



TarisIR® mini

When Size Matters!

**640
x
480**
Detector

Detector Format

Uncooled microbolometer FPA detector;
12 µm pitch

**640
x
480**
50 Hz

IR-Frame Rate

Analysis of extreme temperature changes
and gradients in full frame

**±2
%**

Measurement Accuracy

Highly accurate and repeatable
measurements

**≥ 20
mK**

Thermal Resolution

Precise detection of smallest
temperature differences

GigE

GigE Interface

For loss-free real-time data transmission
and analysis

Case

Rugged Light Metal Housing

Easy and economical installation

Designed for universal use, the compact camera TarisIR® mini with the corresponding IRBIS® software from InfraTec enables entry-level access to stationary thermography at an excellent price-performance ratio. The radiometrically calibrated infrared camera is based on an uncooled microbolometer FPA detector of the latest generation with (640 × 480) IR pixels and a pixel pitch of only 12 µm. In combination with the high thermal resolution of 20 mK, the camera provides unprecedented image quality in this camera segment with exceptionally sharp detail.

The TarisIR® mini is designed for uncompromising continuous operation. It provides reliable thermographic real-time image data that can be operated in any position with a full-frame rate of up to 50 Hz. The camera measures in the long-wave atmospheric window of (8 ... 14) µm, making it well suited for monitoring applications in outdoor areas. Algorithms specially developed for this detector technology in combination with a very comprehensive and sophisticated calibration process ensure precise results with a measurement accuracy of 2 %, even under difficult measurement conditions.

Technical Specifications

Spectral range	(8 ... 14) μm
Pitch	12 μm
Detector	Uncooled microbolometer Focal Plane Array detector
Detector format (IR pixels)	(640 $\times$ 480)
Temperature measuring range	(-40 ... 600) $^{\circ}\text{C}$
Measuring accuracy	$\pm 2 \text{ K}$ or $\pm 2 \text{ \%}$ **
Temperature resolution @ 30 $^{\circ}\text{C}$	0.02 K
Frame rate	50 Hz or < 9 Hz
Focus	Manual
Dynamic range	16 bit
Interfaces	GigE-Vision (RJ45), RS232
Trigger	2x IN / OUT
Tripod adapter	1/4" photo thread
Power supply	(9 ... 36) VDC or PoE
Power consumption	Approx. 2.2 W @12 V, 2.7 W @PoE
Storage and operation temperature	(-40 ... 70) $^{\circ}\text{C}$, (-25 ... 50) $^{\circ}\text{C}$
Humidity (operation and storage)	Relative humidity (10 ... 95) %, not condensing
Housing, Protection degree	Light metal housing, IP40, IP67 (lens frontside)
Dimensions; weight (without lens)	OEM module: (50 $\times$ 30 $\times$ 30) mm; 66 g Camera: (50 $\times$ 55 $\times$ 55) mm; 220 g
Further functions	In-camera emissivity correction, color chart, 3 ROI, 8 Isotherms, 4 user configurations (plus a factory setting)
Analysis and evaluation software	IRBIS® 3, IRBIS® 3 view, IRBIS® 3 plus*, IRBIS® 3 professional*, IRBIS® 3 control*, IRBIS® 3 online*, IRBIS® 3 process*, IRBIS® 3 active*, IRBIS® 3 mosaic*, IRBIS® 3 vision* SDK V4* (LabVIEW*, MATLAB*)

* Depending on model
** In selected measurement ranges

The extremely small and robust light metal housing and the lightweight design of the camera module enable simple integration. In system environments with installation situations with limited space, high dynamic loads and adverse environmental conditions, small size and lightweight design are key – and the TarisIR® mini offers both! Depending on the application, the module can be combined with different lenses and thus optimally configured to suit the measuring task. The IP67 protection degree on the lens frontside facilitates integration even in adverse application conditions.



