



F-Scan GO

User Manual

Bipedal in-shoe pressure / force measurement system

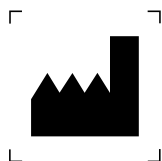


Original instructions

Read this manual before using the equipment

Retain this manual for future use

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Safety notices

The following safety notice formats are used in this manual. Safety notices are used at the start of sections or embedded in operating instructions.

Ensure you fully understand and comply with the notices in this manual.



DANGER

Risk of death!

Indicates a hazardous situation which, if not avoided, will almost certainly result in death or serious injury.



WARNING

Risk of serious injury or death!

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Caution

Risk of injury!

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



Notice

Indicates an important situation which, if not avoided, may seriously impair operations.



Tip

Additional information relating to the current section.



Federal Communications Commission (FCC) Regulations.



In accordance with the EC Waste Electrical and Electronic Equipment (WEEE) directive 2002/96/EC this product must be sent to a recycling plant for proper disposal at the end of its use.

Contents

1 Safety information	7
1.1 Intended use	7
1.2 Contraindications	7
1.3 Symbols used	7
1.4 Accessories and cables	8
1.5 Power sources	8
1.6 Computer	9
1.7 External components	10
1.8 Electromagnetic interference	10
1.9 Electromagnetic environment and compatibility	10
1.10 Electrostatic discharge	11
1.11 Disposal of sensors	11
1.12 Servicing and troubleshooting	12
1.13 Personnel	12
1.13.1 Operating staff	12
1.13.2 The owner	13
2 Product description	14
2.1 Overview	14
2.1.1 The principles of foot scanning	14
2.1.2 The F-Scan GO solution	15
2.2 Computer requirements	16
2.3 System components	16
2.3.1 F-Scan GO sensors	19
2.4 Software description	21
2.4.1 Main window	21
2.4.2 Title bar	23
2.4.3 Menu bar	23
2.4.4 Types of display windows	24
2.4.5 Tab bars and dock groups	25
2.4.6 Details panels	25
2.4.7 Status bar	30
2.4.8 Main menu	31
2.4.9 Toolbars	66
3 Getting started	72
3.1 Charge the batteries	72
3.2 Download and install FootVIEW	74
3.3 Connect the router to your computer	75
3.4 Initialize your TekDAQ devices	75

3.5	Attach the sensors to the TekDAQ devices	76
3.6	Start the software and check the connection	77
3.7	Check the sensors	78
4	Operations	79
4.1	Preparation prior to data capture	79
4.1.1	How to fit the sensors	79
4.1.2	How to prepare the subject	81
4.1.3	How to attach the TekDAQ units to the ankle bands and sensors	82
4.1.4	How to connect to FootVIEW	83
4.1.5	How to adjust sensor sensitivity	84
4.1.6	How to set up your recording parameters	86
4.1.7	How to set up recording triggers (FootVIEW Pro feature)	87
4.1.8	How to set up an external trigger	89
4.1.9	How to calibrate the sensors	90
4.2	Capturing data	92
4.2.1	How to take a recording	92
4.2.2	How to save a recording	94
4.2.3	How to manage files in File Manager	94
4.3	Analyzing data	95
4.3.1	How to review a recording	95
4.3.2	How to display the Center of Force and trajectory	96
4.3.3	How to display data using 3 Box Graphs	96
4.3.4	How to display data using a Gait Parameters Table	97
4.3.5	How to generate a 3 Box Report	97
4.3.6	How to display data using Peak Pressure Graphs	98
4.3.7	How to display data using Peak Pressure Tables	98
4.3.8	How to generate Peak Pressure Reports	98
4.4	Viewing and changing presentation settings	99
4.4.1	How to change the pressure range in the legend	99
4.4.2	How to change the units of measurement	99
4.4.3	How to change the playback speed	99
4.4.4	How to change the language setting	99
4.4.5	How to change how pressure recordings are displayed	100
4.4.6	How to set peak size	100
4.5	Advanced operations	100
4.5.1	How to perform equilibration	101
4.5.2	How to perform a zero offset	103
4.5.3	How to remove selected frames from a recording	104
4.5.4	How to create graphs for different regions	104
4.5.5	How to display key region data from all open windows	105
4.5.6	Adjusting the noise threshold	107
4.6	User interface management	108
4.6.1	How to resize the main window	108

4.6.2	How to adjust elements in the user interface	109
4.7	Viewing hardware and software status details	109
4.7.1	How to view hardware and software status details	109
4.7.2	How to display TekDAQ status	110
5	Troubleshooting	111
5.1	Dealing with wireless connection issues	111
5.2	Dealing with microSD card issues	112
5.3	Status and error indicators	113
5.4	Other issues	114
6	Maintenance and care	115
6.1	General maintenance and care	115
6.2	Sensor maintenance and care	115
6.2.1	Cleaning the sensors	115
6.2.2	Storing the sensors	116
6.2.3	Replacing / disposing of the sensors	116
6.3	Spares or replacement parts	116
7	Support	117
7.1	Warranty	117
7.2	Getting assistance	118
8	Declaration of Conformity	119
9	Specifications	120
9.1	TekDAQ 200 specifications	120
9.2	Battery specifications	120
9.3	External microSD card specifications	121
9.4	Wi-Fi router specifications	121
9.5	Sensor specifications	122
10	Certification standards	123
10.1	Classification	123
10.2	FCC statement	123
10.3	FCC notice	123
10.4	RF exposure information (SAR)	124
10.5	Standards applied	125
10.6	Declaration of Compliance for IEC 60601-1-2	125
Index		130

1 Safety information

This provides an overview of all safety aspects for the protection of people as well as safe and uninterrupted operation.



Caution

Any serious incident that has occurred in relation to the device must be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

1.1 Intended use

F-Scan GO allows you to measure in-shoe foot pressure. This information can then be edited, saved, and exported with the use of the FootVIEW software.

Intended use includes compliance with all of the information in this manual. Any use that deviates from, or goes beyond the intended use, is considered misuse.

Follow these instructions to safely and securely install the equipment. Failure to do so can result in injury and/or damage to the equipment.



Notice

The user is responsible for safely and securely mounting the equipment.

1.2 Contraindications

There are no known contraindications to using this medical electrical equipment.

1.3 Symbols used

The following symbols can be found on the F-Scan GO system.



Read all related documentation



ETL listing number



Type BF compliance



Product identification code



USB port



Li-Ion battery

	WEEE compliance		Caution using equipment
	DC Power		Power on or off
	CE Mark		Non sterile
	Keep away from rain		Temperature limits
	Fragile, handle with care		Atmospheric pressure limitation
	Date of manufacture		Humidity limitation
	Medical device		

1.4 Accessories and cables



Caution

Do not use or attach any components that are not explicitly stated within this manual.



Caution

Using accessories and cables other than those specified by the manufacturer as replacement parts may result in increased emissions or decreased immunity of the equipment or system.

1.5 Power sources



Caution

To avoid damaging the system, use only power sources supplied by Tekscan.

The product is protected against electric shock. The battery that powers the product is a lithium polymer battery.

**Caution**

Do not connect any additional multiple portable socket outlets or extension cords to the system.

**Caution**

Battery charger shall only be used outside of the patient environment.



In accordance with the EC Waste Electrical and Electronic Equipment (WEEE) directive 2002/96/EC this product must be sent to a recycling plant for proper disposal at the end of its use.

The system is powered by a USB type C power source which is supplied from an IEC Certified device, rated 5 Vdc, 100 W max.

1.6 Computer

The computer used with the applied part must be at a minimum approved to 60950-1. If the computer is to be used within the patient environment then it must also be approved to IEC60601-1 or have a medically approved isolation transformer between the computer and the mains voltage. This setup must be tested by a qualified technician to meet the requirements of IEC60601-1-1.

**Caution**

If a non-medically approved computer is being used, do not touch both the computer and the patient at the same time.

Do not disinfect the computer.



In accordance with the EC Waste Electrical and Electronic Equipment (WEEE) directive 2002/96/EC this product must be sent to a recycling plant for proper disposal at the end of its use.

1.7 External components



Caution

Follow all mounting and operational recommendations for external equipment. Deviations could result in injury or damage to the equipment.



Caution

Do not use or attach any components that are not explicitly stated in this manual.



Caution

Do not connect any additional multiple portable socket outlets or extension cords to the system.

1.8 Electromagnetic interference



Caution

Electromagnetic interference (EMI) is a performance-degrading phenomenon that may occur when an electronic device is exposed to an electromagnetic field. Any device that has electronic circuitry can be susceptible to EMI.

Make sure the system is not in close proximity to electronic devices that can interrupt or limit system performance by way of EMI.

For more information, see "Troubleshooting" on page 111

1.9 Electromagnetic environment and compatibility

F-Scan GO is intended for use in the specified electromagnetic environment. The customer or user of F-Scan GO should ensure that it is used in such an environment.

**WARNING**

Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation.

If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

**WARNING**

Portable RF communications equipment, including peripherals such as antenna cables and external antennas, should be used no closer than 30 cm (12 inches) to any part of the TekDAQ 200 devices, including cables specified by the manufacturer. Otherwise, this may result in degradation of the performance of this equipment.

**Caution**

Medical electrical equipment has special precautions regarding electromagnetic compatibility (EMC) and needs to be installed and put into service according to the EMC information provided in the accompanying documents.

1.10 Electrostatic discharge

**Caution**

Electrostatic discharge (ESD) is the sudden flow of electric current between two electrically charged objects.

Exposure to ESD can cause the system to stop functioning.

For more information, see "Troubleshooting" on page 111

1.11 Disposal of sensors

**Notice**

The system does not contain any hazardous materials.

The sensors are not recyclable. Dispose of sensors in general waste containers.

1.12 Servicing and troubleshooting



Caution

No user-serviceable parts!

Do not try to service or take apart any Tekscan hardware. If a component is not working correctly, contact your Tekscan representative.



Notice

Operators are only allowed to perform basic troubleshooting specified in this manual.

To perform troubleshooting, see 5 "*Troubleshooting*"

1.13 Personnel

To ensure safe and secure usage of F-Scan GO, the personnel installing and operating the system (the operator) must have appropriate knowledge, training and experience, and must fully understand and comply with all safety instructions in this manual.

In addition to the safety instructions in this manual, all applicable safety regulations and occupational safety regulations must be implemented.

1.13.1 Operating staff



Caution

Follow these instructions to safely and securely install and operate the equipment. Failure to do so can result in injury and/or damage to the equipment.

Operators of F-Scan GO can be:

- Clinicians or staff in the clinical practice
- Researchers, professors, students, or staff in academia
- Clinicians, researchers, or staff in industry
- Individual or team sport coaches, trainers or staff
- Footwear consultants in footwear retail.

Typical tasks performed by operators include the following:

- Connecting hardware components
- Setting test parameters
- Operating the software
- Basic troubleshooting.

1.13.2 The owner



Caution

Follow these instructions to safely and securely install and operate the equipment. Failure to do so can result in injury and/or damage to the equipment.

The owner of F-Scan GO must make sure that:

- The system is operated within its intended use.
For more information, see 1.1 "*Intended use*"
- Operators follow all operational recommendations for external equipment.
- Operators never attempt to service parts of the system. All system components are not user-serviceable.
- Operators fully understand and comply with the safety information in this manual, as well as with all applicable safety regulations, and occupational safety regulations.

2 Product description

This section provides a detailed description of Tekscan F-Scan GO™. Here you can find an overview of the concept and principles of this scanning technique, and an introduction to the design of the Tekscan solution.

2.1 Overview

F-Scan GO provides dynamic pressure, force, and timing information for foot function and gait analysis. The information captured by F-Scan GO can be used to:

- Aid in the design and testing of orthotics (devices which support or correct the function of a limb or torso).
- Evaluate pre- and post-surgical procedures.
- Identify areas of potential foot ulceration.
- Screen diabetic and other neuropathetic patients.
- Observe foot and gait abnormalities.
- Monitor degenerative foot disorders.
- Help regulate post-surgery weight bearing.
- Record data information for medical and legal issues.
- Educate patients to increase their compliance.
- Evaluate sports footwear.
- Help improve performance techniques in elite athletes.

2.1.1 The principles of foot scanning

Foot pressure measuring systems can help to assess the gait patterns, balance, posture, and foot function of different individuals and groups. They can also provide feedback and guidance for improving performance, preventing injuries, and enhancing comfort and quality of life.

Foot pressure measuring systems can be classified into two main types:

- In-shoe systems that use sensors embedded in the shoe or insole to capture pressure data inside the footwear
- Platform systems that use mats or walkways to capture pressure data outside the footwear

Both systems have advantages and disadvantages depending on the application and the purpose of the research being carried out. They are important for various applications, such as biomechanics, sports, rehabilitation, orthotics, and footwear design.

2.1.2 The F-Scan GO solution

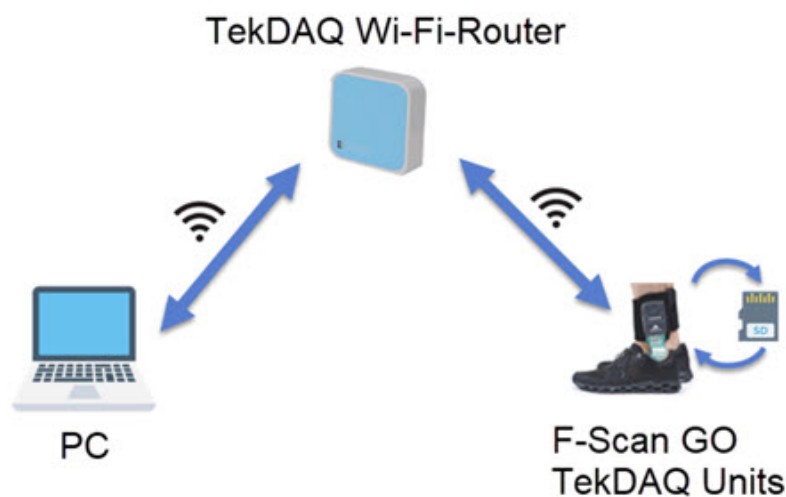
F-Scan GO features cordless electronics and the capability for control over Wi-Fi. It collects data on an embedded SD card with sampling rates up to 500 per second.

F-Scan GO can be used indoor or outdoor for standing, walking, or running with three or more steps required. Some typical use examples include:

- Clinical office
- School teaching room or lab
- Any area suitable for standing, walking, or running

F-Scan GO hardware and software is divided in three separate groups of components as shown in Figure 1.

Figure 1 - F-Scan GO architecture



The TekDAQ 200 units are worn on the ankles. They gather and process data captured from in-sole sensors so that the data can be sent to the F-Scan GO software, FootVIEW.

The TekDAQ Wi-Fi router connects the TekDAQ 200 units to FootVIEW wirelessly. FootVIEW:

- Captures real-time data.
- Calibrates the sensors.
- Controls recording.

When the system starts recording, real-time pressure data is available in FootVIEW, and also data is collected directly to a Micro SD card installed in the TekDAQ 200 units. At the completion of each recording, the recorded data is automatically transferred back to the computer over Wi-Fi to provide immediate access for analysis. This allows F-Scan GO to have the fastest possible sampling speed, even when connected over Wi-Fi. It also provides the ability to infinitely extend the recording range by continuing to record sensor data to the SD card when the system leaves the Wi-Fi range.

2.2 Computer requirements

These are the specifications required for your computer to install and run the FootVIEW software:

- Windows 10
- USB 2.0 (or higher) port
- WiFi (802.11 b/g/n) compatibility
- Minimum 5GB disc space
- 4GB RAM

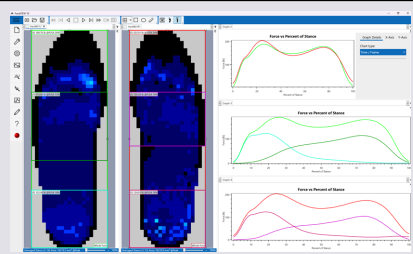
2.3 System components

This list shows the components making up the F-Scan GO system, and detailed descriptions of those components.

Table 1 - Components of the F-Scan GO system

Component	Description	Quantity	Part number
	In-shoe sensors. Trimable in-shoe plantar pressure measurement sensors. For more information about the sensor, see 2.3.1 "F-Scan GO sensors". For sensor specifications, see 9.5 "Sensor specifications".	20	3010-125
	 TekDAQ 200 electronic unit. Wearable sensor acquisition unit that collects and transmits sensor data to FootVIEW. For more information, see 9.1 "TekDAQ 200 specifications".	2	TD-200
	microSD card. Stores the captured pressure data in the TekDAQ200 electronics unit. For more information, see 9.3 "External microSD card specifications".	2	93-00-003
	Li-Po battery packs. Removable battery packs that power the TekDAQ200 units. For more information, see 9.2 "Battery specifications"	4	33-26-011

Component	Description	Quantity	Part number
	Battery chargers. Charges batteries of the TekDAQ200 units. Includes US power cable.	2	97-02-001
	USB-A to USB-C cable. Connects the TekDAQ200 unit to the computer for configuration and troubleshooting.	2	66-26-001
	Wi-Fi router. Connects the TekDAQ200 unit with the computer for a wireless data transfer. For more information, see 9.4 " <i>Wi-Fi router specifications</i> "	1	91-26-001
	Velcro ankle bands. Ankle Bands secure TekDAQ200 units to each ankle for data collection.	2	68-26-001

Component	Description	Quantity	Part number
	FootVIEW In-shoe pressure measurement software. The software download link is delivered by email. For more information, see 2.4 "Software description"	1	WEB-SW
	System carrying case. Used for storing and transporting the F-Scan GO system and sensors.	1	86-26-001
	User manual. Provides all relevant safety information and instructions for use.	1	96-26-001
  Notice The user manual is provided in digital format only (PDF and HTML).			
	Getting started guide. Printed guide with setup steps for F-Scan GO.	1	96-26-001

2.3.1 F-Scan GO sensors

The F-Scan GO in-shoe pressure measuring sensor is a device that measures the pressure distribution of the foot inside a shoe. It is an ultra-thin sensor to capture pressure, force, and timing information for foot function and gait analysis.

Figure 2 - F-Scan GO in-shoe sensor



The sensor connects to the TekDAQ 200 unit through the connector tab to transmit data from the shoe. The sensor uses traces of a silver conductive material forming an array of columns on the upper side of the sensor and rows on the other side. The traces send current down from the TekDAQ 200 unit to the silver circles connecting the rows and columns. These are the points measuring the signal output, which the sensor then sends back to the TekDAQ 200 unit.

The sensor comes in one size and can be cut to fit your shoe with scissors.

For more information, see "How to fit the sensors" on page 79

2.4 Software description



Notice

The software is only compatible with the Microsoft Windows 10 and Windows 11 operating systems.

This section describes the software components of the Tekscan F-Scan GO system, FootVIEW.

FootVIEW software is available in two variants:

- FootVIEW
- FootVIEW Pro

FootVIEW software collects data on walking subjects at 100 Hz for clinical measurements.

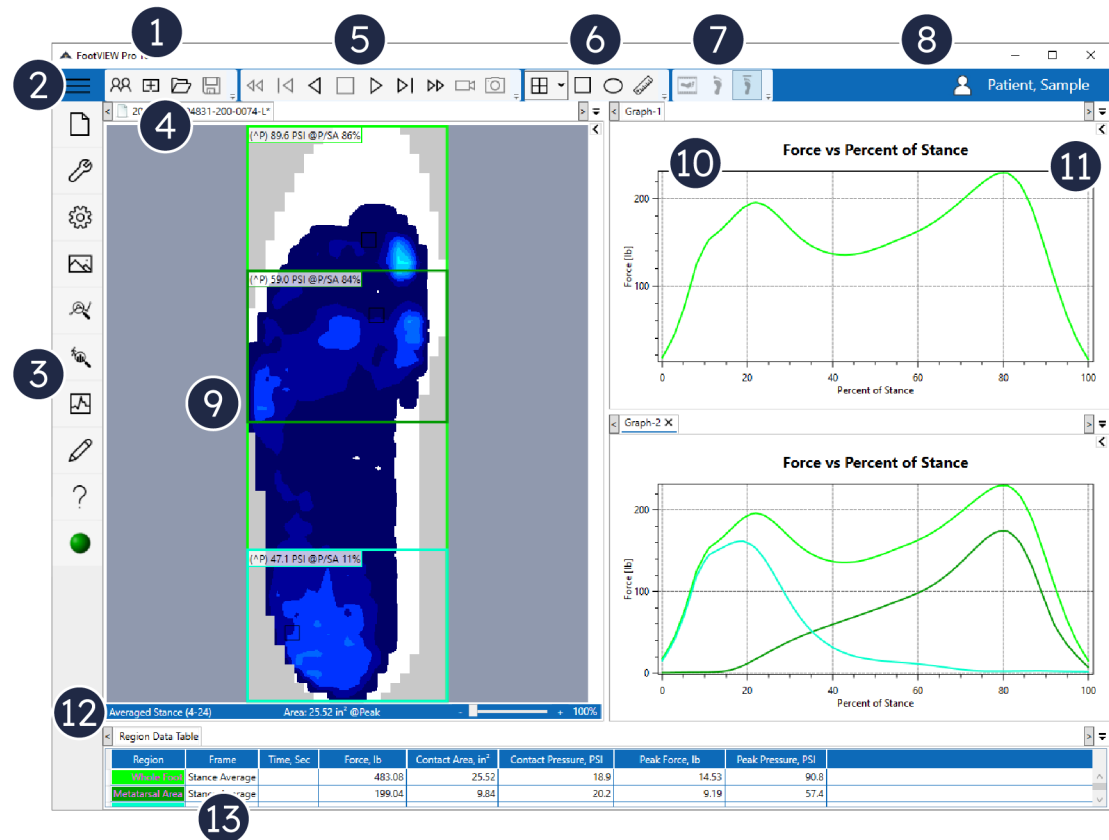
FootVIEW Pro includes all functionality of the FootVIEW software with additional features for dynamic activities and research, including the following:

- Ability to collect data at 500 Hz.
- ASCII Export for both sensor frame data and graphs.
- External triggering for synchronization with other devices.
- Ability to disable the patient database for greater flexibility in recording storage organization.
- Tekscan Data Reader Toolkit (DRT) Application Programming Interface (API) that can be implemented into data analysis applications, including C#, MATLAB, LabVIEW and VB to open and read Tekscan .FSX files.

2.4.1 Main window

Figure 3 shows the elements of the FootVIEW main window. These elements are referenced throughout the rest of this documentation.

