FOR.A®
INNOVATIONS IN VIDEO and AUDIO TECHNOLOGY

Variable Frame Rate Camera

VFC Series VFC-300 / VFC-1000 / VFC-2000

Bringing High-Speed Imaging Closer to You

VFC Series High-Speed Cameras
-- Compact, Lightweight, and Integrated Design with Easy Operation

Bringing High-Speed Imaging Closer to You

Compact Camera with Integrated Memory Function

The VFC Series are high-speed cameras with an integrated memory function. The camera features an extremely compact size and lightweight design. This small camera contains powerful video recording memory. The recording memory allows shooting to start as soon as the power is turned on. The memory records video in a constant loop so that shooting and recording can be made without losing that right moment.

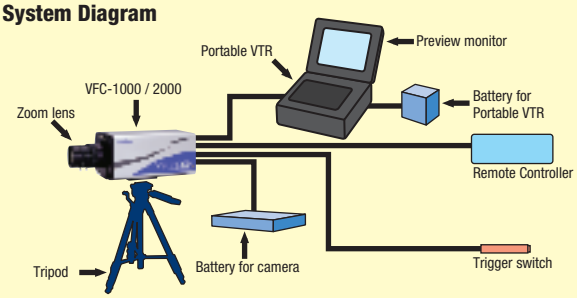
*Camera body only. Does not include lens or accessories.

DC Powered for Recording at Any Location

The VFC Series allows DC powered operation, providing unrestricted camera usage in any location where AC power is not readily available.
Optional camera Field Kit for the VFC-1000 and VFC-2000 include tripod, battery, and other required equipment in a single package, allowing immediate location usage.

VFC-1000F/2000F: Field Kit

System Diagram

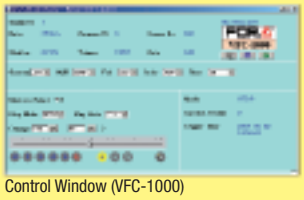


Easy PC Control Over a Network

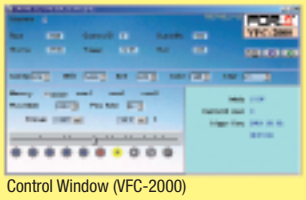
All VFC Series cameras are equipped with an Ethernet port right off the shelf. Meaning there's no need for special interface cards or cables to transfer images or control the camera.
Operation is also surprisingly easy. With the user-friendly software, anyone can easily shoot video.

Preview Window (VFC-300)

Control Window (VFC-300)



Control Window (VFC-1000)



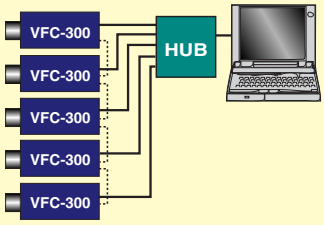
Control Window (VFC-2000)

Synchronized Multi-Camera Imaging

The VFC Series cameras can be connected for synchronized multi-camera imaging.* This function is useful for shooting a single subject from multiple directions or shooting different locations at the same time.

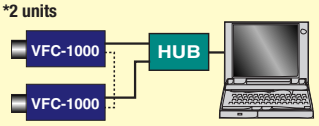
*The VFC-300 enables synchronized shooting with up to eight cameras. In the VFC-1000/2000, a synchronizing signal splitter is needed for synchronized shooting when using three or more cameras.

Connection for VFC-300

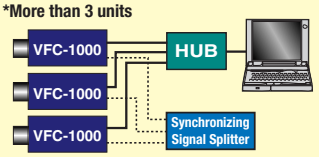


Connection for VFC-1000 / VFC-2000

*2 units



*More than 3 units



Shooting with External Trigger

The VFC Series cameras are equipped with AUX jacks for external trigger support. This enables trigger input from external sources based on the TTL level or make-contact. This feature makes it easy to introduce the camera into a system without changing the daily operating environment, such as enabling recording when an equipment alarm is activated on a manufacturing line.

Satisfy Your Need For Speed

VFC-300

Applications
- ◇ Manufacturing/Production Line Quality Assurance
- ◇ Medical, Sports, and Biomechanical Motion Analysis
- ◇ School/Educational Use
- ◇ Research and Development

Supports a wide range of applications, from high-speed shooting at 300 fps, to time-lapse shooting at 60 seconds/frame. High-speed camera with full-featured software programs supports varied applications

- ●Resolution can be selected from 200 x 200 pixels at 300 fps, to high quality images of 512 x 512 pixels at 90 fps.
- ●10 seconds of recording at 300 fps, with expanded recording up to 40 seconds available with the optional installation of additional memory.
- ●Time-lapse shooting up to 60-second intervals.
- ●High-speed electronic shutter capable of speeds up to 1/100,000 second.
- ●Ethernet and IEEE1394 interface enable PC camera settings and exporting video footage without any special interface board requirements.
- ●Synchronized video recording of external analog data.
- ●Synchronized shooting and recording with two or more cameras (up to eight cameras).

