CAMRECORD

Runner

High-Speed Video Systems

Controller-RC1 Optronis

☑ RESEARCH

☑ TROUBLESHOOTING

☑ MOTION CAPTURE AND ANALYSIS

- Small camera head with controller

- Flexible system configuration

- Covering 1 - 65 MPixel and up to 3,500 fps @1 MPixel

- Up to 56 GB video memory

- TimeViewer software with object tracking

www.optronis.com

Runner High-Speed Video Systems

Optronis
Make time visible

DESCRIPTION

Runner systems combine a high-speed video camera with a separate PC based controller. The systems use a high-speed link between camera and controller to transfer video data in real-time into a large video memory. Application requirements of frame rate and resolution define the camera to be used. Controller and accessories remain unchanged. Runner systems can be configured with different cameras and therefore become very flexible.

Various trigger and synchronization features make the system an ideal tool for trouble shooting, research and industrial applications. The integrated tracking feature to extract trajectory data of moving objects can be used for motion capture and analysis applications.

Model	Frame rate (max.)	Pixel size Image diagonal	Exposure time (min.)	Camera
Runner-1HS-3500-M (mono) Runner-1HS-3500-C (color)	3500 fps @ 1280 x 860 pixel : 275000 fps @ 1280 x 4 pixel	13.7 µm x 13.7 µm 21.12 mm	2 µs	Cyclone-1HS-3500-M Cyclone-1HS-3500-C
Runner-2-2000-M (mono) Runner-2-2000-C (color)	2100 fps @ 1920 x 1080 pixel : 156000 fps @ 1920 x 8 pixel	10 µm x 10 µm 22.03 mm	4 µs	Cyclone-2-2000-M Cyclone-2-2000-C
Runner-5-700-M (mono) Runner-5-700-C (color)	693 fps @ 2560 x 1916 pixel : 88700 fps @ 2560 x 8 pixel	5 µm x 5 µm 16.00 mm	4 µs	Cyclone-5-700-M Cyclone-5-700-C
Runner-25-150-M (mono) Runner-25-150-C (color)	150 fps @ 5120 x 5120 pixel : 20900 fps @ 5120 x 4 pixel	2.5 µm x 2.5 µm 18.10 mm	12 µs	Cyclone-25-150-M Cyclone-25-150-C
Runner-65-70-M (mono) Runner-65-70-C (color)	71 fps @ 9344 x 7000 pixel : 12190 fps @ 9280 x 8 pixel	3.2 µm x 3.2 µm 37.36 mm	12 µs	Cyclone-65-70-M Cyclone-65-70-C

Model	Recording time[1] 24 GB video memory	Recording time[1] 56 GB video memory
Runner-1HS-3500-M (mono) Runner-1HS-3500-C (color)	6.7 sec.	15.5 sec.
Runner-2-2000-M (mono) Runner-2-2000-C (color)	5.7 sec.	13.4 sec.
Runner-5-700-M (mono) Runner-5-700-C (color)	7.6 sec.	17.7 sec.
Runner-25-150-M (mono) Runner-25-150-C (color)	6.6 sec.	15.3 sec.
Runner-65-70-M (mono) Runner-65-70-C (color)	5.5 sec.	12.9 sec.

[1] Recording time is given at max. frame rate and full resolution.

TRIGGERING AND SYNCHRONIZATION

Triggering: Initiates the recording of a sequence. It can be done by software, by change of image content (image trigger) or by an external signal applied to the trigger input of the controller. Post-trigger mode is possible due to vdeo ring memory.

Synchronization: A signal applied to the camera allows to define the moment when each image is captured. This is an alternative to fixed frame rate and allows synchronization of cameras in multi camera setups.

CAMERA AND CONTROLLER CONFIGURATION

The camera can be provided with different lens moutns for Nikon and C-Mount lenses. Also mount for Nikon lenses not having an aperture ring are available.

For high ambient temperatures, an active cooling option is offered. The controller can be equiped with up to 56 GB video memory. For applications requiring even larger video memory custom specific controllers can be configured.

Runner High-Speed Video Systems

Optronis

Make time visible

TimeViewer SOFTWARE

Runner systems are controlled by TimeViewer software. It is installed on the controller but also provided separately for installation on a remote PC. The software is used for single and multiple camera setups. It also integrates a tracking feature to extract trajectory data of moving objects. Video memory is configured as a ringe memory to allow post-trigger operation.

