TECHNICAL DATA

Fluke Calibration E-DWT Electronic Deadweight Tester

Key features

All the features you expect in today's state-of-the-art instruments, including:

Accuracy and performance

- One-year measurement uncertainty is ± 0.02% of reading from 10% to 100% with one Q-RPT, and from 1% to 100% with two Q-RPTs
- Low torque variable volume allows for pressure generation up to 200 MPa (30,000 psi) with minimal physical effort
- Separate fine adjustment tool for maximum, superfine control resolution
- User defined resolution and ready limits enable user to optimize performance based on DUT specifications
- High pressure isolation valve and pressure relief valve protect the low pressure reference transducer from over pressure when high pressure reference transducer is active

Ease of use

- AutoRange feature optimizes measurement and safety features for the specific range of the instrument being calibrated
- Simple rezeroing while vented at atmospheric pressure
- Simple, objective pressure "ready/not ready indicator with user adjustable criteria to ensure repeatable results among operators
- Not dependent on local gravity or ambient temperature
- Sets and reads any pressure value directly in any unit of measure, without moving weights
- Built-in priming system to fill system with test fluid and purge unwanted air to assure smooth operation
- Optional foot switch accessory allows hands-free data collection when running AutoTests

Portability

- Rechargeable battery pack option for eight hours of field operation
- Everything to set, adjust and read pressure in one compact, transportable package
- Optional shipping/carrying case with handles and wheels allows for easy transport to field application
- Proven rugged and weatherproof design with room for accessories.

Automation

- RS232 interface allows for real time automated data collection and customized report generation using COMPASS® for Pressure calibration software

Free upgrades

Flash memory for simple and free embedded software upgrades from

www.dhinstruments.com

Automate data collection and manage calibration assets with COMPASS® for Pressure software

E-DWT can run stand-alone tests and collect test data. Test data can be downloaded over the RPM4-E-DWT's RS232 interface.

The RPM4-E-DWT's RS232 interface can also be used to run the E-DWT with COMPASS® for Pressure software or user developed software.

COMPASS® for Pressure software is universal pressure calibration software for the laboratory, which can be used to run simple or complex tests with multiple instruments. The user can create his/her own calibration report, and data can be exported to Fluke MET/CAL® Plus Calibration Management Software.

The support you need, when you need it
Fluke's calibration, testing and repair services are dedicated to satisfying your needs quickly and at a fair cost while maintaining the unmatched level of quality that is our trademark.

Fluke's calibration laboratories are accredited by the American Association for Laboratory Accreditation (A2LA) for conformance to ISO Guide 17025.

Fluke Calibration, has access to global calibration and repair facilities to keep your hardware in top working order.

If you need training for yourself or your staff, Fluke Calibration offers a broad range of classes including: the principles and practices of pressure calibration, advanced pressure metrology, gas flow calibration using a molbloc/molbox system, set up and operation of COMPASS® for Pressure calibration assistance software, and other Electrical, Temperature and RF calibration topics.

Fluke's commitment to support provides additional benefits as well, including invitations to software user group meetings and conferences, periodic email bulletins and a Fluke Calibration newsletter.

Product overview: Fluke Calibration E-DWT Electronic Deadweight Tester

A modern alternative to the traditional deadweight tester

E-DWT-H breaks new ground, improving the hydraulic pressure calibration process. E-DWT-H is an electronic calibrator designed to replace mechanical, piston-cylinder and weight based deadweight testers. It's a lighter, easier-to-use deadweight tester alternative that is at home in the lab or instrument shop, as well as in the field performing in-situ calibrations and tests. This complete hydraulic pressure calibration system combines the convenience and precision of continuous, realtime

electronic pressure measurement with the simple and direct operation of high quality operator controlled pressure generation hardware. E-DWT-H one year measurement uncertainty is ±0.02% of reading with ranges up to 30,000 psi. It can be configured to provide this uncertainty from its full scale down to 1% of its range. Built-in pressure generation and control hardware allow the operator to fill and prime the system under test and generate and precisely adjust pressure throughout the range with ease.

Broad workload coverage

The E-DWT-H has the operational versatility to calibrate and test a broad range of pressure measuring instruments including:

- Analog gauges
- Transducers
- Calibrators
- Sensors
- Transmitters

AutoTest™ lets E-DWT operators quickly define test points and adjust all of the range-dependent settings with a single function.

The resolution and stability test used by the RPM4-E-DWT are set according to the range of the device under test. The upper limit setting is also set and provides range-based warnings and overpressure protection. While running AutoTests, the operator is prompted to set each sequential test point and test data is stored in the RPM4-E-DWT for recall or download. Typical test setup is quick and easy, but more complex tests can also be stored and reused.

Deadweight tester performance with digital measurement convenience

E-DWT-H offers precision, low measurement uncertainty and the stability over time of a conventional deadweight tester without the inconveniences associated with the piston-cylinders, weights, hand pumps, and interconnecting plumbing.

- No weights to load and unload or regularly send out for calibration
- No need to know and correct for local gravity or ambient temperature
- No piston-cylinder changes; switch Q-RPT ranges in seconds
- Not sensitive to level or vibration
- Able to set and read any pressure value exactly, no minimum increment limited by smallest available masses
- Operates in any unit of measure while deadweight tester is typically limited to the pressure unit stamped on the mass
- Perfect for applications that require setting a nominal pressure precisely on the device under test and measuring it, such as analog gauge calibration
- On-board, AutoTest calibration routines and data acquisition
- Interfaceable with a PC or laptop to allow for automated data acquisition
- Two year calibration interval supported at measurement uncertainty of ±0.025% of reading.
- Easily recalibrated without crossfloating. Automated calibration of E-DWT-H is possible using COMPASS® for Pressure software.

