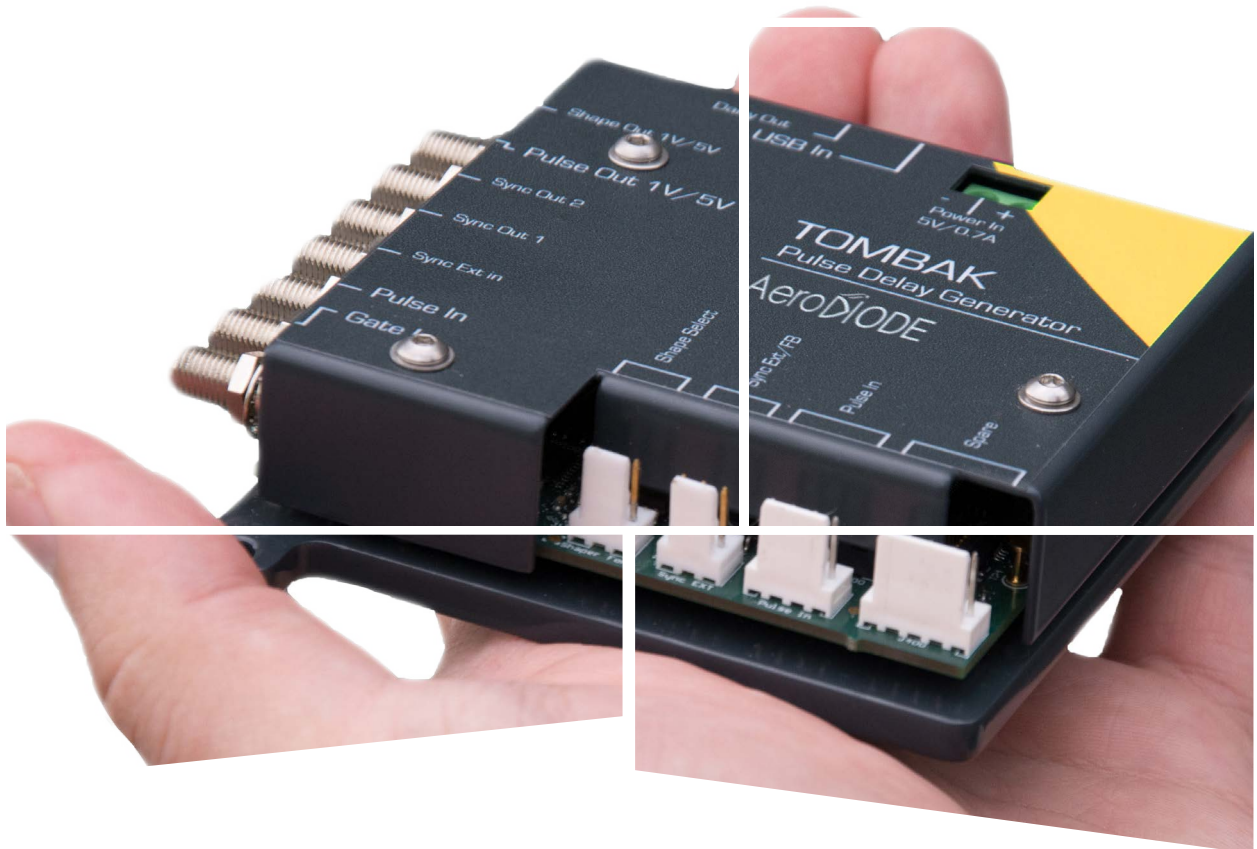# Tombak

Pulse & Digital Delay Generator

Pulse-Picker | Voltage Converter

AWG (Arbitrary Waveform Generator)

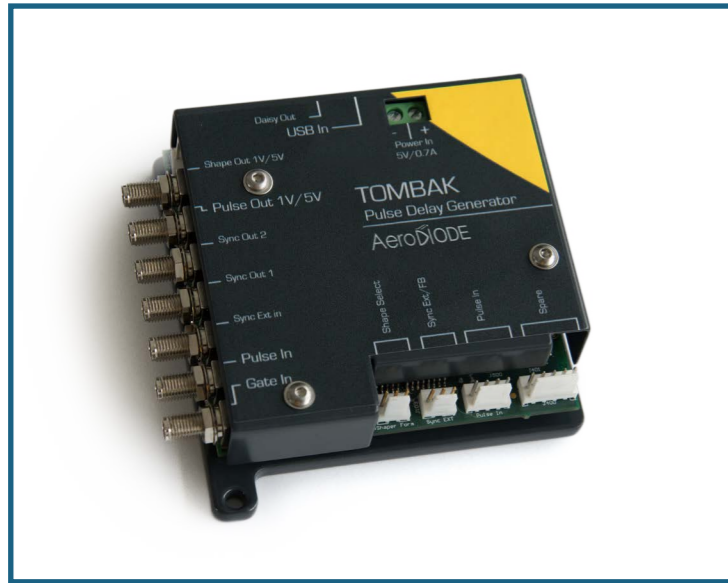Freq. Divider | Burst generator / shaper



# AeroDIODE

# Tombak

## Pulse Delay Generator

This Pulse Delay Generator is a precision instrument that enables the user to consolidate multiple functions into one compact device.

