
NSG
GROUP

∗Fluorescence micro-optics
∗Fluorescence detectors

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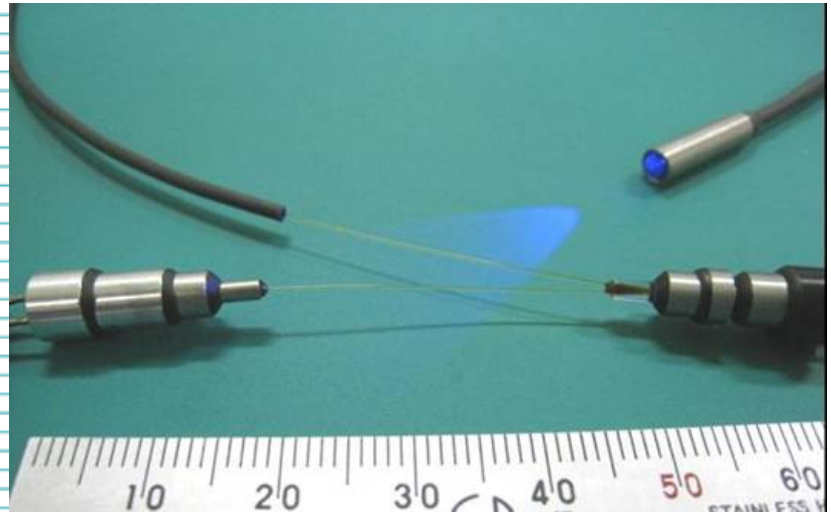
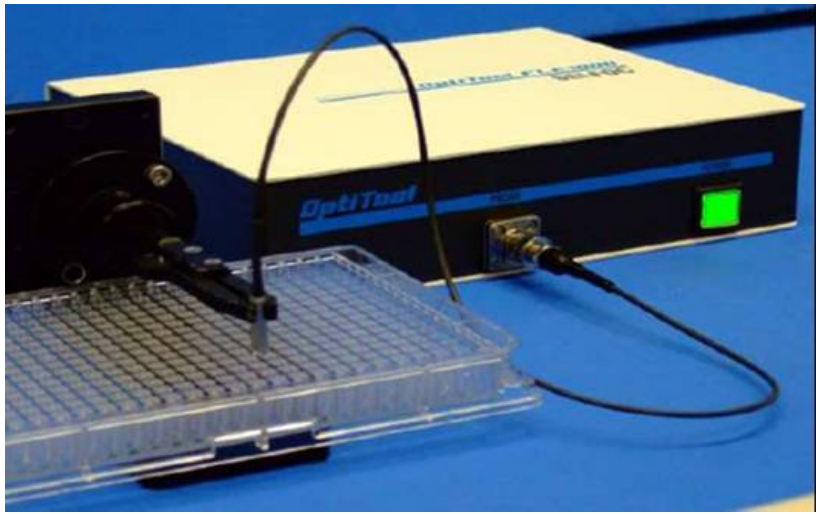
∗ Fluorescence micro-optics
∗ Fluorescence detectors

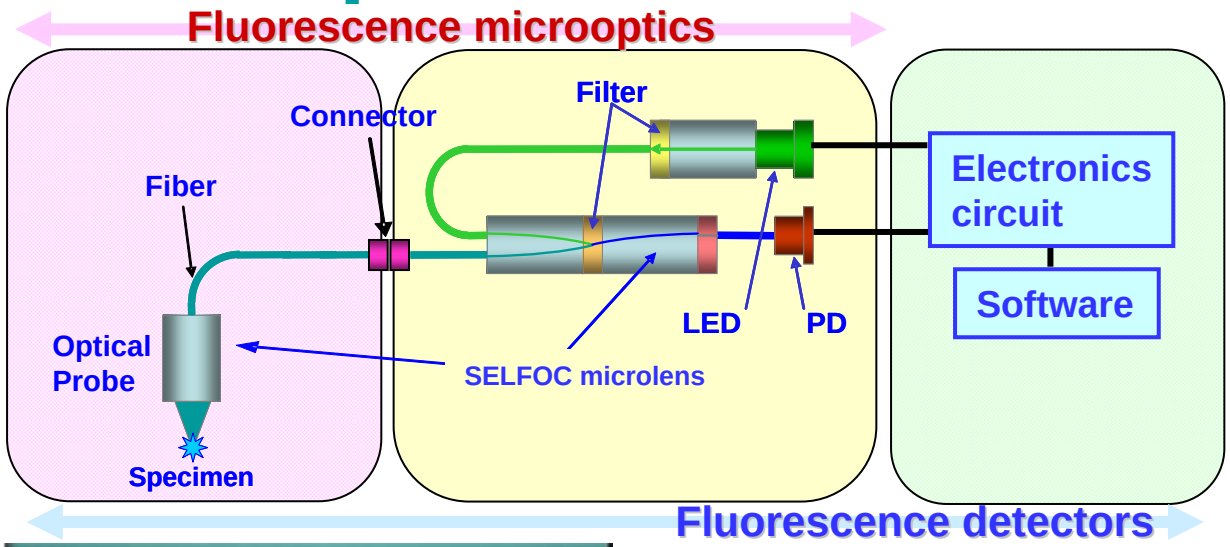
NSG GROUP

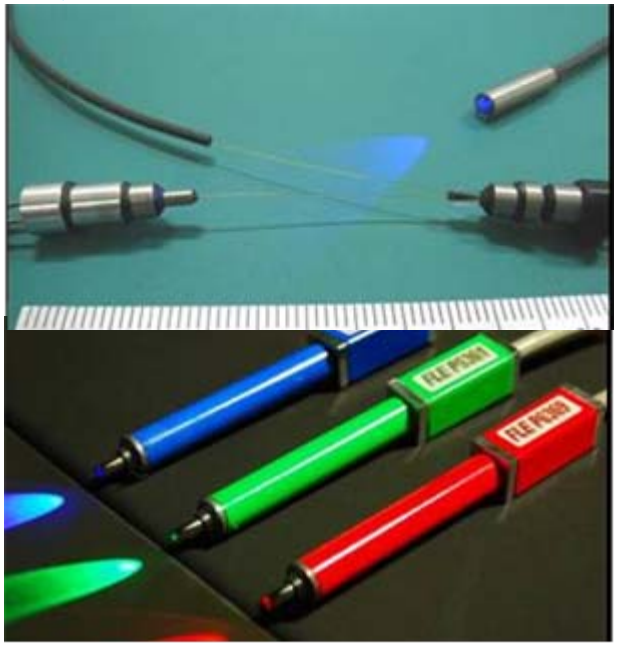
NSG has developed various Fluorescence micro-optical heads applying much experience from SELFOC micro-optics. They are useful for mounting in many kinds of equipment such as real-time PCR machines, etc. and for realizing hand-held equipments. NSG also provides Fluorescence detectors as equipment that includes controllers and software. Both Fluorescence micro-optics and Fluorescence detectors are commercially available. Please contact with us!

