Technical Specifications - MPS and Shake Flask Adapters

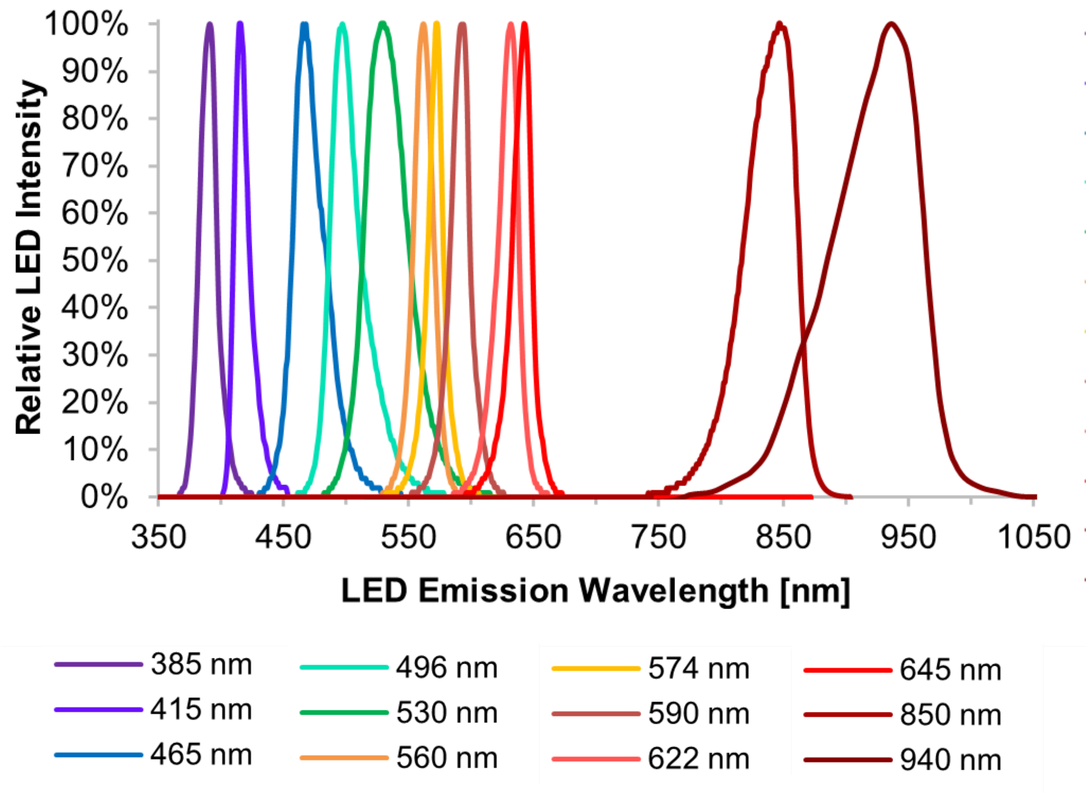
Housing material	ABS and aluminum
Battery capacity (typical)	650 mAh
Power supply (via USB)[1]	
Input voltage (max. range)	4.5 – 5.5 VDC
Input current (max.)	0.5 A
Connection to PC	Via the MPS USB-C connector: • directly using a USB 2.0 (or higher) compatible USB-C-to-USB-A cable or USB-C-to-USB-C cable • using a MPS Hub via a USB 3.0 (or higher) compatible USB-C-to-USB-A cable or USB-C-to-USB-C cable (cables are provided with the MPS Hub)
Operating and storage temperature	4 – 45 °C
Operating and storage humidity	≤ 85 % (non-condensing)
Optimal storage conditions	Dry, dark, and at room temperature

1 The USB-C port is protected against overvoltage up to 25V and transient electric discharge surges up to ±15kV (contact and air according to IEC 61000–4–2).

