

VIRTUAL CHANNELS

The user can create virtual channels thanks to the license D_VIRT_CHAN. These channels are one calculation result, which can be added to the « normal » channels during a measurement or a post-processing. Most of you know the useful arithmetic module, the aim of this tip is to show the interest of virtual channels for you.

1. PRESENTATION

The « virtual channels » can be useful during the measurement or after because:

- We can calculate one result, directly insert inside a measurement like “normal” channels
- It is possible to make some analysis difficult to make without these « virtual channels »
- We can create triggers, events ...
- Etc

We will give you in this tip 3 use cases, where the « virtual channels » are THE solution for users.

Use case n°1: particular analysis

We would like to measure a channel for which the DC part of the signal should be the track parameter and the AC part should be analyzed.

In the PAK software, the « tacking » channels are only defined as « magnitude » or « Tacho » channels. These types of channels don't allow us to analyze the AC part of the signal.

The idea is to create a virtual channel only with the AC part defined as « normal ». The steps are necessary:

1/ conversion of the “magnitude” channel to “normal” channel

2/ Application of HP FIR filter to remove the DC part of the signal

Use case n°2: Multiple Trigger

The multiple trigger combines different conditions relative to existing channels. For instance, it can be used to Start measurement at certain noises for automotive or start measurement at dangerous levels during a monitoring.

The formula has 3 steps:

- 1/ Definition the starting events
- 2/ Creation of one trigger for each event
- 3/ Combination of all the triggers

Use case n°3: Event counter

The event counter can be used to do statistics, test bench control measurement support ...

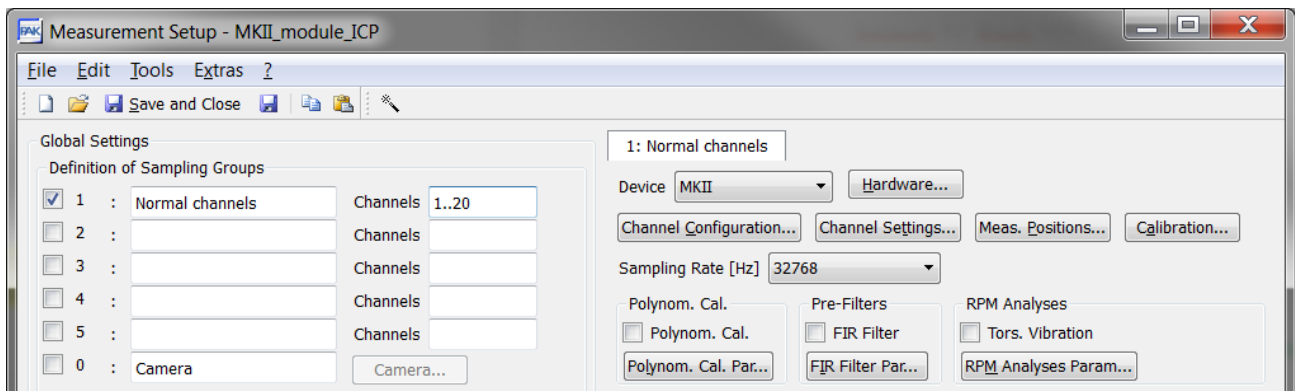
For the settings, we need to:

- Define the interesting event
- Create pulse signal at each event
- Count the number of pulses

