# USBAMP-4

Switchable Gain Photocurrent Digitizer

## GENERAL FEATURES

**Properties of the USBAMP-4**

The USBAMP-4 is a switchable gain photocurrent digitizer that converts small DC currents (e.g. generated by photodiodes) into digital values transmitted via USB to a computer for displaying and recording. Four different current measurement ranges are user selectable by software. The device is delivered with a PTB traceable current calibration.
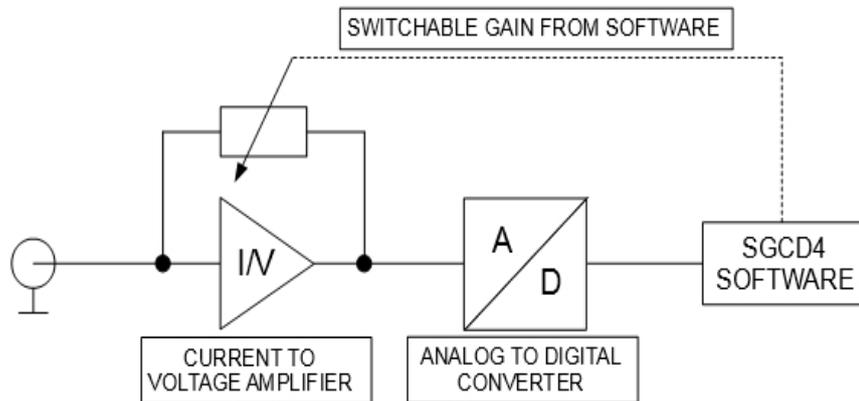
## SPECIFICATIONS

| Parameter | Value |
|---|---|
| Current measurement range 1 (end of range) | 880 pA |
| Current measurement range 2 (end of range) | 29 nA |
| Current measurement range 3 (end of range) | 970 nA |
| Current measurement range 4 (end of range) | 30 µA |
| Maximum input current | 30 µA |
| Measurement range control | by software |
| Operating temperature range (non condensing) | -20 to +80 ºC |
| Storage temperature range (non condensing) | -20 to +80 ºC |
| Dimensions (width x length x height) | 80 x 130 x 28 mm |

We strongly recommend to process this product on ESD protected workplaces.

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## BLOCK DIAGRAM



## SOFTWARE - INSTRUCTIONS

### Installation instructions

Please download the software and programming manual from www.roithner-laser.com/pd_electronics.html

We recommend to keep all settings to default and to just press next/next/.../finish.

### Information about the software being installed on your computer

The install wizard will install three software modules:

1. USB serial port driver (2 MB)
2. Labview runtime engine (280 MB)
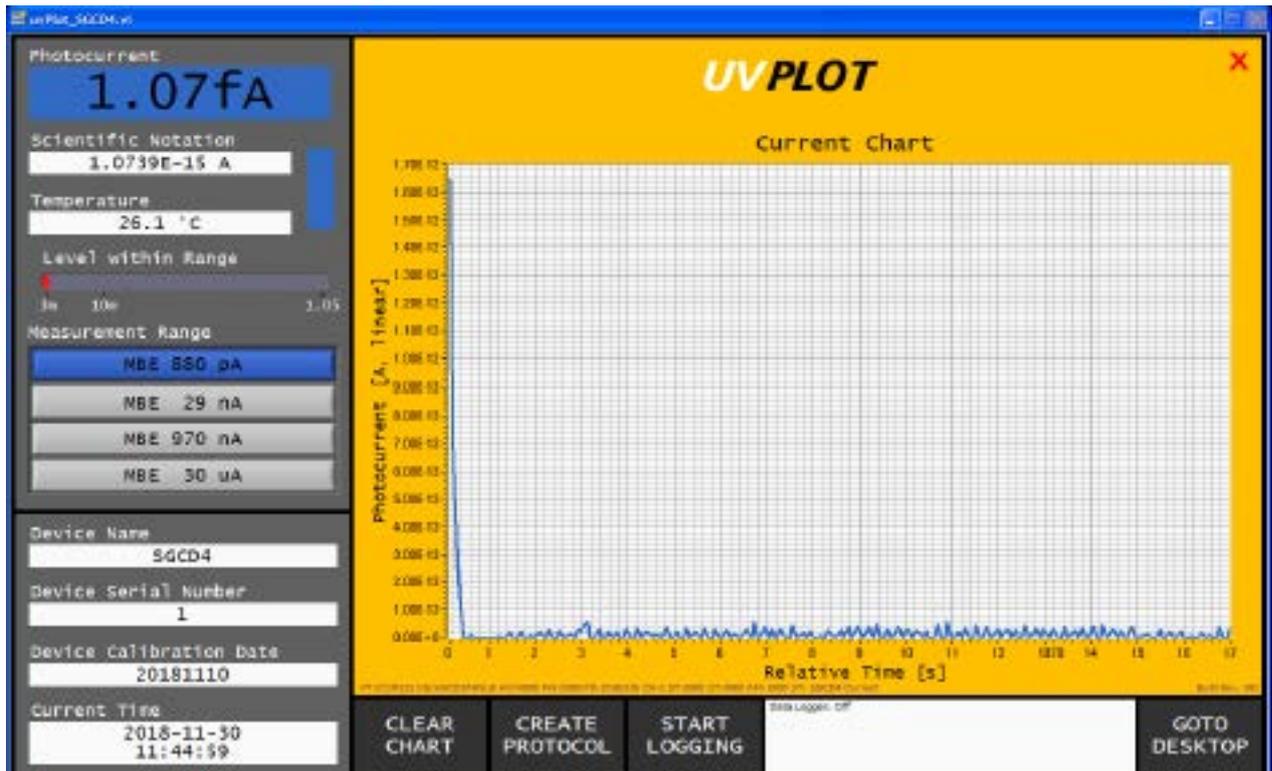3. USBAMP-4 Software (10 MB)

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## SOFTWARE - INSTRUCTIONS
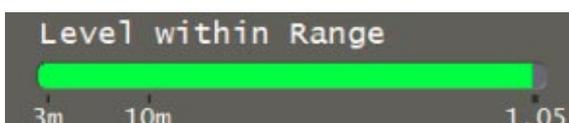
### Usage instructions for uvPLOT

After installing the prerequisites and the program connect the USBAMP-4 unit to the computer and open the program uvPLOT.



By default, the smallest measurement range is selected.



The "Level within range" indicator shows the signal level within the currently selected measurement range. It is green if the measurement range is appropriate for the given current.
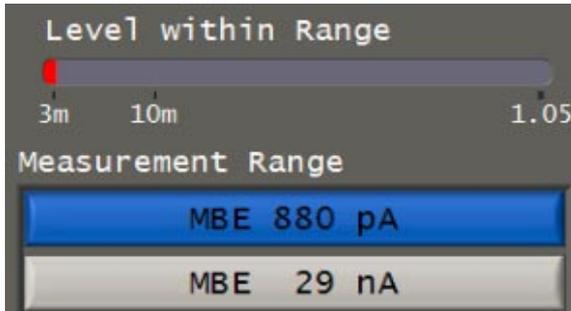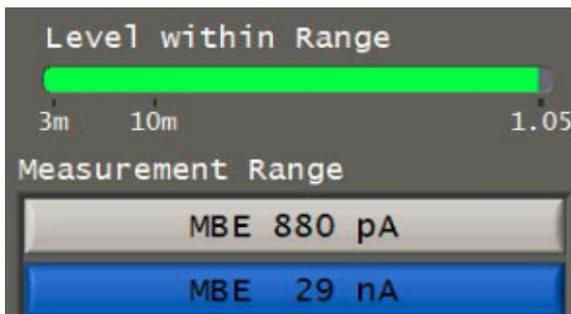
# USBAMP-4

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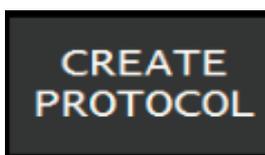
### SOFTWARE - INSTRUCTIONS

If it is red the signal current is either too small or too large for the selected measurement range. If possible change the range accordingly.