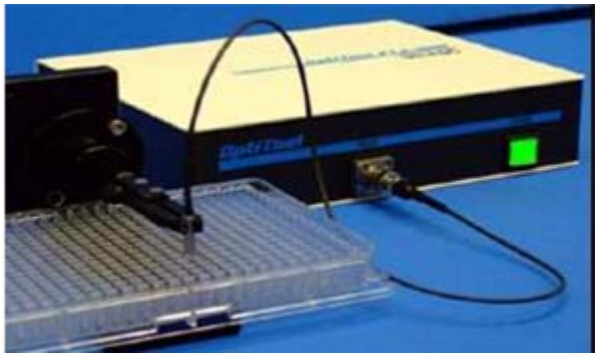




Product line-up



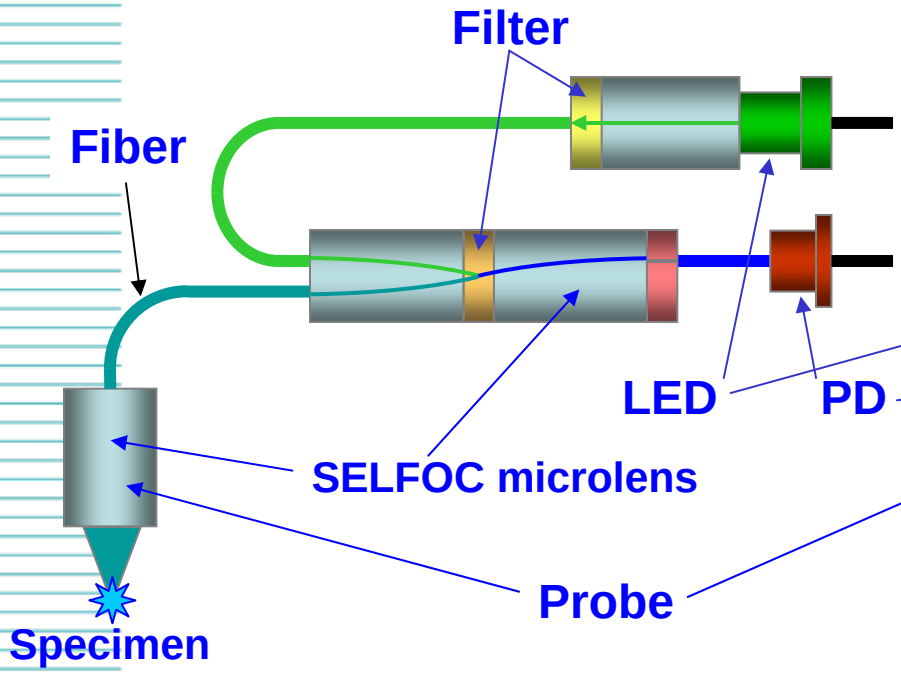


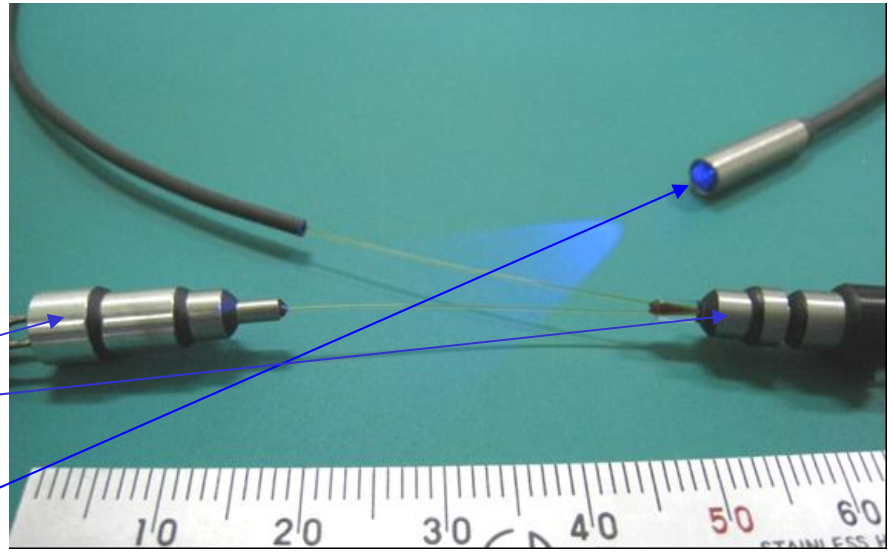


Any component, combination, system can be chosen. Customization is available as well.

Fluorescence micro-optics

NSG's Fluorescence micro-optical heads are based on stacked planar structure of SELFOC lenses and wavelength filters that deriver small, stable, and cost-competitive features.

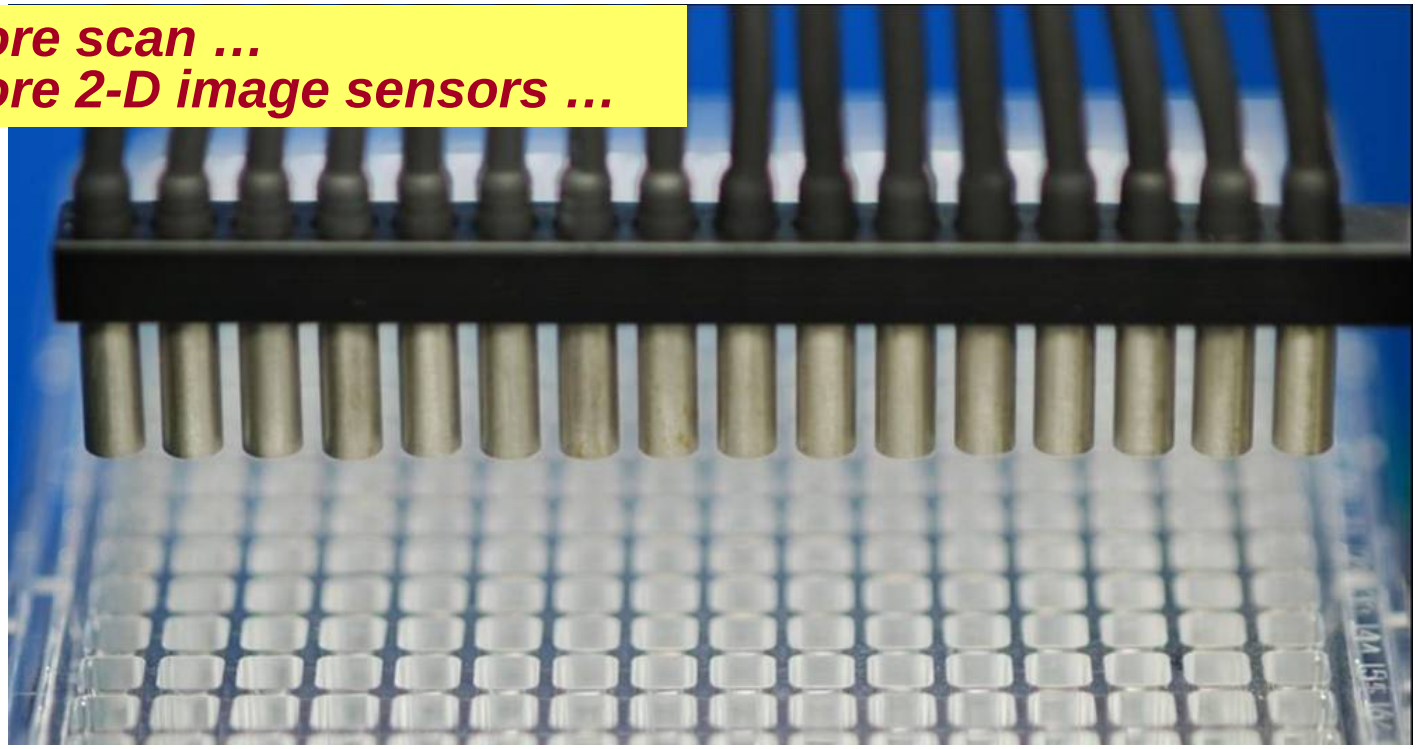




Small optical probes for parallel detection

Small optical probes composed of SELFOC microlenses and fibers can be placed close to specimen or can be applied to realize array heads.

No more scan …
No more 2-D image sensors …

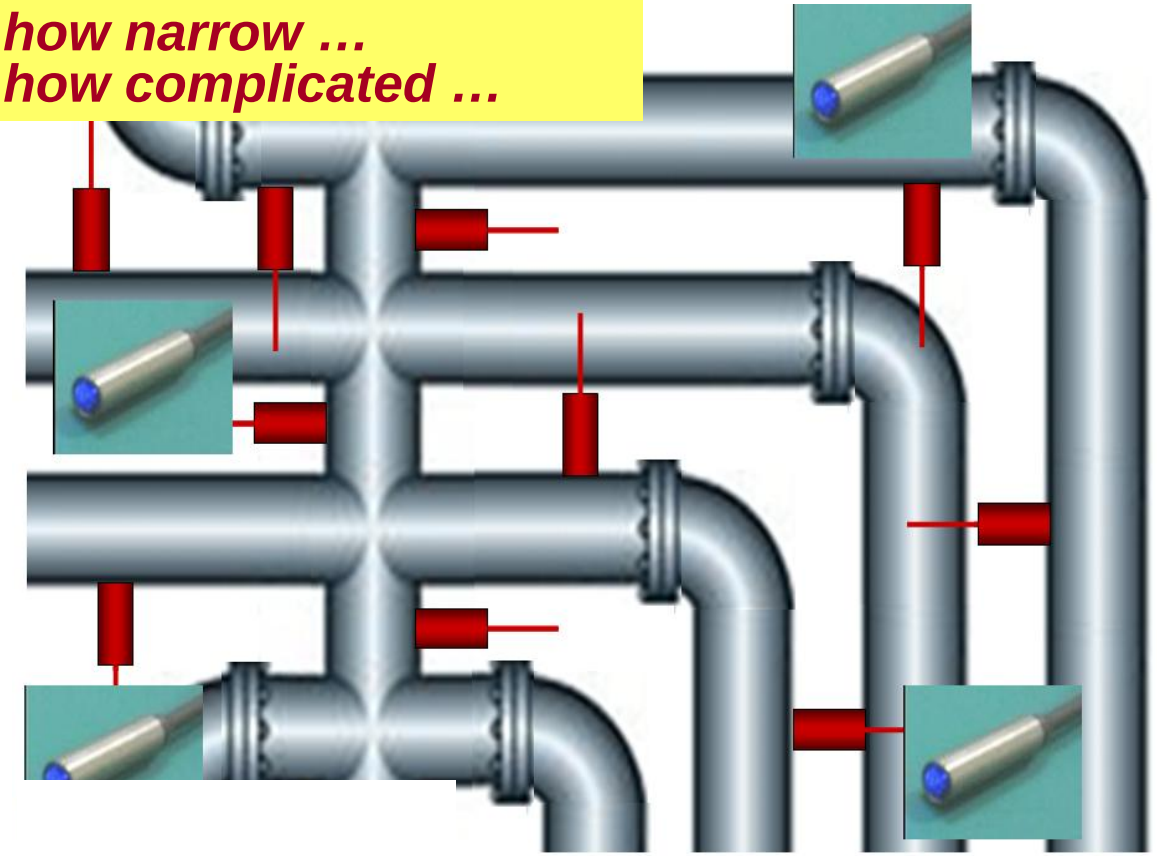


A 16ch probe array of 4.5mm-pitch for 384ch micro-well plates.

