

## SETTINGS PANNEL

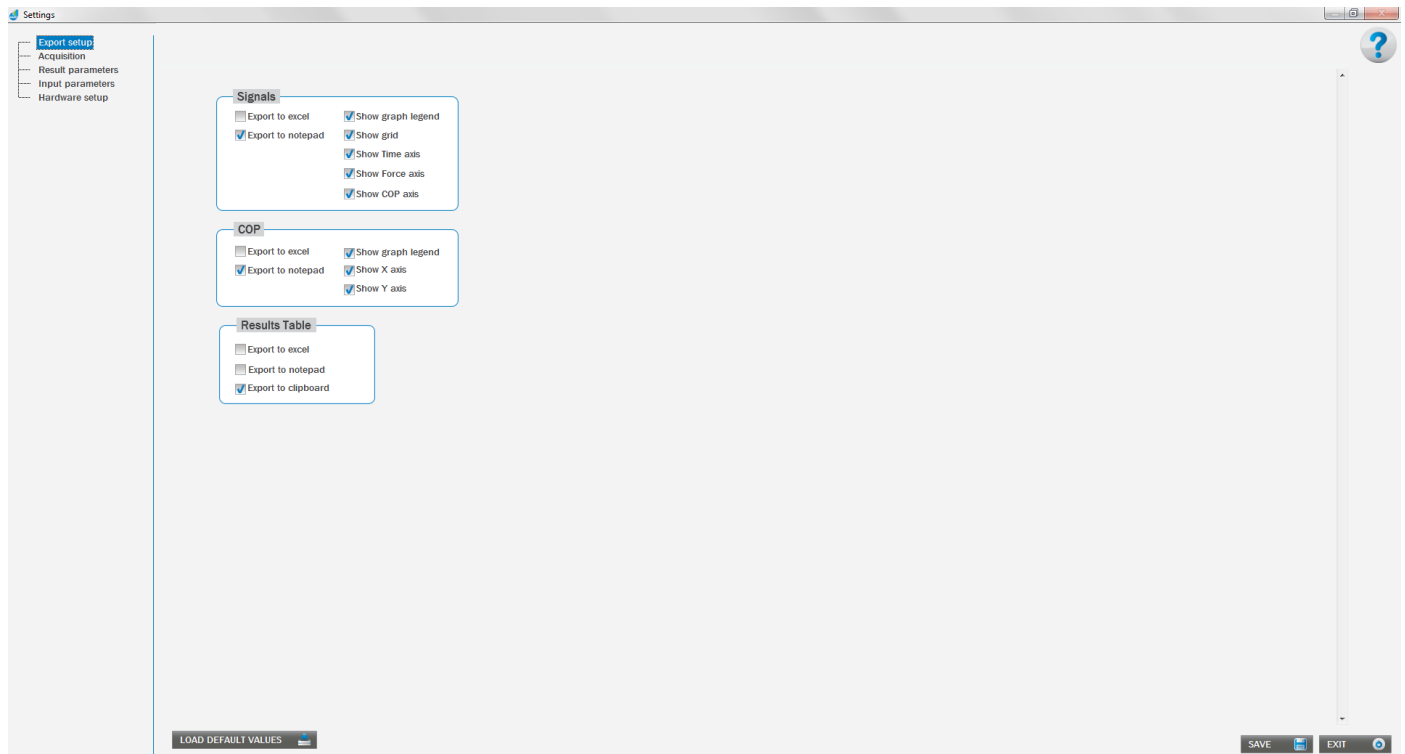
### GENERAL

Settings panel is used to configure force plate, set acquisition parameters, add or edit existing input parameters and/or set values for the analyses of the measurement.

The Settings panel window consists of 5 different panels, which are listed on the left side:

- Under the “Export Settings panel”, settings regarding the export of signals and analysed parameters can be set up.
- Under the “Acquisition” panel, settings regarding the acquisition from the force plate can be set up.
- Under the “Result parameters” panel, settings regarding the calculation of the parameters can be set up.
- Under the “Input parameters” panel, new input parameters can be added.
- Under the “Hardware setup” panel, configuration of the force plate and data acquisition system can be done.

### EXPORT SETUP



## Signals

Here you can define how signals will be exported. These settings are related to all »Signals« tabs in test modules. You can select the option to export by checking the checkbox next to the information you want to export with the signals. Signals can be exported to Excel or to notepad. Only one option can be selected at a time.

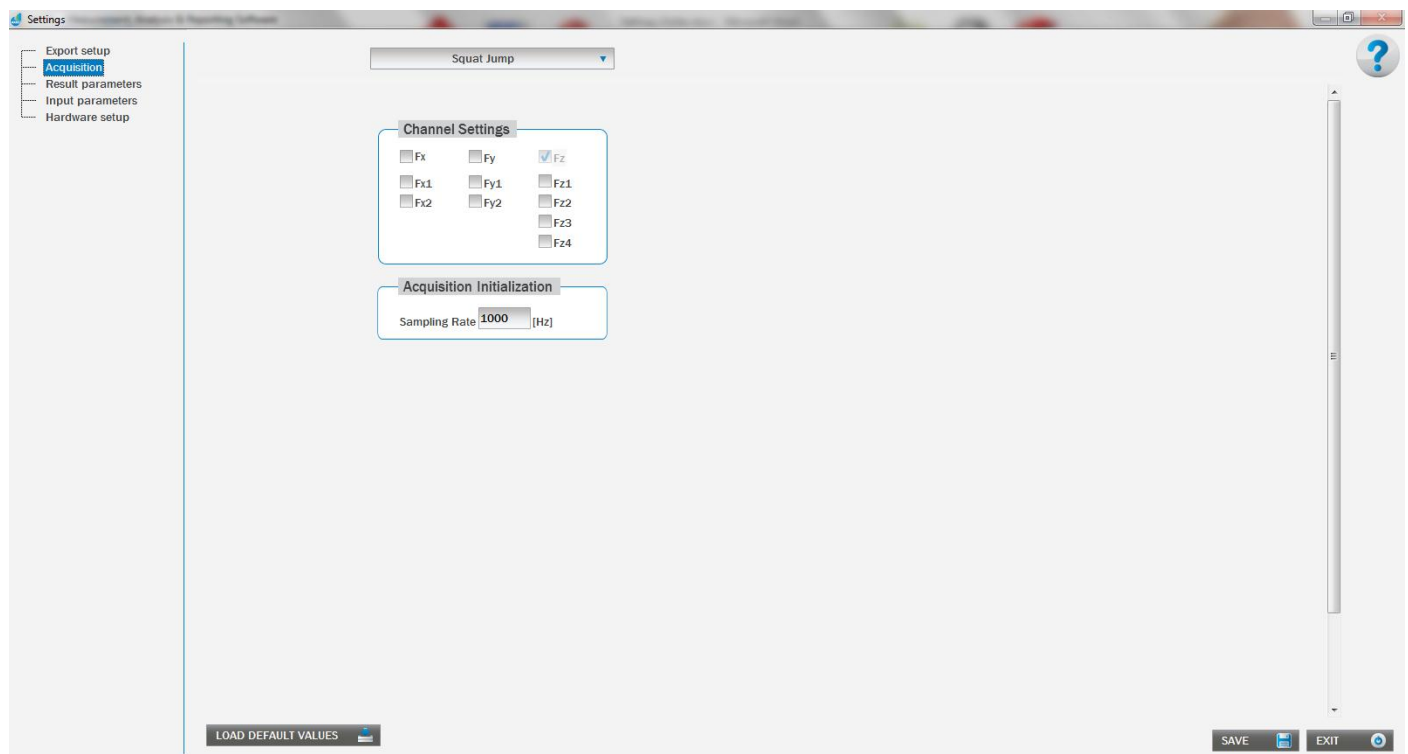
## COP

Here you can define how COP signal will be exported. These settings are related to all »COP tabs« in test modules. You can select the option to export by checking the checkbox next to the information you want to export with signals. The COP signal can be exported to Excel or to notepad. Only one option can be selected at a time.

