Intelligent Video Monitoring Solutions for Harsh Environments

TCAM2000 THERMAL CAMERA MONITORING SYSTEM

FEATURES

- Engineered for operation in Electric Power substations
- Automated temperature monitoring of critical assets
- Monitor multiple temperature points/ assets
- Notification through SCADA or email
- Storage of temperature readings in system database

KEY BENEFITS

- Reliable operation in harsh environments with high levels of EMI, ESD, voltage surges and interrupts
- More reliable continuous temperature readings under all system load conditions
- Reduced downtime due to unplanned outages by detection of potential problems before failures occur
- Reduced monitoring requirements for operations personnel
- Temperature trending analysis allows input into condition based maintenance program

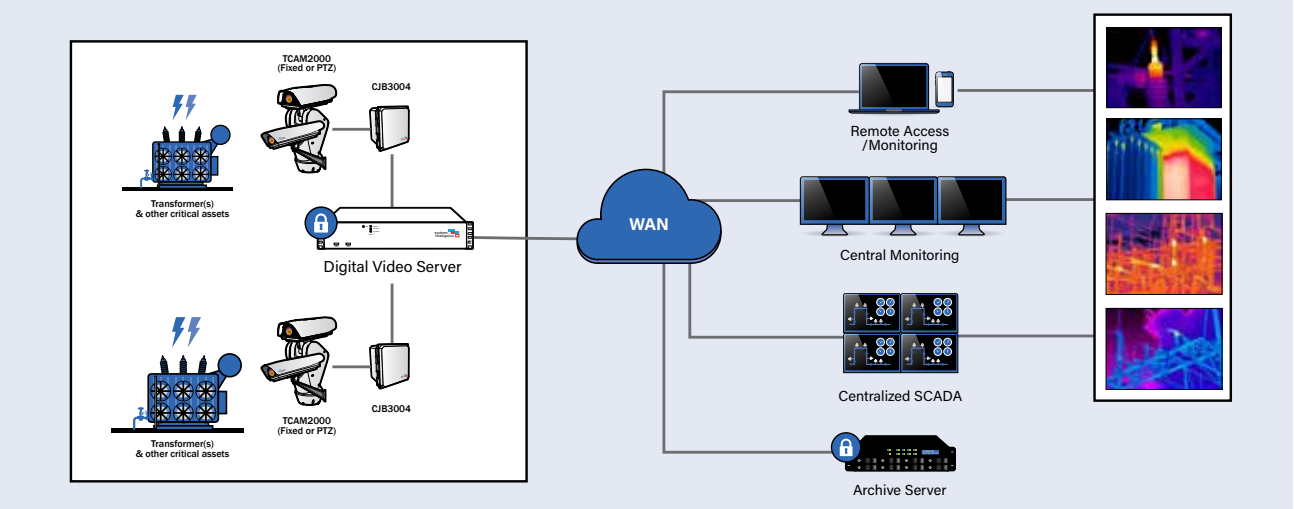
The risk of outages is increasing on the electric power grid due to its aging infrastructure and lack of automation systems that monitor the condition of critical equipment at substations and along the grid. Transformer fluid leaks or insulation breakdown cause overheating that is a warning of potential failures, but many utilities don't have automated thermal detection systems that can help reveal these problems.

Continuous thermal monitoring systems are able to anticipate, detect, and respond rapidly to problems, thereby reducing the chance of failures, outages and lost productivity. Detection of temperature increases in substation equipment with thermal monitoring cameras allows preventative maintenance operations before an unplanned outage occurs due to asset failure.

The Systems With Intelligence thermal monitoring solution includes a substation hardened digital video server (DVS) that digitally records video from multiple cameras and incorporates a suite of sophisticated video and thermal analytic algorithms for detection of anomalies. The DVS includes software tools for video monitoring and analysis, features flexible networking capabilities and provides automated alarm and event notification.

systems with intelligence

SUBSTATION MONITORING ARCHITECTURE



APPLICATIONS

The Systems With Intelligence thermal monitoring solution can be used to monitor and analyze the thermal signatures of the following substation components. Abnormal thermal signatures are precursors to potential equipment failures.

- Power transformers (oil levels, radiators and pump operation)
- Load tap changers
- Insulator bushings
- Standoff insulators
- Lightning arrestors
- Circuit breakers
- Mechanical disconnects
- Control cabinets
- Batteries

