NEW

Dedicated option for the W-VIEW GEMINI-2C

Extended Focus Device

A12802-35 series

Capture a Bigger Slice of Cellular Life with our Extended Focus Device

Ask any microscopist how to improve image quality and they will recommend using a high NA objective. The trade-off for these optically beautiful images is depth of field. The Extended Focus Device, a new optional feature for our W-VIEW GEMINI-2C, efficiently extends your depth of field up to 5 times by using a simple optical filter. There are no moving parts or additional acquisition software required, just install the device into the appropriate position in the W-VIEW GEMINI-2C and instantly see a bigger optical slice of your sample.

HAMAMATSU

PHOTON IS OUR BUSINESS

“Provides Larger Depth of Field”

Extends your depth of field up to 5 times* with a high NA objective

* Under conditions described

NEW

Add-on for the W-VIEW GEMINI-2C

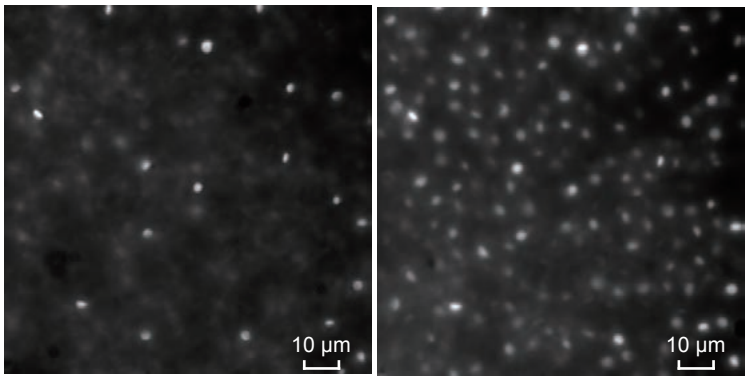
Extended Focus Device A12802-35 series

W-VIEW GEMINI-2C
Image Splitting Optics
A12801-10

* Place the Extended Focus Device into either pupil position for single wavelength measurement or into both positions for multi-wavelength measurements.

Applications

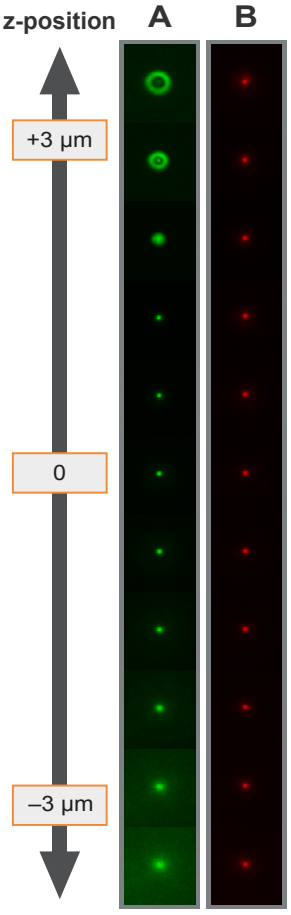
Simultaneous imaging of cells in various z-positions



Without Extended Focus Device **With** Extended Focus Device

Sample: Phytoplankton
Objective lens: 100×/1.40 Oil
Wavelength: 600 nm
Camera: ORCA®-Flash4.0

