The autocorrelator **pulseCheck USB** is a versatile instrument for measuring the pulse width of different fs and ps laser systems. It covers a broad wavelength range using various Optics Sets\(^1\), which can be upgraded in the field.

The internal optics of the MIR version of the **pulseCheck** are designed to cover the wavelength range from 2 ... 12 μm with various Optics Sets. Since the internal optics differs from a standard **pulseCheck**, only MIR Optics Sets can be used with the **pulseCheck MIR**.

The **pulseLink controller** controls the measuring process and is connected via USB to the Control Software running on the customer’s computer.

Enabled by a special scanner design and a real time position measurement system the instrument offers a linear time scale and different factory calibrated scan ranges. In combination with high resolution digitizing and fast processing, the **pulseLink** provides the measured autocorrelation function and pulse width data at a high refresh rate and with a very high precision.

Using an external trigger, the measuring process is also optimized for the measurement of low repetition rate lasers. The included Control Software allows for easy data export for further analysis.

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1) An Optics Set consists of a mounted non-linear crystal as well as a detector. When upgrading Optics Sets, please ask APE or your distributor for details.

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- Trigger input - for broad variety of trigger signals
- High resolution data acquisition - 16 bit
- High speed real time measurement
- Standard Software Interface (using TCP/IP)
## Specifications

<table>
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<tr>
<th>Spec</th>
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<th>50</th>
<th>150</th>
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<tr>
<td><strong>Version</strong></td>
<td>15</td>
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<tr>
<td><strong>Scan ranges</strong></td>
<td>&lt; 15 ps</td>
<td>&lt; 50 ps</td>
<td>&lt; 150 ps</td>
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<tr>
<td><strong>Delay resolution</strong></td>
<td>&lt; 0.5 fs</td>
<td>&lt; 1 fs</td>
<td>&lt; 1 fs</td>
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<tr>
<td><strong>Measurable pulse width</strong></td>
<td>&lt; 100 fs ... 3.5 ps</td>
<td>&lt; 100 fs ... 12 ps</td>
<td>&lt; 100 fs ... 35 ps</td>
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<tr>
<td><strong>Linearity of position signal</strong></td>
<td>better than 1% of actual scan range</td>
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<tr>
<td><strong>Wavelength ranges</strong></td>
<td></td>
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</tr>
<tr>
<td>MIR 1 PD[^1]</td>
<td>2.0 ... 3.2 μm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIR 2 PD[^1]</td>
<td>3.0 ... 5.2 μm</td>
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<tr>
<td>MIR 3 MCT[^2] TPD</td>
<td>5.0 ... 8 μm</td>
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<tr>
<td>MIR 4 MCT[^2] TPD</td>
<td>7.0 ... 12.0 μm</td>
<td></td>
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</tbody>
</table>

**MIR 1 Short Pulse Optics Set**

<table>
<thead>
<tr>
<th>Measurable pulse width</th>
<th>&lt; 50 fs</th>
<th>1.9 ... 2.9 μm</th>
</tr>
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<tr>
<td></td>
<td>&lt; 25 fs</td>
<td>1.9 ... 2.35 μm</td>
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</tbody>
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**MIR 1 TPA Short Pulse Optics Set**

<table>
<thead>
<tr>
<th>Measurable pulse width</th>
<th>&lt; 20 fs</th>
<th>2.1 ... 2.6 μm</th>
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</table>

**Input polarization**

linear / horizontal

**Diameter input aperture**

6 mm (open) or 3 mm (in adjustment position)

**Max. input power**

up to 1 W (oscillator with a rep. rate of approx. 80 MHz)[^3]

up to 10 μJ (amplified system with rep. rates in the kHz range)[^3]

**Laser repetition rate**

> 50 kHz (untriggered)

with external trigger: 300 Hz (recommended) ... 50 kHz

**Interaction**

collinear / non-collinear

**Power supply**

95 … 240 V, 50 ... 60 Hz, 60 W

**Computer interface**

USB

**Input trigger**

level 0.1 ... 5 V_{rms} @ 50 Ω

0.1 ... 8 V_{pp} @ 1 kΩ

**Impedance**

50 Ω / 1 kΩ

**Repetition rate**

300 Hz ... 50 kHz

**Width**

> 50 ns

[^1]: PD : Photodiode

[^2]: MCT : Mercury Cadmium Telluride detector

[^3]: May be lower for systems equipped with broadband optics, on special notice

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APE follows a policy of continued product improvement. Therefore, specifications are subject to change without notice.
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