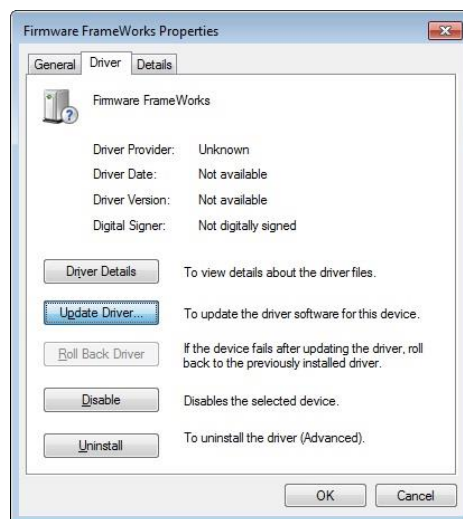


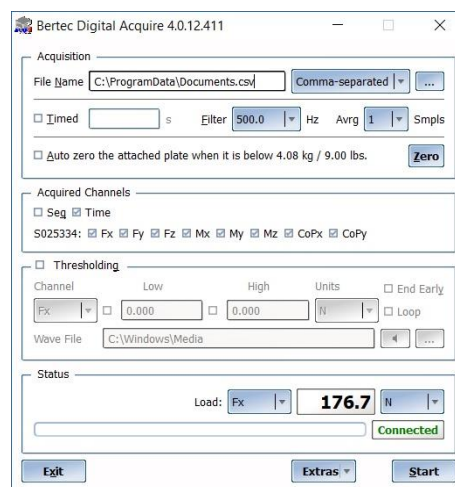
## The MotionMonitor xGen Hardware Guide: Bertec Digital Device Configuration

The following document outlines the steps required to configure and collect from a digital Bertec force plate system that is connected to The MotionMonitor xGen computer via a USB connection. The Bertec Digital Acquire Software must first be installed on the computer before hardware are configured within The MotionMonitor xGen.

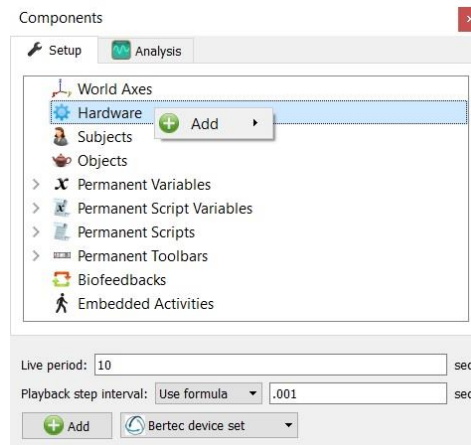
1. Power on the Bertec force plate and amplifier if applicable and connect it to the computer. The device should automatically be recognized. If it is not, right-click on the unrecognized device in the device manager and select Properties. Go to the Driver tab and select Update Driver. Then, select "Browse my computer for driver software" and browse to the Bertec drivers. If the device is still not recognized after this process, contact a Client Support Engineer for assistance.



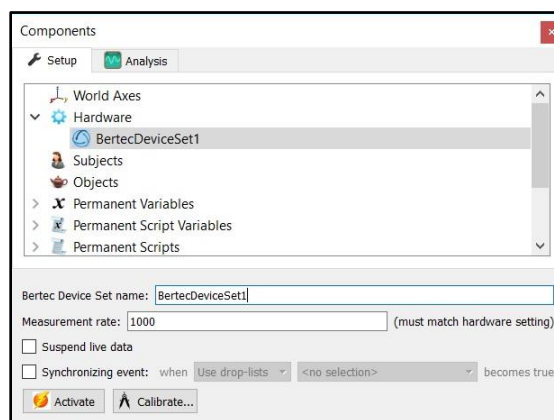
2. Launch the Bertec Acquire software to confirm that you can connect to the force plate and see values from any of the selected force plate channels.



3. Start The MotionMonitor xGen and go to the Hardware node in the Setup Components window. Add a Bertec device set from the Add button in the parameters panel at the bottom of the Components window or by right clicking the Hardware node and adding the device through the cascading drop list.

