

DairyTest X

User Manual

Valid for Firmware V0.11 'Alderney'

innovAg

DR51-0069-03 EN



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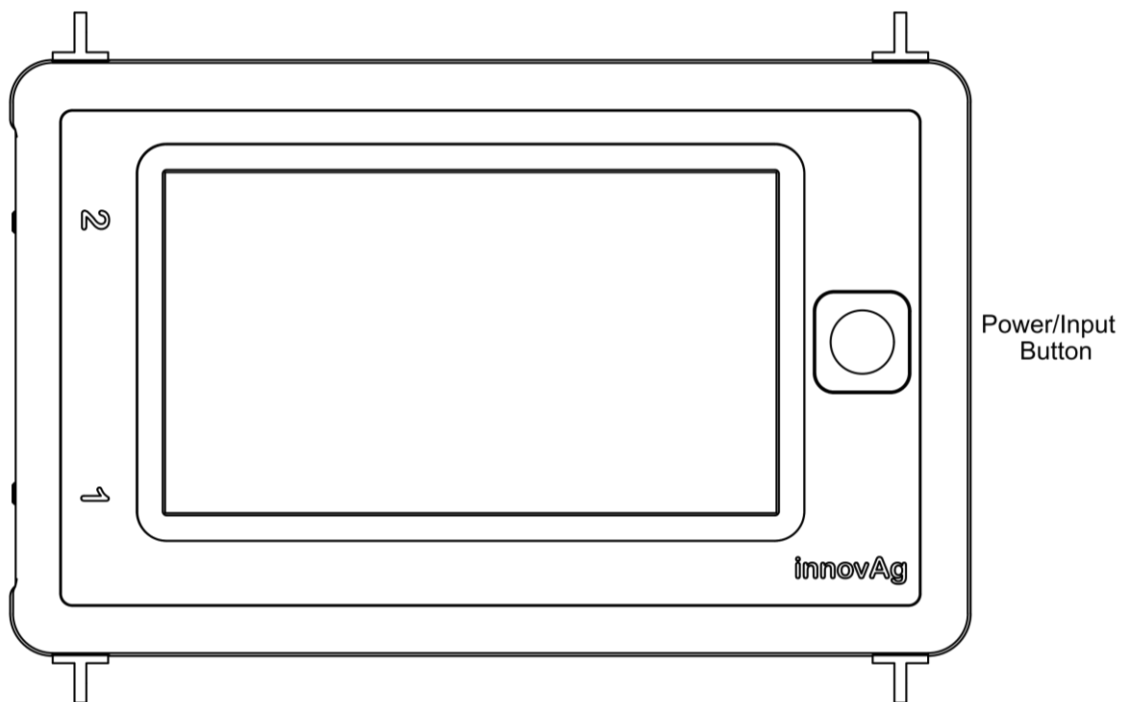
1. DTX

Thank you for purchasing our latest Pulsation Tester, DairyTest X. We have put our 30 years of experience into DTX's design to provide you with a fast and easy (fun even!) way to do your job. If you have any questions or comments, please feel free to contact us via our web site;

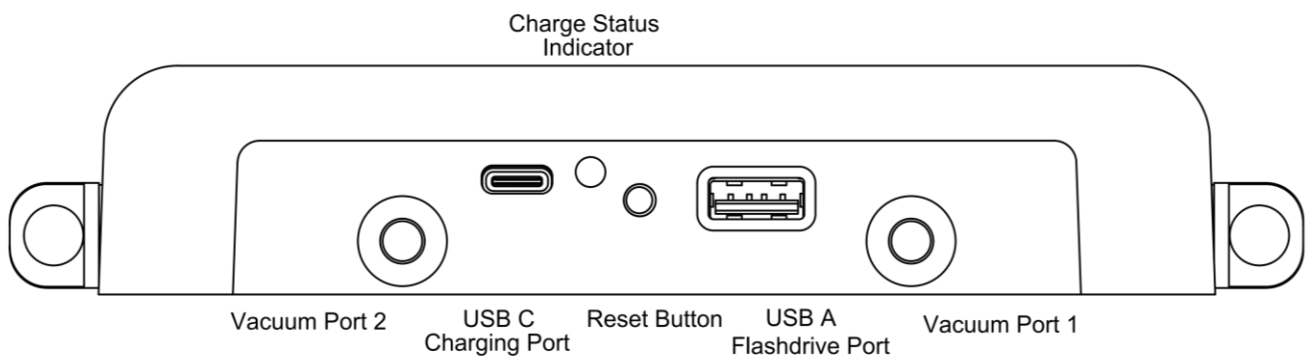


<https://innovag.com/pages/contact-us>

Front Screen



Port End



2. Charging

DairyTest X is charged via the USB C port. Use the included Wall or Car adaptor with the PD compliant cable.

When charging, the Charge Status Indicator will flash GREEN, and once charging is complete it will show GREEN.

The Indicator will show RED if there is an error. Disconnect and reconnect the charger to re-run the charge cycle. If the error persists, contact your distributor.

Note: If you lose any of the charging components you should replace them with similarly specified parts to get the best charging performance.

3. Safety Precautions

DairyTest X is intended to be used in the milking stall – always allow for the unpredictable nature of animals.

During the measurements, sharp needles may be used – take care they don't hurt people or animals.

Always ask the dairy farmer about the behaviour of the animals and milking method used.

If using DairyTest X in wet tests, always keep the unit above the test point to prevent fluid entering.

Damage to the unit from fluid entering the sensor is not covered under the warranty.

4. Maintenance and Calibration

DairyTest X is not waterproof; do not immerse or sit in water. Clean with a moist cloth. Do not use cleaning agents.