## Results Table

Here you can define how results will be exported. These settings are related to all »Results table« tabs in test modules. You can select the option to export by checking the checkbox next to the information you want to export with signals. Results from the table can be exported to Excel or to notepad. Only one option can be selected at a time.

## ACQUISITION SETTINGS



## Channel Settings

Here you can select which channels you want to acquire. You can select a channel to acquire from by checking the checkbox next to the channel.



## Acquisition Initialization

Here you can set frequency of the data acquisition from the force plate.

## RESULT PARAMETERS

Under the Results parameters the settings for the analyses can be set up for each module separately.

In general, Result parameters are divided into three groups:

- **Common Settings** – Here you can set the parameters that are common to all test modules.
- **General Settings** – Here you can set parameters that are specified for each test module.
- **Filter Settings** – Here you can set filter options.

## SQUAT JUMP

### COMMON SETTINGS:

**g [m/(s<sup>2</sup>)]**

Gravitational constant.

### GENERAL SETTINGS:

**Start Buffer [s]**

Buffer before the start event if the trigger option is selected.

**Stop Buffer [s]**

Buffer after landing event if the trigger option is selected.

**Take Off Delay [s]**

Time interval after the take-off event when small oscillations of the vertical force can occur – that defines minimal flight time of correctly processed jump.

**Start Interval [s]**

Interval after the start event used to calculate start interval related parameters.

**Start Of Increasing [N]**

Force threshold above body weight that specifies the start event, if the trigger option is selected.

**Fly Limit [N]**

Force threshold used to detect the take-off and landing events.

**Criteria [%]**

Percentage of the body weight used to detect false movement at the start (eccentric movement).

### FILTER SETTINGS

**Filter**

When checkbox Filter is checked then selected filter is active.



## Filter type

Specifies the bandpass of the filter.

## High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, the high cut-off frequency must be greater than the low cut-off frequency and observe the Nyquist criterion.

## Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, the low cut-off frequency must be less than the high cut-off frequency.

## Order

Specifies the filter order and must be greater than 0.

## Smoothing Filter - Window size [s]

Window size in seconds that is used for the smoothing filter of the acquired signal.

## COUNTER MOVEMENT JUMP

### COMMON SETTINGS

#### g [m/(s<sup>2</sup>)]

Gravitational constant.

### GENERAL SETTINGS

#### Start Buffer [s]

Buffer before start event if the trigger option is selected.

#### Stop Buffer [s]

Buffer after landing event if the trigger option is selected.

#### Take Off Delay [s]

Time interval after take-off event when small oscillations of the vertical force can occur – that defines minimal flight time of correctly processed jump Start Power.

#### Start Interval [s]

Interval after the start event used to calculate start power.

#### Start Of Increasing [N]

The threshold above the body weight that specifies the start event, if the trigger option is selected.

#### Start Of Falling [N]

Threshold below the body weight that specifies the start event, if the trigger option is selected.

#### Fly Limit [N]

Threshold used to detect take-off and landing event.



## FILTER SETTINGS:

### Filter

When checkbox Filter is checked then selected filter is active.

### Filter type

Specifies the bandpass of the filter.

### High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

### Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

### Order

Specifies the filter order and must be greater than 0.

### Smoothing Filter - Window size [s]

Window size in seconds that is used for the smoothing filter of the acquired signal.

## DROP JUMP

### COMMON SETTINGS

#### g [m/(s<sup>2</sup>)]

Gravitational constant.

### GENERAL SETTINGS

#### Start Buffer [s]

Buffer before start event if the trigger option is selected.

#### Stop Buffer [s]

Buffer after landing event if the trigger option is selected.

#### Take Off Delay [s]

Time interval after take-off event when small oscillations of the vertical force can occur – that defines minimal flight time of correctly processed jump Start Power.

#### Start Interval [s]

Interval after the start event used to calculate start power.

#### Contact Time Criteria [s]

Maximal contact time allowed.

#### Criteria Time Interval [s]

Steady faze time interval.



## **Fly Limit [N]**

Threshold used to detect take-off and landing event.

## **Criteria [%]**

Percentage deviation from body weight, used for steady faze.

## **FILTER SETTINGS**

### **Filter**

When checkbox Filter is checked then selected filter is active.

### **Filter type**

Specifies the bandpass of the filter.

### **High cut-off frequency [Hz]**

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

### **Low cut-off frequency [Hz]**

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

### **Order**

Specifies the filter order and must be greater than 0.

### **Smoothing Filter - Window size [s]**

Window size in seconds that is used for the smoothing filter of the acquired signal.

## **JUMPS WITH ADDITIONAL WEIGHTS**

### **COMMON SETTINGS**

#### **g [m/(s<sup>2</sup>)]**

Gravitational constant.

### **GENERAL SETTINGS**

#### **Start Buffer [s]**

Buffer before start event if the trigger option is selected.

#### **Stop Buffer [s]**

Buffer after landing event if the trigger option is selected.

#### **Take Off Delay [s]**

Time interval after take-off event when small oscillations of the vertical force can occur – that defines minimal flight time of correctly processed jump Start Power.

#### **Start Interval [s]**

Interval after the start event used to calculate start power.



## Start Of Increasing [N]

The threshold above the body weight that specifies the start event, if the trigger option is selected.

## Fly Limit [N]

Threshold used to detect take-off and landing event.

## Criteria [%]

Percentage of the body weight used to detect false movement at start (concentric movement).

## FILTER SETTINGS

### Filter

When checkbox Filter is checked then selected filter is active.

### Filter type

Specifies the bandpass of the filter.

### High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

### Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

### Order

Specifies the filter order and must be greater than 0.

### Smoothing Filter - Window size [s]

Window size in seconds that is used for the smoothing filter of the acquired signal.

## LONG JUMP

### COMMON SETTINGS

#### g [m/(s<sup>2</sup>)]

Gravitational constant.

### GENERAL SETTINGS

#### Start Buffer [s]

Buffer before start event if the trigger option is selected.

#### Stop Buffer [s]

Buffer after landing event if the trigger option is selected.

#### Take Off Delay [s]

Time interval after take-off event when small oscillations of the vertical force can occur – that defines minimal flight time of correctly processed jump Start Power.

**Start Interval [s]**

Interval after the start event used to calculate start power.

**Start Of Increasing [N]**

The threshold above the body weight that specifies the start event, if the trigger option is selected.

**Start Of Falling [N]**

Threshold below the body weight that specifies the start event, if the trigger option is selected.

**Fly Limit [N]**

Threshold used to detect take-off and landing event.

## FILTER SETTINGS

**Filter**

When checkbox Filter is checked then selected filter is active.

**Filter type**

Specifies the bandpass of the filter.

