Application Note

How to use the TOMBAK as a burst generator

Multiboard Series

TOMBAK : Synchronization electronic board

How to use the TOMBAK as a burst generator

Pre-requirement: Before using the TOMBAK board, make sure you followed all the instructions mentioned in the Operating Manual

1. Presentation

The board can generate a burst signal from an external trigger or from a software trigger.
The burst consists of a specific software adjustable number of pulses.
When triggered, the board output a burst signal with an adjustable pulse width, a specific delay and a frequency related to the “Pulse In” input signal.

2. Timing Diagram

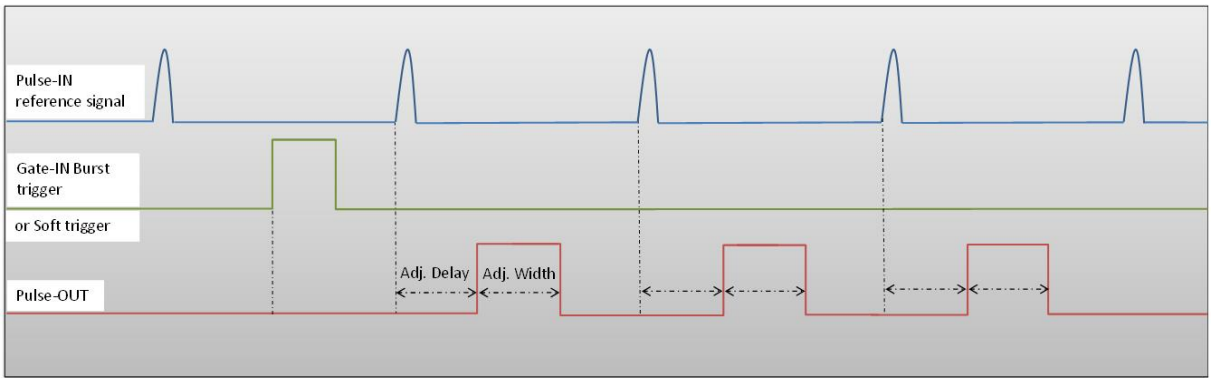


Figure 1 : Burst signal of 3 pulses, “Gate-IN” or Soft triggered and “Pulse-In” synchronized