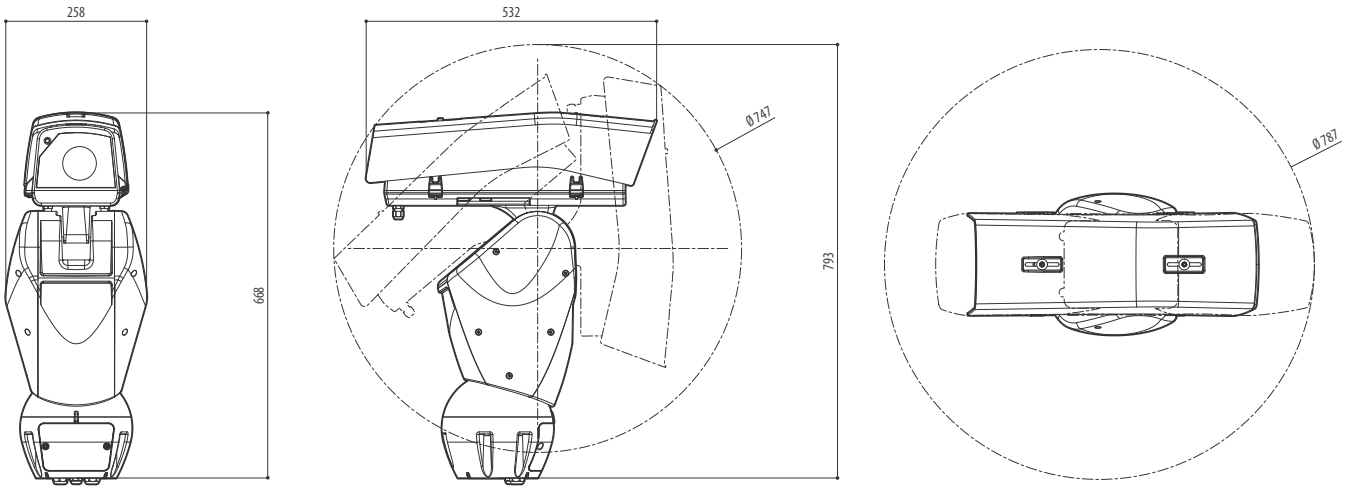
TECHNICAL SPECIFICATIONS

SPECIFICATIONS	
IMAGING PERFORMANCE	
Field of View, focal length	TL01/TS01 = 25° x 19°, 13mm, 324 x 256 pixels TL02/TS02 = 45° x 35°, 7.5mm, 324 x 256 pixels TL03/TS03 = 35° x 27°, 9mm, 324 x 256 pixels TL04/TS04 = 17° x 13°, 19mm, 324 x 256 pixels TL05/TS05 = 13° x 10°, 25mm, 324 x 256 pixels VL01/VS01 = 25° x 20°, 25mm, 640x512 pixels VL02/VS02 = 45° x 37°, 13mm, 640x512 pixels VL03/VS03 = 32° x 26°, 19mm, 640x512 pixels VL04/VS04 = 18° x 14°, 35mm, 640x512 pixels VL05/VS05 = 12.4° x 9.9°, 50mm, 640x512 pixels
Resolution	324 x 256 or 640 x 512 pixels
Detector Type	Uncooled VOx Microbolometer
Pixel Pitch	25µm
Scene Range (High Gain) Scene Range (Low Gain)	-25°C to 135°C -40°C to 550°C
Time to Image	<4.0secs
Video Compression	H.264

NETWORK	
Interface	Pan/Tilt Housing: 10/100TX, RJ45 Fixed Housing: 100FX, LC or 10/100TX, RJ45
Security	Password Protected
Protocols	IPv4/v6, DHCP, HTTP, UDP, RTP/RTSP, UPnP, NTP, ICMP
Software Interface	Web Server
THERMAL	
Spectral band	7.5 to 13.5 um
Sensitivity	0.1° C
Frame rate	FV0x = 30Hz, FS0x = 7.5Hz
ENVIRONMENTAL WITH PAN/TILT HOUSING	
Operating Temperature Range	–40° to 85°C
Encapsulation	IP66 (IEC 60529)
Wind Resistance	Operational: up to 160km/h Stationary: up to 210 km/h
Resistance to Salty Fog	EN50130-5, EN60068-2-52
Certifications	CE: EN60950-1, EN6095-22, EN61000-6-4, EN55022 Class A, EN50130-4

* The specification for this product may change without prior notice for product improvement.

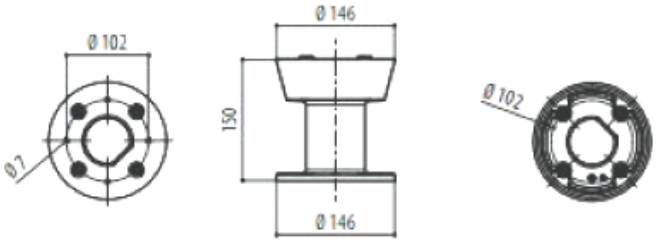
PAN/TILT HOUSING DIMENSIONS Unit: mm



MOUNTING OPTIONS Unit: mm

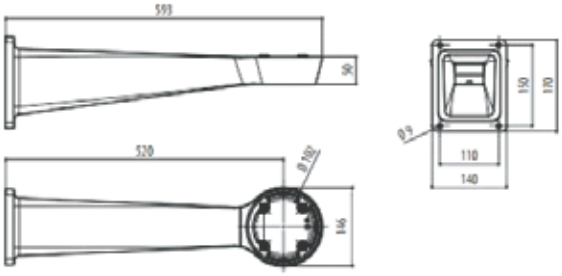
Parapet Bracket - Pan/Tilt, Option A04

- Made of die-cast aluminum
- Epoxypolyester power painting
- Internal cable management
- Unit Weight: 1.6kg (3.5lb)