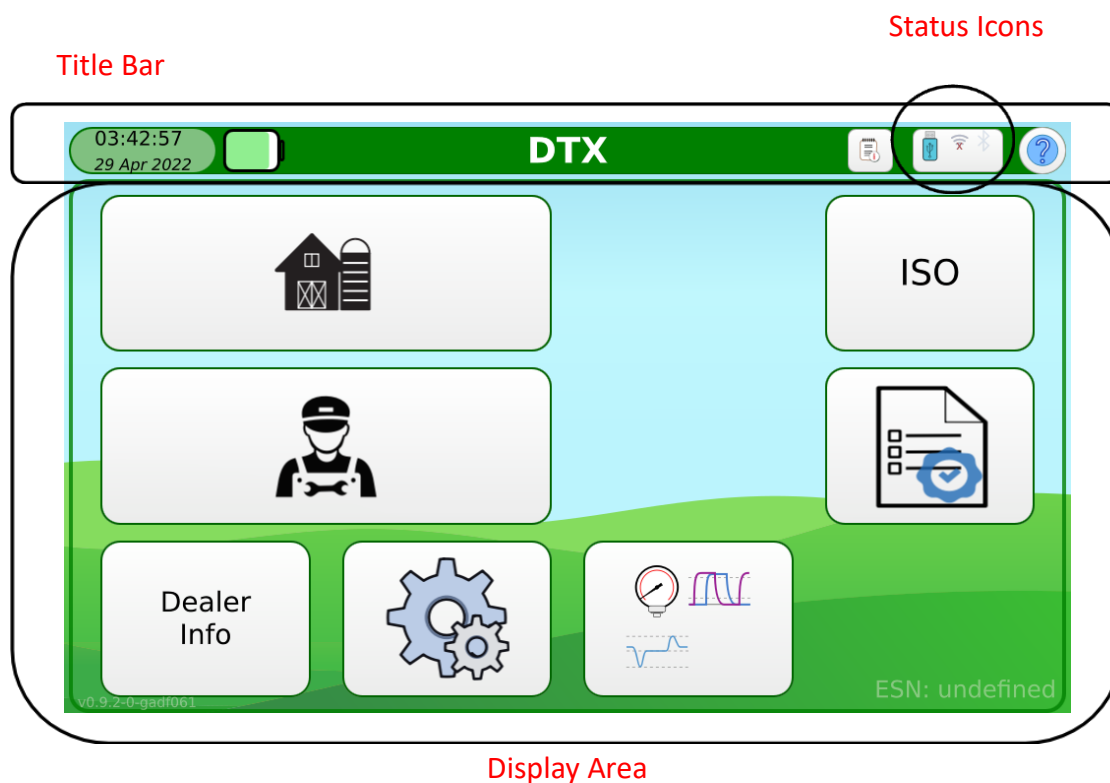
A self-test is performed at powerup. If an error message is displayed, or you suspect the unit is damaged; contact innovAg or your local distributor for further information.

DairyTest X automatically performs a zero calibration when turned on. If the vacuum levels are fluctuating or are very different from the previous zeroing levels the DTX does not change the zeroing values – this can occur when there has been a large shift in atmospheric pressure. A manual 'Force-zero' can be implemented if required.

A complete calibration should be performed with an approved and certified calibration test instrument every 24 months. This can be organised by InnovAg or your local distributor.

5. User Interface

DTX's Screen is divided into a Title Bar and the Display Area.



The Title bar tells you where you are as well as the status of various functions. Pressing on a Status Icon will take you to another screen showing more detail of that function.

The Display Area contains icons to access DairyTest's functions and/or display data.

DairyTest X has some useful shortcuts to help save you time and ease your testing routine. These are detailed in each relevant section of this manual, notated by the symbol: ▲

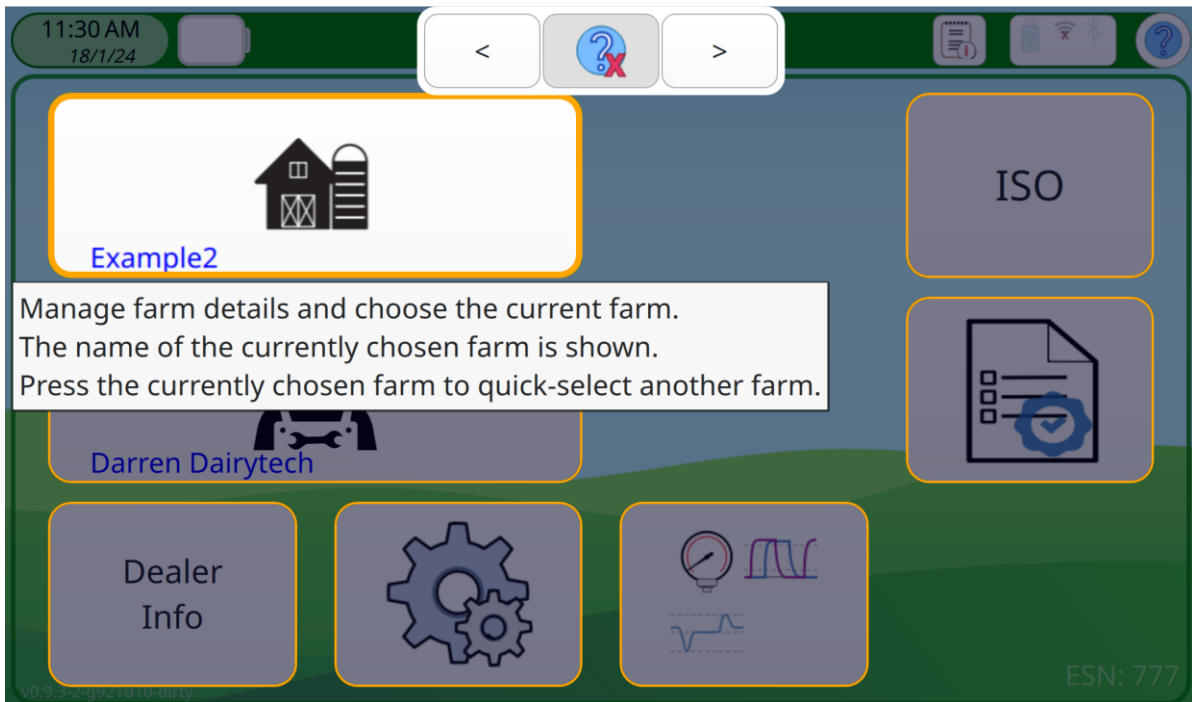
The Power/Input button is used to turn DTX on, go back a menu level, or cancel an entry.

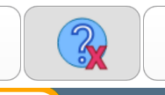
▲ Push and hold the Power button to turn the machine off. DTX will show you a 'progress bar' to shutdown.

6. Help System



Pressing the help icon in the Title Bar provides a highlight showing the elements on the display. Just press the element you want to know more about.



Press  or the Return Button to exit the Help System.

7. Device Configuration



The Configuration screen provides access to the 'backend' functions of DTX.



Access Settings for all the usual operating parameters.

▲ You can also access this screen directly by pressing the Status Icon area in the Title Bar.

Check for software updates using



DairyTest X does not check for updates automatically. You need to set up a WiFi connection to your preferred network to allow checking for software updates and access to email and other connected features.



Measurement Settings provides access to forcing the vacuum to zero, performing various System self-tests and checking the calibration settings.

8. Device Maintenance

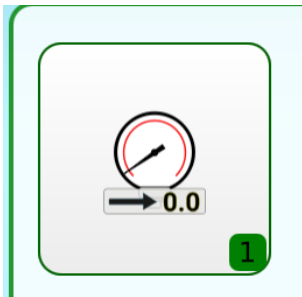
DairyTest X is digitally calibrated at the factory, providing superior accuracy. To further protect the vacuum system there is an internal filter and flush valve system to reduce the likelihood of fluid ingress. Remember to keep DairyTest X above and fluid line when testing.

The following functions are accessed from the Measurements Settings screen.

Forcing a zero

DairyTest X automatically zeros the vacuum system on powerup. If the unit thinks there is vacuum on the ports, it will not perform the zero.

In some instances, such as a change in altitude or atmospheric pressure, DTX will not perform the zero even though there is no vacuum on the ports. You can force DairyTest X to perform a zero by pressing the zeroing button.