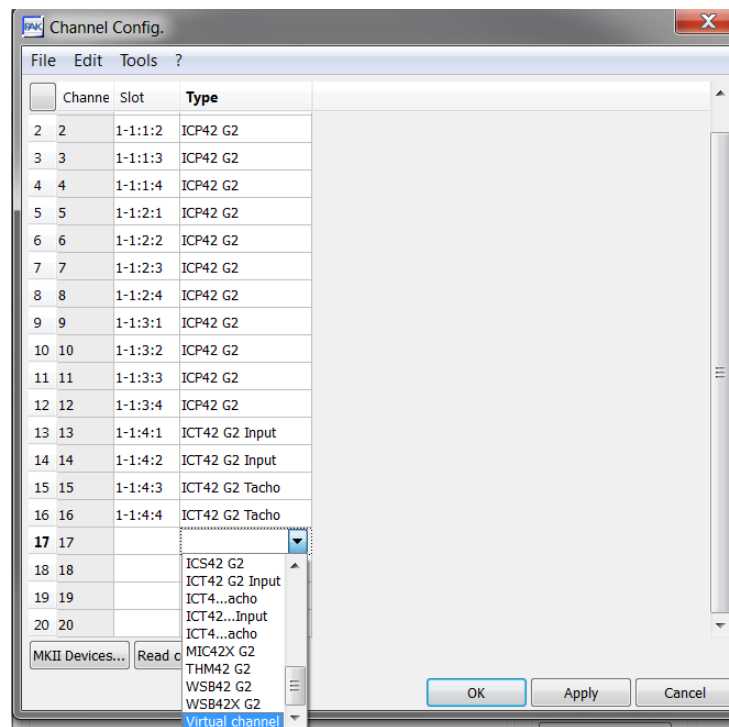
2. SETTINGS

During the measurement

In the measurement setup, we can define some virtual channels. To do this, some « empty » lines have to be available. If we are measuring with a 16 channels MKII, we can, for example, change in the « Global settings » the number « 1..16 » in « 1..20 ».

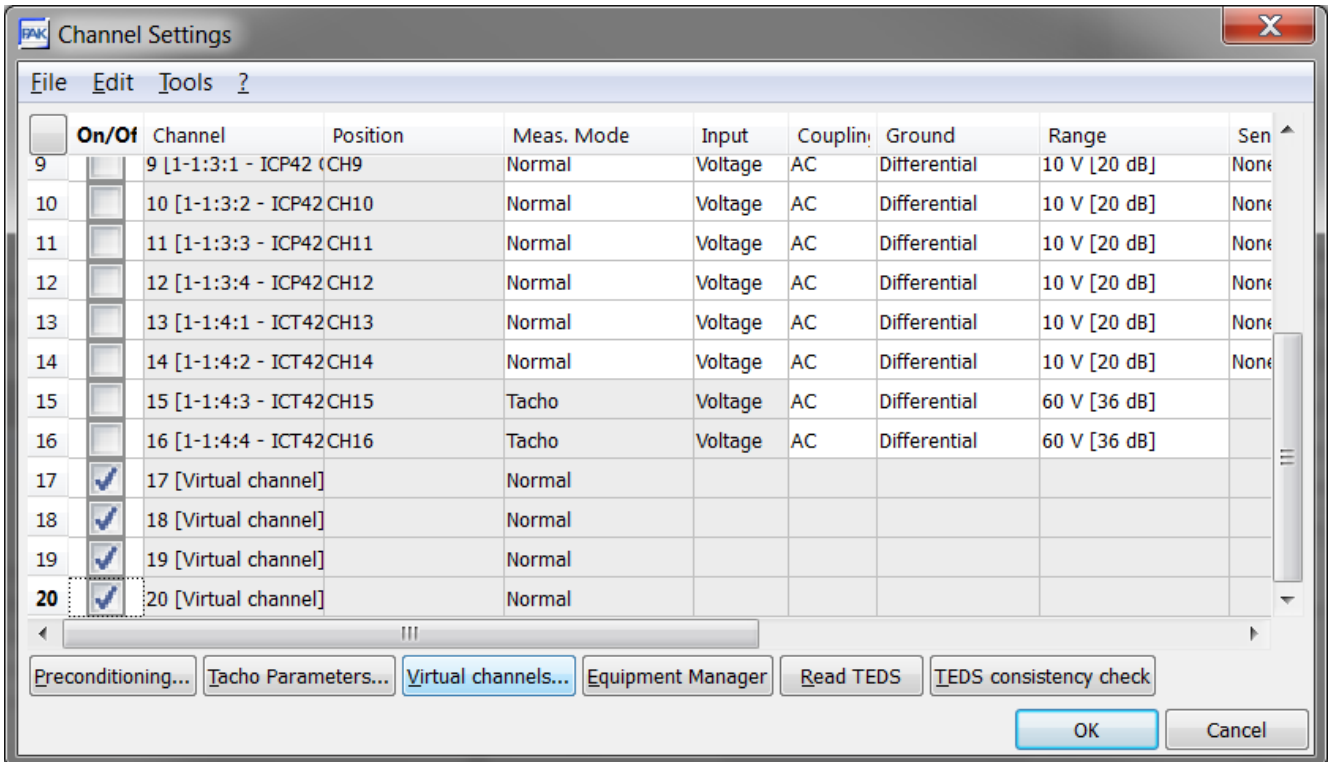


Click on « Channel configuration », you can see the 4 « empty » lines, where we can select « Virtual channel ».

