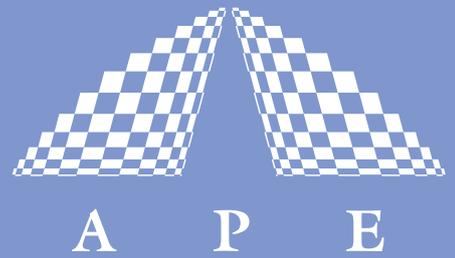# PULSE CHECK

## AUTOCORRELATOR

**A P E**

Accurate pulsewidth measurement with our family of autocorrelators

"Plug and play", ease of alignment

Femtosecond resolution

Background-free and collinear ACF

Fringe resolved traces

Compact and rugged construction

Pulse duration readout

Computer interface

Laser Diagnostics

Spectral Analysis

Acoustooptics

Non-Linear Optics

Accessories

## Your Partner in Ultrafast

# PulseCheck

## AUTOCORRELATOR

### SPECIAL DELAY LINE

APE PulseCheck has a specially designed, spring loaded linear delay drive which allows you to choose the scan range according to the pulse duration. This offers high accuracy and large duty cycle. Because of the friction-free movement there are scan ranges down to 150 fs. The delay is measured online with high resolution to stabilize scan amplitude and to ensure a linear, calibrated time scale. This also provides the capability to measure interferometric autocorrelation functions.

### ONLINE POSITION MEASUREMENT

The PulseCheck optics is designed using high precision all-reflective optical elements in a very compact way. It comes factory aligned, which means minimal adjustment efforts and easy beam handling for the customer. Minimal dispersion guarantees highest possible resolution. The optics unit incorporates beam shutters for convenient SHG signal check and a servo driven angle tuning of the SHG crystal.
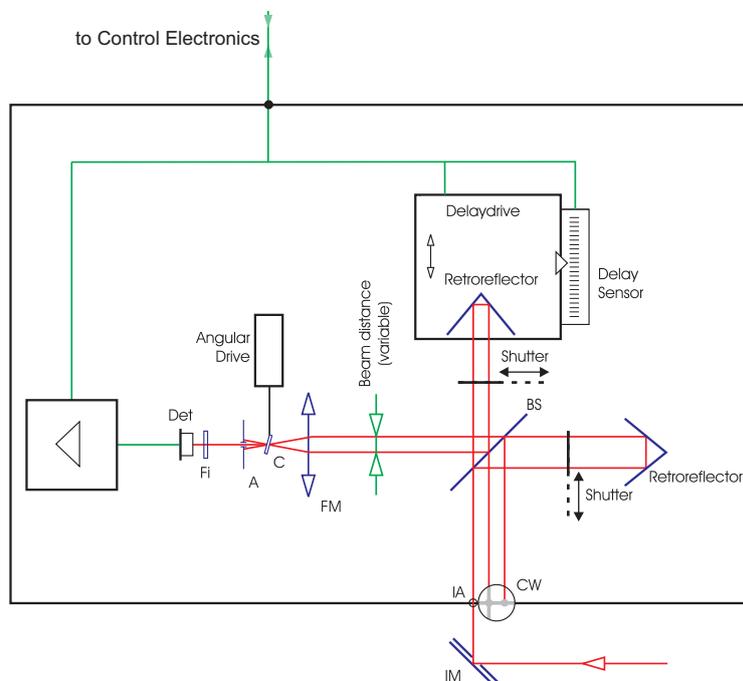
### UNIQUE OPTICAL DESIGN

The PulseCheck offers a simple and continuous adjustment of the interaction angle inside the SHG crystal making it easy to switch between collinear and background-free autocorrelation mode. For lasers with low repetition rate a triggered mode has been implemented to determine the autocorrelation function from the superposition of single pulses.