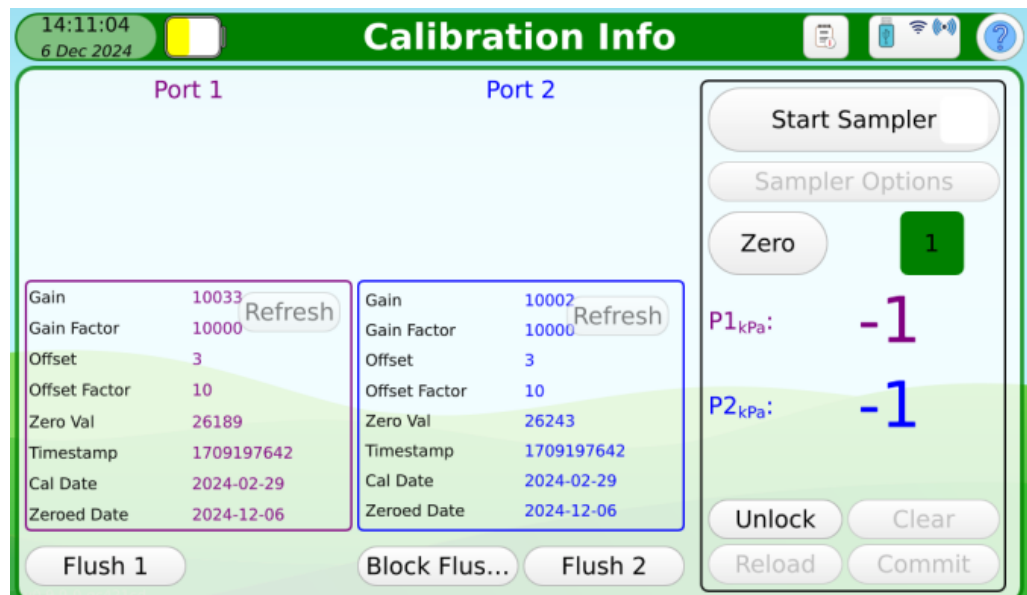
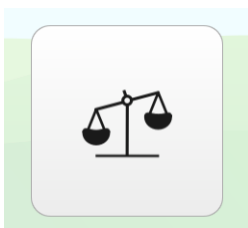


NOTE! DTX will set the port readings to zero even if you have vacuum applied.

Calibration

Calibration should be checked by your InnovAg dealer at least every 2 years, or as required by your Testing Authority. Calibration can only be performed using our Digital Calibration system.

You can check the calibration date in the Calibration info screen.



The screenshot shows the 'Calibration Info' screen. At the top, it displays the time '14:11:04' and date '6 Dec 2024'. The screen is divided into two columns for 'Port 1' and 'Port 2'. Each column lists calibration parameters: Gain, Gain Factor, Offset, Offset Factor, Zero Val, Timestamp, Cal Date, and Zeroed Date. There are 'Refresh' buttons next to the Gain and Gain Factor values. On the right side, there are control buttons: 'Start Sampler', 'Sampler Options', a 'Zero' button with a green '1' indicator, 'P1_{kPa}: -1', 'P2_{kPa}: -1', 'Unlock', 'Clear', 'Reload', and 'Commit'. At the bottom, there are buttons for 'Flush 1', 'Block Flus...', and 'Flush 2'.

Parameter	Port 1 Value	Port 2 Value
Gain	10033	10002
Gain Factor	10000	10000
Offset	3	3
Offset Factor	10	10
Zero Val	26189	26243
Timestamp	1709197642	1709197642
Cal Date	2024-02-29	2024-02-29
Zeroed Date	2024-12-06	2024-12-06

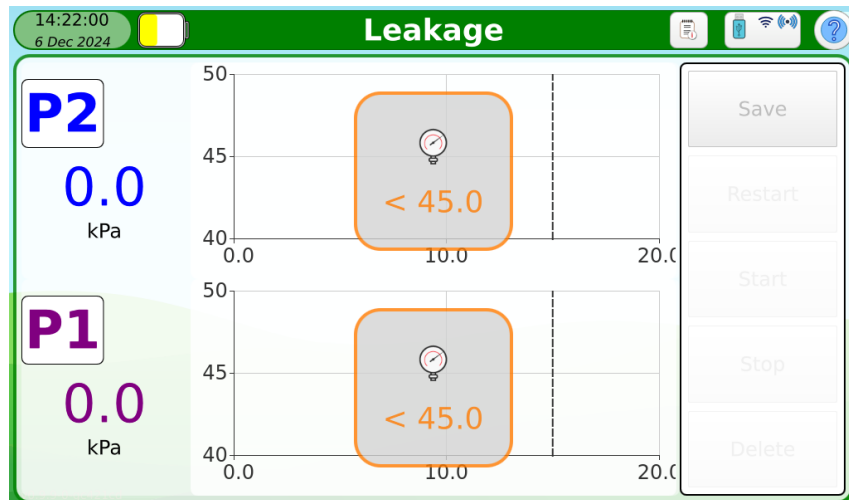
Vacuum System

Reading accuracy can be impaired by a blocked filter or fluid ingress onto the vacuum transducer.

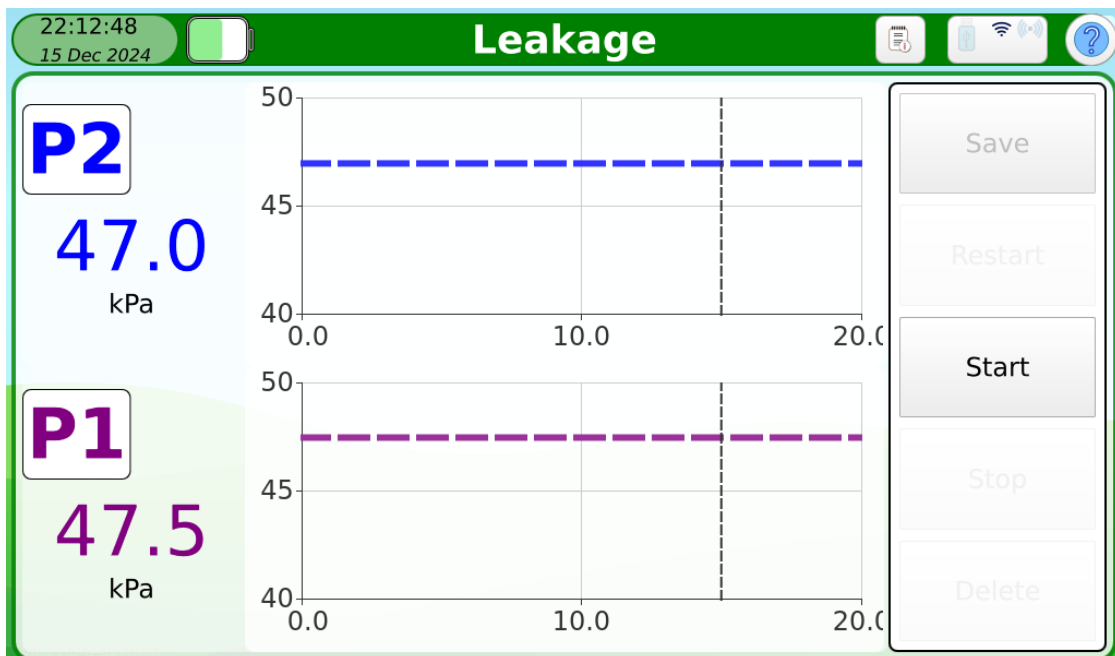
You can check the function of the vacuum system by performing a leakage test and/or response test.

