

Workswell Infrared Camera

Second Generation



- 640 px or 336 px IR detectors
- USB3 and GIGE camera interface
- Interchangeable and focusable lenses
- Fully radiometric and calibrated

[Datasheet](#)

Release date: 25th of November, 2020

Revision Number: 201125



Workswell Infrared Cameras

Introduction

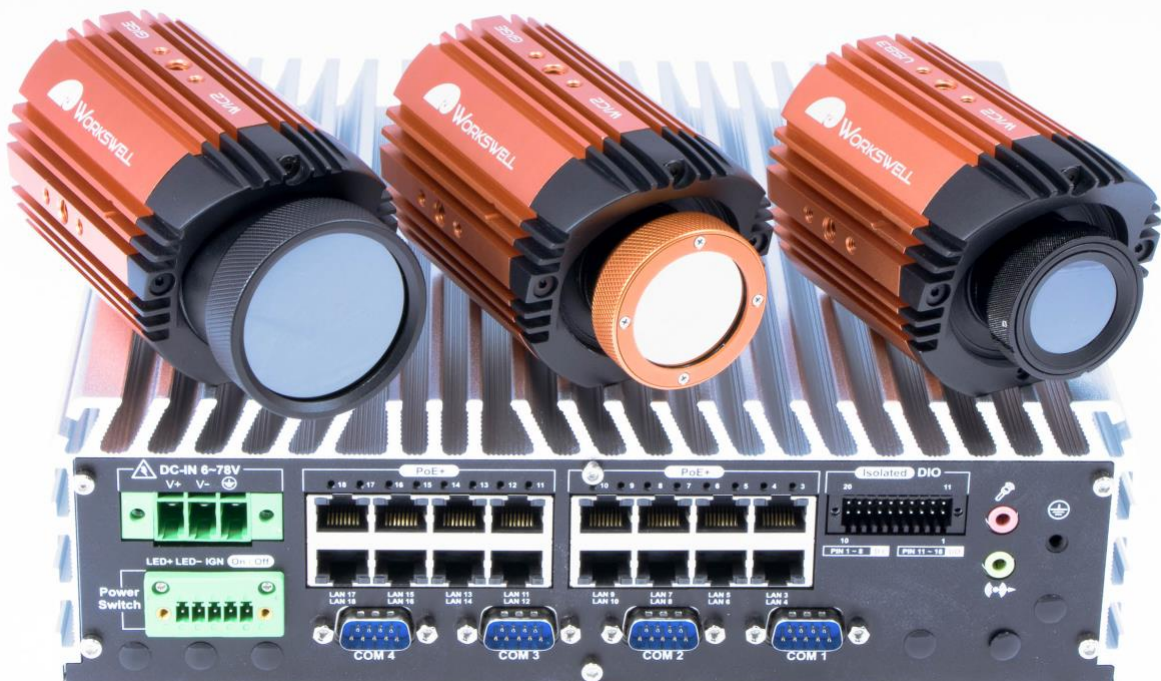
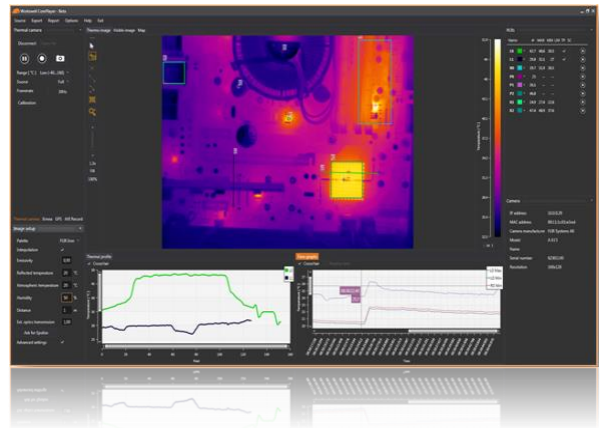
Workswell Infrared Cameras („WIC“) are designed and manufactured for easy and user-friendly integration for all machine vision applications as well as R&D projects. All Workswell Infrared Cameras use the newest Long Wave Infrared Detector Technology. Customers can choose from three types of detector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

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.

Key Features

- Fully radiometric and calibrated
- 30mK sensitivity in standard
- USB3 or 1Gb/s Ethernet interface
- LWIR 640 px and 336 px detector
- Different types of SDKs and Plugins
- Powerful analyzing software
- 4-side tripod and metric threads
- IP65 plugin back cover
- Temperature range up to 1 500 °C (2 732 °F)
- Different types of palletes
- Fast 60 Hz camera versions



Workswell Infrared Camera Specification

| Thermal and optical data | |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resolution | 640 x 512 pixels and 336 x 256 pixels |
| Framerate | 60Hz, 30 Hz or 9 Hz available |
| Temperature ranges | -25 °C to +150 °C (-13 °F to 302 °F) -40 °C to +550 °C (-40 °F to 1 022 °F) optional temperature range +50 – 1 000 °C (122 °F to 1 832 °F) optional temperature range +400 – 1 500 °C (752 °F to 2 732 °F) |
| Accuracy | ±2 % or ±2 °C (±3.6 °F) (in temperature range -10 °C to +150 °C (-13 °F to 302 °F) and 0 °C to +550°C (-40 °F to 1 022 °F)) |
| 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 | 6.8mm, 9mm, 13mm, 19mm (more information in FOV calculator) |
| Focus | Manual continuous (Min. focus distance depends on lens) |
| Communication and Power Supply Interface | |
| Ethernet version | Gigabit Ethernet, RJ-45 connector |
| USB3 version | USB3, 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 | IP65 with IP protection kit |



