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.

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 [optional photodiode]
- Burst/Gate generator
- Down to 12 ns insertion delay
- USB and many libraries [LabVIEW, Dlls, Hexa etc.]

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

GUI control software

Operating Modes

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

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 divider/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

Guards: Extend up to 200 MHz input / 20 MHz output

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

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

Example of using cases: pulse picking from external synchronization signal
Technical Specifications

Electrical

**Pulse_Out Outputs [SMA connector]**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Impedance</td>
<td>50 Ω recommended coupling</td>
</tr>
<tr>
<td>Adjustable output level</td>
<td>1 V/3.3 V/5 V_TTL</td>
</tr>
<tr>
<td>Rise time</td>
<td>&lt; 2 ns typical</td>
</tr>
<tr>
<td>Max output rate</td>
<td>20 MHz (up to 150 MHz as Digital Delay Generator)</td>
</tr>
</tbody>
</table>

**Pulse_In (SMA connector)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>&lt;30 mV to 3.3 V</td>
</tr>
<tr>
<td>Threshold</td>
<td>0-3.3 V DC software adjustable (Pulse In)</td>
</tr>
<tr>
<td>Max Input rate</td>
<td>200 MHz</td>
</tr>
<tr>
<td>Insertion delay</td>
<td>12 ns / 15 ns / 70 ns [see user manual]</td>
</tr>
</tbody>
</table>

**Sync Ext/Gate Inputs [SMA connector]**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>0 to 3.3 V</td>
</tr>
<tr>
<td>Threshold</td>
<td>1.2 V</td>
</tr>
<tr>
<td>Max input rate</td>
<td>20 MHz</td>
</tr>
</tbody>
</table>

Synoptic [probably the most efficient way to understand the product]:

![Synoptic Diagram](image)

General

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power voltage/current</td>
<td>+5 VDC/500 mA [charger included]</td>
</tr>
<tr>
<td>USB</td>
<td>USB 2.0 [cable included]</td>
</tr>
<tr>
<td>Stackable units</td>
<td>Multiple channel setup using several units [single USB/single power supply/single synchronization input signal]</td>
</tr>
<tr>
<td>Dimensions [mm]</td>
<td>104 * 95 * 28.2</td>
</tr>
</tbody>
</table>