

PDL POWERLIGHT



PROCLEANROOM
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The UV flashlight for cleanroom inspection

- Highly effective most powerful flashlight in HQ finish
- Scratchproof, according the highest standards
- Offers UV-A light or white light for the best possible particle inspection
- 2x rechargeable Panasonic battery
- Safety glasses optionally available in various colors
- Original Cree LED's suited for 20.000 hrs of use
- Durable design
- Inductive charging
- Round aesthetic finish

Technical specifications

Power LED's 5x 5 Watt UV-A 365 nm i.c.w. 1x 5 Watt white LED
 Lifetime LED's 20.000 hours
 Tested drop height 1,2 m
 Material Aluminum T6061, Premium Type III hard anodized abrasive finish
 Color Black
 Weight 336 Gram (incl batteries)
 Handling Full grip, anti drop design

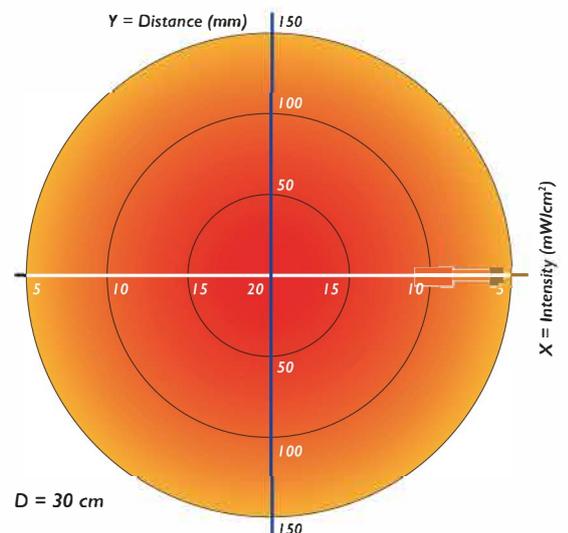
Battery type 1x 18650 Li-ion rechargeable battery from Panasonic, 3400 mAh
 Battery life 3 operational hours
 Electrical supply charger 100-240V ~ 50-60 Hz
 Dimensions 219 x 52 mm (L x D (head))
 IP rating IP67
 Switch Metal executed
 Standards CE & RoHS compliant
 Quality procedure ISO 9001

Life span Min. 5 years
 Certificate IEC report (IEC 60598-2-8) included
 Manual Included in English language
 Guarantee 2 years on electrical performance

Note: Specifications and Design details are subject to change, without any notification



Intensity graph UV-A Light (365 nm)



UV POWERLIGHTS
Flashlights for professional use

PDL-II POWERLIGHT

Particle Detection UV-A inspection Light

UV-A light
upgraded to
50 min
Operational
use

*The most powerful inspection light
for Cleanroom inspection*



Content

No	Item
1	Introduction Particle Detection Light (PDL-II)
2	Main specifications
3	Detailed view & specifications
4	Graphs & tables
5	Features, consumables, options
6	Selling features
7	Questions

Visualisation of particles

1. UV-A light:

- The human eye can roughly see up to 50 microns without any extra outside sources.
- With the PDL-II in UV-A light you can roughly see between 50 and 10 microns (*)

2. Bright light:

- With the PDL-II in bright light you can roughly see between 10 and 2 microns (*)



Standards in Cleanroom industry

High Tech Cleanroom classes

ISO classification number (N)	Maximum concentration limits (particulates/m ³ of air) for particles equal to and larger than the considered sizes shown below (concentration limits are calculated in accordance with equation (1) in 3.2)					
	0.1 µm	0.2 µm	0.3 µm	0.5 µm	1 µm	5 µm
ISO Class 1	10	2				
ISO Class 2	100	24	10	4		
ISO Class 3	1,000	237	102	35	8	
ISO Class 4	10,000	2,370	1,020	352	83	
ISO Class 5	100,000	23,700	10,200	3,520	832	29
ISO Class 6	1,000,000	237,000	102,000	35,200	8,320	293
ISO Class 7				352,000	83,200	2,930
ISO Class 8				3,520,000	832,000	29,300
ISO Class 9				35,200,000	8,320,000	293,000

NOTE: Uncertainties related to the measurement process require that concentration data with no more than three significant figures be used in determining the classification level.

