COMPONENT CATALOGUE / 2026

Thermal vision. Clear integration.

Thermal modules, infrared optics and visible imaging components for equipment manufacturers and system integrators.



Product rendering.

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Configuration coordination / Sample confirmation / Order follow-up

THERMAL IMAGING MODULE

MINI 640-2

A compact core for thermal observation.



A 640 × 512 uncooled LWIR observation module with 12 µm pixels, a listed 60 Hz detector frame rate, CVBS and USB 2.0 video output.

640 × 512
Resolution

12 µm
Pixel pitch

60 Hz
Detector frame rate

21 × 21 mm
Core footprint

Compact integration

A 21 × 21 × 10.3 mm core envelope and 9 g core weight, excluding the lens. Confirm the complete assembly dimensions for your design.

Video and control

CVBS and USB 2.0 video output, with UART, I^2C and USB 2.0 communication options. Request the interface details for your configuration.

Lens configuration

The listed 9.1 mm F0.8 option can be discussed alongside field of view, working distance and mechanical requirements.

TECHNICAL REFERENCE

MINI 640-2 / specifications

DETECTOR & IMAGE

Detector	VOx uncooled infrared FPA
Resolution	640 × 512 pixels
Pixel pitch	12 μm
Spectral band	8-14 μm
Detector frame rate	60 Hz
NETD	≤ 40 mK at 25°C, F/1.0, 25 Hz

INTERFACES & POWER

Video output	CVBS + USB 2.0
Communication	UART / I^2C / USB 2.0
Power supply	5 V ±5%
Typical power consumption	≤ 650 mW, USB output at 25°C

MECHANICAL & ENVIRONMENT

Core dimensions	21 × 21 × 10.3 mm, excluding lens
Core weight	9 g, excluding lens
Operating ambient temperature	-40°C to +80°C

Specifications describe the listed configuration and stated conditions. Confirm the final datasheet, interface details and approved sample before design-in or ordering.

This catalogue lists an observation module. It does not output calibrated temperature data.

THERMAL IMAGING MODULE

MINI 640-2 Radiometric

Thermal image and temperature data on one cable.



A 640 × 512 uncooled VOx module with calibrated temperature measurement in two ranges from -20°C to 650°C, typical accuracy of ±2°C or ±2%, and image, temperature data and control over USB Type-C.

640 × 512
Resolution

-20°C to 650°C
Measurement range

±2°C or ±2%
Typical accuracy

USB Type-C
Image + temperature data

Two measurement ranges

-20°C to 150°C in high-quality mode and 100°C to 650°C in wide-range mode, with typical accuracy of ±2°C or ±2%.

One USB Type-C cable

Thermal image, temperature data and control run over one USB Type-C connection. On a Windows PC it appears as a USB camera, with no driver to install; temperature display and readout are done through TSDK, our SDK for this module.

Shutterless as standard

Shutterless non-uniformity correction is standard. Shutter correction is also listed.

TECHNICAL REFERENCE

MINI 640-2 Radiometric / specifications

DETECTOR & IMAGE

Detector	VOx uncooled infrared FPA
Resolution	640 × 512 pixels
Pixel pitch	12 µm
Spectral band	8-14 µm
Detector frame rate	30 Hz
NETD	≤ 40 mK at 25°C, F/1.0, 25 Hz
Thermal time constant	< 12 ms
Non-uniformity correction	Shutter correction / shutterless algorithm
Polarity / palettes	White hot, black hot and pseudo-colour palettes
Digital zoom	1.0-8.0× continuous, 0.1 steps

TEMPERATURE MEASUREMENT

Measurement ranges	-20°C to 150°C (high-quality mode); 100°C to 650°C (wide-range mode)
Accuracy	±2°C or ±2% (typical)
Ambient temperature for measurement	-10°C to +70°C

LENS

Fitted lens	9.1 mm F1.1, fixed focus
Field of view	48.7° × 38.6°
IFOV	1.3 mrad
Lens weight	10.5 g ±5%
Other listed lenses	13.5 mm F1.0 (31.9° × 25.7°); 18 mm F1.1 (24.2° × 19.5°)