**High cut-off frequency [Hz]**

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

**Low cut-off frequency [Hz]**

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

**Order**

Specifies the filter order and must be greater than 0.

**Smoothing Filter - Window size [s]**

Window size in seconds that is used for the smoothing filter of the acquired signal.

## REPETITIVE COUNTER MOVEMENT JUMPS

### COMMON SETTINGS

**g [m/(s<sup>2</sup>)]**

Gravitational constant.

### GENERAL SETTINGS

**Start Buffer [s]**

Buffer before start event if the trigger option is selected.

**Stop Buffer [s]**

Buffer after landing event if the trigger option is selected.



**Take Off Delay [s]**

Time interval after take-off event when small oscillations of the vertical force can occur – that defines minimal flight time of correctly processed jump Start Power.

**Start Interval [s]**

Interval after the start event used to calculate start power.

**Start Of Increasing [N]**

The threshold above the body weight that specifies the start event, if the trigger option is selected.

**Start Of Falling [N]**

Threshold below the body weight that specifies the start event, if the trigger option is selected.

**Fly Limit [N]**

Threshold used to detect take-off and landing event.

**Number of jumps [n]**

Number of jumps taken from repetitive jumps for analyse.

## FILTER SETTINGS

**Filter**

When checkbox Filter is checked then selected filter is active.

**Filter type**

Specifies the bandpass of the filter.

**High cut-off frequency [Hz]**

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

**Low cut-off frequency [Hz]**

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

**Order**

Specifies the filter order and must be greater than 0.

**Smoothing Filter - Window size [s]**

Window size in seconds that is used for the smoothing filter of the acquired signal.

## REPETITIVE HOPPING

### COMMON SETTINGS

**g [m/(s<sup>2</sup>)]**

Gravitational constant.

### GENERAL SETTINGS

**Start Buffer [s]**

Buffer before start event if the trigger option is selected.

**Stop Buffer [s]**

Buffer after landing event if the trigger option is selected.

**Take Off Delay [s]**

Time interval after take-off event when small oscillations of the vertical force can occur – that defines minimal flight time of correctly processed jump Start Power.

**Start Interval [s]**

Interval after the start event used to calculate start power.

**Contact Time Criteria [s]**

Maximal contact time allowed.

**Start Of Increasing [N]**

The threshold above the body weight that specifies the start event, if the trigger option is selected.

**Start Of Falling [N]**

Threshold below the body weight that specifies the start event, if the trigger option is selected.

**Fly Limit [N]**

Threshold used to detect take-off and landing event.

**Number of jumps [n]**

Number of jumps taken from repetitive jumps for analyse.

## FILTER SETTINGS

**Filter**

When checkbox Filter is checked then selected filter is active.

**Filter type**

Specifies the bandpass of the filter.

**High cut-off frequency [Hz]**

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

**Low cut-off frequency [Hz]**

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

**Order**

Specifies the filter order and must be greater than 0.

**Smoothing Filter - Window size [s]**

Window size in seconds that is used for the smoothing filter of the acquired signal.



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## SQUAT

### COMMON SETTINGS

**g [m/(s<sup>2</sup>)]**

Gravitational constant.

### GENERAL SETTINGS

**Start Buffer [s]**

Buffer before start event if the trigger option is selected.

**Stop Buffer [s]**

Buffer after landing event if the trigger option is selected.

**Start Interval [s]**

Interval after the start event used to calculate start power.

**Criteria Time Interval [s]**

Steady faze time interval.

**Start Of Increasing [N]**

The threshold above the body weight that specifies the start event, if the trigger option is selected.

**Start Of Falling [N]**

Threshold below the body weight that specifies the start event, if the trigger option is selected.

**Criteria [%]**

Percentage deviation from body weight, used for steady faze.

### FILTER SETTINGS

**Filter**

When checkbox Filter is checked then selected filter is active.

**Filter type**

Specifies the bandpass of the filter.

**High cut-off frequency [Hz]**

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

**Low cut-off frequency [Hz]**

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

**Order**

Specifies the filter order and must be greater than 0.

**Smoothing Filter - Window size [s]**

Window size in seconds that is used for the smoothing filter of the acquired signal.



## STAMPING

### COMMON SETTINGS

**g [m/(s<sup>2</sup>)]**

Gravitational constant.

### GENERAL SETTINGS

**Time interval [s]**

Interval used to calculate fatigue and endurance.

**Time interval Fmin/Fmax [s]**

Time interval within calculate of ratio Fmin/Fmax performs. Interval step through acquired signal is 1s.

**Peak threshold [N]**

Threshold of minimal used value.

**Peak width [s]**

Minimal allowed width between peaks (in seconds) in X or Y component of the COP.

### FILTER SETTINGS

**Filter**

When checkbox Filter is checked then selected filter is active.

**Filter type**

Specifies the bandpass of the filter.

**High cut-off frequency [Hz]**

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

**Low cut-off frequency [Hz]**

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

**Order**

Specifies the filter order and must be greater than 0.

**Smoothing Filter - Window size [s]**

Window size in seconds that is used for the smoothing filter of the acquired signal.

## BODY SWAY

### COMMON SETTINGS

**g [m/(s<sup>2</sup>)]**

Gravitational constant.



## GENERAL SETTINGS

### Time Interval [s]

Interval used to calculate fatigue and endurance.

### Peak width [n]

Minimal allowed width between peaks (in seconds) in X or Y component of the COP.

### COP threshold [N]

Minimal allowed load at force plate.

## FILTER SETTINGS – General

### Filter

When checkbox Filter is checked then selected filter is active.

### Filter type

Specifies the bandpass of the filter.

### High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

### Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

### Order

Specifies the filter order and must be greater than 0.

## SETTINGS – Diffusion plots

### Max time window portion [s]

Maximal window length used in the analysis.

## SETTINGS – Density plots

### Radius [mm]

Radius that defines neighbor samples on the COP sway.

### Lowerpass filter cut-off frequency [Hz]

Cutoff frequency for the Butterworth lowpass filter used to filter density graph.

## SETTINGS – Sample entropy

### M [a.u.]

Maximum epoch length used in the algorithm.

### R [a.u.]

Tolerance used in the algorithm.



## SETTINGS – Recurrence quantification analysis

### Embedding dimension [n]

How many data points are used for the reconstruction of the space.

### Epsilon [%]

% of the mean distance between data points in the reconstructed space.

### Diagonal line min length [n]

Minimum length of diagonal line.

### Vertical line min length [n]

Minimum length of vertical line.

### Trend [%]

Percent of lines included.

### Downsample factor

Downsample factor for the original signal.

## CURVE TRACKING

### COMMON SETTINGS

#### g [m/(s<sup>2</sup>)]

Gravitational constant.

### GENERAL SETTINGS

#### Time Interval [s]

Interval used to calculate fatigue and endurance.

#### Graph window [s]

Amplitude of the time axis during the performance of the test.

#### COP threshold [N]

Minimal allowed load at force plate.

### FILTER SETTINGS

#### Filter

When checkbox Filter is checked then selected filter is active.

#### Filter type

Specifies the bandpass of the filter.

#### High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.



## Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

## Order

Specifies the filter order and must be greater than 0.

## SHAPE TRACKING

### COMMON SETTINGS

#### g [m/(s<sup>2</sup>)]

Gravitational constant.

### GENERAL SETTINGS

#### Time Interval [s]

Interval used to calculate fatigue and endurance.