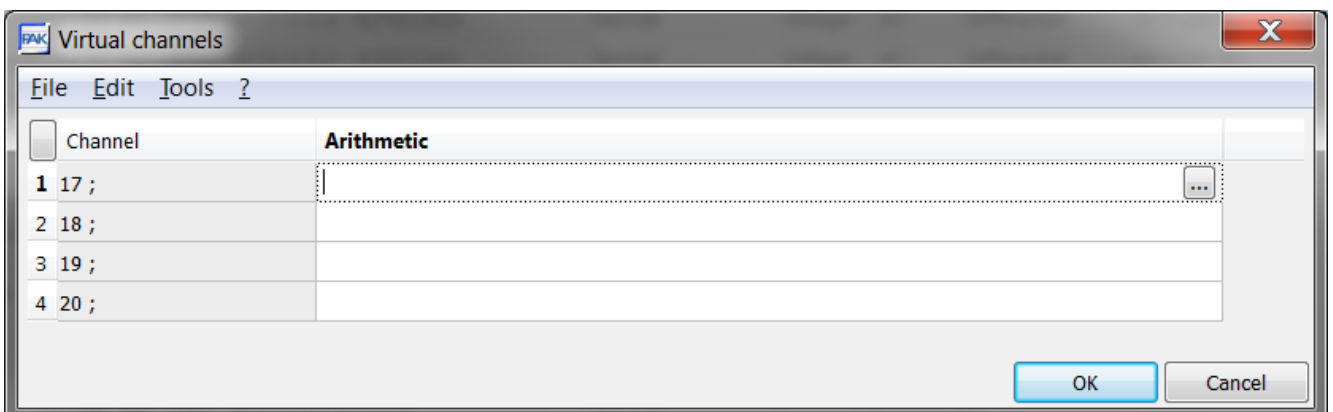


17	17	-	Virtual channel
18	18	-	Virtual channel
19	19	-	Virtual channel
20	20	-	Virtual channel

In « Channel Settings », you active some of this lines and click on « Virtual channels » bottom.

