

Workswell Infrared Camera

Second Generation



- 640 px or 336 px resolution
- USB3 and GIGE Vision camera interface
- Interchangeable and focusable lenses

[Datasheet](#)

Release date: 17th of September, 2017

End users Validity date: 31st of December, 2018 or till next revision

Revision Number: 2.9



Workswell Infrared Cameras

Introduction

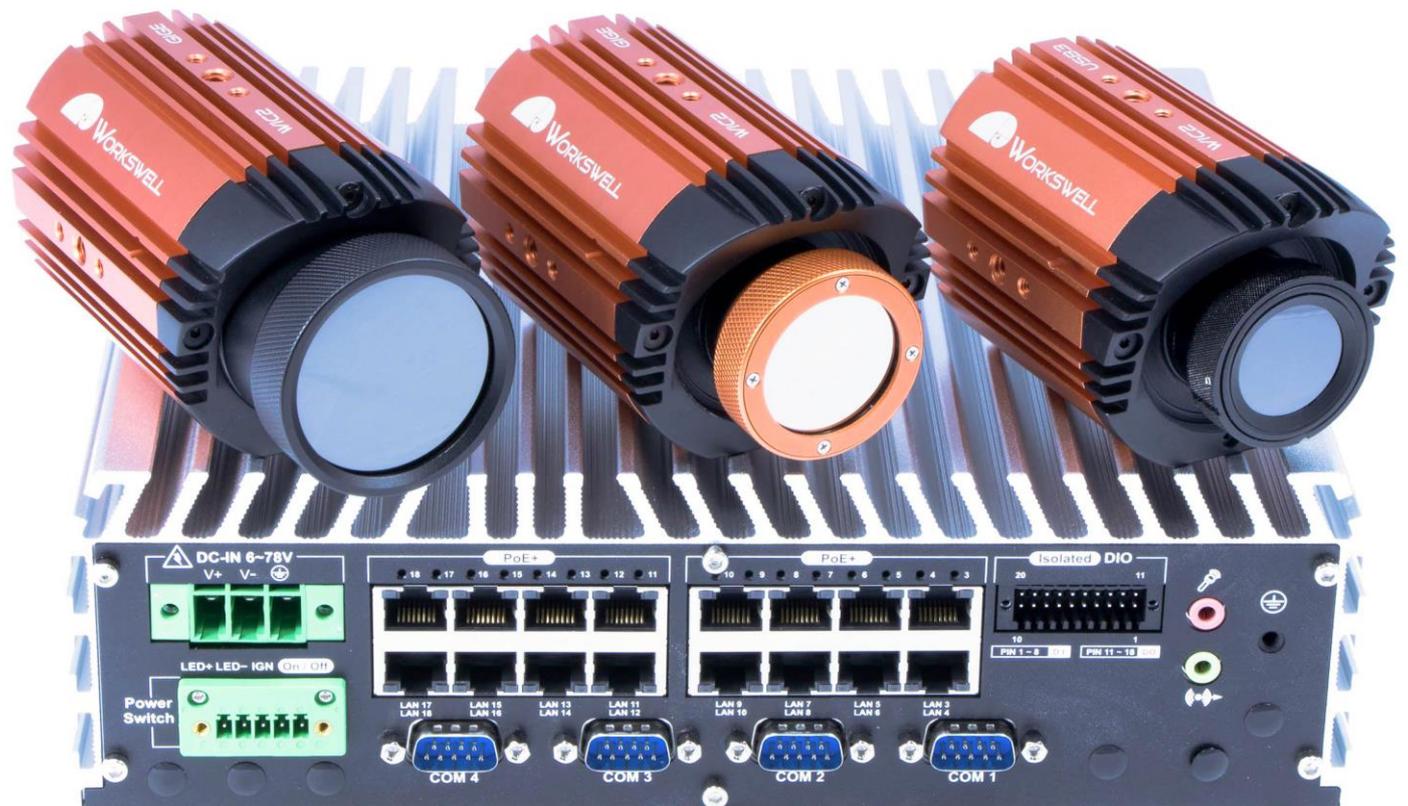
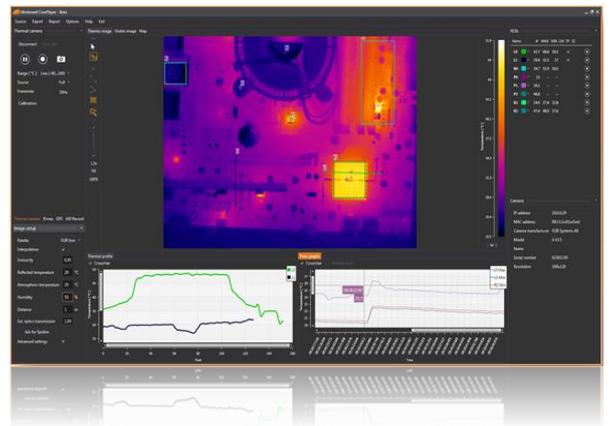
Workswell Infrared Cameras („WIC“) are designed and manufactured for easy and user-friendly integration for all machine vision applications as well as R&D projects. All Workswell Infrared Cameras use the newest Long Wave Infrared Detector Technology. Customers can choose from three types of detector resolution: 640 x 512 or 336 x 256 pixel format.

