

ThermCAM-384

High Resolution LWIR
Ultra Compact Infrared
Camera for Non Contact
Temperature Measurement Solutions

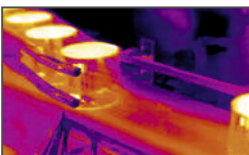


ThermCAM-384 is a versatile thermal camera which can be used for a wide range of temperature measurement applications. ThermCAM-384 with resolution of 384 x 288 pixels, provides optimum image resolution as well as thermal data transfer to PC via 100 Mbps Ethernet connectivity. With InfraVIEW Software, it can fit many industrial applications off-the-shelf. Whether in quality control, process monitoring or process automation ThermCAM-384 measures temperature of each pixels consistently and accurately.

Product Highlights

- ThermCAM-384 works at a long wavelength range from 8 - 14 μm .
- Various Lens options for area of measurement.
- Configurable storage and temperature video recording.
- Provide continuous thermal video in InfraVIEW Software in PC via an Ethernet connectivity.
- High shock and vibration tolerance for maintenance-free operation.
- Multiple ThermCAM-384 can be connected to a single InfraVIEW Software.

Typical Applications



Process Automation



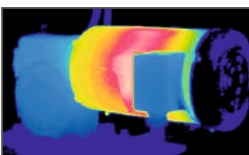
Electric Equipment Inspection



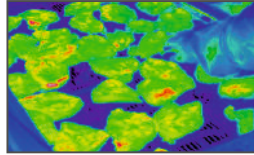
Process Control in Metallurgy



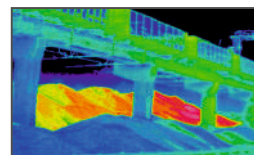
Ladle Monitoring



Critical Assets



Quality Management



Early Fire Detection



Building Thermography

Temperature Ranges

- -20°C - 120°C
 - 100°C - 1000°C
- } Switchable via Software

Detector

Uncooled FPA detector with 384 x 288 pixels resolution

Measurement Accuracy

$\pm 2\%$ of reading in $^{\circ}\text{C}$ or $^{\circ}\text{K}$

Software Features

- Different Types of ROI for localized temperature monitoring and measurement
- Histogram and Trend Chart of ROI.
- Configurable Audio/Visual Alarm.
- Configurable Alarm output to I/O module.

Output Interface

- Fast thermal data acquisition in real time via 100M-bit Ethernet.
- Digital and analog input/output modules

ThermCAM-384

Overview

The compact design of the ThermCAM-384 enables the integration of the camera into compact process applications, while the durable and robust housing guarantees reliability even in harshest industrial environments. The ThermCAM-384 can be installed with an optional IP67 enclosure with air purge unit for additional protection in harsh industrial environments where ambient temperatures exceed ~60°C.

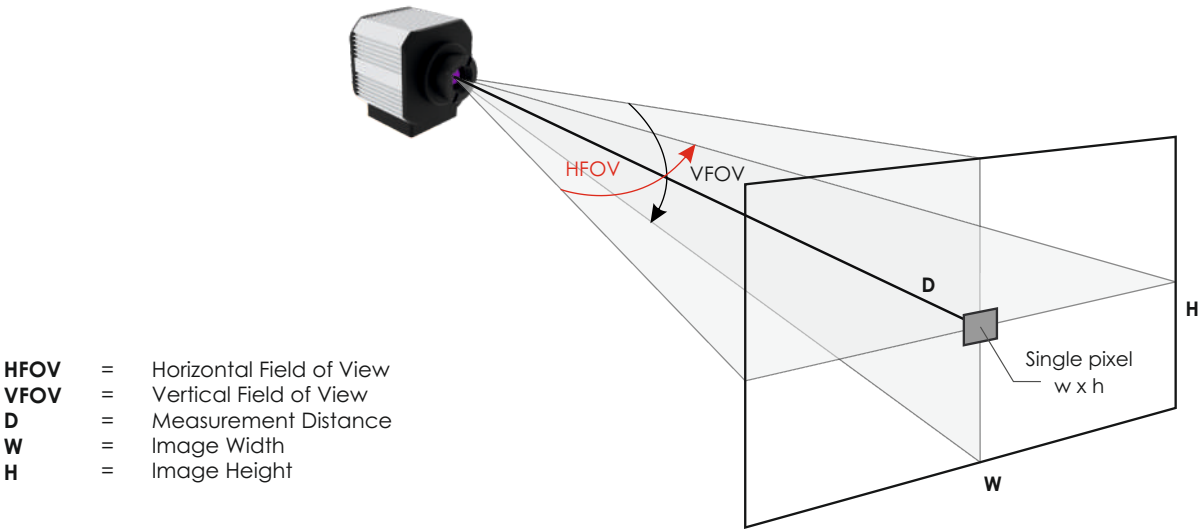
The built-in 100M-bit Ethernet allows the camera to be connected to the system for high speed data transmission to InfraVIEW software for further analysis.