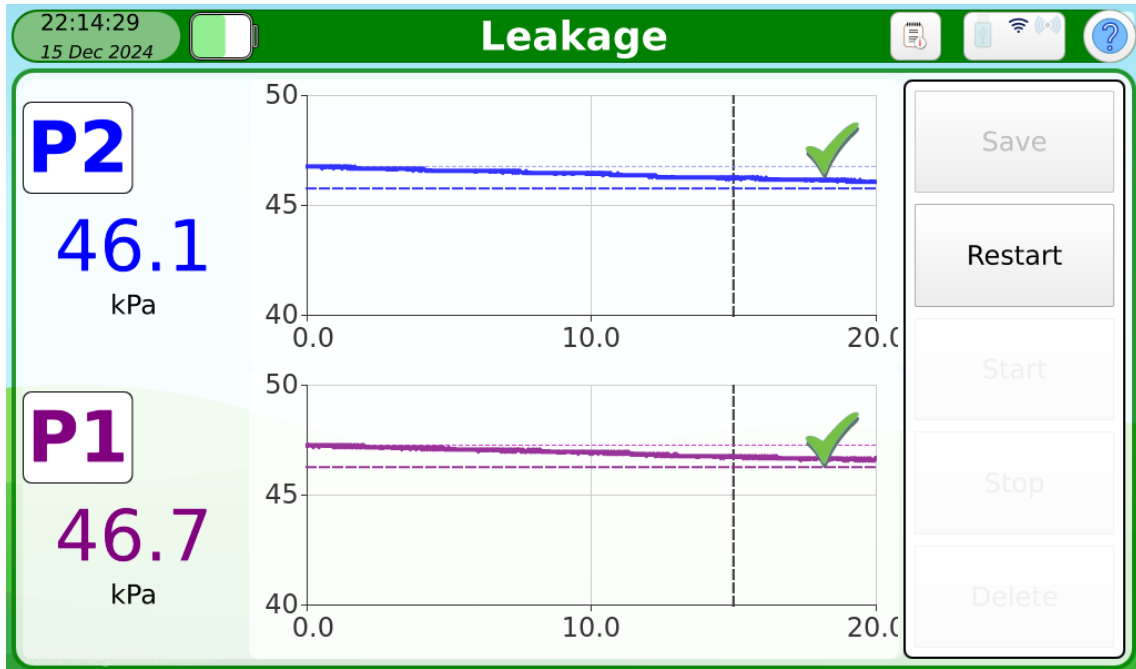
Leakage
Selftest

The Leakage Test checks that the internal flush value is operating correctly.



Apply a vacuum of around 50 kPa (more than 45, less than 55 kPa) to both ports and clamp the tubing with the supplied pinch clamps, then press Start.

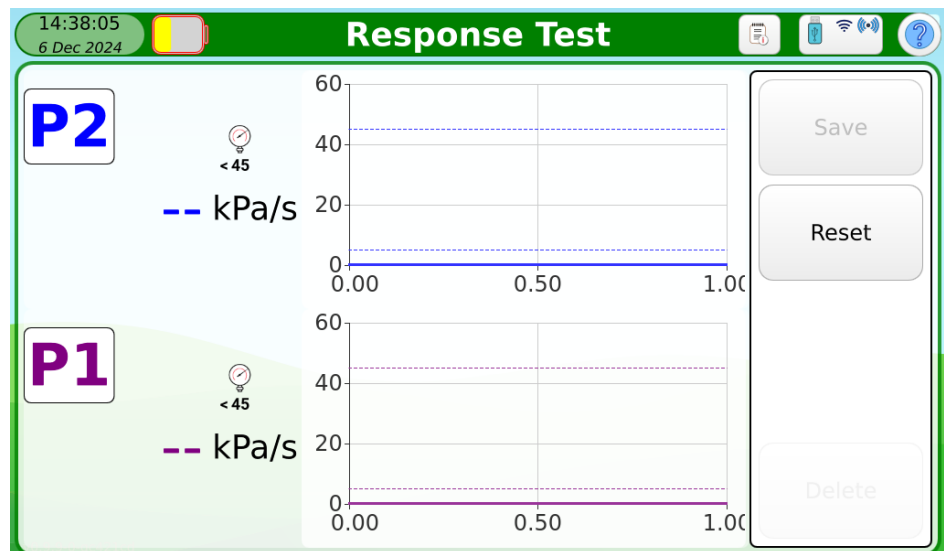




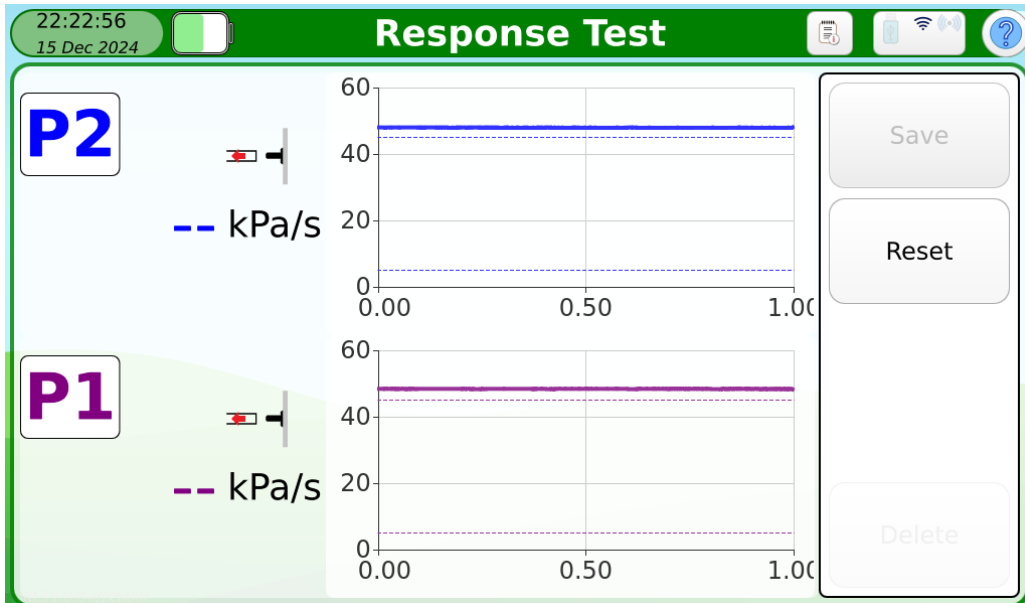
Leakage in the vacuum system must be less than 1 kPa. If the unit fails the test, please contact your InnovAg dealer.