- ISO 1 = the most clean Cleanroom
- ISO 9 = the less clean Cleanroom

Pharma Cleanroom classes

Grade	Maximum permitted number of particles per m ³ equal to or greater than the tabulated size			
	At rest		In operation	
	0.5 µm	5.0 µm	0.5 µm	5.0 µm
A	3,520	20	3,520	20
B	3,520	29	352,000	2,900
C	352,000	2,900	3,520,000	29,000
D	3,520,000	29,000	Not defined	Not defined

- Grade A = the most clean Cleanroom
- Grade D = the less clean Cleanroom

Introduction PDL-II *Particle Detection Light*

Explanation:

- 1) Particle light detector
- 2) Inductive charger
(Cable fixed on adapter)
- 3) Plastic (PE) protective cap
- 4) Plastic PDL table holder

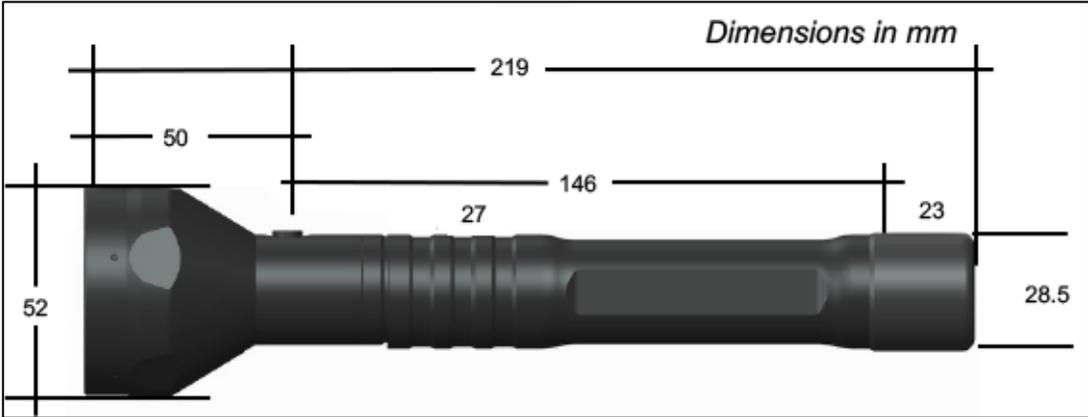
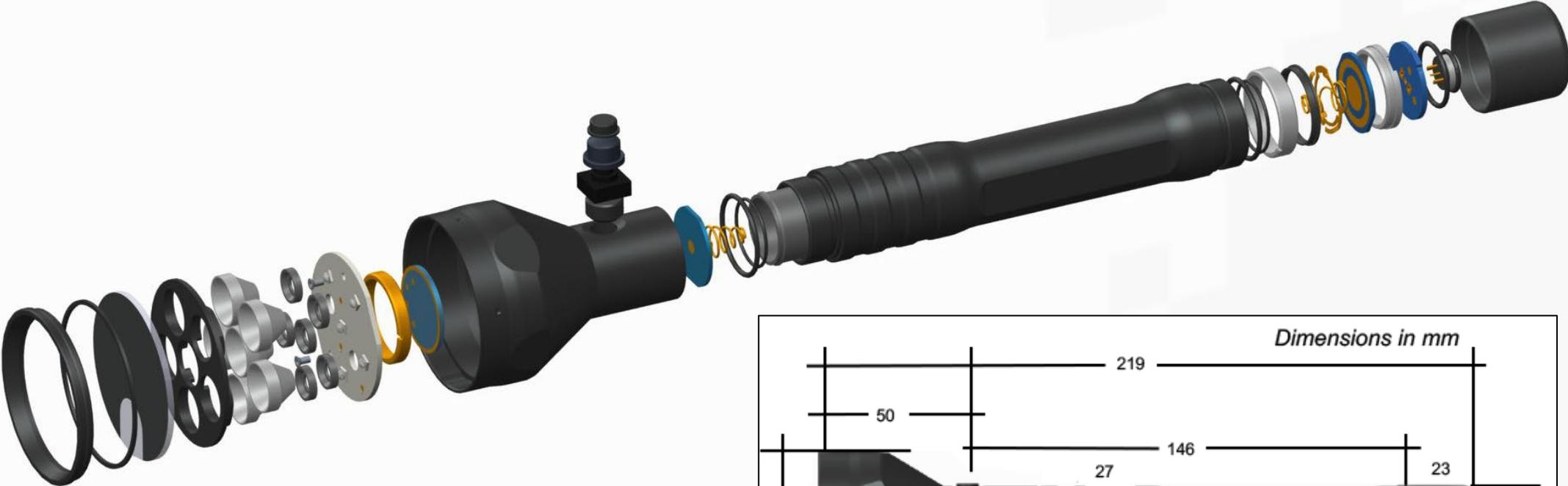


