



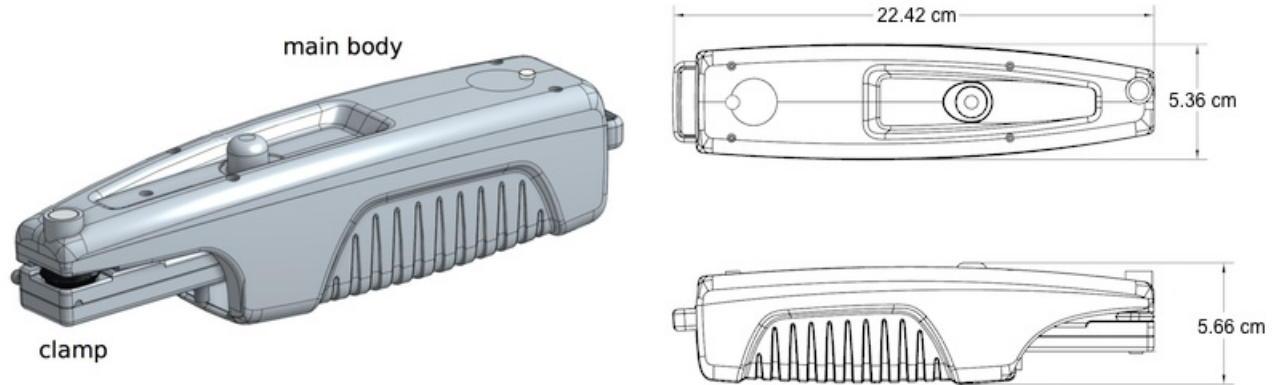
## MultispeQ v2.0 Configuration

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*Modified: November 19, 2018*

*Version: v0.40*

## 1. MultispeQ v2.0 Configuration



Body	Measurements
Size	224.2 mm x 53.6 mm x 56.6 mm (l, w, h)
Total Weight	340 g (incl. battery)
Light Guide Surface	8 mm x 8 mm ( 64mm <sup>2</sup> )
Leaf Clamp Opening	13 mm
Safety	Ring for leash
Updates	Firmware updates through Applications

### Lights

There are sets of five LEDs each on the main body and the leaf clamp.

