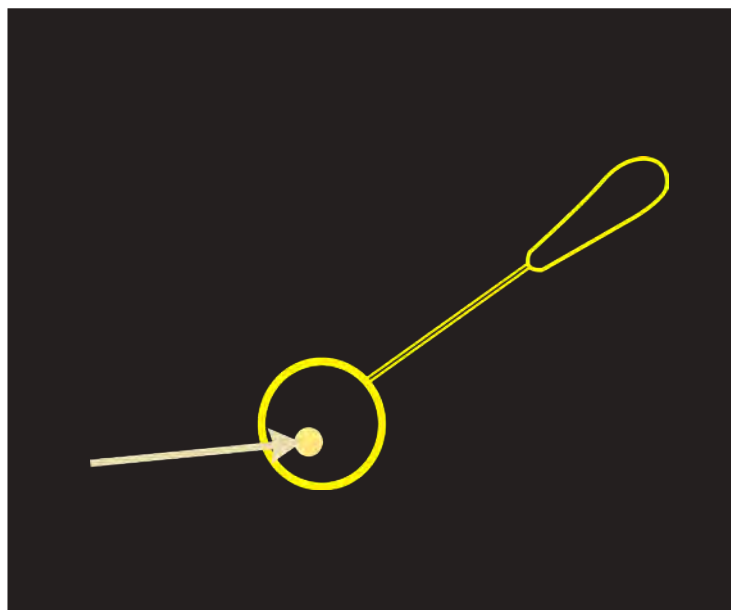


## Laser accessories

4Lasers offers a variety of laser accessories designed and dedicated to enhancing your capabilities to visualize, guide and to monitor near infrared (NIR) and ultraviolet (UV) laser beams, parasitic reflections or losses in the fibers.



Infrared (IR) viewers  
ABRIS M



Contour near infrared (IR) CCD  
camera



Contour near infrared (IR)  
digital CMOS camera



UV-NIR laser beam  
visualizers

**PHOTO  
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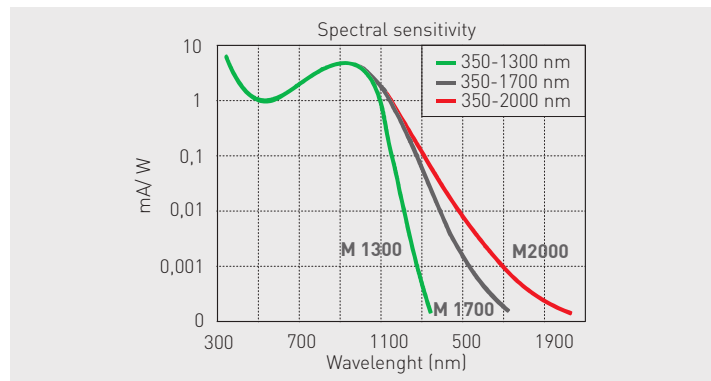
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## Infrared (IR) viewers ABRIS M



Infrared (IR) viewers are used to observe, register, and record both indirect and direct radiation of IR lasers, light emitting diodes (LED's), dye and other IR-sources. It is ideal for IR-laser beam alignment and inspection, optical fiber alignment, telecommunications, solar panel inspection, photo processing, surveillance and investigation in botany, biophysics, medicine, forensics and art restoration, infrared microscopy, fluorescence etc.

High performance image conversion infrared (IR) viewers based on high-grade image converter are designed to observe indirect radiation of infrared laser, light emitting diodes (LED), dye and other IR-sources in 350–2000 nm spectral range.

(IR) Infrared viewer is based on a first-generation high-grade image converter that has an electro-static focusing system, photocathode S-1+ with an increased concentration of oxygen and screen of type P-20 with the maximum of luminescence at 550 nm.

Infrared viewer focus emitted or reflected light from a chosen object into the image tube where the electron image is generated. When powered (with a battery or power supply) the 16-18 kV voltage is generated to accelerate the electron image towards the phosphor screen at the output. The fluorescent green light output (550 nm) is observed via an adjustable eyepiece lens.