Main specification

No	Item	Spec
1	Power LED's	5x 5 Watt UV-A 365 nm +/- 5nm i.c.w. a centrally placed 5 Watt white LED (300 Lumen)
2	UV-A Light strength	See separate table with intensity data
3	Material	Aluminum T6061, Premium Type III hard anodized abrasive finish
4	Color	Black
5	Weight	App. 336 gram (batteries included)
6	Handling	Full grip, anti drop design
7	Battery life	3 operational hours by means of 1x Panasonic 18650 rechargeable Li-Ion battery (3400 mAh – 7.4 V / battery)
8	Lifetime LED's	20.000 hours
9	Dimensions	219 x 52 mm (L x D (head))
10	IP rating	IP 67
11	Guarantee	2 years on electrical performance



Detailed view



Detailed specifications (1)

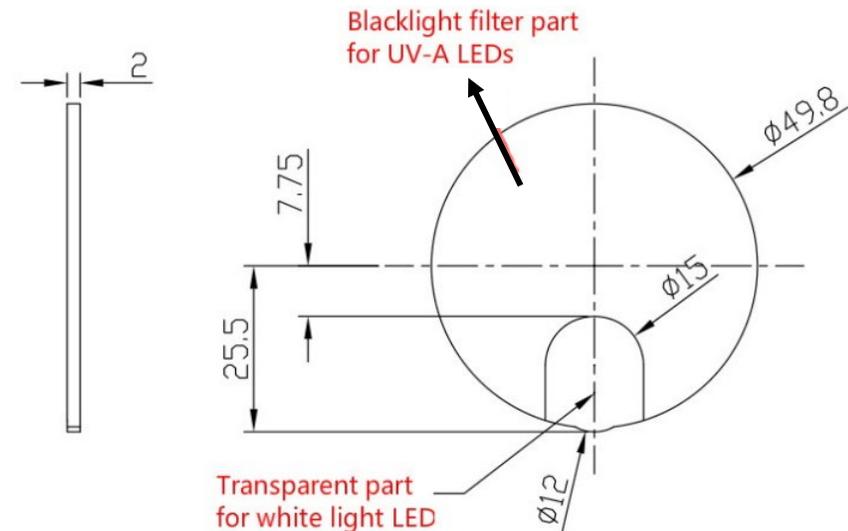
No	Item	Spec
1	Electrical supply charger	100-240 V ~ 50-60 Hz
2	Details finish housing	Aluminum T6061, Premium Type III hard-anodized abrasive finish
3	Standards	CE & RoHS compliant
4	Cleaning classification	Grade 2 & Grade 4 cleaning (conform: <i>ASML GSA 07 9410 & GSA 07 9510</i>)
5	Switch	Metal executed
6	Charging	Magnetic inductive charger (cable length is min 1,0 m) included
7	Manual	Included in English language
8	Tested drop height	1,2 m improved design on multiple drop tests
9	Quality procedure	ISO 9001
10	Life span	Min. 5 years
11	Certificate	IEC report (IEC 60598-2-8) enclosed in the scope of supply