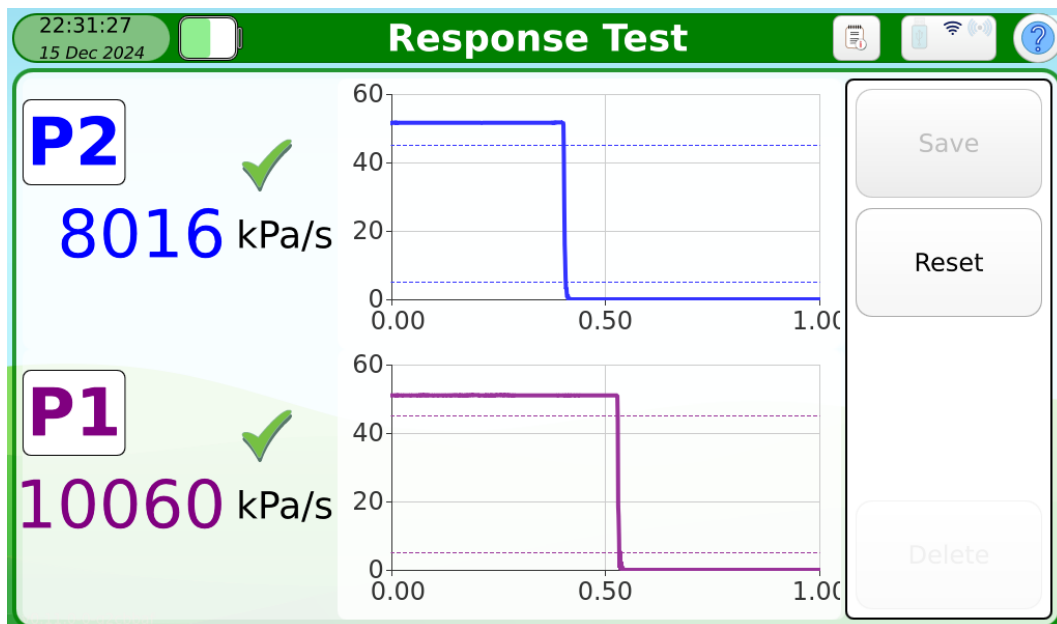
The Response Test checks that the filter is not blocked and that the vacuum transducer is operating correctly.



Apply a vacuum of around 50 kPa (more than 45, less than 55 kPa) to both ports and clamp the tubing with the supplied pinch clamps.

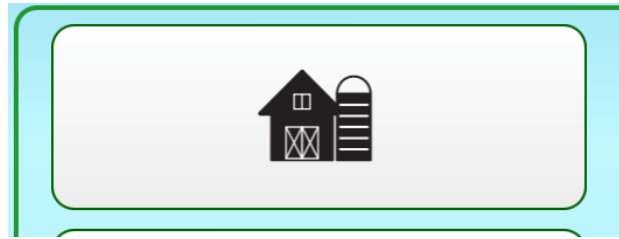


Open the pinch clamps to perform the test.



The Response must be higher than **4000** kPa/s. If the unit fails the test, please contact your InnovAg dealer.

9. Farms



Farm information is used to pre-configure the ISO test and is printed on the report. There is no practical limit on the number of farms you can store on DTX. Farms can also be exported and imported using a USB disk.

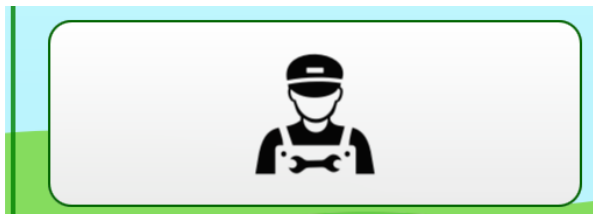
It is recommended that Farms be created on one unit and then exported to others.

Details with an exclamation mark are required to allow DTX to properly perform pre-configuration for an ISO Test.



If the Farm details are not sufficient to preconfigure an ISO test, DTX will jump to the edit screen for that farm when you try to start a test.

10. Technician



Technician information is used to connect test session to a particular person. The Technician name is mandatory to commence an ISO Test. The Technician name and accreditation (if entered) will be printed on the report.

11. Dealer



Dealer information is not required to perform an ISO test. You can add an image (.jpg, .jpeg, .png, .gif) if you want. All Dealer information is printed on the report.

12. Import/Export

For Farms, Technician and Dealer data you have the option to import and/or export saved data.

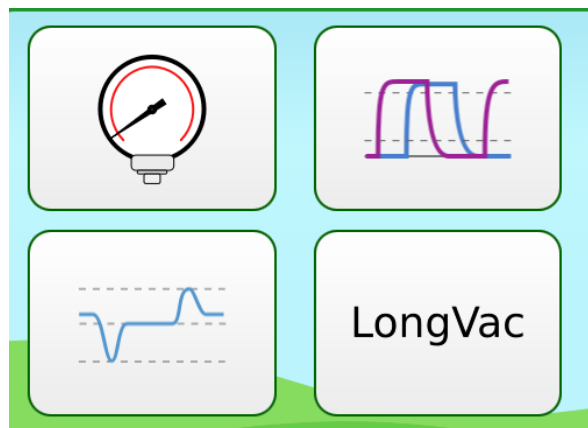
▲ You can use this feature to set up several DTX's with the same information, and to serve as a backup should you lose the information.

13. Quick Measurements

Use the 'Quick Measurements' mode when you just want to perform a couple of tests.

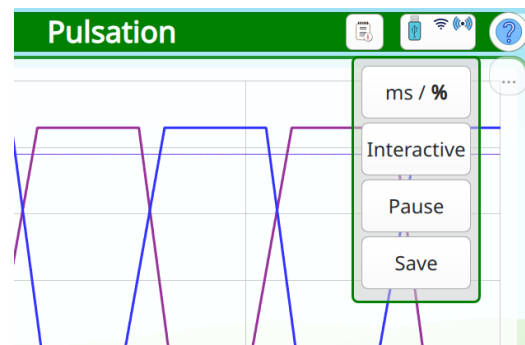
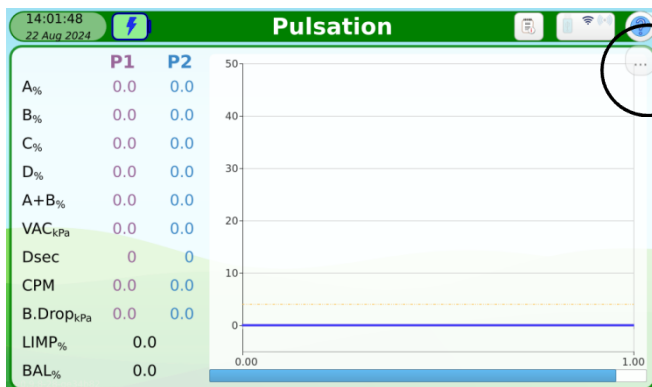


There are 4 measurements available in Quick mode; Vacuum, Pulsation, Regulation and Long Vacuum.