### Main features

- Spectral region 350-2000 nm
- Resolution 60 Lp/mm
- Hand-held / post mounted
- Battery + DC powered
- Up to 35 hours continuous working
- Pulsed and CW light detection

### Application examples

- Laser alignment and safety
- Semiconductor inspection
- Forensics and art restoration
- Photo processing
- Thermal imaging

### Specifications

IR-VIEWERS ABRIS M SERIES SPECIFICATIONS	
Resolution (centre)	60 Lp/mm
Working distance of lens	12,5 (+/-0,2) mm
Battery	1,5V, 1x "AAA" size
Non-uniformity of screen	< 20 %
Non-uniformity of response	< 15 %
Distortion of image	< 18 %
Battery life (continuous)	35 hours
External power supply	DC 3V, 30 mA
Weight	0,4 kg
Dimensions	140 x 78 x 52 mm
Temperature range	-10 °C ... 40 °C
Tripod or handle connection	R"1/4"

### Standard products

FIELD OF VIEW	MAGNIFICATION	OBJECTIVE LENS	ADJUSTABLE IRIS	FOCUS	SPECTRAL SENSITIVITY	
					350-1700 nm	SKU
40°	1X	F1,4/25 mm	Included	0,15m (0,05m) to inf, (with distance ring)	350-1700 nm	7404
					350-1300 nm	7654
					350-2000 nm	7655
20°	2X	F1,8/50 mm	Included	0,5m (0,15m) to inf, (with distance ring)	350-1300 nm	7656
					350-1700 nm	7657
					350-2000 nm	7658

**PHOTO  
TECHNICA**

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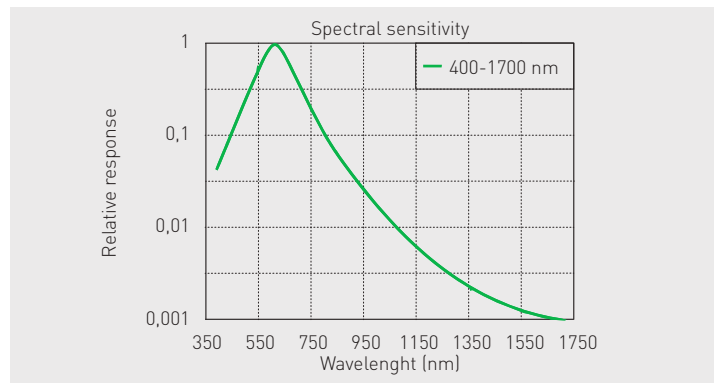
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## Contour near infrared (IR) CCD camera



The near infrared Contour-IR camera is designed for observation, registration and recording radiation in the near infrared zone of the 400 - 1700 nm spectral region emitted by infrared sources such as GaAs IR LED, diode or solid-state lasers as well as for use in infrared microscopy, infrared luminescence, examination of documents, forensics, art restoration and etc.

The camera is based on a highly sensitive low-noise silicon CCD sensor and two-photon absorption phenomenon. Superior image quality is obtained thanks to the micro lens system and a special coating layer on silicon.

### Main features

- Spectral region 400-1700 nm
- High sensitivity CCD camera
- Small and compact
- Tripod fixed
- Cost-effective
- Video output

### Application examples

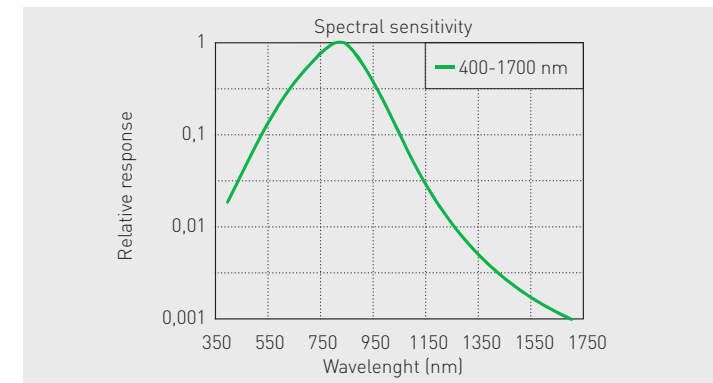
- Laser alignment and safety
- Semiconductor inspection
- Forensics and art restoration
- Photo processing
- Thermal imaging
- Technical information

CONTOUR IR CCD CAMERA SPECIFICATIONS	
Field of view	10°
Focusing range	0,2 m (or 0,08 m with distance ring) to inf
Ration signal-to-noise	48 dB
Video output	CCIR Standard composite video
Power supply	DC 10 ... 14 V, 150 mA
Temperature range	+5 ... +40 °C
Weight	0,23 kg
Dimensions	90 x 50 x 58 mm

### Standard products

SPECTRAL SENSITIVITY	SENSOR SIZE	MAXIMUM RESOLUTION	RESOLUTION AT MAXIMUM SENSITIVITY	LENS	SKU
400-1700 nm	1/3 inches, 6,0 mm x 4,96 mm	570 TV lines	135 TV lines	F1,4/26 mm, C-mount	7660

## Contour near infrared (IR) digital CMOS camera



The near infrared Contour IR Digital camera is designed for observation, registration and recording radiation in the near infrared zone of the 400 - 1700 nm spectral region emitted by infrared sources such as GaAs IR LED, diode or solid-state lasers as well as for use in infrared microscopy, infrared luminescence, examination of documents, forensics, art restoration, etc.