3. Synoptic

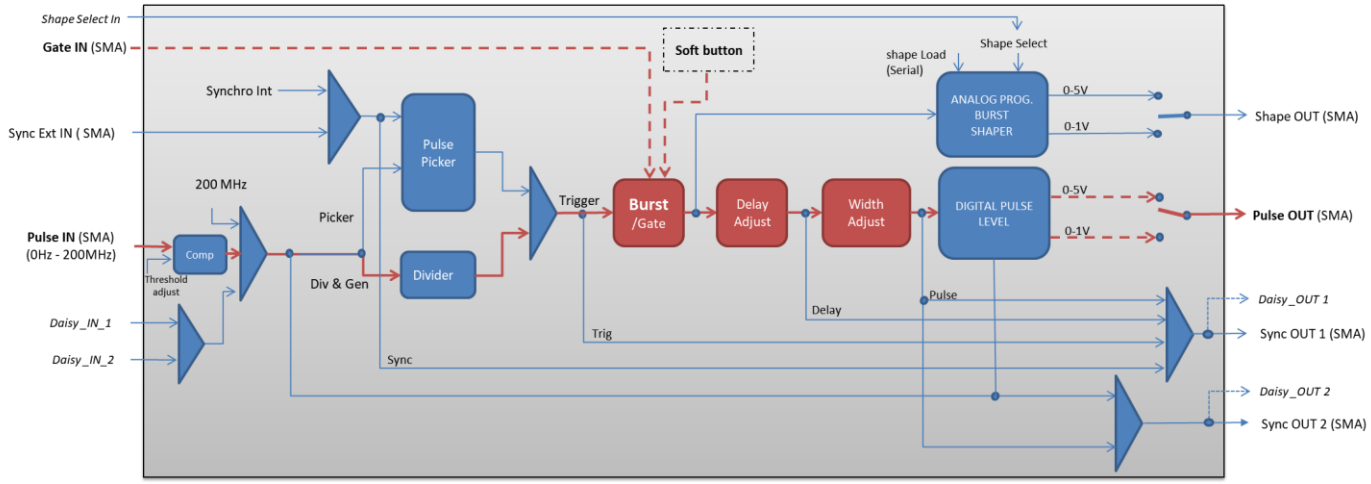
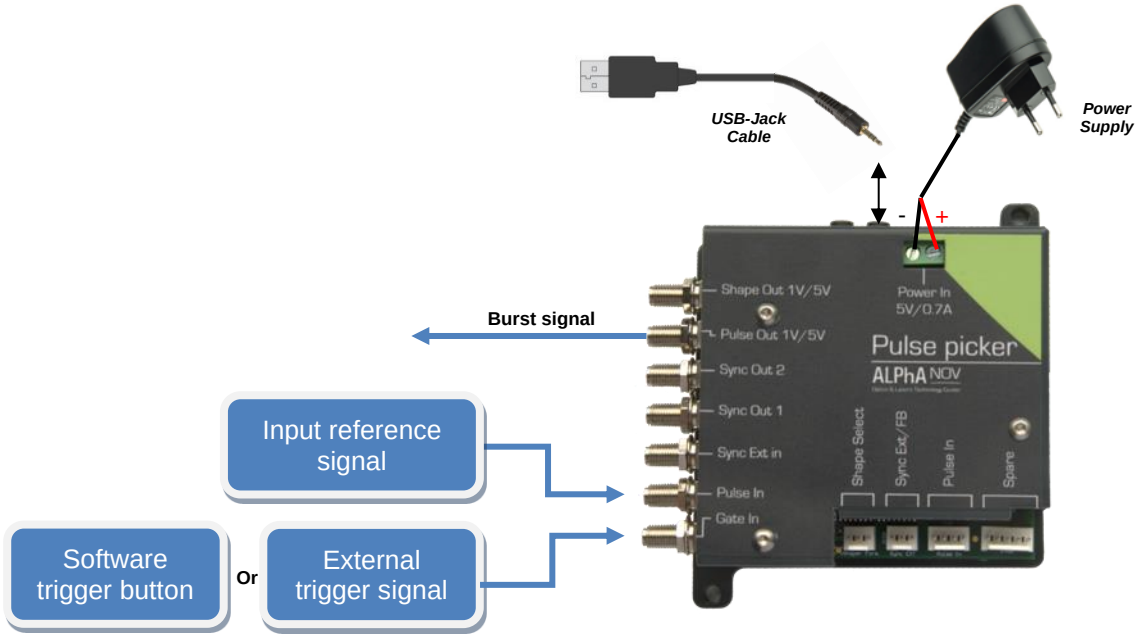


Figure 2 : Main software features used in Burst Generator

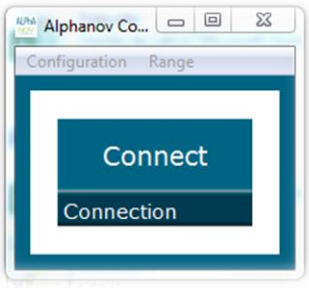
4. Cabling

1. Plug the USB-Jack cable in the "*USB In"* connector
2. Plug the power supply to the "*Power In*" connector to power on the board
3. Burst signal will output on the "*Pulse Out*" SMA connector
4. Connect the trigger signal that will start the burst to "*Gate In*" SMA connector
5. Connect the reference signal (i.e. the signal that will drive the burst when triggered) to "*Pulse In*" SMA connector.