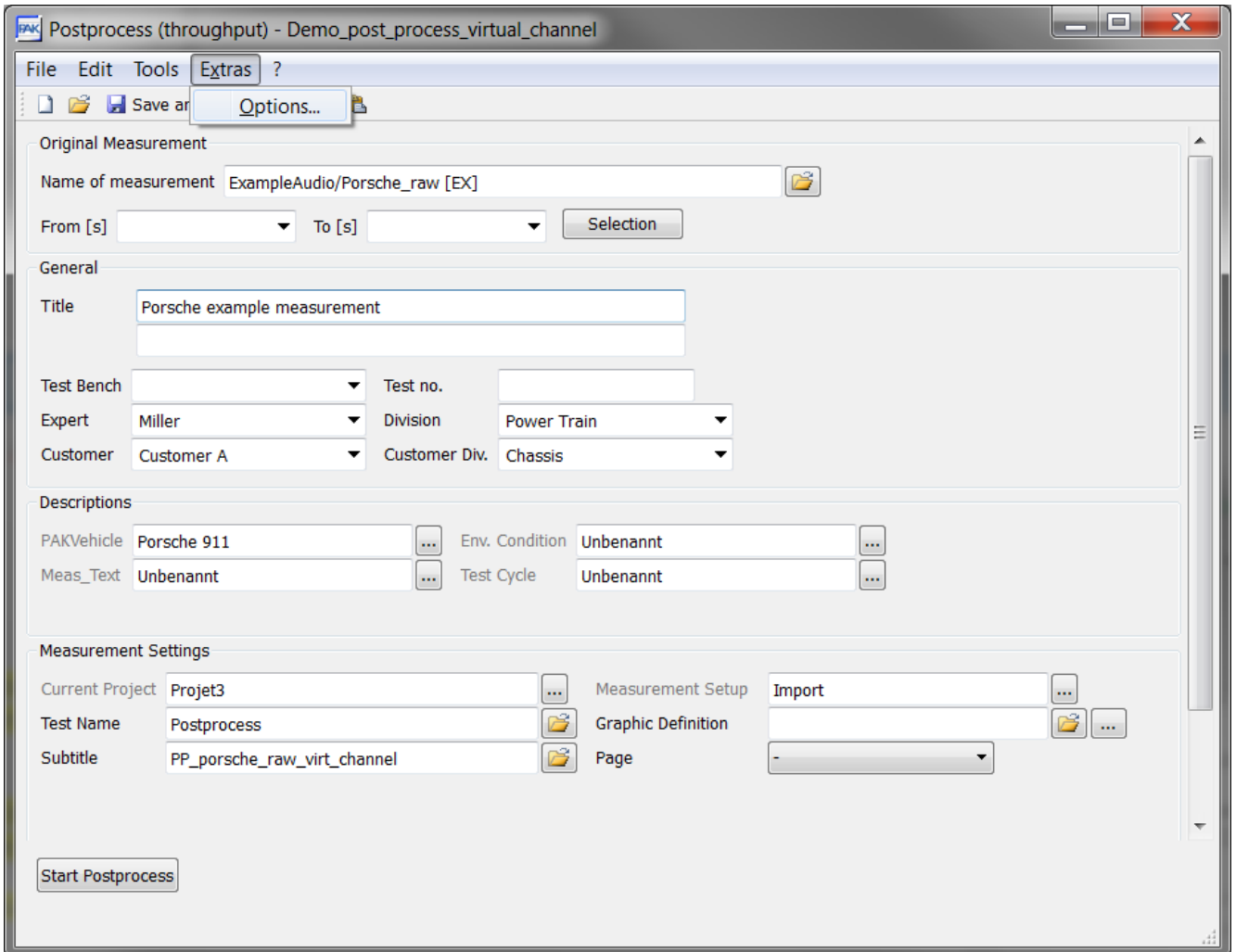


In the window, you can edit the calculation.

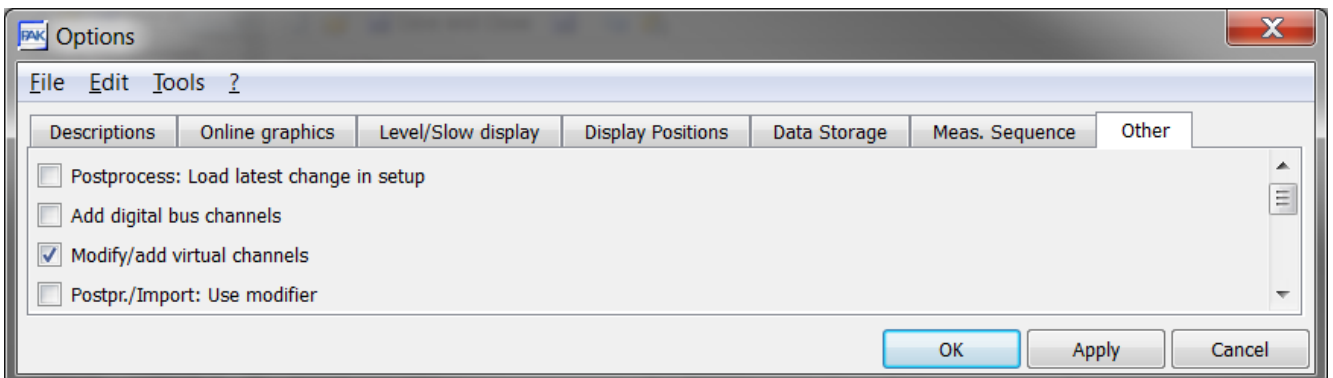


Postprocess

In the “postprocess (Throughput)” window, open the menu extra/Options.



In the last tab, we activate « Modify/add virtual channels ».



A new setting is displayed after the setup. You can enter a name and open it:

Measurement Settings

Current Project: ... Measurement Setup: ...

Test Name: Virtual Channels: ...

Subtitle: Graphic Definition: ...

Page:

In this window, we can activate some « virtual channels », define the formula, the name, position, label... of this new channel.

Additional Virtual Channels - Demo_pp_virtual_channel

File Edit Tools Extras ?