WIC are powered directly from USB3 or Ethernet cable instead of external supply adapter. Internal electronics is protected by metal enclosure. Very low power consumption decreases needs for special cooling and large camera dimensions. WIC are fully compatible with USB3 Vision and GenICam protocol, ensuring interoperability in a multi-vendor environment. All the products use precision time protocol to synchronize image.

Workswell CorePlayer software automatically detects a camera, configures an address and ensures a camera connection. All WIC use 14 RAW data format or calculated temperature values. Image can be shown in different color palletes with interactive side bar and measurement tools. Users can manage camera parameters such as Gain, NUC, Factory Reset, etc. There is also tutorial application, Linux and Windows dll libraries and C# application code available. CorePlayer Application Workswell CorePlayer is included for free of charge in every WIC package.

Key Features

- USB3 or 1Gb/s Ethernet interface
- LWIR 640 px or 336 px resolution
- Different types of SDKs and Plugins
- Powerful analyzing software
- Hybrid metal industry enclosure
- 4-side tripod and metric threads
- IP65 plugin back cover
- Temperature range up to 1 500°C
- Internal protection IP65
- Fast 60 Hz camera versions



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All pictures are only for illustration
Real values and parameters may vary

Workswell Infrared Camera Specification

Thermal and optical data	
Resolution	640 x 512 pixels or 336 x 256 pixels
Framerate	9 Hz, 30 Hz or 60 Hz (9 Hz available on request for non-ITAR delivery)
Temperature ranges	-25°C to +150°C -40°C to +550°C optional up to 1 000°C with special filter optional up to 1 500°C with special filter
Accuracy	±2% or ±2°C
Temperature sensitivity	≤0.03°C (30mK) @ 30°C
Spectral Range	7.5 – 13.5 μm
Dynamic range	14bit radiometric temperature data, 14bit RAW data
Calibration	Yes, calibrated both temperature ranges
Detector Type	Uncooled VOx microbolometer
Lenses	Interchangeable and focusable, various field of view
Available Lenses	6.8 mm , 9 mm, 13 mm, 19 mm (see details on page with lenses)
Focus	Manual continuous (Min. focus distance depends on lens)
Communication and Power Supply Interface	
Ethernet version	Gigabit Ethernet, GigE Vision standard, RJ-45 connector
USB3 version	USB3, USB3 Vision Standard, Thumbscrews lock micro USB connector
Analog video output	PAL/NTSC video format (only for USB3 version)
Input Supply Voltage	5 V DC for USB3, Power over Ethernet 48V type
Power Dissipation	< 1.3 W (max. 3 W during NUC calibration time)
Mechanical data	
Dimensions for USB3 version	97 x 65 x 63 mm for IP40 for WFOV, 186 x 65 x 63 mm for IP65 for WFOV,
Dimensions for GIGE version	106 x 65 x 63 mm for IP40 for WFOV, 179 x 65 x 63 mm for IP65 for WFOV,
Weight	360 g for GIGE WFOV model (without back IP65 cover)
Mounting and tripod	4 x 1/4-20 UNC thread and 10 x M4
Internal Protection	IP 65 with plugin front and back cover (IP 40 without the IP cover)