Detailed specifications (2)

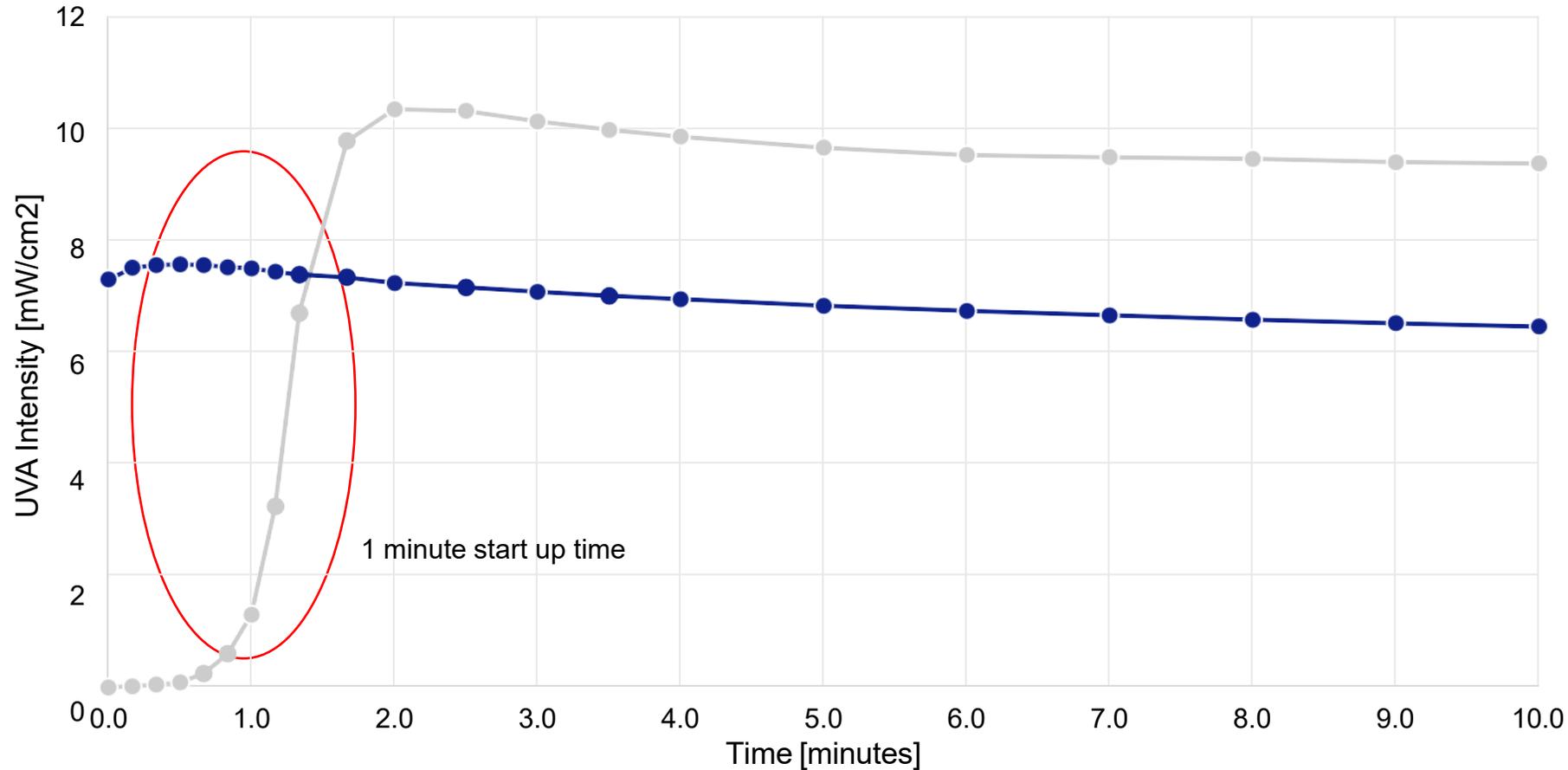
No	Item	Spec
1	Label	Product label or logo (10 x 55 mm) can be placed on the PDL
2	Roll proof design	Yes, by means of flattened head part
3	Serial number	Engraved in the housing: Year-Prod Batch-No: (YY-PB-XXXXX)
4	Temp control	Thermo switch built into the head, set at 50 °C
5	Cable shielding	The inductive connection part is optimized to minimize electric contact with the surroundings
6	Filter	Dichroic interference filter placed in front of the UV-A LED's (see separate sheet)
7	Sealing O-rings	Viton executed
8	Ergonomics	Ergonomic grip included in design (smooth finish)
9	Switching pattern	See separate sheet
10	Lens protection cap	Injection molded design, Plastic: PE / black color

