

Upcon[®] reader

Exceptional UCNP label technology

Upcon plate readers are modular and highly versatile low-maintenance instruments for biochemical assays utilizing Upcon upconverting nanoparticle (UCNP) technology. Extremely compact and light, the readers fit almost any laboratory space and the automation interface is customizable to most open system stackers and automation lines.



Upcon® Reader Family – General Configuration

General	
Plate types	6 – 1536 well-plate
Measurement modes	Endpoint / Kinetic / Area scan
Reading modes	Top / Bottom
Dynamic filter storage capacity	Up to 32 optical filters (Ø 15 mm or 1/2").
Dichroic mirror slide capacity	Up to 5 dichroic mirrors (26 mm x 18 mm).
Z-focus	0 – 16 mm
Temperature control	Ambient + 3°C to 65°C
Shaking modes	Linear / Orbital / Double orbital
User interface program	Loaded into the reader. PC is not included.
Instrument connection	Ethernet
Dimensions (w x h x d)	202 mm x 268 mm x 495 mm / 7.9" x 10.6" x 19.5"
Weight	13 kg / 29 lbs
Power consumption	Max 120 W with temperature control on
Mains voltage	110 – 230 V, 50 / 60 Hz

Environmental conditions	
Operating conditions	+15°C to +35°C, relative humidity < 80 %
Transportation and storage conditions	-20°C to +50°C, relative humidity < 90 %

Performance	
Upcon sensitivity	3 pg / ml
Upcon dynamic range	5 decades

2000-0033 Upcon Reader

Model Specific	
Detection technology	Upcon
Excitation light source	Infrared laser (976 nm)
Detector (Upcon)	Photomultiplier tube
Emission wavelength range (Upcon)	230 – 850 nm

Preinstalled optical filters and mirrors	
Upcon	976/30 nm, 540/60 nm, D800 dichroic mirror

2000-0035 Upcon F-Pro Reader

Model Specific	
Detection technologies	Upcon, FI, ABS, LUM, TRF, FP
Excitation light source	Infrared laser (976 nm), Xenon flash lamp
Detector (Upcon, FI, LUM, TRF, FP)	Photomultiplier tube
Detector (ABS)	Photodiode
Emission wavelength range (Upcon, FI, LUM, TRF)	230 – 850 nm
Emission wavelength range (FP)	400 – 850 nm
Wavelength range (ABS)	220 – 1000 nm

Preinstalled optical filters and mirrors	
Upcon	976/30 nm, 540/60 nm, D800 dichroic mirror
Fluorescence / Fluorescence polarization Absorbance	485/10 nm, 535/20 nm (2 pcs), D505 dichroic mirror
Luminescence	405/10 nm, 450/10 nm
Time-Resolved Fluorescence	400-650 nm (Infrared blocking filter)
Upcon	340/70 nm, 616/8 nm, D400 dichroic mirror

2000-0036 Upcon S-Pro Reader

Model Specific	
Detection technologies Upcon, FI, ABS, LUM, TRF, FP	Upcon, FI, ABS, LUM, TRF, FP
Excitation light source Infrared laser (976 nm), Xenon flash lamp	Infrared laser (976 nm), Xenon flash lamp
Detector (Upcon, FI, LUM, TRF, FP) Photomultiplier tube	Photomultiplier tube
Detector (ABS) Spectrometer (full spectrum scan < 1 s)	Spectrometer (full spectrum scan < 1 s)
Emission wavelength range (Upcon, FI, LUM, TRF) 230 - 850 nm	230 - 850 nm
Emission wavelength range (FP) 400 - 850 nm	400 - 850 nm
Wavelength range (ABS) 220 - 1000 nm	220 - 1000 nm

Preinstalled optical filters and mirrors	
Upcon	976/30 nm, 540/60 nm, D800 dichroic mirror
Fluorescence / Fluorescence polarization	485/10 nm, 535/20 nm (2 pcs), D505 dichroic mirror
Luminescence	400-650 nm (Infrared blocking filter)
Time-Resolved Fluorescence	340/70 nm, 616/8 nm, D400 dichroic mirror

Accessories

2100-0071 Upcon Test Plate

Test plate for testing Upcon reader performance.
Prerequisite for IQ/OQ/PQ.