This unit is a great asset to generate high frequency pulses, delays and bursts. It's an ideal testing and timing control instrument for electronics, lasers or camera setup.

### Key applications

- Ideal for OEM integration
- Components test
- Laser timing control
- Laser pulse-picking
- Precision pulse application
- Instrument triggering
- ATE applications
- Camera synchronization

### Key features

- 10 ps delay resolution
- 80 ps RMS jitter (few ps in direct mode)
- Min input voltage: 30 mV (<10 mV optional) with adjustable threshold
- 150 MHz voltage level converter / Digital Delay
- 20 MHz standalone generator
- 2 ns pulse resolution
- Photodiode input (otional photodiode)
- Burst/Gate generator
- Down to 12 ns insertion delay
- USB and many libraries (LabVIEW, Dlls, Hexa etc.)
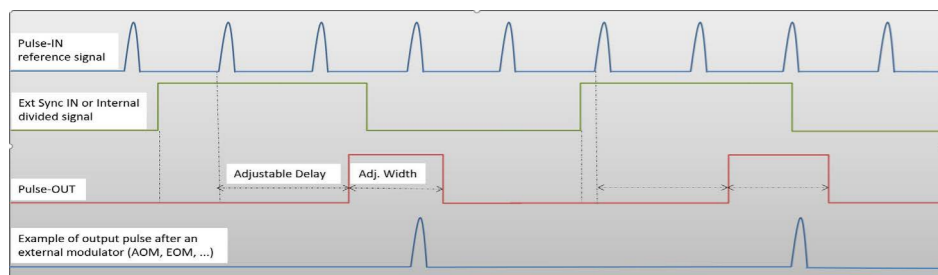


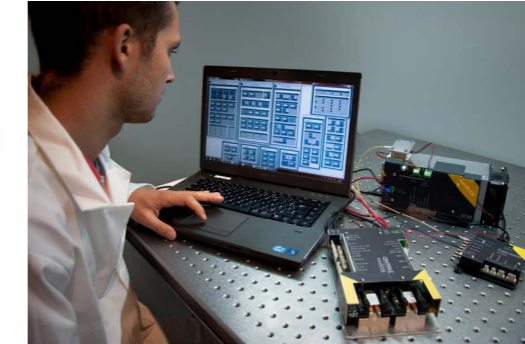Example of using cases : pulse picking from external synchronization signal
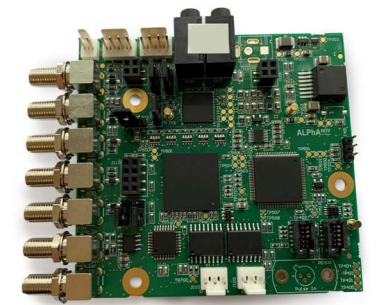
### GUI control software
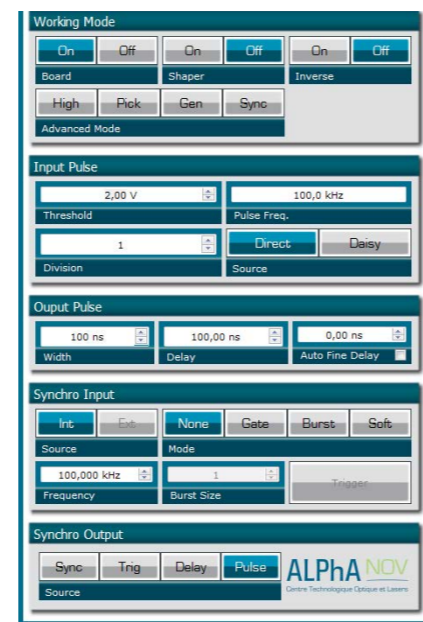


## Operating Modes



Possibility to stack multiple synchronized modules.

Tombak is part of Aerodiode multiboard system which makes users save a lot of time for R&D and integration.

Tombak is also available at board level for OEM integration (Minimum order quantity may apply).

This Pulse Delay Generator offers several operating modes including pulse generator, Digital delay generator, frequency divider, burst generator, pulse picker and Voltage converter.

### Pulse/Digital Delay Generator

- Adjustable pulse delay: 10 ps to >1000 s
- Adjustable pulse width: 5 ns to >1000 s
- Delay resolution: 10 ps
- Width resolution:
  - 2 ns for pulse width: 5 to 510 ns
  - 5 ns for pulse width: 511 ns to 1000 s
- Jitter:
  - < few ps up to 10 ns delay
  - < 80 ps RMS up to 100 ns delay
  - < 200 ps RMS up to 500 ns delay
  - 1.5 ns RMS otherwise