#### COP threshold [N]

Minimal allowed load at force plate.

### FILTER SETTINGS

#### Filter

When checkbox Filter is checked then selected filter is active.

#### Filter type

Specifies the bandpass of the filter.

#### High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

#### Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

## Order

Specifies the filter order and must be greater than 0.

## LIMITS OF STABILITY

### COMMON SETTINGS

#### g [m/(s<sup>2</sup>)]

Gravitational constant.



## GENERAL SETTINGS

### Time interval [s]

Interval needed for calculating result parameters Movement Velocity and Reaction Time.

### Time – Center [s]

Time needed from rectangle to circle (foot offset).

### Time – Leaning [s]

Time needed from circle (foot offset) to rectangle.

### Percent from offset [%]

Percentage of length from Foot Offset to Maximum Excursion for start point of calculating result parameters Movement Velocity and Reaction Time. This point is start point of Time Interval.

### Size for directional control [n]

Size of vector needed for calculating result parameter Directional Control.

### COP threshold [N]

Minimal allowed load at force plate.

### COP Range [mm]

Distance between two opposites direction shapes.

### Shape size [mm]

Length side of direction squares.

### Foot offset Radius [mm]

Radius of circle which is drawn around active foot offset.

## FILTER SETTINGS

### Filter

When checkbox Filter is checked then selected filter is active.

### Filter type

Specifies the bandpass of the filter.

### High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

### Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

### Order

Specifies the filter order and must be greater than 0.





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## STEP ANALYSIS

### COMMON SETTINGS

**g [m/(s<sup>2</sup>)]**

Gravitational constant.

### GENERAL SETTINGS

**Start Buffer [s]**

Buffer before start event.

**Stop Buffer [s]**

Buffer after landing event.

**After Event Delay [s]**

The threshold used to calculate the parameters labelled under.

**COP threshold [N]**

Minimal allowed load at force plate.

**Contact threshold [N]**

The threshold used to detect the step.

### FILTER SETTINGS

**Filter**

When checkbox Filter is checked then selected filter is active.

**Filter type**

Specifies the bandpass of the filter.

**High cut-off frequency [Hz]**

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

**Low cut-off frequency [Hz]**

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

**Order**

Specifies the filter order and must be greater than 0.

## TAPPING

### COMMON SETTINGS

**g [m/(s<sup>2</sup>)]**

Gravitational constant.



## GENERAL SETTINGS

### Time interval [s]

Interval used to calculate fatigue and endurance.

### Peak width [s]

Minimal allowed width between peaks (in seconds) in X or Y component of the COP.

### COP threshold [N]

Minimal allowed load at force plate.

## FILTER SETTINGS

### Filter

When checkbox Filter is checked then selected filter is active.

### Filter type

Specifies the bandpass of the filter.

### High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

### Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

### Order

Specifies the filter order and must be greater than 0.

## FORWARD LUNGE

### COMMON SETTINGS

### $g$ [m/(s<sup>2</sup>)]

Gravitational constant.

## GENERAL SETTINGS

### Start Buffer [s]

Buffer before start event if the trigger option is selected.

### Stop Buffer [s]

Buffer after landing event if the trigger option is selected..

### After Event Delay [s]

Threshold used to calculate parameters labelled under.

### COP threshold [N]

Minimal allowed load at force plate.



## Contact threshold [N]

Threshold used to detect take-off and landing event.

## FILTER SETTINGS

### Filter

When checkbox Filter is checked then selected filter is active.

### Filter type

Specifies the bandpass of the filter.

### High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

### Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

### Order

Specifies the filter order and must be greater than 0.

## SIT-TO-STAND

### COMMON SETTINGS

#### g [m/(s<sup>2</sup>)]

Gravitational constant.

### GENERAL SETTINGS

#### Start Buffer [s]

Buffer before start event if the trigger option is selected.

#### Stop Buffer [s]

Buffer after landing event if the trigger option is selected.

#### Criteria Time Interval [s]

Steady faze time interval.

#### COP threshold [N]

Minimal allowed load at force plate.

#### Start Of Increasing [N]

The threshold above the body weight that specifies the start event, if the trigger option is selected.

#### Start Of Falling: [N]

Threshold below the body weight that specifies the start event, if the trigger option is selected.

#### Criteria [%]

Percentage deviation from body weight, used for steady faze.



## FILTER SETTINGS

### Filter

When checkbox Filter is checked then selected filter is active.

### Filter type

Specifies the bandpass of the filter.

### High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

### Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

### Order

Specifies the filter order and must be greater than 0.

## TURN

### COMMON SETTINGS

#### g [m/(s<sup>2</sup>)]

Gravitational constant.

### GENERAL SETTINGS

#### Start Buffer [s]

Buffer before start event if the trigger option is selected.

#### Stop Buffer [s]

Buffer after landing event if the trigger option is selected.

#### COP threshold [N]

Minimal allowed load at force plate.

#### Contact threshold [N]

Threshold used to detect take-off and landing event.

## FILTER SETTINGS

### Filter

When checkbox Filter is checked then selected filter is active.

### Filter type

Specifies the bandpass of the filter.



## High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

## Low cut-off frequency [Hz]

Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

## Order

Specifies the filter order and must be greater than 0.

## FREE MEASUREMENT

### COMMON SETTINGS

#### g [m/(s<sup>2</sup>)]

Gravitational constant.

### FILTER SETTINGS

#### Filter

When checkbox Filter is checked then selected filter is active.

#### Filter type

Specifies the bandpass of the filter.

#### High cut-off frequency [Hz]

Is the high cut-off frequency in Hz. When filter type is bandpass or bandstop, high cut-off frequency must be greater than low cut-off frequency and observe the Nyquist criterion.