The camera is based on the newest technology CMOS sensor with an increased sensitivity, micro lenses on photocells and intensifying cascades in each element. Camera is connected to PC via USB 2.0 (USB 3.0) cable.

### Main features

- Spectral region 400-1700 nm
- Newest technology CMOS sensor with micro lenses
- Controlled from a computer via USB2.0 and USB3.0
- High sensitivity
- IR cut-off filter and case included

### Application examples

- Laser alignment and safety
- Semiconductor inspection
- Forensics and art restoration
- Photo processing
- Thermal imaging

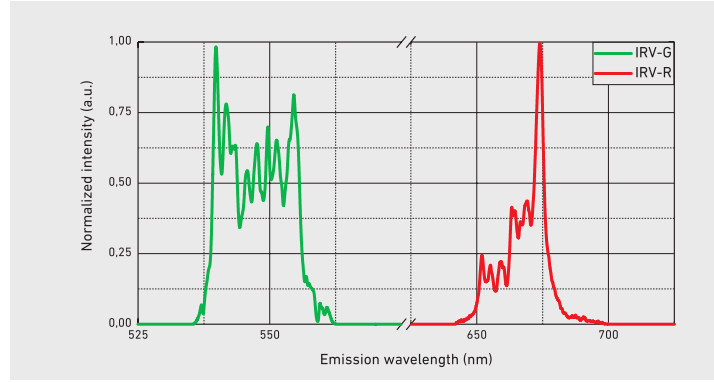
### Specifications

CONTOUR IR DIGITAL CMOS CAMERA SPECIFICATIONS	
Sensor	CMOS 1/3" 1280 (h) x 960 (w)
Pixel size	3,75 x 3,75 μm
Dynamic range	60 dB
Ratio signal-to-noise	54 dB
Format 1	1280 x 960 (4, 8, 12.5, 16, 25, 30 Hz)
Format 2	1280 x 720 (5, 10, 15, 20, 30, 40 Hz)
Format 3	800 x 600 (6.25, 12.5, 20, 30, 40, 50 Hz)
Format 4	640 x 480 (8, 16, 25, 32, 50, 64 Hz)
Range of exposure	3,4x10 <sup>-5</sup> -3,4x10 <sup>-2</sup> s
Weight	0,2 kg
Dimensions	55 x 55 x 75 mm

### Standard products

SPECTRAL SENSITIVITY	SENSOR SIZE	LENS	FIELD OF VIEW	FOCUSING RANGE	SKU
400-1700 nm	1/3 inches, 6,0mm x 4,96mm	F1,4/26mm, CS-mount	10°	0,15m to infinity	7663

## UV-NIR laser beam visualizers



Laser beam visualizers are designed to detect UV and IR both CW and pulsed laser light radiation. These visualizers are fabricated from aluminum with an organic polycrystal photosensitive region, which enables easy location of

UV-VIS-NIR light beams and focal points. As it is not necessary to charge the active region both CW and pulsed laser light will be detected even in darkened room conditions.

### Main features

- Wavelength detection from UV to NIR
- Suitable for CW and pulsed laser light
- High sensitivity to laser radiation – 0,1 mW/mm<sup>2</sup>
- Damage threshold for pulsed laser – 1 J/cm<sup>2</sup>, 10 ns
- Both sides are active

### Standard products

CLEAR APERTURE	ITEM MODEL	DETECTION SPECTRAL RANGE	EMISSION COLOR	THRESHOLD SENSITIVITY	SKU
35 mm	IRV-R-1	190-1090 + 1470-1600 nm	Red	0,01 W/cm <sup>2</sup>	7662
	IRV-G-1	880-1070 nm	Green	0,02 W/cm <sup>2</sup>	7661

### Application examples

- Laser alignment
- Research

## Notes