VFC-1000

Applications
- ◇ Manufacturing/Production Line Quality Assurance
- ◇ Research and Development
- ◇ Mechanical Fault Analysis
- ◇ Medical, Sports, and Biomechanical Motion Analysis

Full frame: 250 frames/second. Split frame: Maximum 8,000 frames/second. Enables high-speed recording with superior image quality at a low cost

- ●Two types: B&W and color models available.
- ●Maximum resolution of 512 x 472 pixels at 250 fps. An optional 128 x 34 pixels at maximum shooting speed of 8000 fps is available.
- ●Electronic shutter function enables speeds of up to 1/100,000 second for capturing sharp, high-speed image situations.
- ●Standard recording time of 4 seconds, expandable to 16 seconds (option).
- ●Composite and Y/C output capability allows instantaneous shot setting adjustments and video playback and analysis, with problem identification/resolution.
- ●Ethernet interface enables PC camera settings and exporting video footage, without any special interface board requirements.
- ●Supports synchronized multi-camera operation with two cameras, utilizing a master-slave system. With three or more cameras, an optional synchronizing signal splitter is required.

VFC-2000

Applications
- ◇ Product Development Applications
- ◇ Research and Development
- ◇ Drop Testing, Destructive Testing, and other Testing Applications

Full frame: 2,000 frames/second. Split frame: Maximum 32,000 frames/second. VFC Series high-end model enabling super-high-speed recording

- ●Two types: B&W and color models available.
- ●Maximum resolution of 512 x 512 pixels at 2,000 fps, 512 x 32 pixels at maximum shooting speed of 32,000 fps.
- ●Electronic shutter function enables speeds of up to 1/300,000 second for capturing sharp, high-speed image situations.
- ●Standard recording time of 1 second, expandable to 4 seconds (option).
- ●Composite and Y/C output capability allows instantaneous shot setting adjustments and video playback and analysis, with problem identification/resolution.
- ●Ethernet interface enables PC camera settings and exporting video footage, without any special interface board requirements.
- ●Supports synchronized multi-camera operation with two cameras, utilizing a master-slave system. With three or more cameras, an optional synchronizing signal splitter is required.