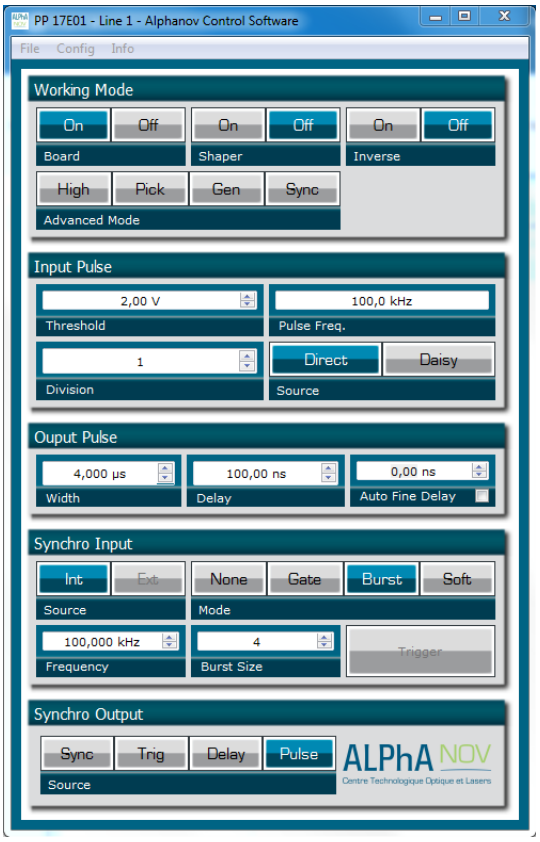
5. Software configuration

Launch the ALPhANOV Control Software and click on *Connect* to start the TOMBAK hardware detection. The software automatically detects the TOMBAK board.

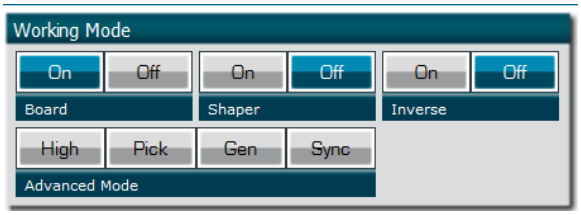


A window will appear for each TOMBAK connected to the computer.

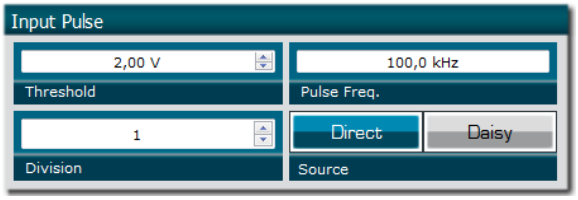
The main configuration windows must be configured as follow :



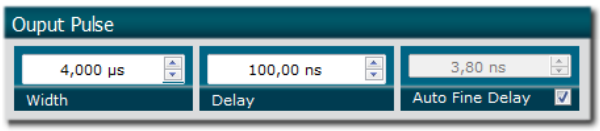
- Working Mode window :
  - Set the **Board** button to **ON**
  - Set the **Shaper** button to **Off**
  - Set the **Inverse** button to **Off**
  - Unset all **Advance Mode**



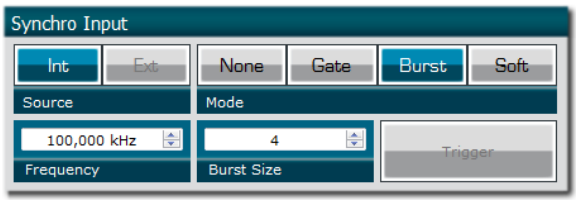
- Input pulse window :
  - Configure the **Threshold** voltage so that the input pulse frequency is detected and the same as your pulse generator system
  - Set the **Division** factor to **1** (default settings). Division value may be ajusted to divide the input reference signal frequency.
  - Set the input pulse **Source** to **Direct**



- Output Pulse window :
  - Set the output pulse **Width**
  - Set the **Delay** between output and input signals
  - **AutoFineDelay** may be let in auto mode

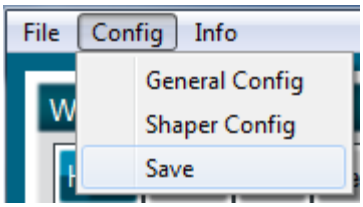


- Synchro input windows:
  - **Source** synchronisation is not used in this mode
  - Set **Mode** to Burst
  - **Frequency** is not used in this mode
  - Set the **Burst Size** value to configure the number of pulse triggered



- Synchro ouput window (default settings) :
  - Source : Pulse

Don’t forget to save the settings by clicking on the “Save” button in the bar menu.



6. Main feature

Burst size range	[1 - 10^9] pulses
Adjustable pulse width ⇨ resolution (pulse width [5ns – 510ns]) ⇨ resolution (pulse width [511ns – $2^{\wedge 62}$ns])	[5ns – >>1000s] 2ns 5ns
Adjustable pulse delay ⇨ resolution	[70ns – >>1000s] 10ps
Input Trigger Voltage ⇨ Logic Low ⇨ Logic High	 [0-0.8V] [1.7-3.3V]
Input PulseIn voltage	30 mV – 3,3V
Output Voltage	1 / 3,3 / 5 Volts (hardware setup)
Output maximum frequency	20 MHz