Lenses	Focal length (mm)	Focusing range / with close focus (mm)	FOV ($^{\circ}$)	IFOV (mrad)
Ultra-wide-angle lens	4.9	(150 ... ∞)	(95 $\times$ 70)	2.45
Wide-angle lens	6.2	(350 ... ∞) / (175 ... ∞)	(75 $\times$ 55)	1.94
Wide-angle lens	9.2	(500 ... ∞) / (125 ... ∞)	(50 $\times$ 37)	1.30
Standard lens	13.6	(500... ∞) / (125 ... ∞)	(32 $\times$ 24)	0.88
Telephoto lens	25	(1,000 ... ∞) / (250 ... ∞)	(17.6 $\times$ 13.2)	0.48



TarisIR® mini for Integration Applications

The radiometric compact camera is characterised by very low power consumption and can be conveniently supplied with power via Ethernet (PoE). Thanks to the individual configurability and extremely small design TarisIR® mini is predestined for use in OEM solutions. It can be easily integrated into machines, systems and devices for monitoring and measuring tasks in process optimisation and quality assurance. The GenICam compatibility and included Software Development Kit (SDK) make this significantly easier.

The modern interface concept of the TarisIR® mini enables convenient camera control and data acquisition. Recordings can be saved and/or processed on a PC in real time at frame rates of up to 50 Hz via the GigE interface.

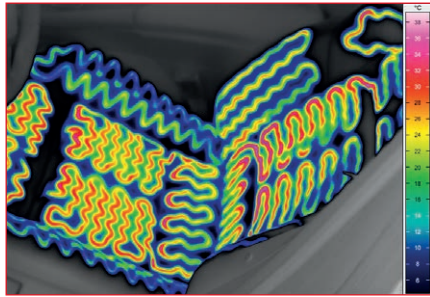
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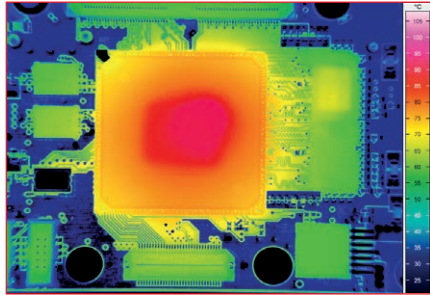
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Seat heater



Assembled circuit board



VarioCAM® HD head

Thermographic Solution for Use in Industry and Research

**1,024
x
768**
Detector

Detector Format

Efficient measurement of smallest details on large-scale objects

3,1
MegaPixel

MicroScan

IR pixels by genuine camera hardware

**≥ 20
mK**

Thermal Resolution

Precise detection of smallest temperature differences

240 Hz

IR-Frame Rate

Analysis of extreme temperature changes and gradients

GigE

GigE Vision Compatible

Standard interface for easy integration into existing process environment

IP67

Protection Degree

Camera operation under harsh environmental conditions

The **thermographic high-resolution system VarioCAM® HD head** was conceived for demanding stationary monitoring and measurement tasks. The VarioCAM® HD head produces **brilliant high-quality thermographic images with 16 bits**, which allows unprecedented efficiency, especially when capturing smallest details on large object surfaces. Because of the maximum frame rate of 240 Hz, **very quick temperature changes can be recognised reliably**.

The **various sets of equipment** make it easy to adjust the setup to the respective measurement task: The application range includes automatic threshold recognition and signalling, digital real-time image acquisition via GigE, online processing of thermographic data and much more. The industrial light metal housing (IP67) allows easy and inexpensive **installation in tough process environments**.

Application examples:

- High-resolution thermography in research and development
- Stationary microthermography
- Security engineering and early fire detection
- Monitoring and controlling of fast-running processes