Dichroic interference filter

Spec	Item
Advantage	Reduces fatiguensess of the inspector during inspection
Shock resistance	Drop proof compliant
Temp resistance	Up to 150 °C
Ageing	Anti ageing (no deterioration over time)
Selectiveness	Optimized for 365 nm
Illuminance visible light	≤ 20 lux (in UV setting)



Start up time lamp types

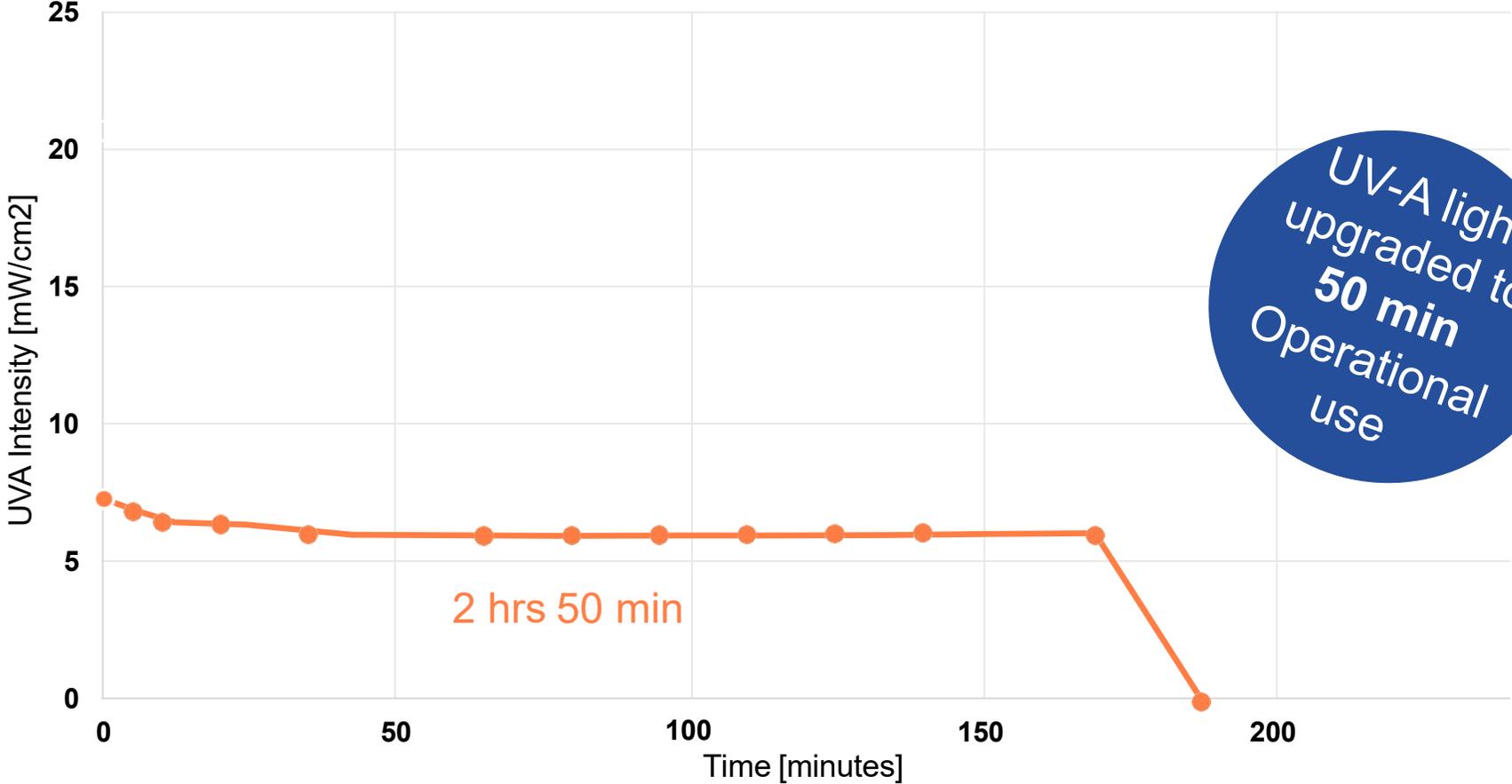


—●— Fluorescent UV lamp

—●— PDL-II UV LED

