LEICA ADAPTIVE FOCUS CONTROL

Save time searching for your cells and eliminate photo-toxicity from fluorescent light during focusing. One click of a button and the LED light beam-assisted Leica **A**daptive **F**ocus **C**ontrol (AFC) automatically maintains your focus, in real time even when performing long-term time lapse experiments.

- Typical applications for Leica AFC are live cell imaging, screening of well plates, multi-position experiments, and ratio imaging.

- Leica AFC currently works with over 85 objectives (dry, oil, water, glycerol) with magnifications from 10x to 100x.

- Leica AFC provides flexibility by working with plastic dishes and plastic multi-well plates.

- Leica AFC is fully integrated into LAS X (Leica Application Suite X) software and can be combined with image-based autofocus systems to minimize light stress on the specimen during experiments.

- Continuous mode: continuously holds the focus stable during time-lapse experiments and during x-y movements of the stage.

- On-demand mode: combines Leica AFC with z-stacks, multi-position experiments, and image-based autofocus systems over time.

- Fully upgradeable: from any Leica DMi8 with CTR box at customer site, which reduces downtime.

FIELD OF OPERATION

Detection details:	Typical specimen:	Cells in aqueous culture solution in a glass bottom dish (all supported objectives) Specimens in plastic dishes (dry Long Working Distance LWD objectives)	
	Cover glass:	Thickness:	0.16 - 0.19 mm (#1.5, according to ISO 8255-1)
		Refractive index:	approx. 1.5
	Culture solution:	Height:	at least 2 mm
		Refractive index:	approx. 1.33
	Reflection interface:	Water / Glycerol / Oil Immersion:	Glass and culture solution
		Dry:	Air and glass
	Recommended immersion media:	Glycerol:	11513910 Type G Immersion Liquid, ISO 8036
		Oil:	11513859 Type F Immersion Liquid, ISO 8036
		Water:	Aqua bidest
Supported software:	Leica:	LAS X, LAS	
	Third-party:	Metamorph; Volocity; MicroManager	
Control methods:	Stand-alone:	Use of standard focus controls: TFT, buttons, STP4000, STP8000, SmartMove	
		No separate offset controller needed	
	Modes:	**Continuous mode**: active continuous holding of current focus position, stand alone and software	
	(Possible with all contrast methods)	**On-demand mode**: defined time-points and stage positions to check and correct the focus position. Different focus positions possible (via multi-position experiments), software only	
		Active focusing: automatically refocus the specimen without any visible light by using a saved reflection position, software only	
Contrast methods:	Brightfield (BF), Darkfield (DF), Polarization Contrast (POL), Phase Contrast (PH), Differential Interference Contrast (DIC), Integrated Modulation Contrast (IMC), Integrated Phase Contrast (IPH), Fluorescence, TIRF, CLSM		

TYPICAL PERFORMANCE CHARACTERISTICS

Detection method:	Method:	IR-LED projection, closed loop feedback	
	Detector:	2D CMOS sensor	
	Light source:	IR-LED (peak at 850 nm)	
Typical working range:	Dry objectives:	11506511 HC PL APO 10x/0.4	0 – 500 µm
		11506529 HC PL APO 20x/0.8	0 – 250 µm
		11506201 HC PL FLUOTAR L 40x/0.6	0 – 100 µm
	Oil immersion objectives:	11506329 HC PL APO 40x/1.3	0 – 70 µm
		11506187 HC PL APO 63x/1.4	0 – 50 µm
		11506319 HC PL APO 63x/1.47 TIRF	0 – 70 µm
		11506220 HC PL APO 100x/1.4	0 – 40 µm
		11506318 HC PL APO 100x/1.47 TIRF	0 – 35 µm
	Glycerol immersion objectives:	11506193 HCX PL APO 63x/1.3 Glyc	0 – 100 µm
	Water immersion objectives:	11506340 HCX IRAPO L 25x/0.95	0 – 500 µm
		11506346 HC PL APO CS2 63x/1.2	0 – 140 µm
	Multi-immersion objectives:	11506363 HC PL FLUOTAR 25x/0.8	0 – 180 µm
Typical performance parameters:	Focusing time:	in on-demand mode, ≤ 650 ms (immersion objective) at focus close to the boundary interface	
	Focusing accuracy:	1/3 depth of focus using a high magnification objective	
Imaging Spectral Range:	AFC on:	365 nm - 760 nm and 1000 nm - 1200 nm	
	AFC off:	no restrictions	