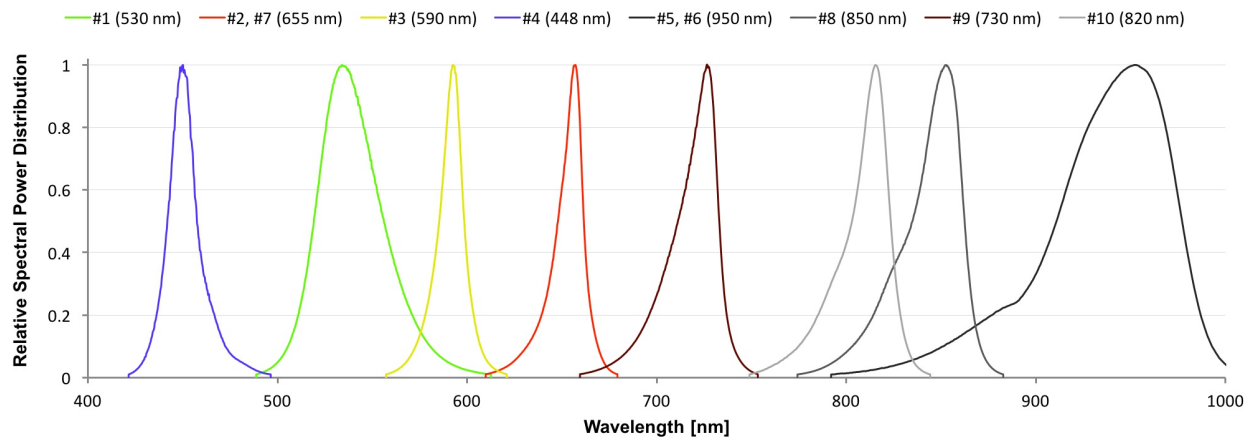
#### Main Body

#	Emission Peak	Model	Specifications
1	530nm	LED (green), Lumileds, LXZ1-PM01	<a href="#">view</a>
2	655nm	LED (red), Lumileds, LXZ1-PA01	<a href="#">view</a>
3	590nm	LED (amber), Lumileds, LXZ1-PL01	<a href="#">view</a>
4	448nm	LED (blue), Lumileds, LXZ1-PR01	<a href="#">view</a>
5	950nm	LED (NIR), OSRAM, SFH 4441	<a href="#">view</a>

## Leaf Clamp

#	Emission Peak	Model	Specifications
6	950nm	LED (NIR), OSRAM, SFH 4441	<a href="#">view</a>
7	655nm	LED (red), Lumileds, LXZ1-PA01	<a href="#">view</a>
8	850nm	LED (NIR), OSRAM, SFH 4451	<a href="#">view</a>
9	730nm	LED (far red), Everlight, ELSH-Q61F1-0LPNM-JF3F8	<a href="#">view</a>
10	820nm	LED (NIR), OSRAM SFH 4786S	<a href="#">view</a>

## Emission Spectra for LEDs



## Detectors

The MultispeQ v2.0 comes with two detectors. One covering the near infrared on the main body, the other covering the visual range on the leaf clamp.

#	Detection Range	Model	Specifications
1	700nm - 1150nm	Hamamatsu, S6775-01 (main body)	<a href="#">view</a>
3*	400nm - 700nm	Hamamatsu, S6775 (leaf clamp)	<a href="#">view</a>

\*Note: The detector 3 is covered with a BG-18 bandpass filter with a center wavelength around 493 nm. If you are using the detector to detect signals on the edges of the detection range, expect the signal strength to be low.

## Sensors

The MultispeQ v2.0 has a set of sensors to measure the environmental parameters

Sensor	Model	Specifications
Ambient Temperature, Humidity, Pressure (2x)	BOSCH, BME280	<a href="#">view</a>
Contactless Temperature	Melexis, MLX90615SSG-DAG-000-TU	<a href="#">view</a>
Accelerometer	Freescale, MMA8653FCR1	<a href="#">view</a>
Magnetometer	Freescale, MAG3110FCR1	<a href="#">view</a>
Hall Effect Sensor	TT Electronics, OHS3150U	<a href="#">view</a>
PAR light sensor	AMS-TAOS USA, TCS34715FN + 700nm low pass filter	<a href="#">view</a>

## Filters

The MultispeQ v2.0 has two filters, a Band Pass filter covering the visible light detector (#3) and a Low Pass filter used in the PAR sensor.

Filter	Model	Specifications
Band Pass	Schott, BG-18 1mm thickness	<a href="#">view</a>
Low Pass	UQC Optics, Hot Mirror HM-07	<a href="#">view</a>

## Indicator Lights

The MultispeQ v2.0 has now two indicator lights. One to indicate if the device is charging which is located next to the micro-USB port. The second one is located on top to indicate progress or required actions.

LED	Model	Specifications
Charging Indicator		---
Progress/Action Indicator	NeoPixel (RGB), SK6812	<a href="#">view</a>

## Battery

The MultispeQ v2.0 has a Li-ion battery which can be charged through the micro USB port.

Battery	Model	Specifications

Main

Soshine Li-ion 26650 Protected Battery: 5500mAh 3.7V

[view](#)

## References

Kuhlgert, S., Austic, G., Zegarac, R. Osei-Bonsu, I., Hoh, D., Chilvers, M. I., et al. (2016). MultispeQ Beta: a tool for large-scale plant phenotyping connected to the open PhotosynQ network. *R. Soc. Open Sci.* 3, 160592. doi:10.1098/rsos.160592.