Figure 3 - FootVIEW main window



1	Title bar	Shows the name of the software.	See 2.4.2 "Title bar"
2	Show menu button	Shows the names of main menu items.	See 2.4.3 "Menu bar"
3	Main menu	Shows the main menu options.	See 2.4.8 "Main menu"
4	File toolbar	Opens and saves recordings.	See "File toolbar"
5	Playback toolbar	Plays recordings, records and takes snapshots.	See "Playback toolbar"
6	Region analysis toolbar	Adds panes, boxes, ovals, and lines for region analysis.	See "Region analysis toolbar"
7	View toolbar	Changes views between Frame View , Stance View and Average Stance view .	See "View toolbar"
8	Selected patient	Displays the name of the selected patient from the Patient Management System	See "Patient Management window"
9	Display window	Shows Real-time , Recording , or Graph window.	See 2.4.4 "Types of display windows"

10	Graph	Shows a graph for the analysis region.	
11	Arrow that opens the Details panel	Opens the Details panel for the window. After the Details panel is open, the arrow turns horizontally, and you can close the panel.	See 2.4.6 " <i>Details panels</i> "
12	Status bar	Shows the status of the electronics.	See 2.4.7 " <i>Status bar</i> "
13	Region Data Table	Shows data for the analysis region.	

2.4.2 Title bar

FootVIEW has a title bar along the top, which displays the name (title) of the software and the minimize / maximize / close window icons.

Figure 4 - FootVIEW title bar

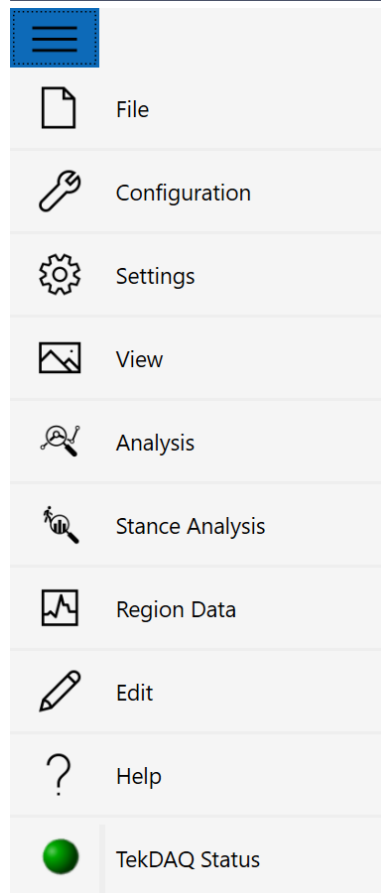


2.4.3 Menu bar

The menu bar gives access to all software functionality.

To display the menu item names, select .

Figure 5 - FootVIEW menu bar



Select a menu item to open a sublist of related commands and settings (see 2.4.8 "Main menu")

To close the menu, click anywhere outside the menu area.



Notice

Exception: clicking on the title bar does not close the menu bar.

2.4.4 Types of display windows

There are three types of display windows in FootVIEW:

- **Real-time** window

The window shows color-coded pressure information of sensors in real time.

To open this window, select **File > Open Real-time**.

- **Recording** window

When you start a recording in the **Real-time** window, the window switches to the **Recording** window. Recordings are saved to your computer automatically for instant playback and analysis.

For more information, see 4.2.2 "*How to save a recording*".

- **Graph** window

This window shows a graph of the pressure data from an analysis region that is placed in the **Real-time** or **Recording** window.

Many analysis regions from multiple windows can be graphed at the same time in the same graph. Each analysis region has its own color-coded trace.

For more information, see "*Graph Details panel*".

2.4.5 Tab bars and dock groups

Each type of display window (see 2.4.4 "*Types of display windows*") has an associated tab. When you select a window, the tab moves to the front of the tab stack, and the tab label turns white (unselected tabs are gray). Select any tab to select its associated window.



Tip

Unselected tabs are shown in gray.

Figure 6 - An example of tab bars



FootVIEW uses docked windows, which means all open windows expand to use the full surface of the screen. You can move docked windows and resize them to your preferences. You can place multiple windows in the same dock group, where they are tabbed for organization.

When you open multiple **Recording** windows and change the view for one recording from the view toolbar, the tab moves to the right and is located after the last opened tab.

To move and resize docked windows, see 4.6.2 "*How to adjust elements in the user interface*".

2.4.6 Details panels

All types of display windows have a **Details** panel.

To open the **Details** panel for any type of display window (see 2.4.4 "*Types of display windows*"), select the small arrow at the top right of the window.

Figure 7 - Opening the **Details** panel

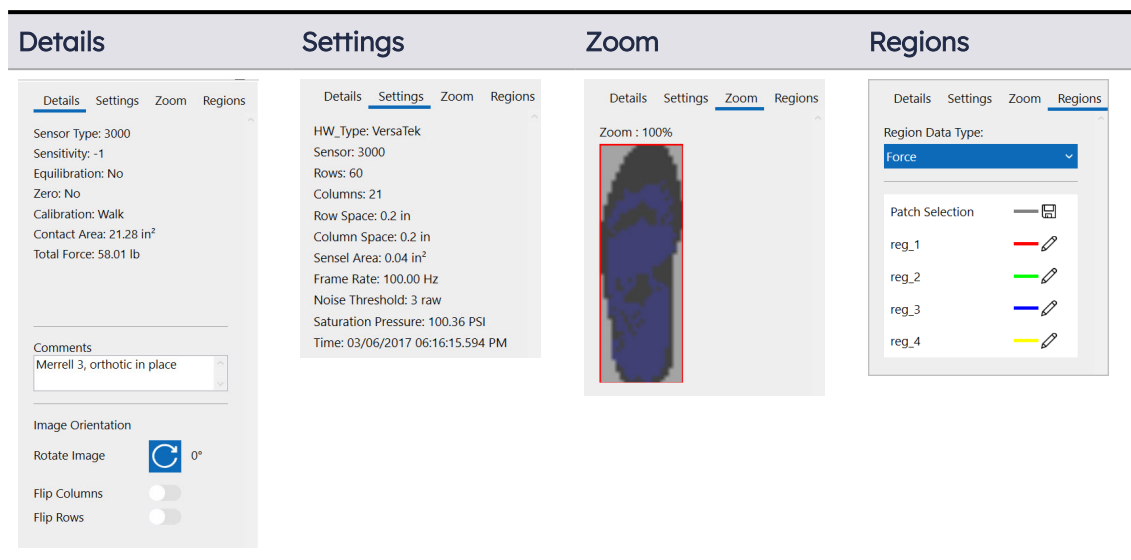
After you open the **Details** panel, the arrow flips horizontally, and allows you to close the panel.

You can open the **Details** panel for the following types of windows:

- The **Real-time/Recording** window
- The **Graph** window

Real-time/Recording Details panel

The table shows the **Details** panel for the **Real-time** and **Recording** windows. There are four tabs in this panel:



Details tab

The **Details** tab shows information about the sensor and software configuration:

- **Sensor Type**
- **Sensitivity**
- **Equilibration**
- **Zero**

- Calibration
- Contact Area
- Total Force

In the middle of the window, you can enter comments.

At the bottom, you can find actions for image orientation:

Item	Function
Rotate Image	Rotate the image 90° clockwise by selecting the  icon.
Flip Columns	Flip the columns by selecting the toggle switch.
Flip Rows	Flip the rows by selecting the toggle switch.

Settings tab

The **Settings** tab shows details about the electronics and sensor hardware.

Item	Details
HW_Type	Type of hardware used to collect data.
Sensor	Sensor model number.
Rows	Number of rows of the sensor.
Columns	Number of columns of the sensor.
Row Space	Spacing between each row.
Column Space	Spacing between each column.
Sensel Area	Area of each active sensel.

Lists recording settings.

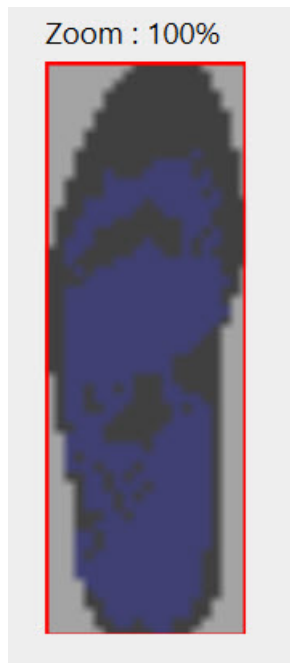
Item	Details
Frame Rate	The frequency rate at which the data is recorded.
Noise Threshold	The noise threshold used to record the data.
Saturation Pressure	The Saturation Pressure value is the calibrated pressure (PSI) at 255 raw, and is the maximum absolute measurable pressure. Tekscan electronics units have an 8-bit digital pressure resolution with 256 levels of pressure reported for each sensel. Before calibration, these pressure levels are reported in raw units of 0-255. Following calibration, the software converts raw units to SI units.
Time	Timestamp with date and time.

Zoom tab

The **Zoom** tab shows details about the sensing area zoom settings.

You can adjust the zoom level in the status bar. If the zoom is larger than 100%, you can navigate the view of the window's sensing area by moving the red rectangle in the **Zoom** panel.

Figure 8 - The **Zoom** panel



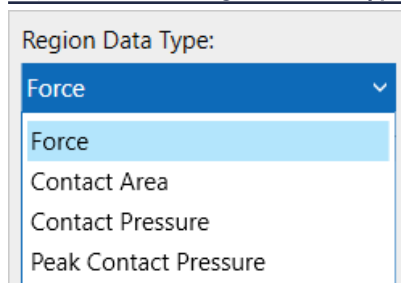
Regions tab

The **Regions** tab gives details about the regional data type.

You can select the following options:

- Force
- Contact Area
- Contact Pressure
- Peak Contact Pressure

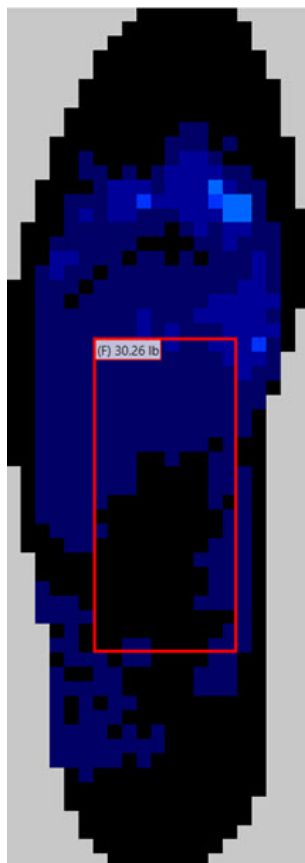
Figure 9 - The **Region Data Type** window



The selected data type is shown:

- In the top left corner of the applied region.

Figure 10 - An example of the data in a region



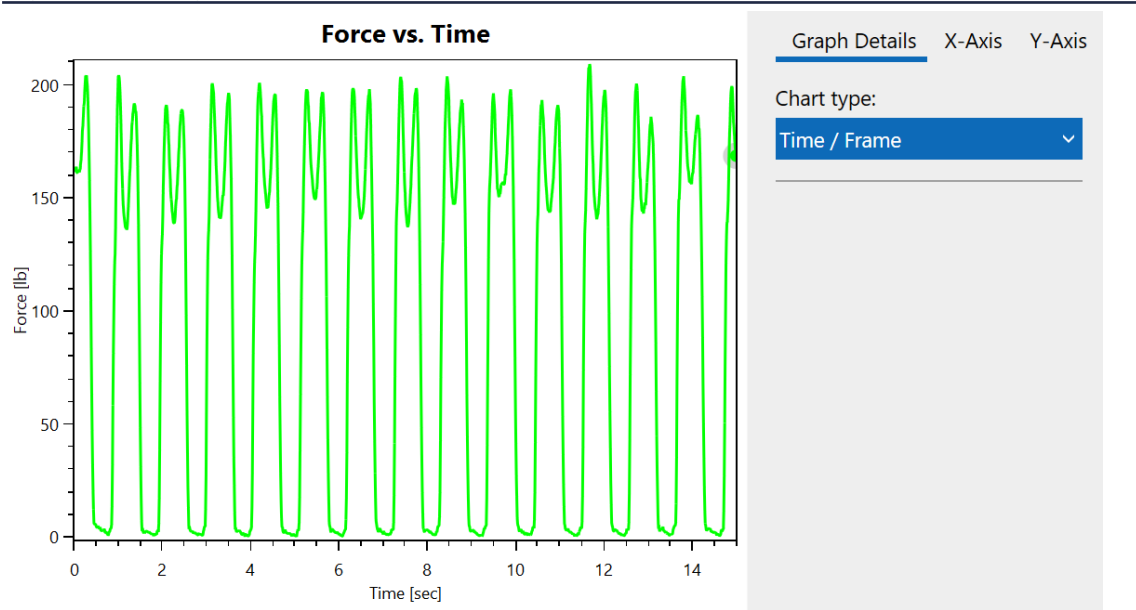
- In the **Region Data Table**.

For more information, see "*Region data options*".

Graph Details panel

Graph windows show a graph of the plantar pressure data from one or more **Display** windows. Each object has its own color-coded trace and a legend shows the names of the corresponding display and their graph data. The **Graph** panel opens when an object is placed in the **Display** window.

Figure 11 - The graph window



The **Graph** panel includes the following options:

- **Chart type** drop-down.
Displays the graph's chart model.

Chart type	Description	X-Axis data	Y-Axis data
Time / Frame	Shows total sensor data over duration of the recording.	• Time • Frame	• Force • Contact Area • Contact Pressure • Peak Contact Pressure

- The **X-Axis** tab displays the **X-Axis** graph properties.
If you deselect the **Auto** toggle switch in **Scale**, you can enter your own minimum and maximum range settings, and settings for tick display.
- The **Y-Axis** tab displays the **Y-Axis** graph properties.
If you deselect the **Auto** toggle switch in **Scale**, you can enter your own minimum and maximum range settings, and settings for tick display.

2.4.7 Status bar

Each **Real-time** or **Recording** window has a status bar that provides information about what is happening on your screen at any given moment.

Figure 12 - The status bar



- The left side displays the patch count for that view type.
- The middle shows the **Area** of loaded sensels for that patch or patch range.
- The right side is the window zoom factor with a slider control.

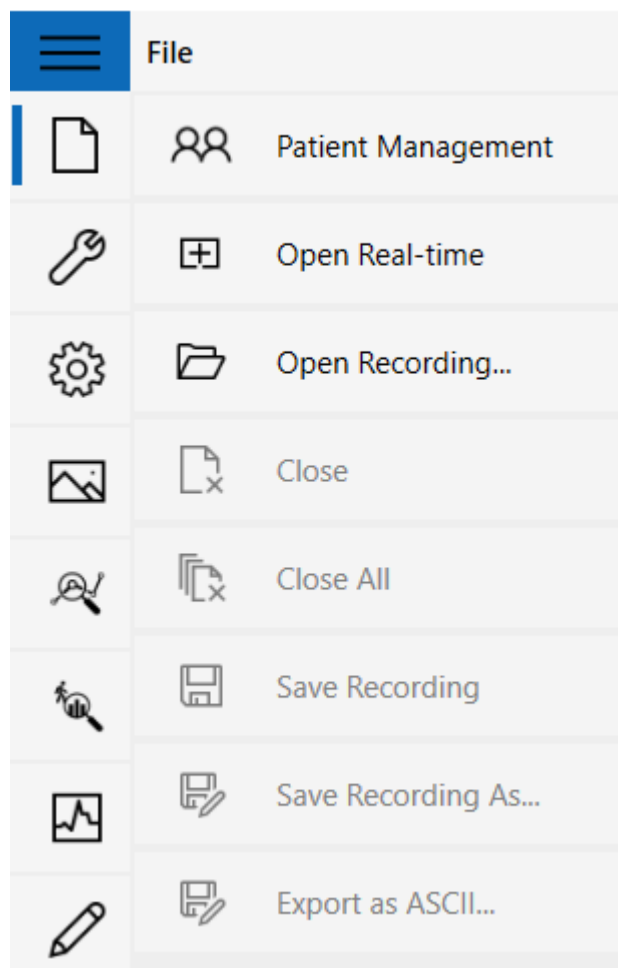
2.4.8 Main menu

The main menu gives you access to all FootVIEW functionality.

File options

The **File** menu allows you to work on files, for example, open or save recordings.

Figure 13 - The **File** menu



Patient Management

Opens the **Patient Management** window. From here you can **Search** or **Add** patients to your database. You also have access to manage and changes the patient management settings.

Open Real-time

Opens a new **Real-time** window where pressure is shown in real time, and can be recorded. If you did not configure the sensor, the **Sensor Configuration** dialog opens.

Open Recording

Opens a saved recording. The recordings are saved as `.fsx` files.

Close

Closes the **Real-time**, **Recording**, or **Graph** window.

Close All

Closes all open **Real-time**, **Recording**, or **Graph** windows.

Save Recording

Saves the recording as an `.fsx` file in the default Tekscan folder on your computer.

Save Recording As

Saves the recording in a different folder, or under a different name.

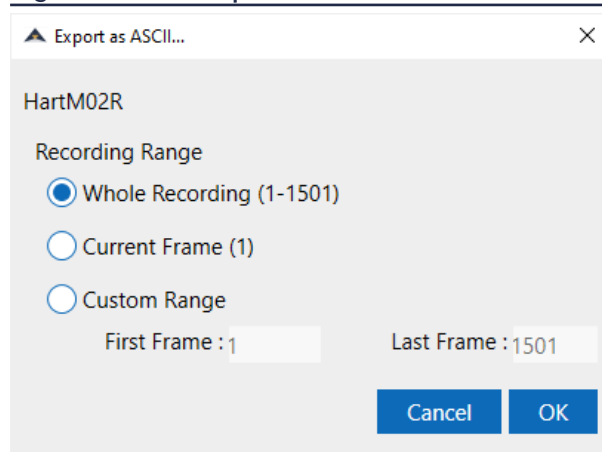
Export as ASCII - FootVIEW Pro feature

Exports the recording in ASCII (`.csv`) format.

If the Graph window is active, you export the graph type according to the settings in the **Graph Details** panel (see "*Graph Details panel*").

If the Display window is active, the Export as ASCII window opens as shown in Figure 14.

Figure 14 - The **Export as ASCII** window



You can save patch in the following way:

- **Whole Recording**
- **Current Frame**

- a **Custom Range** of frames.

Files are saved to your destination folder (see 4.1.6 "*How to set up your recording parameters*").

When you open the ASCII (.csv) file in a spreadsheet program (like Microsoft Excel), you see the header information and data for all frames of the recording that you specified.

Figure 15 - Example of header data

	A	B	C	D	E	F	G	H	I	J	K
1	DATA_TYPE	MOVIE									
2	VERSION	Core									
3	HARDWARE	00114-A996									
4	MAP_VERSION	8.0									
5	HW_TYPE	7									
6	VersaPogoFsx	0									
7	VersaV6CuffFsx	1									
8	FILENAME	C:\USERS\CURRENT\TEKSCAN\HartM02R.fsx									
9	SENSOR_TYPE	FSCAN									
10	ROWS	60									
11	COLS	21									
12	SINGLE_LINE_DRUM	0									
13	MAX_FREQ_VERSA	750 Hz									
14	SETTLING_TIME_VERSA	24 usec									
15	ROW_SPACING	0.2 in									
16	COL_SPACING	0.2 in									
17	SENSEL_AREA	0.04 in ²									
18	NOISE_THRESHOLD	3									
19	SECONDS_PER_FRAME	0.01									
20	MICRO_SECOND	1									
21	TIME	3/6/2017 7:16:19.928PM									
22	SATURATION_PRESSURE	119.708 PSI									
23	CALIBRATION_POINT_1	165 (lb) 8787 (Raw Sum) 364 (Number of Loaded Cells)									
24	CALIBRATION_MODE_1	Walk									
25	CALIBRATION_INFO	C:\USERS\CURRENT\TEKSCAN\HartM02R.fsx									
26	SENSITIVITY	S--1									
27	MAP_INDEX	0									
28	SUBMAP	0									
29	COMMENTS:										
30	Merrell 3	orthotic in place									
31	START_FRAME	1									
32	END_FRAME	1501									
33	UNITS	PSI									
34	MIRROR_ROW	0									
35	MIRROR_COL	0									
36	ASCII_DATA	@@									

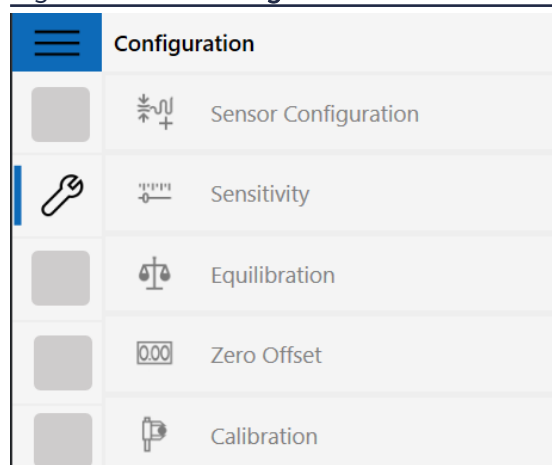
Figure 16 - Example of one frame of recording data

[illegible]

Configuration options

Before recording you need to perform a few steps in a sequence shown in the **Configuration** menu.

Figure 17 - The **Configuration** menu



Sensor Configuration

Set the map used with TekDAQ 200 scanning electronics. The map defines the location and spacing of sensing points in the array. In this way, the software data correlates to the physical sensor. Tile maps integrate multiple sensors into a single window to work as a larger sensor.

The table displays all TekDAQ 200 units recognized by the software. The TekDAQ 200 units are organized in order of their serial numbers.

Figure 18 - Organization of TekDAQ 200 units

Sensor	TekDAQ	Port	Hub
3010 ▾	200-0006	192.168.0.101:5024	WiFi
3010 ▾	200-0030	192.168.0.102:5024	WiFi

The **Sensor** field is a pull-down of all the maps available for that TekDAQ 200.

To check the sensor configuration, see 3.6 *"Start the software and check the connection"*.