Small optical probes for placing in narrow space

Small optical probes composed of SELFOC microlenses and fibers can be placed close to specimen or can be applied to realize array heads.

No matter how narrow …
No matter how complicated …

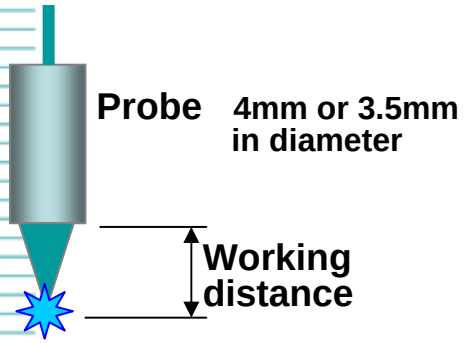


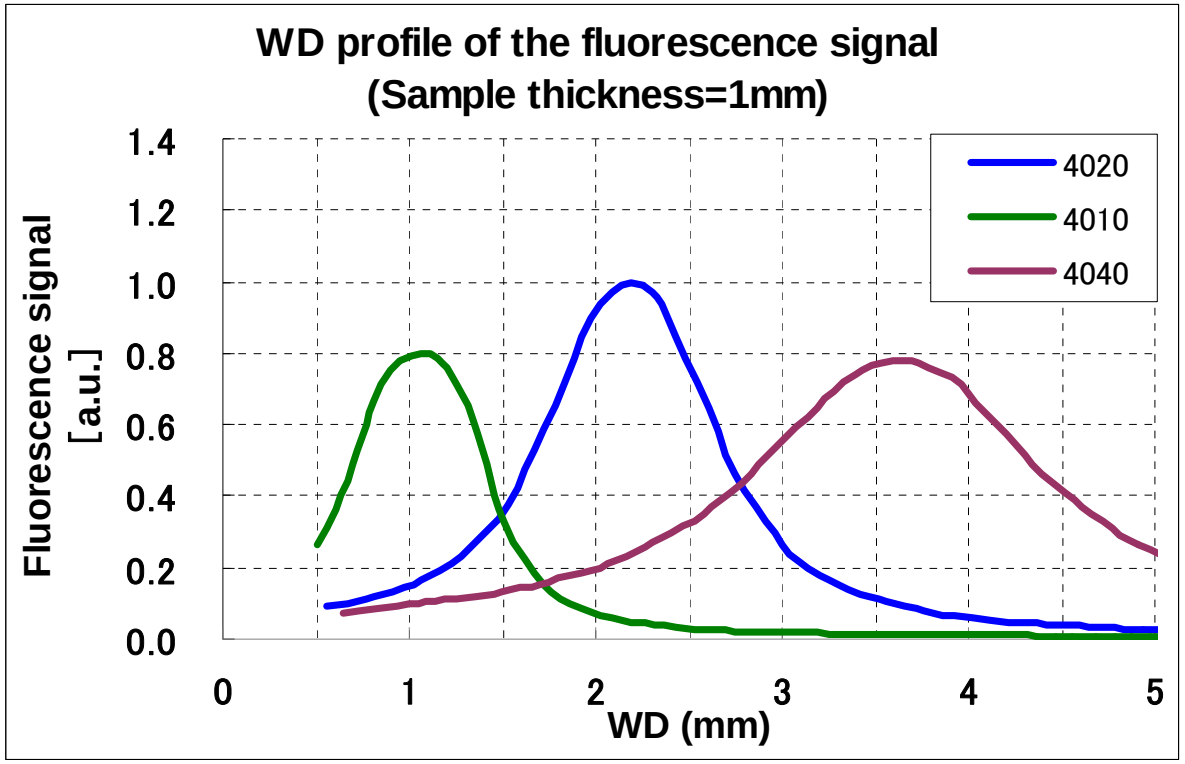
Wide varieties of optical probes - 1

Wide varieties of optical probes can be lined up by applying SELFOC microlenses.

Many different eyes take the information that you want.

Probes of working distances of around 1, 2, 4, and 10mm are prepared, corresponding to their spot sizes of 0.1, 0.2, 0.4, and 1.0mm, respectively.

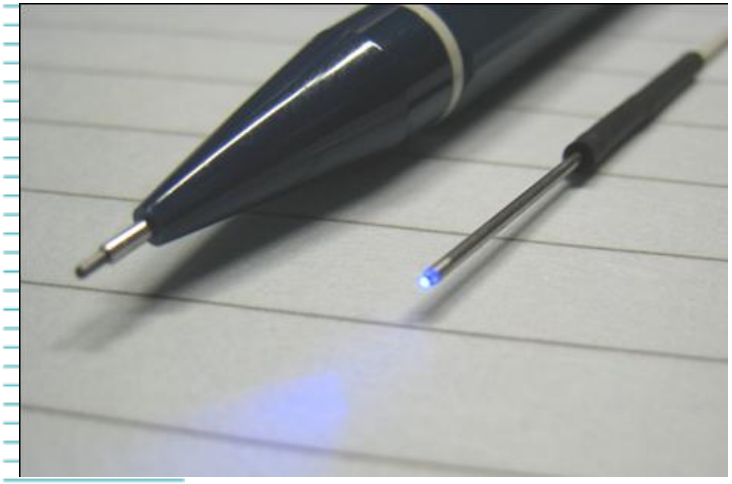


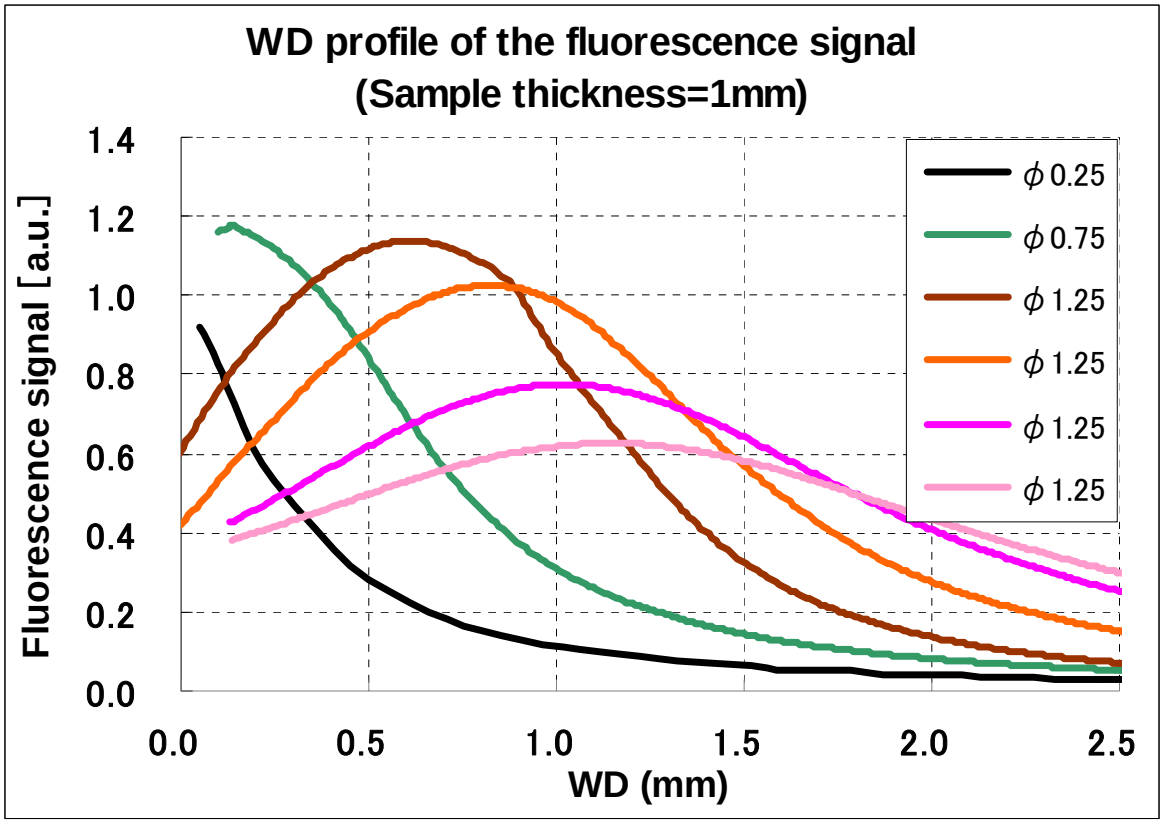


Wide varieties of optical probes - 2

Thinner probes of 1.25, 0.75, and 0.25mm in dia. have also been developed.