Imaging of fluorescent beads in various z-positions

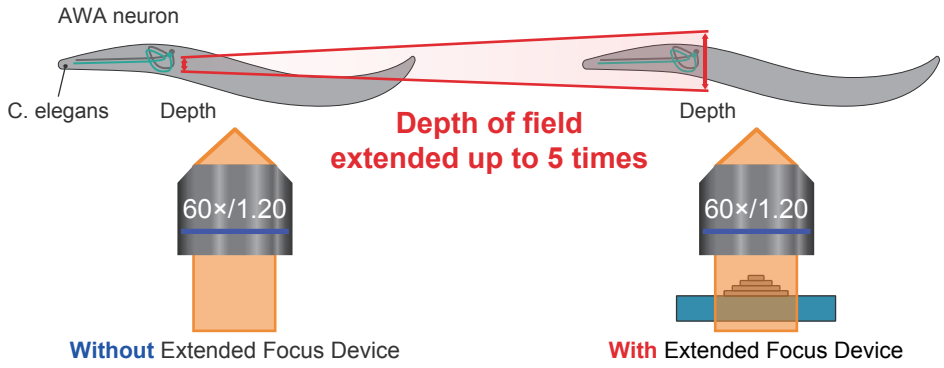


A **Without** Extended Focus Device

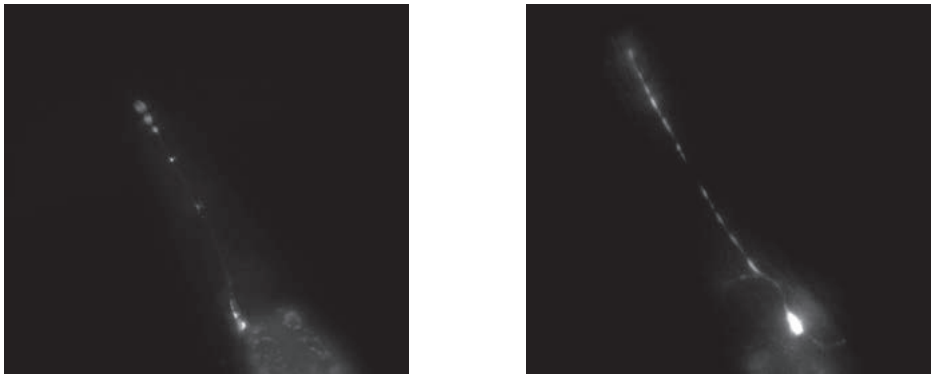
B **With** Extended Focus Device

Sample:
Fluorescent beads 0.5 µm
Objective lens:
60×/1.40 Oil
Microscope:
Nikon Ti
Z step:
0.6 µm
Wavelength:
561 nm
Camera:
ORCA®-Flash4.0

Simultaneous imaging of thick cells in different focus positions



Sample: C. elegans expressing GCaMP and mCherry in AWA neurons
Objective lens: UPlanSApo 60×/1.20 water
Exposure time: 50 ms
Camera: ORCA®-Flash4.0

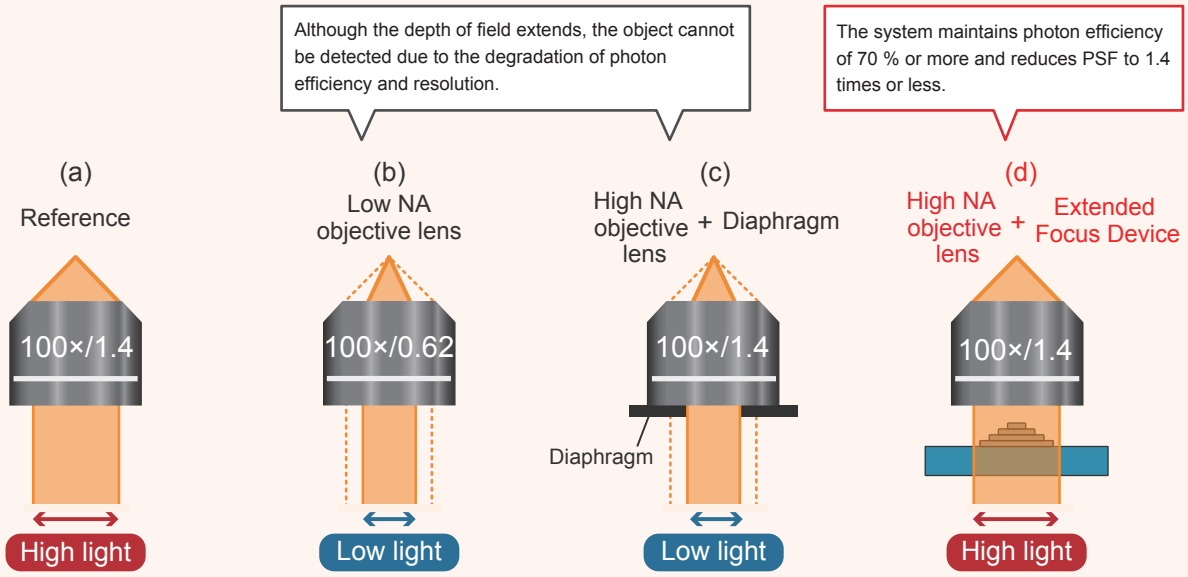


Without Extended Focus Device **With** Extended Focus Device

Sample and image courtesy of Sayuri Kuge and Takeshi Ishihara, Ph.D.
Molecular Genetics Laboratory, Department of Biology, Faculty of Sciences, Kyushu University

Advantage over conventional methods

Compared to the conventional methods (b) and (c) which reduce the effective NA, the method (d) with Extended Focus Device makes it possible to extend the depth of field while suppressing the degradation of photon efficiency and resolution.



Method	(a)	(b)	(c)	(d)
Depth of field	1 time	5 times	5 times	5 times
Photon efficiency	100 %	20 %	20 %	70 % or more
PSF* (FWHM)	1 time	2.2 times	2.2 times	Lower than 1.4 times (typ.)