Workswell Infrared Camera Specification

Operating Environment	
Operating temperature	-15°C to +50°C
Storage temperature	-30°C to +60°C
Humidity	5% to 95% non-condensing
Content of delivery	Workswell infrared camera, calibration certificate, software CorePlayer, cables, PoE (GigE version), download card, hard transport case
Thermal Camera Settings	
Source of image	As a source of image can be used full image (full sensor size) or only a part of the image specified by a rectangle ROI tool
Framerate	According to the camera you can change frame-rate from 1Hz to 60Hz
Calibration	Using Calibration button you can activate NUC (non-uniformity compensation) to reach the best image quality and camera signal stabilization
Play/Pause	Using Play/Pause icon you can start and pause real time image streaming
Start recording/Snapshot	During radiometric thermal video acquisition (using Start capture button) you can save snapshots (Radiometric JPG) at the same time
AVI Record	User can save live video streaming directly as AVI format . It is possible to change framerate and bitrate and display into the video Palette bar, Bottom bar and ROI
Thermal Image Settings	
Palette	User can choose from 14 palettes – BlackRed, BlueRed, BWRGB, Fire, FLIR Iron, Gradient, Gray, Iron1, Natural, Rainbow, Sepia, Steps, Temperature, WBRGB
Interpolation	To obtain a smooth image without pixelization, user can interpolate the image
Units	Temperature can be displayed and calculated in °C or °F
Acquisition Parameters	Emissivity (continuously in range 0.01 – 1.0 with step 0,01) and Reflected temperature
Advanced Parameters	In CorePlayer can be set/changed other parameters as Atmospheric temperature, Humidity, Distance and Transmission of external optics
Temperature Range	Interactive temperature range can be used in manual or automatic mode. Using it you can change the color distribution of temperatures to e.g. highlight details.
Isothermal Mode	User can set Isothermal mode of the image. CorePlayer offers four types of isotherms: Below, Above, Between and Below and Above .
Report generation	
Report Contents	There are automatically shown thermal images and time graphs and parameters of the image: emissivity, reflected temperature, atmospheric temperature, humidity, distance and transmission of external optics
Additional Information	User can insert into a report: protocol name, date and time of measurement, company logo, user/company name and additional information about measured area



Workswell Infrared Camera Specification

Measurement features	
ROI analysis	User can insert into the image variety of measurement tools/ROI: Point, Line, Polyline and Rectangle . User can insert more ROIs into one image, change its color, replace it or delete ROIs that a user can see in the top-right subwindow
Zoom	User can zoom real-time streamed data, the acquired image or sequence – continuously, each mouse scroll zooms 0,5x
Measured Values	In each ROI can be measured and visualized Min, Max, and Average temperature. User can save temperature values from the ROI as CSV file
Graphs	
Thermal Scanner	Temperature values for Line ROI could be visualized in Thermal Scanner . User can select number of lines and temperature range (manual or automatic)
Thermal Profile	All measured data can be displayed in real time Thermal Profile (for Line ROI). User can adjust range of graph axis and see the measurement Target Cross for fast and easy visualization of measured graph values
Time Graph	Temperature values from all ROI tools (for real time visualization or captured sequence measurement) can be showed into the Time Graph . User can adjust range of graph axis and see the measurement Target Cross for fast and easy visualization of graph values. For saved sequence can be set upper and lower limit for the temperatures in each ROI and x-axis in relative or real time
Radiometric Sequence	
Playback	Radiometric video can be played Backwards, Forwards , show Next frame or Previous frame or play the sequence continuously in the loop
Processing	User can cut the video and save it into new file as radiometric sequence.
Additional functions	
Export	User can export images into different file formats - save *.seq file as Radiometric JPEG, PNG or CSV file. Radiometric sequence can be exported to AVI file
Presentation Mode	For presentation purposes the live stream or acquired image can be displayed in full screen mode with image related controls.
User Interface	Intuitive and well-arranged user interface . User can change layout of sub-windows or restore layout to defaults
Image Information	The information about saved image in sub-window: filename, camera type, captured date, resolution, emissivity and reflected temperature
Camera Information	CorePlayer shows information about connected camera: IP and MAC address, Camera manufacturer, Camera model, Name, Serial number and Resolution
GPS Support	CorePlayer supports integration of GPS data from standard GPS receiver and display the position in Google Maps