Not a needle, but a probe …





Line-up of optical probes

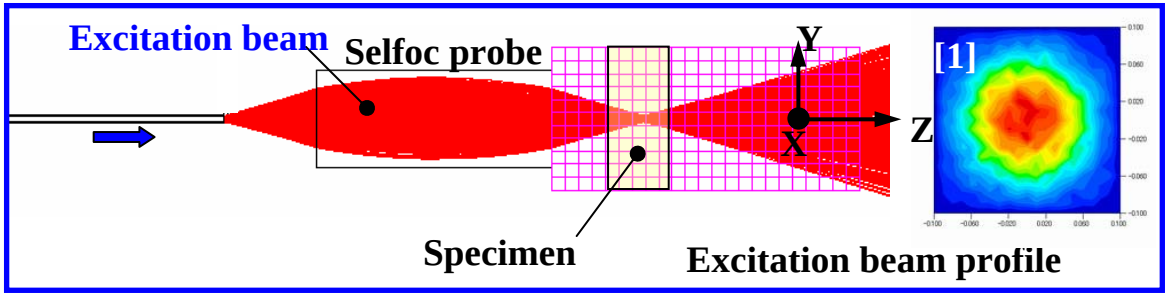
No.	Probe dia.	Spot dia.	W.D.
40100	4.0 (mm)	1.0 (mm)	10 (mm)
4040	4.0	0.4	4
4020	4.0	0.2	2
4010	4.0	0.1	1
1210	1.25	0.5	1
1208	1.25	0.4	0.8
1206	1.25	0.3	0.6
0702	0.75	0.4	0.2
0200	0.25	0.2	0

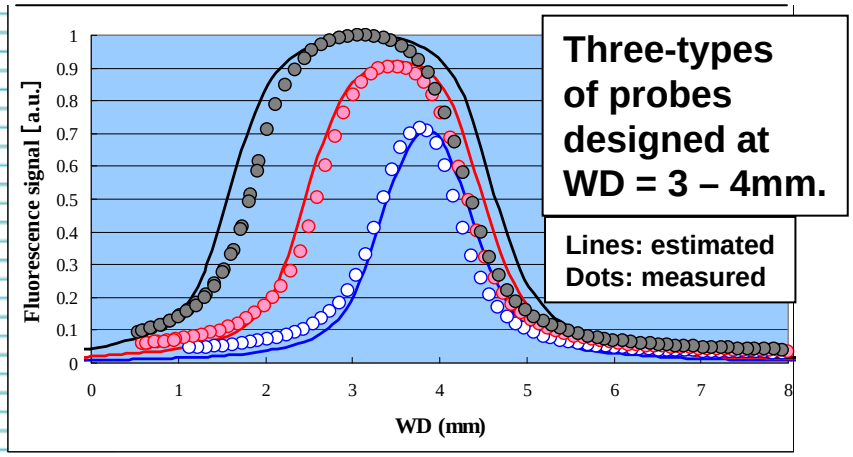
We will also provide a custom product to meet your requirements.

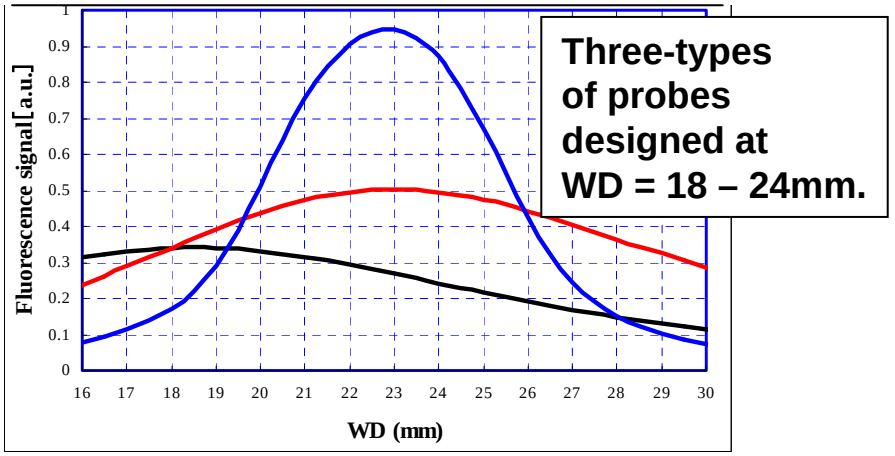
Customization of optical probes

In case you do not find a suitable product in our line-up, we will provide a custom product to meet your requirements.

NSG's vast experience and knowledge of micro-optics provides the best solution.





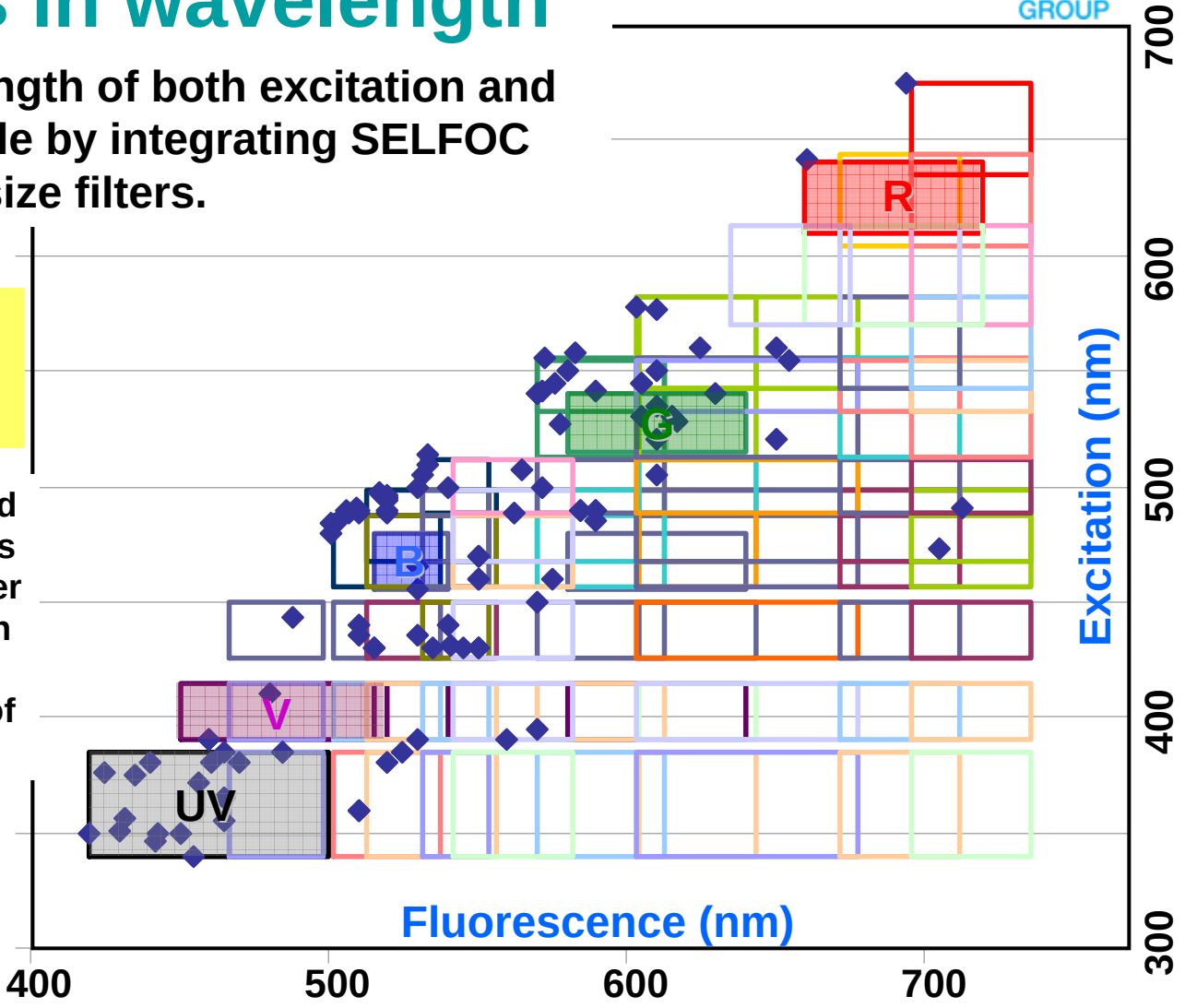


Wide varieties in wavelength

Wide varieties in wavelength of both excitation and fluorescence are available by integrating SELFOC microlenses with small size filters.

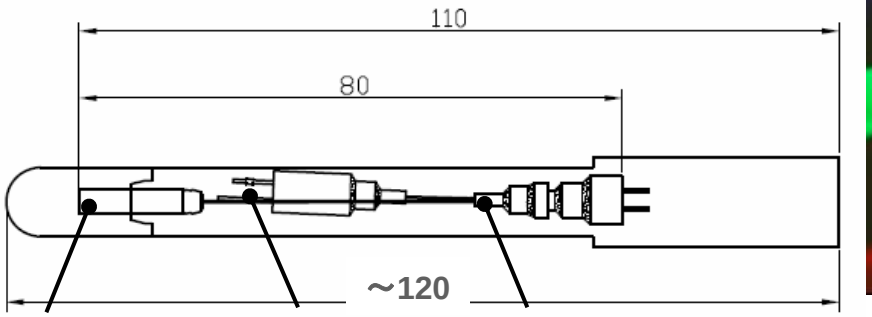
More than rainbow ! Ask any color that you want.

