

FULL 4K VARIABLE FRAME RATE CAMERA

FT-ONE

FT-ONE



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Winner, Star Award, TV Technology Europe (IBC 2012)
Winner, Best of IBC 2012, TVB Europe (IBC 2012)



The ultimate 4K solution for super-slow motion

The world's first* high-speed camera designed for super-slow-motion acquisition at 4K resolution up to 900 frames per second (fps). The FT-ONE incorporates the groundbreaking FT1-CMOS, a global shutter CMOS color sensor. The FT-ONE CMOS was developed by FOR-A to provide superior resolution and sensitivity. RAW material is recorded at high speed to the internal RAM memory, which holds nearly 10 seconds of 4K content shot at 900 fps. For convenience, material can then be transferred to optional internal SSD cartridges.

Unleash your creativity with this unprecedented innovation in super-slow-motion video at 4K resolution.

FT-ONE Highlights

Advanced FT1-CMOS sensor

Creating a high-speed 4K camera with the necessary capabilities required a new kind of sensor. Drawing on our expertise in high speed cameras, we devised a CMOS sensor equivalent in size to super 35mm. The FT1-CMOS is a sensor with outstanding sensitivity, responsiveness, resolution and transfer speed. It is a unique sensor for a revolutionary camera.

Super-slow motion in 4K at 900 fps

The advanced FT1-CMOS sensor enables high-speed recording at up to 900 fps. Powerful image processing is needed for the massive 4K image data from the sensor. Material is stored in internal memory in real time. The frame rate is also adjustable (starting at base level of 60 fps*) The FT-ONE maintains a striking 4K resolution at all frame rates.

*50 fps supported for 50 Hz SDI output (1080/50i)

11-stop dynamic range

The 12-bit FT1-CMOS sensor affords a high dynamic range across 11 stops. What's more, a sensitivity of ISO 640 ensures stable, extremely low noise results.

Fast recording, generous SSD memory capacity

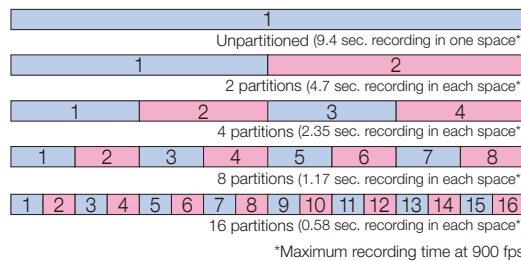
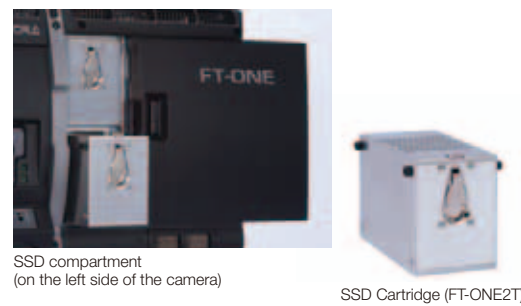
RAW material is recorded at high speed to internal RAM. Shoot in 4K resolution for up to 9.4 seconds at 900 fps. Slower frame rates allow for longer record capacity. For convenience, this material can be transferred to optional SSD cartridges, each of which can hold 84 seconds of material. The camera accommodates two cartridges, enabling a total of nearly 3 minutes of 4K acquisition. Switch the hot-swappable cartridges as needed in production.

Storage partitioning

Internal memory can be used as a single space or partitioned into 2 to 16 spaces for simultaneous recording or playback. In continuous recording, material can be left intact before recording the next segment. Partitioning enables you to record new scenes while playing back recorded scenes already stored in any partition.

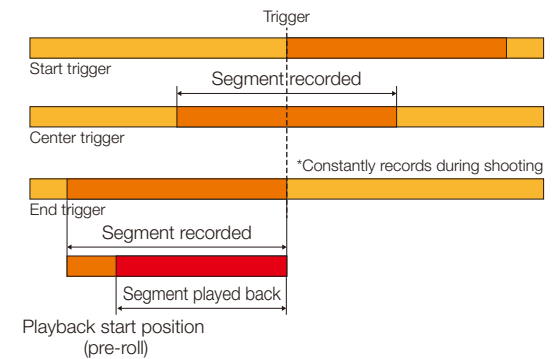
Simultaneous 4K recording/playback

Simultaneous 4K recording and playback are output using four 1080p HD-SDI signals. In addition, two downconverted HD-SDI outputs allow you to monitor the signal on a preview monitor and a viewfinder with an on-screen information display. Any segment during 4K recording can be extracted for viewing in HD-SDI (1080i). This dual-channel output can help you avoid missing crucial moments by continuing to record the next segment even during slow-motion playback from the camera.



