



# TCAM2500

## Installation Guide

D017-0010-301-02

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Note: Please read this manual thoroughly before operating this unit and retain it for future reference.

# 1 Table of Contents

- 2 Terminology..... 6
  - 2.1 Typographical conventions..... 6
  - 2.2 Safety rules ..... 7
- 3 Read Me First..... 10
- 4 Introduction – TCAM2500 Overview ..... 11
- 5 Camera dimensions ..... 14
  - 5.1 TCAM2500 – Pan/Tilt housing dimensions..... 14
  - 5.2 Mounting Arm Dimensions [Unit: mm]..... 15
  - 5.3 Accessory: Illuminator ..... 16
  - 5.4 Junction Box Dimensions..... 17
- 6 Preparing the product for use..... 18
  - 6.1 Safety precautions before use..... 18
  - 6.2 Unpacking ..... 18
  - 6.3 Box content: - Installation Components..... 19
  - 6.4 Safely disposing of packaging material ..... 20
  - 6.5 Preparatory work before installation ..... 20
    - 6.5.1 Attaching the bracket ..... 20
    - 6.5.2 Cables management ..... 20
- 7 Installation ..... 21
  - 7.1 Fixing the base to the support..... 22
  - 7.2 Junction Box for a single TCAM2500 – CJB4006..... 23
- 8 Cleaning ..... 24
  - 8.1 Window and plastic cover cleaning..... 24
  - 8.2 Cleaning the germanium window ..... 24
- 9 Disposal of waste material ..... 24

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## Disclaimer of Liability

We have checked the contents of this manual against the hardware and software described. However, deviations from the description cannot be completely ruled out.

Systems With Intelligence shall not be liable for any errors or omissions contained herein or for consequential damages in connection with the furnishing, performance, or use of this material.

The information given in this document is reviewed regularly and any necessary corrections will be included in subsequent editions. We appreciate any suggested improvements. We reserve the right to make technical improvements without notice.

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## Federal Communications Commission Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference on his own expense.

## CAUTION

This product contains no user-serviceable parts. Attempted service by unauthorized personnel shall render all warranties null and void. Changes or modifications not expressly approved by Systems With Intelligence Inc. could void the user's authority to operate the equipment. Should this device require service please contact Systems With Intelligence.

## Notes on copyright and information on trademarks

The quoted names of products or companies are trademarks or registered trademarks.

## IMPORTANT SAFETY INSTRUCTIONS

### READ THESE INSTRUCTIONS

1. Keep these instructions.
2. Heed all warnings.
3. Follow all instructions.
4. Install in accordance with the manufacturer's instructions.
5. Only use attachments/accessories specified by the manufacturer.
6. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
7. Installation should be done only by qualified personnel and conform to all local codes.
8. Use only installation methods and materials capable of supporting four times the maximum specified load.
9. Use stainless steel hardware to fasten the mount to outdoor surfaces.
10. To prevent damage from water leakage when installing a mount outdoors on a roof or wall, apply sealant around the bolt holes between the mount and mounting surface.
11. Only use replacement parts recommended by Systems With Intelligence.
12. Avoid aiming the camera directly to bright objects (e.g. sun) as this may damage the CCD image sensor of the camera.
13. Do not drop the object or apply strong blows to it.
14. Keep away from locations subject to excessive vibration.

## 2 Terminology

### 2.1 Typographical conventions

---



**DANGER!**

High level hazard.

Risk of electric shock. Disconnect the power supply before proceeding with any operation, unless indicated otherwise.

---



**DANGER!**

Hot surface.

Avoid contact. Surfaces are hot and may cause personal injury if touched.

---



**DANGER!**

Mechanical hazard.

Risk of crushing or shearing.

---



**CAUTION!**

Medium level hazard.

This operation is very important for the system to function properly. Please read the procedure described very carefully and carry it out as instructed.

---



**INFO**

Description of system specifications.

We recommended reading this part carefully in order to understand the subsequent stages.

## 2.2 Safety rules



**CAUTION!**

The electrical system to which the unit is connected must be equipped with a 20A max automatic bipolar circuit breaker. This circuit breaker must be of the Listed type. The minimum distance between the contacts must be 3mm (0.1in). The circuit breaker must be provided with protection against the fault current towards the ground (differential) and the overcurrent (magnetothermal).



**CAUTION!**

Hazardous moving parts. Keep fingers and other body parts away.



**CAUTION!**

The device must be installed only and exclusively by skilled technical personnel.



