



1266PX
THERMAL
RESOLUTION

16MPX
RGB CAMERA
RESOLUTION

30x
OPTICAL
ZOOM

1500M
RANGEFINDER

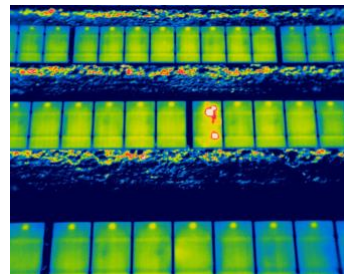
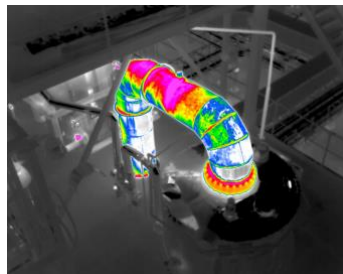
0.03°C
SENSITIVITY

1500°C
TEMPERATURE
RANGE



WORKSWELL WIRIS ENTERPRISE SC

MOST ADVANCED R&D DRONE THERMAL CAMERA



Datasheet

Release date: 24th of October 2023

Version: 231024

WIRIS Enterprise SC technical specification

WIRIS Enterprise Key features description	
Super Resolution Mode	Super Resolution Mode takes 1 266px Radiometric image in one shot
Operating onboard system	WIRIS OS for full real-time data streaming and control during the flight - operating system ensures the full access to all camera functions - easy camera control via S.Bus, CAN bus, MavLink, Ethernet - trigger input for image recording, alarm output for confirmation
30x Optical antivibration zoom	Full HD 30x optical zoom camera with antivibration compensation
Laser rangefinder	Distance measurement 10 to 1500 m (32 to 4920 ft), divergence: 1.4 x 0.4 mrad, EN 60825-1:2015-07 eye-safe 905nm
Thermal camera specification	
IR camera resolution	640 x 512 pixels
IR Super Resolution Mode	1 266 x 1 010 pixels (improvement of native resolution up to 1.3 Mpx)
FPA active sensor size	1.088 x 0.8705 cm
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)
Temperature sensitivity	Standard 0.03 °C (30 mK)
Accuracy	±2 % or ±2 °C (in temperature range -10 °C to +150°C and 0 °C to +550°C, after stabilization, climate chamber and black body testing for all products)
Frame rate	30 Hz or < 9 Hz
Spectral range / detector	7.5 – 13.5 μm / Uncooled VOx microbolometer
Calibration of each lens	Package includes a calibration certificate
Available lenses (2 in package)	18°, 32°, 45°, 69° (exchangeable lenses), visit FOV calculator
Protective filter on lens	Filter protects the lens against external damage during the flight
Thermal image digital zoom	1 – 12x steps
Digital RGB cameras – WIRIS Enterprise is equipped with two RGB cameras	
High resolution fixed camera	Resolution: 4 656 x 3 496 pixels (16 Mpx), 1/2.8" IMX298 sensor Field of view: extra wide DFOV 73.2°, focal 4.35mm Settings: configuration and stream in advanced auxiliary menu
30x optical zoom camera	Resolution: 1 920 x 1 080 pixels (Full HD), 1/2.8" EXMOR R CMOS sensor Field of view: 30x optical zoom with vibration compensation and image stabilization, ultra-zoom HFOV 2.3° - extra wide 63.7°, focal 129.0 mm - 4.3 mm
Optical zoom camera Image enhancement	Auto-white balance, WDR, IR cut filtering, DEFOG, 3D noise reduction
Optical focus camera - autofocus	Autofocus with Direct Focus Zoom synchronization

Memory and data recording	
Memory	Internal high-speed SSD 128GB or 256GB for image and video recording External slot for Micro SD card & USB 2.0 for USB stick for taking images
Image and video formats	16Mpx high resolution camera JPEG images, Optical zoom camera Full HD JPEG images, Radiometric IR JPEG and IR TIFF images Pix4D and Agisoft compatible for 3D modeling Digital camera h.264 encode video HD recording Radiometric full-frame IR recording (raw data recording 30 Hz or < 9 Hz)
GPS geo-tagging (image & video)	
GPS tagging (image & video)	MavLink, External GPS (NMEA) or DJI A3 compatible via CANbus
Interfaces & real-time remote control	
Auxiliary digital port	S.BUS UART (MAVLink, NMEA GPS or Workswell Command Control Protocol) - Pixhawk compatible - Aulerion compatible - Gremsy gimbals compatible CANbus (direct compatibility with DJI M600 series, A3 controllers or Workswell Command Control Protocol) External trigger input Digital alarm output
Ethernet (RJ-45) port	Video streaming and camera control (SDK in the package)
Micro USB 2.0 port	Mass storage, USB OTG
USB-A port communication	Keyboard connection for in-house WIRIS camera control
USB-C port communication	USB mass storage connection, Flash drive connection (USB2.0)
Remote control system	WIRIS OS ensures real-time control of all camera functions during the flight via onboard WIRIS operating system
Remote control options	S.BUS protocol Mavlink protocol CANbus & Command Control Protocol - UART CAN bus for real-time control on DJI M600 and GPS geo-tagging Ethernet for wireless uplink installation (video streaming and camera control) – SDK and tutorial App available
Camera functions	WIRIS onboard operating system: full control and access to all functions Measurement functions: Hot/cold spot detection, center point Temperature range settings: Automatic, manual or span mode Advanced alarm modes: Above, below, between, above & below Multi camera modes: Full screen mode, IR only, VIS only, Picture in Picture with blending setup in percentage Periodic capturing: From 1s, IR and VIS images simultaneously Trigger speed of capturing: around 200ms for radiometric image Temperature units: Celsius, Fahrenheit, Kelvin NUC control settings: Automatic, manual or triggered
Micro HDMI video output	1 280 x 720 pixels (720p), Aspect ratio 16:9, Micro HDMI video output

Software & SDK	
Desktop software	Advanced software ThermoLab for radiometric calibrated analysis
SDK libraries	Stream SDK, Data SDK, CANbus & UART SDK in the package
Power supply, weight & dimensions	
Input supply voltage	9 – 36 VDC, 2-pin HARTING connector
Power dissipation	18W average (21W peak) consumption
Weight	< 680 grams (1.49 lb) including Rangefinder, without IP protection cap
Dimensions (L x W x H)	76 mm x 107 mm x 102 mm (2.99 in x 4.21 in x 4.01 in)
Mounting	2 x 1/4-20 UNC thread (1x bottom side, 1x upper side)
Housing material	Durable aluminium body for long-time measurement stability
Environmental	
Operating temperature range	-15 °C to +50 °C (5 °F to 122 °F)
Storage temperature range	-30 °C to +60 °C (-22 °F to 140 °F)
IP rating	Optional IP66 with backside cap and certification (on request) <i>Backside cap must be ordered together with camera due to IP rating tests; the camera is shipped with IP40 rating as standard configuration without the cap.</i>

Standard package WIRIS Enterprise: WIRIS Enterprise SC camera head with 2 lenses, Lens protection cap, WIRIS OS, IP66 backside cap, Calibration certificate, Micro SD card, Micro HDMI cable, 3 connectors (1x power supply, 2x AUX), power supply and AUX 2-pin wire cable (2 meters), USB Mass storage cable, Software ThermoLab FREE license, Ethernet SDK library and Data SDK library, My.Workswell card, Hard transport case