* PSF: Point Spreading Function
FWHM: Full Width at Half Maximum. PSF (FWHM) raito to no Extended Focus Device.

Product lineup

Product name		Extended Focus Device 5× Φ4.0	Extended Focus Device 5× Φ6.5	Extended Focus Device 5× Φ10.0
Type number		A12802-35-040	A12802-35-065	A12802-35-100
Step		5 steps	5 steps	5 steps
Active area diameter (mm)	1	4.0	6.5	10.0
	2	3.6	5.8	8.9
	3	3.1	5.0	7.7
	4	2.5	4.1	6.3
	5	1.8	2.9	4.5
Wavelength range		450 nm to 800 nm		
Resolution degradation		Lower than 40 % (FWHM)*		
Extended focus magnification		3 to 5 times		

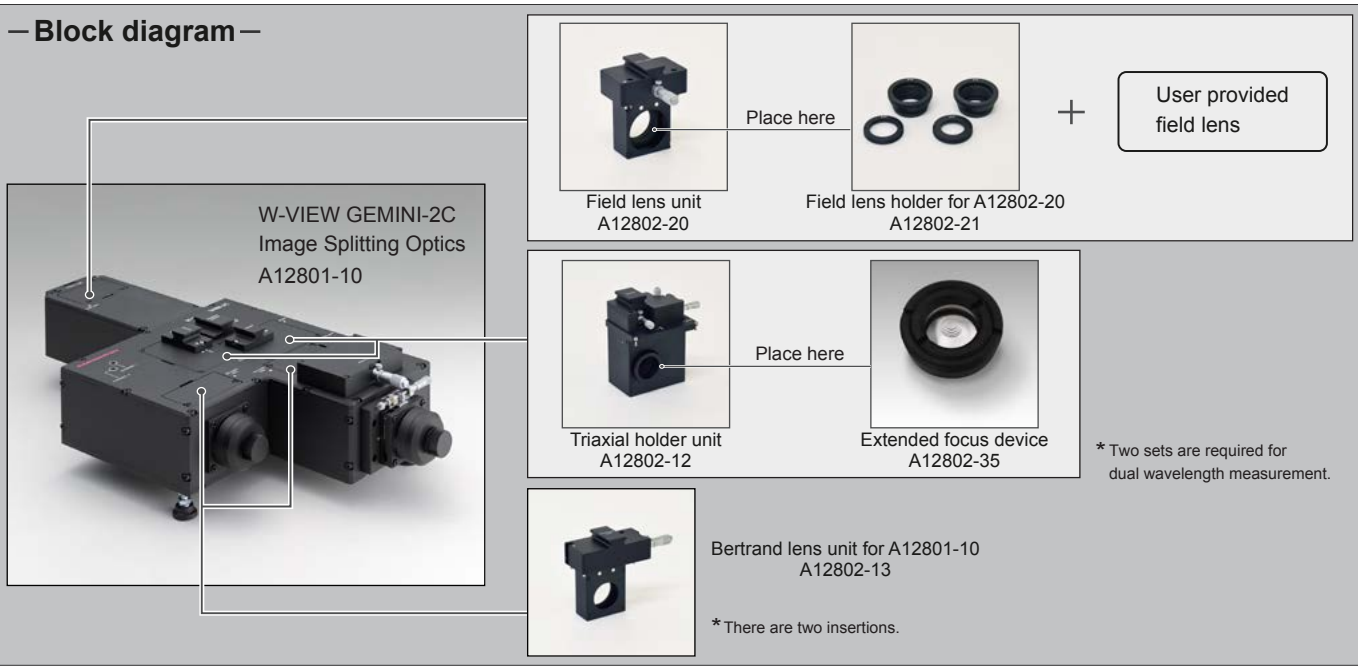
* PSF (FWHM) ratio to no Extended Focus Device.

Configurations

- **W-VIEW GEMINI-2C Image Splitting Optics A12801-10**
  Image splitting optics for dual channel imaging.
- **Triaxial holder unit A12802-12**
  Device can be mounted in the pupil position and X, Y and Z positions are adjustable.
- **Bertrand lens unit for A12801-10 A12802-13**
  Image the optical element mounted in the pupil position on the camera.
- **Field lens unit* A12802-20**
  The pupil position can be corrected.
- **Field lens holder for A12802-20* A12802-21**
  Useful for mounting the field lens in the field lens unit.

*** Please prepare separately the field lens suitable for your use.**

—Block diagram—



⚠ Note
The degree of depth of focus and its effects may be different depending on your microscope type, camera, size and thickness of object, and usage, etc.
It is recommended that you demo before purchasing. Please contact a Hamamatsu subsidiary or your local sales representative.

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