Sensitivity



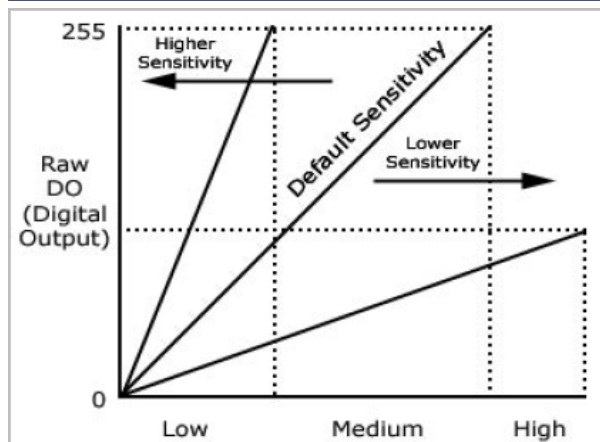
Notice

To prevent loss of calibration data, adjust sensitivity before calibrating the sensor.

The **Sensitivity** option enables you to change the level of response or the digital output of the software and sensor to a given pressure. The advantage of changing the amount of response is that you can more closely match the system and pressure level of the sensor to your application by increasing or decreasing the range and resolution of your pressure measurements.

Sensitivity adjustment changes the excitation and reference voltages of the electronics to increase or decrease the reported raw output at a fixed applied pressure. Following calibration, sensitivity adjustment increases or decreases the calculated saturation pressure.

Figure 19 - Range of pressure that can be measured



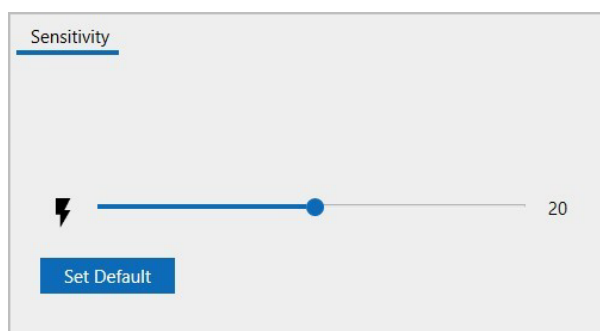
By adjusting the sensitivity, the same sensor can be used in a broader range of applications and has a very wide usable pressure range. The sensitivity can be reduced or increased by a factor of three

For example:

With sensitivity adjustment, based on a 100 PSI standard pressure sensor, a 100 PSI sensor could have a saturated pressure of 33 PSI at high sensitivity, and a saturated pressure of 300 PSI at low sensitivity.

The default sensitivity level is 20.

Figure 20 - Sensitivity level



To set the sensitivity, see 4.1.5 "How to adjust sensor sensitivity".

Equilibration



Notice

To perform equilibration, you need an optional equilibration device (equilibrator). Equilibration devices are recommended for improving accuracy and lifespan of Tekscan systems.

**Caution**

Do not equilibrate the sensor if you use the zeroing feature.

Each sensor is unique, due to manufacturing processes. In particular, the distribution of pressure-sensitive ink throughout a sensor is not precisely uniform. In addition, as a sensor is used, certain areas may become less responsive than others. The purpose of the equilibration process is to compensate for these slight differences and make the sensor more uniform.

Figure 21 - Sensor equilibration process

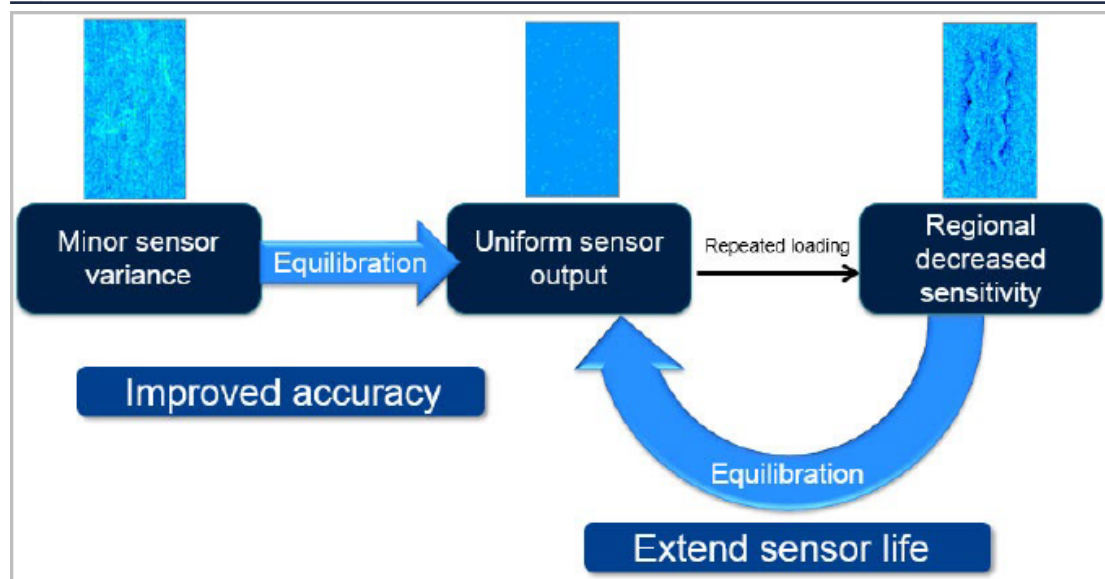
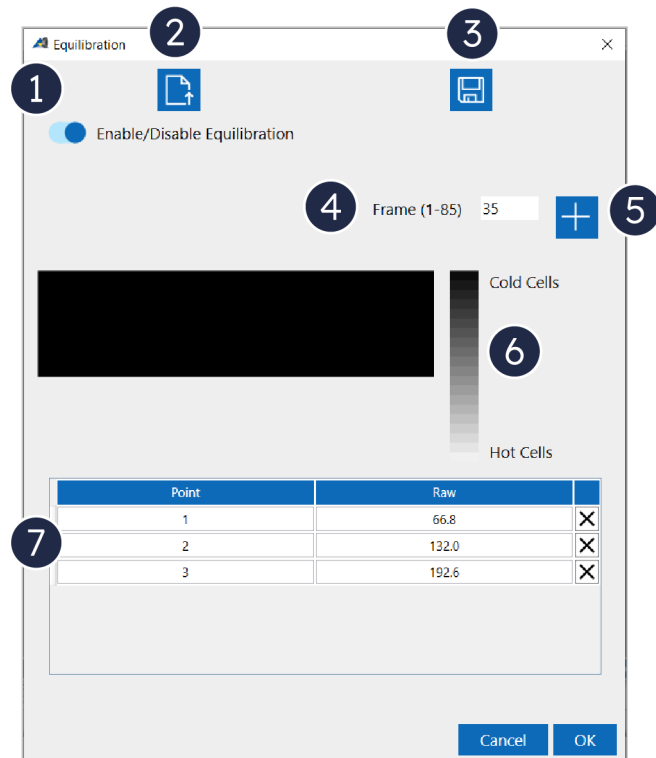


Figure 22 - The **Equilibration** window

- | | | |
|---|---|---|
| 1 | Enable/Disable Equilibration | Use the toggle switch to enable or disable equilibration. |
| 2 | Load Equilibration File | Select the icon to load an equilibration file (.equ). |
| 3 | Save Equilibration File | Select the icon to save an equilibration file (.equ). |
| 4 | Frame field | Enter the frame you want to use for equilibration. |
| 5 | The Add equilibration point  icon | Select to add an equilibration point to the list. |
| 6 | Cold Cells and Hot Cells legend | <ul style="list-style-type: none"> Cold cells are less responsive than other. Hot cells are more responsive than other. |
| 7 | Equilibration points list | Select X to remove a point from the list. |

**Tip**

You can apply equilibration before or after taking the measurement.

To perform equilibration, see 4.5.1 "*How to perform equilibration*".

Zero Offset

The **Zero Offset** option modifies the raw or calibrated data to correct for residual pressure (referred to as the **Offset Load**) on the sensor at zero load.

This operation is useful to remove residual loads caused by the fixturing or wrapping of the sensor around non-flat surfaces.

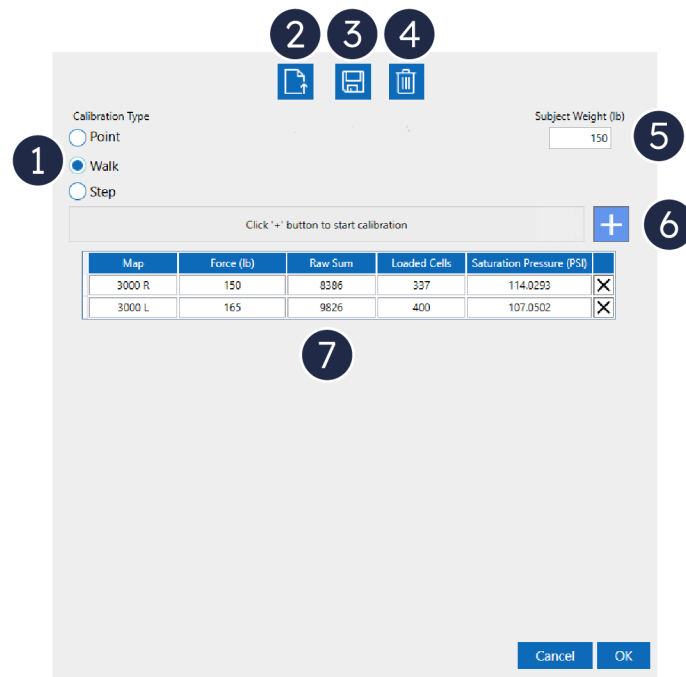
To perform a Zero Offset, see 4.5.2 "*How to perform a zero offset*".

Calibration

The **Calibration** feature allows for converting the raw digital output of the sensor to actual pressure units (PSI). The calibration procedure requires the patient to stand on the sensor (usually on one foot) for a moment. A calibration should be performed before each new patient session, and whenever a new sensor is used. Each sensor must be calibrated individually.

**Tip**

Proper calibration of the sensors is critical to obtaining accurate pressure readings with your system. To achieve the best results, ensure similar duration of the patient's weighting for both left and right foot.

Figure 23 - The **Calibration** window

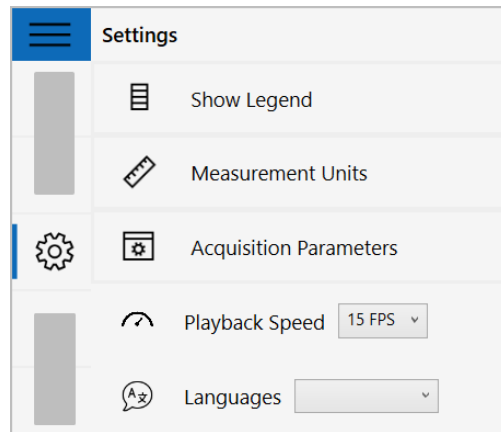
- | | |
|---|--|
| 1 Point Calibration Type | Start calibrating with your weight on the foot to be off-loaded. Then they quickly shift your weight onto the foot to be calibrated. About one second later, select the Calibrate button. Repeat for the other foot. |
| 1 Walk Calibration Type | This is an automated calibration method. Walk calibration is accomplished for both feet at the same time. |
| 1 Step Calibration Type | Start calibrating by standing on the foot to be off-loaded and click the Calibrate button. After a second or two, you will be instructed to rapidly shift your weight onto the foot to be calibrated and to keep your weight applied for five to ten seconds. You do this calibration individually both feet. |
| 2 Open Calibration File | Select the icon to load a calibration file (.cal). |
| 3 Save Calibration File | Select the icon to save a calibration file (.cal). |
| 4 Delete Calibration Result | Select the icon to delete a calibration result. |
| 5 Subject Weight (lb) | Enter your weight in pounds. |
| 6 The calibration start  icon | Select to start calibration for the previously selected mode. |
| 7 Main status bar | Shows the results of calibration. |

To perform a calibration, see 4.1.9 "*How to calibrate the sensors*".

Settings options

The **Settings** menu lets you adjust the way parameters or units are shown in the software.

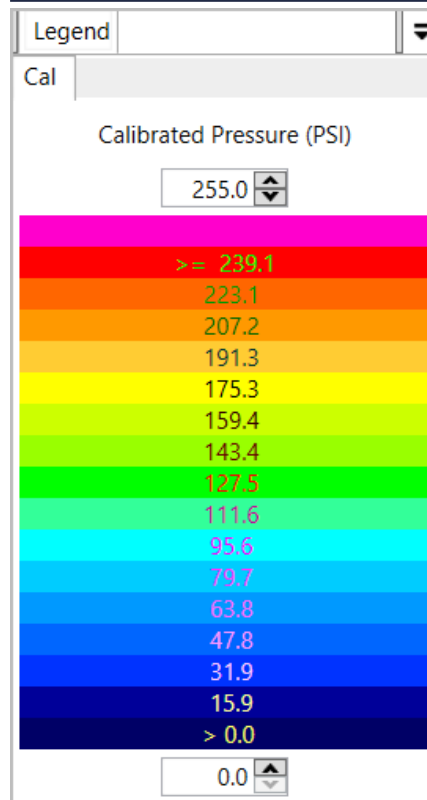
Figure 24 - The **Settings** menu



Show Legend

The **Legend** window shows the calibrated (pressure) range corresponding to each of the settings in any open **Real-time** or **Recording** window. The number shown on each color in the pressure legend is the lowest pressure value in that color range.

Figure 25 - The **Legend** window



The pink color above the red maximum shows fully saturated sensels. Very few pink sensels should be present when taking a recording. True pressure values of pink sensels cannot be accurately measured because they exceed the maximum pressure range of the sensor.

To change the pressure range represented by each color in the legend, see 4.4.1 *"How to change the pressure range in the legend"*.

**Notice**

Changing the upper and lower limit values of the legend has no effect on the actual data, and only changes how the data is displayed.

To help identify the correct top scale value of the calibrated pressure, check the saturation pressure in the [Details panel](#).

Measurement Units

The **Measurement Units Settings** window lets you select the following measurement settings:

- Length
- Force
- Pressure

Figure 26 - The **Measurement Units Settings** window

The screenshot shows the 'Measurement Units Settings' window with three sections: Length, Force, and Pressure. Each section has a 'Prefix' dropdown set to 'None - 1', a 'Units Of' dropdown, and a 'Format' section with a text input and two buttons for decimal formatting.

Measurement Type	Prefix	Units Of	Format
Length	None - 1	Inches	1.00[in] (Buttons: .00, →.0, ←.0, .00)
Force	None - 1	Pounds	1.00[lb] (Buttons: .00, →.0, ←.0, .00)
Pressure	None - 1	PSI	1.0[PSI] (Buttons: .00, →.0, ←.0, .00)

You can also select the following unit settings:

Measurement	Prefix	Units
Length	• None - 1 • giga - 10^9 • mega - 10^6 • kilo - 10^3 • hecto - 10^2 • centi - 10^{-2} • milli - 10^{-3} • micro - 10^{-6} • nano - 10^{-9}	• Cells • Meters • Inches
Force	• None - 1 • giga - 10^9 • mega - 10^6 • kilo - 10^3 • hecto - 10^2 • centi - 10^{-2} • milli - 10^{-3} • micro - 10^{-6} • nano - 10^{-9}	• Raw Sum • Grams • Newtons • Pounds
Pressure	• None - 1 • giga - 10^9 • mega - 10^6 • kilo - 10^3 • hecto - 10^2 • centi - 10^{-2} • milli - 10^{-3} • micro - 10^{-6} • nano - 10^{-9}	• Raw • PSI • Pascal • mmHg • Atmosphere • Bars • N/cm2

All measurement units settings are immediately applied to all open **Real-time**, **Recording**, and **Graph** windows. Once the settings are changed, the software remembers the settings even after you close and restart the application.

To change the units of measurement, see 4.4.2 "*How to change the units of measurement*".

Acquisition Parameters

The **Data Acquisition Parameters** window enables you to select recording parameters and trigger options.

Recording

The **Recording** tab allows you to set the following options:

- **Duration:** Data acquisition duration.
- **Frequency:** Data acquisition frequency in hertz (Hz). 100 Hz Maximum with FootVIEW standard and 500 Hz Maximum with FootVIEW Pro.
- **Recording Frames:** Number of frames to be recorded.
- **Noise Threshold:** Any force equal to or below this limit is set to zero by the software, filtering out unwanted force readings.

For more information, see 4.5.6 "Adjusting the noise threshold".

- **Destination Folder:** Select the folder where the recording is saved.

Figure 27 - The **Recording** tab of the **Data Acquisition Parameters** window

The screenshot shows the 'Data Acquisition Parameters' window with the 'Recording' tab selected. The 'Triggers' tab is also visible. The 'Recording' tab contains a table with four rows: 'Duration [d.h:mm:ss.s]' with value '00:00:10', 'Frequency [Hz] (1-500 Hz)' with value '50', 'Recording Frames (1-500,000)' with value '500', and 'Noise Threshold [raw] (3-255)' with value '3'. Below the table is a 'Destination Folder' section with a text box containing 'c:\Tekscan\Recordings' and a blue button with three dots.

Data Acquisition Parameters	
Recording Triggers	
Duration [d.h:mm:ss.s]	00:00:10
Frequency [Hz] (1-500 Hz)	50
Recording Frames (1-500,000)	500
Noise Threshold [raw] (3-255)	3

Destination Folder

c:\Tekscan\Recordings ...

To set up your recording parameters, see 4.1.6 "How to set up your recording parameters".

Triggers - FootVIEW Pro feature

The **Triggers** tab allows you to start and stop recordings from an external device.

Figure 28 - The **Triggers** tab of the **Data Acquisition Parameters** window

Data Acquisition Parameters	
Recording Triggers	
Start Recording	
Method	Start Button
Polarity	N/A
Stop Recording	
Method	Stop Button or Completed
Polarity	N/A

To set up recording triggers, see 4.1.7 "*How to set up recording triggers (FootVIEW Pro feature)*".

Playback Speed

This option allows you to adjust the speed a recording plays back.

You have the following options:

- 5 frames per second (Slow)
- 15 frames per second (Default)
- 20 frames per second (Medium)
- 40 frames per second (Fast)
- 1x Recorded Speed
- 2x Recorded Speed
- ½ x Recorded Speed

To change the playback speed, see 4.4.3 "*How to change the playback speed*".

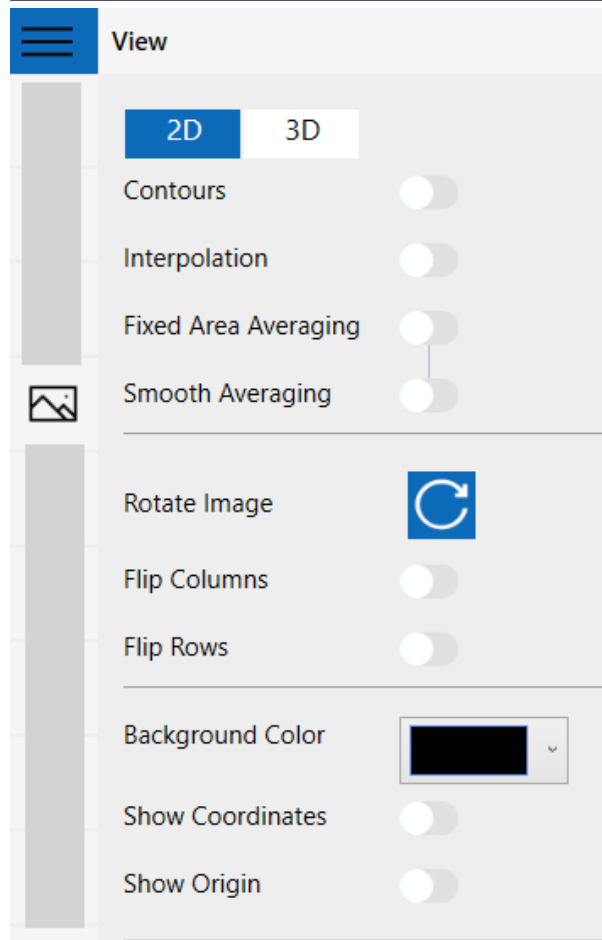
Languages

This option allows you to select the language you want to use in FootVIEW.

To change the language, see 4.4.4 "*How to change the language setting*".

View options

The **View** menu allows you to change how pressure recordings are displayed.

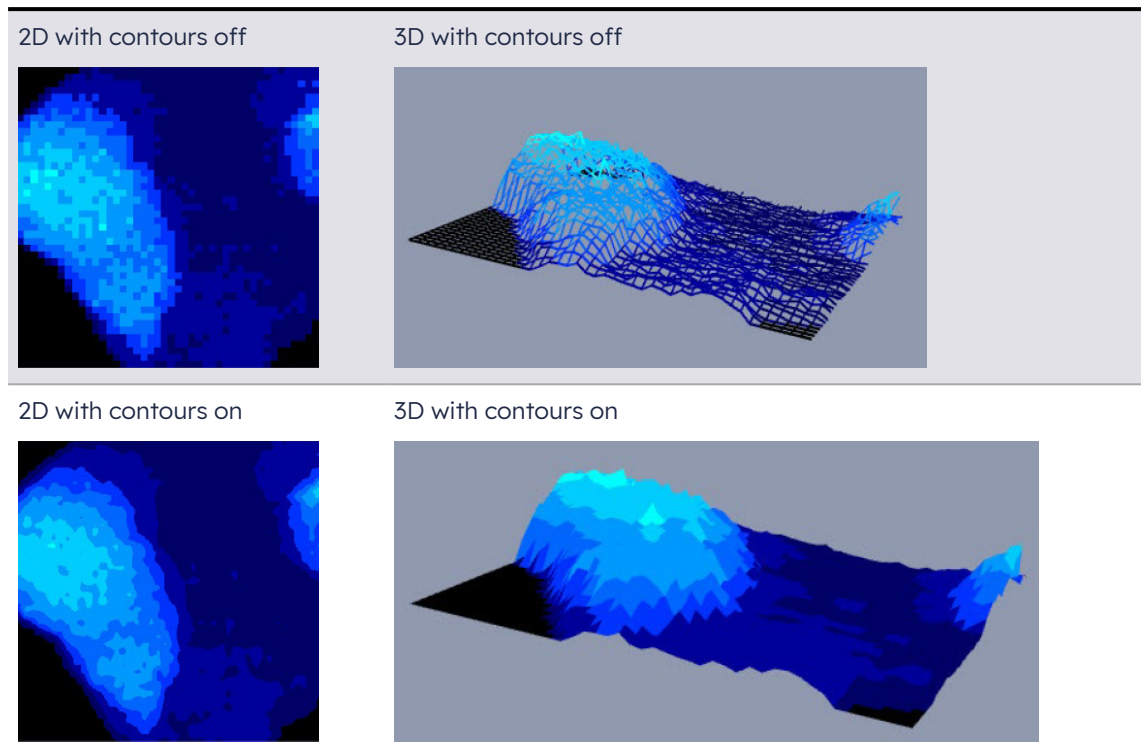
Figure 29 - The **View** menu

2D/3D

- **2D:** Shows pressures in two dimensions. Each square of color represents a sensel on the sensor. This display is closest to the actual raw sensor output.
- **3D:** Shows pressures in the **Real-time** and **Recording** windows as an outlined three-dimensional image. In the 3D wireframe view, relative pressure differences are more visible.