Versatility to cover a broad workload in a variety of environments

The E-DWT-H is at home in metrology and calibration labs, on the production floor or in the field. It operates with Sebacate calibration fluid, mineral oil, Skydrol® and other liquids. An optional battery/charger pack supports up to eight hours of operation away from line power.

Specifications: Fluke Calibration E-DWT Electronic Deadweight Tester

General

Power requirements	To RPM4-E-DWT: 12 V DC 1.2 A	
	To AC to DC power supply: 100 V AC to 240 V AC, 50/60 Hz	
Temperature range	Storage: - 20°C to 70°C	
	Operating: 10°C to 40°C	
Relative humidity	Storage: 0% to 100%	
	Operating: 0% to 70%	
Weight	1 Q-RPT: 12 kg (26 lb) approximate	
	2 Q-RPT: 14 kg (30 lb) approximate	
Dimensions	E-DWT footprint (W x D): 41.4 x 37.1 cm (16.3 x 14.6 in)	
	E-DWT height: 26.9 cm (10.6 in), 33.6 cm (13.2 in) to max variable volume handle height	
Pressure ranges dependent on Q-RPT(s) included in RPM4-E-DWT.	200 MPa (30,000 psi) maximum with standard variable volume	
	100 MPa (15,000 psi) maximum with high volume (-HV) variable volume	
Operating medium	Delivered filled with oil (di-ethyl-hexyl sebacate) or dry	
	Standard E-DWT-H compatible with Sebacate, silicon oils, propylene glycol, fully fluorinated liquids, partially fluorinated liquids, isopropyl alcohol , and distilled water. Option for Skydrol or mineral oil preparation.	
Reservoir capacity	300 cc (18 in^3)	
Variable volume displacement	Standard: 3 cc (0.18 in^3), 200 MPa (30,000 psi) maximum	
	High: 7 cc (0.43 in^3), 100 MPa (15,000 psi) maximum	
Filling and priming pump displacement	3.7 cc (0.23 in^3)	
TEST pressure connection	DH500 female.	
	DH500 is a gland and collar type fitting for 6mm (1/4 in) coned and left hand threaded tubes equivalent to AE F250C, HIP HF4, 9/16-18 UNF, etc.	
Pressure limits	**Maximum working pressure:**	Range of RPM4-E-DWT monitor's Hi Q-RPT 200 MPa (30,000 psi) with standard variable volume
		100 MPa (15,000 psi) with high volume variable volume
	Maximum priming pump pressure:	700 kPa (100 psi)
	Maximum working pressure:	With Lo Q-RPT selected: Range of RPM4-E-DWT monitor's Lo Q-RPT
Communication ports	RS232 (COM1, COM2)	
Pressure Measurement		
Warm up time	15 minute temperature stabilization recommended from cold power up.	
Normal operating temperature range	10°C to 40°C	
Resolution	Default: 0.01% of active range	
	User adjustable to 1 ppm of Q-RPT maximum or 10 ppm of active AutoRange, whichever is larger	

Precision[1]	±0.018% of reading or 0.0018% of Q-RPT span, whichever is greater
Predicted stability[2]	One year: ±0.0075% of reading
	Two year: ±0.015% of reading
Measurement uncertainty[3]	One year: ±0.02% of reading or 0.002% of Q-RPT span, whichever is greater
	Two year: ±0.025% of reading or 0.0025% of Q-RPT span, whichever is greater

1. Combined linearity, hysteresis, and repeatability. Precision does not include stability or calibration reference uncertainty.
2. Predicted Q-RPT measurement stability limit (k=2) assuming regular use of AutoZero function and short term stability between rezeroing.
3. Maximum deviation of the Q-RPT indication from the true value of applied pressure including precision, predicted stability with rezeroing, temperature effect from 10°C to 40°C and calibration uncertainty (assumes calibration reference uncertainty of ±0.005% of reading, k=2), combined and expanded (k=2) following the ISO Guide to the Expression of Uncertainty in Measurement.

Ordering information

E-DWT-HV AhhhM/AlllM

E-DWT hydraulically operated electronic deadweight tester

Download the product brochure for configuration details.

Where:
E-DWT-H: Hydraulically operated electronic deadweight tester (E-DWT)
HV: High volume variable volume if desired (limits max pressure to 100 MPa). Do not include if high volume variable volume is not desired.
AhhhM: Hi Q-RPT designator
AlllM: Lo Q-RPT designator. Do not include if Lo Q-RPT is not desired.

Configure E-DWT-H as follows:

1. Determine the maximum pressure desired and select the Hi Q-RPT from the E-DWT-H Q-RPTs chart.
2. If uncertainty better than ± 0.02 % reading is needed below 10 % of the span of the Hi Q-RPT, add a Lo Q-RPT from the E-DWT-H Q-RPTs chart. Lo Q-RPT cannot be higher than A40M.
3. If desired, specify the high volume variable volume rather than the standard volume variable volume (limits maximum pressure to 100 MPa).
4. Standard preparation for unit is filled with Sebacate oil calibration fluid. See specifications for compatibility with other liquids. If other preparation is needed, must specify either “Shipped Dry, Std Prep, “Shipped Dry, Skydrol Ready, or “Shipped Dry, Mineral Oil Ready. The fill kit accessory is recommended for units that are shipped dry and for refilling in the field.

Fluke. *Keeping your world up and running.®*

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