Five standard lineups (painted rectangles) and semi-customs (many other rectangles) cover any position in the wavelength coordinates.
Blue dots indicate examples of fluorescence agent.



Pen-type optical heads

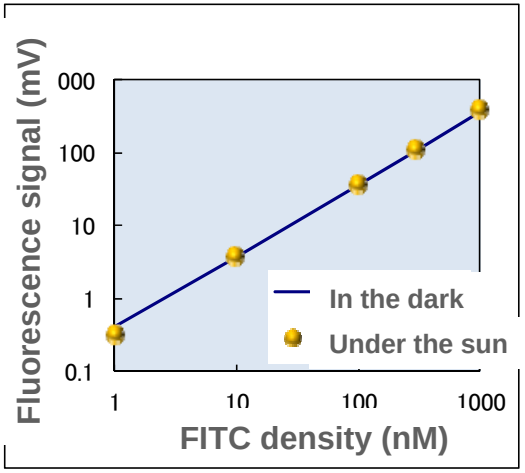
Pen-type optical heads have been newly developed. It is the best choice for inspection in production lines or for making various types of hand-held equipments.

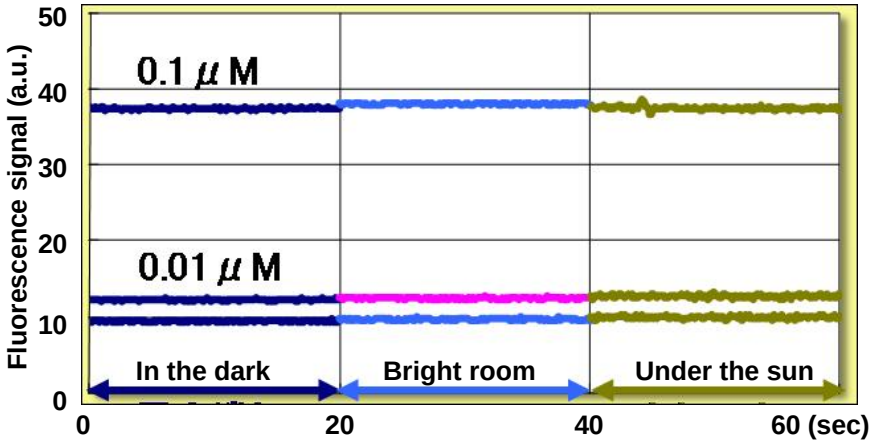


Probe **LED** **Wavelength-division optics with PD**

Pen-type optical heads (cont.)

Take it !
Go outside.
Go to the frontline.





Optimum design of micro-optics that consists of SELFOC microlenses, wave-length filters, and optical fibers, minimizes the optical noise. It results in the ability to work in high ambient light, even in bright sunshine.

Fluorescence detectors: FLE1100

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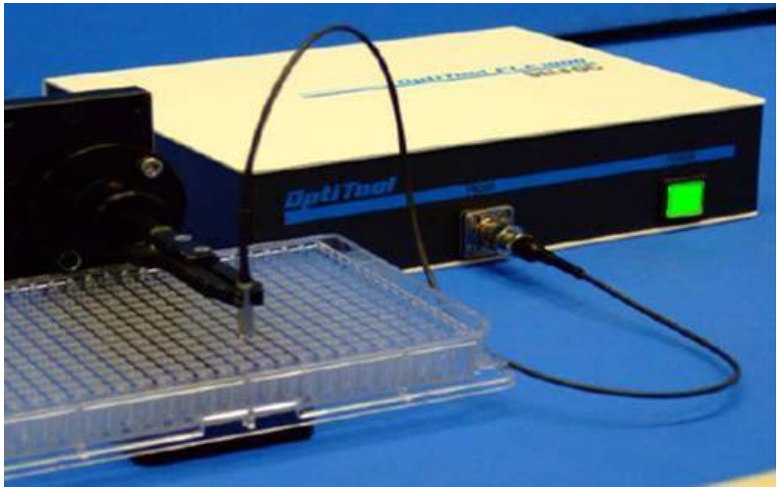
NSG's Fluorescence detector FLE1100 is combining Fluorescence micro-optics with a controller unit and software, which enables one to obtain fluorescence signal easily just after buying it.

Wavelength line-up;

	Excitation	Fluorescence
- UV	365nm	470nm
- Violet	405nm	470nm
- Blue	470nm	530nm
- Green	530nm	630nm
- Red	630nm	670nm

Please ask what you want



Interface	RS232C (to PC), analog voltage (for your requirements)
Software	attached (easily installed to your PC)
Size	130 x 160 x 40mm
Power supply	AC 100 – 240V
Detection area	0.2mm in dia. approximately (customization available)
Optical probe	4mm in dia. (Typically)

An example of measurement

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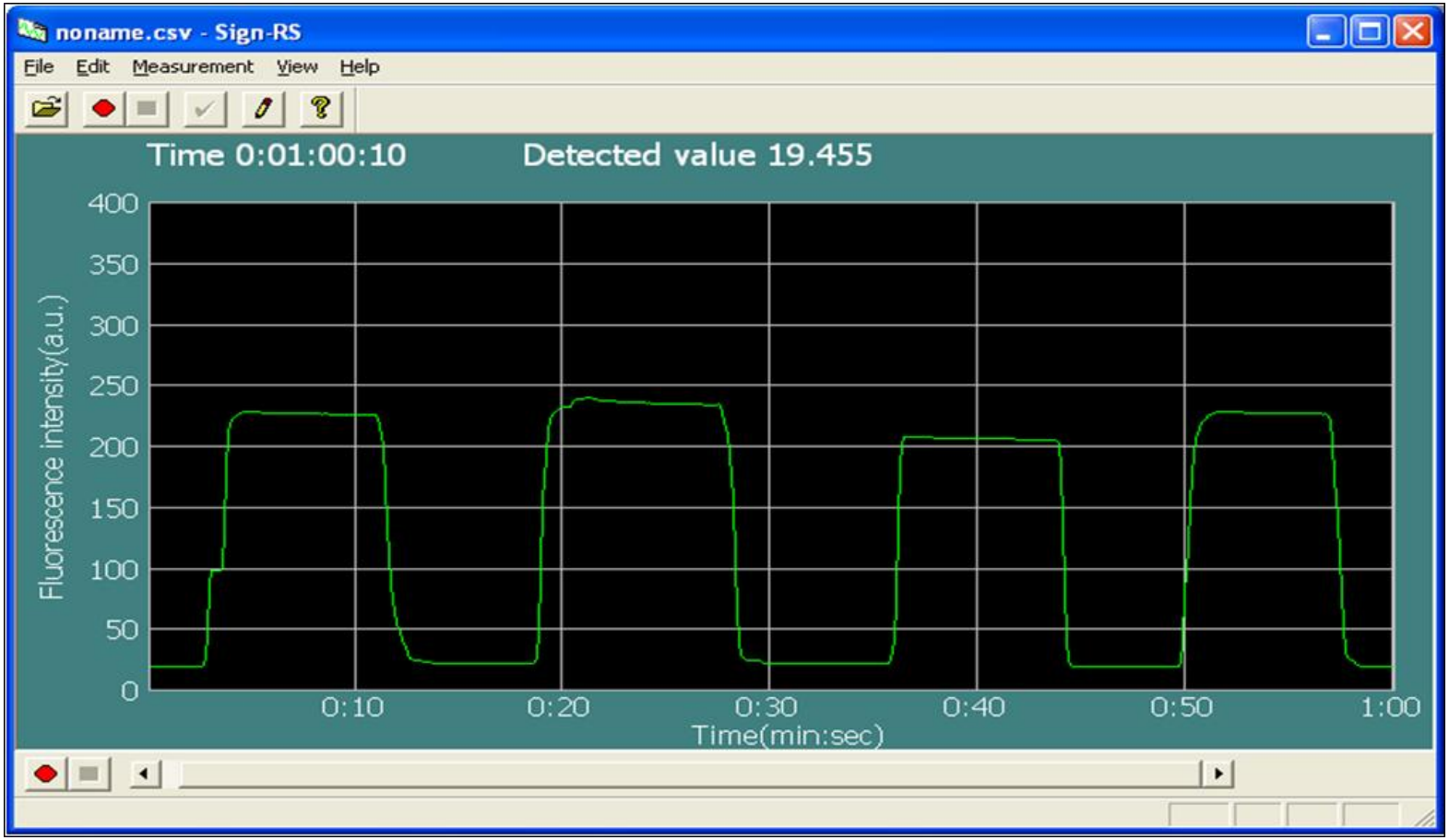
Fluorescence signal of the each well of a micro-well plate is measured in this case.