Contours

With the **Contours** option on, the edges between sensels / colors are smoothed. Pressure boundaries are easier to identify.



Interpolation



Notice

Interpolation is only available in 2D views.

Interpolation divides each sensel into 25 sub-sensels and shows them with the center sub-sensel displaying the original cell value. The other 24 sub-sensels is shown using an interpolation algorithm to calculate the pressure gradient between sensels.

This normalizes the sensor data to provide a screen that has a higher resolution than the sensor can afford. Sensor data does not change. Interpolation provides a more realistic rendering.

Fixed Area Averaging



Notice

Fixed area averaging and smooth averaging cannot be applied at the same time.

Fixed Area Averaging displays the image with each cell's pressure value modified to reflect the value of neighboring cells. The cell's pressure values are calculated so that the

total contact area of the display is not increased. As an example, in the group of nine cells shown below, the averaged pressure value of **X** is calculated using the following equation:

$$X_{avg} := \frac{\frac{A + C + F + H}{2} + B + D + E + G + X + X}{8}$$

A	B	C
D	X	E
F	G	H

The denominator is reduced to reflect the "weight" of the cells with zero load in the equation.

For example, if cell **A** is zero, the denominator is reduced by half. If **D** is zero, the denominator is reduced by one. If **X** is zero, the denominator is reduced by two.

Smooth Averaging



Notice

Smooth averaging and fixed area averaging can't be applied at the same time.

Notice displays the image with the pressure value for a cell modified to reflect the value of neighboring cells. This results in a smoother image. For example, in the group of nine cells shown below, the averaged pressure value of **X** is calculated using the following equation:

$$X_{avg} := \frac{\frac{A + C + F + H}{2} + B + D + E + G + X}{7}$$

A	B	C
D	X	E
F	G	H

Where the load recorded in each cell (A-G) is used to calculate the averaged pressure in cell **X**.

**Notice**

If cell **X** is at the edge of the sensor, the values of the neighboring cells that are not loaded are not used in the calculation.

Rotate Image



The  icon turns the views of all open **Real-time** and **Recording** windows clockwise by 90 degrees. All 2D and 3D views are rotated. When a window is rotated, the origin point (upper left corner) is also rotated.

**Notice**

You can rotate a window from the [Details panel](#) of the window.

Flip Columns

The **Flip Columns** toggle switch mirrors all open **Real-time** and **Recording** windows horizontally, left to right.

Flip Rows

The **Flip Rows** toggle switch mirrors all open **Real-time** and **Recording** windows vertically, top to bottom.

Background Color

Using the drop-down, you can change the background areas of the **Real-time** or **Recording window** to white, black, blue, or gray. This may be useful for easier on-screen viewing.

**Notice**

You can change the background color only if the sensor does not sense pressure.

**Tip**

Use this option to make viewing the screen easier.

Show Coordinates

The **Show Coordinates** toggle switch displays the X and Y coordinates on the top and left edges of the **Real-time** or **Recording** windows.

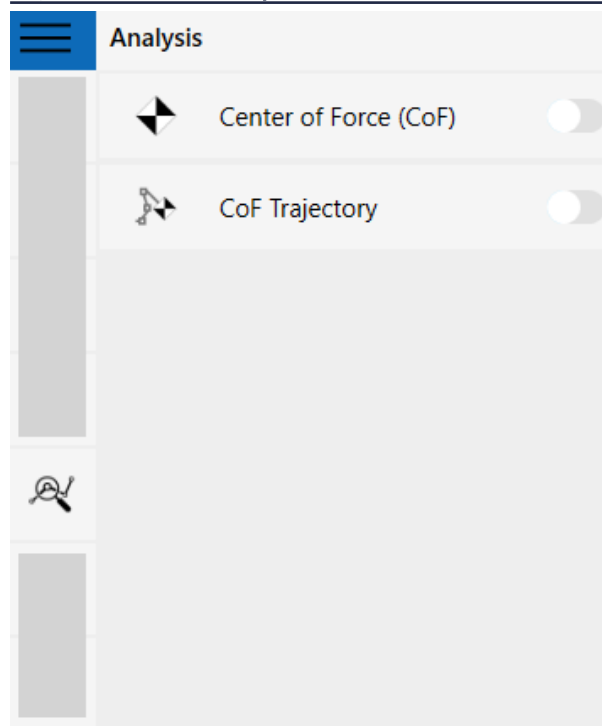
Show Origin

Select the **Show Origin** toggle switch to display the origin point of the sensor (0, 0) as a small dot in 2D view, or as a vertical line in 3D view.

Analysis options

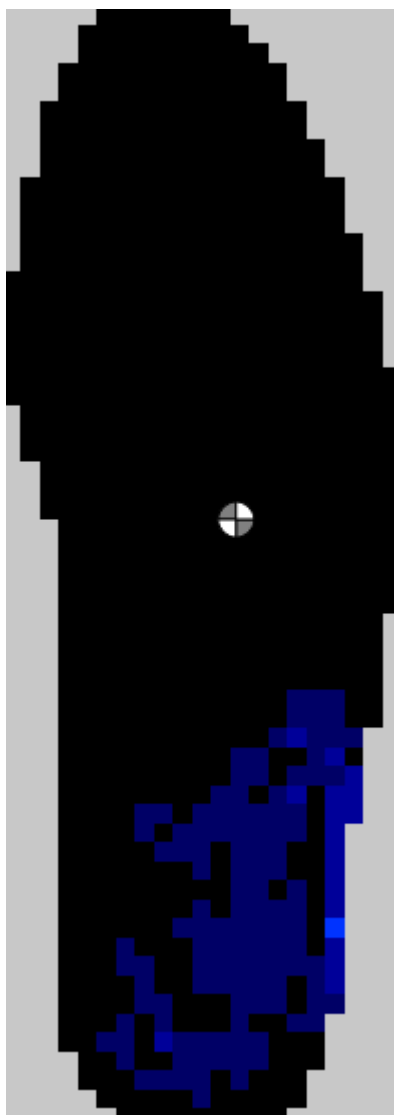
The **Analysis** menu allows you to show the center of all forces on the sensor and the movement of the center of force for the duration of a recording.

Figure 30 - The **Analysis** menu



Center of Force (CoF)

Shows the center of all forces on the sensor, displayed in the 2D **Real-time** or **Recording** window. The center point is represented by a black and white diamond icon. This is useful for showing how the forces are “balanced” on the sensor.



The CoF calculation takes into account all forces on the sensor, regardless of the Legend's lower limit.

The CoF coordinates (in X, Y) are determined using the following two equations:

$$X_{cof} = \frac{\sum_{i=0}^{Cols-1} (i * \sum_{j=0}^{Rows-1} F_{ij})}{\sum_{i=0}^{Cols-1} (\sum_{j=0}^{Rows-1} F_{ij})}$$

$$Y_{cof} = \frac{\sum_{i=0}^{Rows-1} (i * \sum_{j=0}^{Cols-1} F_{ij})}{\sum_{i=0}^{Rows-1} (\sum_{j=0}^{Cols-1} F_{ij})}$$

Where **F** is the force at each sensel.

CoF Trajectory

Displays the movement of the center of force for the duration of a recording. The movement of the CoF can be tracked by playing a recording one frame at a time, with **CoF**

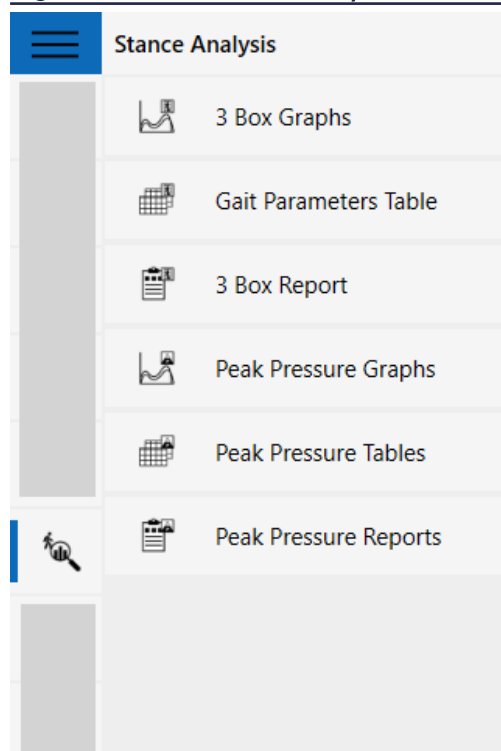
Trajectory selected.

The trajectory is represented on the screen by a bold hashed line that trails the CoF marker. Each hash mark represents a single frame of the recording.

Stance Analysis options

The **Stance Analysis** menu gives you different ways to visualise and interpret the recording data. You can also generate reports from this menu.

Figure 31 - The **Stance analysis** menu



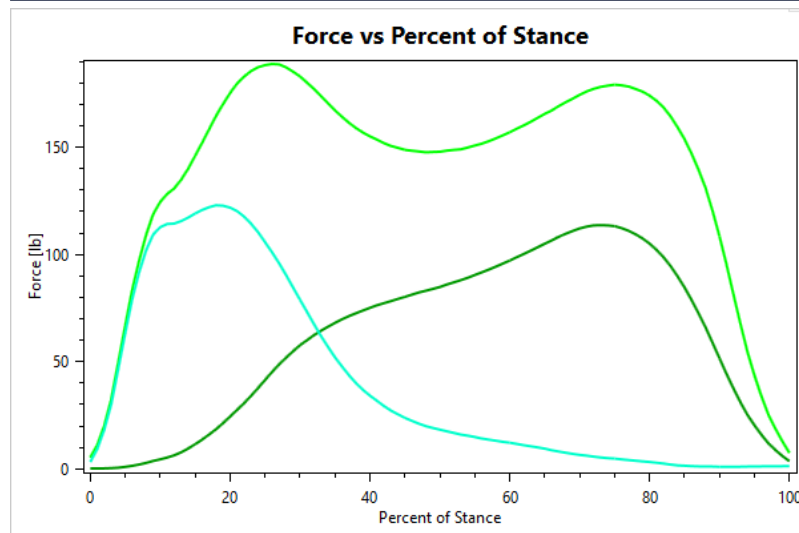
3 Box Graphs

3 Box Graphs show an analysis that subdivides the total vertical ground reaction force from heel strike to toe-off (gait curve) into two components:

- **Heel Area**
- **Metatarsal Area**

The graph shows these two components along with the third one, which is the whole foot.

Figure 32 - Example of 3 Box Graph



The 3 Box approach is a biomechanical analytical protocol, used to assess and analyze natural (non-symptomatic) and/ or perturbed (symptomatic) foot function, gait, and posture related issues.

The displayed information helps:

- Clinicians determine:
 - Treatments and prescriptions.
 - Assessments for subsequent treatment outcomes.
- Researchers:
 - Answer hypotheses.
 - Discuss and conclude findings in investigations.

3 Box Graphs use three data points:

- Timing (pivoting speeds)

The speed of travel for the plantar foot Center of Force (CoF) displacement, and speed of changes in plantar pressure gradients.
- Trajectory (CoF path)

The pattern of the path followed by the CoF.
- Symmetry and slope (gait, heel, and forefoot curves)

The patterns (rises, peaks, plateaus, and falls) exhibited in the vertical reaction "Force vs. Time" curves for the "Gait Curve" (total force under the plantar foot), for the plantar heel section and the plantar forefoot section.

To display data using a 3 Box Graph, see 4.3.3 "*How to display data using 3 Box Graphs*".

Gait Parameters Table

The **Gait Parameters Table** provides gait analysis in a numerical form, rather than visual.

You can copy the data to Excel (or another tool) for editing. Select all fields of the table and press **Ctrl+C** to copy to clipboard.

Figure 33 - Gait Parameters Table

Gait Parameters - Paired L versus R					
Parameter	HartM01L	HartM01R	HartM01 R-L Difference	HartM01 Symmetry Index (SI)	
Cadence (steps/min)	57.61	56.12	-1.49	-2.62	
Step Time (sec)	0.55	0.53	-0.01	-2.36	
Gait Cycle Time (sec)	1.04	1.07	0.03	2.62	
Stance Phase (sec)	0.69	0.68	-0.01	-1.81	
Swing Phase (sec)	0.35	0.39	0.04	10.81	

Item	Details
Cadence (steps/min)	Number of steps taken per minute.
Step time (sec)	Elapsed time from first foot contact to the opposing foot's first contact. The heel may or may not contact first. For some subjects, the forefoot will contact first.
 Notice Be aware of random sensel flickers. First contact must be immediately followed by a larger region of contact for several frames.	
Gait Cycle Time (sec)	Elapsed time between the first contacts of two consecutive footfalls of the foot in question. Also the time from first foot contact to subsequent first contact of the same foot.
Stance Phase (sec)	Elapsed time from first foot contact to last contact of the same foot.
Swing Phase (sec)	Gait cycle time minus stance time.

To display data using a Gait Parameters table, see 4.3.4 "How to display data using a Gait Parameters Table".

3 Box Report

3 Box report exports a 3 Box analysis report directly to Microsoft Word. It includes peak pressure profiles, 3 Box gait analysis, and foot segmentation results. Additionally, the report includes a section for comments and observations.

To generate the report, you can enter several common field properties or leave the fields blank.

Figure 34 - 3 Box Report input screen

Examiner' Information	
Doctor Name	
Company Name	
Address (Street)	
Address (City, State, an...	
Phone	
Examiner	

Recording Labels	
Label for Exam #1	
Label for Exam #2	

Cancel OK

To generate a 3 Box report, see 4.3.5 "*How to generate a 3 Box Report*".

Peak Pressure Graphs

Peak Pressure Graphs finds the places of the highest pressure and displays the data in two pre-defined graphs:

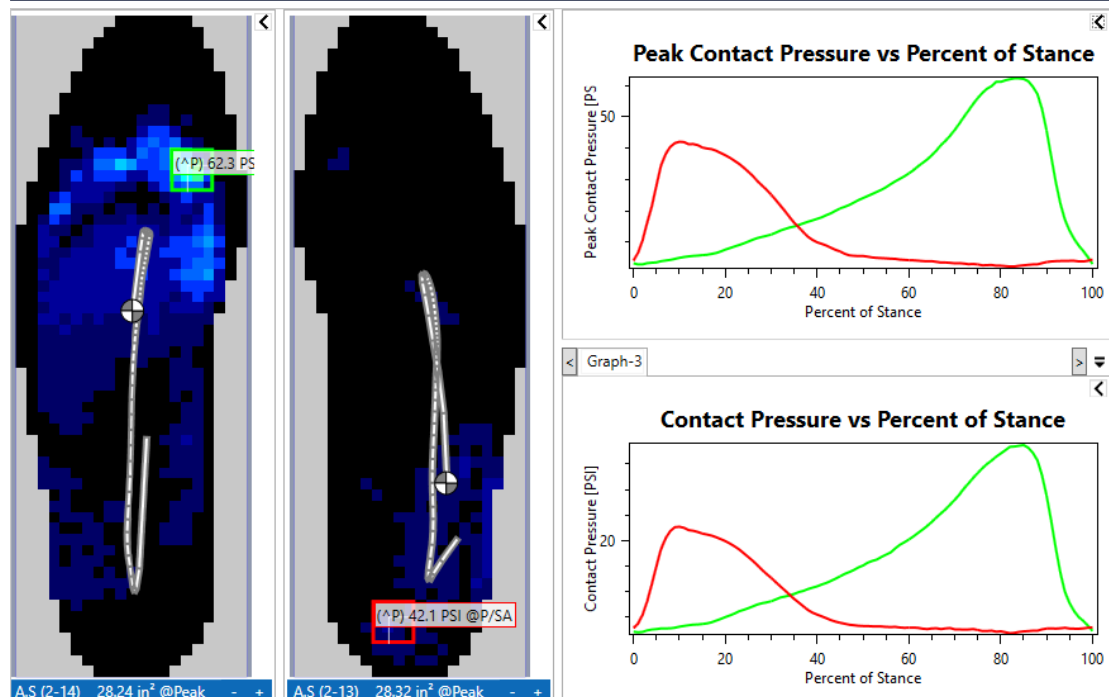
- Peak Contact Pressure vs Percent of Stance
- Contact Pressure vs Percent of Stance

The presented composite image shows the peak pressure on the entire foot over the entire step. You can drag the squares on the foot view to measure different pressure points.

The peak pressure analysis provides the following:

- Identifies and quantifies peak plantar pressure area for each foot.
- Generates tables with the parameters needed to assess the risk of ulcer formation or the effectiveness of a chosen off-loading strategy, including peak pressure, pressure time integral, peak pressure gradient as well as the duration that the peak pressure threshold has been exceeded.

Figure 35 - Peak Pressure Graph screen



To display peak pressure, see 4.3.6 "How to display data using Peak Pressure Graphs".

Peak Pressure Tables

Peak Pressure Tables provides peak pressure analysis in a numerical form, rather than visual.

You can copy the data to Excel (or another tool) for editing. Select all fields of the table and press **Ctrl+C** to copy to clipboard.

Figure 36 - Peak Pressure Table

PP - Paired L versus R					
Parameter	HartM01L	HartM01R	HartM01 R-L Difference	% Difference to HartM01L	% Difference to HartM01R
Peak Pressure (PSI)	62.32	42.07	-20.25	-32%	-48%
Pressure (PSI)	38.82	22.83	-15.99	-41%	-70%
PTI (PSI*sec)	10.60	4.92	-5.68	-54%	-115%
PPG (PSI/in)	255.82	325.26	69.44	27%	21%
Duration above peak pressure threshold (sec, 25.00 PSI)	0.28	0.17	-0.11	-38%	-61%

Item	Details
Peak Pressure (PSI)	The maximum or highest pressure within the Box or Object.
Pressure (PSI)	The pressure contained in the Box or Object.
PTI (PSI*sec)	Pressure-Time-Integral (PTI), a measure representing the amount of pressure relative to the time that the pressure is present.

Item	Details
PPG (PSI/in)	Peak Pressure Gradient (PPG), a measure representing the spatial change in pressure around location of the peak pressure.
Duration above peak pressure threshold (sec, 25.00 PSI)	The duration in which the pressure is above a specific value. In the example above, for HartM01L, the pressure was above 25 PSI for a duration of 0.28 seconds.

To display a peak pressure table, see 4.3.4 *"How to display data using a Gait Parameters Table"*.

Peak Pressure Reports

Peak Pressure Reports exports a peak pressure analysis report directly to Microsoft Word. The report includes the following sections:

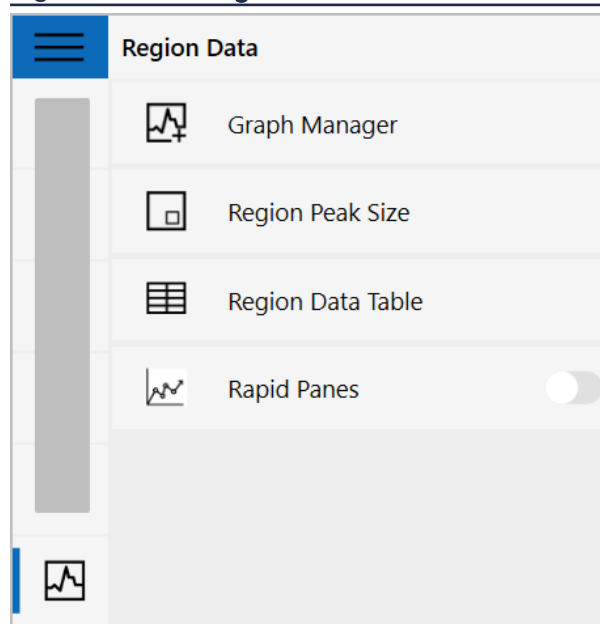
- Peak pressure profiles
- Pressure and force vs. time curves
- Pressure parameter comparison
- Peak pressure table

Additionally, the report includes a section for comments and observations.

To generate a peak pressure report, see 4.3.8 *"How to generate Peak Pressure Reports"*.

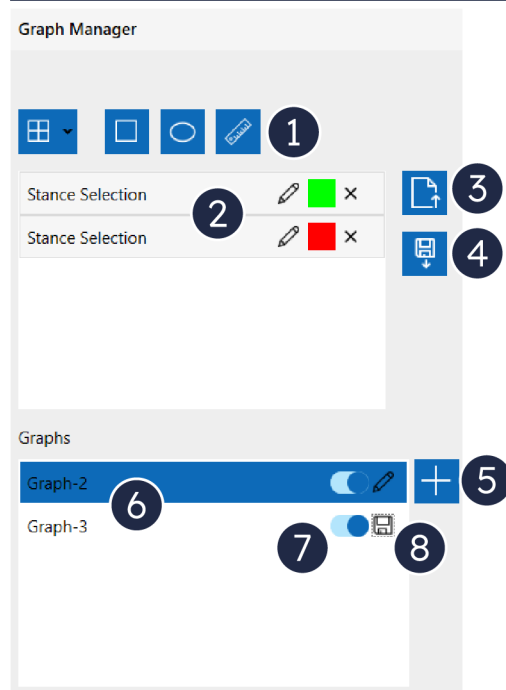
Region data options

Figure 37 - The **Region Data** menu



Graph Manager

This area is used to add regions and create graphs from those regions.

Figure 38 - The **Graph Manager** panel

- 1** Add regions icons Adds regions to the sensing area.
For more information, see "How to display key region data from all open windows" on page 105

- 2** Regions list Lists existing regions. You can change the name of a region by selecting .

**Notice**

The **Stance Selection** region is an automatic region created by the software to allow you to select individual patches. It is only visible in **Stance View**. If you delete it from **Graph Manager**, it appears again when changing between **Sensor View** and **Average Stance View**.

- 3** Load Region File Loads a previously user-created region.

- 4** Save Region File Saves a user-created region for later use.

- 5** Add Graph Creates graphs.
For more information, see 4.5.4 "How to create graphs for different regions".