#### Low cut-off frequency [Hz]

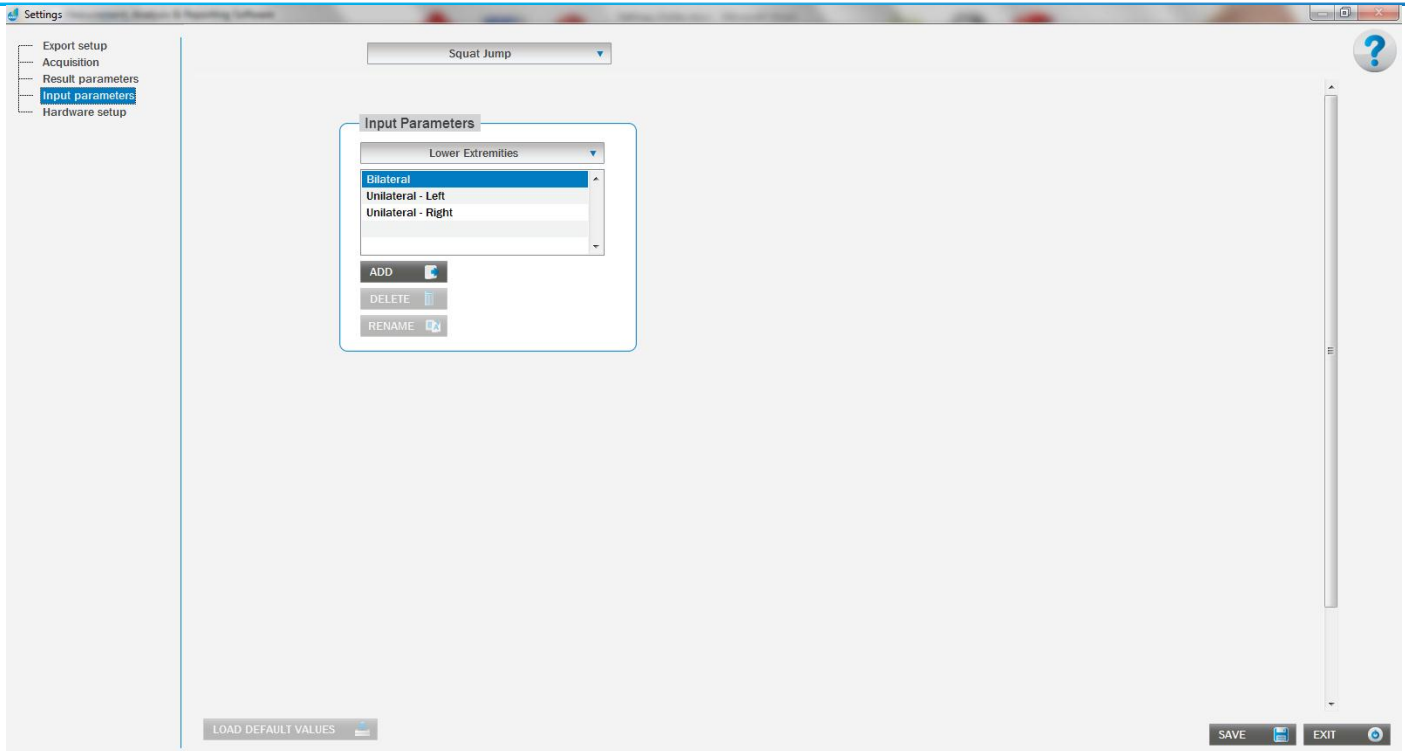
Is the low cut-off frequency in Hz and must observe the Nyquist criterion. When filter type is bandpass or bandstop, low cut-off frequency must be less than high cut-off frequency.

#### Order

Specifies the filter order and must be greater than 0.

## INPUT PARAMETERS

In this section you can add, delete or rename existing Input Parameter values. Delete and rename function is available only for Input Parameter values added by the user. Default Input Parameter values cannot be deleted or renamed.



### Add

Add new input parameter value.

### Rename

Rename input parameter value.

### Delete

Delete input parameter value form database.

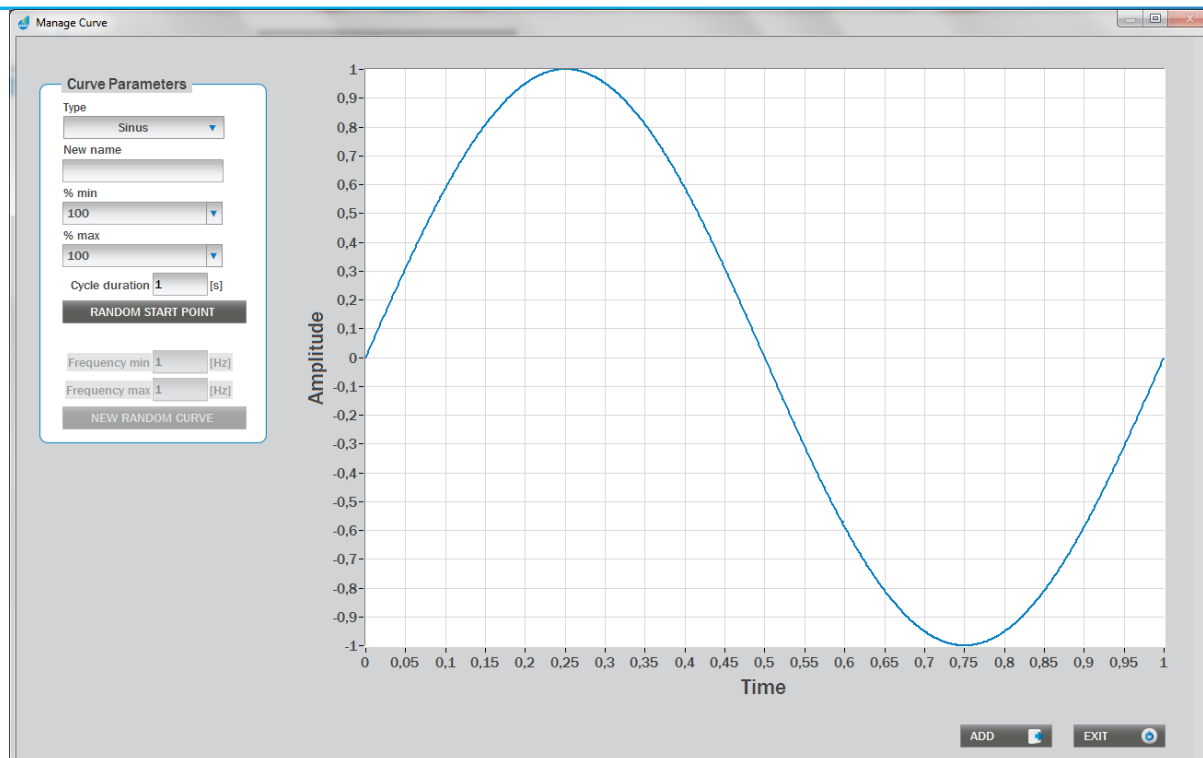
## EDITING INPUT PARAMETERS

Procedure for editing Input Parameters` values are the same for all Input Parameters. An exception is only for editing Input Parameter Curve (test Curve Tracking) and Shape (test Shape Tracking). The procedure for these exceptions is described below.

### CURVE TRACKING

All Curves are defined with Type of curve, name, per cent of maximal and minimal amplitude and cycle duration.

Ramp has additional settings for defining per cents of line, where the sum of per cents must be 100. Random curve has additional settings for minimal and maximal frequency, which means that frequency of new the random signal will be somewhere between minimal and maximal frequency.



## Type

Type of curve.

## New name

Defines the name of the curve.

## % min

Curve minimum value defined as percent of the subject's maximal amplitude (which is measured with the Limits of Stability module).

## % max

Curve maximum value defined as percent of the subject's maximal amplitude (which is measured with the Limits of Stability module).

## Cycle duration [s]

Cycle duration of the generated curve.

## Random start point

Generates the same curve with new start point.

## Frequency min [Hz]

This parameter is enabled only for Random type of the curve.

