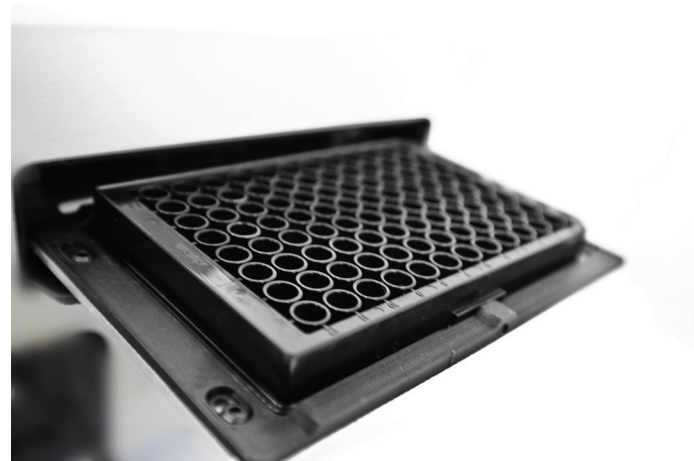# Colorwatcher, Colorimetric Array Reader

Colorwatcher is a compact and portable instrument designed for imaging colorimetric arrays (for example, DNA, protein biochips). The instrument by standard operates in brightfield and darkfield illumination modes with bottom and top illuminations respectively. The instrument is able to work with 96-well plate, a 12 x 8 well strip, as well as microscopic glasses (placed in a special adapter). The device is equipped with a highly sensitive CMOS camera. The instrument has an automatic mechanism of 96 well plate ejection outside the body.

The instrument can operate with a 20V portable lithium-ion battery, which makes the device usable in the field studies or point-of-care.

The compact design allows the device to be carried in the hand luggage of the aircraft.

Software Features:
- Automatic array finder via machine learning and image recognition
- Grid lay-outing (Manual and Automatic)
- Analysis of images by the average/median intensity of the spots
- Qualitative/quantitative analysis of the arrays
- Creating Qualitative/quantitative analysis assays
- Quantitative assays with 4/5 parameter logistics functions, etc.
- Setting multi level interpretation thresholds for different type of samples in the same well (e.g. tolerance to egg and lettuce)
- Report exports to PDF, CSV, EXCEL
- Control of camera exposure, gain, XYZ kinematics.

Colorwatcher, Colorimetric Array Reader

Specifications	
Illumination	Brightfield and darkfieled (bottom and top)
Vessels	96 well plate/12 x 8 well strip/4 microscope slides
Light source	White LED
Lifetime of the light source	<10 000 hours
Data interface for unit controls	USB 2.0
Camera	3 MP, CMOS
Resolution	5-7 µm per pixel, per user request
Data interface for camera control	USB 3.0
Magnification	>10x
Image formats	png/bmp/tiff/jpg, 8/16 bit
Focus	Manual, adjustable via PC
Software	Included
PC requirements	CPU: Intel i7 (with AVX2 support) RAM: 8 GB Video card: Nvidia GTX 1050 Ti 4GB, or better (Capability only with Nvidia cards) SSD: 256 GB OS: Windows 10 (64 bit)
Size (W×D×H)	330 × 345 × 150 mm
Weight, w/o power supply	not more than 6 kg
Power supply	Input AC 100–240 V 50/60 Hz, Output DC 20-24 V, 2.5A

Software interface, picture of a well of 96 well plate (brightfield)