TECH NOTE :: ClipX peak to peak time

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Brief description

This is an instruction to measure the peak to peak time. In our example the peak to peak time is captured during a force measurement.
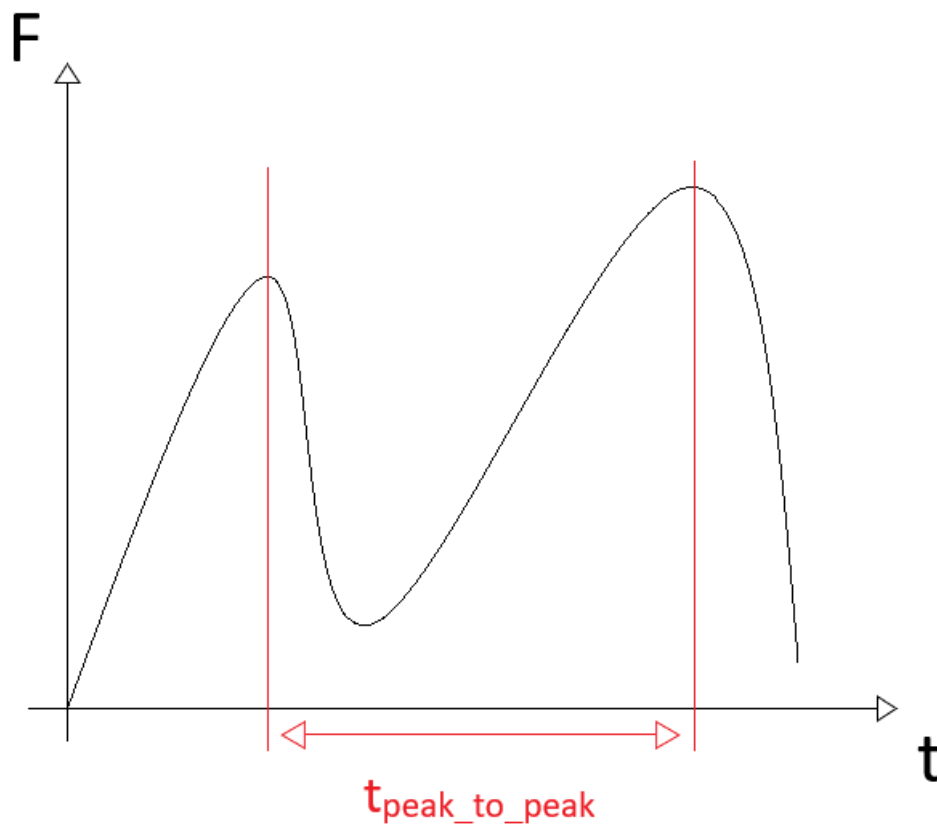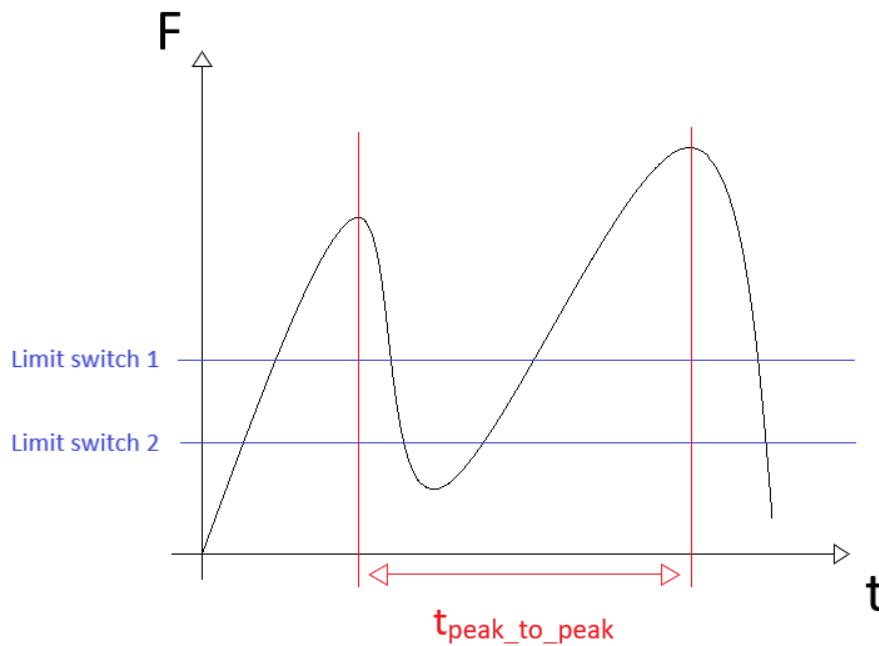