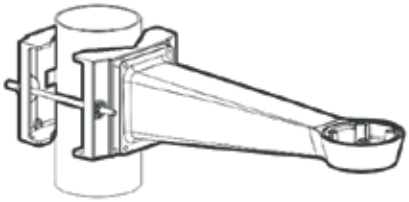
Wall Mount Bracket - Pan/Tilt, Option A08

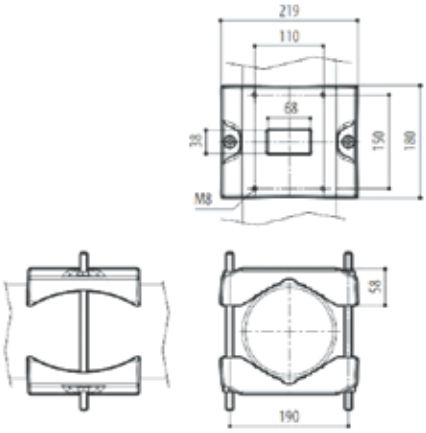
- Made of die-cast aluminum
- Epoxypolyester power painting
- Wall bracket with internal cable channel
- Unit Weight: 3.1kg (6.6lb)



Pole Mount Bracket with Arm - Pan/Tilt, Option A13

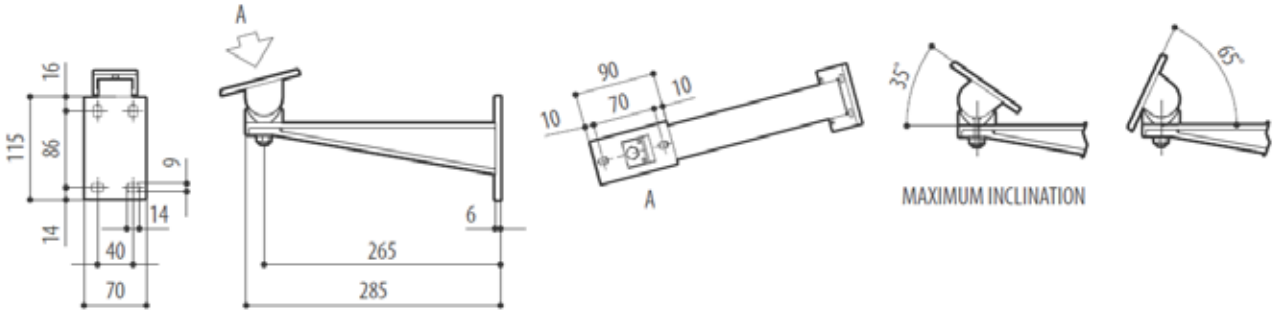
- Pole Installation
- Pole Diameter: 80– 150mm (3.14 – 5.9in)





Wall Mount Bracket for Fixed Housing, Option A09

- Wall Installation
- Unit Weight: 0.7kg (1.5lbs)



CONFIGURATION

BASE UNIT	Description
TCAM2000	Thermal Camera
FIELD OF VIEW	
TL01/TS01	25° x 19°, 13mm, 324 x 256 pixels (30Hz/7.5Hz)
TL02/TS02	45° x 35°, 7.5mm, 324 x 256 pixels (30Hz/7.5Hz)
TL03/TS03	35° x 27°, 9mm, 324 x 256 pixels (30Hz/7.5Hz)
TL04/TS04	17° x 13°, 19mm, 324 x 256 pixels (30Hz/7.5Hz)
TL05/TS05	13° x 10°, 25mm, 324 x 256 pixels (30Hz/7.5Hz)
VL01/VS01	25° x 20°, 25mm, 640x512 pixels (30Hz/7.5Hz)
VL02/VS02	45° x 37°, 13mm, 640x512 pixels (30Hz/7.5Hz)
VL03/VS03	32° x 26°, 19mm, 640x512 pixels (30Hz/7.5Hz)
VL04/VS04	18° x 14°, 35mm, 640x512 pixels (30Hz/7.5Hz)
VL05/VS05	12.4° x 9.9°, 50mm, 640x512 pixels (30Hz/7.5Hz)
ETHERNET PORT	
C01	1-port 10/100TX, RJ45 interface
LC1	1-port 100FX, multimode, 2km, LC interface
HOUSING	
PT02	Pan/Tilt Housing (Requires C01 interface)
H10	Fixed Mount Housing
HXX	No Housing
BRACKET	
A04	Parapet Bracket for PT Module
A08	Wall Mount Bracket for PT Module
A13	Pole Mount Bracket for PT Module
A09	Wall Mount Bracket for Fixed or No Housing
AXX	No Mounting Accessory Provided
CABLES	
CLXX	Communications and power cable

systems with intelligence

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