Key features:

- Automatic recording start by image trigger
- Freely adjustable pre- and post-trigger
- Object tracking
- Preview images for simplified navigation
- Synchronous multi-camera control
- Export of AVI formats
- Capture of trajectories
- Measurement of distance, angle, speed
- Insertion of logo and text into sequences
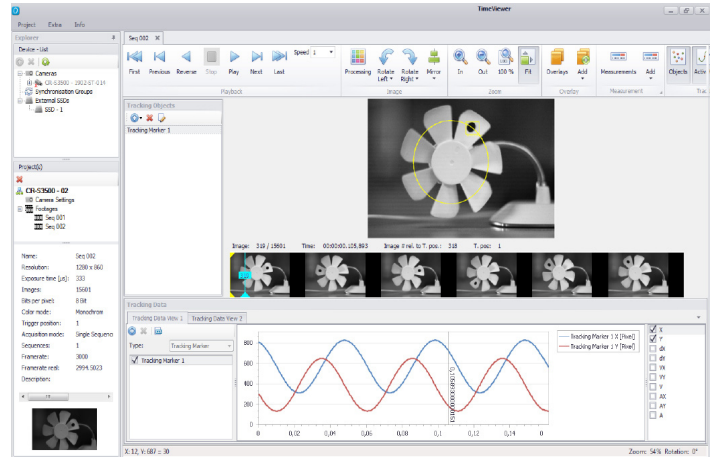
SETUP

Basicly, the camera is connected to the controller for power supply and data transfer. User control in stand-alone configuration is provided via additional keyboard, mouse and monitor. For remote operation only Ethernet connection is used. Multi-camera configurations are possible also.
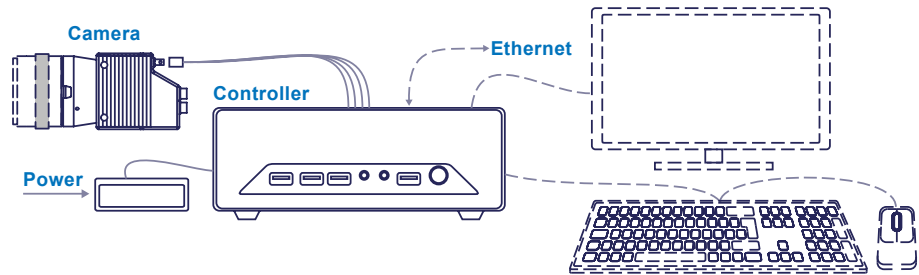

STAND-ALONE OPERATION

The system can be operated stand-alone by connecting keyboard, mouse and monitor. After capturing a video sequence it can be saved on the hard disk of the controller. Transfer of video data to external devices is done by using Ethernet or USB interface.
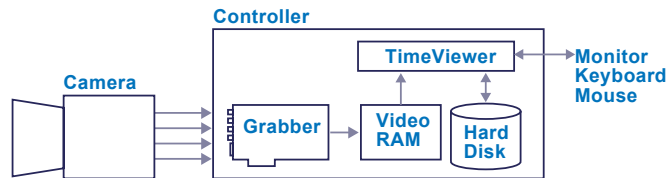

REMOTE OPERATION

Using a separate PC allows to operate Runner systems in remote mode. In this configuration video sequences are saved on the hard disk of the remote PC.
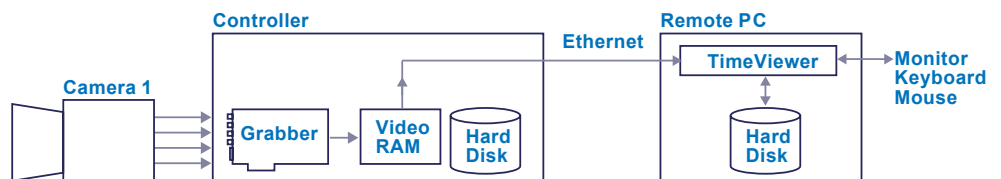
MULTI-CAMERA OPERATION

Multi-camera systems can be configured by connecting multiple Runner systems via Ethernet to the remote PC. Additionally to Runner sytems, CamRecord-Sprinter and CamRecord-CR cameras can be used. Alternative to a remote PC, multi-camea systems might be controlled by one of the controllers.

