

Manual

Infrared cameras Contour IR Digital



irvi infrared viewers

ADOS-TECH
ADVANCED DIGITAL OPTICAL SYSTEMS

Content

Content.....	3
Safety requirements	4
About	5
Operation.....	5
PC requirements	8
Software usage	9
Software set and features	10
Applications development by the customer	10
The Maintenance instruction.....	11
Spectral sensitivity.....	13
Power density.....	14
Technical information	15
Warranty	19

Safety requirements

- The customer is responsible for light source safety while using a camera as a standalone device or integrated into system.
- The customer must consider protective measures if necessary.
- While assembling or operating camera, do not stare at the direct laser (or other source) light even with safety goggles.
- Camera is not protected from direct high intensity radiation. Use it with caution and appropriate attenuation if used in direct illumination mode.
- Electrical safety requirements must be complied while operating this device.

About

The design of CONTOUR IR Digital camera allows observation, registration and recording of radiation in the near-infrared zone in 400-1700 nm spectral region. The CONTOUR IR Digital camera is suitable in infrared microscopy, luminescence, examination of documents, forensics, art restoration (infrared reflectography), instrument alignment and optical assembly, pharmacology, food sorting, agronomy, surveillance, etc., applications.

CMOS sensor is based on SONY chip which has increased sensitivity and microlenses on photocells for better photon absorption and amplification of each pixel element. Camera is connected to PC via USB 2.0 (or USB 3.0) interface.

Operation

CAUTION! Do not use direct powerful laser radiation on a sensor.

CAUTION! Use filters, attenuators or beam splitters to decrease of laser radiation.

1. Install the camera driver and software from provided USB key.
2. Connect camera to PC via USB port.
3. Start CONTOUR-IR application.
4. To have sharp unblurred image on viewed screen, adjust focus of objective lens. If necessary, switch on/off automatic exposure and gain control, arrange parameters of the camera (brightness, contrast, saturation, sharpness) and if required change image format and refresh rate.

5. For very low power target observation decrease any extrinsic light to increase noise to signal ratio. Use cut-off or interference filters for raise contrast.

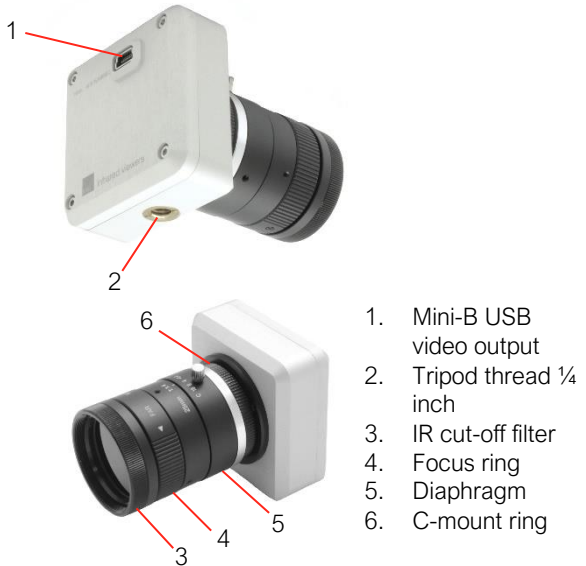


Figure 1. Contour IR Digital camera.

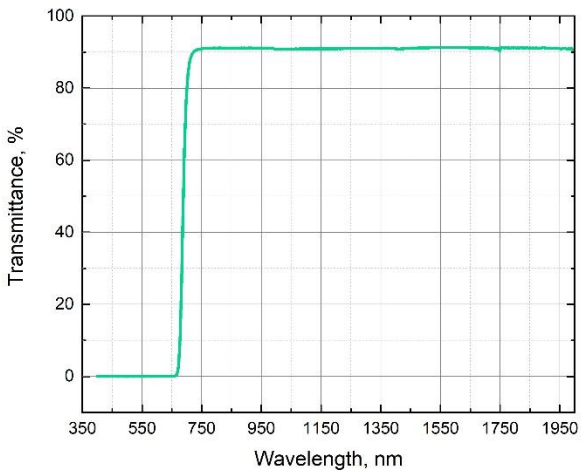


Figure 2. IR cut-off filter transmittance

Minimal PC requirements

- Processor at least 1 GHz.
- At least 512 MB RAM.
- USB 2.0 or higher port.
- OS Microsoft Windows 7 or higher (USB 2.0 Host, root concentrators and Direct-X drivers shall be installed).
- Microsoft .NET 4.6 Framework (installed with software if not present).

To install the CONTOUR-IR software, you must have administrator rights on your computer. During installation camera drivers depending on your operating system will be installed. To run CONTOUR-IR application Microsoft .NET 4.6 Framework or later must be installed. The installer detects if .NET framework is missing and prompts its installation.