Versatile trigger support

Constant image capture begins as soon as the FT-ONE is turned on, pressing a trigger starts recording to internal memory. The trigger can be set to record from the start, center or end of the event to be captured. Choose the optimal recording trigger for the subject or scene. With pre-roll function, playback starts from the specified position, keeping playback focused on required segments.



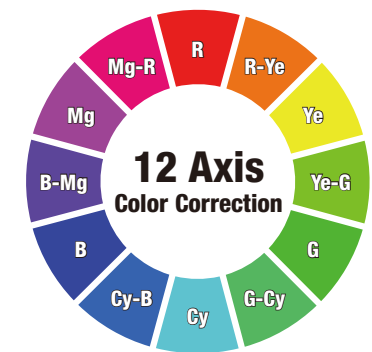
Global shutter system

The high-speed global shutter system counteracts rolling shutter artifacts that might otherwise occur with fast motion. Capture instantaneous subject movement in crisp detail at 4K resolution.

12-axis color correction

When using video output, color correction along 12 axes surpasses ordinary trichromatic correction. By adjusting hue and saturation for individual colors of the 12 axes, you can isolate specific colors for correction. Our 12-axis color correction allows for an unprecedented ability to match the output of traditional cameras.

(This adjustment is restricted to video output and does not affect the RAW material in the camera memory.)



Genlock input

Genlock functionality was designed with broadcast scenarios in mind. The FT-ONE was designed to fit seamlessly into an existing mobile or studio system.

Remote control unit

Take advantage of an optional remote control to streamline the camera setup. The FT-1RU includes dedicated recording and playback buttons as well as a rotary encoder and touchpanel for a range of settings. The FT-1RU provides efficient camera setup and more convenient recording or playback.



Remote Control Unit (FT-1RU)

Dual synced video capture

The FT-ONE supports synced shooting with two cameras. Synced camera mode is perfect for recording or playback when covering the same subject with both cameras, or using two cameras in a 3D rig. In high-speed acquisition, the slightest discrepancy in timing is very noticeable, which makes synced shooting and playback a key feature.



Supports super-slow-motion 3D production in 4K

RAW conversion

12-bit RAW material is recorded to internal memory and SSD cartridges. Before color grading or editing, this RAW data (not video output) must be converted to a common file format.

For conversion, take advantage of the FT-1READ DPX converter, developed by FOR-A as an FT-ONE option. Conversion produces DPX files with your preferred parameters.



Images provided by Kamogawa Seaworld

Exterior/Parts Guide

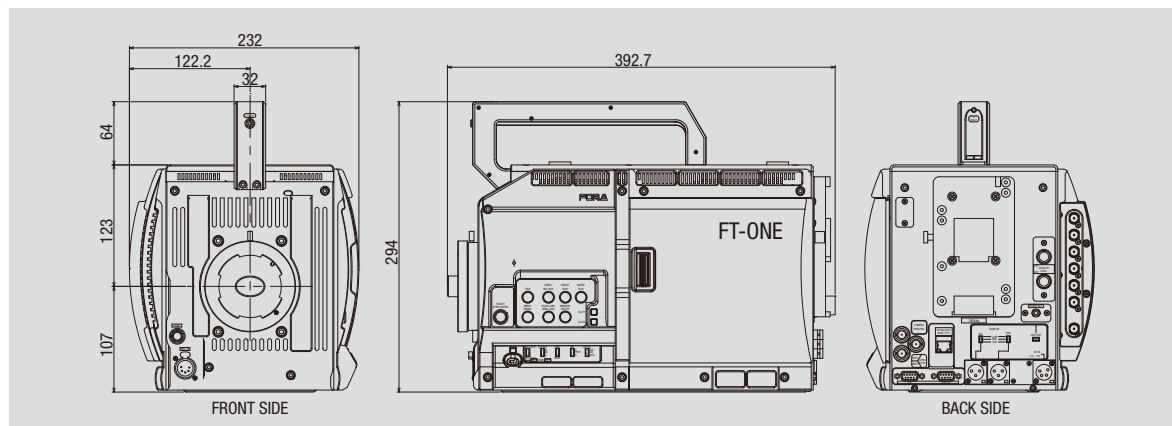
FT-ONE



FT-1RU: Remote control unit (optional)