Runner High-Speed Video Systems

Optronis
Make time visible
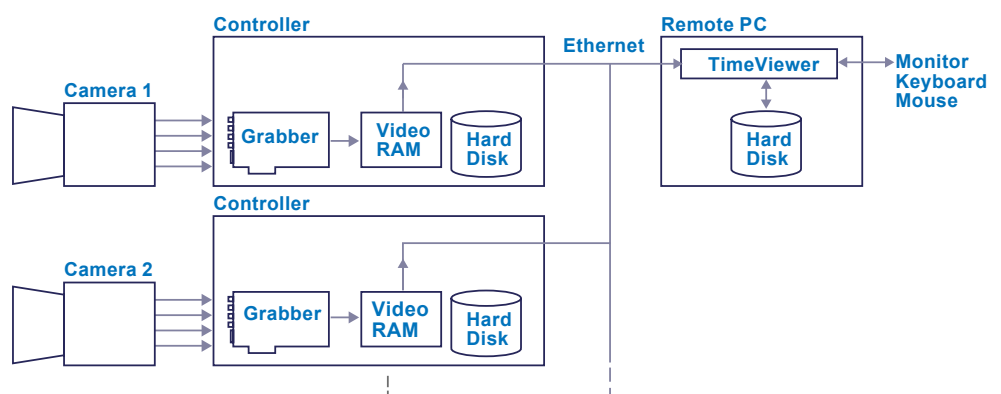
CAMERA

Synchroization	Internal, External, CXP
Synchroization signal (external)	Synch IN, Synch OUT, TTL level, electrically isolated
Dimensions	98 x 65 x 71 mm³
Weight (aprox.)	700 g
Temperature range	0 - 25 °C (32 - 77 °F) 0 - 35 °C (32 - 95 °F) with CY-HIS 0 - 50 °C (32 - 122 °F) with CY-FAN
Scope of delivery	Camera

LENSE MOUNTS (ONE NEEDED)

CP-FM	F-Mount lens adapter
CP-CM	C-Mount lens adapter
CP-FMG	F-Mount lens adapter with aperture control

CXP CABLES (ONE NEEDED)

CABLE-HDBNC-3m	CXP Cable 4 x 3 m
CABLE-HDBNC-5m	CXP Cable 4 x 5 m
CABLE-HDBNC-10m	CXP Cable 4 x 10 m
CABLE-HDBNC-40m	CXP Cable 4 x 40 m

ACCESSORIES

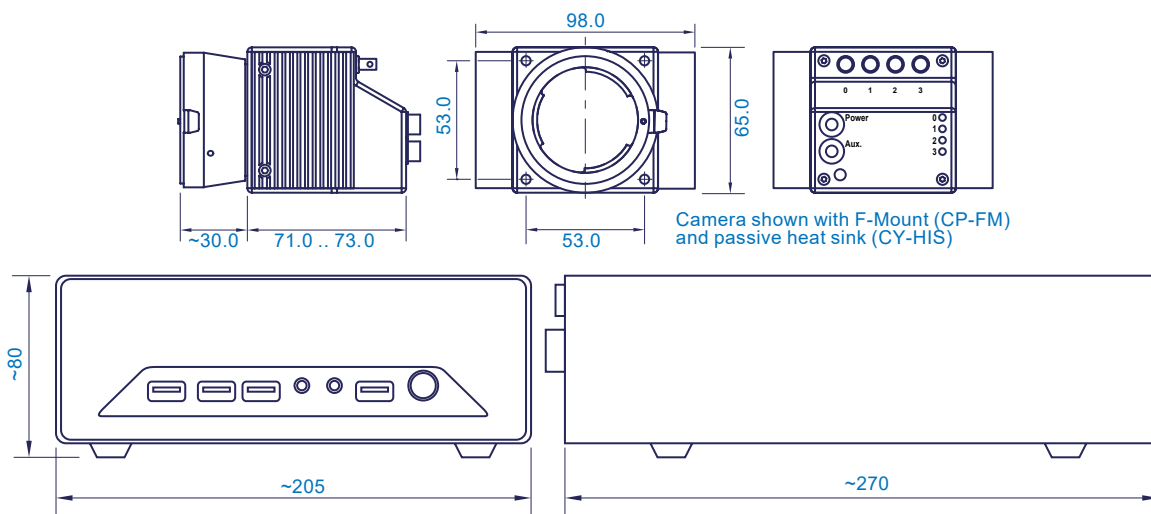|	
CY-HIS	passive cooling option
CY-FAN	active cooling option
CPH6-PTC	Pig tail cable for synch

CONTROLLER-RC1

Video memory	24 GB (opt. 56 GB)
Memory configuration	Ring memory
A/D conversion	8 Bit
Trigger Modes	Rising or falling edge, software, manually by handtrigger, pre- and post-trigger
Trigger input	D-SUB HD 26p fem., TTL
Hard disk	1 TB, SSD
Operating system	Win 10 pro, english
Dimensions (aprox.)	205 x 270 x 80 mm³, 1.8 kg
Supply	100 - 240 V, 50 - 60 Hz
Temperature range	0 - 40 °C (32 - 104 F)
Interfaces	HDMI, 4x USB2, 4x USB3, GigE, D-SUB HD26 for trigger input
Scope of delivery	Controller with 24 GB video memory, controller power supply with cable, TimeViewer software, Manual on USB stick, transport case

ACCESSORIES

Mem-56GB	Upgrade to 56 GB video memory
CR-TAR	Trigger Adapter HD26 D-SUB to BNC female
CR-HTR	Manual Trigger Device, 1.8 m
CPH6-PTC	Pig tail cable for synch

TECHNICAL DRAWING

Camera shown with F-Mount (CP-FM) and passive heat sink (CY-HIS)

CONTACT INFORMATION