TECHNICAL REFERENCE

MINI 640-2 Radiometric / specifications

INTERFACES & POWER

Interface versions	USB Type-C, MIPI (2-lane) or DVP, all with temperature data
Module interfaces	DVP / USB 2.0 / MIPI digital video
Communication	UART / I^2C / USB 2.0
Power supply	5 V
Typical power consumption	< 0.7 W, USB output at 25°C

MECHANICAL & ENVIRONMENT

Core dimensions	21 × 21 × 10.3 mm, excluding lens
Core weight	< 8.6 g, excluding lens
Operating temperature	-40°C to +80°C (imaging); -10°C to +70°C (measurement)
Storage temperature	-50°C to +85°C
Humidity	5%-95%, non-condensing
Vibration	6.06 g random, all axes
Shock	80 g, 4 ms, saw-tooth, 3 axes, 6 directions

Specifications are supplier document values measured under laboratory conditions. Confirm the final datasheet, interface details and approved sample before design-in or ordering.

THERMAL IMAGING MODULE

MINI 384-2

A 384 × 288 core for compact thermal designs.



A 384 × 288 uncooled VOx LWIR module with 12 µm pixels, a listed 60 Hz frame rate, CVBS and USB output and a DC 5-20 V input in a 21 × 21 mm footprint.

384 × 288
Resolution

12 µm
Pixel pitch

60 Hz
Frame rate

≤ 40 mK
NETD

Shutter or shutterless correction

Non-uniformity correction is listed by shutter or by a shutterless algorithm. Confirm the method for your configuration.

Image controls on board

0-100 brightness and contrast steps, 1.0-8.0× continuous digital zoom in 0.1 steps, and up-down, left-right or diagonal image flip.

Three lens options

Listed F1.0 lenses of 4.3 mm, 6.8 mm and 9.1 mm. Discuss field of view and working distance for your scene.

TECHNICAL REFERENCE

MINI 384-2 / specifications

DETECTOR & IMAGE

Detector	VOx uncooled infrared FPA
Resolution	384 × 288 pixels
Pixel pitch	12 µm
Spectral band	8-14 µm
Frame rate	60 Hz
NETD	≤ 40 mK at 25°C, F/1.0, 25 Hz
Thermal time constant	< 12 ms

IMAGE PROCESSING

Non-uniformity correction	Shutter correction / shutterless algorithm
Brightness / contrast	0-100 steps
Polarity / palettes	White hot, black hot and pseudo-colour palettes; CVBS output supports white hot / black hot only
Digital zoom	1.0-8.0× continuous, 0.1 steps
Image flip	Up-down / left-right / diagonal
Lens options	F1.0, 4.3 mm / 6.8 mm / 9.1 mm

INTERFACES & POWER

Analog video	PAL / NTSC
Video interface	CVBS and USB
Power input	DC 5-20 V
Connector pinout	1 DC 12 V · 2 GND · 3 CVBS · 4 TX · 5 RX

MECHANICAL & ENVIRONMENT

Core footprint	21 × 21 mm
Operating temperature	-40°C to +80°C
Storage temperature	-50°C to +80°C
Humidity	5%-95%, non-condensing
Vibration	6.06 g random, all axes
Shock	80 g, 4 ms, saw-tooth, 3 axes, 6 directions

Specifications follow the listed MINI-series parameter sheet. Confirm the final datasheet, lens, interface details and approved sample before design-in or ordering.

THERMAL IMAGING MODULE

MINI 256-2

The entry point to LWIR thermal imaging.



A 256 × 192 uncooled VOx LWIR module with 12 µm pixels, a listed 50 Hz frame rate, CVBS and USB output, a DC 5-20 V input and a listed 22.8 g weight.

256 × 192
Resolution

12 µm
Pixel pitch

50 Hz
Frame rate

22.8 g
Weight

Shutter or shutterless correction

Non-uniformity correction is listed by shutter or by a shutterless algorithm. Confirm the method for your configuration.