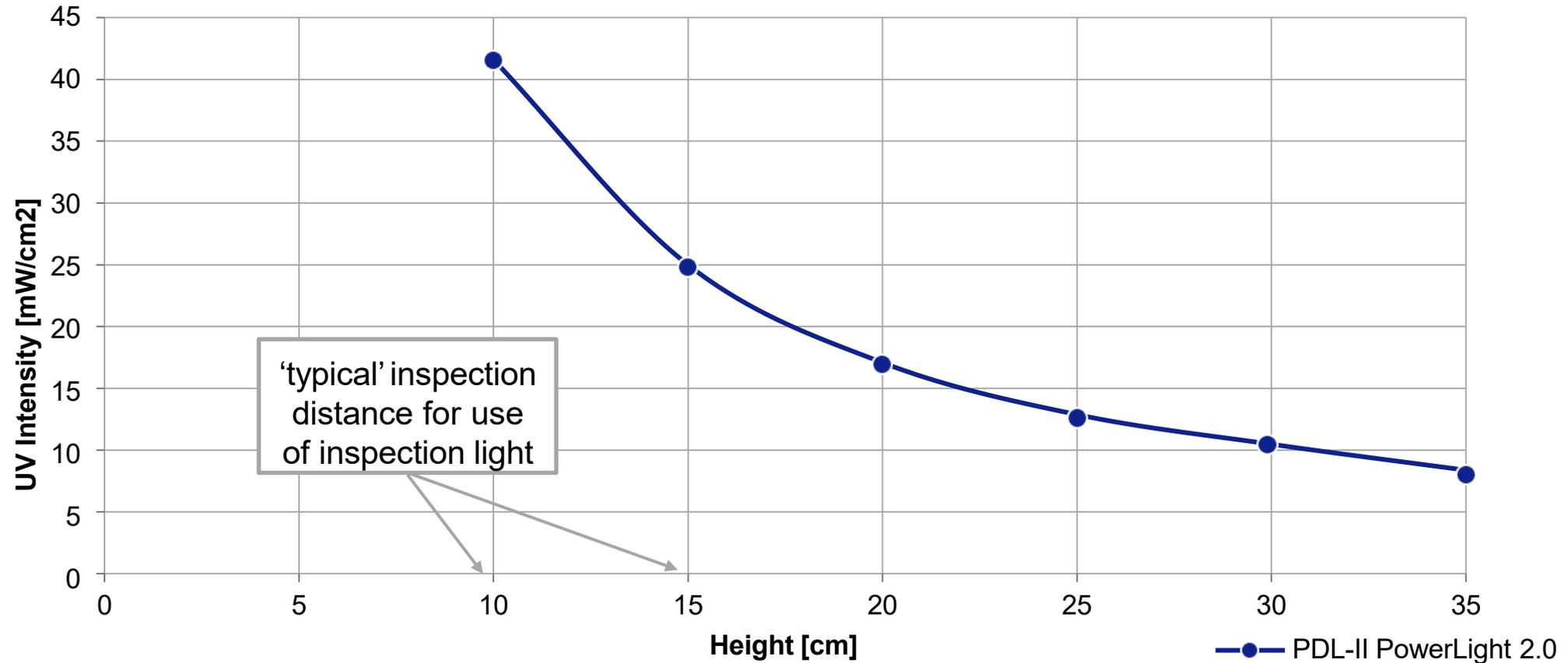


Battery lifetime *PDL-II* POWERLIGHT



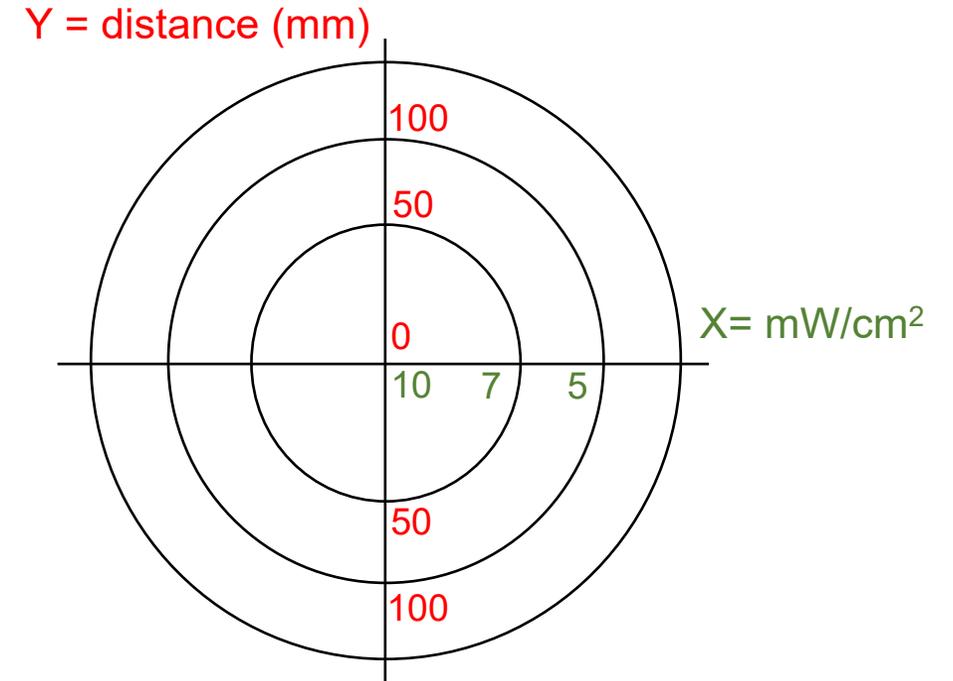
—●— PDL accu / 50 min in UV-A mode and 2 hours in white light mode

Inspection height vs UV intensity



Minimum UV intensity graph

Diameter	150 mm	300 mm	350 mm	400 mm	450 mm	500 mm
Central point	35	10	7	6	4.5	3.5
100 mm	12	7	4.5	4	3.5	2.5
200 mm	1	5	3	3	3	2.5



Data in graph given in mW/cm² of 365 nm

D = 30 cm

Switching pattern

No	Hard Switching pattern
	When lamp is off:
A	White light 100% strength & UV light off
B	White light 50% strength & UV light off
C	UV light 100% strength & White light off (The visible light strength is than ≤ 15 lux)



UV-A light LED

Specifications	Item
Power	5x 5 Watt
Wavelength	365nm \pm 5nm
Intensity	See separate graph
FWHM	\leq 30 nm
Temperature stability	\leq 5 nm drift at temp 10-50 °C