-
- 6 Graphs list** Views and manages graphs that were created by the user in the selected map.
 - 7 Region visibility toggle switch** Switches on to show or off to eliminate a region in the selected map.
 - 8 Graph label edit** Select  to modify the name of the graph.
Select  to confirm the name of the graph.
-

Region Peak Size

The **Region Peak Size** determines the peak size that is used for other software calculations, such as **Peak Force** and **Peak Pressure** in the **Region Data Table**.

The default peak size is 2 rows by 2 columns.

Figure 39 - The **Region Peak Size** panel

Region Peak Size

Number Of Rows (1-60) :

Number Of Columns (1-21) :



Notice

The range displayed for the number of rows and columns is dependant on the sensor selected.

Region Data Table

The **Region Data Table** displays key data from all regions in all open windows in a tabular format below any open **Recordings** and **Graph** dock groups.

When region data within the open windows is updated (for example, if a box region is resized or moved to a new sensing area location), the corresponding region data in the table is dynamically updated with the same changes.

Figure 40 - Example of a **Region Data Table**

Region	Frame	Time, Sec	Force, lb	Contact Area, in ²	Contact Pressure, PSI	Peak Force, lb	Peak Pressure, PSI
Stance Selection	1	0	0.00	0.00	0.0	0.00	0.0
reg_0	1	0	0.00	0.00	0.0	0.00	0.0
reg_3	1	0	0.00	0.00	0.0	0.00	0.0
reg_4	1	0	183.55	12.64	14.5	6.23	39.0
reg_5	1	0	208.02	15.24	13.6	7.32	45.8

For each **Region**, the following information is available:

Frame	Current recording frame.
Time	The current time, relative to the start of the recording.
Force	Total force on the sensor area within the region.
Contact Area	Area of loaded sensels inside the region.
 Notice Sensels with zero load are not included in the calculation.	
Contact Pressure	Pressure of loaded sensels inside the region, calculated by dividing the force by the contact.
 Notice Sensels with zero load are not included in the calculation.	
Peak Force	Highest area of force in the region.
Peak Pressure	Highest-pressure area in the region, calculated as the force inside the peak size area divided by the peak size area.

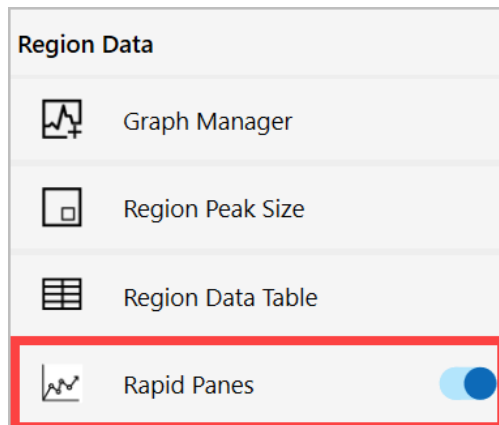
The **Region Data Table** can be also displayed in a paired version as a comparison of the left and right sensor data.

Figure 41 - Example of a paired view of the **Region Data Table**

PP - Paired L versus R					
Parameter	HartM02L	HartM02R	HartM02 R-L Difference	% Difference to HartM02L	% Difference to HartM02R
Peak Pressure (PSI)	69.91	49.00	-20.91	-30%	-43%
Pressure (PSI)	41.66	24.56	-17.10	-41%	-70%
PTI (PSI*sec)	9.91	5.37	-4.54	-46%	-84%
PPG (PSI/in)	316.95	354.43	37.48	12%	11%
Duration above peak pressure threshold (sec, 25.00 PSI)	0.21	0.20	-0.02	-7%	-8%

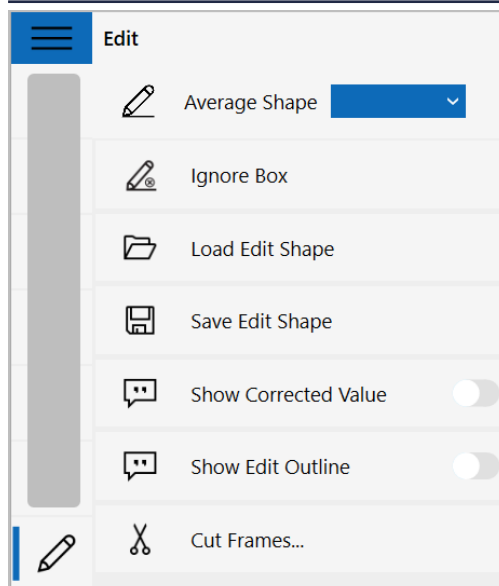
Rapid Panes

Selecting the **Rapid Panes** toggle switch causes a new graph to be automatically created every time a pane is placed in the sensing area.



Edit options

Figure 42 - The **Edit** menu



Over time, damage may occur to a sensor. Individual sensels or even rows and columns may develop shorts (red sensels with no pressure applied) or opens (missing sensels with pressure applied). Editing lets you define a "mask" for these sensels, which replaces their readings with an average of neighboring sensels. You can also remove specific sensels altogether.



Notice

Real-time editing is designed to "repair" one or two damaged rows, columns or a few sensels. Do not use it to fix large areas of the sensor.

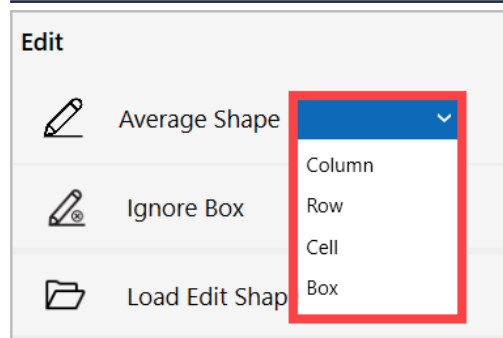
If larger areas of a sensor are damaged, replace the sensor.

**Notice**

Movie editing does not delete data. Editing can always be undone.

Average Shape

Figure 43 - The **Average Shape** drop-down



Average Shape averages the **Column**, **Row**, **Cell**, or **Box** shape so that each cell's pressure value is modified to reflect the value of neighboring cells.

Edit Column	Each sensel value in the column is calculated by averaging the sensels to the left and right of the column.
Edit Row	Each sensel value in the row is calculated by averaging the sensels above and below the row.
Edit Cell	The sensel's value is calculated by averaging all eight sensels that surround it.
Edit Box	The sensels inside the box are the average value of the cells inside the box.

Ignore Box

Creating an ignore box removes all pressure data from movie calculations in a defined area. Pressure values are set to zero, and ignored.

Load Edit Shape

Loads a previously saved Edit File (.edx).

Save Edit Shape

Saves the current edit shape to an Edit File (.edx) on your computer. You can load the file later on subsequent recordings.

Show Corrected Value

The **Show Corrected Value** toggle switch updates the recording's status bar and any open graphs with the recording's edited value. It also shows the corrected value within the edited area.

To display non-edited values, deselect the toggle switch.

**Notice**

By default, this option is on.

We recommend to keep this option on to have a visual indication of the edits made. If you turn this option off, ensure the **Show Edit Outline** toggle switch is on.

Show Edit Outline

The **Show Edit Outline** toggle switch displays a white box around the edited area.

**Notice**

By default, this option is on.

We recommend to keep this option on to have a visual indication of the edits made. If you turn this option off, ensure the **Show Corrected Value** toggle switch is on.

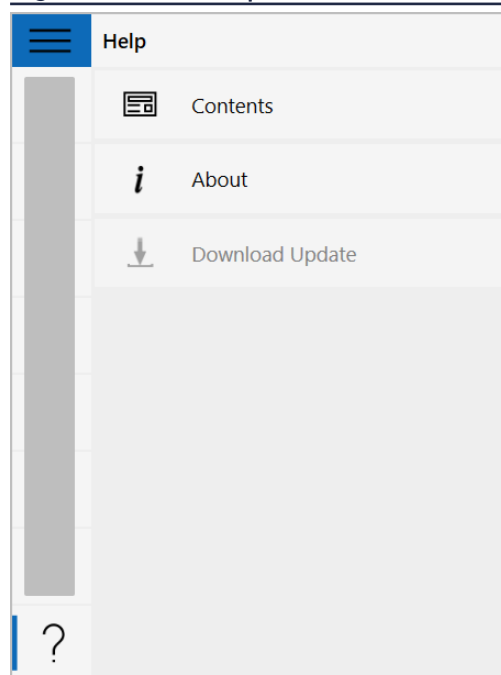
Cut Frames...

The **Cut Frames...** option removes selected frames from the recording.

To cut selected frames, see 4.5.3 "*How to remove selected frames from a recording*".

Help options

Figure 44 - The **Help** menu



Contents

Opens the software help file **Table of Contents** tab.

About

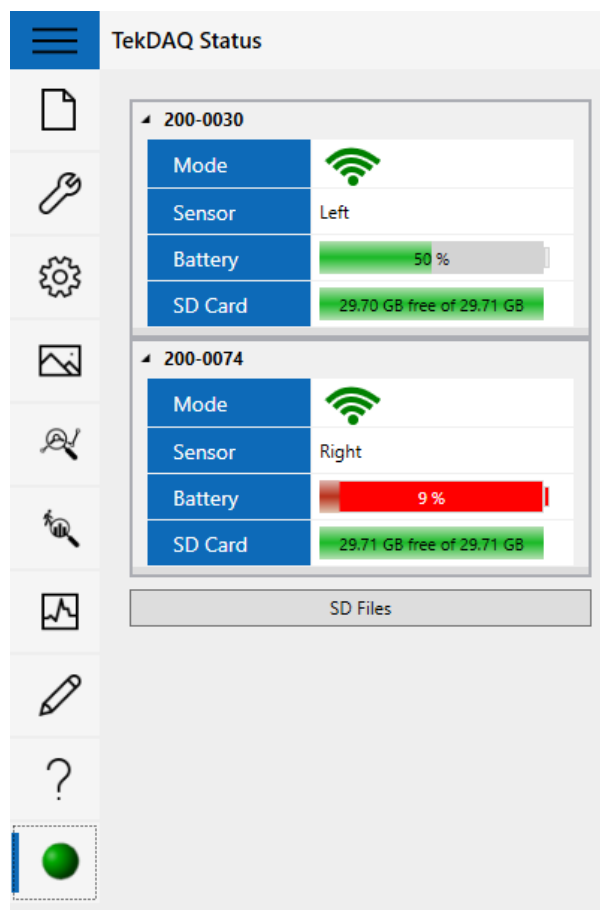
Displays the **About** dialog, providing basic information about FootVIEW.

Download Update

When a software update is available, a green arrow appears next to the  menu icon, and the **Download Update** menu option enables.

TekDAQ status options

Figure 45 - The **TekDAQ Status** menu



The **TekDAQ Status** menu shows a drop-down with information about the device's mode, status of the sensor, charging status, and the capacity of the SD card.

The **Battery** indicator is:

- Green if the battery capacity is 15% or higher
- Red if the battery capacity is less than 15%

**Notice**

The TekDAQ indicator is red if one or more of the batteries is below 15% capacity.

For more information about TekDAQ status, see 4.7.2 *"How to display TekDAQ status"*.

Selecting the **SD Files** button opens the **File Manager** window, which lets you see the files stored in the TekDAQ electronics unit, and contains the following fields:

- **File Name**
- **File Size [B]**
- **Creation Date**
- **Folder**
- **Orientation**
- **TekDAQ**

To manage the files in File Manager, see 4.2.3 *"How to manage files in File Manager"*

2.4.9 Toolbars

The toolbars shown in Figure 46 give access to the most commonly used commands in FootVIEW.

Figure 46 - Main window toolbars

1	2	3	4
1 File toolbar Lets you open Patient Management , Real time , and Recording windows, and save recordings. See <i>"File toolbar"</i>	2 Playback toolbar Lets you navigate through a recording. See <i>"Playback toolbar"</i>	3 Region analysis toolbar Lets you place regions in the sensing area. See <i>"Region analysis toolbar"</i>	4 View toolbar Lets you change the view of the Real time and Recording windows. See <i>"View toolbar"</i>

File toolbar

Icon	Description	Action
	Patient Management	Opens the Patient Management window. See " <i>Patient Management window</i> "
	Open Real-time	Opens a new Real time window.
	Open Recording...	Opens a new Recording window.

Playback toolbar

Icon	Description	Action
	First Frame	Navigates to the start of the recording (frame 1).
	Previous Frame	Rewinds one frame.
	Play Backward	Plays in reverse, starting at the current frame.
	Stop	Stops playback.
	Play Forward	Plays forward, starting at the current frame.
	Next Frame	Plays forward one frame.
	Last Frame	Navigates to the end of the recording (final frame).
	Record	Starts recording.
	Snapshot	Takes a single frame recording.

Region analysis toolbar

Icon	Description	Action
	Add Pane	Places a pane region on the currently selected sensing area. The drop-down contains four different types of pane:  Pane  Quad pane  Vertically-split pane  Horizontally-split pane
	Add Box	Places a box region on the currently selected sensing area.
	Add Oval	Places an oval region on the currently selected sensing area.
	Add Line	Places a line on the currently selected sensing area.

For more information about adding regions, see 4.5.5 "*How to display key region data from all open windows*"

View toolbar

Icon	Description	Action
	Frame View	Show the view for a single frame.
	Stance View	Show multiple steps view, a composite image for each one of the steps, with a graph of those over time. You simultaneously view the highest pressure experienced by each part of the foot during a foot strike. The playback items treat each stance as a frame, for example, Next Frame moves the recording to the next stance. If Stance View is enabled at the same time that CoF Trajectory is enabled, the trajectory of the CoF for the entire range of frames is displayed.
	Average Stance	Show an average footprint and an average graph for all steps. The single frame displayed is created by averaging a group of "peak" frames, or "stances" (a recording is divided into "stances" when the "Peak/Stance" menu item is selected). The individual sensel values for each of the peak frames are averaged and displayed as a composite "averaged stance". Selecting Average Stance opens a dialog where you can specify which stances you want to include in the display.

For more information about changing the view, see 4.4.5 "*How to change how pressure recordings are displayed*".

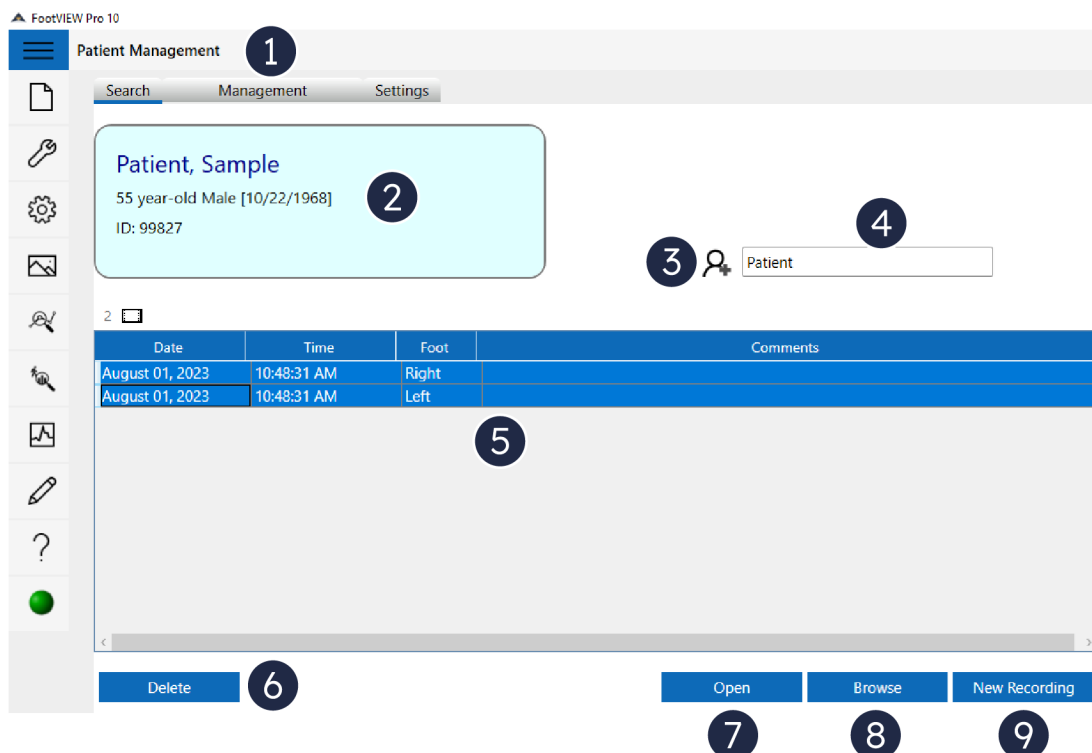
Patient Management window

To access the Patient Management System select the **Patient Management** button in the **Main** toolbar or from the **File** menu.

When the **Patient Management** system is enabled, it requires a patient to be selected before collecting new recordings or opening existing recordings.

Before a patient has been selected, the **Open Real-time** and **Open Recording** buttons also open the **Patient Management** system for patient selection.

Figure 47 - Patient Management window with a patient selected



- 1 Patient management tabs

 - **Search** tab - This provides the ability to search for and select existing patients. When a patient has been selected, it provides the interface for opening recordings and collecting new ones.
 - **Management** tab - This provides the list of all patients. From this tab you can delete and edit patient details.
 - **Settings** tab - This area allows you to select your settings.
See "Settings tab"
- 2 Patient details

List the details of the selected patient. The selected patient's name is also shown in the top right of the interface.
- 3 

Select this button to **Add new patient** to your database. You must provide a first and last name for any patient you want to add.
- 4 Search

To select an existing patient start typing the patient's name.

The search returns a list of matching patient names.

Select the patient from the drop-down list. After a patient is selected, their name is shown in the top right corner of the main toolbar.
- 5 Patient record

The patient record displays a table with all recordings collected on the selected patient, along with the recording dates and comments.
- 6 Delete

To delete recordings from the patient record, select one or multiple recordings (use CTRL + Click) and then select **Delete**.

7	Open	Select a recording from the list and select Open . The opposite foot recording opens automatically when a single left or right foot recording is opened.
8	Browse	The Open Recording.. dialog is opened and from there you can browse for and select individual recordings.
9	New Recording	Select New Recording to open the Real-time window. FootVIEW automatically wirelessly downloads recordings from both TekDAQ devices at the completion of each recording. Recordings are saved in a folder associated with the selected patient and are added to the list of recordings in the patient record.

Settings tab

There are two settings on the Settings tab:

- **Enable the Patient Management System** (FootVIEW Pro feature)

The **Patient Management System** is enabled by default, however, it can be disabled with FootVIEW Pro. When enabled, all recording and file opening procedures must use the **Patient Management System**.

In some scenarios, for research studies or use cases other than clinical patient environment, it may be necessary to disable the patient management system. When the patient management system is disabled, **Open Real-time** and **Open Recording** buttons may be used without selecting a patient and files may be opened directly from folders on the PC in any location.

New recordings are saved automatically in the destination folder specified in the acquisition parameters.

- **Only display recordings for a single patient at a time**

This setting is enabled by default.

This setting limits FootVIEW to have a single patient active at any time.

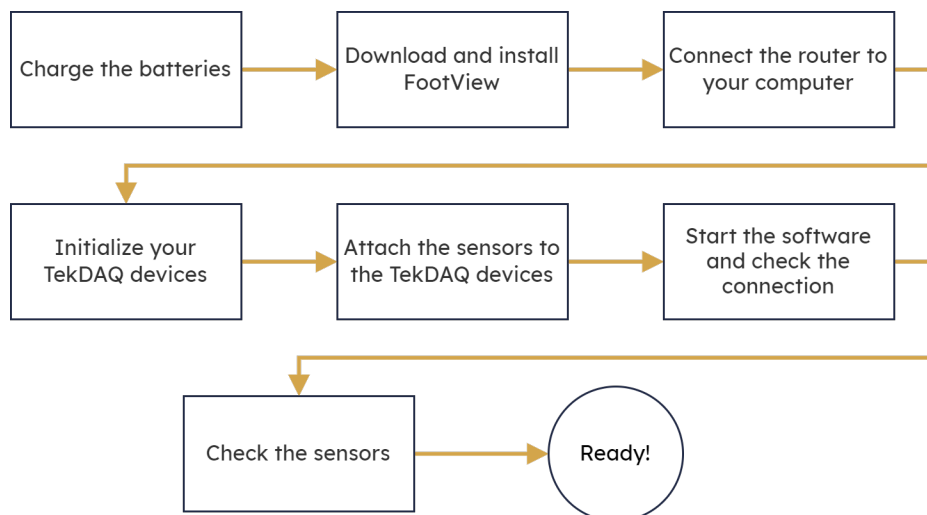
If a patient is selected and recordings are open in the software, attempting to open recordings from another patient record will close all recordings and open only recordings for the new patient.

Disabling this feature allows recordings from multiple patients to be open simultaneously.

3 Getting started

Before operating F-Scan GO, you need to prepare the system and its components.

The process for getting started is shown below:



To prepare F-Scan GO for operation, follow the steps.



Notice

Customising the sensors is described separately.

For more information, see "How to fit the sensors" on page 79

3.1 Charge the batteries



WARNING

Only use the batteries for their designated purpose.

Do not connect any equipment to the terminals of the batteries.

Never short-circuit the batteries.

Never use damaged batteries.

Only charge the battery with the designated charger.

**Notice**

Before using the equipment, Tekscan recommends that you fully charge the batteries for the TekDAQ devices.

To charge the batteries, do the following:

1. Open the end cover of the TekDAQ device.
2. To remove the battery, pull the clear plastic pull tab.
3. Repeat the process for the other TekDAQ device.
4. Connect the supplied battery charger to a suitable mains supply.

Figure 48 - TekDAQ 200 battery charger



5. On the battery charger, lift the blue lever.
6. Insert both batteries into the battery charger.
7. Check the LED status on the battery, and do the following according to the LED status:

LED	Description	Action
Solid yellow	The batteries are charging.	Monitor the charging process until the batteries are charged.
Flashing yellow	The batteries are almost charged.	Monitor the charging process until the batteries are charged.
Solid green	The batteries are charged.	Remove the batteries from the battery charger and disconnect the battery charger from the mains supply.
Flashing green	The battery is not inserted into the charger.	Check if the battery is inserted into the battery charger.
Flashing red	The device encountered an error.	Remove the batteries from the battery charger, and after a few minutes, try reinserting them to the battery charger. If the error continues, contact Tekscan, Inc. technical support at https://www.tekscan.com/support/customer-support/technical-support .
Off	The battery charger is not connected to the mains supply.	Check if the battery charger is connected.

**Notice**

A full-charged battery provides about 90 minutes of operation.