Illustration 1: Peak to peak time

Requirements

To measure the peak to peak time with the ClipX, two limit switches and the calculated channels are required.

Limit switch 1 represents a minimum, from which a maximum is searched. Underlying (unwanted) maxima are thus filtered out during the measurement. The limit of this switch is usually in the middle between maximum and minimum.

Limit switch 2 resets the calculated channel, which measures the peak value. The threshold of this switch must be guaranteed to fall below each cycle.

Operation

Limit Switches
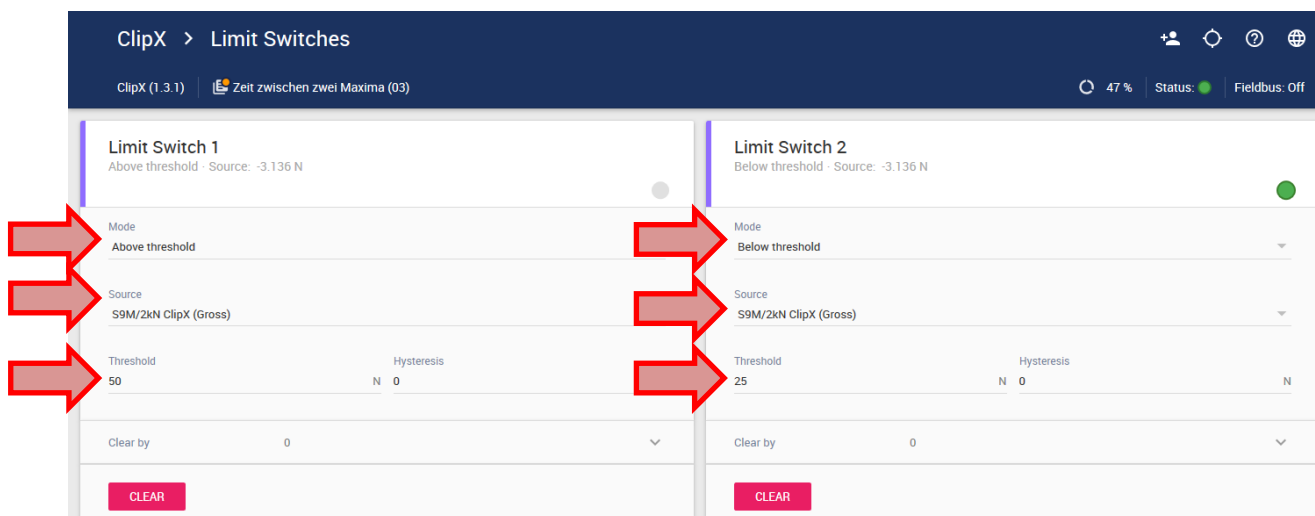
At first, the limit switches must be implemented.

Therefore in the menu 'limit switches' two limit switches are added.

Limit switch 1 (filters unwanted maxima):
- Mode: 'Above Threshold'
- Threshold: ca. middle between maximum and minimum (here: 50N)