NOTE: High performance computer is recommended for best motion picture without stuttering. Otherwise you might need to reduce frame rate or choose lower resolution, to get optimal preview. Camera transfers data in RAW Data format to a personal computer or laptop, so computer must be able to process large amount of data in real-time.

Software usage

1. Launch the CONTOUR-IR program using icon on the desktop. After program starts it automatically detects camera devices and enumerates them in “Device” list box.
2. To **start** the capture, select your camera in the list. After selection, the software will read camera’s allowed settings and update the interface according present settings.
3. Use the software provided functionalities shown in Fig. 2 to suit your application needs.

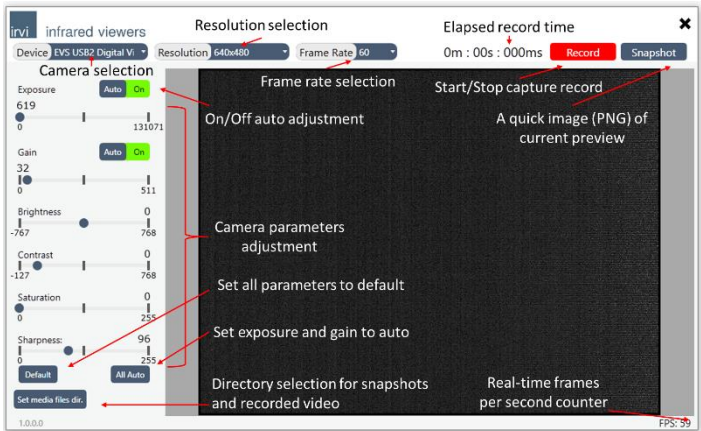


Figure 3. Software controls description.

Software set and features

- WDM driver suitable for Windows XP/7/10 (32 and 64bit).
- Use CONTOUR-IR for single picture capture and video recording.
- The Contour-IR digital camera is supplied with software controlling following functions: exposure time, gain factor, gamma correction, etc.
- The electronic shutter is in the Rolling Shutter. The operation in pulse mode with short exposures is useless – there will be visible just one or several lines of the entire frame.
- Gain factor is 30 dB.
- Gamma correction can be deactivated from the driver bookmark.
- There is no external synchronization.
- Uncompressed video record function is available.

Applications development by the customer

The Contour-IR digital camera is supplied with the WDM driver that implements the Microsoft Direct Show technology, which is the Windows SDK (Microsoft Direct X) component.

>> [Download Windows SDK here](#)

<https://developer.microsoft.com/en-gb/windows/downloads/windows-10-sdk/>

It allows working with a large array of commercial and free-ware software, supports technology, such as Ulead Video Studio, Adobe Premier, AmCap, VirtualDub, etc.

For personal applications development, the customer must use Microsoft Windows SDK or other software libraries like OpenCV or DirectShowLib. Any computer vision library that supports Direct Show technology is suitable.

More information about Direct Show technology and its usage can be found in Microsoft website.

>>[DirectShow](#)

(<https://docs.microsoft.com/en-us/windows/win32/directshow/directshow>).

The Maintenance instruction

- Keep device away from mechanical damage and moisture.
- Always use a protective case while transporting equipment.
- While changing an objective do it in clean environment to reduce chances of dust particles falling onto the sensor.
- Protect the lenses from dirt and grease. It may deteriorates the image quality. If necessary, clean the external lens of an objective with a lens cleaning tissue dipped in alcohol substance. Dust removal from the sensor might be done blowing air.
- To avoid any possible scratches, use a soft mat for placing camera gear when cleaning operations applied.

- Do not use any household cleaning products which are not suitable for camera cleaning operations. These products may cause serious damages of sensor, electrical board or lens.

Troubleshooting

The Contour-IR Digital camera can experience some image flickering and connection loss. In this case try to reconnect camera as many times as it takes. Before that end all related tasks with Contour software in “Windows Task Manager”. If camera experiencing image flickering after performing described actions, try to lower the “Frame rate” and “Resolution” through the software.

These actions may not help if your PC does not support Contour software. In this case try to run Contour-IR Digital camera with another PC.

Spectral sensitivity

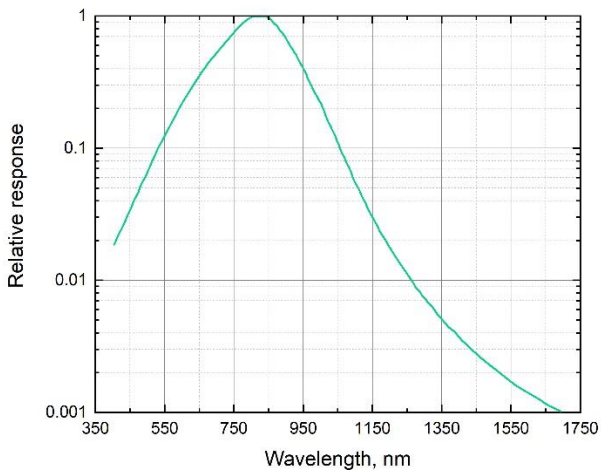


Figure 4. Spectral sensitivity (Contour IR digital camera)

