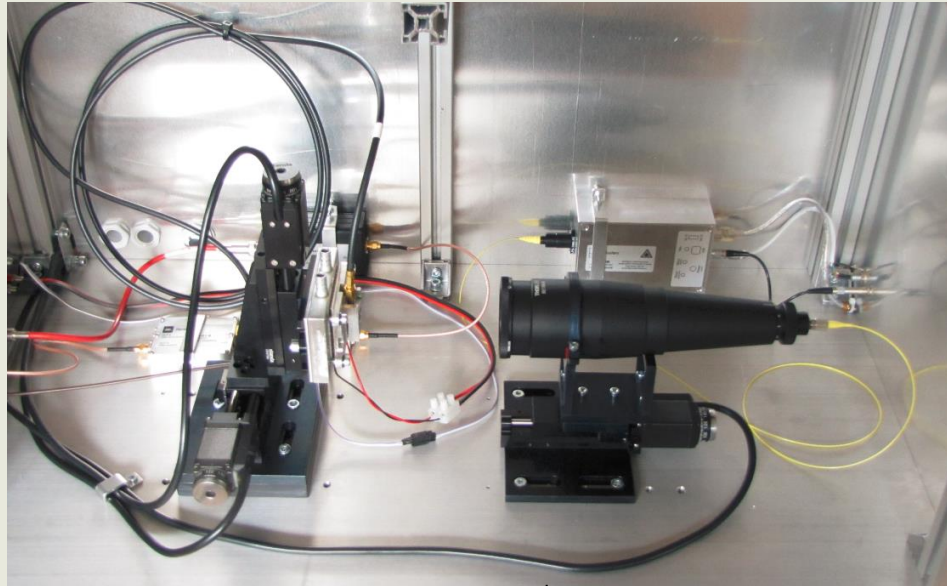




Scanning TCT System



Particulars

Advanced Measurement Systems

OVERVIEW

Particulars Scanning TCT System is a complete setup for measurements of transient currents generated in semiconductor sensors with narrow laser beam. It can be used for standard and Edge-TCT measurements. Edge-TCT enables measurements of charge collection and carrier velocity profiles – crucial for understanding the performance of heavily irradiated detectors.

FEATURES

- Wide band current amplifier
- Bias-T
- High voltage low pass filter
- Laser diode (650 nm, 1064 nm)
- Programmable laser driver for sub-nanosecond laser pulses
- Laser beam optics, beam spot 8 μm FWHM
- XYZ moving stages for precise DUT positioning in the beam and focus tuning
- Water cooled Peltier mounting block for DUT temperature control
- Aluminium closure for light and RF shielding and atmosphere control
- Dimensions: 80 cm x 40 cm x 40 cm
- Weight: 20 kg
- Hardware control software (connection via USB)
- Data acquisition software
- ROOT based package for data analysis



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Scanning TCT System



Amplifier

- Bandwidth 0.01 - 2000 MHz
- Bias 6 - 15 V
- Amplification 35 dB or 53 dB
- Input, output impedance: 50 Ω
- Dimensions: 7x5x1.5 cm³



Bias-T

- Max voltage 1 kV
- Freq. range: 0.01 - 2000 MHz
- Input, output impedance: 50 Ω
- Dimensions: 7x5x1.5 cm³

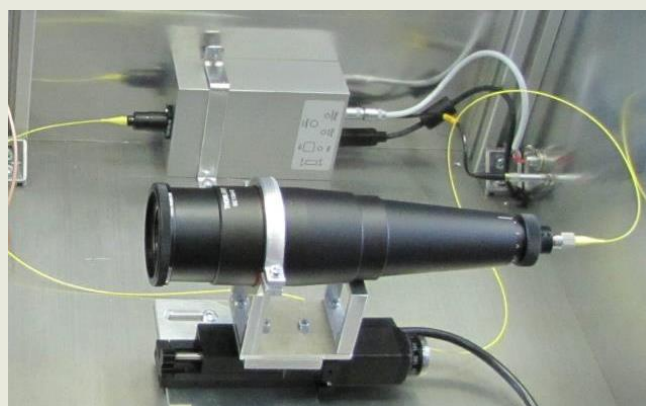


HV Low-pass filter

- Filter high frequency interferences from HV power supplies
- Max voltage 2 kV

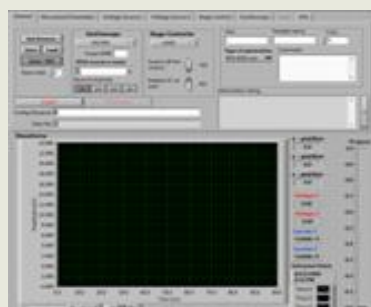
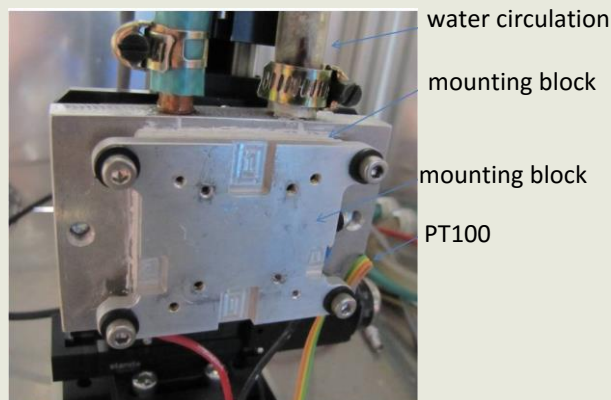
Fibre coupled laser with optics on translation stage

- Laser diode 660 nm or 1064 nm
- Tunable pulse power equivalent to 10 MIP - 100 MIP in Si
- Tunable pulse width 0.4 ns - 4 ns
- Single pulse mode 50 Hz to 1 MHz
- 1024 bits deep pulse sequence
- NIM logic trigger output
- NIM external trigger
- USB control



Sample mounting

- Aluminium support block on XY translation stage:
< 1 μ m precision, 2 kg load, 5 cm range
- Block fixed to water cooled Peltier element (40 W, $\Delta T \sim 40$ °C)
- PT100 for temperature measurement



Software

Executables with GUI for complete measurement control: Laser control, stage movement, data acquisition
ROOT based package for analysis of TCT signals