Available LED Wavelengths and Peak Detector Wavelengths

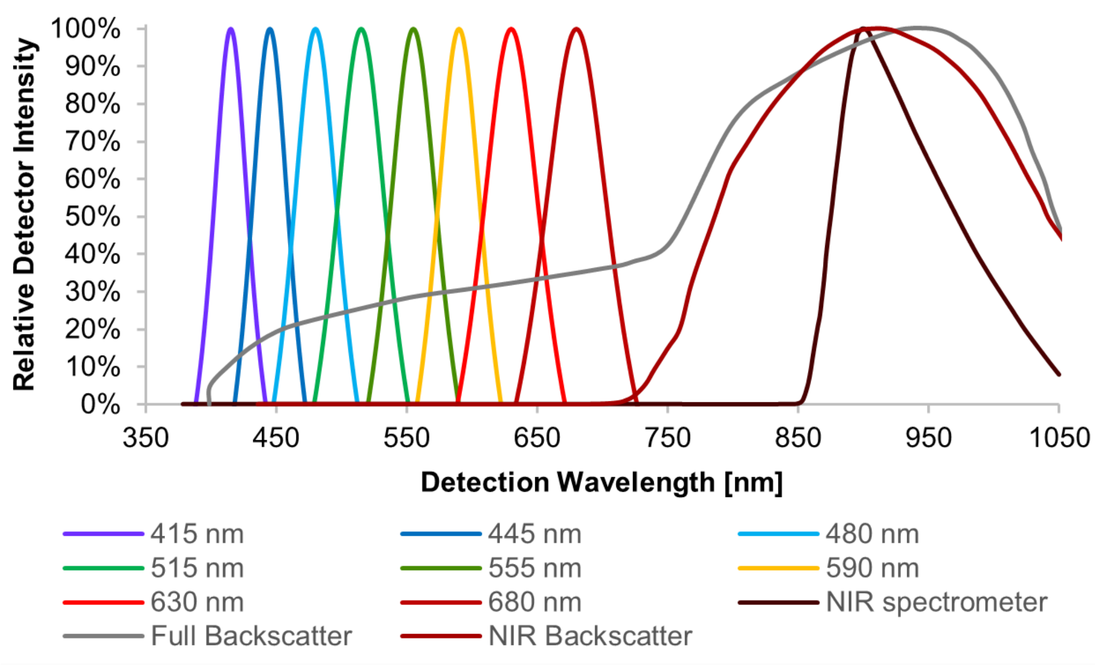
The LEDs located in the center of the center window are used for backscatter (biomass) measurements and excitation of fluorophores.

LED peak wavelength (typical)	Full width half maximum (typical)
385 nm	12 nm
415 nm	15 nm
465 nm	28 nm
496 nm	24 nm
530 nm	38 nm
560 nm	20 nm
574 nm	20 nm
590 nm	20 nm
622 nm	24 nm
645 nm	28 nm
850 nm	42 nm
940 nm	40 nm



The detection spectra available on the MPS are listed below.

Peak detector wavelength (typical)	Full width half maximum (typical)
415 nm	19 nm
445 nm	21 nm
480 nm	25 nm
515 nm	28 nm
555 nm	27 nm
590 nm	25 nm
630 nm	32 nm
680 nm	36 nm
(Full backscatter) 930 nm	400 – 1100 nm detection range
(NIR backscatter) 880 nm	730 – 1100 nm detection range
(NIR spectrometer) 910 nm	850 – 1100 nm detection range



Recommended Operating Conditions - MPS and Shake Flask Adapters (without Sensor Pills)

Temperature	4 - 45 °C (Ensure to let the MPS adjust to the operating temperature for 30 min.)
Humidity (relative)	≤ 85 % (non-condensing)
Shake flask filling volume (without Sensor Pill)	
optimal range	10 – 20 %
good range[1]	5 – 25 %
applicable range[2]	2 – 30 %
extended range[3]	0 – 50 %
Shaking speed (without Sensor Pill)	
optimal range[4]	160 – 300 rpm
shaking diameter ≤ 2.5 cm	0 – 350 rpm
shaking diameter ≤ 5.0 cm	0 – 300 rpm
Optimal performance[6] under ambient light[5]	
Biomass measurement	coverless
Fluorescence measurement	darkened shaker
DO measurement	coverless

1 Measurement quality should be as good as for the optimal range, in few cases reduced precision or weak artifacts may be observed.
2 Measurement quality should be acceptable, in some cases reduced precision or artifacts may be observed.
3 Measurement quality can be acceptable, in many cases reduced precision or artifacts might be observed, filling volumes above 50% shouldn’t be used to avoid spilling of the liquid during shaking.
4 Use these speeds for optimal measurement results, for other shaking speeds within the general specification range, in few cases reduced precision or weak artifacts may be observed.
5 The MPS actively compensates ambient light. Depending on the application specific ambient light and cultivation conditions, this compensation may be incomplete. Constant ambient light can be compensated efficiently by the MPS. Strong and fast changes of the ambient light intensity may be visible as step-like artifacts in the measurement data.
6 Optimal measurement performance regarding sensitivity at low cell densities, or fluorescence intensities, optimal signal-to-noise ratio and minimized number and size of measurement artifacts.