Optics Variants

A wide range of lenses are available for the ThermCAM-384, making it suitable for most industrial applications. The table and picture show the correlation between the measurement distance, different optics, and the size of the measurement fields.

Measurement Field (HFOV x VFOV)	Distance of object	Width (m)	Height (m)	Pixel WxH (mm)
63° X 46° (FL=6.2 mm)	1	1.22	0.84	3.07
	5	6.12	4.24	15.34
	10	12.25	8.48	30.67
27.3° x 20.4° (FL=14 mm)	5	2.42	1.79	6.29
	10	4.85	3.59	12.57
	15	7.28	5.39	18.86
19.6° X 14.7° (FL=19 mm)	5	1.72	1.29	4.49
	10	3.45	2.58	8.98
	15	5.18	3.87	13.47
14.8° X 11.2° (FL=25 mm)	5	1.29	0.98	3.39
	10	2.59	1.96	6.79
	15	3.89	2.94	10.18
10.6° X 8.6° (FL=35 mm)	5	0.92	0.75	2.51
	10	1.85	1.5	5.02
	50	9.27	7.51	25.11
7.5° X 5.6° (FL=50 mm)	5	0.65	0.48	1.7
	10	1.31	0.97	3.41
	50	6.55	4.89	17.03

Note : Other lens options are also available as per application requirements.