Technical Specifications

Spectral range	(7.5 ... 14) µm
Detector	Uncooled Microbolometer Focal Plane Array
Detector format (IR pixels)	(1,024 × 768), with built-in opto-mechanical high-precision scan unit (2,048 × 1,536)*
Temperature measuring range	(-40 ... 2,000) °C*
Measurement accuracy	± 1 °C or ± 1 %*
Temperature resolution @ 30 °C	Up to 0.02 K*
Frame rate	Full-frame: 30 Hz (1,024 × 768), sub-frame formats*: 60 Hz (640 × 480) / 120 Hz (384 × 288) / 240 Hz (1,024 × 96)
Storage media	SDHC Card, external control computer for camera control and data acquisition*
Image storage	Time-, trigger- and temperature controlled recording of 16 bit single frames or image sequences with timestamp, video streaming in MPEG format
Realtime storage*	Computer-aided storage of radiometric sequences by GigE interface with up to 240 Hz
Lens mount	Bayonet to comfortably switch objectives, automatic objective detection and data transfer; screw-on interface*
Focus	Motor-driven, automatic or manual, accurately adjustable
Zoom	Up to 32× digital, stepless
Dynamic range	16 bit
Interfaces; Trigger*	GigE Vision*, DVI-D (HDMI), C-Video, RS232, USB 2.0, WLAN*; 2 × digital I/O, 2 × analogue I/O
Tripod adapter	1/4" photo thread
Power supply	AC adapter, (12 ... 24) V DC, PoE*
Storage and operation temperature	(-40 ... 70) °C, (-25 ... 55) °C
Protection degree	IP54, IEC 60529, IP67 with screw-on interface*
Impact strength / vibration resistance in operation	25 G (IEC 68 - 2 - 29), 2 G (IEC 68 - 2 - 6)
Dimensions; weight	(221 × 90 × 94) mm; 1.15 kg (basic configuration with standard lens)
Further functions	Camera internal emissivity correction, shutter free operation, use of various colour sets, contrast enhancement, user profile, language selection
Analysis and evaluation software*	IRBIS® 3, IRBIS® 3 view, IRBIS® 3 plus*, IRBIS® 3 professional*, IRBIS® 3 remote HD, IRBIS® 3 control*, IRBIS® 3 online*, IRBIS® 3 process*, IRBIS® 3 active*, IRBIS® 3 mosaic*, IRBIS® 3 vision*, FORNAX 2*, FORNAX 2 plus*

* Depending on model

Detector format (IR pixels)	(1,024 × 768)	
Lens	Focal length (mm)	FOV (°)
Super wide-angle lens	7.5	(98.5 × 82.1)
Wide-angle lens	15	(60.3 × 47.0)
Standard lens	30	(32.4 × 24.6)
Telephoto lens	60	(16.5 × 12.4)
Telephoto lens	120	(8.3 × 6.2)

Macro and microscopic lenses	Minimum object distance (mm)	Pixel size (µm)
Close-Up 0.2× for 30 mm	137	83
Close-Up 0.5× for 30 mm	47	38
Close-Up 0.5× for 60 mm	100	35
Microscopic lens M=1.0×	50	17



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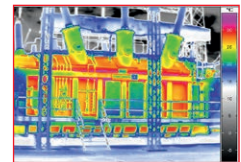
GRID-DETECT – Monitoring System

Thermography-based IR Substation Monitoring

System Description

The IR Substation Monitoring System GRID-DETECT uses infrared (IR) technology to monitor the temperature of substation components to secure the reliability of substation. Thermography cameras in combination with visible cameras and pan-tilt head observe the substation area and thus allow predictive maintenance.

The temperature measurements are made fully automatically without the need of any manual interaction. The system GRID-DETECT automatically raises a warning and alarm if an adjustable temperature threshold is passed. This prevents dangerous substation component failures and saves the reliability of the entire substation. GRID-DETECT automatically tracks the temperature development of different substation elements. This allows reducing maintenance costs, failures and unplanned outage of substation. GRID-DETECT comes with highly reliable components in a flexible structure and thus, is easily adaptable to the different situations and operational modes in substations.