The measurement range can be changed by clicking one of the 4 buttons. Your selection will be marked blue and is immeadiately effective.
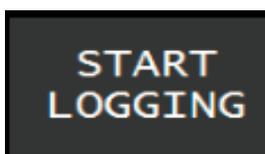


CREATE PROTOCOL - Button



Clicking this button creates a HTML file with an overview of all sensor data and a chart of the current measurement. This file is saved in the installation folder and can be opened with any web-browser.

START / STOP LOGGING - Buttons



Activation this button creates a CSV file and all subsequent sensor readings are recorded. The file can be found in the installation folder. During data logging, it is not possible to change the measurement range. For this the logging must be interrupted.
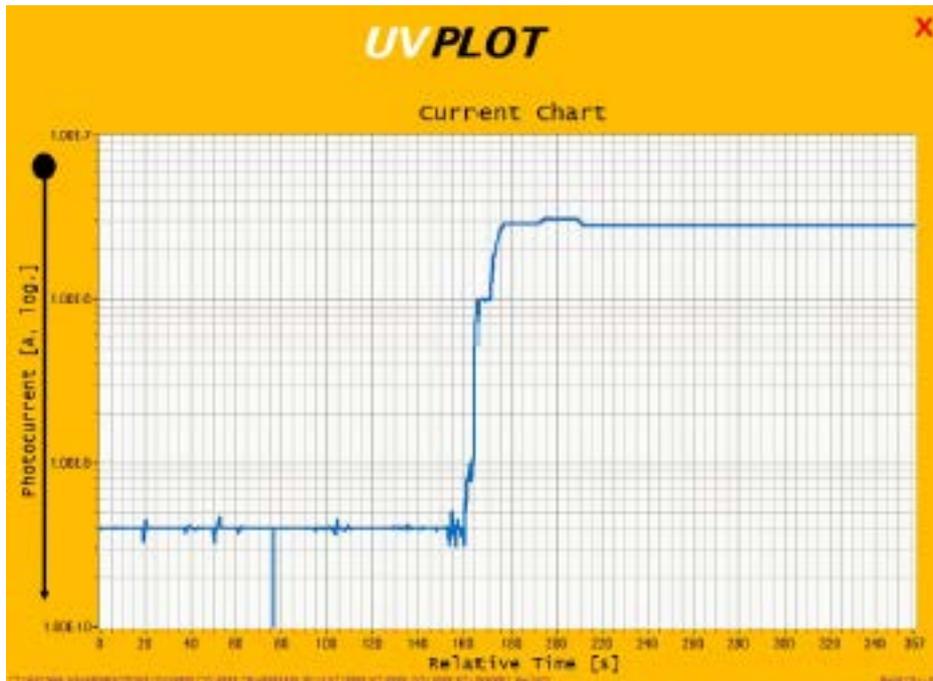
# USBAMP-4

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## SOFTWARE - INSTRUCTIONS

**CHANGING THE CHART SCALE**

To change the chart scale from linear to logarithmic or from logarithmic to linear click and hold on the axis title and swipe down or up.



## PERFORMANCE DEPENDING ON GAIN SETTING

| | Range 1 | Range 2 | Range 3 | Range 4 |
|---|---|---|---|---|
| End of range current | 880 pA | 29 nA | 970nA | 30 µA |
| Input noise current (peak to peak) | 120 fA | 400 fA | 8 pA | 200 pA |
| Time constant (T) | 102 ms | 103 ms | 102 ms | 100 ms |
| Settling time (5*T) | 510 ms | 515 ms | 510 ms | 500 ms |
| Cutoff frequency (-3dB) | 1.6 Hz | | | |
| Temperature coefficient (ppm/K) | -300 | -280 | 360 | 50 |

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▶ DRAWING