Limit switch 2 (Resets the peak and capture):
- Mode: 'Below Threshold'
- Threshold: As low as possible but guaranteed undercut in every cycle (here: 25N)
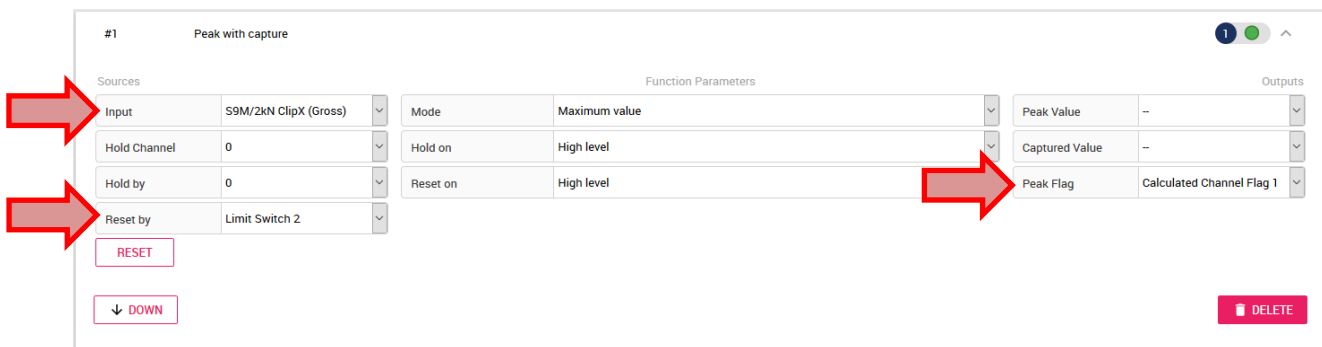
Calculated channels

To carry out the measurement three calculated channels are required:

1. Peak with Capture
2. Logic modules
3. Pulse-width measurement

1. Peak and Capture

In the menu 'Calculated Channels' a new calculated channel of type 'Peak with capture' is added:
- Select the gross signal (force) as source
- At 'Reset by' select the for this purpose created limit switch (here: Limit Switch 2)
- For the outputs, assign the "Peak Flag" to a calculated channel flag (here: Calculation Channel Flag 1)

2. Logic modules:

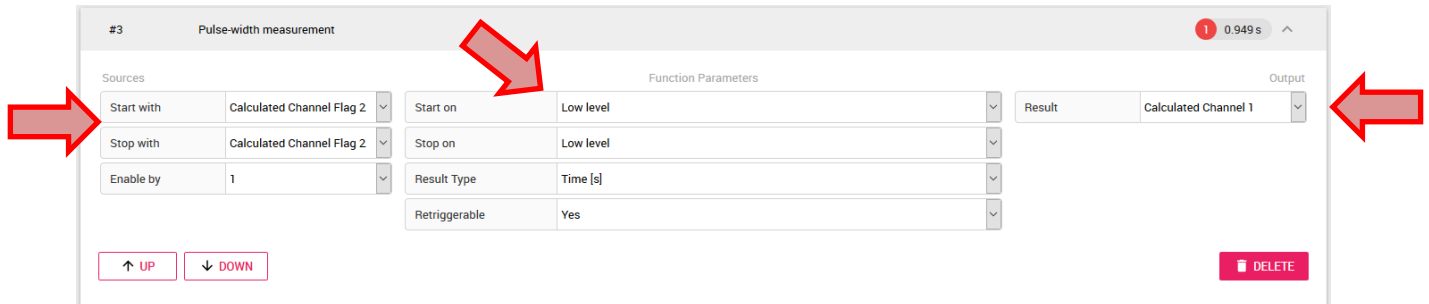Now a new channel of type 'Logic modules' is added:
- Select 'AND' for both gates
- Select the first limit switch for x_1
- Select the for this purpose created Calculated Channel Flag (here: Calculated Channel Flag 1) for x_2
- Select 1 for x_3 and x_4
- Assign a Calculated Channel Flag to the output y_1 (here: Calculated Channel Flag 2)
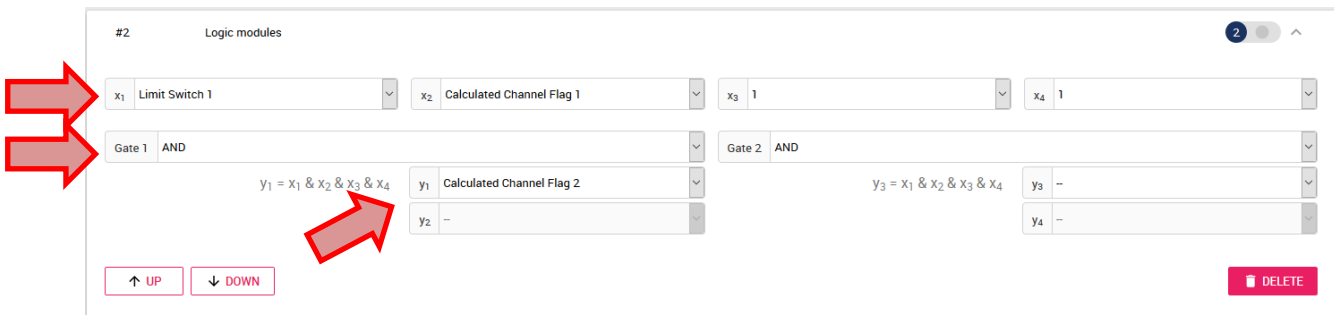
3. Pulse-width measurement:

Finally a Calculated Channel of type 'Pulse-width measurement' is added:
- At sources select 'Calculated Channel 2' as start as well as end
- Set 'Start with' and 'Stop with' to 'Low level'
- Change 'Result Type' to the desired unit
- Retriggerable → Yes
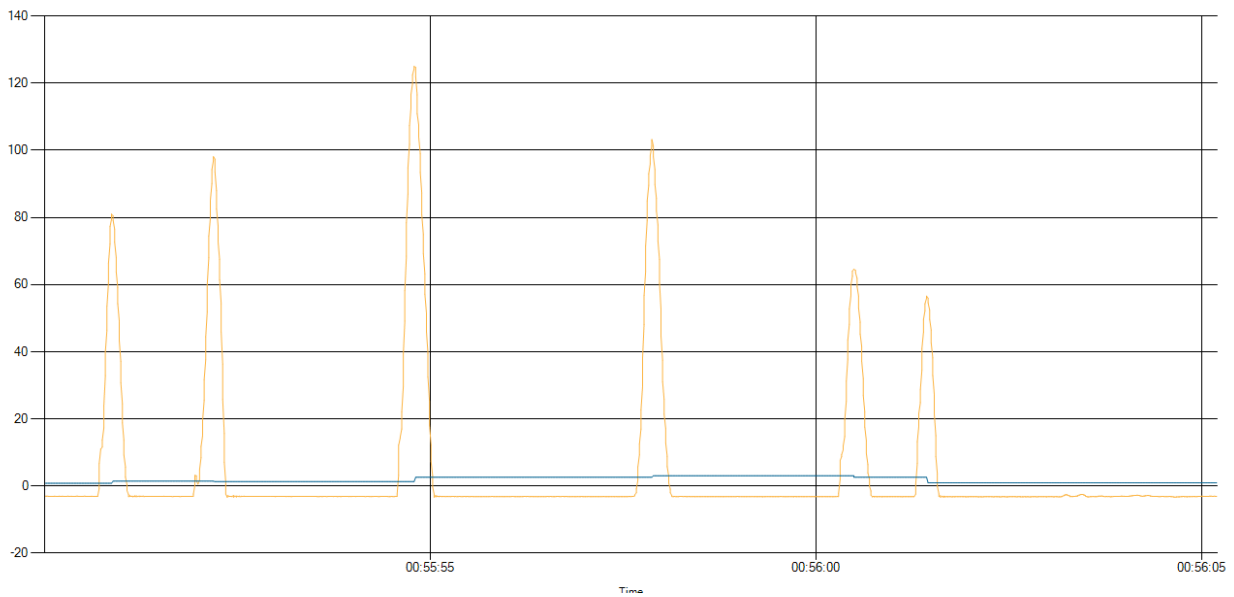- Assign 'Result' to a Calculated Channel

For error-free operation, it must be ensured that only falling flanks (Calculation Channel Flag 1) occur near the maximum. The falling flank marks the maximum.

Visualization

For the visualization the ClipX Dataviewer 2 can be used:

In addition, the flags can be displayed via the internal ClipX visualization or can be assigned to a digital output.

Disclaimer

These examples are for illustrative purposes only. They cannot be used as the basis for any warranty or liability claims.