Specifications of FLE1100

NSG's Fluorescence detector FLE1100 has five types, R, G, B, Violet, and UV, as typical products. Please specify the wavelength what you want. Specifications of R, G, and B-types are shown here as examples;

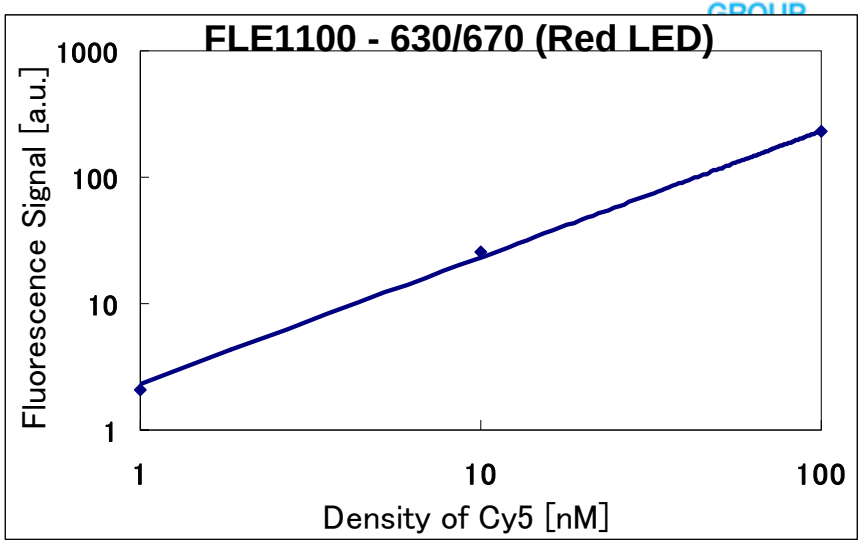
Item		Characteristics		
		FLE1100-02-470/530	FLE1100-02-530/630	FLE1100-02-630/670
Light source (Excitation wavelength)		Blue LED (470 nm)	Green LED (530 nm)	Red LED (630 nm)
Fluorescence wavelength (central value)		530 nm	630 nm	670 nm
Reagent (for example)		FITC	Resorufin	Cy5
Sensitivity	Digital output	1 nmol/ℓ	1 nmol/ℓ	1 nmol/ℓ
	Analog output	2 nmol/ℓ	2 nmol/ℓ	2 nmol/ℓ
Dynamic range		27 dB	27 dB	27 dB

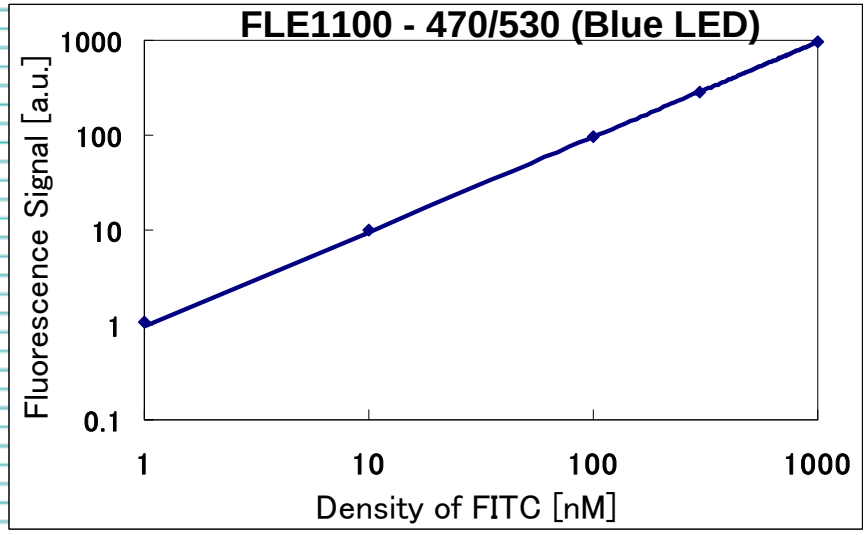
Sensitivity roughly corresponds to minimum density of the reagents, FITC, Resorufin, and Cy5 with PBS solution, while the fluorescence signal is obtainable with SNR = 10.

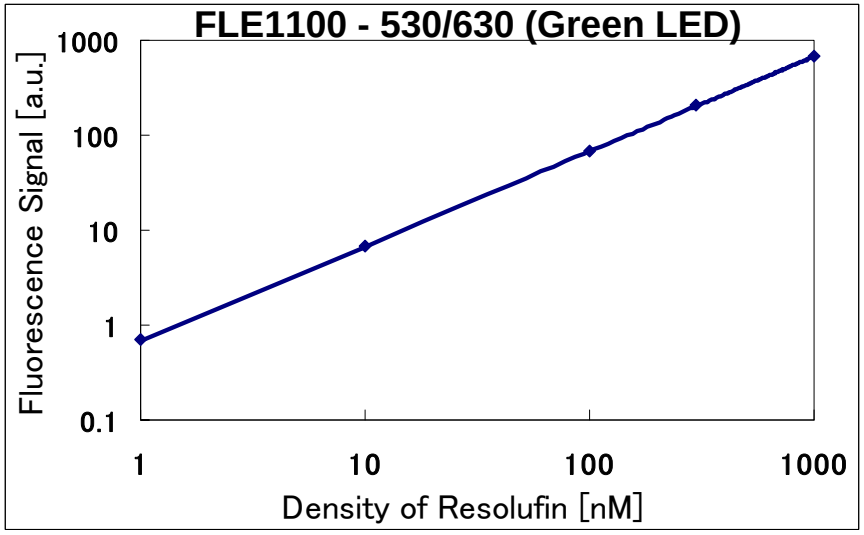
High sensitivity

Combination of optimized optics and well-designed controller enables you to obtain high sensitivity in the nM-range.

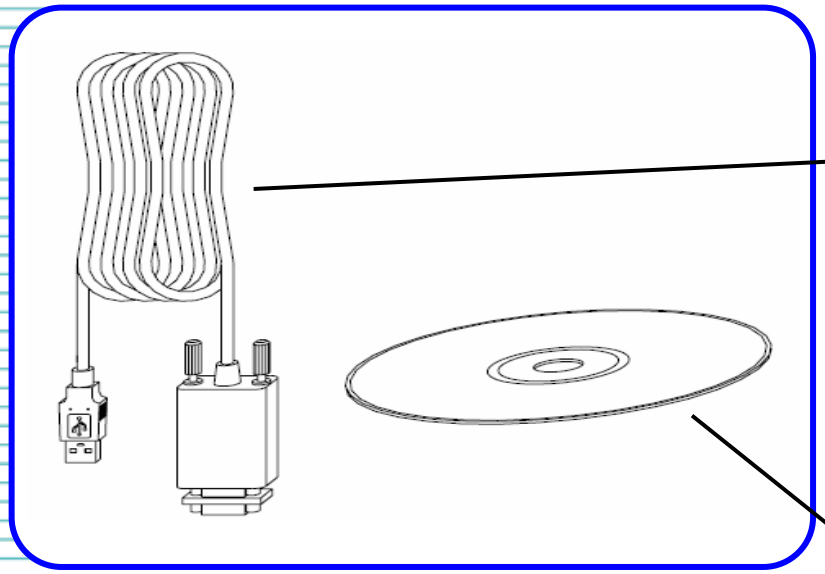
FITC, Resorufin, and Cy5 are solved in PBS solution. The results may change corresponding to the measurement condition.