### Standalone generator

- Rate up to 20 MHz
- Programmable duty cycle

### Pulse-Picker / Clock synchronizer

- Pulse picking up to 200 MHz input / 20 MHz output
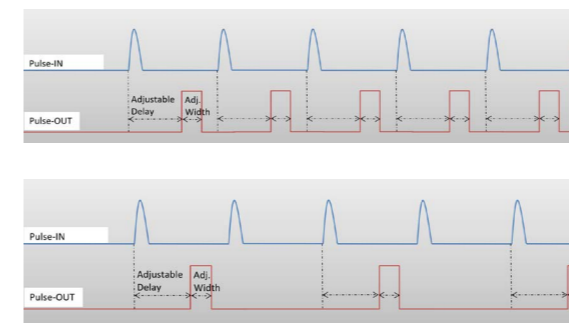


Example of two simple using cases : Digital delay (top) and frequency divider (bottom)

### Voltage level converter

- Rate: up to 150 MHz
- Input Voltage: <30 mV to 3.3 V
- Adjustable output level: 1 V/3.3 V/5 V_TTL
- 12 ns insertion delay
- < 30 ps Jitter

### Frequency drivider/prescaler

- 200 MHz maximum input freq
- Division by 1 to $10^9$

### Burst/gate generator

- 1 to $10^9$ pulses (burst)
- Adjustable trig to burst delay
- Intra burst resolution (internal source): 5 ns
- External or internal source generator
- External or software trigger/gate
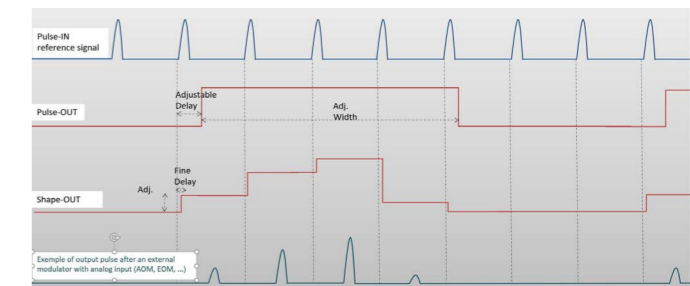


Example of a complex using case : pulse picking with burst shaping

# AeroDIODE

# Technical Specifications

## Electrical

### Pulse_Out Outputs (SMA connector)

| | |
|---|---|
| Output Impedance | 50 Ω recommended coupling |
| Adjustable output level | 1 V/3.3 V/5 V_TTL |
| Rise time | < 2 ns typical |
| Max output rate | 20 MHz (up to 150 MHz as Digital Delay Generator) |

### Pulse_In (SMA connector)

| | |
|---|---|
| Input voltage | <30 mV to 3.3 V |
| Threshold | 0-3.3 V-DC software adjustable (Pulse In) |
| Max Input rate | 200 MHz |
| Insertion delay | 12 ns / 15 ns / 70 ns (see user manual) |

### Sync Ext/Gate Inputs (SMA connector)

| | |
|---|---|
| Input voltage | 0 to 3.3 V |
| Threshold | 1.2 V |
| Max input rate | 20 MHz |

## Synoptic (probably the most efficient way to understand the product) :
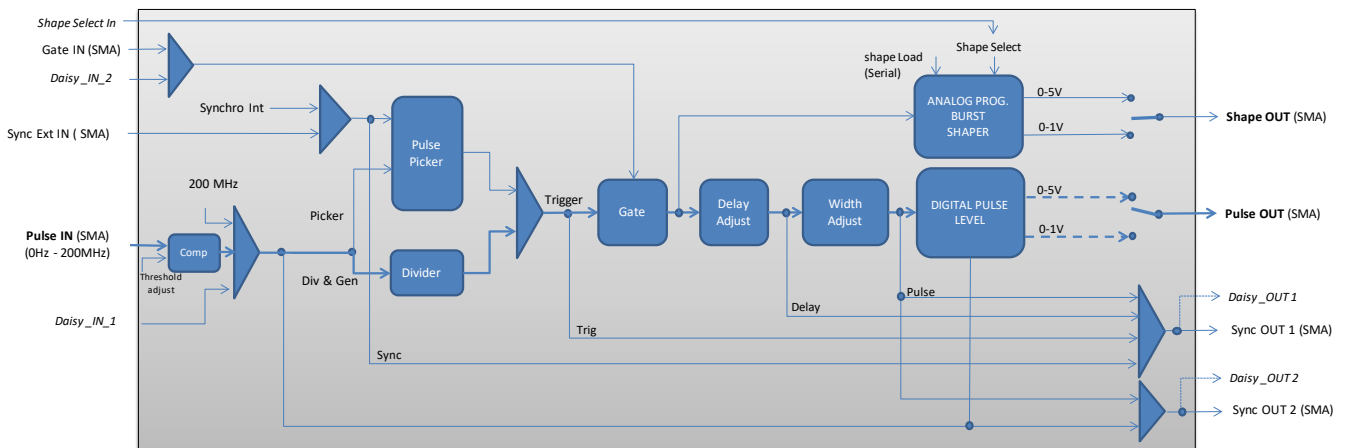


## General

| | |
|---|---|
| Power voltage/current | +5 VDC/500 mA (charger included) |
| USB | USB 2.0 (cable included) |
| Stackable units | Multiple channel setup using several units (single USB/ single power supply/single synchronization input signal) |
| Dimensions (mm) | 104*95*28.2 |

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