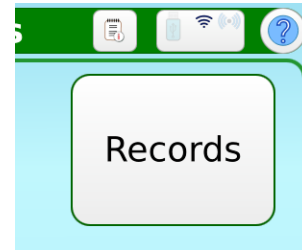


You can save Pulsation, Regulation and Long Vacuum measurements.

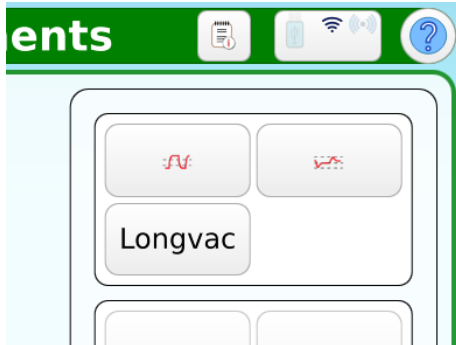
For Pulsation, select the drop-down menu on the top right-hand side



To view saved Quick Measurements, press the Records Button.

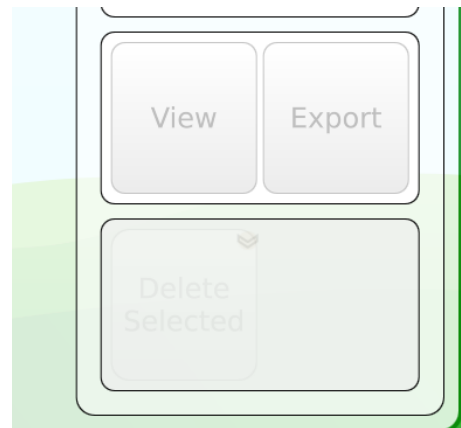


The available records will be listed. You can filter by Pulsation, Regulation and Long Vacuum.



You can View a measurement, export it as a pdf to the USB or Delete it.

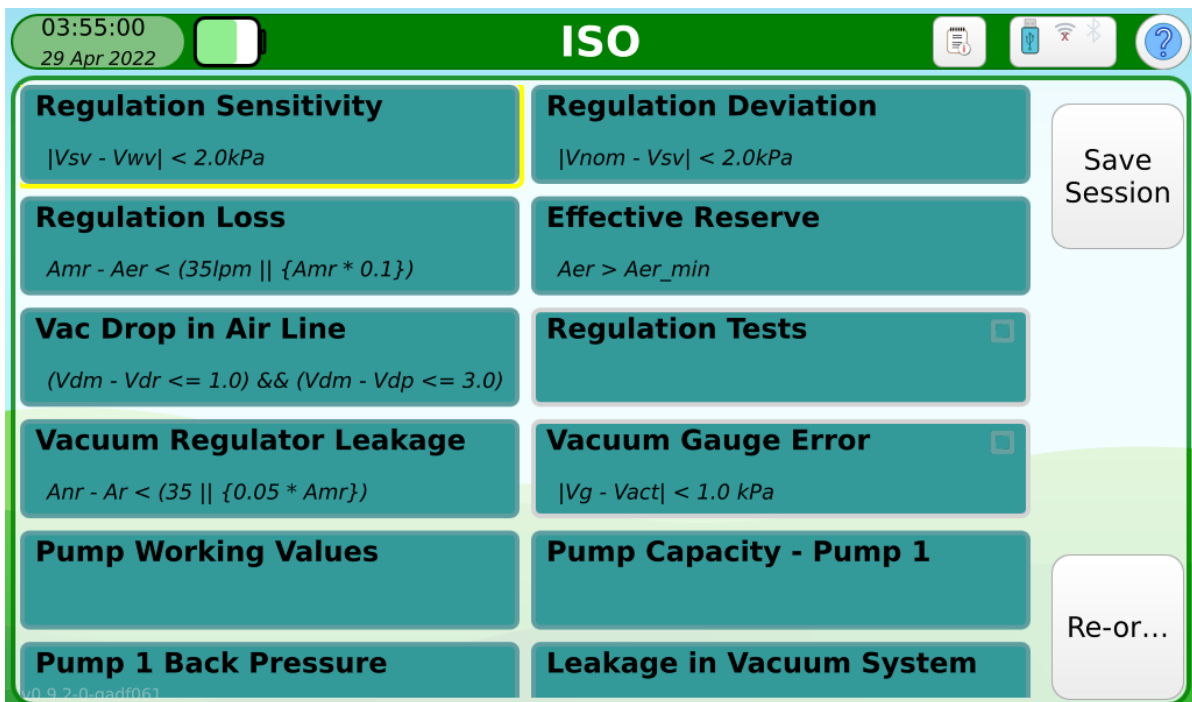
▲ A USB must be present to enable the Export function.



14. Performing an ISO Test



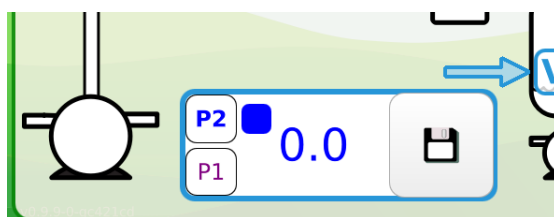
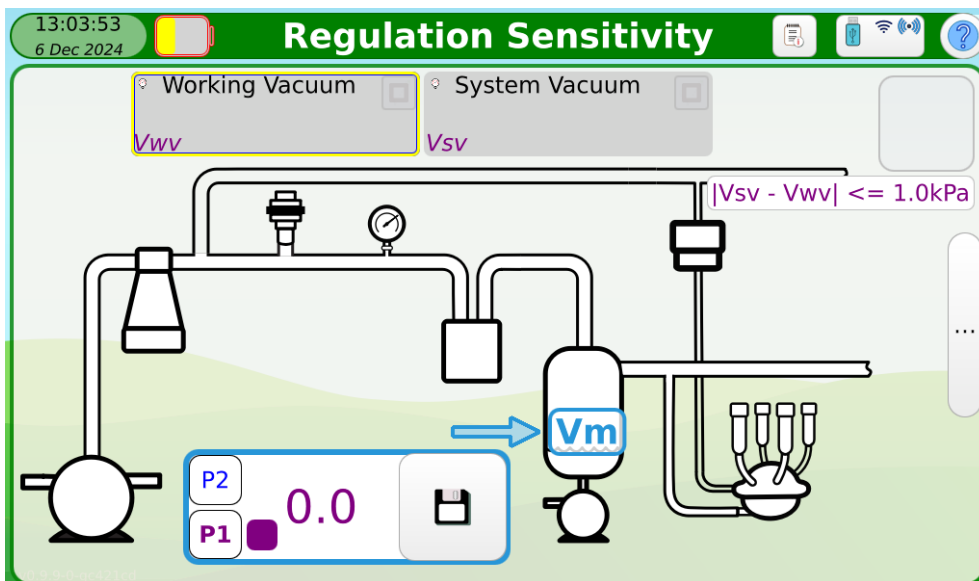
You can perform an ISO or other predefined test. DairyTest X ships with an ISO compatible Test procedure. There may also be country-specific Test Procedures depending on where and from whom you purchased your Tester.