**CAUTION!**

For continued protection against risk of fire, replace only with same type and rating of fuse. Fuses must be replaced only by service personnel.



**CAUTION!**

TNV-1 installation type. The installation is type TNV-1, do not connect it to SELV circuits.



**CAUTION!**

In order to reduce the risk of fire, only use UL Listed or CSA certified cables sizes greater than or equal to 0.13mm<sup>2</sup> (26 AWG).

- The manufacturer declines all responsibility for any damage caused by an improper use of the appliances mentioned in this manual. Furthermore, the manufacturer reserves the right to modify its contents without any prior notice. The documentation contained in this manual has been collected with great care. The manufacturer, however, cannot take any liability for its use. The same thing can be said for any person or company involved in the creation and production of this manual.
- Before starting any operation, make sure the power supply is disconnected.
- Do not use cables that seem worn or old.
- Never, under any circumstances, make any changes or connections that are not shown in this handbook. Improper use of the appliance can cause serious hazards, risking the safety of personnel and of the installation.
- Use only original spare parts. Non-original spare parts could cause fire, electrical discharge or other hazards.
- Before proceeding with installation, check the supplied material to make sure it corresponds to the order specification by examining the identification labels.

- This device was designed to be permanently installed on a building or on a suitable structure. The device must be installed permanently before any operation.
- Installation category (also called Overvoltage Category) specifies the level of mains voltage surges that the equipment will be subjected to. The category depends upon the location of the equipment, and on any external surge protection provided. Equipment in an industrial environment, directly connected to major feeders/short branch circuits, is subjected to Installation Category III. If this is the case, a reduction to Installation Category II is required. This can be achieved by use of an insulating transformer with an earthed screen between primary and secondary, or by fitting listed Surge Protective Devices (SPDs) from live to neutral and from neutral to earth. Listed SPDs shall be designed for repeated limiting of transient voltage surges, suitable rated for operating voltage and designated as follows: Type 2 (Permanently connected SPDs intended for installation on the load side of the service equipment overcurrent device); Nominal Discharge Current ( $I_n$ ) 20kA min. For example: FERRAZ SHAWMUT, STT2240SPGCM, STT2BL240SPG-CN rated 120Vac/240Vac, ( $I_n=20kA$ ). Maximum distance between installation and reduction is 5m.
- A disconnecting device, readily and easily accessible, must be incorporated in the electrical system of the building for rapid intervention.
- The separate protective earthing terminal provided on this product shall be permanently connected to earth.
- Connect the device to a power source corresponding to the indications given on the marking label. Before proceeding with installation make sure that the power line is properly isolated. The supply voltage should never exceed the limit ( $\pm 10\%$ ).
- Power supply must be provided with a SELV type, 24Vac, 8A isolated source derived from a double isolation UL Listed transformer specially protected in output.
- The device should be mounted so that it is accessible only to the technician/installer because the moving parts constitute a residual risk of injury caused by movement of said parts.
- Attach the Dangerous Moving Parts label near the device.
- Do not use the appliance in the presence of inflammable substances.
- To connect the power supply line use the appropriate junction-box (CJB4006).
- Do not allow children or unauthorized people to use the appliance.
- The appliance should only be considered switched off when the power supply has been disconnected and the connecting cables to other devices have been removed.
- Only skilled personnel should carry out maintenance on the device. When carrying out maintenance, the operator is exposed to the risk of electrocution and other hazards.
- Use only the accessories indicated by the manufacturer. Any change that is not expressly approved by the manufacturer will invalidate the guarantee.
- Before connecting all the cables make sure the device is properly connected to the earth circuit.

- If the device has to be removed from the installation, always disconnect the earth cable last.
- Take all necessary precautions to prevent the apparatus from being damaged by electrostatic discharge.
- The unit has been made for connection using a 3-pole cable. To make a correct connection to the earth circuit, follow the instructions in this handbook.
- Handle the unit with great care, high mechanical stress could damage it.
- Make especially sure that the power supply line is insulated at a sufficient distance from all other cables, including lightning protection devices.
- If it is necessary to transport the device, this should be done with great care. Abrupt stops, bumps and violent impact could damage the unit or injure the user.

### 3 Read Me First

This chapter describes how the guide is organized and how to use it. The document is divided into sections ordered by chronology of use and frequency of use.

#### Section 4 – Product description

This section contains a short overview of the TCAM2500 capabilities.