3.2 Download and install FootVIEW

After purchasing F-Scan GO you receive information about where you can download the software and drivers.

**Notice**

Make sure your computer meets the requirements for installing and running the FootVIEW software.

For more information, see 2.2 "*Computer requirements*".

**Notice**

You have to install the software before adding any Tekscan hardware components to your system.

Close all other applications before installing the software.

Follow the download and installation instructions provided by Tekscan.

3.3 Connect the router to your computer

To connect the router to your computer, do the following:

1. Connect the router to the mains power.
2. On your computer, locate and connect to **TekDAQWiFi**.
This SSID is accessed from your **Network & Internet settings**.
The password for the router is **tekscan1**.

3.4 Initialize your TekDAQ devices

To initialize your TekDAQ devices, do the following:

1. Open the end cover of the TekDAQ.
2. Insert the battery into the TekDAQ.

Figure 49 - Inserting battery into the TekDAQ



3. Close the end cover of the TekDAQ.
Make sure the end cover clicks into place.
4. Slide the power switch to the On position .

The status LED ① flashes green until it connects with the router, then it changes to solid green.

Figure 50 - TekDAQ status LEDs



Notice

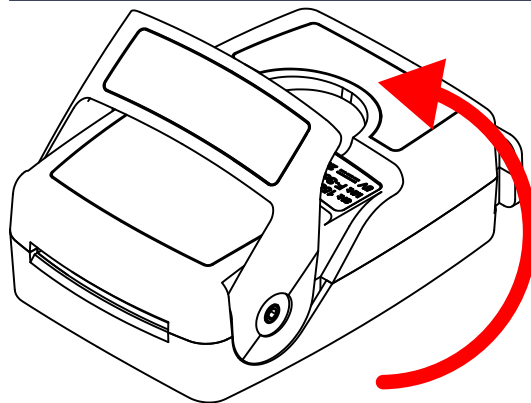
A red error LED ② shows that a sensor or SD card are not fitted, or that the battery is low.

3.5 Attach the sensors to the TekDAQ devices

To attach the sensors to the TekDAQ devices, do the following:

1. Lift the sensor release lever on the TekDAQ.

Figure 51 - Open the TekDAQ release lever



2. Insert a sensor into the slot in the TekDAQ.

The orientation that the sensor is inserted determines whether the sensor is for a left or right foot.

3. Push down the sensor release lever on the TekDAQ.

Figure 52 - Sensor fitted to TekDAQ



The TekDAQ error LED switches off when a sensor is connected, the SD card is inserted, and the battery is sufficiently charged.

In some cases, the error LED may not switch off.

For more information, see 5.3 "*Status and error indicators*".

4. Repeat the process for the second TekDAQ, and make sure the sensor is inserted in the opposite orientation to the first.

3.6 Start the software and check the connection



Notice

The status LEDs (2) on both TekDAQs must be solid green before starting FootVIEW.

To start the software and check the connection, follow these steps:

1. Open FootVIEW.
2. Select **Menu > Configuration > Sensor Configuration**
Connected TekDAQs are listed.

For more information, see "*Configuration options*".

3. Make sure both devices are connected.
4. Make sure the sensor model 3010 is selected.
5. Select **OK**.
6. Select the Sample patient by typing `Sample` in the **Search** bar in **Patient Management**.
7. Select **New Recording** to open two **Real-time** windows.

3.7 Check the sensors

To check the sensors, do the following:

1. Using your fingers, squeeze the sensor and apply pressure to the sensor.
2. Confirm that FootVIEW shows pressure data in real-time, in the same location as the applied pressure.

Figure 53 - Example of pressure point on sensor



4 Operations

To operate F-Scan GO, use the procedures described here.

4.1 Preparation prior to data capture

This describes how to prepare for taking recordings with F-Scan GO .

4.1.1 How to fit the sensors

Each sensor is trimmed to fit the subject's foot size. The sensors must be carefully trimmed without damaging the sensor connection points.



Notice

Shoe shapes and dimensions vary greatly. The white printed size guidelines are approximate and sensor trimming should be fine-tuned based on the fit within the shoe.

To fit the sensors to size, do the following:

1. If possible, remove the foam insole from the shoe and trace the entire outline on the sensor. If this is not possible, use the size guidelines to choose a size slightly larger than the shoe size.
2. Using scissors, trim along the lines traced from the insole or selected from the printed white size lines.



Notice

- Do not bisect the silver circles that connect each wiring trace to the rows and columns.
- Make sure you trim between sensing elements so that the outermost sensing elements remain whole.
- Check both sides to avoid cutting through silver wiring traces that lead to any rows or columns within the remaining foot area.
- Trim between the green rows and columns and in the darker areas where possible.

**Tip**

Start at the heel and work your way towards the toe section.

Figure 54 - Trimming the sensors



3. Test the fit of the sensor inside the shoe to confirm that it lays flat.

**Notice**

If an orthotic is present, place the sensor on top of the orthotic, between the orthotic and the plantar surface of the foot.

**Notice**

It is important for the trimmed sensor to lie flat within the shoe. Make sure there is no curling of the sensor up the sides of the shoe. If the sensor is too large, trim off more material to get a better fit.

**Tip**

Attach small pieces of double-sided tape on the bottom side of the sensor to help keep the sensor in place and prevent wrinkling. Tape should be applied under the forefoot and heel regions of the sensor.

Figure 55 - Fitting a sensor inside a shoe



4.1.2 How to prepare the subject

Before you can attach the TekDAQ electronics units, you must make sure the prepared shoes are fitted correctly to the subject.

To prepare the subject, do the following:

1. Help the subject put on the shoes, making sure the sensors remain flat and in position inside the shoes.



Notice

Make sure the sensor tabs exit the shoes and extend up the lateral sides of each ankle.

**Tip**

Hold the heel of the sensor in the shoe with your thumb while helping put the shoe on. If possible, use a shoehorn to help with this step.

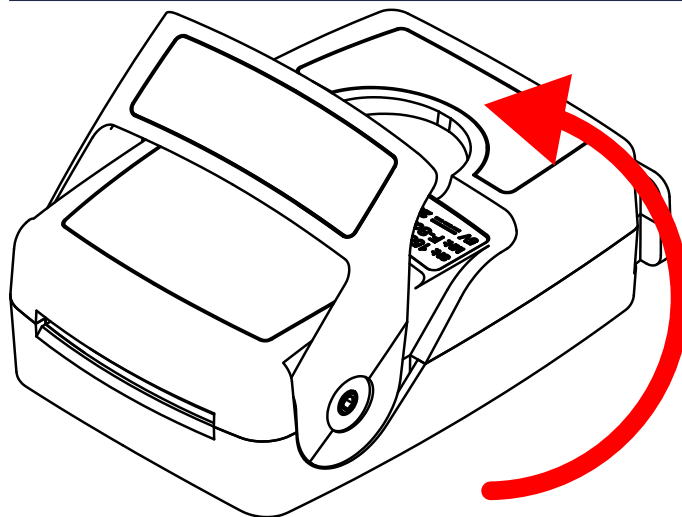
2. Wrap the black Velcro ankle bands around the lower calf on each leg of the subject.
3. Secure the ankle bands around the subject's calves using the dual tightening straps.

4.1.3 How to attach the TekDAQ units to the ankle bands and sensors

To attach the TekDAQ electronics units to the ankle bands and sensors, do the following:

1. Lift the sensor release lever on the TekDAQ.

Figure 56 - Open the TekDAQ release lever



2. Insert a sensor into the slot in the TekDAQ.

**Notice**

The orientation that the sensor is inserted determines whether the sensor is a left or right foot.

3. Push down the sensor release lever on the TekDAQ.
4. Attach the TekDAQ electronics units to the Velcro ankle bands on the outside of each calf, with the Tekscan logo facing right-side up.

Figure 57 - TekDAQ and sensor attached



Tip

Attach the TekDAQ units so you form a bend in the sensor between the TekDAQ and the entrance to the shoe. This provides strain relief while the subject is walking or running.

5. Make sure the LEDs are illuminated as described in 3.5 "*Attach the sensors to the TekDAQ devices*".
6. Repeat the process for the second TekDAQ, and make sure the sensor is inserted in the opposite orientation to the first.

Figure 58 - TekDAQ electronics units attached



4.1.4 How to connect to FootVIEW

To connect to the F-Scan GO software FootVIEW you must first complete the steps in the following sections:

- 3.2 "Download and install FootVIEW"
- 3.3 "Connect the router to your computer"
- 3.4 "Initialize your TekDAQ devices"
- 3.6 "Start the software and check the connection"

These procedures are required to initialize your system so it can recognize and connect to your computer over the Wi-Fi network.

The connection to FootVIEW will be automatic, but can be checked as follows:

1. Make sure the power switch is in the On position .
The status LED flashes green until it connects with the router, then it changes to solid green.
2. Open FootVIEW.
3. In the FootVIEW homescreen, make sure the TekDAQ status is green (see 4.7.2 "How to display TekDAQ status").

4.1.5 How to adjust sensor sensitivity

To adjust the sensitivity of the sensors, you must first create a real-time window to create some live sensor data.

To create a real-time window, do the following:

1. Do one of the following:
 - Select  in the file toolbar (see "File toolbar").
 - Select  > **File** > **Open Real-time**.
 - Select or create a patient record in the **Patient Management System** and select **New Recording**.
2. Instruct your subject to rock back onto their heels and forward onto their forefoot.
You will see pressure data appear in the real-time window.



Tip

This is a good time to check that pressure data is being shown correctly in the real-time window. If it is not, there may be something wrong with your connection.

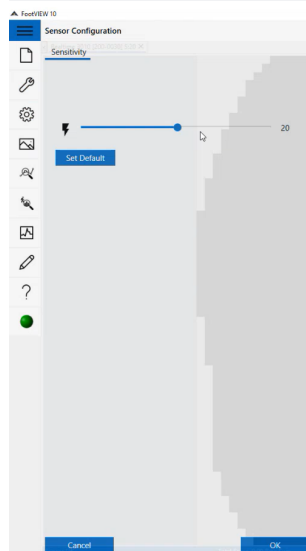
To adjust the sensitivity, do the following:

**Notice**

You can only adjust the sensitivity for one sensor at a time.

1. Select the tab of the real-time window you want to adjust sensitivity for.
2. Select **Configuration > Sensitivity**.
3. Do one of the following:
 - Adjust the slider to the left (less sensitive).
 - Adjust the slider to the right (more sensitive).
 - Select the **Set Default** button to reset sensitivity back to the baseline value (21).
4. Select **Cancel** to discard your changes, or **OK** to confirm.

Figure 59 - Adjusting the sensitivity of a sensor



5. Repeat the process for the other real-time window.

**Tip**

Ideally, peak sensor output should be in the light green to orange range (160 to 208 on the raw unit scale).

Decrease sensitivity if the output is too low.

Increase sensitivity if the output is too high.

See the figures below.

Figure 60 - Output too low (blue)

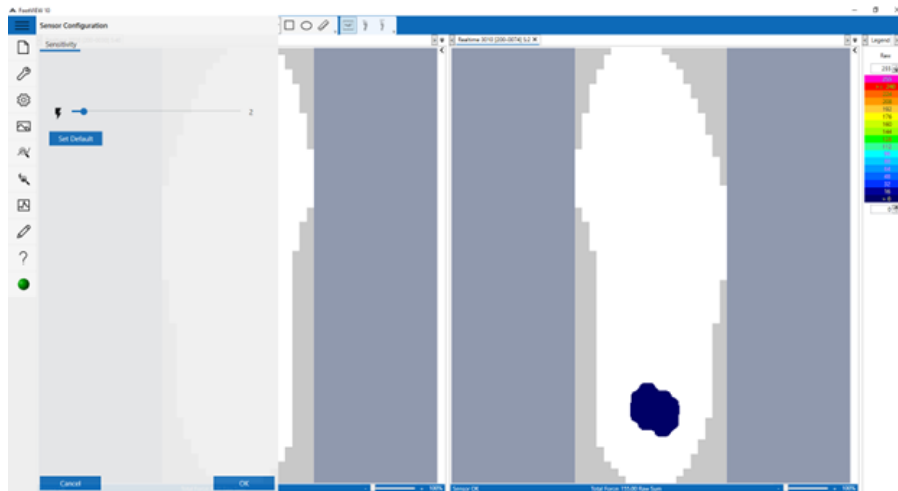
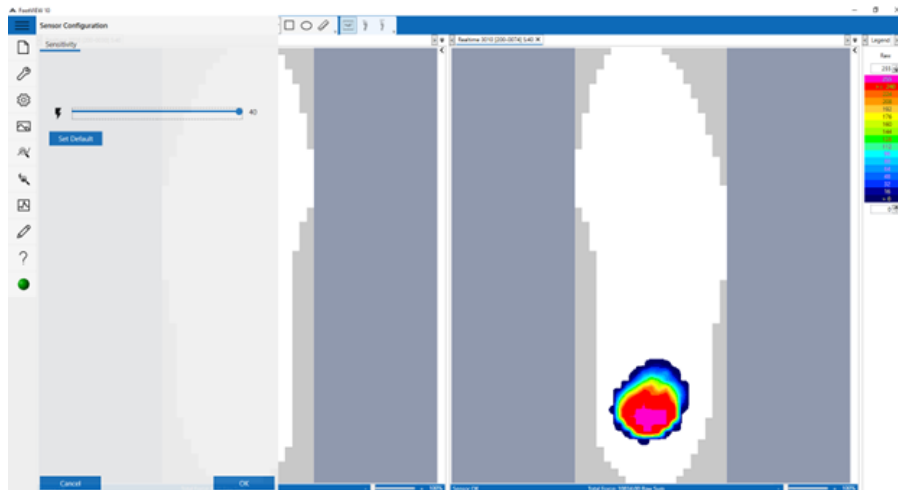


Figure 61 - Output too high (pink)



4.1.6 How to set up your recording parameters

Before you take a recording, set up your recording parameters appropriately.

To set up your recording parameters, do the following:

1. Select **Settings > Acquisition Parameters**.
2. Select the **Recording** tab and insert values in the following fields:
 - **Duration**
 - **Frequency** - Up to 100 Hz with FootVIEW and 500 Hz with FootVIEW Pro
 - **Recording Frames**
 - **Noise Threshold**

The **Destination Folder** is the destination for all new recordings to be automatically copied and saved.

**Notice**

When the **Patient Management System** is enabled, the **Destination Folder** is automatically selected for each patient. The folder can be viewed but not changed in the **Acquisition Parameters** menu.

**Notice**

When the **Patient Management System** is disabled (FootVIEW Pro feature), the default destination for recordings is **C:\Tekscan\Recordings**.

Select  to browse, create sub-folders, and to organize your recordings.

4.1.7 How to set up recording triggers (FootVIEW Pro feature)

There are two ways you can trigger the recording process:

- Using the Start/Stop button in FootVIEW.
- Using an external device which sends a step voltage to an external trigger device connected to the PC running FootVIEW.

To set up which recording process to use, do the following:

1. Select **Settings > Acquisition Parameters**.
2. Select the **Triggers** tab.

The default setting is for using the buttons on FootVIEW.

Figure 62 - Default trigger recording settings

Data Acquisition Parameters

Recording Triggers

Start Recording

Method	Start Button
Polarity	N/A

Stop Recording

Method	Stop Button or Completed
Polarity	N/A

3. To change this to trigger recording from an external device, do the following:
 - a. In the **Start recording > Method** field, select **External**.
 - b. In the **Start recording > Polarity** field, select one of the following:
 - **Positive** for input signals with a step-up voltage (low to high).
 - **Negative** for input signals with a step-down voltage (high to low).
 - c. In the **Stop recording > Method** field, select **External**.

The value in the **Stop recording > Polarity** field automatically adjusts to that chosen in the **Start recording > Polarity** field.

Figure 63 - External trigger recording settings

Data Acquisition Parameters

Recording Triggers

Start Recording

Method	External
Polarity	Positive

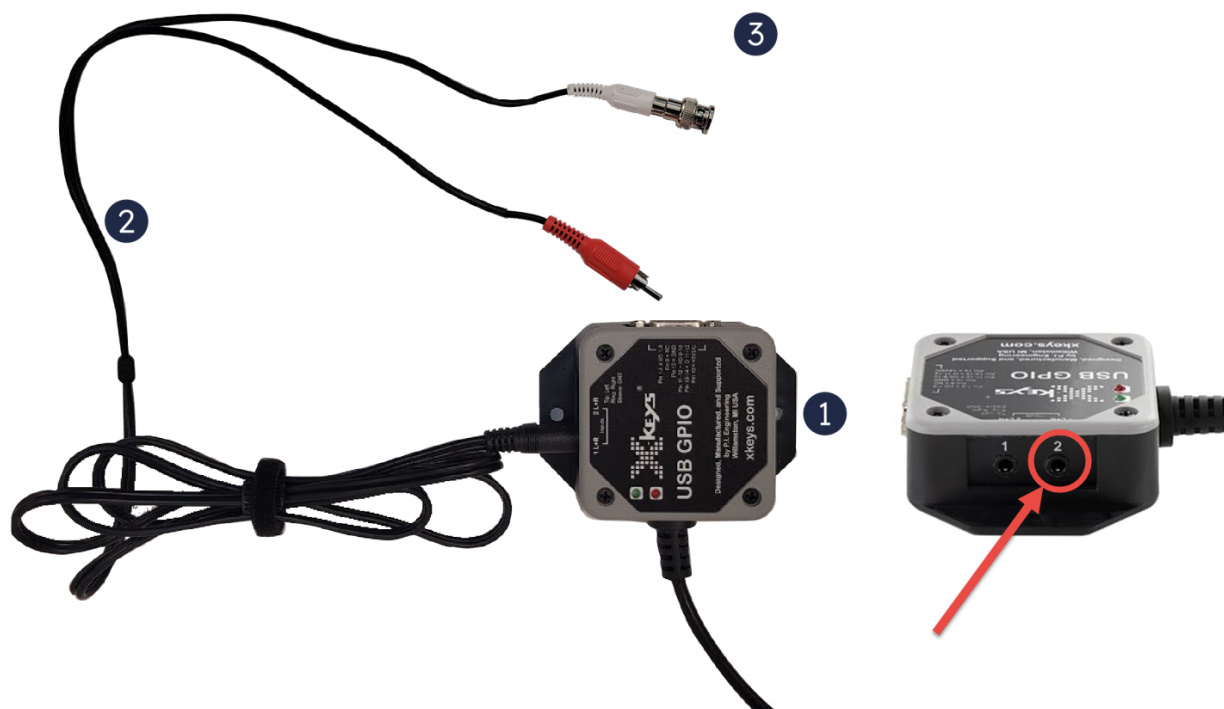
Stop Recording

Method	External
Polarity	Negative

4.1.8 How to set up an external trigger

To set up and use external triggering, you need to use the TekDAQ trigger bundle (TB-TEKDAQ). This item is sold separately. Contact Tekscan for more details.

Figure 64 - TekDAQ trigger bundle



1	USB-GPIO	X-Keys USB GPIO
2	66-02-006	Cable, audio, stereo, 3.5 mm
3	CON-BNC-RCA-JACK	USB-6008 and TR-1 RCA to BNC adapter

To connect and configure the trigger bundle, follow these steps:

1. Connect the USB-GPIO trigger device to the USB port of the PC running the FootVIEW software.
2. Connect the TRS to RCA cable (66-02-006) to Port 2.
3. Connect the BNC adapter to the Ring/Sleeve RCA connector (White).
4. Connect the BNC connector to a device supplying a TTL level trigger signal.

This is used to start recordings based on a rising or falling edge signal selected in the software.

4.1.9 How to calibrate the sensors

You need to calibrate F-Scan GO sensors to provide meaningful measurements against a traceable reference.

For F-Scan GO, calibration is achieved using a subject's weight and measurements are taken with the sensor unloaded (no weight) and then fully loaded (full weight).



Notice

A calibration should be performed before each new patient session, and whenever a new sensor is used. Sensors are calibrated one at a time.

To calibrate the sensors, do the following:

1. Select **Settings > Calibration**.
2. In the **Subject Weight (lb)** field, enter the weight of the subject.
3. Select the calibration type.

Walk	Uses Subject Weight and walking force data collected during the recording for calibration. Re-calibrates after every recording. It can only be performed for walking tests. Walk calibration is accomplished for both sensors simultaneously.
Step	Applies an additional drift correction algorithm. It requires the subject to perform a prescribed calibration sequence to measure sensor output while the subject balances on each foot. Calibration must be performed separately for the Left sensor and the Right sensor.
Point	Calibrates from a specified instant in time when the full weight of the subject is loaded onto the sensor. Recommended for static tests or when Step or Walk calibrations are not possible.

4. Select the calibration parameters:
 - For **Walk**, select **Both**.
 - For **Step**, select **Left** or **Right**.
 - For **Point**, enter the point in time (in seconds) you want the calibration to start.

Calibration Type

☒ Point Start In (0 - 60 s)

☐ Walk

☐ Step

Subject Weight (lb)

Click '+' button to start calibration

Map	Force (lb)	Raw Sum	Loaded Cells	Saturation Pressure (PSI)
-----	------------	---------	--------------	---------------------------

Cancel OK

5. Select  to start the calibration process.
6. Follow the on-screen instructions.

When the calibration process is complete, you are prompted to set the legend to the maximum saturation level. Select **Yes** to accept, or **No** to reject.

7. Select OK to display and save the calibration results.

The calibration results are shown in a table underneath the scan images.

Figure 65 - Calibration complete



8. Repeat the process for other sensors as necessary.

4.2 Capturing data

This describes how to take and save recordings with F-Scan GO.

4.2.1 How to take a recording



Tip

You can take a recording manually. Alternatively, you can set up an external device to trigger the recording process.

To set up an external device to trigger the recording process, see 4.1.7 "*How to set up recording triggers (FootVIEW Pro feature)*"

**Tip**

Prepare your subject to perform the necessary movements needed to collect the data. The subject will do this once the recording process starts.

To take a recording manually:

1. Do one of the following:

- Select  in the file toolbar (see "*File toolbar*").
- Select  > **File** > **Open Real-time**.
- Select an existing patient or create a new patient in the **Patient Management** system.

Select **New Recording**.

2. Prepare your subject to perform the necessary movements required.
3. If necessary, adjust the sensor sensitivity.
4. If necessary, adjust the data acquisition recording parameters.
5. In the playback toolbar:

Select  (see "*Playback toolbar*")

The **Real-time** window automatically switches to a **Recording** window (see 2.4.4 "*Types of display windows*").