### MENU SELECTABLE FUNCTIONS AND INTEGRATED DISPLAY

The PulseCheck microprocessor control unit provides menu selectable functions including averaging and data storage. A bright graphical colour display shows the autocorrelation function together with an alphanumerical readout and analog bargraph indication of actual autocorrelation half width. The autocorrelator comes standard with an RS232 serial port.
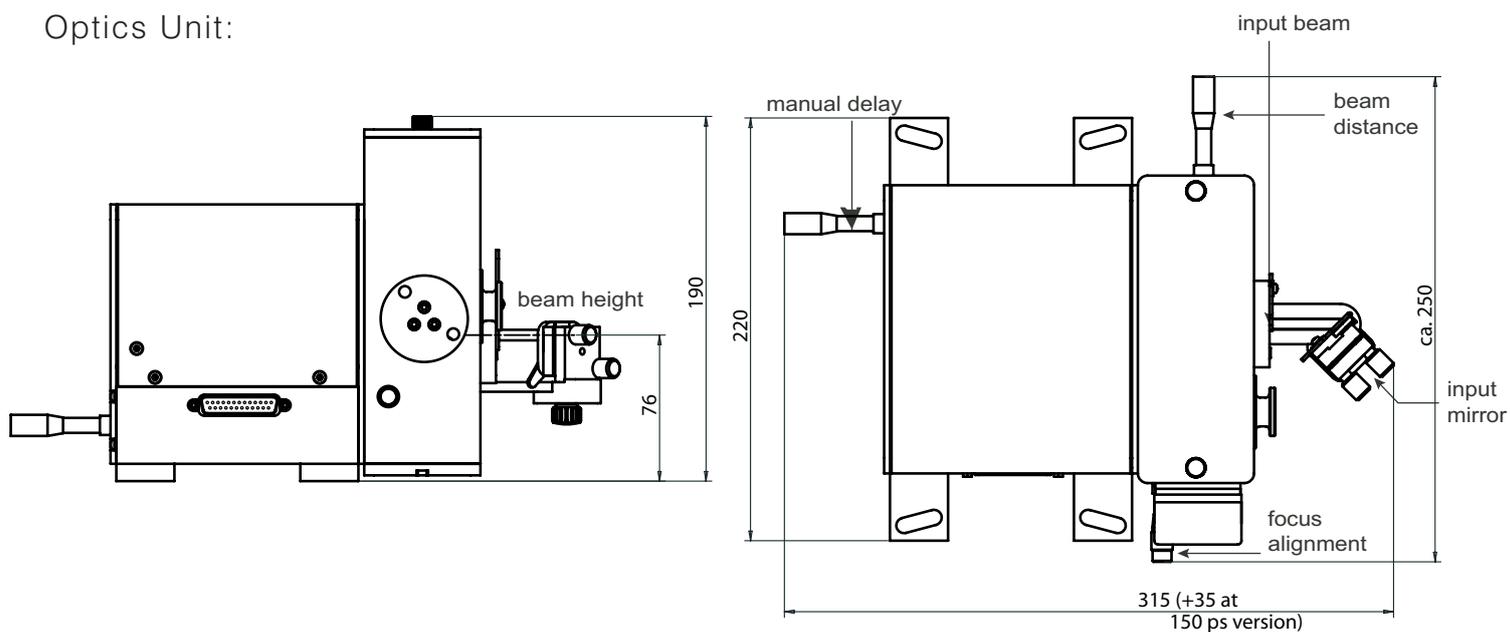
# AUTOCORRELATOR OPTICS

to Control Electronics

Delaydrive

Retroreflector

Delay Sensor

Angular Drive

Beam distance (variable)

Shutter

BS

Det

Fi

C

A

FM

Retroreflector

Shutter

IA

CW

IM

# DIMENSIONS (in mm)

Control Unit (W*L*H):              275*279*240 (max.)

Optics Unit:

input beam

manual delay

beam distance

beam height

190

220

76

ca. 250

input mirror

focus alignment

315 (+35 at 150 ps version)

# PulseCheck

## SPECIFICATIONS

| Version | 15 | 50 | 150 | SM |
|---|---|---|---|---|
| Scan ranges | 150 fs ...15 ps | 500 fs ... 50 ps | 1,5 ps ...150 ps | 2,5 ps ... 250 ps [1] |
| Delay resolution | <1 fs | <2 fs | <6 fs | 10 fs |
| Min. pulse width | 50 fs [2] | 50 fs [2] | 120 fs [2] | 120 fs |
| Max. pulse width | 3,5 ps | 12 ps | 35 ps | > 60 ps |
| Scan rate, appr. | 13 Hz | 10 Hz | 7,5 Hz | 10 ps/s |

1) Larger scan ranges optional    2) Short-pulse options available

| | |
|---|---|
| Linearity | Better 1% of actual scan range |
| Sensitivity ($P_{AV} * P_{PEAK}$) | PMT: $10^{-4}$ W$^2$ (higher sensitivity optional); PD: 1 W$^2$ |

| Wavelength ranges (others optional) | | |
|---|---|---|
| | VIS I | 420 ... 550 nm |
| | VIS II | 540 … 750 nm |
| | NIR | 700 … 1100 nm |
| | IR | 1000 … 1600 nm |
| | Cross I | 360 … 450 nm + 720 … 900 nm |
| | Cross II | 260 … 320 nm + 730 … 960 nm |

| | |
|---|---|
| Input polarization | Horizontal (polarization rotator optional) |
| Min. laser repetition rate | Any (optional photodiode detector recommended for repetition rates < 50 kHz) |
| Interaction | Non-collinear ... Collinear (intensity and fringe resolved ACF) |

| | | |
|---|---|---|
| Power supply | 95 ... 240 V, 50 ... 60 Hz, 60 W | |
| Readout | Colour LCD 320 x 240 pixels | |
| Outputs | Delay: analog | 0 ... 10 V |
| | Signal: analog | 0 ... 10 V |
| | RS232 serial interface (parallel interface IEEE488 and USB serial interface optional) | |
| Input | Trigger: TTL, <10 kHz | |

## OPTIONS

Spectrometer
FROG - option
Additional optics sets
Fibre input
Short pulse option
Triggered SlowScan (recommended for repetition rates < 100 Hz)
Logarithmic preamplifier
Enhanced Sensitivity
Customized wavelength ranges
Windows control software
LabView driver
IEEE488 and USB serial (instead of RS232)
Input polarization rotator