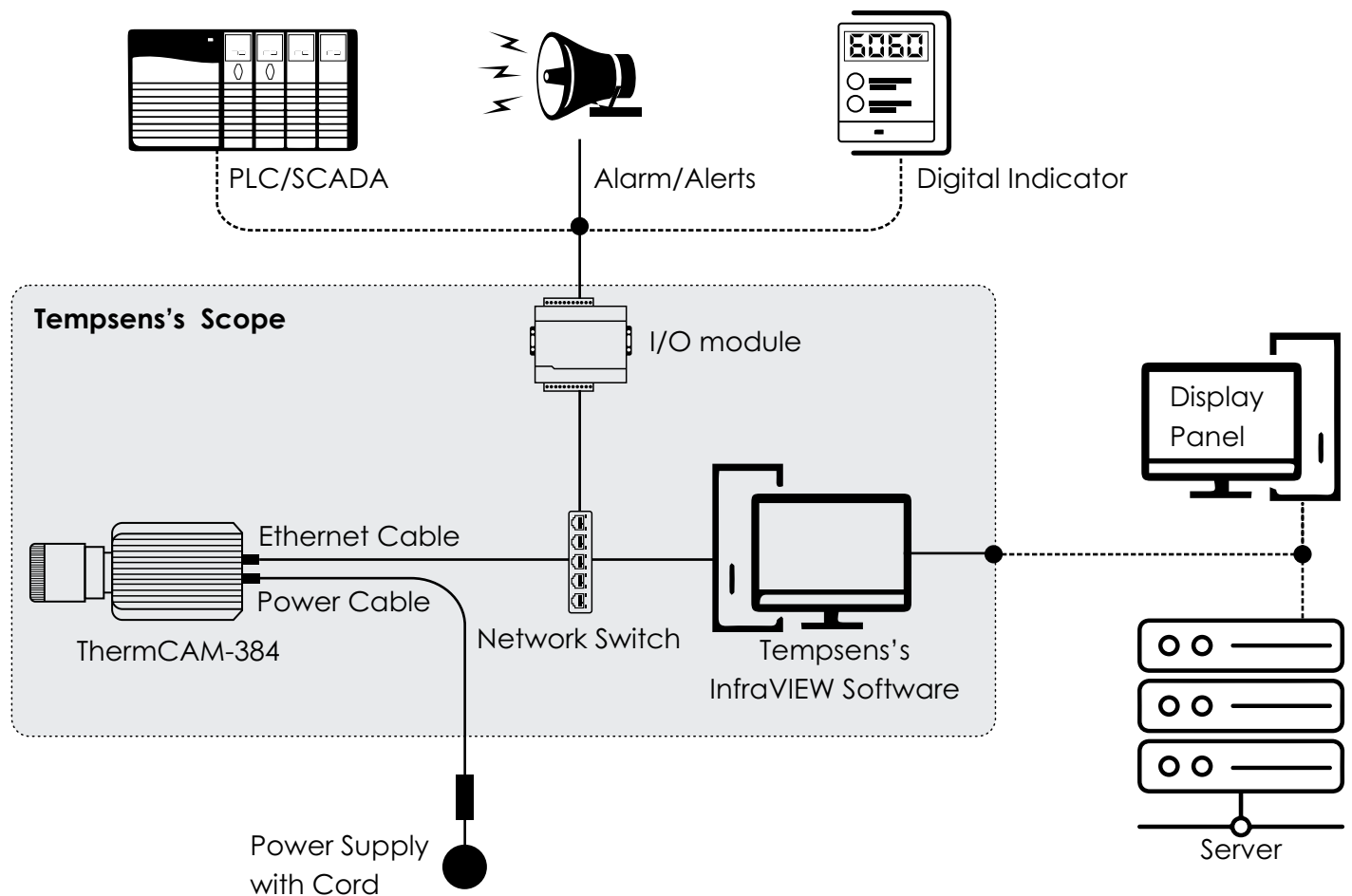


System Configuration

ThermCAM-384 Over Network

The system can be set up by connecting the camera directly to a dedicated computer using Ethernet connection which can be extended for remote access/intranet. Also camera can be paired with a network device (switch) which can be further connected with I/O module to get alarm/alerts, analog/digital output for digital indicator and PLC/SCADA systems.