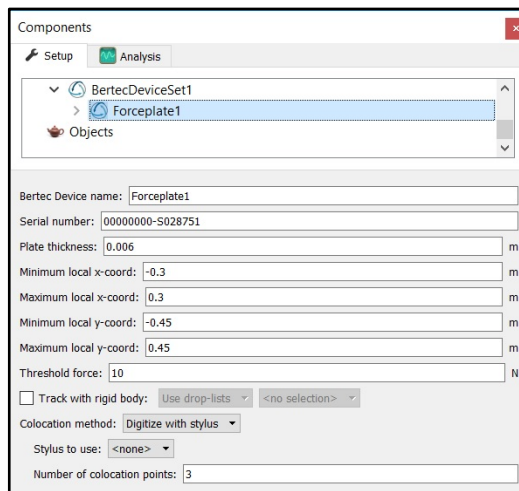


4. Click on the Bertec device set to bring up the parameters panel. Set the measurement rate to 1,000 (Hz). The suspend live data checkbox will suppress any data from the Bertec device from being displayed in graphs or used in any equations. However, the data would immediately be available and presented in a recorded activity. This is a means for limiting the computer resources being used while running in the Live Window.



5. Click on the “Activate” button in the parameters panel or the “Activate/Deactivate Hardware” toolbar icon to activate the Bertec device set hardware. The software will attempt to discover and connect to any Bertec force plates. Any detected force plates will populate under the Bertec device set node. The “Calibrate” button will zero any discovered force plates.

- Expand the Bertec device set node to view the connected force plates. Select a listed force plate to bring up the parameters panel for that plate. The plate thickness field refers to any materials affixed to the surface of the plate. The min/max x and y coordinates refers to the dimensions for the plate, relative to its origin. This will control the footprint for the force plate in the animation window. The settings displayed in the image below would be for a 60cm x 90cm force plate. The “Threshold force” sets the minimal allowable force to be used in the software for computing force derived and Center of Pressure data. The “Colocation method” can be selected as either “Digitize with Stylus” or “Use Expressions”. The preferred and recommended method for alignment is the “digitize with Stylus” option. This method requires that a stylus be configured using a kinematic tracking system. Select the stylus from the “Stylus to use” drop-list and specify the number of points to use in the colocation points. Click the “Align” button and follow the prompts to align the force plate. This process needs to be performed for each force plate.

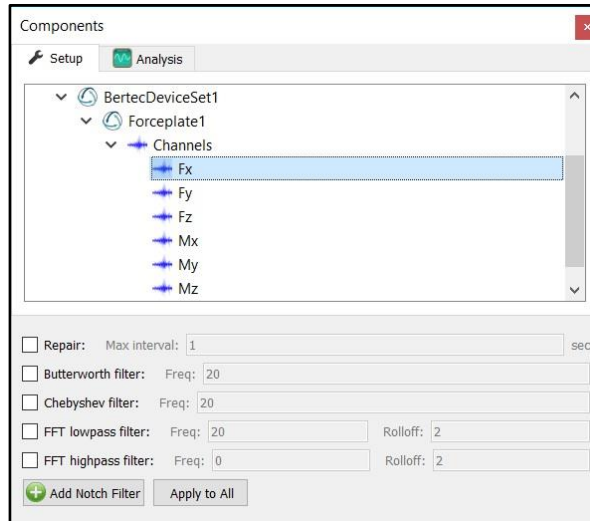


The screenshot shows the 'Components' window with the 'BertecDeviceSet1' expanded to show 'Forceplate1'. The parameters panel for 'Forceplate1' is displayed, showing the following settings:

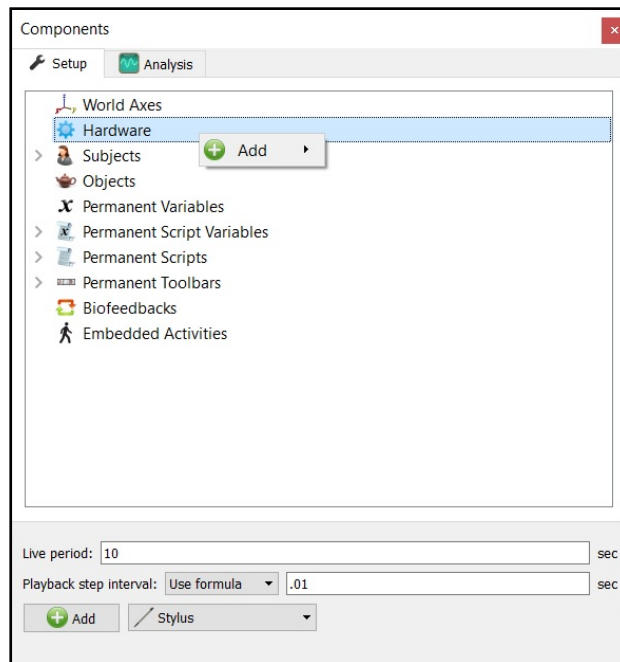
- Bertec Device name: Forceplate1
- Serial number: 00000000-S028751
- Plate thickness: 0.006 m
- Minimum local x-coord: -0.3 m
- Maximum local x-coord: 0.3 m
- Minimum local y-coord: -0.45 m
- Maximum local y-coord: 0.45 m
- Threshold force: 10 N
- Track with rigid body: Use drop-lists <no selection>
- Colocation method: Digitize with stylus
- Stylus to use: <none>
- Number of colocation points: 3