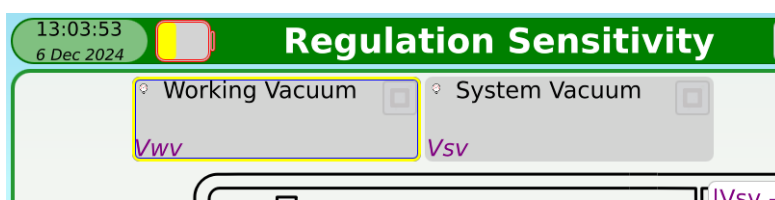
You can perform the test steps in any order, subject to any preconditions/test results that a given step may need. DTX will have a natural testflow to move through steps in the listed order, ie, when one step is completed it will move on to the next uncompleted step.

The step order can be rearranged to suit different preferences.

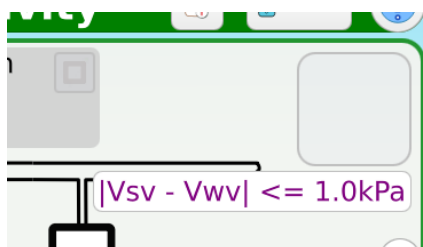
Each step (except the multi-point ones; cluster, pulsation and tap airflow) shows a graphic of where the measurement is to be taken and available sensor readings. Press the other Port to swap the source of measurement. See the Remote Vacuum Sensor manual for instructions on how to use it as the measurement source.



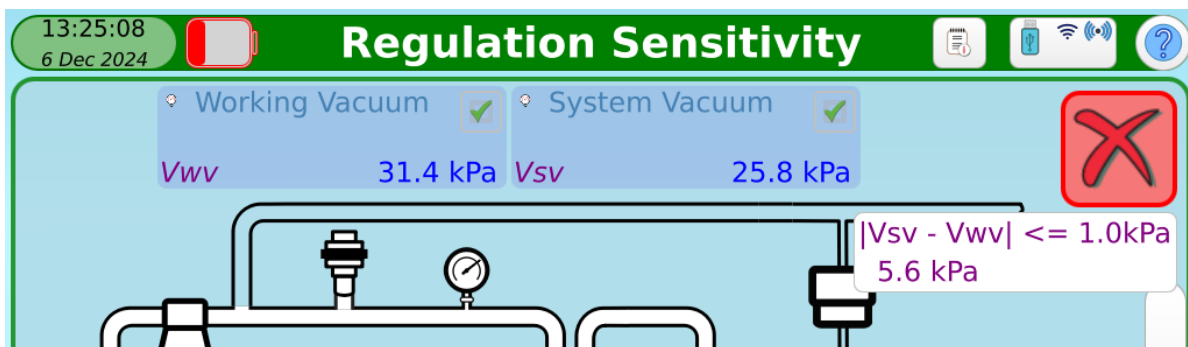
If there is more than one measurement for the step, they will be shown along the top of the Step Screen in preferred testing order left to right. You can scroll across the measurements and press to select it for measurement.



The pass conditions and test status are shown on the top right hand side of the Step Screen.



When the step's measurements are completed, the measurements, calculation and test result will be displayed.

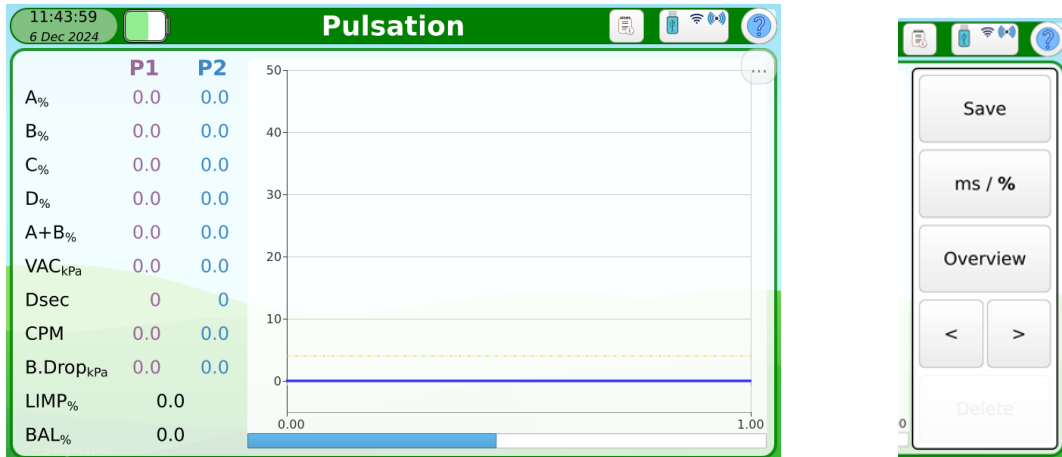


15. Graphic Views

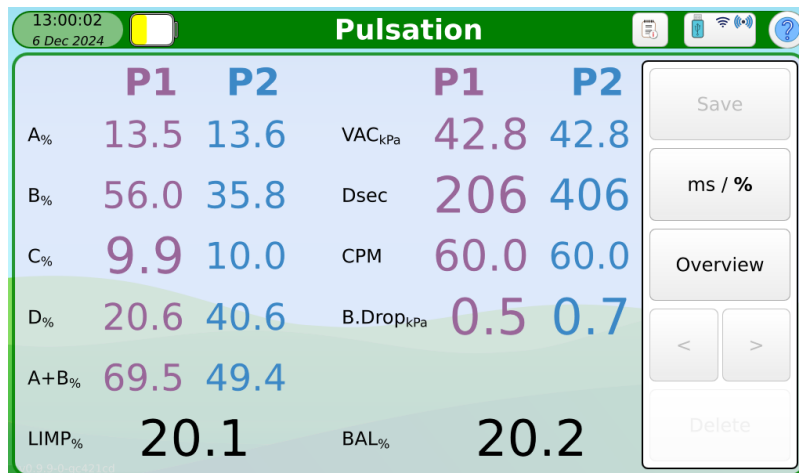
DairyTest X allows you to change views in Pulsation, Long Vacuum and Regulation Test modes.