## Frequency max [Hz]

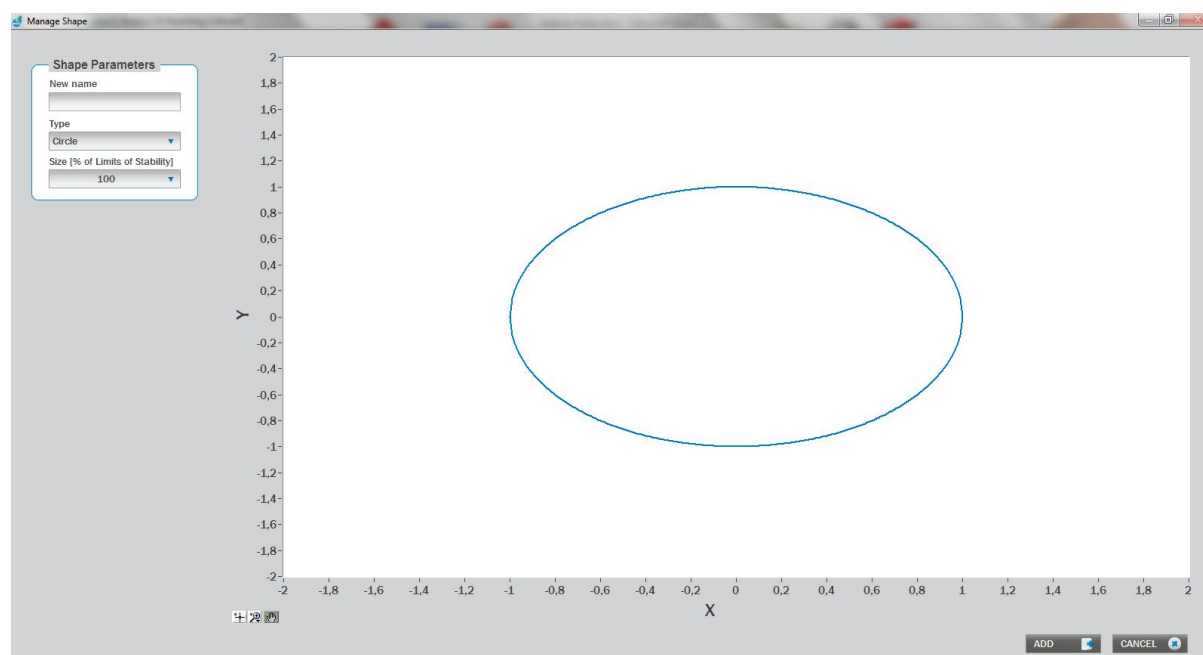
This parameter is enabled only for Random type of the curve.

## New random curve

Generates the new random curve with selected parameters.

## SHAPE TRACKING

Shape is defined with name, type and size with percentages of Limits of Stability.



### New name

Defines the name of the shape.

### Type

Type of shape.

### Size [%]

Size of the shape expressed in the % of Limits of stability.

## HARDWARE SETUP

Under Hardware setup panel, you can set parameters for force plate and for DAQ system box.

### Force plate is defined with the following parameters:

#### Active device

List of all configured force plates.

#### Device information

- **Type** – Type of the force plate.
- **Serial number** – Serial number of the force plate.

#### Dimensions

Dimensions of the force plate. The dimensions are shown in millimetres, and once entered correctly they should not change.



**Width (x)**

The width of the force plate.

**Length (y)**

The length of the force plate.

**a (x - offset)**

Distance of sensor from y-axis.

**b (y - offset)**

Distance of sensor from x-axis.

**az (depth)**

Distance of plate surface from x-y sensor plane.

**Orientation**

If the plate is used in conjunction with another plate, then the orientation with respect to the other plate must be shown. The orientation for one of the two plates must be zero(0) for each variable.

**Alpha [°]**

Angle from the plate central axis to the global central axis in the clockwise direction.

**dx [mm]**

Distance from the global origin to the plate origins in the x-direction.

**dy [mm]**

Distance from the global origin to the plate origins in the y-direction.

**Channels**

The user can select the starting channel for the device that is being added to the active devices list in the active device field by clicking Edit button. Kistler force plates normally use eight channels.

**Start**

Start channel.

**End**

End channel.

**Sensitivities**

Default values for your force plate type may already be entered for either case, but will need editing because every force plate has unique sensitivities.

It is strongly advised that these sensitivities are not changed unless the user is absolutely certain that they are incorrect.

The calibration sheet reports values for the three dimensions **F<sub>x</sub>**, **F<sub>y</sub>**, and **F<sub>z</sub>**:

- enter the **F<sub>x</sub>** values for **x1-2** and **x3-4**
- enter the **F<sub>y</sub>** value for **y1-4** and **y2-3**
- enter the **F<sub>z</sub>** value for **z1**, **z2**, **z3** and **z4**.

**Range**

The user should select the initial force range per channel for both the shear and vertical directions. These ranges are calculated from the force plate sensitivities and amplifier ranges and Full Scale Output (FSO). A good rule of thumb is to choose the lowest range that will not be exceeded during



the intended trials (peak force). This range selection can be changed as needed to handle a wide variety of applications, so it is not critical to know exactly which range to enter at this time.

### **X,Y (Shear)**

Shear direction.

### **Z (Vertical)**

Vertical direction.

### **COP improvement**

Some eight-channel plates have Center of Pressure enhancement variables that, when activated, implement an algorithm based on these variables to more accurately calculate the center of pressure of the force plate.

**The Data Acquisition (DAQ system) is defined with the following parameters:**

### **Board Type**

Is the type of your DAQ System box, you have connected to the computer and force plate.

### **Board Number**

Is the number from DAQ system in Instacal configuration program, which you have installed on your computer.

**NOTE: The board type and the board configured in Instacal must match.**

## Before the first use of the application:

Before first use, you have to configure DAQ system and a force plate. To configure follow the next steps:

- After successfully installation process and restarting the computer open Instacal.
- To run Instacal, click on Start -> Programs -> Measurement Computing ->Instacal.
- Connect your DAQ system with your computer and turn it on.

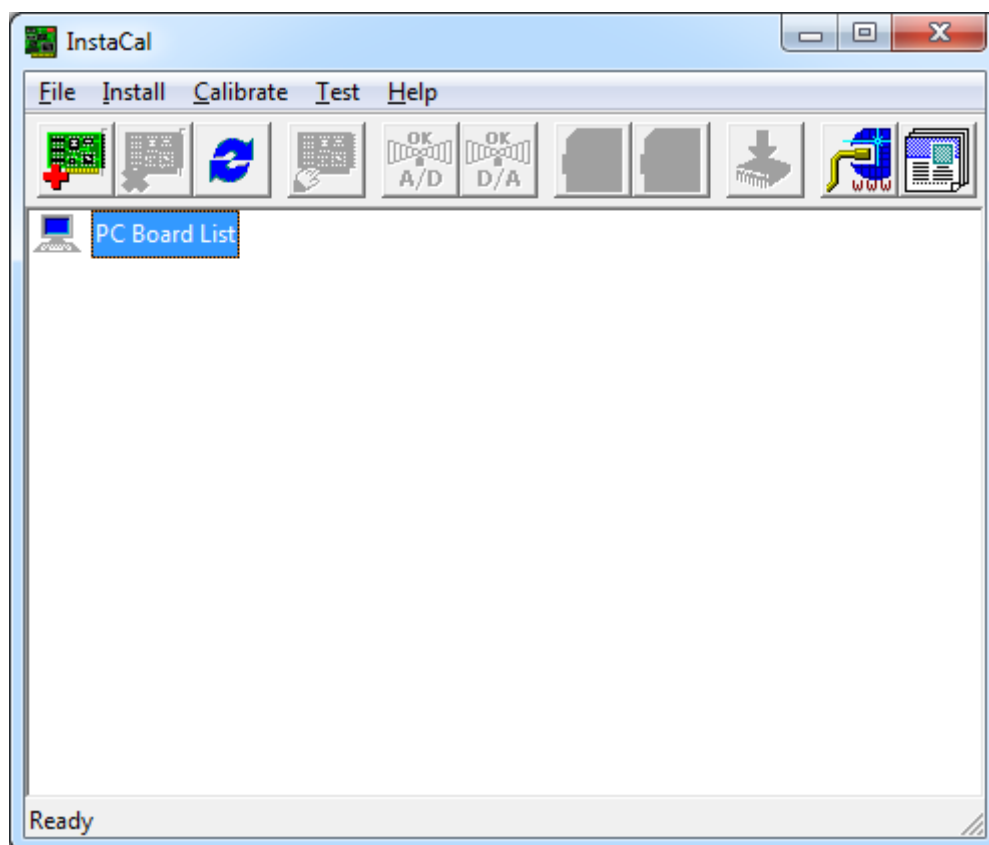


Figure 1. Instacal window.