ThermCAM-384 with Ethernet Configuration

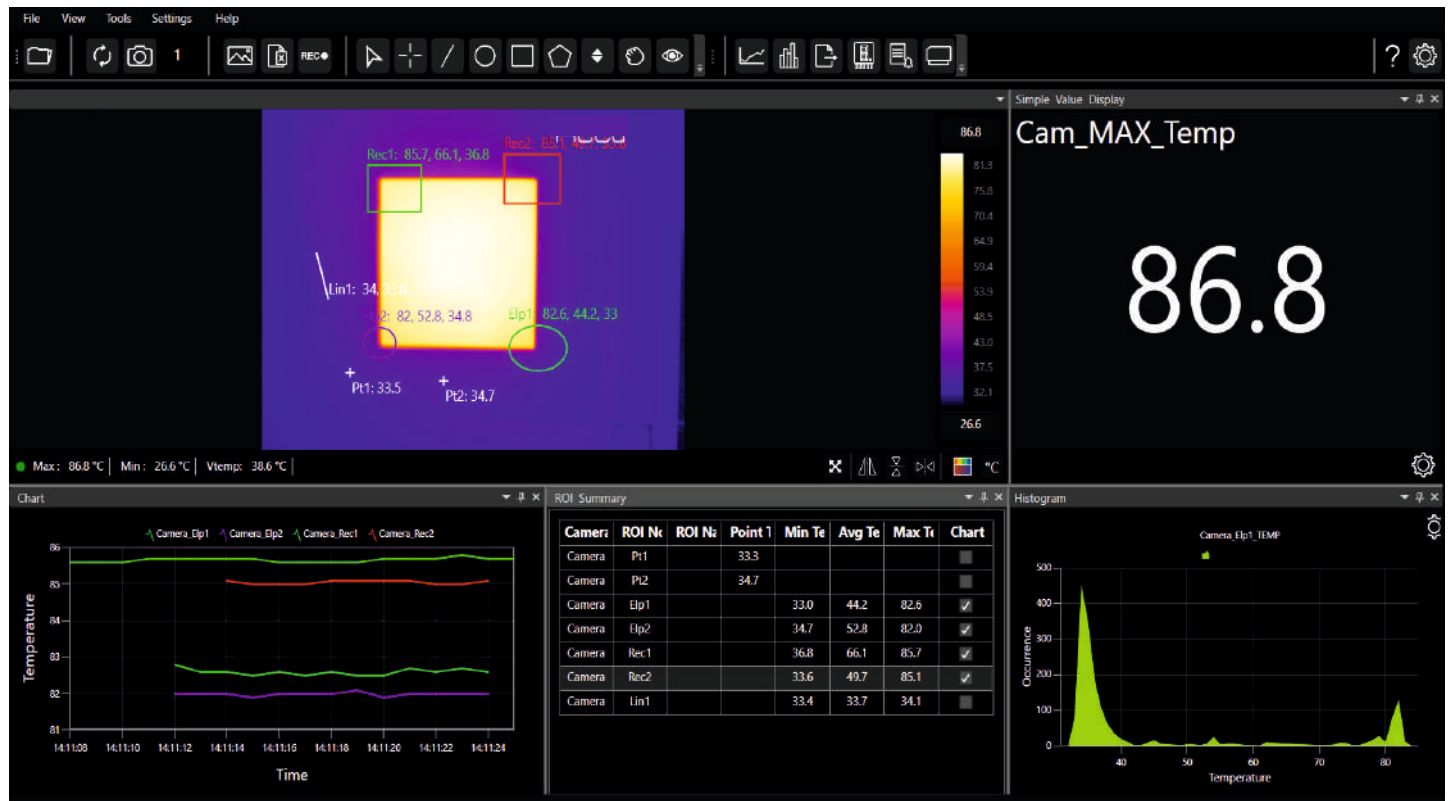


ThermCAM-384

Infraview Software

ThermCAM-384 comes with thermal image processing software InfraVIEW at the core of a thermal imaging system which is Windows based Software with many useful features.

Tempsens's InfraVIEW software allows you to stream thermal video on a PC, record thermal video, Draw ROI (Region Of Interest) in various shapes and sizes. It allows computed temperatures to be sent out via I/O card which in turn can be connected to PLCs.