IFOV and Field of View calculator

Resolution 640 x 512 pixels	Field of view	Spatial resolution IFOV	Min focus distance
Focal length 9 mm	FOV 69° x 56°	1.889 mrad from 1 meter	7 cm
Focal length 13 mm	FOV 45° x 37°	1.308 mrad from 1 meter	15 cm
Focal length 19 mm	FOV 32° x 26°	0.895 mrad from 1 meter	20 cm
Resolution 336 x 256 pixels	Field of view	Spatial resolution	Min focus distance
Focal length 6.8 mm	FOV 45.6° x 35.5°	2.5 mrad from 1 meter	5 cm
Focal length 9 mm	FOV 35° x 27°	1.889 mrad from 1 meter	7 cm
Focal length 13 mm	FOV 25° x 19°	1.308 mrad from 1 meter	15 cm
Focal length 19 mm	FOV 17° x 13°	0.895 mrad from 1 meter	20 cm

Visit FOV calculator on www.workswell.eu

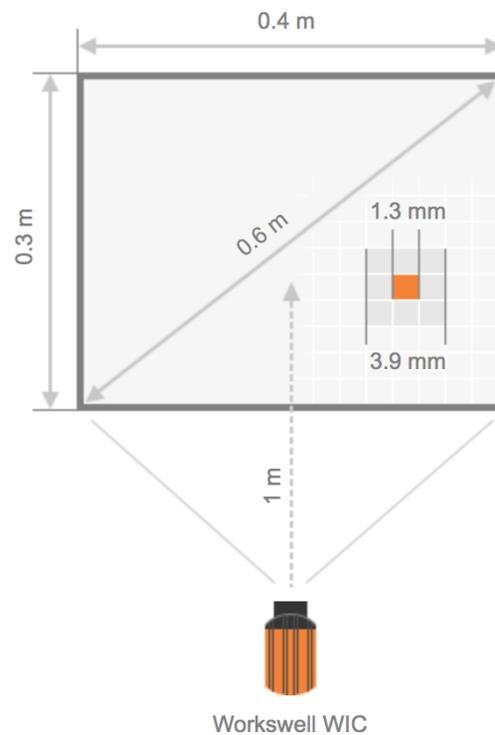
Product

Camera configuration

Distance
 mm cm m in ft

Measurement data

Parameter	Value
Camera distance	1 m
Spot size 1x1	1.3 mm
Spot size 3x3	3.9 mm
IFOV	1.3 mrad
Horizontal FOV	0.4 m
Vertical FOV	0.3 m
Diagonal FOV	0.6 m



General information and conditions

Repairs & return merchandise authorization (RMA)

An RMA number is required for Workswell to process returned products, whether the product is under warranty or out of warranty. International returns must be coordinated in advance of shipment in order to adhere to import requirements. Please get information on service@workswell.eu.

Calibration including general maintenance

General maintenance is done in conjunction with calibration, to verify and update camera status before calibration. Shipping cost is not included in the price.

Placing an order

All orders must be placed on orders@workswell.eu together with ordering sheet. The ordering sheet must contain all necessary information about Distributor (customer), shipment address and ordered equipment together with ordering codes. Without this information shall not be the order accepted.

EXPORT STATEMENT

These commodities are for commercial end use only. They may not be used in the design, development, production, or use of nuclear, chemical or use of nuclear, chemical or biological weapons or missiles and not be sold transferred or exported to Belarus, Burma (Myanmar), Ivory Coast (Côte d'Ivoire), Libya, Zimbabwe, Cuba, Iran, North Korea, Sudan, Russia and Syria.



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