Workswell Infrared Camera Specification

| Operating Environment | |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating temperature | -15 °C to +50 °C (5 °F to 122 °F) |
| Storage temperature | -30 °C to +60 °C (-22 °F to 140 °F) |
| 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 |

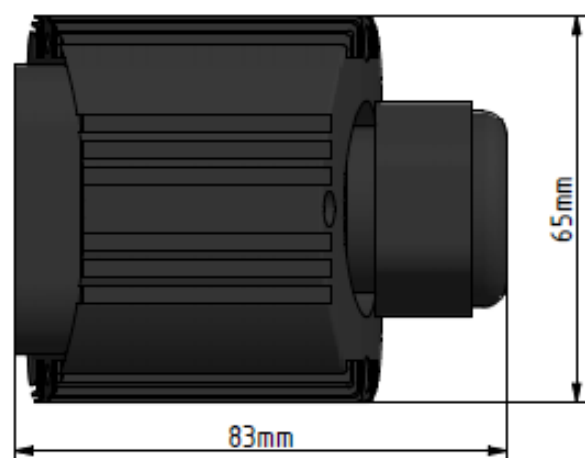
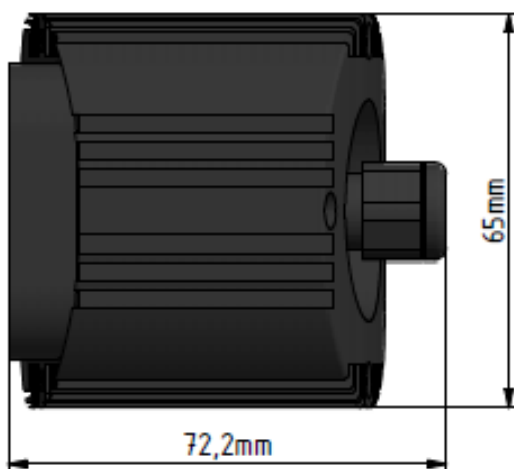
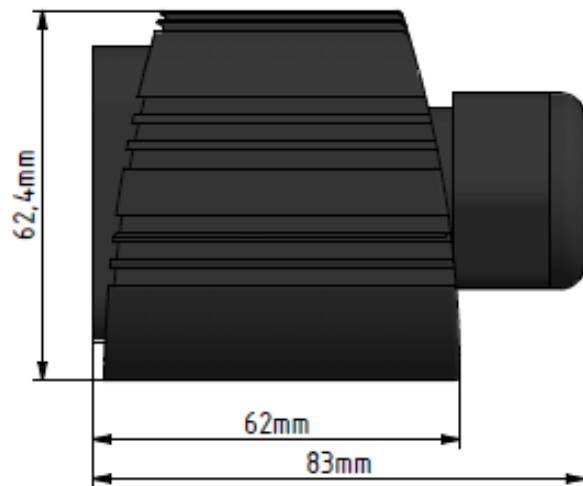
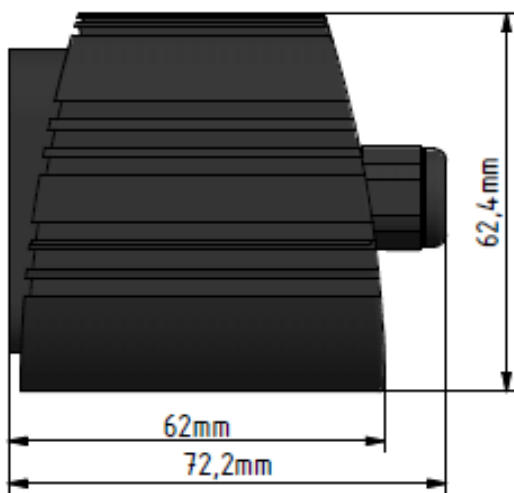
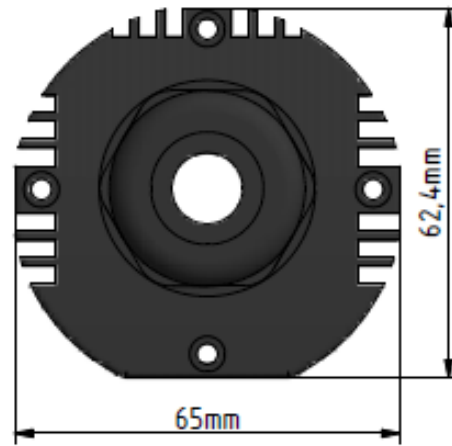
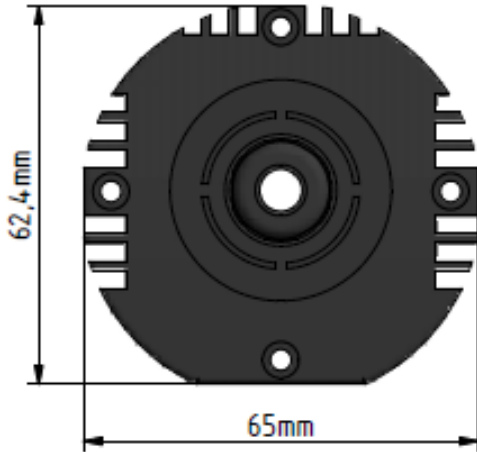


Workswell Infrared Camera Lenses

| 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 |



Mechanical drawings – Back Cover IP65



Contact information

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