# 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**
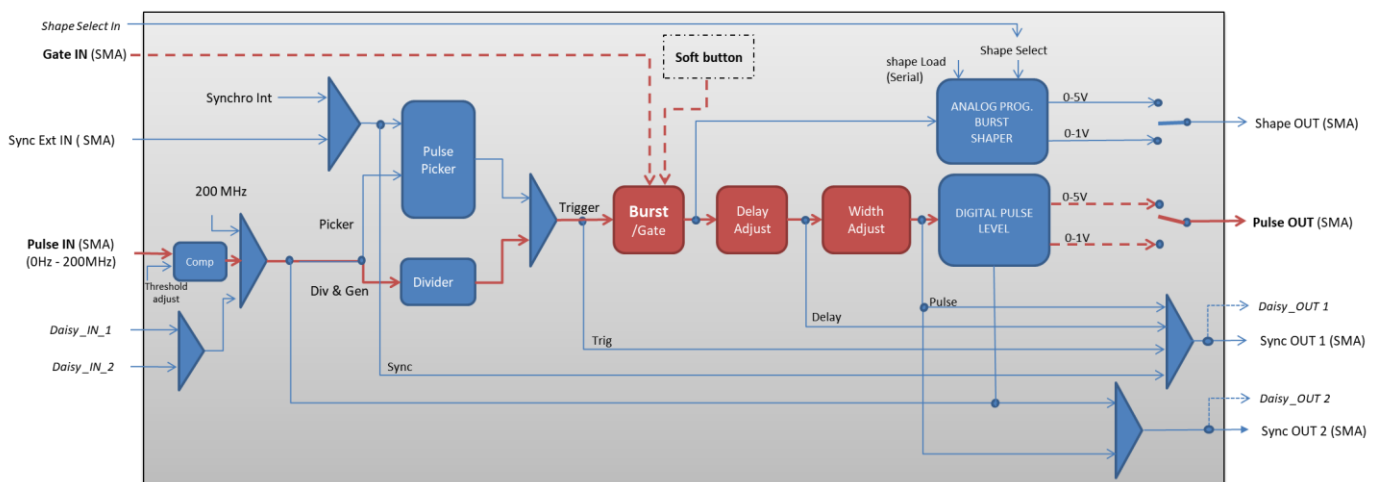
## 3. Synoptic



**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.
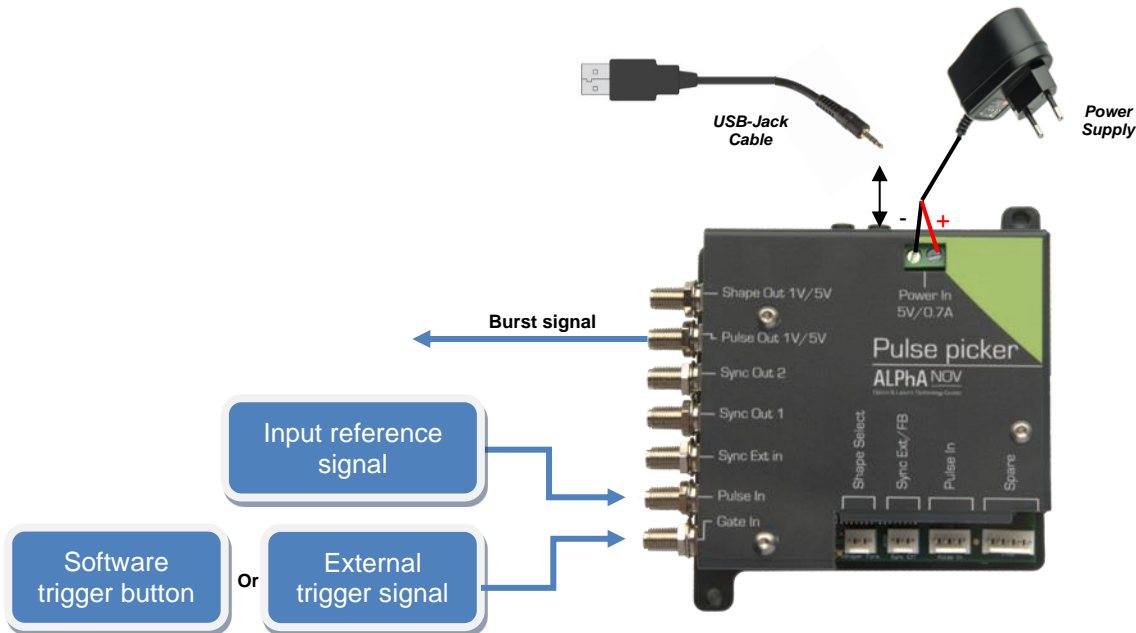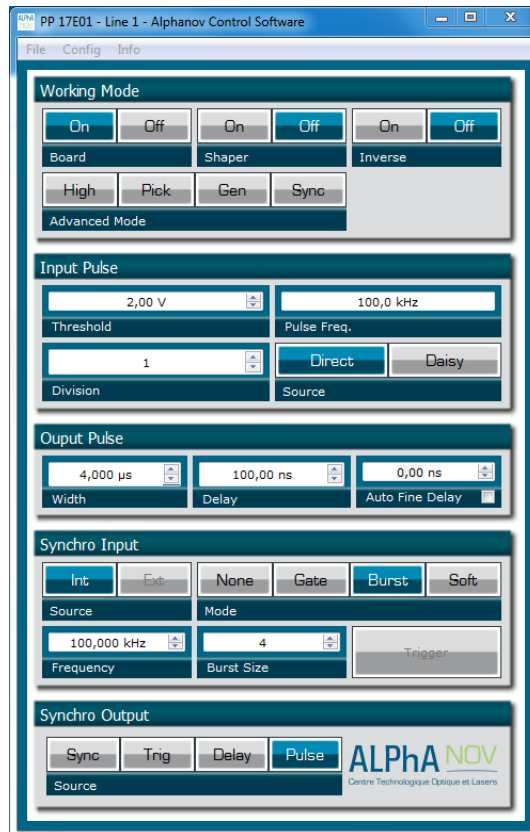