Be sure to click the “Calibrate” button in the Bertec Device Set parameters panel to zero the force plates before taking any of the colocation points. The colocation points should not be taken in the corners of the force plate, near a load cell or along the midline of two adjacent load cells. A steady strong force should be applied perpendicular to the surface of the force plate using the specified stylus. Stylus tip and CoP position data will then be used from each of the digitized readings to align the coordinate system of the force plate with that of the world. A tutorial video for configuring force plates can be found at <https://themotionmonitor.com/support/>.

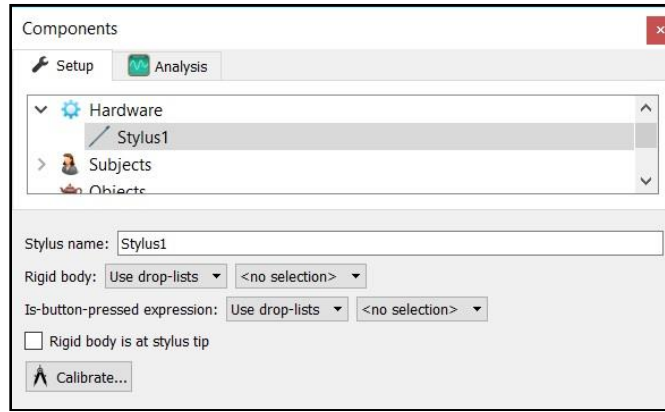
- Expanding the Force plate node and clicking on any of the Force plate channels will bring up the properties panel, which includes their filtering parameters. Each channel can be filtered independently, and filters can be applied either before data collection or in post processing.



- If a stylus is not already defined in the current Workspace, go to the Hardware node in the Setup Components window add the Stylus device through Add button at the bottom of the Components window or right-click on the Hardware node to add the device.

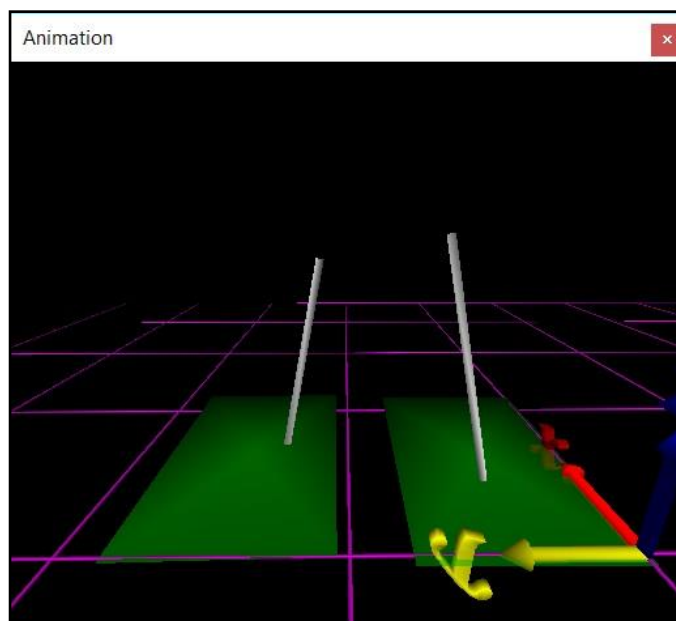


- Before calibration of the stylus can be performed, the rigid body affixed to the object being used as the stylus needs to be selected through the “Rigid body” drop-list menu. If a remote OK button is to be used during the digitizing process, that Boolean expression would need to be defined through the “Is-button-pressed expression” drop-list menu or formula field. If the origin for the rigid body is at the tip of the stylus, as can be the case for certain kinematic tracking systems, the “Rigid body is at stylus tip” check box should be enabled.



Once all parameter fields are completed, click the “Calibrate” button and follow the prompts to calibrate your stylus. A tutorial video for configuring the stylus can be found at <https://themotionmonitor.com/support/>.

- Once the Calibration and Alignment procedures have been completed, the force plate footprint and force vector should appear in the Animation window.



- Force plate data can be defined as Analysis Variables and plotted in Graphs as seen in the image below. Tutorial videos for adding variables and graphs can be found at <https://themotionmonitor.com/support/>.

