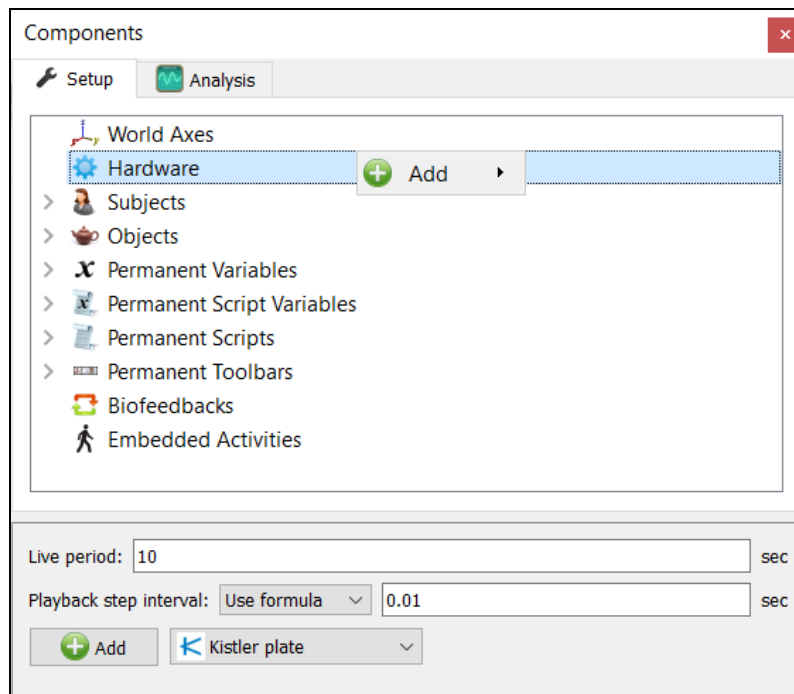# *The MotionMonitor xGen Hardware Guide:*
Kistler Analog Forceplate Configuration

This document reviews the procedures for configuring Kistler forceplates in The MotionMonitor xGen software and assumes that the Kistler force plates and amplifier control units have been properly connected and configured.

1. From the Hardware node in the Setup Components window add the Kistler plate through the Add button at the bottom of the Components window or right-click on the Hardware node to add the device.
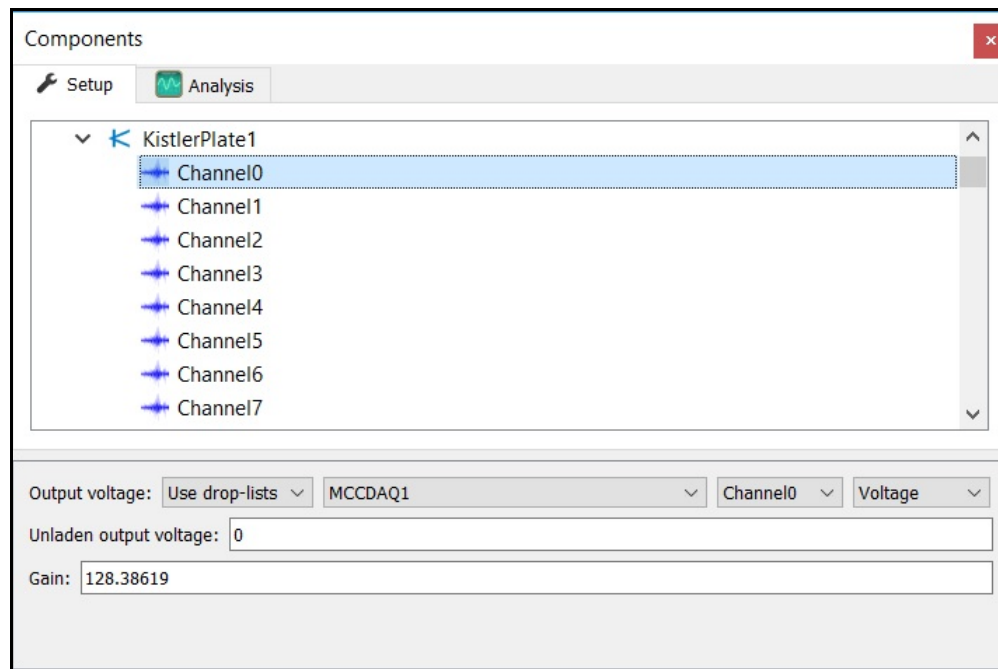
2. From the Kistler parameters panel, specify the name for your force plate and the "A", "B" & "AZ0" from the Kistler calibration sheet. The min/max x and y coordinates refers to the dimensions for the plate, relative to its origin. This will control the footprint for the force plate in the animation window. The settings displayed in the image below would be for a 50cm x 50cm 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. After the remaining steps have been completed the "Calibrate" button performs a software zero of the force plate channels and the "Align" button will begin the procedure for aligning the force plate to the world axes. If an alignment is not performed, the force plate will report relative to it's native coordinate system.
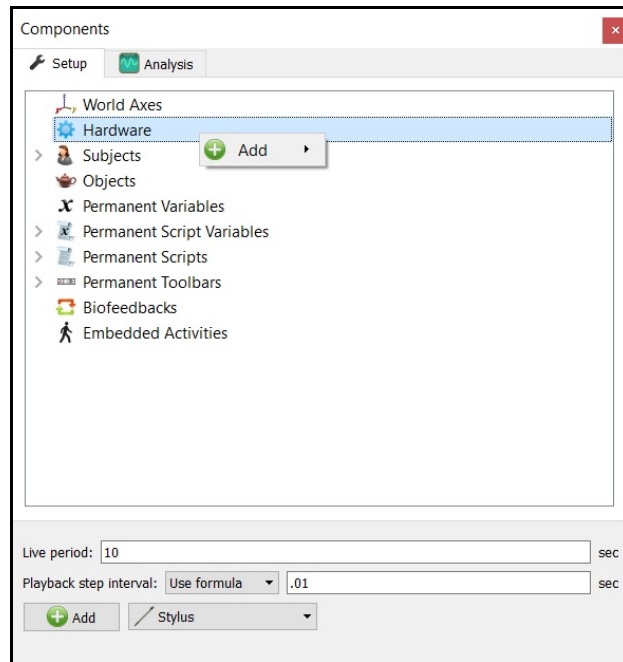
3. Expanding the Kistler plate node will bring up the 8 channels that need to be configured. The "Output voltage" should be configured to specify where the channel is getting its signal from (i.e Measurement Computing Device or other data acquisition device). The "Unlaiden output voltage" will be automatically updated when the "Calibrate" button is pressed for the force plate. The "Gain" value for each channel is taken from the Kistler Calibration sheet, depending on which range has been selected on the amplifier for that channel. For instance, the Calibration sheet for a force plate may indicate that the Sensitivity for a selected range on channel 0 (X1+2) may be 7.789 mV/N. The MotionMontior xGen is expecting these values in N/V. So 128.38619 N/V would be entered for the Gain in this instance, which was calculated as follows (1/7.789)*1000.
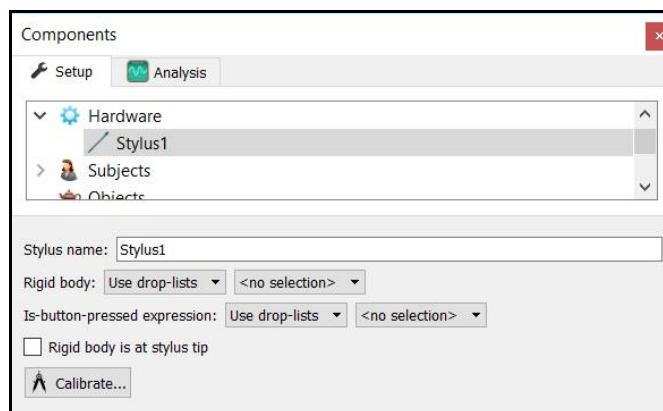