Specifications

Products	VFC-300	VFC-1000SB VFC-1000SC	VFC-2000SB VFC-2000SC
Camera Elements	1/3-inch CCD, color	1/3-inch CCD, B&W 1/3-inch CCD, color	C-MOS, B&W C-MOS, color
Pixel Area	512 x 512 pixels (max.)	512 x 472 pixels (max.)	512 x 512 pixels (max.)
Scan Format	Progressive	Progressive	Progressive
Resolution	(Refer to below)	(Refer to below)	(Refer to below)
Lens Mount	C mount	C mount	C mount
Shutter Speed	1/250 sec. to 1/100,000 sec. (selectable)	1/250 sec. to 1/100,000 sec. (selectable)	1/250 sec. to 1/300,000 sec. (selectable)
Max. Recording Time	(Refer to below)	(Refer to below)	(Refer to below)
Recording Modes	Endless (loop record) Trigger (Selectable: start, center, end) - Internal trigger input from PC control software - External trigger via AUX jack	Endless (loop record) Trigger (Selectable: start, center, end) - Internal trigger input from PC control software - External trigger via AUX jack	Endless (loop record) Trigger (Selectable: start, center, end) - Internal trigger input from PC control software - External trigger via AUX jack
Video Outputs	N/A	NTSC or PAL (Factory setup) Composite: 1ea., RCA-pin connector Y/C: 1ea, 4-pin S-connector	NTSC or PAL (Factory setup) Composite: 1ea., RCA-pin connector Y/C: 1ea, 4-pin S-connector
Interfaces			
Ethernet	10Base-T/100Base-TX, 1ea., RJ-45	10Base-T/100Base-TX, 1ea., RJ-45	100Base-TX, 1ea., RJ-45
IEEE1394	2ea., 6-pin (compliant with IEEE1394.a standards)	N/A	N/A
AUX	1ea., 12-pin (female) (for external trigger and synchronized record) External trigger: TTL level or Make-contact	1ea., 9-pin D-sub (female) (for external trigger and synchronized record) External trigger: TTL level or Make-contact	1ea., 9-pin D-sub (female) (for external trigger and synchronized record) External trigger: TTL level or Make-contact
RS-232C	N/A	1ea., RJ-11 (for remote control unit)	1ea., RJ-11 (for remote control unit)
Synchronized Record	Up to 8 units connected: Master/Slave configuration	2 units connected: Master/Slave configuration 3 or more units connected: Star configuration using synchronizing signal splitter (optional)	2 units connected: Master/Slave configuration 3 or more units connected: Star configuration using synchronizing signal splitter (optional)
Control Software	Original Software	Web Browser	Web Browser
Temperature	0ºC - 40ºC	5ºC - 40ºC	5ºC - 40ºC
Humidity	10% - 95% (no condensation)	10% - 95% (no condensation)	10% - 95% (no condensation)
Power	+9VDC	+16VDC	+16VDC
Consumption	Approx. 5.4W	Approx. 9.6W	Approx. 16W
Dimensions	75 (W) x 75 (H) x 176 (D) mm	75 (W) x 75 (H) x 176 (D) mm	78 (W) x 77 (H) x 177 (D) mm
Weight	Approx. 1.0kg	Approx. 1.2kg	Approx. 1.5kg
Accessories	Operation Manual, Control Software	Operation Manual	Operation Manual
Options	◇256MB memory: Record time extension ◇Lens/Tripods/Lights: various selections available	◇1000-8SEC: record time extension (expands to 8 sec) ◇1000-16SEC: record time extension (expands to 16 sec) ◇1000SB-8KF: 8000fps correspondence option for VFC-1000SB ◇1000SC-8KF: 8000fps correspondence option for VFC-1000SC ◇CB-1000: Remote control unit ◇Synchronizing signal splitter ◇Lens/Tripods/Lights: various selections available	◇2000-2SEC: record time extension (expands to 2 sec) ◇2000-4SEC: record time extension (expands to 4 sec) ◇Remote control unit ◇Synchronizing signal splitter ◇Lens/Tripods/Lights: various selections available

VFC-300: Max. Recording Time

Image size	Standard (128MB)		Option (256MB)	
200 x 200 pixels	300 fps	10 sec.	300 fps	20 sec.
	150 fps	20 sec.	150 fps	40 sec.
	100 fps	30 sec.	100 fps	60 sec.
	1 spf	55 min.	1 spf	110 min.
	2 spf	110 min.	2 spf	220 min.
	5 spf	275 min.	5 spf	550 min.
	10 spf	550 min.	10 spf	1,100 min.
	60 spf	3,300 min.	60 spf	6,600 min.
256 x 256 pixels	240 fps	8 sec.	240 fps	16 sec.
	120 fps	16 sec.	120 fps	32 sec.
	1 spf	34 min.	1 spf	68 min.
	2 spf	68 min.	2 spf	136 min.
	5 spf	140 min.	5 spf	280 min.
	10 spf	340 min.	10 spf	680 min.
	60 spf	2,040 min.	60 spf	4,080 min.
512 x 256 pixels	160 fps	6 sec.	160 fps	12 sec.
	80 fps	12 sec.	80 fps	24 sec.
	1 spf	17 min.	1 spf	34 min.
	2 spf	34 min.	2 spf	68 min.
	5 spf	85 min.	5 spf	170 min.
	10 spf	170 min.	10 spf	340 min.
	60 spf	1,020 min.	60 spf	2,040 min.
512 x 512 pixels	90 fps	5 sec.	90 fps	10 sec.
	45 fps	10 sec.	45 fps	20 sec.
	30 fps	15 sec.	30 fps	30 sec.
	1 spf	8 min.	1 spf	16 min.
	2 spf	16 min.	2 spf	32 min.
	5 spf	40 min.	5 spf	80 min.
	10 spf	80 min.	10 spf	160 min.
	60 spf	480 min.	60 spf	960 min.

fps: frames per seconds, spp: seconds per frames

VFC-1000: Max. Recording Time

Resolution	Frame rates	Recording Time		
		Standard	1000-8SEC	1000-16SEC
512 x 472 pixels	50 fps	20 sec.	40 sec.	80 sec.
	125 fps	8 sec.	16 sec.	32 sec.
	250 fps	4 sec.	8 sec.	16 sec.
512 x 232 pixels	500 fps	4 sec.	8 sec.	16 sec.
256 x 212 pixels	1,000 fps	4 sec.	8 sec.	16 sec.
256 x 98 pixels*	2,000 fps*	4 sec.	8 sec.	16 sec.
128 x 98 pixels*	4,000 fps*	4 sec.	8 sec.	16 sec.
128 x 34 pixels*	8,000 fps*	4 sec.	8 sec.	16 sec.

