

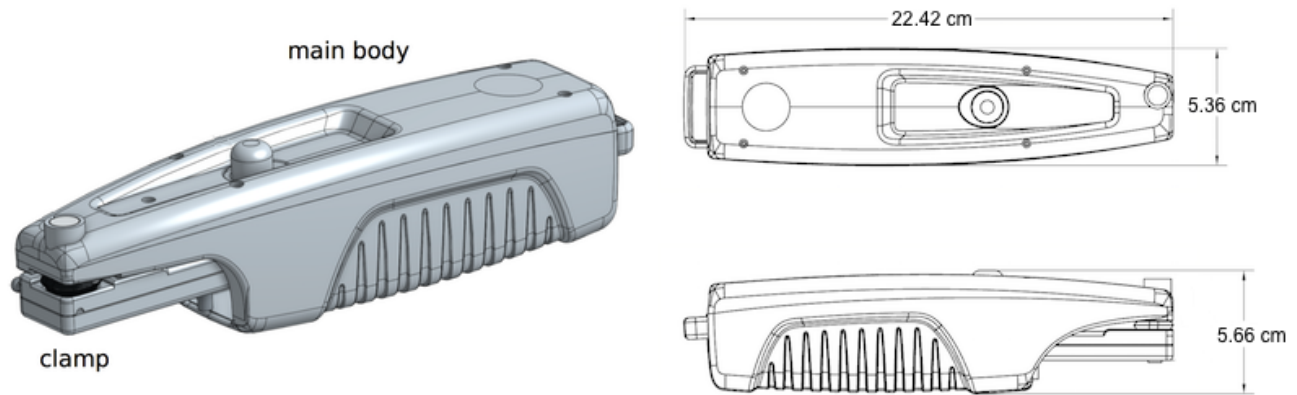


## MultispeQ v1.0

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*Modified: August 23, 2019*  
*Version: v0.80*

# MultispeQ v1.0 Configuration



*MultispeQ v1.0 measurements*

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**.

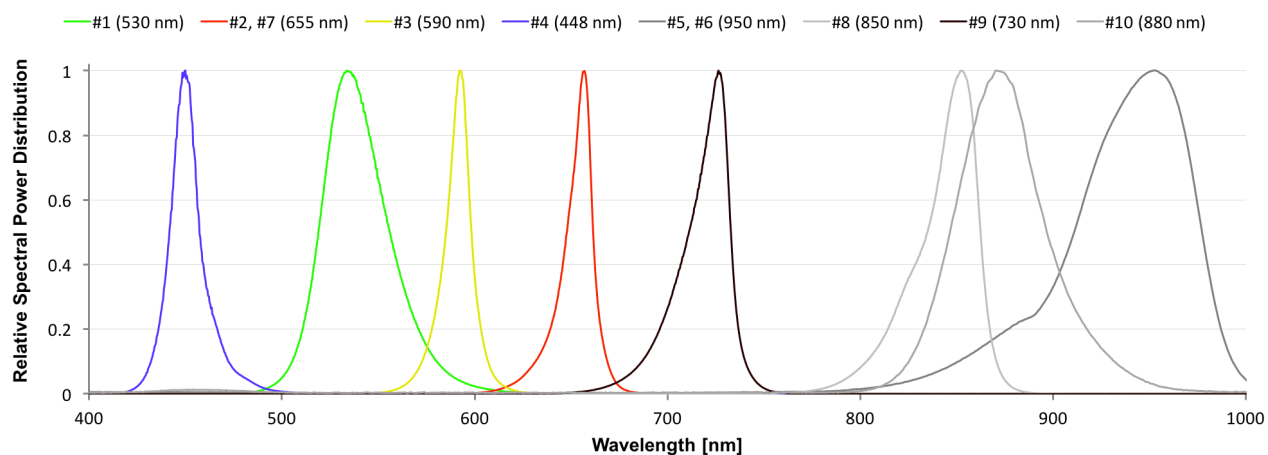
### Main Body

#	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	880nm	LED (NIR), Kingbright, APTD3216SF4C	<a href="#">view</a>

## Emission Spectra for LEDs



*Emission spectra for LEDs build in the MultispeQ v1.0 - Emission normalized to maximum emission peak*

## Detectors

The MultispeQ v1.0 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 v1.0 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 v1.0 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>

## Battery

The MultispeQ v1.0 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	<a href="#">view</a>

## 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](https://doi.org/10.1098/rsos.160592).