4. From the Kistler plate parameters panel click the "Calibrate" button to perform a software zero and click on the "Align" button to begin the procedure for aligning the force plate to the world axes.

Be sure to press the hardware zero button before taking the software zero or 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://www.innsport.com/supportxgen.html. This process needs to be performed for each force plate.

5. 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.
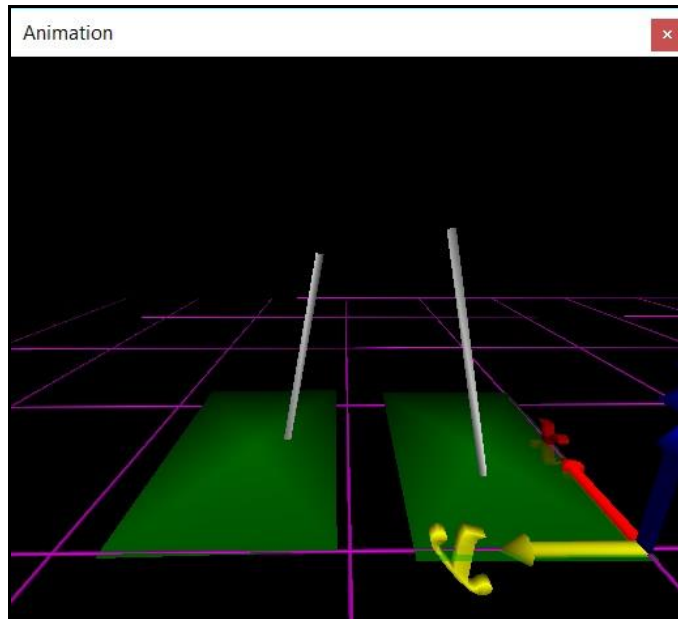

6. Before calibration of the stylus can be performed, the rigid body affixed to the object being used as the stylus needs to be selected through the "Rigid body" drop-list menu. If a remote OK button is to be used during the digitizing process, that Boolean expression would need to be defined through 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://www.innsport.com/supportxgen.html.

7. Once the Calibration and Alignment procedures have been completed, the force plate footprint and force vector should display appropriately in the Animation window.

8. 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://www.innsport.com/supportxgen.html.