Image controls on board

0-100 brightness and contrast steps, 1.0-8.0× continuous digital zoom in 0.1 steps, and up-down, left-right or diagonal image flip.

Three lens options

Listed F1.0 lenses of 4.3 mm, 6.8 mm and 9.1 mm. Discuss field of view and working distance for your scene.

TECHNICAL REFERENCE

MINI 256-2 / specifications

DETECTOR & IMAGE

Detector	VOx uncooled infrared FPA
Resolution	256 × 192 pixels
Pixel pitch	12 µm
Spectral band	8-14 µm
Frame rate	50 Hz
NETD	≤ 40 mK at 25°C, F/1.0, 25 Hz
Thermal time constant	< 12 ms

IMAGE PROCESSING

Non-uniformity correction	Shutter correction / shutterless algorithm
Brightness / contrast	0-100 steps
Polarity / palettes	White hot, black hot and pseudo-colour palettes; CVBS output supports white hot / black hot only
Digital zoom	1.0-8.0× continuous, 0.1 steps
Image flip	Up-down / left-right / diagonal
Lens options	F1.0, 4.3 mm / 6.8 mm / 9.1 mm

INTERFACES & POWER

Analog video	PAL / NTSC
Video interface	CVBS and USB
Power input	DC 5-20 V
Connector pinout	1 DC 12 V · 2 GND · 3 CVBS · 4 TX · 5 RX
Analog output power	≈ 0.65 W at DC 12 V, 25°C

MECHANICAL & ENVIRONMENT

Core footprint	21 × 21 mm
Weight	22.8 g
Operating temperature	-40°C to +80°C
Storage temperature	-50°C to +80°C
Humidity	5%-95%, non-condensing
Vibration	6.06 g random, all axes
Shock	80 g, 4 ms, saw-tooth, 3 axes, 6 directions

Specifications follow the listed MINI-series parameter sheet. Confirm the final datasheet, lens, interface details and approved sample before design-in or ordering.

FPV THERMAL CAMERA

FPV Thermal 256 / 384 / 640

Three resolutions. One compact 20 mm body.



A compact VOx thermal camera for civilian UAV and small-platform imaging, offered in 256 × 192, 384 × 288 and 640 × 512 versions with CVBS PAL output and a 5-16 V supply.

640 × 512
Highest resolution

50 FPS
384 and 640 versions

40 mK
NETD

20 × 20 mm
Body, excluding lens

Choose the resolution

256 × 192 at 25 FPS, 384 × 288 at 50 FPS or 640 × 512 at 50 FPS. Match the version to scene detail, platform and budget.

Four colour modes

White hot, black hot, fusion and iron red on the analog CVBS output.

Built for small platforms

A 20 × 20 mm body, excluding lens, a 5-16 V supply and a listed -40°C to 80°C operating range.

TECHNICAL REFERENCE

FPV Thermal 256 / 384 / 640 / specifications

VERSIONS

256 version	256 × 192, 25 FPS
384 version	384 × 288, 50 FPS
640 version	640 × 512, 50 FPS
Lens options	4 mm / 6.8 mm / 9.7 mm listed for the 256 version; 9.7 mm listed for the 384 version

DETECTOR & IMAGE

Detector	VOx uncooled infrared FPA
Pixel pitch	12 µm
NETD	40 mK
Spectral band	8-14 µm
Colour modes	White hot, black hot, fusion, iron red

VIDEO & POWER

Output	CVBS
Analog format	PAL
Supply voltage	5-16 V

MECHANICAL & ENVIRONMENT

Body size	20 × 20 mm, excluding lens
Operating temperature	-40°C to 80°C
Storage temperature	-45°C to 85°C

Values other than resolution and frame rate are listed once for the series; confirm them for the selected version.

LWIR LENS CONFIGURATION

9.1 mm F0.8



A 9.1 mm F0.8 lens configuration listed for the MINI 640-2, with a 48.74° × 39.01° field of view. Discuss the complete module and lens assembly for your project.

Shown as part of the MINI 640-2 assembly. Lens supply scope is agreed in the quotation.