2100-0061 LF-Strip Holder (80-120mm)

Well-plate format frame with spring powered strip holder clips

Capacity 10 clips for 80mm / 120mm strips

Dimensions 127.8 x 21 x 85.4mm (WxHxD)

Weight approx. 20g



2100-0072 800nm High Sensitivity PMT Module

High-sensitive exchangeable detection unit for Upcon plate readers.
Improved UCNF sensitivity in the infrared range.



1600-0001 Strip Scanning Software

Upcon plate reader application software for scanning LF-strips.
Allows scanning by row or column directions in the plate.
Scanline spacing and length is adjustable to accommodate the 2100-0061 LF-strip holder or a custom one.



Upcon[®] UCNP technology

Upcon[®] is a new system which brings the exciting new UCNP technology (upconverting nano-particles) into the life science and clinical chemistry laboratories.

The unique properties of particles allow:

- Detection even through tissue and in whole blood
- Measurement without photobleaching or self-quenching
- Measurement without autofluorescence
- Bright luminescence with discrete emission bands

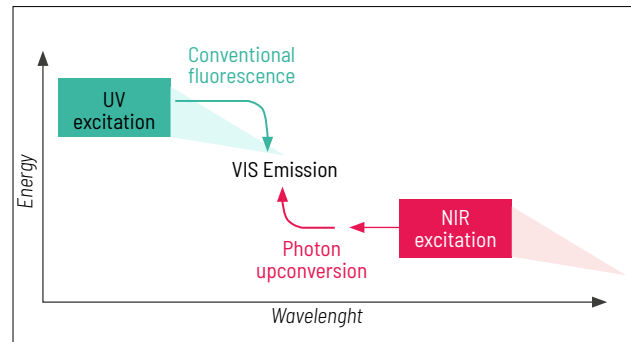
Ideal for:

- Quantitative lateral flow tests
- Bioaffinity assays
- Microscopy and imaging

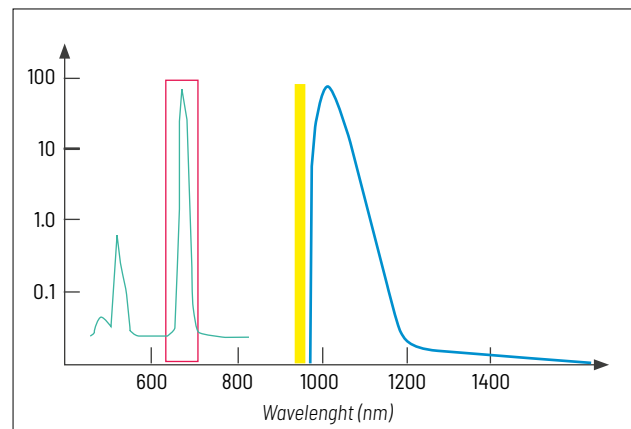
The UCNPs provide several advantages over traditional labels like conventional fluorophores or quantum dots. Due to the NIR-excitation and emission at visible wavelength, the autofluorescence in biological samples is totally eliminated, and the particles are detectable through tissue and even in whole blood. The lanthanide ions that are embedded within the particles provide the favourable properties of stable and bright emission, discrete emission bands and long emission lifetime.

Customized plate maps and sample holders are available on request. For example, scanning over lateral flow strip lines can be done with the optional Labrox strip scanning software.

For increased throughput Labrox offers the LF strip holder with possibility to run up to 10 LF strips per experiment.



In the picture above the laser excitation is presented as yellow line and autofluorescence as blue curve. The emission signal presented as green curve can be measured free of autofluorescence.



In Upcon, the label is excited at long wavelengths (NIR) and emission is detected at shorter wavelengths (VIS). Autofluorescence occurs always with longer wavelengths than excitation, so autofluorescence will not disturb the detection with visible wavelengths.

Manufacturer

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