# 5. Software configuration

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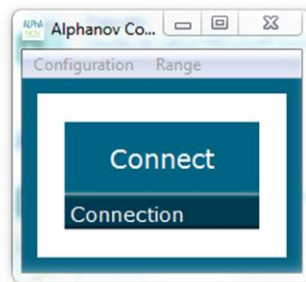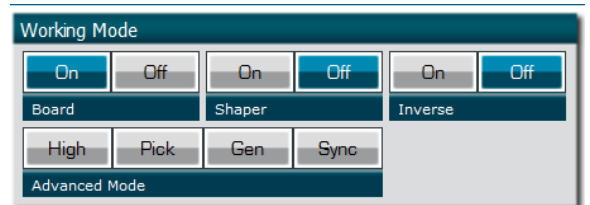


**<u>A window will appear for each TOMBAK connected to the computer.</u>**

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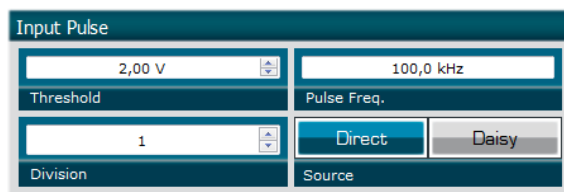
- Output Pulse window :
  - Set the output pulse **Width**
  - Set the **Delay** between output and input signals
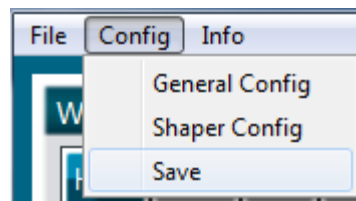  - **AutoFineDelay** may be let in auto mode
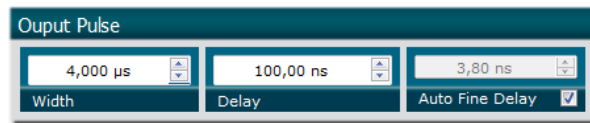


- Synchro input windows:
  - **Source** synchronisation is not used in this mode
  - Set **Mode** to Burst
  - **Frequency** is not used in this mode
  - Set the **Burst Size** value to configure the number of pulse triggered
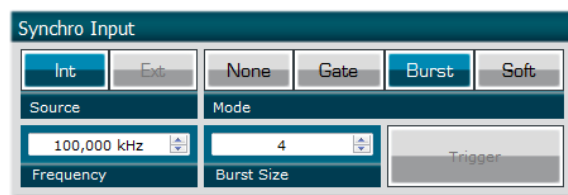


- Synchro ouput window (default settings) :
  - Source : Pulse



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