bleed port, open this port.*

❸ *Pull up on the reservoir plunger.*

❹ *Push down the reservoir plunger until clear fluid, with no air bubbles, bleeds out the loose DUT connection. For a system with a large volume of air, you may need to cycle the plunger more than once to start the fluid flowing out the open port.*

❺ *Tighten the loose DUT connection.*

❻ *Push the reservoir plunger down until 30 to 50 psig is indicated on the RPM4-E-DWT display, or until the bottom of the plunger stroke is reached. While holding the 30 to 50 psig pressure with the plunger, close the reservoir shutoff valve to hold pressure in the system.*

⚠ Warning

Do not generate more than 100 psig pressure using the reservoir priming pump plunger. The reservoir hardware and seals are not designed for greater pressures and may be damaged.

Running an E-DWT-H Quick Test

❶ *Select [ENT] on the RPM4-E-DWT to begin Quick Test setup.*

Note:

The RPM4 must be in a display mode , such as the Rate display, that does not use the [ENT] key for other display functions.

❷ *Choose Quick*

❸ *Select units, ie. psi.*

❹ *Select DUT FS range, ie. 10,000.*

❺ *Enter DUT Tolerance.*

Note:

As an example, the DUT tolerance may be ±0.25%, but you may want to enter 0.1% for the purposes of the demonstration. It will be more likely you'll see an out of tolerance data point and see E-DWT's reaction.

❻ *Select test increments, ie. 20%*

❼ *Select Up and Down points, if desired.*

❽ *Confirm the test selections by pressure [ENT].*

❾ *Confirm the unit's setting of an AutoRange.*

Note:

When an AutoRange is selected on RPM4, the unit automatically sets it's pressure upper limit (for alarms), stability test pass/fail criteria, pressure display resolution and Q-RPT range selection based on the DUT range and tolerance entered by the operator.

❿ *If a zero point is required for your test, open the reservoir shutoff valve and confirm that the test shutoff valve is open. This will produce zero gauge pressure in the test system. After recording this point, you should repeat step 6 of* **DUT Connection and Priming** *to prime the system again. Be aware that even when the reservoir shutoff and test shutoff valves are open, there may be a difference in pressure between the DUT and the E-DWT due to fluid head. For more precise instruments with lower ranges, you may need to zero the DUT before making final test connections.*

⓫ *AutoTest will guide you to set each pressure that was defined in* **Running an E-DWT-H Quick Test**.

Note.

Use the variable volume to control pressures. For more precise control, use the test shutoff/fine pressure adjust valve. When testing DUTs, especially analog gauges, set test pressures according to the indication on the DUT, then read (or let the RPM4-E-DWT's software read and record) the reference pressure value for you. When running the AutoTest, you will not be prompted to enter DUT indications because the DUT is expected to be set to the nominal test point.

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⓬ *Once you have set a test pressure, E-DWT-H will automatically test for stability, and indicate to the operator when it is safe to take data. Press [ENT] to collect a data point.*

Hint:

Try collecting a data point while the pressure is still unstable and you have not yet seen the stability light illuminate green – to see and prove the unit's reaction to a technician trying to ignore or override the stability test.

Note:

The stability ready/not ready limit is equal to 10% of the DUT tolerance.

⓭ *To collect test data, simply select [ENT]. E-DWT-H will either respond with a tone to indicate that the DUT measurement at that point is in tolerance, or a lower tone and OT indication on the display to indicate that the DUT measurement is out of tolerance.*

⓮ *When the test is complete, use [SETUP], <5ATest>, to view the stored test results.*

Performance and Safety Features to Note

- *Note that in the E-DWT-H design, special attention was given to making a system that minimize vessel expansion and thermal effects that can cause the system to require a long time to reach stability. As such, an operator should be able to set stable test points in about 30 seconds, or no more than 1 minute depending on the DUT tolerance.*
- *The system of lights and audible warnings on E-DWT-H is intended to keep operators from applying a high pressure to RPM4-E-DWT while the Lo Q-RPT is selected. The green lights near the Lo Q-RPT shutoff valve indicate the position that the valve should be in based on the current RPM4-E-DWT selection.*
- *There is a relief valve built into E-DWT-H that protects the Lo Q-RPT in the event that the operator mistakenly applies a high pressure to the Lo Q-RPT circuit.*
- *In addition to audible warnings upon near-overpressure of a Q-RPT; if the Lo Q-RPT shutoff valve is set to Lo and the Hi Q-RPT is selected on the RPM4-E-DWT, an audible warning sounds if over 300 psi is sensed because it is likely that the operator has forgotten to change one of the settings and is applying pressure to the Lo Q-RPT without the ability to see the measured pressure.*

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