System Features

- Full automatic operation
- Reliable alarm release at defined pre- and main alarm limits
- Merging of IR and VIS image for better orientation
- Temperature trend recording and analysis
- Customized system alignment and adjustment
- Parameterization, supervision, operation, display, evaluation and playback in the GRID-DETECT software
- Decentralized monitoring of system status and measured values
- Recall of all recorded data for comparison and optimisation
- Easy to operate data presentation in the substation network
- Remote access from Master Control Center



Benefits of the System

- Complete automatic thermographic temperature screening of substation on 24/7 basis
- Early detection of equipment failures with maximum range and highest resolution (640 × 480) / (1,280 × 960) IR pixels
- Reduction of maintenance costs, failures and outage of substation
- Saves investments and long term operating ability of your substation
- Flexible structure for customized adaption to your operational modes

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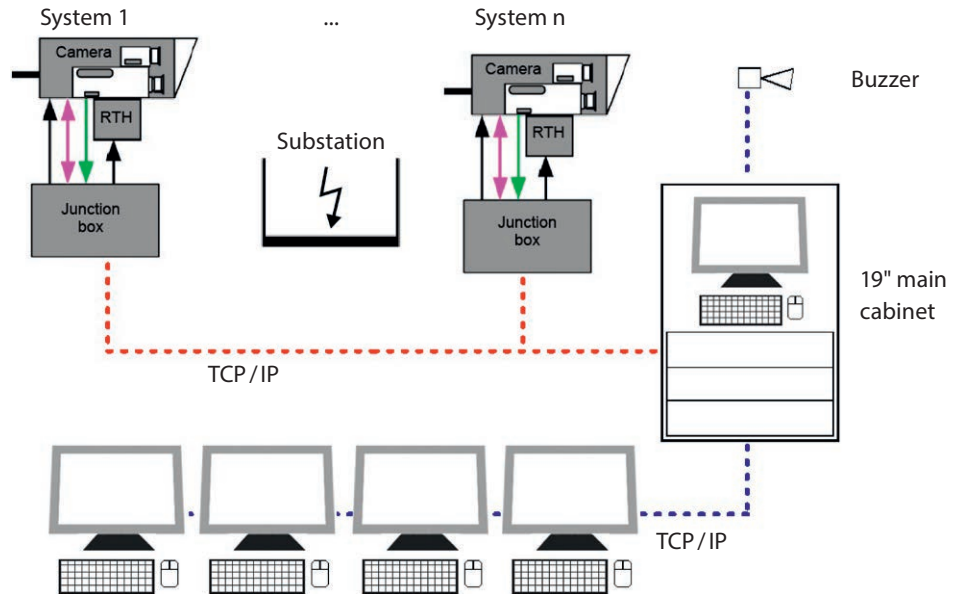
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GRID-DETECT – Monitoring System

Thermography-based IR Substation Monitoring

System Structure

IR cameras + VIS cameras built in protective housing on pan-tilt head with junction box



Parameterization, supervision, operation, display, evaluation and playback on standard PC at different sites and levels

Construction / Design

- Reliable 19"-industrial standard main cabinet
- Protective housing and pan-tilt head designed to withstand the harsh environmental conditions
- Infrared cameras VarioCAM® HD head and VarioCAM® HDx head with (640 × 480) / (1,280 × 960) IR pixels guarantee long-term exact and reliable temperature measurements
- Nearly maintenance-free, no wearing parts
- Decentralized installable components (IR cameras, VIS- cameras, PC, alarm unit), fiber optic cable for interference-free data transmission
- TCP/IP based flexible structure allows customized adaption to the specific substation situations
- Easy to use GRID-DETECT software allows flexible customization



Position	Temp	Unit	Objekt	Objekt	Objekt	Objekt	Objekt	Objekt	Objekt
1	10	°C	1	10	10	10	10	10	10
2	15	°C	2	15	15	15	15	15	15
3	20	°C	3	20	20	20	20	20	20
4	25	°C	4	25	25	25	25	25	25
5	30	°C	5	30	30	30	30	30	30
6	35	°C	6	35	35	35	35	35	35
7	40	°C	7	40	40	40	40	40	40
8	45	°C	8	45	45	45	45	45	45
9	50	°C	9	50	50	50	50	50	50
10	55	°C	10	55	55	55	55	55	55