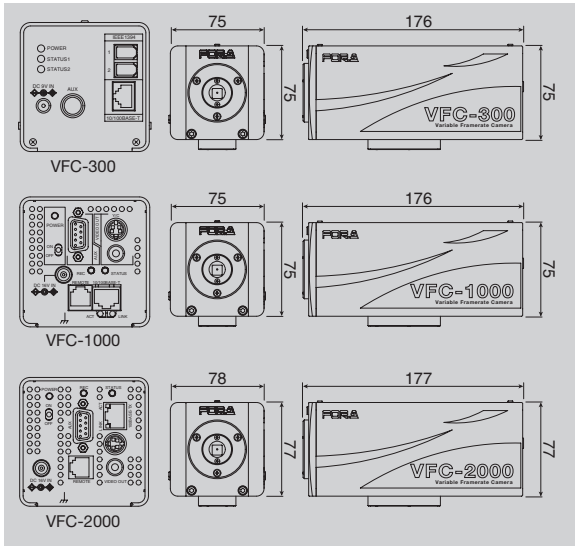
fps: frames per seconds, *Required 1000SB-8KF or 1000SC-8KF (optional)

VFC-2000: Max. Recording Time

Resolution	Frame rates	Recording Time*		
		Standard	2000-4SEC	2000-8SEC
512 x 512 pixels	50 fps	81.6 sec.	163.4 sec.	326.9 sec.
	100 fps	40.8 sec.	81.7 sec.	163.4 sec.
	250 fps	16.3 sec.	32.7 sec.	65.4 sec.
	500 fps	8.2 sec.	16.3 sec.	32.7 sec.
	1,000 fps	4.1 sec.	8.2 sec.	16.3 sec.
	2,000 fps	2.0 sec.	4.1 sec.	8.2 sec.
512 x 392 pixels	3,000 fps	1.8 sec.	3.6 sec.	7.1 sec.
512 x 292 pixels	4,000 fps	1.8 sec.	3.6 sec.	7.2 sec.
512 x 232 pixels	5,000 fps	1.8 sec.	3.6 sec.	7.2 sec.
512 x 192 pixels	6,000 fps	1.8 sec.	3.6 sec.	7.2 sec.
512 x 142 pixels	8,000 fps	1.8 sec.	3.7 sec.	7.3 sec.
512 x 112 pixels	10,000 fps	1.9 sec.	3.7 sec.	7.4 sec.
512 x 72 pixels	15,000 fps	1.9 sec.	3.8 sec.	7.7 sec.
512 x 54 pixels	20,000 fps	1.9 sec.	3.8 sec.	7.6 sec.
512 x 32 pixels	32,000 fps	2.0 sec.	4.0 sec.	8.0 sec.

fps: frames per seconds, *Recording Time is rounded to the nearest tenth of a second

Rear Panel / External Dimensions



FOR-A COMPANY LIMITED **Homepage:http://www.for-a.com**

Head Office : 3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan +81 (0)3-3446-3936 Fax : +81 (0)3-3446-1470
FOR-A UK Limited : UNIT C71,. Barwell Business Park, Leatherhead Road, Chessington Surrey, KT9 2NY, U.K. +44 (0)20-8391-7979 Fax : +44 (0)20-8391-7978
FOR-A Italia S.r.l. : Viale Europa 50 20093, Cologno Monzese (MI), Milan, ITALY +39 02-254-3635/6 Fax : +39 02-254-0477
FOR-A America Corporate Office : 11125 Knott Ave., Suite #A, Cypress, CA 90630, U.S.A. +1 714-894-3311 Fax : +1 714-894-5399
FOR-A America East Coast Office : 1065 Avenue of the Americas Suite #1701A New York,NY 10018, U.S.A. +1 212-861-2758 Fax : +1 212-861-2793
FOR-A America Atlanta Office : 4219 Burns Heritage Trail, Roswell, GA, 30075, U.S.A. +1 770-645-7776 Fax : +1 770-234-5165
FOR-A America Distribution & Service Center : 2400 N.E. Waldo Road, Gainesville, FL 32609, U.S.A. +1 352-371-1505 Fax : +1 352-378-5320
FOR-A Corporation of Canada : 425 Queen St. W. #210, Toronto, Ontario M5V 2A5, CANADA +1 416-977-0343 Fax : +1 416-977-0657

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