FT-ONE External Dimensions



Specifications

Camera Section	
Sensor	FT1-CMOS
Effective resolution	4096x2304 (4096x2160 DCI-compliant)
Sensor size	Super 35 mm-equivalent
Color filter	RGB Bayer
Shutter mechanism	Global shutter
Color depth	12bit
Sensitivity	ISO 640
Dynamic range	11 STOPS
Shutter speed	1/frame rate – 1/900,000 sec.
Lens mount	PL mount
Recording Section	
Frame rate/recording time	See table below
Partitioning	1 to 16 spaces
Trigger method	START, CENTER, END
Trigger signal input	Pre-roll function: Adjustable playback position Buttons on camera, remote control
SSD Cartridge	
Capacity	Approx. 2 TB (accepts two 2 TB cartridges, for a total of 4 TB)
Recording time	Equivalent to 84 sec. of RAW material per cartridge at 900 FPS
Transfer from internal memory	1,000 frames in approx. 80 sec.
Cartridge switching	Hot-swappable (unused cartridge only)
Video settings	
Gain	0dB, 6dB, 12dB, 18dB, 24dB, 30dB, 36dB, 42dB, 48dB
White balance	PRESET: 3200K, 5600K, 6500K, 9300K AUTO WHITE: Semiautomatic correction, by shooting a white subject USER A / USER B: User profiles A/B
Pedestal	Black level set via R, G, B, Master
Linear matrix color correction	RG, RB, GR, GB, BR, and BG
12-axis color correction	R, R-Ye, Ye, Ye-G, G, G-Cy, Cy, Cy-B, B, B-Mg, Mg, Mg-R
Gamma	γ1, γ0.45, γ0.50, HDTV, CINEMA
Knee	Knee point and Knee slope setting
Enhancement	On/Off, horizontal (H), vertical (V)
Video Output	
4K video output	3G-SDI (Level-A) × 4 (quad output of 3840 × 2160 video signals) Output formats: 1080/59.94p, 1080/50p
VF/auxiliary output	HD-SDI × 2 (VF output ×1, aux. output ×1) (Downconverted signals of 4K material, with menus and markers layered on VF output) Output formats: 1080/59.94i, 1080/50i
Genlock input	BB: NTSC: 0.429V(p-p)/PAL: 0.45 Vp-p or Tri-sync: ±0.3 Vp-p ×1
Genlock modes	Internal or external sync (BB or Tri-sync)
External Interfaces	
Ethernet	1000Base-T ×1 (for remote control unit)
Iris control	D-sub 12-pin (female), manual/auto
Dual synced shooting/playback	Supported with a coax cable (5C-FB)
General Specifications	
Temperature	0°C to 40°C
Humidity	30% to 85% (no condensation)
Power	12–17 V DC (battery or external power supply)
Power consumption	Approx. 170 W
Dimensions	232 (W) x 294 (H) x 393 (D) mm (excluding protrusions)
Weight	7.5 kg (fully equipped with options: 8.5 kg)
Other Specifications	
Accessories	Operation manual, dedicated AC adapter
Options	FT-1RU Remote Control Unit FT-ONE2T SSD cartridge (approx. 2 TB) FT-1READ RAW→DPX converter

Frame Rate/Recording Time

Recording Frame Rate	Recording Time	Recording Frame Rate	Recording Time
60 fps	141.4 sec.	540 fps	15.7 sec.
120 fps	70.8 sec.	600 fps	14.2 sec.
180 fps	47.2 sec.	720 fps	11.8 sec.
240 fps	35.4 sec.	760 fps	11.2 sec.
300 fps	28.3 sec.	780 fps	10.9 sec.
360 fps	23.6 sec.	810 fps	10.5 sec.
420 fps	20.2 sec.	900 fps	9.4 sec.
480 fps	17.7 sec.		

Resolution: 4096x2304 (4096x2160 at some frame rates)
fps: frames per second