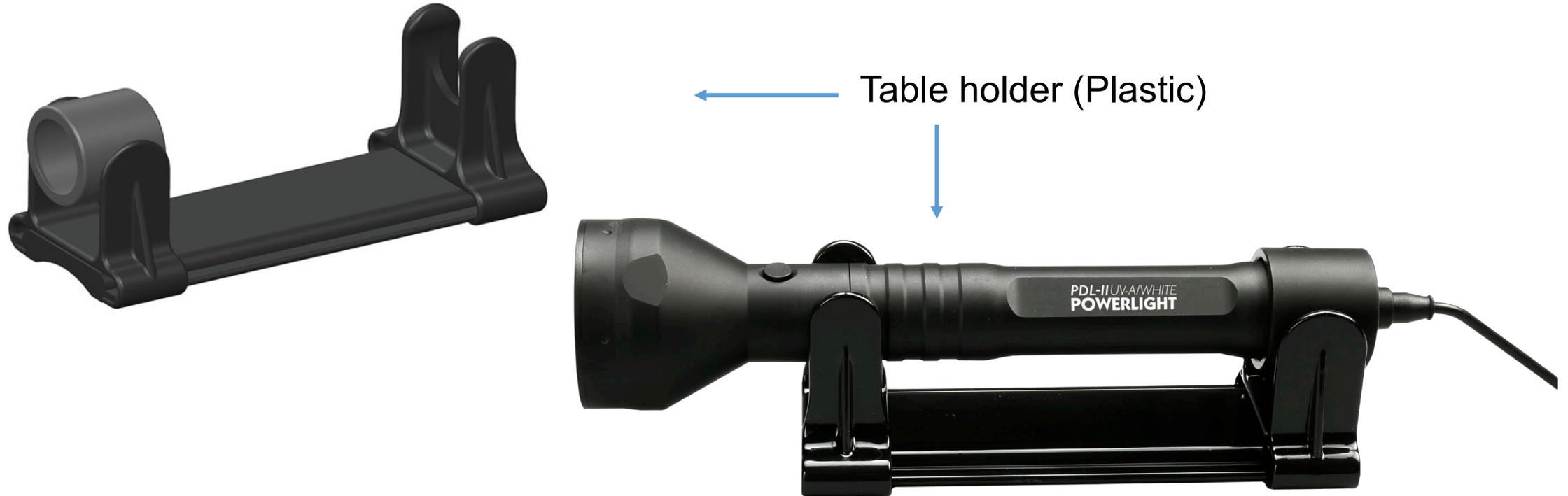


White light LED

Specifications	Item
Brand	Cree
Power Output	5 Watt
Colour temperature	6500K
Output	300 Lumen
At 100% Strength	At 50cm: 10.000 Lux At 70cm: 6.400 Lux
At 50% Strength	At 50cm: 4.900 Lux At 70cm: 3.060 Lux



Holder / Inductive charger



Casing PDL-II

Item	Spec
Dimension	280 x 220 x 80 mm
Color	Black
Material casing	PPC (Polypropylene carbonate)
Material inlay	EVA (Evatane) foam
Weight	528 gram
Lock	2x hinge lock (Red color)



Option A – (Spare) battery

Item	Spec
Brand	Panasonic
Type	18650 Li-ion
Capacity	3400 mAh – 7.4 V or 2x 3400 mAh 3.7 V
Safety	Protection circuit included in battery design
Quality	Class A / Optimized for serial charge
RoHS compliant	Yes



Option B - Battery charger set



**Rapid charging station
battery for 2 batteries**
(not in scope of supply)

- CE / ROHS compliant
- 2x 1,5 A charger
- 100-240 V ~ 50-60 Hz

Available from aug. 2021

- New ESD safe container (supplied in yellow IDP bag) for PDL-II
- Material: **Inherently Dissipative Polymers**
- Dimensions: 29 x 18 x 12 cm (L x D x H)
- Color container: Yellow



Summarizing the PDL-II

No	Item
1	Highly effective most powerful UV-A / White inspection light in high quality finish
2	Scratch-proof, Drop-proof, Hose-proof; meets the highest mechanical standards
3	Instant use (instant On / Off)
4	Optimized design for long term use of detection of dust particles
5	1x Lion rechargeable Panasonic Li-ion battery
6	Table top standard included in scope of supply
7	Inductive charging (3 to 3,5 hours required for full charging)
8	Round aesthetic finish, light design
10	Original Cree LED's suited for 20.000 hours of use

Particle Detection Light



*The most powerful flashlight available
for the Cleanroom industry*