Save and Close Sampling rate of virtual channel sampling group [Hz] 16384

Active	Sampling group	Arithmetic	Quantity	Position label	Direction	X position [m]	Y position [m]	Z position [m]	Meas.point description	Meas.point type
<input checked="" type="checkbox"/>	1st sampling rate		Sound Pressure	Left	S	0	0	0	0 Left ear	LS
<input checked="" type="checkbox"/>	1st sampling rate		Sound Pressure	Right	S	0	0	0	0 Right ear	LS
<input type="checkbox"/>	Virtual Channels									
<input type="checkbox"/>	Virtual Channels									
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<input type="checkbox"/>	Virtual Channels									

Position list

3. CALCULATION EXAMPLES

Cas n°1 : Analysis

Convert a Magnitude channel to "NORMAL"

CH1_Normal = (POS{ CH2_normal }*0+1)*POS{ CH1_magnitude }

AC FIR Filter

RESULT = HP_FIR(POS{ CH1_Normal },1,1025)

Cas n°2: Multiple trigger

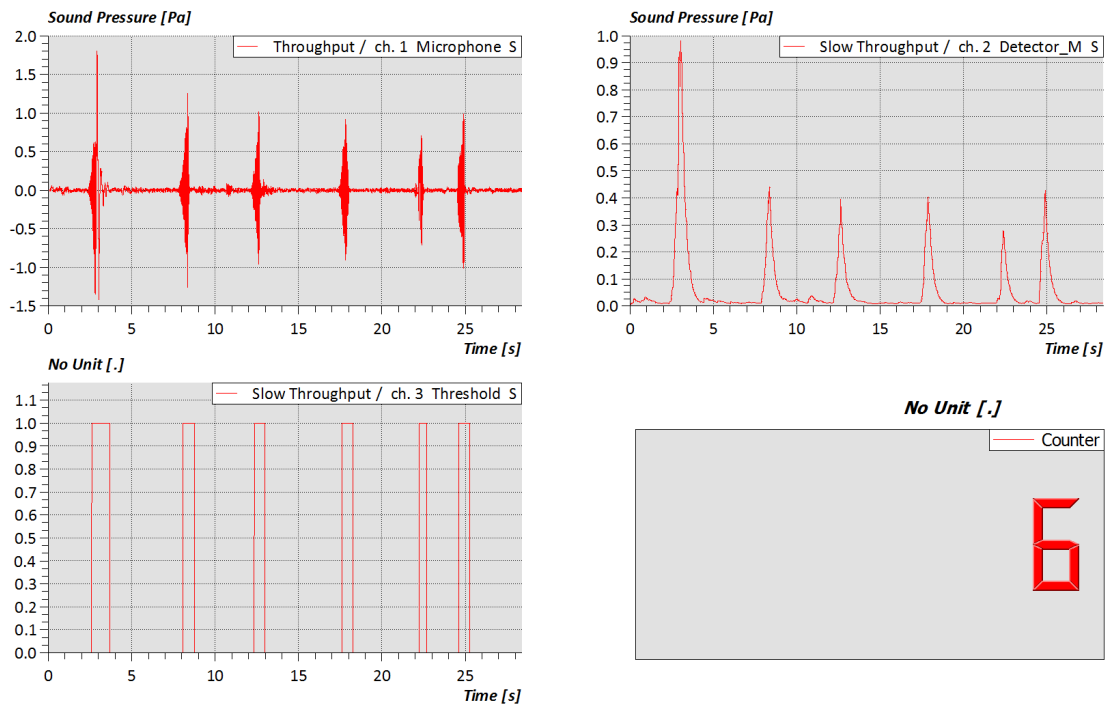
```
#Creation of 2 bandpass on 2 measured signals
#absolute value of bandpass 100-300Hz for Mic_01
Mic1F1 = ABS(BP_FIR(POS{ Mic_01 },100,300,1025))
#absolute value of bandpass 1500-2500Hz for Mic_02
Mic2F2 = ABS(BP_FIR(POS{ Mic_02 },1500,25000,1025))
```

```
#Trigger for tachoedge if value for Mic1F1 is higher 2
T1 = TRIGGER(Mic1F1,2,2,RISING,0.1)
#Trigger for tachoedge if value for Mic2F2 is higher 2.5
T2 = TRIGGER(Mic2F2,2.5,2.5,RISING,0.1)
```

```
#Join pulses → OR statement. One level exceeds or the other a pulse edge will be created for further use.
RESULT = JOIN_PULSES(T1,T2)
```

Cas N°3 : Event counter

You can call us to set up a event counter. Below, you can see the steps in graphics for an example, where the event consists to have a detector value higher than 0.1 Pa.



PREVIEW

In the next august issue of your PAK Tip: **derived channels**

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