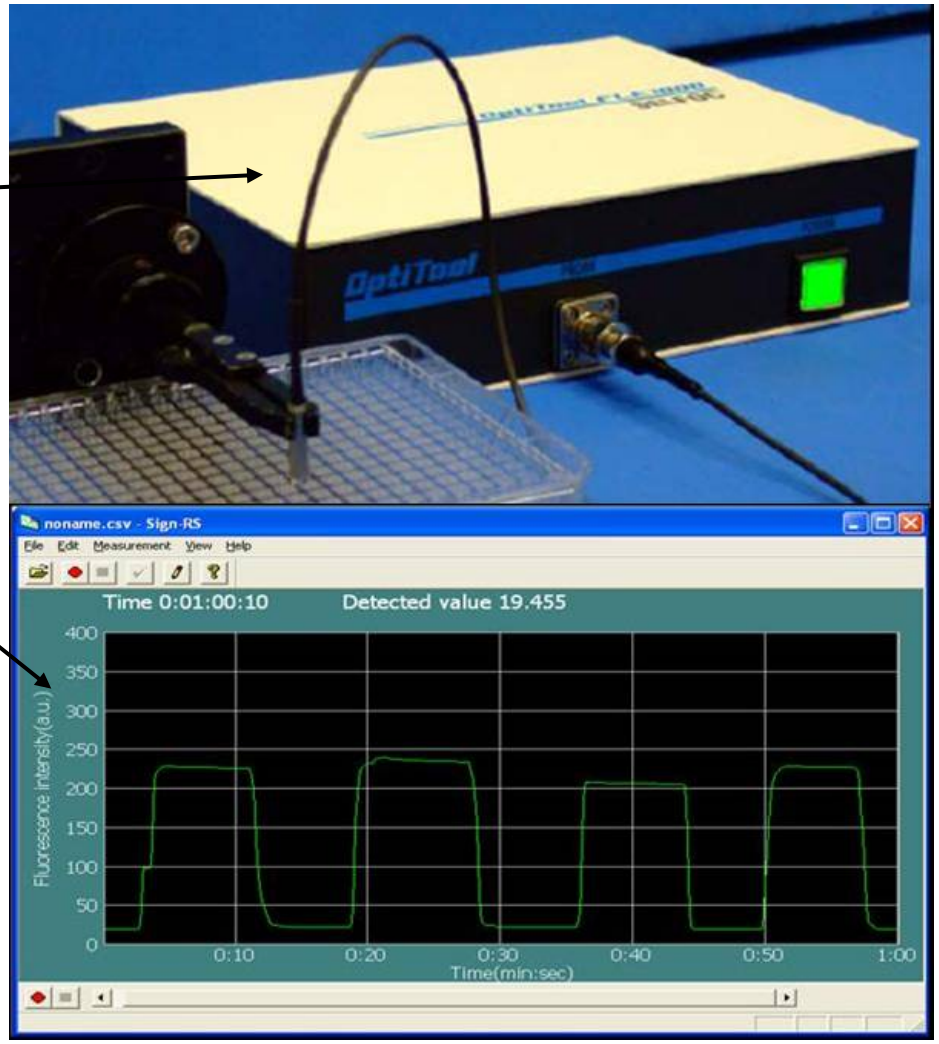






Easy to handle, easy to use





Connect the USB cable and copy attached software to your PC.
Then, just click the icon, you can start the detection.

Fluorescence detectors: FLE500

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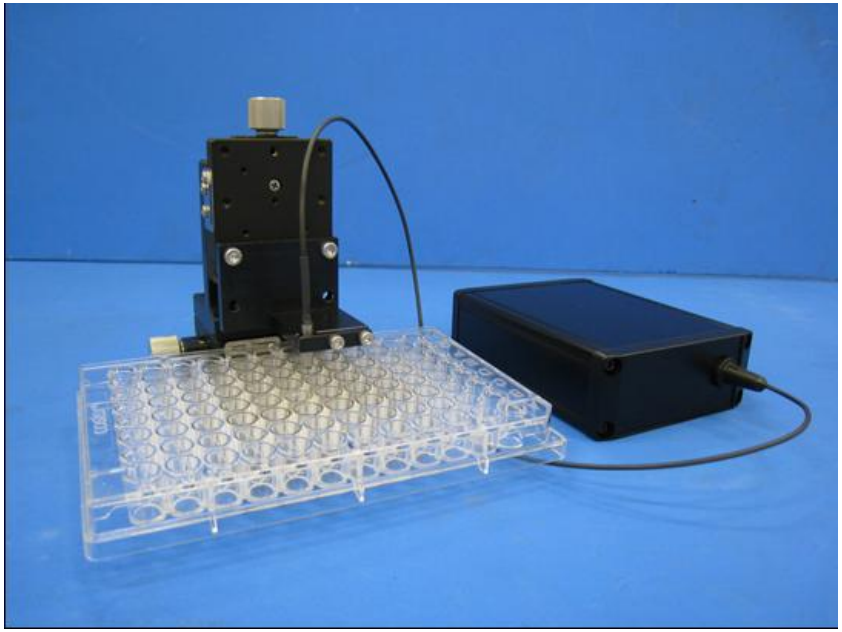
Fluorescence detector FLE500, newly appears as attractive version in cost. The same characteristics as FLE1100 including optics, probe varieties, and color varieties can be obtained with lower cost. Electronics circuit is simplified as analog signal only, and is slightly lower sensitivity.



Wavelength line-up;

	Excitation	Fluorescence
- UV	365nm	470nm
- Violet	405nm	470nm
- Blue	470nm	530nm
- Green	530nm	630nm
- Red	630nm	670nm

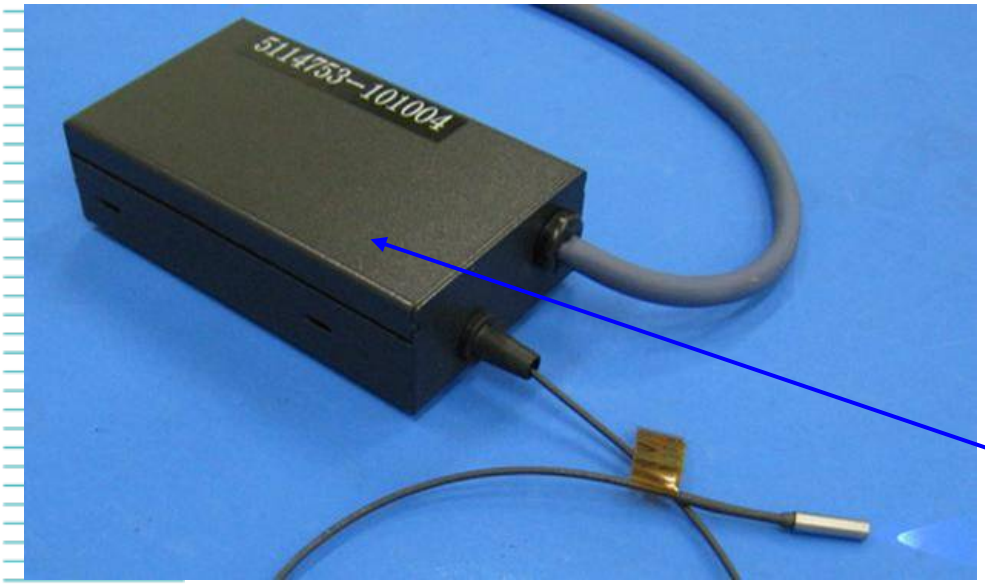
Please ask what you want

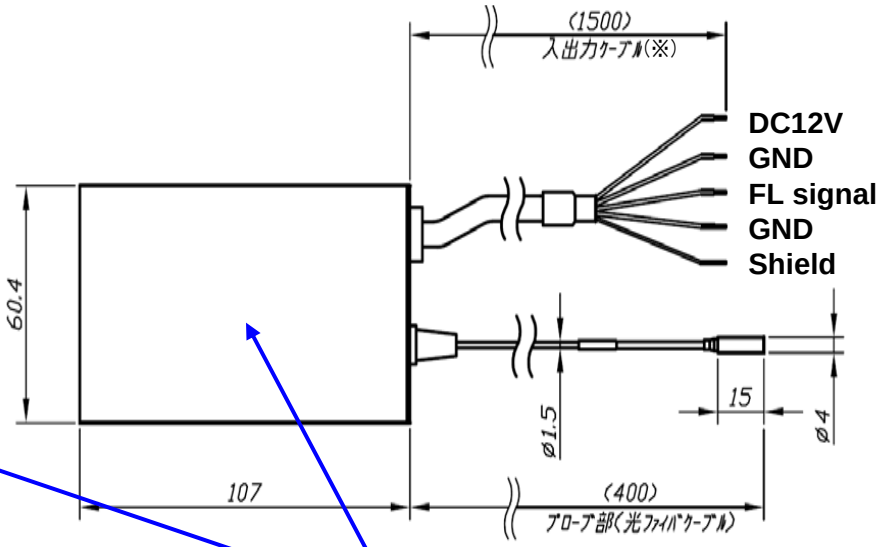
Interface	Analog voltage
Sensitivity	5nM (Approximately)
Size	100 x 75 x 30mm
Power supply	AC 100 – 240V
Detection area	0.2mm in dia. approximately (customize available)
Optical probe	4mm in dia. (Typically)

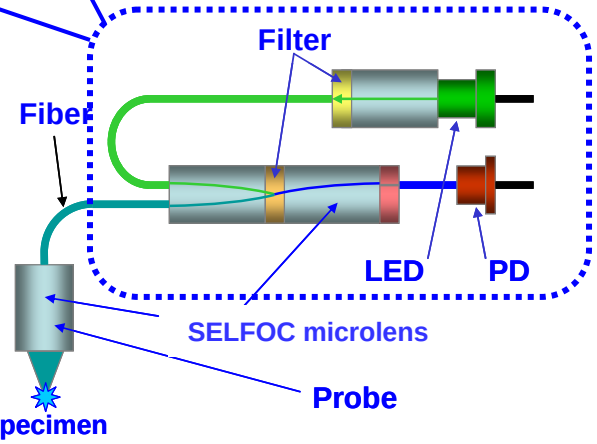
Controller

Fluorescence detectors FLE500

- Controllers, circuits, and housings shown here are attached to FLE500.
- They can be provided as options with any Fluorescence micro-optics as well.



