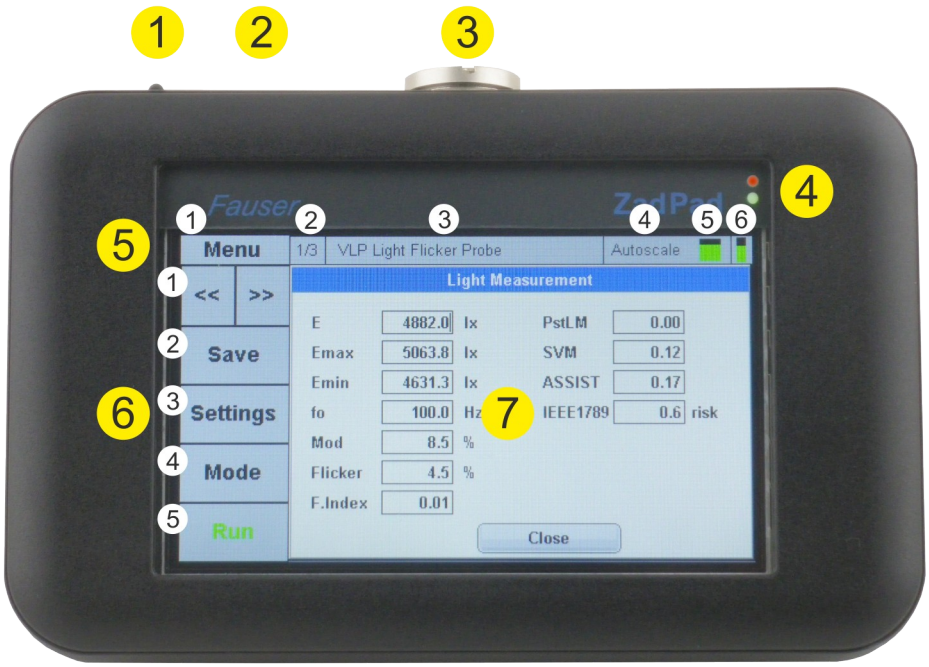
1. Introduction

ZadPad is a measuring device for different physical metrics, selectable via the attached probes. Fast and precise data acquisition and high-performance processing power offer extensive possibilities of data acquisition and analysis for a hand-held measuring device.

Also time and frequency domain analysis of the measurement signals are displayed as a chart. The measurement data can be saved on the internal USB drive (future firmware version).

2. Device description

2.1. Operating and indication elements



❶ **`On/Off`** button
❷ USB port (micro-B-USB)
For connecting the ZadPad with a PC and for battery charging
❸ Sensor connector
For inserting the various measuring probes.
❹ Control LEDs (Charging indicator LED red, Function LED tricolor)

Touch display functions:
❺ Header info screen
① **`Menu`**
② Page info
③ Probe info
④ Y Scale
⑤ Recording level indicator
⑥ Battery voltage indicator

❻ Main buttons:

① **<< >>** Page switch buttons
② **Save** button
③ **Settings** button
④ **Mode** button
⑤ **Run** button

❼ Measurement windows:

Values <> Time graph <> Frequency graph

2.2. Turn on/off

The ZadPad is turned on through the **On/Off** button ❶ and turned off by *Menu→Off*. If no software turn off is possible, the **On/Off** button can be pressed for 5 seconds.
If no key is pressed for the selected Auto-Power-Off time or the battery falls to minimum voltage ZadPad turns off automatically.

2.3. Charging the battery and battery indicator

The ZadPad has a rechargeable Lithium Ion battery. The operating time significantly depends on use and settings (e.g. backlight). Operation time is between 8 and 20 hours.
The battery voltage level is shown in the *Header info screen* ❺.
Charging is done through the USB port ❷ with a power supply of 5 V/1500 mA.
This corresponds to the standard charger for mobile device. Never use other chargers; this may lead to damage the ZadPad. Never charge in the vicinity of combustible material or gases. Never charge batteries unattended!
Recharge device approximately every 6 months in case of prolonged non-usage.
Charging is done once the charger is plugged in; this is visible through the light of charging indicator-LED ❹. The charging time is approximately two hours for a discharged battery. The charging indicator turns off after completion of charging.
When any fault condition occurs, the charging indicator LED blinks at 1 Hz.