OPTICS

Focal length	9.1 mm
Aperture	F0.8
Field of view	48.74° × 39.01° on the listed MINI 640-2 configuration
IFOV	1.33 mrad
Listed focus range	0.3 m to infinity
Depth of field (fixed focus)	1.5 m to infinity; distinct from focusing range

ASSEMBLY

Lens + flange weight	13 g ±1 g, lens + flange
Listed platform	MINI 640-2
Supply scope	Confirm module, lens and included items in the quotation

This is a lens configuration option. Field of view and fit depend on the selected detector, optics and mechanical assembly. Confirm the configuration before ordering.

VISIBLE-LIGHT CAMERA MODULE

DL-W5010



A visible-light module combining a 3.0 mm lens, a 125° field of view and configurable PAL / NTSC video output in a 19 × 19 mm board footprint.

DL-W5010 low-light FPV camera.

IMAGE & OPTICS

Sensor format	1/1.8-inch
Resolution	1500 TVL
Lens	3.0 mm
Field of view	125°
Minimum illumination	0.00001 lux (listed)
Dynamic range	84 dB; WDR > 100 dB

OUTPUT & INTEGRATION

Video output	CVBS, PAL / NTSC
Image processing	3D DNR, OSD control
Power input	DC 5-20 V
Board footprint	19 × 19 mm
Listed supply current	Approx. 200 mA at 5 V; 85 mA at 12 V

Values from the supplied DL-W5010 product manual.

VISIBLE-LIGHT CAMERA MODULE

1.2MP CVBS Camera

Colour by day. Black-and-white by night.



A compact analog camera with a 1.2 MP CIS sensor (1288 × 968 total pixels), 1280H / 800 TVL output, 0.01 lux minimum illumination and a DC 4.5-30 V input.

800 TVL
Output resolution

0.01 lux
Minimum illumination

≥ 46 dB
Signal-to-noise ratio

0.95 W
Power consumption

Day and night

Automatic or external day/night switching, 2D digital noise reduction and digital WDR.

Analog video

CVBS composite output, 1 Vp-p at 75 Ω, in PAL or NTSC.

Wide supply range

A DC 4.5-30 V input with a listed 0.95 W ±10% power consumption.

TECHNICAL REFERENCE

1.2MP CVBS Camera / specifications

IMAGE

Image sensor	1.2 MP CIS
Total pixels	1288 (H) × 968 (V)
Output resolution	1280H / 800 TVL
Scanning	Interlaced
Signal-to-noise ratio	≥ 46 dB (AGC off)
Minimum illumination	0.01 lux at F2.0, AGC on

FUNCTIONS

Day / night	Auto / external control
Noise reduction	2D DNR
Wide dynamic range	Digital WDR
Iris	Auto / manual

VIDEO & POWER

Video output	CVBS, 1 Vp-p composite, 75 Ω
Video standard	PAL / NTSC
Power supply	DC 4.5-30 V
Power consumption	0.95 W ±10%

ENVIRONMENT

Operating	-30°C to +65°C, humidity < 80%
Storage	-40°C to +85°C

Specifications follow the listed parameter sheet. Confirm lens, housing colour, connector and the approved sample before ordering.

FROM EVALUATION TO ORDERING

Start with your system requirements.

Send the details below. We coordinate the supplier response, clarify the sample scope and follow up on the open questions.

Application	Target, environment, working distance and required output.
Optics & host	Field of view, lens, video input, control link and power supply.
Mechanical fit	Complete assembly envelope, connectors, mounting and cable space.
Sample scope	Model, quantity, included hardware and requested documents.
Commercial brief	Destination, expected volume, evaluation timing and delivery terms.

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Reference: MINI 640-2 Product Manual V1.0 (2025-09-19), the radiometric module series product manual V1.1 (2025-12-17), the supplied DL-W5010 product sheet and the supplied parameter sheets for the MINI 384-2, MINI 256-2, FPV thermal camera and 1.2MP CVBS camera. Specifications retain stated conditions; request the current approved documents for the selected configuration.