6. Instruct your subject to start the necessary movements.

The recording stops automatically after the recording duration you configure in the **Data Acquisition Parameters** window (see "*Acquisition Parameters*"). You can select  to stop recording earlier (see "*Playback toolbar*").

The real-time windows are replaced by the recorded files. To record more data, select **File** > **New Real-time**. After a patient has been selected, all new real-time windows and recordings are linked to the selected patient.

To take a recording from an external device:

1. Do one of the following:

- Select  in the file toolbar (see "*File toolbar*").
- Select  > **File** > **Open Real-time**.

2. Prepare your subject to perform the necessary movements required.
3. If necessary, adjust the sensor sensitivity.
4. If necessary, adjust the data acquisition recording parameters.
5. Start the recording process from your external device.
6. Instruct your subject to start the necessary movements.

The recording stops automatically after the recording duration you configure in the **Data Acquisition Parameters** window (see "*Acquisition Parameters*"). You can stop the recording earlier from your external device.

The real-time windows are replaced by the recorded files. To record more data, select **File > New Real-time**.

4.2.2 How to save a recording



Tip

Before instructing the software to save your recording, add comments in the **Details > Comments** field in the **Details** panel.

This gives you useful historical information about the recording you have made. For example:

Comments

Merrell 3, orthotic in place

To save a recording:

Do one of the following:

- Select  in the file toolbar (see "*File toolbar*").
- Select  > **File > Save Recording**.



Tip

The current recording is saved as an .fsx file in the destination folder you set up in the recording parameters.

See 4.1.6 "*How to set up your recording parameters*".

4.2.3 How to manage files in File Manager

In the **File Manager** window, you can see the files stored in the SD card of the TekDAQ electronics unit, and manage them.

To open the File Manager:

1. Select  > **TekDAQ Status**.
2. Select the **SD Files** button.

In the **File Manager** window, do the following:

- Click in the area next to the check box to sort the files.



- Select the check box next to a file and select **Download** to start the wireless transfer of the file to the software.

All recordings will be stored in the recordings folder configured in **Settings > Acquisition Parameters > Destination Folder**.

- Apply additional options (check boxes) below the file list:

Download after record	After each recording is finished, the file is automatically downloaded to the software.
Delete after download	After downloading the file to the software, the file is automatically deleted.

- Select the **Format SD** button to delete all data from the SD card, and prepare the SD card to collect recordings from the TekDAQ electronics unit.



Notice

We recommend formatting a new SD card the first time it is placed in the TekDAQ electronics unit.

4.3 Analyzing data

This describes how to analyze your saved recordings with F-Scan GO.

4.3.1 How to review a recording

Recordings are available immediately after recording but you can review existing recordings at any time.

To review a recording immediately:

1. Select  to play the recording frame-by-frame.
2. Use the View toolbar options to display data in graph form.
For more information, see 2.4.9 "Toolbars".

To review a stored recording:

1. Do one of the following:
 - Select  in the file toolbar (see 2.4.9 "Toolbars").
 - Select  > **File** > **Open Recording...**
2. On your computer, browse for the saved .fsx file you want to review.
3. Select the file, and select **Open**.
The file opens in a new display window.
4. Select  to play the recording frame-by-frame.
5. Use the View toolbar options to display data in graph form.
For more information, see 2.4.9 "Toolbars".

4.3.2 How to display the Center of Force and trajectory

The **Center of Force (CoF)** and **CoF Trajectory** options are available from the **Analysis** menu (see 2.4.8 "Main menu").

To display the Center of Force (CoF):

1. Select  > **Analysis**.
2. Select the toggle switch next to **Center of Force (CoF)**.

To display the CoF Trajectory:

1. Select  > **Analysis**.
2. Select the toggle switch next to **CoF Trajectory**.

4.3.3 How to display data using 3 Box Graphs

3 Box Graphs are available from the **Stance Analysis** menu 2.4.8 "Main menu"

To display 3 Box Graphs:

1. Select **Stance Analysis** > **3 Box Graphs**.
2. Select the stances you want to include in the display and select **OK**.

The 3 Box Graph is displayed.

3. If required, move the **Heel Area** and **Metatarsal Area** boxes to positions that give you more precise calculations for your needs.

For more information, see "*Stance Analysis options*".

4.3.4 How to display data using a Gait Parameters Table

A **Gait Parameter Table** is available from the **Stance Analysis** menu (see 2.4.8 "*Main menu*")

To display a Gait Parameter Table:

- Select **Stance Analysis > Gait Parameter Table**.

The gait parameters are displayed in a table underneath any open displays.

For more information, see "*Stance Analysis options*".

4.3.5 How to generate a 3 Box Report

A **3 Box Report** is available from the **Stance Analysis** menu 2.4.8 "*Main menu*"



Tip

Reports can be used with one pair of recordings, or two pairs of recordings. If necessary, close additional recordings to exclude them from the analysis report.

To generate a 3 Box Report:

1. Select **Stance Analysis > 3 Box Report**.
2. Select the stances you want to include in the report for each scan and select **OK**.
3. Complete the 3 Box Report input screen.



Notice

The fields in the 3 Box Report input screen are optional.

4. Select **OK**.

The report is generated and opens as a Microsoft Word file on your computer.

4.3.6 How to display data using Peak Pressure Graphs

Peak Pressure Graphs are available from the **Stance Analysis** menu 2.4.8 "Main menu"

To display **Peak Pressure Graphs**:

- Select **Stance Analysis > Peak Pressure Graphs**.

The **Peak Pressure** graphs for each scan are displayed.

You can view the peak contact pressure in other areas of the scan by dragging the analysis region boxes to different locations.

For more information, see "*Stance Analysis options*".

4.3.7 How to display data using Peak Pressure Tables

Peak Pressure Tables are available from the **Stance Analysis** menu (see 2.4.8 "Main menu")

To display **Peak Pressure Tables**:

- Select **Stance Analysis > Peak Pressure Tables**.

The peak pressures are displayed in a table underneath open displays.

For more information, see "*Stance Analysis options*".

4.3.8 How to generate Peak Pressure Reports

Peak Pressure Reports are generated from the **Stance Analysis** menu 2.4.8 "Main menu"

To generate **Peak Pressure Reports**:

1. Select **Stance Analysis > Peak Pressure Reports**.
2. Complete the **Peak Pressure Report** input screen.



Notice

The fields in the **Peak Pressure Report** input screen are optional.

3. Select **OK**.

The report is generated and opens as a Microsoft Word file on your computer.

4. Save the report.

For more information, see "*Stance Analysis options*".

4.4 Viewing and changing presentation settings

You can change how some items are presented by following the procedures here.

4.4.1 How to change the pressure range in the legend

You can change the pressure range represented by each color in the legend by increasing or decreasing the upper limit value (displayed above the legend) with the up / down arrows, or by typing in a value.

The lower limit (displayed below the legend) can be changed in the same manner as the upper limit, creating a threshold below which no pressure displays.

4.4.2 How to change the units of measurement

To change the units of measurement:

1. Select  > **Settings**.
2. Select **Measurement Units**.
3. In the **Measurement Units Settings** panel, from the drop-downs, choose measurement units and prefixes.

All measurement units settings are immediately applied to all open **Real-time**, **Recording**, and **Graph** windows. Once the settings are changed, the software remembers the settings even after you close and restart the application.

4.4.3 How to change the playback speed

To change the playback speed:

1. Select  > **Settings**.
2. In the **Playback Speed** drop-down, select one of the available playback speed options.

4.4.4 How to change the language setting

To change the language setting:

1. Select  > **Settings**.
2. In the **Languages** drop-down, select one of the available languages.

4.4.5 How to change how pressure recordings are displayed

To change how pressure recordings are displayed:

- In the main window, in the toolbar, choose one of the views available in the View toolbar.

For more information, see 2.4.9 "Toolbars".

Figure 66 - The View toolbar



4.4.6 How to set peak size

Peak size is the number of sensels (rows by columns) that will be used to calculate **Peak Contact Pressure**.

To set the peak size:

1. Select  > **Region Data**.
2. Select **Region Peak Size**.
3. Fill in the following fields:
 - **Number Of Rows**
 - **Number Of Columns**



Notice

The range displayed for the number of rows and columns is dependant on the sensor selected.

4.5 Advanced operations

The operations described here are for advanced users. These actions are not generally needed in the day-to-day use of F-Scan GO.

4.5.1 How to perform equilibration



Notice

To perform equilibration, you need an optional equilibration device (equilibrator). Equilibration devices are recommended for improving accuracy and lifespan of Tekscan systems.

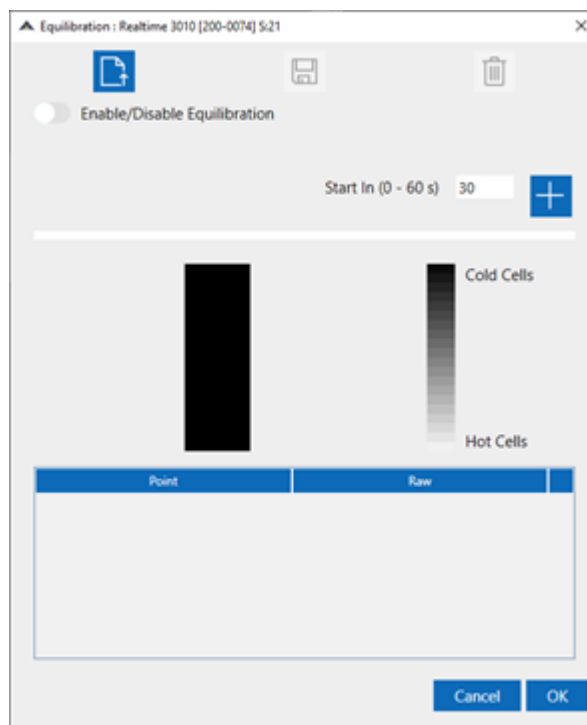


Tip

You can apply equilibration before or after taking the measurement.

To perform equilibration

1. Place the sensor in the equilibrator.
2. Select **Configuration > Equilibration**.



3. Identify three to five pressure levels to use for equilibration.
4. Adjust the equilibration device to the first selected pressure.
Follow the instructions provided with the equilibration device.
5. Adjust the delay period to start equilibration.
We recommend 30 seconds for most sensors and equilibration bladders.

6. Apply the first equilibration pressure and select .

A blue progress indicator displays the status of the delay timer.

When the process finishes, the table will indicate the average raw sensor output for each equilibration pressure.

Point	Raw	
1	45.3	X
2	102.0	X
3	142.5	X

7. Continue the same process for the remaining equilibration pressures.

After performing the equilibration, you can:

- Save it as an .equ file by selecting .
- Remove an equilibration point by selecting it from the list at the bottom of the screen and selecting the X to the right of the selection.
- **Enable/Disable Equilibration** by using the toggle switch.
- Add more equilibration points (up to five) by selecting .



Tip

We recommend using three equilibration points that produce average raw sensor output between 40-60 raw, 90-110 raw, and 140-180 raw. For standard foot pressure applications, you can achieve this result with 20 PSI, 40 PSI, and 60 PSI.

To load an equilibration file (.equ) at any time, select .



Notice

If an equilibration already exists, a warning prompt opens asking if you want to overwrite the existing equilibration.

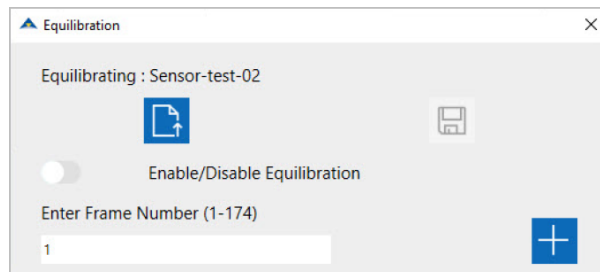
Frame equilibration

With frame equilibration, you can collect a recording with multiple pressures applied to the sensor with the equilibration bladder. You then use the sensor data from the recording (.fsx file) to perform the equilibration. By maintaining three frame .fsx files of the equilibration points, you can keep track of the status of the sensor for quality control records.

Before you begin, collect a recording with the sensor in the equilibration bladder, and apply each pressure to be used for equilibration.

To create the equilibration file:

1. Open the .fsx file with the equilibrated images.
2. Select **Configuration > Equilibration**.



3. Type the frame you want to use for an equilibration point and select .
4. Repeat for as many frames as you want to use from the recording (up to five). The equilibration is automatically applied.

4.5.2 How to perform a zero offset

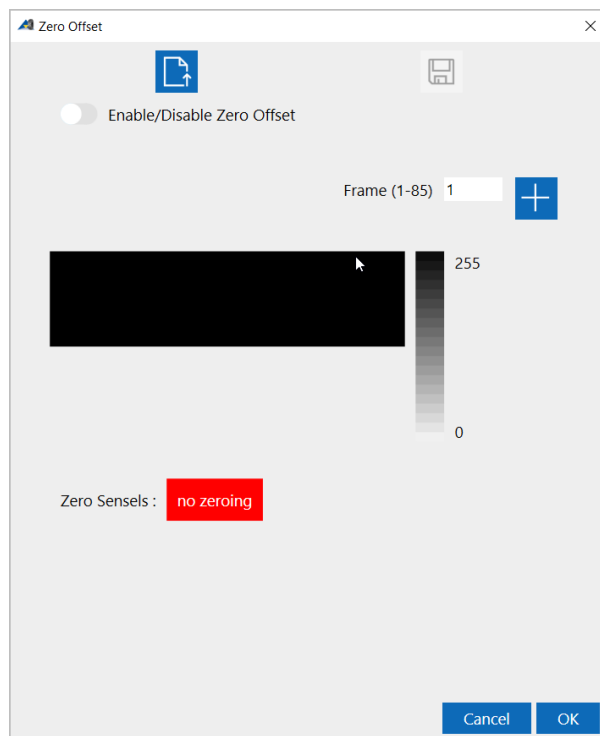


Notice

The **Zeroing** function does not affect raw or calibrated data.

To perform a Zero Offset

1. Select **Configuration > Zero Offset**.



2. Enter the frame you want to use for zero offsetting.
3. When ready, select .

After zeroing, you can:

- Save it as a .zer file by selecting .
- Add additional calibration points by selecting .
- **Enable/Disable the Zero Offset** by using the toggle switch.

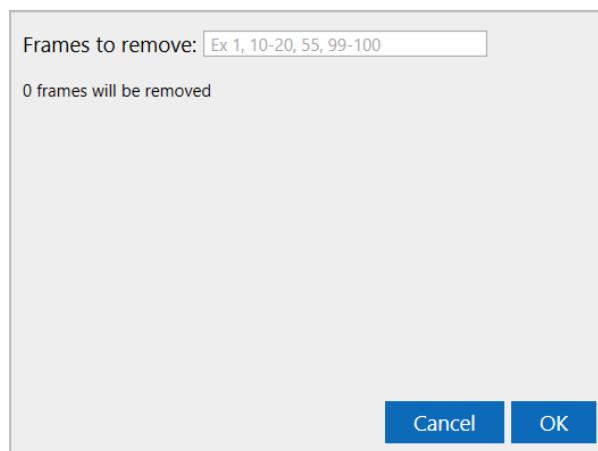
To load a zero file at any time, select .

If a Zero Offset already exists, a warning prompt opens asking if you want to overwrite the existing Zero Offset.

4.5.3 How to remove selected frames from a recording

To remove selected frames:

1. Open the recording.
2. Go to **Edit > Cut Frames....**



3. In the **Frames to remove:** field, enter the frames to remove.
4. Select **OK**.

The recording's total frame count in the status bar and any open graphs are recalculated to reflect the new frame count.

4.5.4 How to create graphs for different regions

To add a graph for a region:

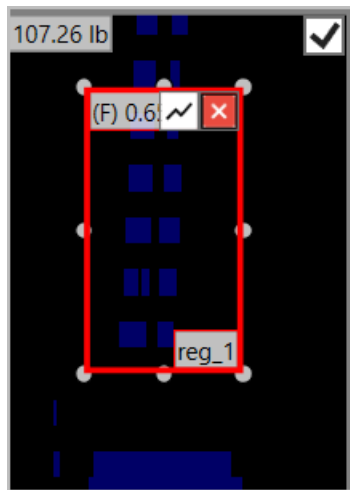
1. Go to the **Graph Manager**.
2. Ensure the region is selected in the regions list.
3. Select .

You can add multiple regions into a single graph. To do this, select them all from the regions list first before selecting .

Once a graph is created, the region visibility toggle switch appears next to each graph in the graphs list to reflect if the region is shown in the graph or not.

To create a graph directly from the region:

- Select  at the top right side of the region.



To remove a region from the sensing area:

- Select **X**.

The region is removed from the sensing area, and any graphs where it is displayed. If the associated graph contains only this single region, the graph is also closed.

4.5.5 How to display key region data from all open windows

To add a region to the sensing area:

1. Ensure the window in which you want to add the regions or graphs is selected.
2. Select **Region Data > Graph Manager**.
3. Select one of the icons to add a region.



Add Pane

The drop down contains four different types of pane:



Pane



Quad Pane



Vertically Split Pane



Horizontally Split Pane



Add Box



Add Oval



Add Line

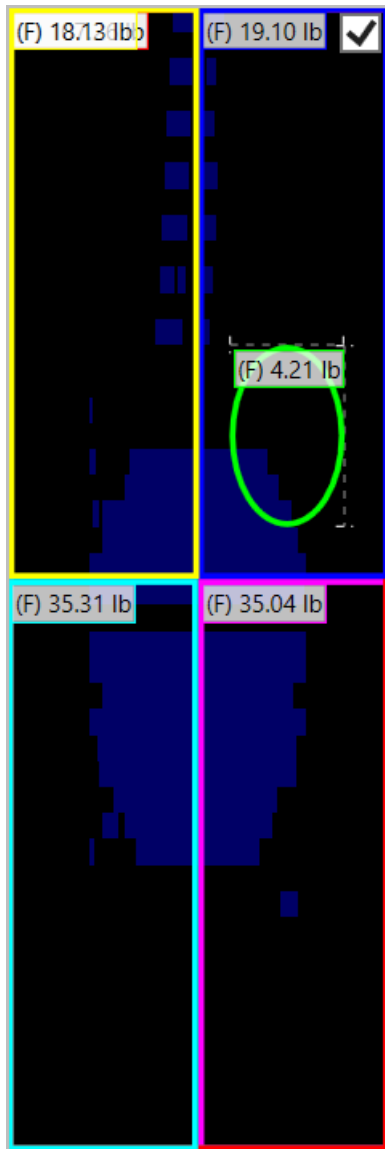


Notice

Lines are only used to measure spacing in the sensing area. They do not provide data for graphs or tables.

- To adjust the size of a region, select the region, and use the sizing handles to resize the region.
- To change the location of a region, drag and drop it.
- To remove a region from the sensing area, select **X** in the top right corner of the region.

You can add as many regions as you like into the currently selected window.



When all the regions are set to the location/size you wish, select  to save these regions as a .sof file. You can then load them back into any window by selecting .

To remove a region from the sensing area:

- Select X.

The region is removed from the sensing area, and any graphs where it is displayed. If the associated graph contains only this single region, the graph is also closed.

4.5.6 Adjusting the noise threshold

Similar to raising the lower limit of the color legend to remove output below a specified threshold, the **Noise Threshold** setting can be used to permanently remove output below a

specified threshold while recording. Any force equal to or below this threshold is set to zero by the software, filtering out unwanted force readings.

To set the noise threshold:

1. In the main menu, select **Settings > Acquisition Parameters**.
2. In the **Data Acquisition Parameters** panel, type in the desired value in the **Noise Threshold [raw] (3-255)** field.

**Tip**

The default .noise threshold values is 3. You cannot set a lower value in **Data Acquisition Parameters**.

**Caution****Data loss**

Setting the noise threshold removes data from your recording. This is a destructive change. Do not set this value higher than necessary, as this can filter out valid low-level pressure data.

An alternate way to mask noise is to raise the minimum value in the **Legend**. This hides the data in a non-destructive way.

To raise the minimum value in the Legend:

1. In the main menu, select **Settings > Show Legend**.
2. Change the value displayed below the legend with the up / down arrows, or by typing in a value.

4.6 User interface management

4.6.1 How to resize the main window

**Tip**

To optimize the use of the main window, the software opens in a reduced-size window by default.

To change the window size:

1. Point to any edge of the window.
The mouse cursor changes to a double-ended arrow.
2. Click and drag to the desired size.

To maximise the window:

Do one of the following:

- Select  in the top right-hand corner.
- Click the toolbar and drag the window until the mouse cursor reaches the left-hand, upper, or right-hand of the screen.

To restore the previous window size:

Do one of the following:

- Select .
- Click the toolbar and drag it in any direction.

4.6.2 How to adjust elements in the user interface

You can move docked windows between dock groups. If you have several windows in the same dock group, you can reorder them anywhere along the tab bar.

To move a window from one dock group into another:

- Drag and drop the tab from the original dock group tab bar over to the other dock group tab bar.

To reorder windows along the tab bar:

- Click and drag the tab label and place it before or after other tabs along the tab bar.

4.7 Viewing hardware and software status details

You can view system details at any time, but it may be particularly useful to check component details before capturing and analyzing data to ensure you have everything set up correctly.

4.7.1 How to view hardware and software status details

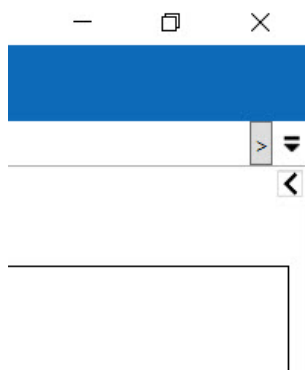
You can view the hardware and software status details in the **Details** panel of every **Real-time** and **Recording** window.

In the **Details** panel (see 2.4.6 "*Details panels*"), you can view the following details:

- Sensor software configuration details in the **Details** tab
- Electronics and sensor hardware details in the **Settings** tab
- Magnification of the sensing area window in the **Zoom** tab
- Data type for any regions in the sensing area in the **Regions** tab.

To open the **Details** panel for any type of display window (see 2.4.4 "*Types of display windows*"), select the small arrow at the top right of the window.

Figure 67 - Opening the **Details** panel



After you open the **Details** panel, the arrow flips horizontally, and allows you to close the panel.

4.7.2 How to display TekDAQ status

At the bottom of the FootVIEW main menu, you can see the **TekDAQ Status** menu. The menu button shows a circle indicating if the TekDAQ electronics units are properly connected to the computer.