Salient Feature List For Infraview Software

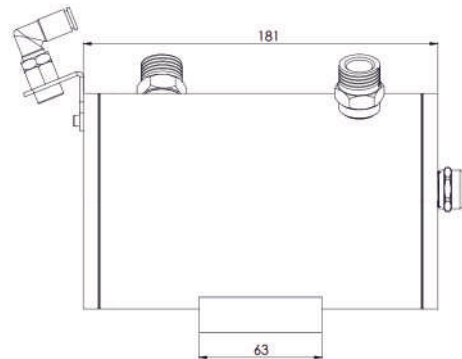
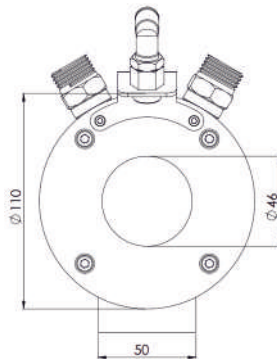
- Configurable emissivity
- Real-time display of thermal images
- Includes 9 different color palates
- Multiple types of ROI including point, line, and area with min./max./avg. temperature display
- Includes analysis tools like histogram and temperature trend chart for multiple ROI's.
- Alarm generation for entire or ROI based on minimum, maximum or average temperature
- Analog and digital output module
- Triggered capture based on alarm conditions
- Data export to text or Microsoft Excel (includes thermal image, ROI table summary/data, image data) or to text
- Analyze previously recorded images using RAW data
- Saving Thermal Video in MP4 format
- Optional SDK
- Additional software for Real Time Temperature dashboard, analysis and report generation.

Standard Accessories

- Ethernet Cable
- Power Cable
- Standard Infraview™ Software
- Lens
- SMPS

Optional Accessories

Water Cooling Jacket with Air Purge



I/O Module



I/O Module

The I/O module consist of digital input/digital output(relay output) and analog 4 - 20mA, which can be mounted on Din-rail. It provides analog and relay outputs with respect to temperature. These outputs can be customized for temperature indication, alarm generation or error reporting.

- All I/O are user settable for range and ROI selection
- I/O Channel parameters can be customized via software, as per requirement
- I/O works on Ethernet and provide with Din rail Mounting for Easy Installation

Workstation/Laptop (for Single Camera Only)



- Processor : Intel i7 8th Generation or Higher
- RAM : 8 GB
- HDD : 1 TB or Higher
- SSD : 256GB
- 2 Nos Gigabit Ethernet or USB 2.0 port
- Operating System : Windows 10Pro