2.4. Connecting the Sensor

For flicker analysing the VPL light flicker probe has to be plugged into the *Sensor connector* ❸.
The measuring probe can also be connected to ZadPad via the 80 cm long connecting cable.
The connected probe is shown in the *Header info screen* ❺.

2.5. Header info screen

The *Header info screen* ❺ shows the status informations. Clicking the **Menu** opens the menu functions.

2.6. Menu functions

Menu →	Probe →	Installed probes	
	Device →	General →	Date / Time (not used) Language Password (not used) Factory Reset
		Customize →	Signal tone Colour scheme Backlight brightness % Power Saving time Power Saving % Auto Power Off time
		Graphics →	FFT Scale FFT AC Scale Mode Frequency Scale Time Scale
		User →	User Data
		About →	Device Info
	Off		

Table 1: Functions in menu mode

2.7. Main buttons

The *Main buttons* ❻ functions:
Page switch buttons **<< >>** select the different pages of the *Measurement window* ❼.
Save button is not supported in this firmware version.
Settings button opens the quick menu for X Scale and Y Scale selection.
Mode button opens the quick menu for Sample Time and Sample Mode selection.
Run button starts the measurement.

3. Measurement

3.1. Preparation for measurement

Connect the VLP light flicker probe to the sensor connector.
The influences of other light sources should be avoided if a single lamp is measured.
Avoid any movement or vibration of the sensor during the measurement, especially if a 180 second P_{stLM} measurement is in progress. It is strongly recommend to mount the probe on a holder or tripod.

3.2. Proceeding flicker measurement

First select the required sample time for the measurement with the **Mode** button quick menu:

- ➔ 1 sec for standard measurement
- ➔ 2 sec for ASSIST Mp measurement
- ➔ 180 sec for P_{stLM} measurement

Press the **Run** button to start measurement.
When the measurement is finished the *Measurement windows* ❼ open or refresh.
The illumination level should be between 1000 lx and 10000 lx. So the *Recording level indicator* must be checked. For accurate results the level should be in the green range.
The *Measurement windows* show the light and flicker values.
With the *Page switch buttons* **<< >>** the different windows *Values*, *Time graph* and *Frequency graph* can be selected.

3.3. Flicker standard reference

EU Directive No 2019/2020: Ecodesign requirements for light sources and separate control gears

IEC TR 61547-1: Objective light flickermeter and voltage fluctuation immunity test method

IEC TR 63158: Objective test method for stroboscopic effects of lighting equipment

4. Annex

4.1. Technical information

Display:	4,3 " TFT capacitive touch panel
Data conversion:	16 Bit, 4 channel
Sampling rate:	up to 1.6 MHz
Data storage memory:	32 GByte
Sensor detect:	Automatic sensor recognition
Power supply:	Lithium ion battery
Dimensions:	154 x 96 x 34 mm
Weight:	350 g
Operating temperature:	0..40 °C
Humidity range:	10..70 % (non-condensing)
Light measurement:	
Illuminance	mean, maximum, minimum
Flicker	fundamental frequency, percent of flicker, flicker index, modulation depth
Flicker (frequency weighted)	P_{stLM} , SVM, ASSIT Mp, IEEE 1789
Light flicker probe VLP:	
Spectral sensitivity	480...660 nm
Spectral approximation	V(λ)
Illuminance	1 lx...20,000 lx
Frequency range:	50 Hz...400 kHz

Technical changes reserved.

4.2. Waste disposal

This product has the recycling symbol in accordance with EU Directive 2002/96/EC. This means the device must be returned to the manufacturer for recycling after its useful life. Waste disposal along with household waste is not done.

Disposal address: Fauser Elektrotechnik
Ambacher Straße 4
D-81476 München

Manual version 1.0.
The current version of the manual is available on the homepage *www.fauser.biz.*
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