	Indicates that both TekDAQ 200 electronics units are connected.
	Indicates one of the following: • One or both TekDAQ 200 electronics units are disconnected. • There is no SD card inside one or both of the electronics units. • One or both of the batteries are below 15% capacity.

To open the TekDAQ Status options:

- Select the TekDAQ menu button.

The TekDAQ electronics status menu opens. For more information about the **TekDAQ Status** menu, see 2.4.8 "*Main menu*".

5 Troubleshooting

Occasionally, you may encounter problems which interfere with the regular performance of F-Scan GO. These may be:

- Wireless connection issues
- microSD card issues
- Other issues

Use the information here to perform actions to address these problems.

The meanings of F-Scan GO status and error indicators are also provided to help.

If you cannot correct a performance issue yourself, call Tekscan, Inc. support.



IMPORTANT

Always make sure you have the most up-to-date software and drivers installed before attempting any of the resolution actions.

5.1 Dealing with wireless connection issues

There may be a number of reasons why you cannot connect the system to the wireless network. Use the table below to resolve wireless connection issues:



Notice

If the software is not showing the TekDAQ 200 units in the **Sensor Configuration** window, close the software, verify that the Wi-Fi connection is active and connected to **TekDAQWiFi** and open the software again. If the TekDAQ 200 units are still not visible, restart your computer.

Possible cause	Solution
Computer is not connected to the correct network.	Make sure your computer is connected to the correct wireless network: TekDAQWifi .
Router is not connected to you computer or didn't initialize correctly.	Restart your router and make sure the computer can connect to it.
TekDAQ 200 units may not be connected to the router.	Restart the TekDAQ 200 units.
 Notice When the TekDAQ 200 unit is switched on, a green LED blinks indicating the TekDAQ 200 is searching for a network. Once connection is established, the LED becomes solid green. See 5.3 "Status and error indicators"	
Distance between your router and your computer is too great.	Move your router closer to your computer.
Distance between your router and the TekDAQ 200 unit is too great.	Move your router closer to the TekDAQ 200 unit.
Devices that emit electrical radiation (for example, washing machines, microwave ovens and motors) affecting the Wi-Fi connection.	Move your router and computer as far away as possible from any such devices.
There is more than one Wi-Fi connection (for example, two Wi-Fi adapters).	Disable or disconnect the connection not being used for the TekDAQ 200 units.

5.2 Dealing with microSD card issues

There may be a number of reasons why you experience microSD card reading or writing issues. Use the table below to resolve these issues:

Possible cause	Solution
microSD card not correctly formatted.	Format the microSD card from the file manager as described in 4.2.3 "How to manage files in File Manager".
microSD card may have corrupted data.	Remove all the files from the microSD card and reformat the card from the file manager as described in 4.2.3 "How to manage files in File Manager".
microSD card may be full.	Make sure there is ample memory available in the microSD card. You can check this from the TekDAQ Status menu.

Possible cause	Solution
microSD card is faulty.	Use a different microSD card. Make sure to format the new card using the file manager as described in 4.2.3 " <i>How to manage files in File Manager</i> ". The recommended microSD card specification is given in 9.3 " <i>External microSD card specifications</i> ".
microSD card is loose or not properly inserted.	Turn off the TekDAQ 200 unit, eject the microSD card completely and re-insert it. Make sure the door is closed before turning the TekDAQ 200 back on.

5.3 Status and error indicators

The status and error indicators are shown as lights on the TekDAQ 200 unit.

Status LED	Meaning
Green blinking	Waiting to join a network
Solid green-yellow	Connected to a Wi-Fi network
Solid green	Software has establish a connection / USB connected
Solid blue	Recording in progress
Solid white	System busy: - microSD card formatting in progress - File being sent to the computer
No light	System off

Error LED	Meaning
Solid red	Error condition: - microSD card not detected - microSD card full - microSD card write error - Low battery - Sensor not detected
No light	No error or TekDAQ 200 unit swicthed off

5.4 Other issues

**Tip**

If EMI occurs, or if there is a high level of noise on your display screen, try moving to a location that is not in proximity to other electrical devices (such as televisions, radios, and cell phones).

**Tip**

If the system stops functioning due to ESD, shut down the system by turning off all the power switches on all attached parts. Then turn on the system and restart the software.

If problem persists, make sure the humidity in the room is >30%, and do not touch the patient after equipment is installed and powered up.

If you are still having difficulty in operating the system, contact your Tekscan representative.

6 Maintenance and care

These are the common tasks that should be carried out for proper maintenance and care of F-Scan GO.

6.1 General maintenance and care

**Caution**

Keep liquids away from electronics.

If liquids enter electronics, the components can stop working and must be allowed to dry for 24 hours.

You can use forced air to significantly reduce the drying time.

Do not attempt to dry out the components using any other method, or you may destroy the delicate electronics.

What you need:

- 70% isopropyl alcohol solution
- A lint-free cloth

To clean components:

1. Slightly dampen the lint-free cloth with the 70% isopropyl alcohol solution. Be careful not to soak or saturate the cloth.
2. Wipe down the component.

6.2 Sensor maintenance and care

This shows the procedures you can follow to make sure F-Scan GO sensors remain in good working order and when expired, how to dispose of them.

6.2.1 Cleaning the sensors

**Notice**

You should clean the sensors after each use.

To clean the sensors:

1. Slightly dampen a lint-free cloth with a 70% isopropyl alcohol solution. Be careful not to soak or saturate the cloth.
2. Gently wipe down the sensor.

6.2.2 Storing the sensors



Notice

Improper storage can adversely affect sensor life.

Always store the sensors flat in either the envelope in which they were shipped, or some other protective cover.

6.2.3 Replacing / disposing of the sensors

The sensors are not recyclable. Dispose of sensors in general waste containers.

6.3 Spares or replacement parts



Notice

Using accessories and cables other than those specified by the manufacturer as spares or replacement parts may result in increased emissions, or decreased immunity of the equipment or system.

Component part numbers are shown in 2.3 "*System components*".

7 Support

This describes the support available for F-Scan GO.

7.1 Warranty

Tekscan, Inc. limited 1-year warranty

1. WARRANTY. Tekscan, Inc. warrants to the original purchaser of this product that should it prove defective by reason of improper workmanship and/or materials:
 1. Tekscan systems and components:

For one year from the date of original purchase at retail, Tekscan will repair or replace, at our option, any defective part without charge for the part or labor if an inspection proves the claim. Parts used for replacement may be used or rebuilt, and are warranted for the remainder of the original warranty period.
 2. Tekscan sensors:

Tekscan will replace any Tekscan sensor which fails due to manufacturing defect if an inspection proves the claim. Claims must be made within 30 days of purchase.
2. TO OBTAIN WARRANTY SERVICE, call Tekscan at 1-800-248-3669, (617) 464-4500 in MA, for further instructions. Should you be asked to deliver your product to Tekscan, Inc. in Boston, MA, shipping expenses are the purchaser's responsibility. Proof of purchase is required when requesting warranty service.
3. THIS WARRANTY DOES NOT COVER defects caused by modification, alteration, repair or service of the enclosed product by anyone other than Tekscan or an authorized Tekscan service center, physical abuse to, misuse of, the product or operation thereof in a manner contrary to the accompanying instructions, or shipment of the product to Tekscan or an authorized Tekscan service center for service. This warranty also excludes all costs arising from installation, cleaning or adjustments of user controls. Consult the operating manual for information regarding user controls.
4. ANY EXPRESS WARRANTY NOT PROVIDED HEREIN, AND ANY REMEDY FOR BREACH OF CONTRACT WHICH, BUT FOR THIS PROVISION MIGHT ARISE BY IMPLICATION OR OPERATION OF LAW, IS HEREBY EXCLUDED AND DISCLAIMED. THE IMPLIED WARRANTIES FOR THE MERCHANTABILITY AND OF FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY LIMITED TO A TERM OF ONE YEAR. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THAT THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THE WARRANTIES SET FORTH HEREIN ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESS OR IMPLIED INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS. THE BUYER ACKNOWLEDGES THAT NO OTHER

REPRESENTATIONS WERE MADE TO THEM OR RELIED UPON BY THEM WITH RESPECT TO THE QUALITY AND FUNCTION OF THE GOODS SOLD HEREIN. NO PERSON, FIRM OR CORPORATION IS AUTHORIZED TO ASSUME FOR US ANY LIABILITY IN CONNECTION WITH THE SALE OF THESE GOODS.

5. UNDER NO CIRCUMSTANCES shall Tekscan, Inc. be liable to purchaser or any other person for any special or consequential damages, whether arising out of breach of warranty, breach of contract, or otherwise. Some states do not allow the exclusion or limitation of incidental or consequential damages, so that the above limitation or exclusion may not apply to you.

FORM-200-057-B

7.2 Getting assistance

Tekscan, Inc. will provide technical assistance for any difficulties you may experience using your F-Scan GO system for 90 days from the system shipping date.

After 90 days, Tekscan offers annual Technical Support and System Maintenance Plans or customer support at our standard rates per incident. An incident is defined as one single issue or problem.

Contact Tekscan for:

- Additional sensors
- Current pricing and availability

Contact your Tekscan representative to discuss:

- Custom sensors for your special applications

The flexible manufacturing process used to make sensors allows us to design custom sensors for applications in which standard sensors are not suitable. Custom pressure-sensitive materials can be formulated to produce a sensor whose sensitivity is well matched to a particular application. Contact your Tekscan representative to discuss custom sensors for your special applications.

Write, call or fax us with any concerns or questions. Our knowledgeable support staff will be happy to help you. Comments and suggestions are always welcome.

Tekscan, Inc.

333 Providence Highway
Norwood, MA 02062
USA

Phone: (617) 464-4500 or (800) 248-3669 in U.S. and Canada

Fax: (617) 464-4266

E-mail: support@tekscan.com

Or visit our website at: www.tekscan.com

8 Declaration of Conformity

Contact Tekscan, Inc. for a copy of the latest valid Declaration of Conformity (D of C).

9 Specifications

This details the component specifications of F-Scan GO.

9.1 TekDAQ 200 specifications

Table 2 - TekDAQ 200 specifications

Dimensions	
Length	89.6 mm [3.53 in]
Width	62.2 mm [2.45 in]
Height	31.5 mm [1.24 in]
Weight	133 g [4.7 oz]
Housing	
Material	ABS like
Color and finishing	Grey, glossy finish
Power source	
Removable battery	3.7 Vdc, 660 mAh
Input	5 V, 2 A
Connector	USB type C
Cable length for USB connection	1.5 m (59.1 in)
Communication	
Communication to personal computer	wireless (Wi-Fi) / USB-C

9.2 Battery specifications

Table 3 - Battery specifications

Brand	Varta
Model	EasyPack S
Capacity	660 mAh 3.7 Vdc 2.5 Wh
Configuration	1S

USB-C output	5 V / 2.2 A
Dimensions (L x W x H)	100 mm x 65 mm x 20 mm [3.93 in x 2.56 in x 0.79 in]
Weight	15 g
Interface	USB-C
Temperature range	from -10°C to 60°C [from 14°F to 113°F]
Battery type	Lithium polymer



In accordance with the EC Waste Electrical and Electronic Equipment (WEEE) directive 2002/96/EC this product must be sent to a recycling plant for proper disposal at the end of its use.

9.3 External microSD card specifications

Brand	SanDisk
Model	Extreme microSDXC™ UHS-I
Capacity	32 GB
Dimensions (L x W x H)	1.02 mm x 14.99 mm x 10.92 mm / 0.04 in x 0.59 in x H 0.43 in
Sequential read performance	up to 100 MB/s

9.4 Wi-Fi router specifications

Brand	TP-Link
Series	TL-WR802N
Model	N300
Dimensions	- Device: 57 mm x 57 mm x 18 mm [2.2 in x 2.2 in x 0.7 in] - Box: 110 mm x 110 mm x 72 mm [4.3 in x 4.3 in x 2.8 in]
Weight	7.20 oz
Frequency band class	Single band
Wireless type	802.11a/b/g/n

Frequency	2.4 GHz
Ethernet ports	1 x LAN/WAN
Connector	• Micro USB port • Power adapter and Micro USB connection cable included

9.5 Sensor specifications

To see the latest specifications for the Medical Sensor 3010, refer to the following location:

<https://www.tekscan.com/products-solutions/medical-sensors/medical-sensor-3010>

10 Certification standards

Tekscan, Inc. commits to establishing and maintaining a quality system that meets or exceeds the requirements of ISO 13485: 2016 and applicable regulatory requirements for its medical products.

Tekscan established a risk management system compliant with IEC 60601-1 and ISO 14971

No aspects of the device performance are assigned Essential Performance; that is, no aspects of the device contribute to injury or harm.



Caution

This equipment is not AP- or APG-rated.

10.1 Classification

Class I, Rule 13, per MDR (EU) 2017/745 Annex VIII

We herewith declare the products mentioned above meet the provisions of the Regulation (EU) 2017/745 for medical devices and 89/336/EEC for electromagnetic compatibility. The declaration is issued under the sole responsibility of the manufacturer. All supporting documentation is retained under the premises of the manufacturer.

10.2 FCC statement



Federal Communications Commission (FCC) Regulations.

Class B compliance.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

10.3 FCC notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed

and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Caution**

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Tekscan may void the user's authority to operate the equipment.

10.4 RF exposure information (SAR)

This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by Federal Communications Commission of the U.S. Government.

This device has been tested and meets the FCC RF exposure guidelines, for body-worn operation:

- FCC OET 65 Supplement C: 01-01 FCC ID: WAP4008
- Industry Canada, IC ID: 7922A-4008
- European Union (EU) EN 50360:2001, EN 50371:2002, EN 50385:2002, IEC 62209-2:2008
- F-Scan GO is a portable device per FCC section 2.1093

10.5 Standards applied

Standard	Description
IEC 60601-1:2005 + A1:2012 + A2:2020, Edition 3.2	Medical electrical equipment – Part 1: General requirements for basic safety and essential performance
IEC 60601-1-6:Ed.3 2010 + A1:2013 + A2:2020	Collateral Standard: Usability
IEC 60601-1-2 ed 4.1 (2020-09) ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09) FCC 47CFR Part 15.209 (2023-12)	Collateral Standard: Electromagnetic compatibility emissions
IEC 62304:2006 - +A1:2015, Ed. 1.0	Medical Device Software
ISO 14971:2019	Medical devices – Application of risk management to medical devices
ANSI AAMI ES60601-1:2005/AMD1:2012/AMD2:2022	Medical electrical equipment – Part 1: General requirements for basic safety and essential performance
CAN/CSA C22.2 NO. 60601-1:14 + A2:2022	Medical electrical equipment – Part 1: General requirements for basic safety and essential performance
CENELEC EN 60601-1:2005 + A1:2013 + A2:2021	Medical electrical equipment Part 1 – General requirements for basic safety and essential performance
ISO 13485:2016	Certificate No. 9172-8
Classifications	Class I ME Equipment, Continuous Operation
Place, Date of Issue	16 June 2023, Norwood MA, USA

10.6 Declaration of Compliance for IEC 60601-1-2

Table 4 - Emission test table

Emission test	Compliance	Electromagnetic Environment Guidance
Radiated Emissions	Group 1 Class B	The F-Scan Go uses RF energy according to the local allowable Wi-Fi bands. Its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.

Table 5 - Immunity test table

Immunity Test	Test Level	Compliance Level	Electromagnetic Environment Guidance
IEC/EN 61000-4-2 ESD Immunity	+/- 8 kV: Contact +/- 15kV: Air	+/- 8 kV: Contact +/- 15kV: Air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
IEC/EN 61000-4-3 Radiated RF Immunity	3 V/m 80 MHz to 2.7 GHz 10 V/m (Home Environment)	10 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the F-Scan-Go, including cables than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = [3.5/V] \sqrt{P}$: 80 MHz to 800 MHz = $1.2 \sqrt{P}$ $d = [7/V] \sqrt{P}$: 800 MHz to 2.5 GHz = $2.33 \sqrt{P}$ Note: using unshielded input leads Where P is the maximum output power rating of the transmitter in watts (W) according to the manufacturer and d is the recommended separation distance in meters (m).
Immunity to Proximity Fields From RF Wireless Communications Equipment IEC 61000-4-3	Refer to Table 7	Refer to Table 7	Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. Interference may occur in the vicinity of equipment marked with the following symbol:
Power Frequency Magnetic Field Immunity Test IEC 61000-4-8	30 A/m	30 A/m	
Immunity to Proximity Magnetic Fields in the Frequency Range of 9 kHz to 13.56 MHz IEC 61000-4-39	30kHz-13.56 MHz	Per standard	

10.6.1 The RF output power

The RF Output Power was measured at the lowest, the middle, and the highest channel and at normal and extreme operating temperatures. The measurements were performed per the procedures of ETSI EN 300 328 section 5.4.2.

The test equipment was set to a center frequency at which the EUT will transmit. The span was set to 10 MHz and the RBW and VBW were set to 1 MHz and 3 MHz, respectively. In accordance with ETSI EN 300 328 section 4.3.2.2, for adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be 20 dBm.

This limit shall apply for any combination of power level and intended antenna assembly.

- Maximum Antenna Assembly Gain: +3.2 dBi
- Beam-forming Gain: 0 dBi
- Correction factor/cable loss: 12.2 dB

Table 6 - RF Output power measurement

Frequency (MHz)	Measure Result (dBm) A	Combination of Power Level and Antenna Gain (dBm) A+G+Y	Limit (dBm)	Margin (dB)
Measured at -40°C				
2402	-3.81	8.39	20.0	11.6
2440	-4.10	8.10	20.0	11.9
2480	-4.30	7.90	20.0	12.1
Measured at 25°C				
2402	-4.60	7.60	20.0	12.4
2440	-4.81	7.39	20.0	12.6
2480	-5.30	6.90	20.0	13.1
Measured at 85°C				
2402	-5.13	7.07	20.0	12.9
2440	-5.22	6.98	20.0	13.0
2480	-5.58	6.62	20.0	13.4

Table 7 - Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment

Test frequency (MHZ)	Band ^(a) (MHZ)	Service ^(a)	Modulation	Immunity Test Level (V/m)
385	380 to 390	TETRA 400	Pulse modulation ^(b) 18 HZ	27
450	430 to 470	GMRS 460, FRS 460	FM ^(c) +/- 5 kHz deviation 1 kHz sine	28
710 745 780	704 to 787	LTE Band 13, 17	Pulse modulation ^(b) 217 HZ	9

Test frequency (MHZ)	Band ^(a) (MHZ)	Service ^(a)	Modulation	Immunity Test Level (V/m)
810 870 930	800 to 960	GSM 800/1900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation ^(b) 18 Hz	28
1,720 1,845 1,970	1,700 to 1,990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation ^(b) 217 Hz	28
2,450	2,400 to 2,570	Bluetooth. WLAN. 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation ^(b) 217 Hz	28
5,240 5,500 5,785	5,100 to 5,800	WLAN 802.11 a/n	Pulse modulation ^(b) 217 Hz	9

If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3

- For some services, only the uplink frequencies are included.
- The carrier shall be modulated using a 50 % duty cycle square wave signal.
- As an alternative to FM modulation, the carrier may be pulse modulated using a 50 % duty cycle square wave signal at 18 Hz. While it does not represent actual modulation. It would be worst case.

Table 8 - Immunity to proximity magnetic fields in the frequency range of 9 kHz to 13,56 MHz

Test Frequency	Modulation	Immunity Test Level (A/m)
30 kHz ^(a)	CW	8
134.2 kHz	Pulse modulation ^(b) 2.1 kHz	65 ^(c)
13.56 MHz	Pulse modulation ^(b) 50 kHz	7.5 ^(c)

Tests are performed in accordance with IEC 61000-4-39.

- This test is applicable only to ME equipment and ME systems intended for use in HOME HEALTHCARE ENVIRONMENT.

- b. The carrier shall be modulated using a 50% duty cycle square wave signal.
- c. Rms before modulation is applied.

Index

A

- accessories and cables 8
- additional sensors 118
- AP or APG rating 123
- applied standards 125
- ASCII export 32
- assistance 118
- attach sensors 76

B

- battery charging 72
- battery requirements 8

C

- cables and accessories 8
- calibration 39
- care
 - sensors 115
- care of system 115
- certification standards 123
- changing sensor response level 35
- charge batteries 72
- check sensors 78
- classification 123
- cold cells 36
- computer requirements 9, 16
- computer to router connection 75
- configuring sensors 35
- connect router to computer 75
- contact details ii
- contraindications 7
- creating graphs 58
- csv file 32

D

- device initialization 75
- device symbols 7
- disposal of sensors 11
- download software 74

E

- E-mail ii
- electromagnetic compatibility 10
- electromagnetic environment 10
- electromagnetic interference 10
- electronics unit status 110
- electrostatic discharge 11
- EMI 10
- emissions 10
- equilibrating 36
- equilibrating the sensor 101
- error LEDs 113
- errors 111
- ESD 11
- exporting a custom range of patches 32
- exporting current patch 32
- exporting selected patches 32
- external components 10

F

- F-Scan GO 15
- F-Scan GO sensors 19
- faults 111
- FCC notice 123
- FCC statement 123
- foot scanning principles 14

G

general maintenance 115

get in touch ii

H

hardware components 16

hardware status details 109

hot cells 36

how to scan feet 14

I

icon on devices 7

IEC60601-1 123

initialize TekDAQ devices 75

install software 74

intended use 7

ISO 13485 123

L

loss of connection 111

M

maintenance 115

maintenance of sensors 115

microSD issues 112

mounting equipment 72

P

part replacement 116

PC specifications 16

power bank specifications 120

power sources 8

pricing and sales 118

R

recording 92

reducing noise 107

removing frames 64

replacements parts 116

residual pressure 39

RF exposure information 124

router connect 75

S

safety 7

SAR 124

SD card problems 112

sensor disposal 11

sensor maintenance 115

sensor response level 35

sensors 19

checking 78

sensors attaching 76

servicing 12

software

download 74

install 74

start 77

software components 21

software status details 109

spares 116

standards 123

standards applied 125

start software 77

status LEDs 113

status of the electronics units 110

symbols used on devices 7

system overview 14

T

technical support 118

Tekscan, Inc. address ii

troubleshooting 12, 111

U

updating software 65
use of equipment requirement 7
using the software 79

W

warranty 117
waste management 11
Wi-Fi issues 111

Z

zeroing 103