Wall Mounting



Power Supply



Tripod



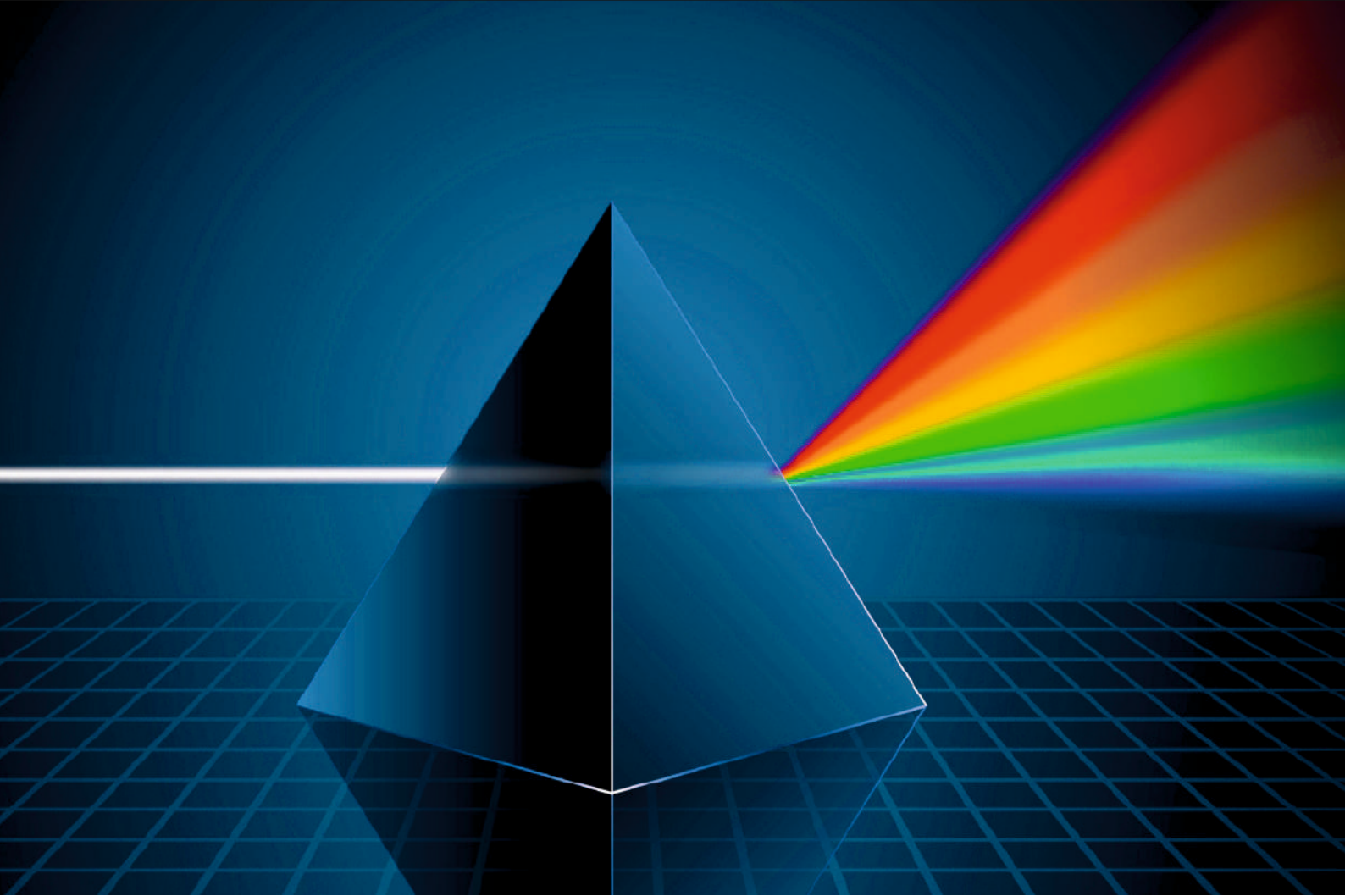
Network Devices



ThermCAM-384

Technical Data

Performance Specifications	
Temperature Range	-20°C to 120°C 100°C to 1000°C Switchable via Software
Optical Resolution	384 x 288 pixels
Detector	Uncooled FPA Detector
Spectral Range	8 to 14 µm
Pixel Pitch	17 µm
Frequency	Up to 30Hz
Sensitivity / NETD	<50mK@f1.0, 30Hz 300 K
Accuracy	±2°C or ±2% of reading in °C or °K
Emissivity	0.01 - 1.0 adjustable
Interface Specifications	
Video	100MBit/s Ethernet
Connection	Power Connector, RJ-45 Ethernet Connector
Video Format for Saving	MPEG-4
Image Format for Saving	BMP/JPEG
Optics	
Lens Type	Fixed / Motorized
Electrical Specifications	
Power Supply	12 to 24 V DC
Power Consumption	<4 Watt
Environmental / Mechanical Specifications	
Ambient Temperature	0°C - 60°C
Storage Temperature	-40°C - 70°C
Relative Humidity	≤95% non-condensing
Shock Resilience	25G
Vibration Resilience	2G
Weight	~400 gms
Protection Class	IP65
EMC	CE
Size	60 x 70 x 80 mm
Mounting	UNC 1/4"-20 , UNC 3/8"-16 Standard Mount
I/O Module Specifications	
Analog Output	4 Channel Analog Current Output (4 - 20mA)
Digital Input	2 Isolated Inputs
Digital Output	2 Relay Outputs
Power Supply	5 V DC
Cooling Jacket Specifications	
Inlet/Outlet (Cooling)	½" BSP Thread
Inlet For Air Purging	PU Pipe suitable for 8mm nozzle
Water Flow Rate	6-8 L/min
Air Pressure	Min. 3 bar (Moist Free)
Mounting	5 x M5 Thread
Protection Class	IP 67



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