



## FEMTO Custom Photoreceiver and Amplifier Questionnaire

Besides the standard product offering of current, voltage and lock-in amplifiers FEMTO also offers many customized solutions in small or large quantities. One particular focus is customized photoreceivers where they integrate photodiodes in the FEMTO amplifiers. This often improves the overall performance drastically compared to situations where the detector is connected to the amplifier by an external cable. Various options are available:

- bandwidth from DC to 1.5 GHz
- wavelength from 300 nm up to 2400 nm
- free-space or fiber coupled input
- Si or InGaAs photodiodes with active diameter of 50  $\mu\text{m}$  up to 5 mm
- Conversion gain up to 1 TV/W ( $10^{12}$  V/W)
- NEP down to 0.5 fW/sqrt(Hz)

Typical applications of the FEMTO photoreceivers include:

- Spectroscopy
- Opto-electrical measurements
- Time-resolved pulse and transient measurements
- Particle detection

Questions:

A. What is the application in general? (brief description)

B. Source/Detector

1. What kind of detector? (Photodiode, PMT, MCP, STM-tip...) -
2. Who is the detector manufacturer and what is the part name?
3. Output impedance low (<1 kOhm) or high (>1 kOhm)? -
4. Capacitance (pF) -
5. Inductivity (if source=coil only) (H) -
6. Connection Source « Preamplifier (or Oscilloscope etc) -
7. Kind of cable (e.g. coax) -
8. Cable length –

### C. Preamplifier:

1. Do you already use a preamplifier?
2. If commercial preamp, manufacturer and type –
3. If self-made: Gain - , Upper cut-off frequency - , Input resistance - , Noise at output (Vss) - , More details -
4. What do you connect at the output of the source/detector (Oscilloscope, ADC, ...)?  
Manufacturer, type - , Upper cut-off frequency - , Sample rate - , Input impedance -

### D. The signals:

1. Signal shape (U(t)) -
2. Continuous Wave or Pulse -
3. If CW, what shape (sinusoidal, square, ...) and frequency?
4. If pulses, what shape (square, transients (ex-decay), ...)
  - a. Pulsethickness - , Rise time & fall time -
5. Amplitude (Voltage, current, power) -
6. If known, what are the signal amplitudes at preamplifiers output or oscilloscope (ADC) input (Vss)?
7. If not known, what are expected signal amplitudes in A (current), V (voltage) or W (opt. power)?

FEMTO offers many options depending on the requirement. Pricing will depend on your requirements and can vary significantly depending on the selected photodiode. Please send us your requirements and we will be happy to provide you with a quote.

For further information on FEMTO's amplifiers and photoreceivers please visit [www.eoc-inc.com](http://www.eoc-inc.com) or use the following link:

FEMTO amplifiers - [http://eoc-inc.com/electronic\\_amplifiers\\_photodetectors.htm](http://eoc-inc.com/electronic_amplifiers_photodetectors.htm)