Compact industrial-grade multi-pixel thermal camera

Terabee IND-Thermal-90 is one of the smallest industrial-grade multi-pixel thermal cameras on the market. Its large (90°) Field of View enables temperature monitoring of larger areas, whilst programmable thresholds can be set via Modbus to trigger temperature alarms. It can also count the number of hot/cold spots within its Field of View.

Key features

— Small, lightweight and easy to mount

— Advanced Thermopile technology enables the sensor to operate over a wide temperature range

— No need for frequent re-calibration

— Modbus RS485 interface

— NO/NC for event triggers, alarms, emergency stop etc

— Embedded intelligence (EDGE processing) enables simple data processing and local feedback loops that can eliminate the need for a PLC

— Thermal image outputs, enabled by onboard storage of raw temperature pixels on Modbus registers

Terabee, 90 Rue Henri Fabre, 01630,
St-Genis-Pouilly, France (5 km from Geneva Airport)

+33 7 50 15 16 64
terabee-sales@terabee.com
www.terabee.com

Technical specifications

Product code	TB-IND-T90
Performance	
Detection principle	Thermopile
Sensor resolution	32 x 32 pixels
Field of View (FOV)	90° x 90°
Frame rate	7 Hz
Measurable temperature range	-20 °C to 670 °C
Temperature accuracy[1]	±2 °C for targets below 100 °C
	±2% for targets above 100 °C
Thermal sensitivity	329 mK
(At 1 Hz and 25 °C ambient temperature)	
Electronics	
Supply voltage V_{DD}	12V DC to 24V DC
Typical current consumption	38 mA (at 12V DC)
(Without NO/NC load, 20°C ambient temperature)	21 mA (at 24V DC)
Initialization time	< 4 s
Interfaces	
Serial (temperature measurement and remote settings)	
Type	RS485 (half-duplex, 1.2 … 256 kbps), unprotected
Communication protocol	Modbus
Digital output (alarm)	
Type	Switching (NO/NC in PNP/NPN configuration), 0V - V_{DD}
Maximum output current	450 mA (at 24V DC), unfused
Output delay	< 200 ms
Visual notification (status, communication, error)	
Type	3 x LEDs (multi-color)
Mechanics	
Dimensions	95 mm x 57 mm x 27 mm
Weight	<100 g
Enclosure rating	IP65 [2]
Housing material	Main body: ABS
	Backplate: Aluminium
Type of connection	M12 A-coded male connector, 5-pin
Ambient operating temperature	-10°C to 65°C
(at V_{DD} = 24 VDC)	
Mounting	4 slots for M4 screws
Conformity	
Reference Standard	CE, RoHS, Vibration & Shock [2]

(1) Reference Application 2 (see below): central 4x4 pixels and 10 frames temporal moving average. Accuracy may also vary depending on distance, target emissivity, and ambient temperature.
(2) Refer to the conformity certificate in the User Manual for details.

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Operation and indicators

COMMUNICATION
1. M12 A-coded male connector, 5-pin
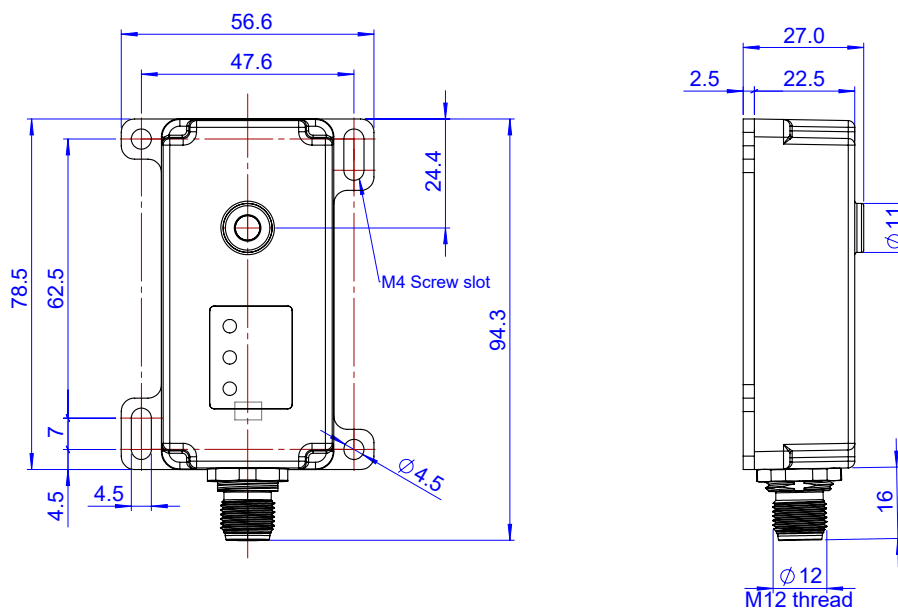
LED INDICATORS
1. STATUS: alarm / error status
2. COM: communication
3. PWR: power

Applications

- Heat monitoring and fire detection
- Energy efficiency monitoring
- Process and production control
- Predictive and Preventive maintenance

Dimensions

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Embedded Applications

	Application 1	Application 2	Application 3
Setup	Via RS485 (Modbus) or Graphical User Interface (GUI)		
Operation Sensor data	Available via RS485 (Modbus)		
Operation Switching output (NO/NC)	Temperature Threshold Alarm (triggered by min/max temperature over the available Field of View)	Threshold Alarm from the average over a Centered area (expandible to the available Field of View)	Counting and monitoring of Regions of Interest (ROI)
Application examples	Temperature control of continuous flow of extruded material Temperature monitoring of electrical cabinets	Automatic control of water spray when hot materials (e.g. bricks) pass on conveyor belts (in the centre of the Field of View)	Fire and explosion prevention

Connector pinout

M12 A-coded
male connector
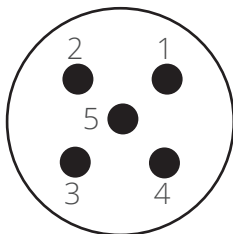
1	+V$_{DD}$	12V ... 24V DC power supply
2	GND	Ground (power supply and data)
3	NO/NC	Normally Open or Normally closed (PNP/NPN) connection
4	Tx/Rx+	RS485 differential line
5	Tx/Rx-	RS485 differential line

Have any questions? Contact us today!