Power density

The approximate minimum of power density of radiation on an object at the signal-to-noise ratio=10 (20dB) on a 0,15m distance:

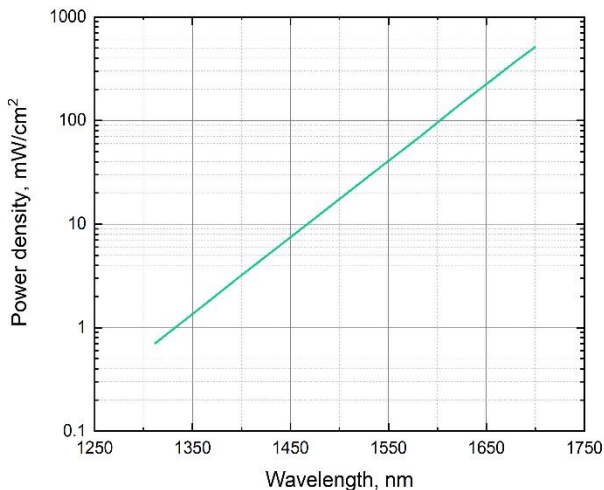


Figure 5. Power density (Contour IR digital camera)

Technical information

Spectral sensitivity	400-1700nm
Sensor size	1/3 inches, 6.0mm x 4,96mm
Lens	F1.4/25mm with iris, CS/C-mount*
Field of view	10°
Focusing range	0.05m to inf
Sensor	CMOS 1/3" 1280 (W) x 960 (H)
Size of pixel	3.75 x 3.75 μ m
Dynamic range	60 dB
Relation signal to noise	54 dB
Format 1	1280x960 (4, 8, 12.5, 16, 25, 30 Hz)
Format 2	1280x720 (5, 10, 15, 20, 30, 40 Hz)
Format 3	800x600 (6.25, 12.5, 20, 30, 40, 50 Hz)
Format 4	640x480 (8, 16, 25, 32, 50, 64 Hz)
Range of exposure	34 μ s - 34ms
Temperature range	+5... +40°C
Weight	0.2 kg
Dimensions	49x49x75 mm

* C-mount adapter included

Standard kit includes:

- IR camera with F1.4/25mm with internal iris;
- C-mount adapter;
- Mounted IR cut-off filter;
- USB cable;
- USB key with software and drivers;
- Manual;
- Tripod;
- Case.



Figure 6. Standard camera kit

Accessories available upon request;

- Neutral density filter for lens 1X (1.5-2% @ 1064nm)

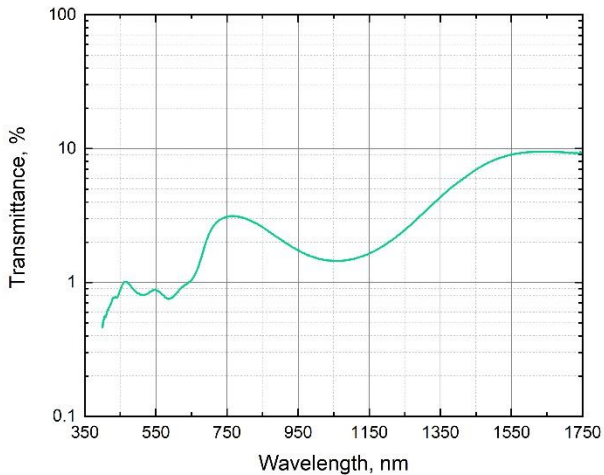


Figure 7. Neutral density filter transmittance

- Zooming lens 5-50mm, FOV ($50^\circ - 5^\circ$)



Figure 8. Neutral density filter transmittance

1. IR cut-off filter
2. Zooming or magnification (1X-10X)
3. Diaphragm
4. Focusing ring
5. CS mount (thread 1"-32)

Warranty

Infrared viewing device CONTOUR-IR Digital meets specifications of the manufacturer and declared operation.

The warranty period of the device is 24 months from the date it was sold to the consumer.

Claims not accepted, and warranty repair are not made, because of the improper use or incorrect service and maintenance of product instructions. The company shall not accept warranty claim:

- non-authorized alteration,
- disassembling of device,
- mechanical or any external damages,
- if 2-year warranty term has expired.

Serial No.

Version No.

Spectral range

Date of Issue

ADOS-TECH, UAB
Mokslininku st. 2A,
LT-08412, Vilnius, Lithuania
Phone: +370 5 270 6407
Fax: +370 5 210 0067

www.ir-viewers.com
sales@ir-viewers.com