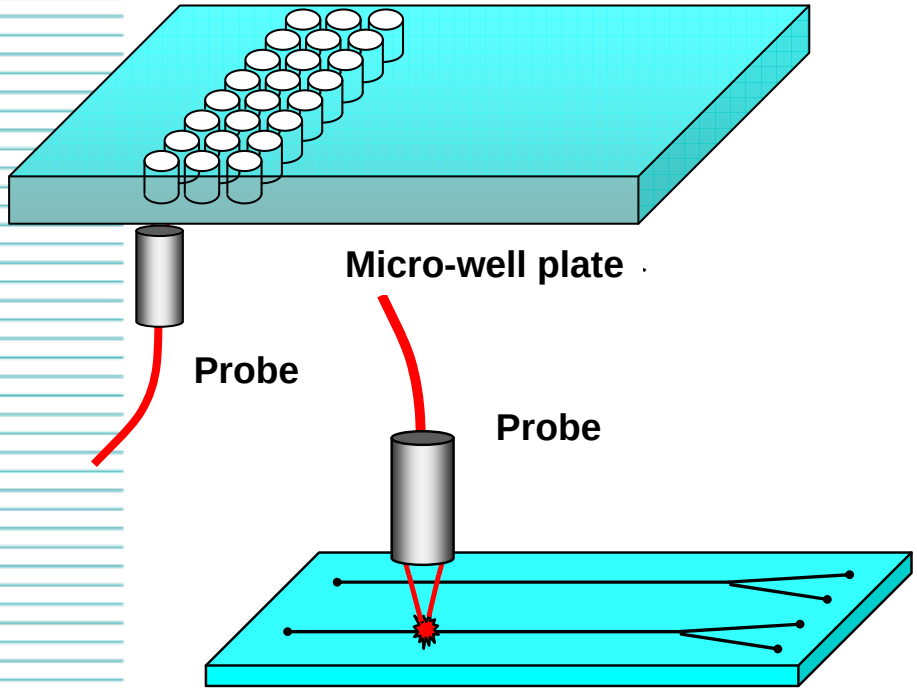


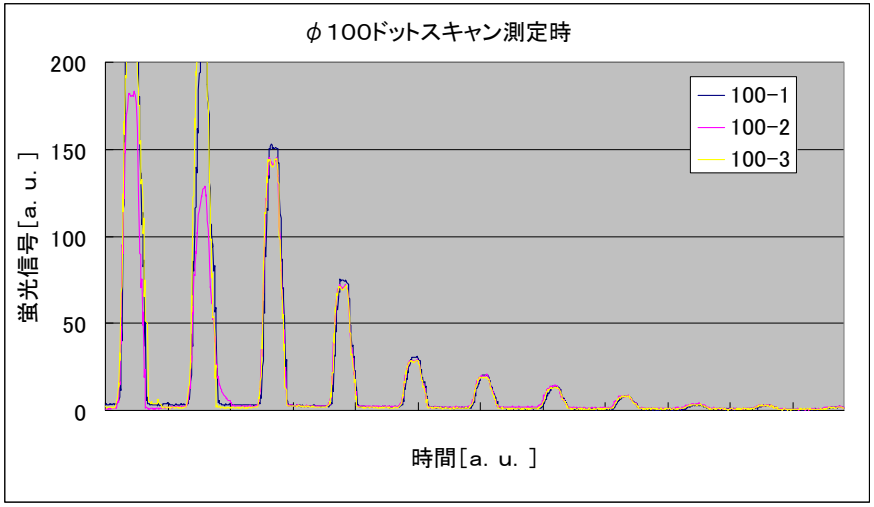


Driving circuit with optics including an LED and a PD is mounted inside the controller.

for bio-chemistry and life-science

By putting the optical probes closer to micro-well plates and chemical chips, fluorescence signals can be obtained in various applications such as DNA analysis, chromatographic measurements, etc.

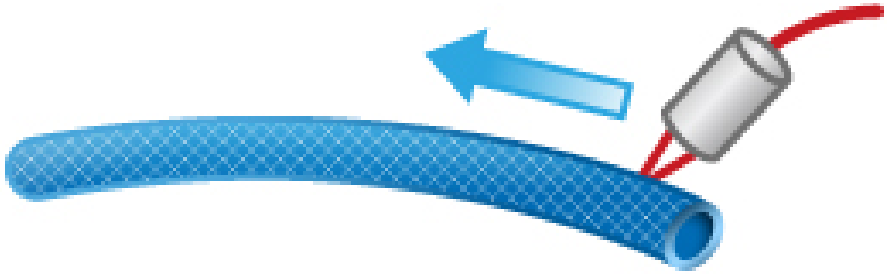




This graph shows a result of fluorescence signal obtained from specimen dots of 0.1mm in diameter.

for environmental inspections

- Inspection of pollutant density in rivers.
- Water flow analysis applying multi-point measurements.

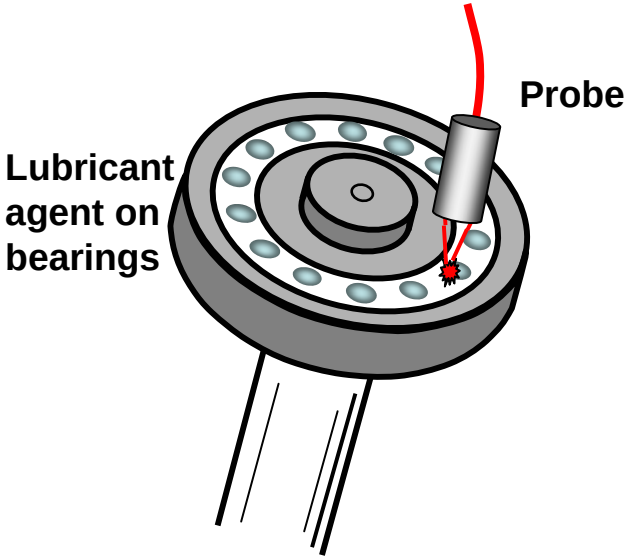


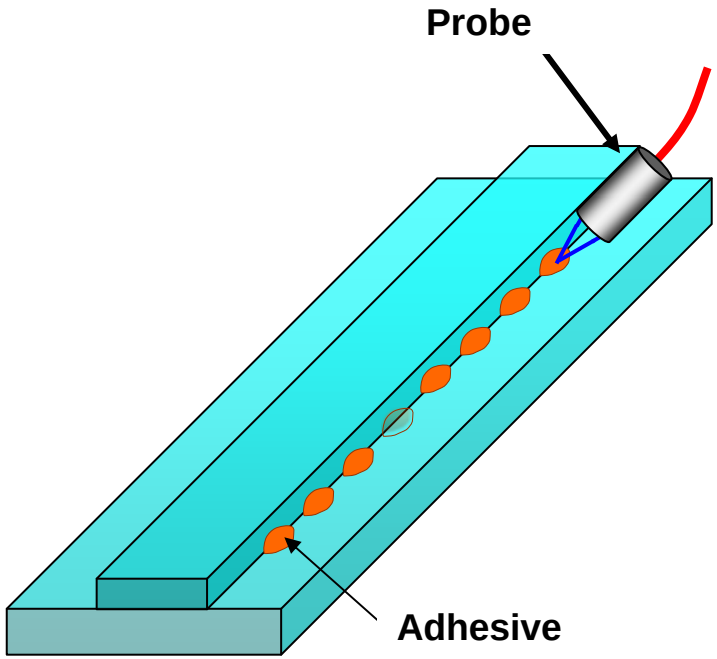
- Inspection of pollutant density inside hose or tube, caused by bacteria, algae, etc.

for quality inspections in production lines

The optical probes enable to inspect small area of 0.2mm in case. They can be placed at the narrow space.

- **Inspections of smearing or leakage of adhesive, grease, lubricant agent, oil, ink, etc.**
- **Inspections for any other fluorescence material such as printed material.**





The other application candidates - 1

For example …

For your next machines …

- Real-time PCR
- micro-plate reader
- HPLC, High Performance Liquid Chromatography
- Flowcytometer
- DNA analyzer

For the hand-held equipments, multi-point inspections, POCT, etc. …

Bio-chemistry and life-science;

- infection
- enzyme
- influenza
- DNA/RNA
- NADH
- drug
- cellulose
- cell
- yeast
- plant
- blood
- calcium
- fermentation
- microbe
- glucose
- bacteria
- virus
- allergy
- odor
- cosmetics
- cholesterol
- amino acid
- immunity
- vegetable
- urine
- porphyrin
- polyphenol
- acceptor
- protein
- colon bacillus
- fat
- collagen
- fouling
- food
- chlorophyll
- ELISA
- skin
- freshness
- sweat
- fungus
- pollen
- oxidation

The other application candidates - 2

For example …

For the hand-held equipments, multi-point inspections, etc. …

Environmental inspections;

- petroleum
- aromatic hydrocarbon
- agrichemicals
- pesticide
- bacteria
- industrial effluent
- mitochondria
- dissolved oxygen
- toxin
- herbicide
- water inspection
- coarse-sediment
- gas ingredient
- soil pollution
- algae
- phosphoric acid ion

Quality inspections in production lines;

- adhesive
- lubricant agent
- grease
- ink
- dye
- plastic
- rubber
- paper money
- liquid crystal
- plating agent
- soldering chemicals
- filling agent
- etching liquid
- printing liquid
- coating liquid
- painting agent
- application liquid
- deterioration
- impurities element
- screen-printing ink

Let us know what you want.
Thank you.

… not only fluorescence micro-optics, but also the other micro-optics …

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This document includes developing prototypes. Please ask us in detail.


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