- Use refresh button, if your Instacal window is the same as in *Figure 1*.



- If DAQ system is properly connected, you should see it under detected devices (*Figure 2*).

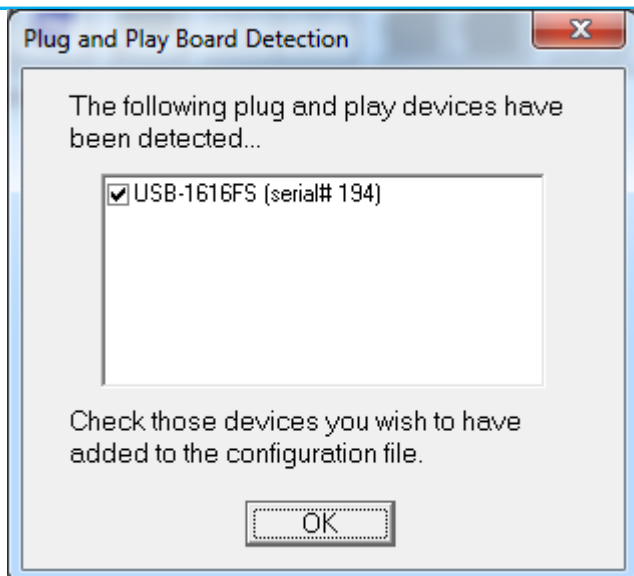


Figure 2. Detected devices.

- Click OK to confirm detected device.
- You have successfully configured DAQ system and it must be listed under the PC board list (Figure 3).

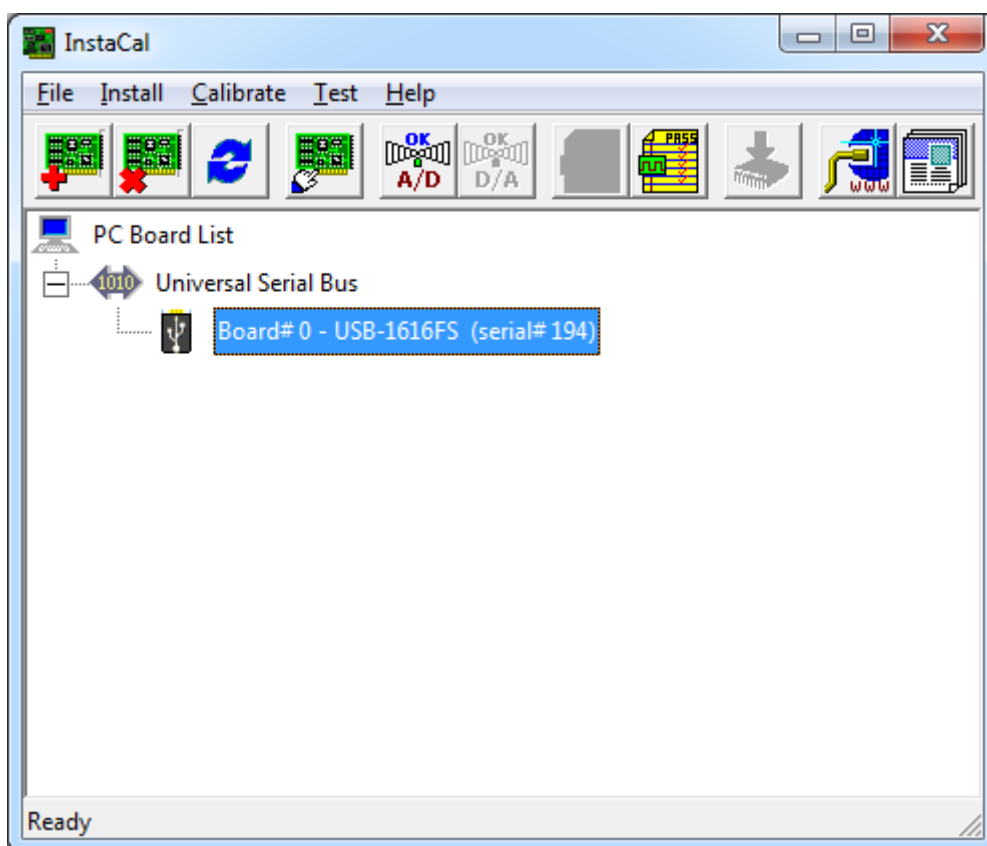


Figure 3. PC Board List.

- Close Instacal.

- After successful configuration of the DAQ system a Force plate must be configured in the MARS application.
- To run MARS, click on Start -> Programs -> MARS -> MARS.

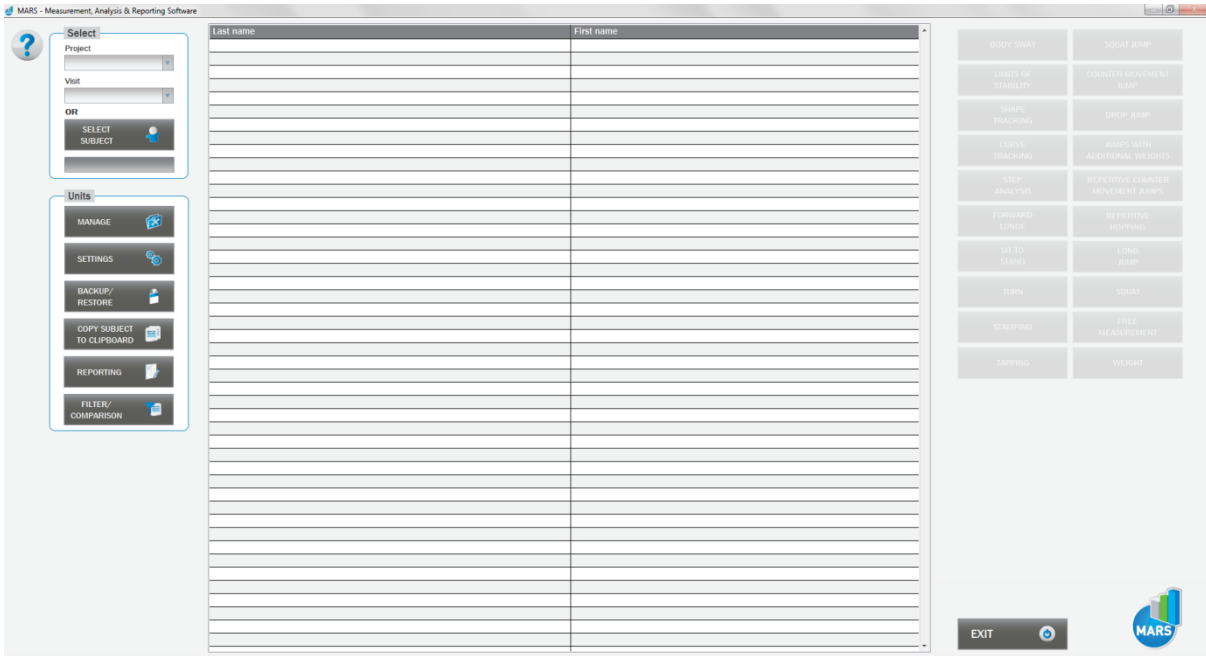


Figure 4.MARS main window.