Pulsation Measurement Display

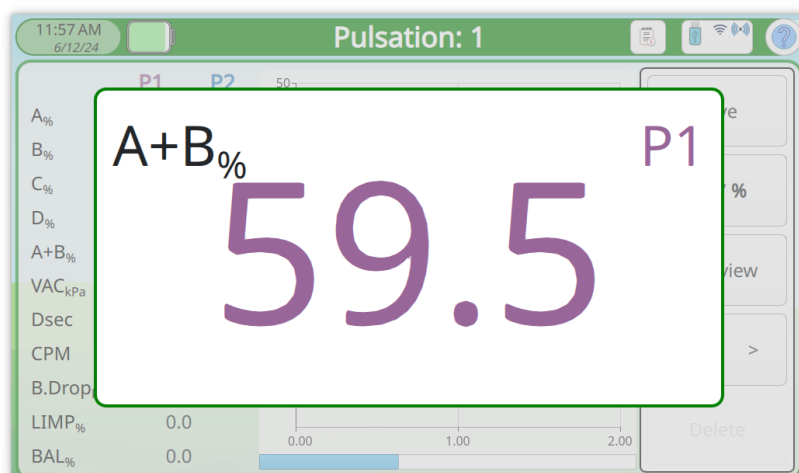
The Pulsation Measurement screen works in the same way whether in ISO or Quick Measurements. In ISO mode there are additional functions available in a right hand button panel.



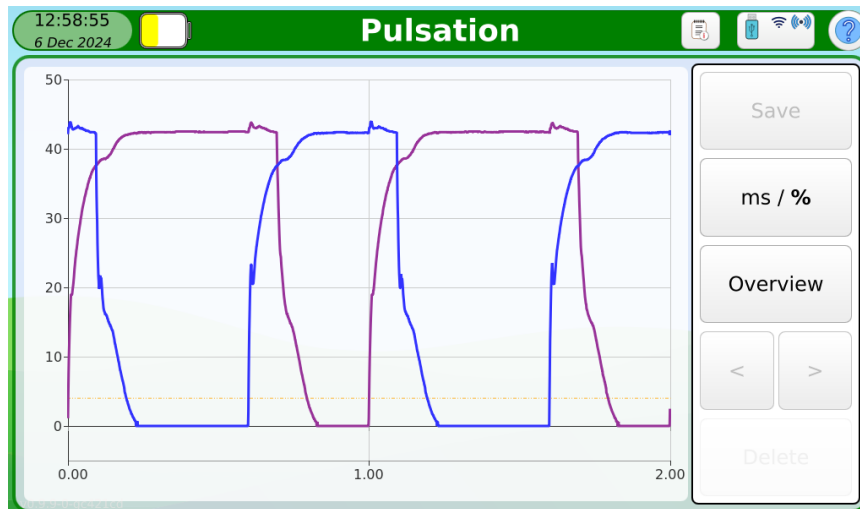
Tapping either the data table heading or measurement label will move to a large data screen format.



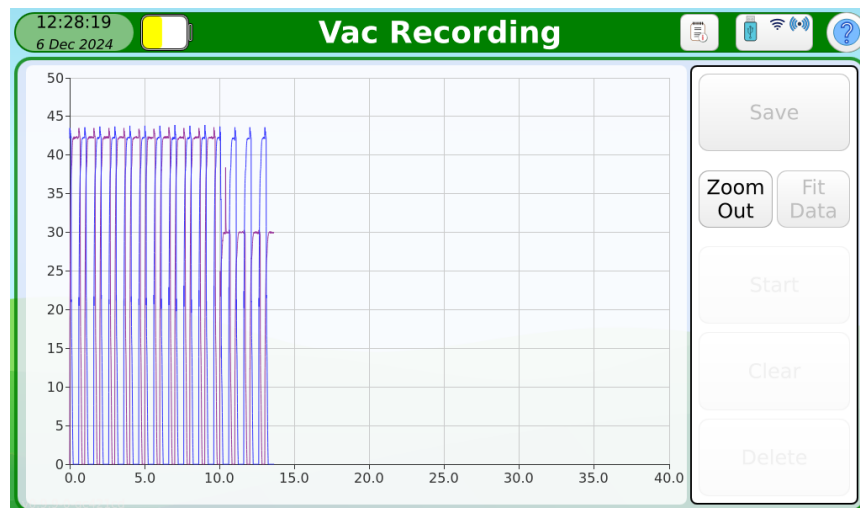
You can also select a single measurement to be enlarged by touching on the specific reading.



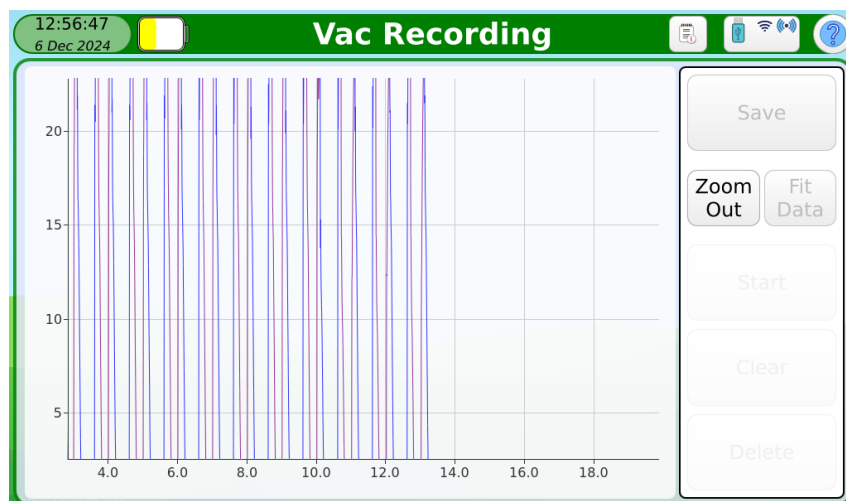
Tapping on the graph will change the view to full screen graph.



Long Vacuum recording



You can 'pinch and spread' to zoom in by time (horizontal), vacuum (vertical) or both. You can also scroll to move around the reading.



These functions work even when the recorder is running.

Press the Zoom Out button to return to the native screen size.

Specifications

Display

7" LCD, 1024 x 600, IPS with Capacitive Touch Screen

Processor

Quad core, w/ NPU, GPU, 1.8 Ghz

Battery

3.6V 9600mAH nom. Li Ion

Charging via USB C, BC1.2 and CC compatible

Interface

USB C

USB A

WiFi (802.11 ac/a/b/g/n)

2.4Ghz Wireless, Bluetooth 5 compatible.

Pressure (kPa)

Number of Ports: 2

Range: -80 ~ 10 @ 1 atm

Accuracy: ± 0.3 Typ., ± 0.5 Max.

Repeatability: ± 0.1 Typ., ± 0.3 Max

Resolution: 0.1

Sample Rate: 1,000 /sec

Readings

Pulsation Rate: 40 ~ 500 CPM

Rate accuracy: ± 0.5 ms or 0.5 % of calculated value

Ratio accuracy: ± 0.5 %

Time: ± 0.5 %

General

Operating Temperature : 5 ~ 40 °C

Storage Temperature: 0 ~ 60 °C

Humidity: 10 ~ 90 %, non-condensing

Weight: 1 kg

Dimensions (excluding carry strap mounts): 240 x 145 x 45 mm (W x H x D)