- Go to **SETTINGS** (Figure 4).

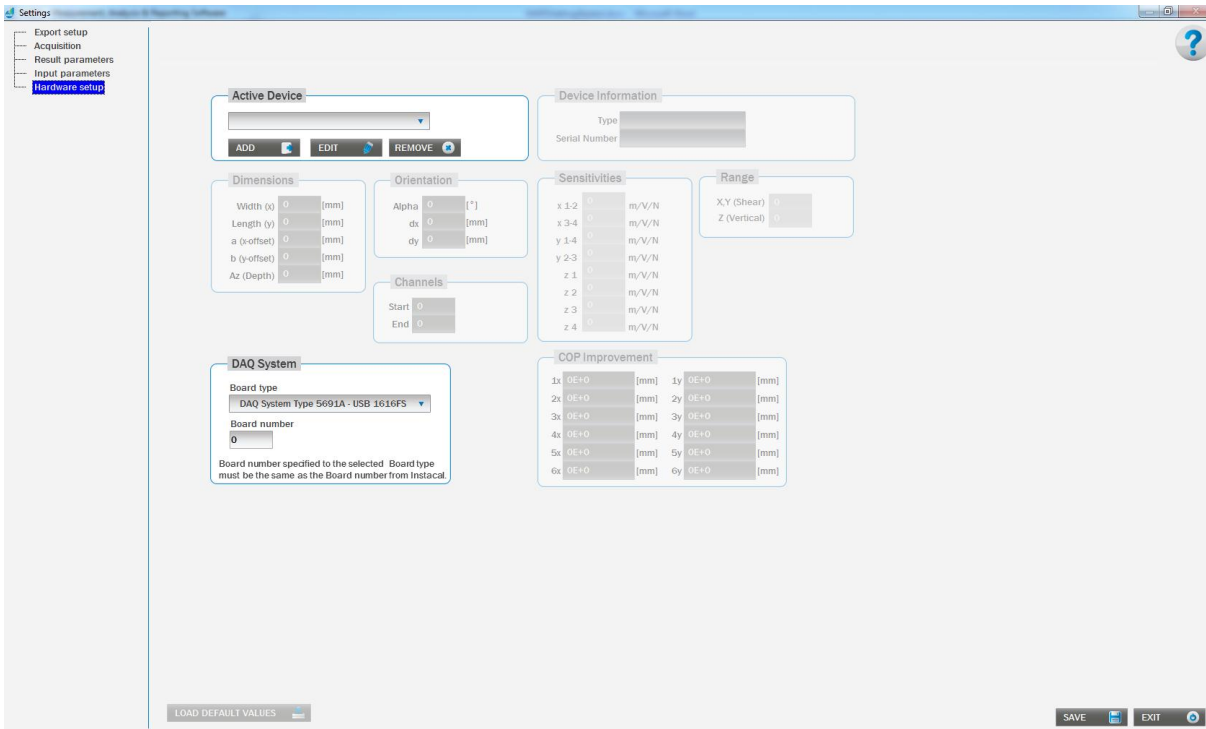
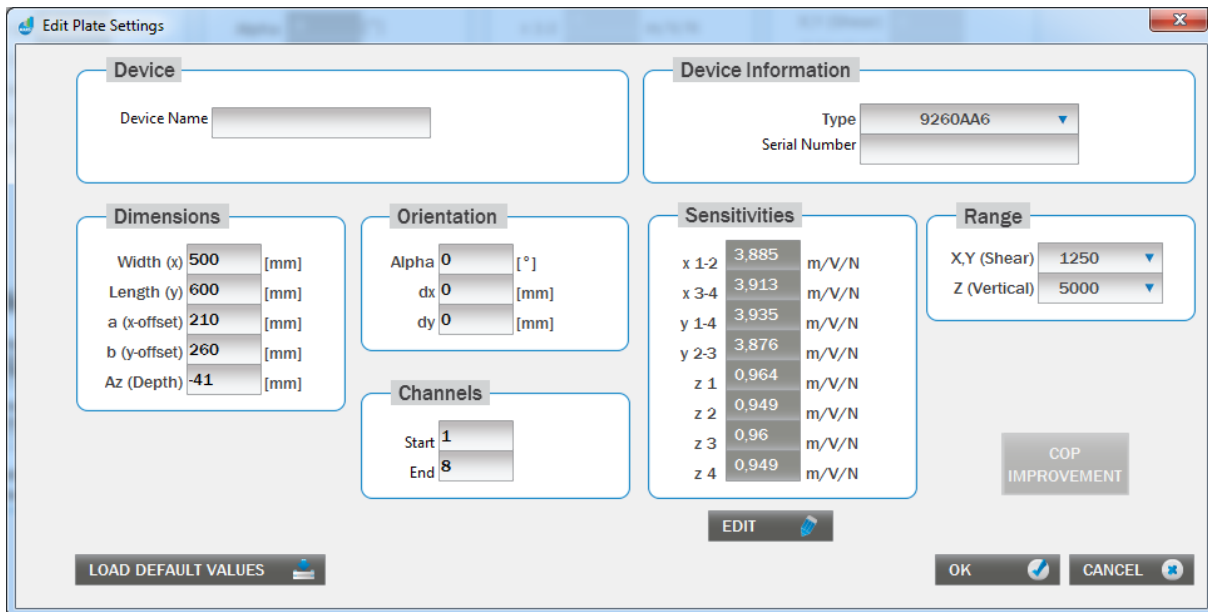


Figure 5.MARS hardware setup.

- To add new force plate, click on Add button (*Figure 5*).



**Edit Plate Settings**

**Device**  
Device Name:

**Device Information**  
Type: 9260AA6  
Serial Number:

**Dimensions**  
Width (x): 500 [mm]  
Length (y): 600 [mm]  
a (x-offset): 210 [mm]  
b (y-offset): 260 [mm]  
Az (Depth): -41 [mm]

**Orientation**  
Alpha: 0 [°]  
dx: 0 [mm]  
dy: 0 [mm]

**Sensitivities**

x 1-2	3,885	m/V/N
x 3-4	3,913	m/V/N
y 1-4	3,935	m/V/N
y 2-3	3,876	m/V/N
z 1	0,964	m/V/N
z 2	0,949	m/V/N
z 3	0,96	m/V/N
z 4	0,949	m/V/N

**Channels**  
Start: 1  
End: 8

**Range**  
X,Y (Shear): 1250  
Z (Vertical): 5000

COP IMPROVEMENT

LOAD DEFAULT VALUES

EDIT

OK CANCEL

Figure 6. MARS – Force plate settings.

- Choose your plate type from the list and enter the name and the plate serial number (entering the name will help you identifying the plate easily, in case you are using more than one plate).
- After the selection of the force plate type, all settings for the selected force plate type are already populated with default values
- Compare these values with the values shipped with your force plate and change them if necessary.
- Confirm settings by clicking »OK« button.
- Under Hardware setup select DAQ system (use the board type and the board number as configured in Instacal).
- **The board type and the board configured in MARS and in Instacal must match.**
- **Click “Save” button to save all changes.**
- After completing all the steps your system is ready to use.