#### Section 5 – Camera dimensions

This section contains drawings pertaining to the TCAM2500 installation.

#### Section 6 – Preparing for use

This section will guide you through the preparation steps.

#### Section 7 - Installation

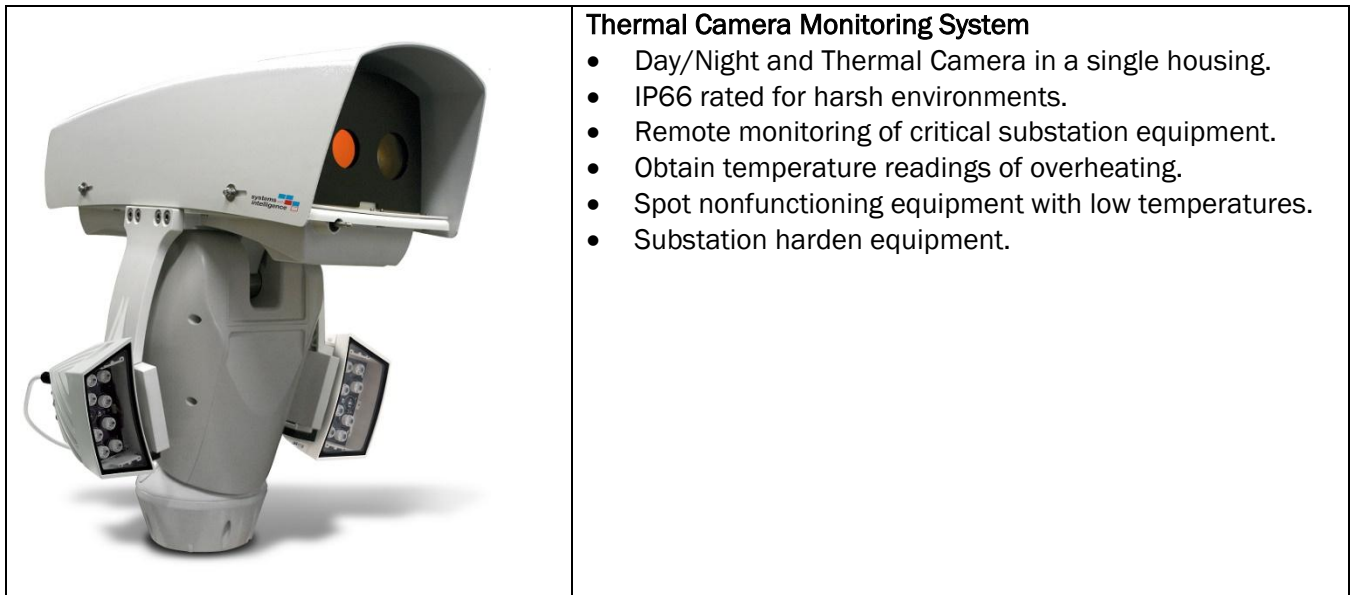
This section will guide you through installation steps.

Throughout this manual you will find two distinctive paragraphs:

**Best practice** – recommendations based on FAE experience and customer feedback.

**Troubleshooting** - tests and solutions for most common situations.

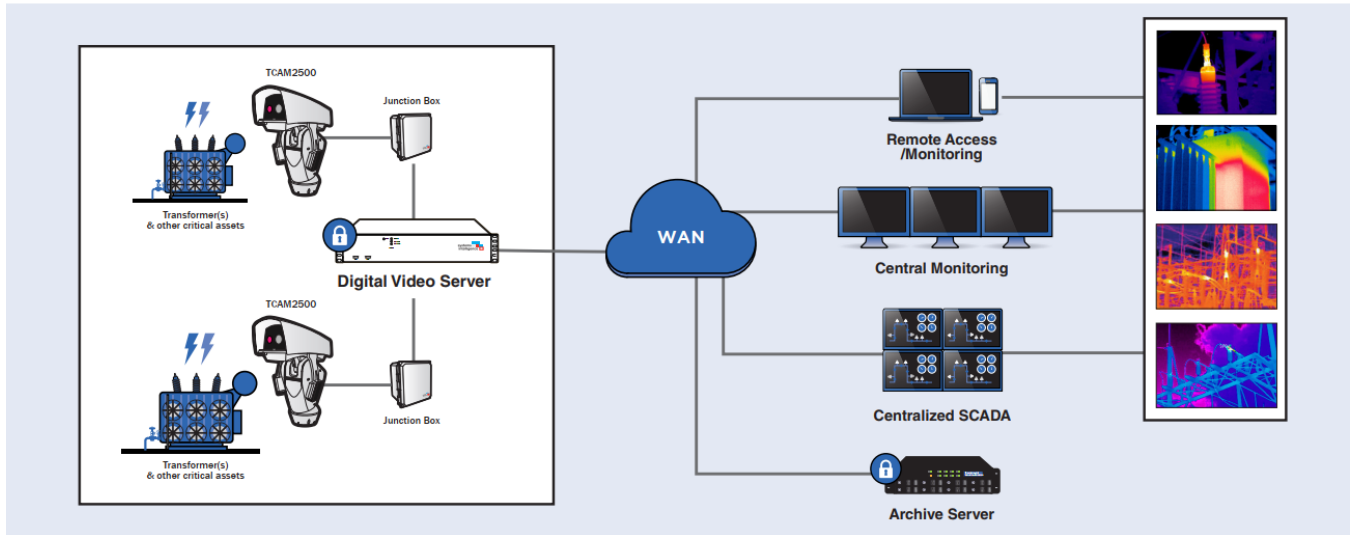
## 4 Introduction – TCAM2500 Overview



### KEY BENEFITS

- Operating temperature -40 °C to +85 °C.
- Helps increase reliability without adding personnel.
- Extend lifecycle of assets through preventive maintenance.
- Continuous and automatic monitoring.
- Works day or night in any weather 24/7 operation.
- Reduce chance for failures and downtime.

# SUBSTATION MONITORING ARCHITECTURE



## TECHNICAL SPECIFICATIONS

SPECIFICATIONS	
IMAGING PERFORMANCE	
Field of View, focal length	PL08 / PS08 NARROW 55MM 8° 640 x 512 Pixels (30Hz / 7.5Hz) PL18 / PS18 WIDE 24.4MM 18° 640 x 512 Pixels (30Hz / 7.5Hz) PL24 / PS24 WIDE 18MM 24° 640 x 512 Pixels (30Hz / 7.5Hz) PL32 / PS32 WIDE 14MM 32° 640 x 512 Pixels (30Hz / 7.5Hz) PL50 / PS50 WIDE 9.2MM 50° 640 x 512 Pixels (30Hz / 7.5Hz) PL95 / PS95 WIDE 4.9MM 95° 640 x 512 Pixels (30Hz / 7.5Hz)
Resolution	336 x 256 or 640 x 512 pixels
Detector Type	Uncooled VOx Microbolometer
Pixel Pitch	17µmqwhitr
Scene Range (High Gain)	-25° C to 135° C
Scene Range (Low Gain)	-40° C to 550° C
Time to Image	<4.0secs
Video Compression	H.264

NETWORK	
Interface	Pan/Tilt Housing: 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	PL = 30 Hz, PS = 7.5Hz
ENVIRONMENTAL WITH PAN/TILT HOUSING	
Operating Temperature Range	-40° C (-40° F)/+85° C (185° F)
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	IEC61850-3, IEEE1613, 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.	

SPECIFICATIONS: DAY/NIGHT CAMERA	
<b>CAMERA</b>	
Sensor:	1/2.8" CMOS Progressive Scan (2MP)
Lens:	Compatible with CS Mount or C Mount with adaptor DC Auto Iris Support
Day/Night:	IR cut filter removal (ICR) Off/Dusk/Dark/Custom
Iris:	DC-Auto/Manual
Min. illumination:	0.2 lux @ F1.2 (Colour) 0.01 lux @ F1.2 (BW)
<b>VIDEO</b>	
Video Compression:	H.264 (MPEG-4 Part 10) MJPEG
Resolution:	1920 x 1080 (1080p) 1280 x 720 (720p) 720 x 480 (D1) 704 x 480 (4CIF) 704 x 240 (2CIF) 352 x 240 (CIF) 176 x 120 (QCIF)
Frame Rate:	30 fps for all resolutions (except 1080p & 720p-15fps)
Video Streaming:	Triple Stream: 2ch H.264, 1ch MJPEG Stream-profile: resolution /compression / framerate / video quality
Analog Video Out:	BNC port, NTSC
Image Setting:	Brightness, Contrast, AWB, Sharpness, Saturation, Gain, White Balance, Auto Exposure
Image Mirroring:	Horizontal/Vertical/Both
* The specification for this product may change without prior notice for product improvement.	

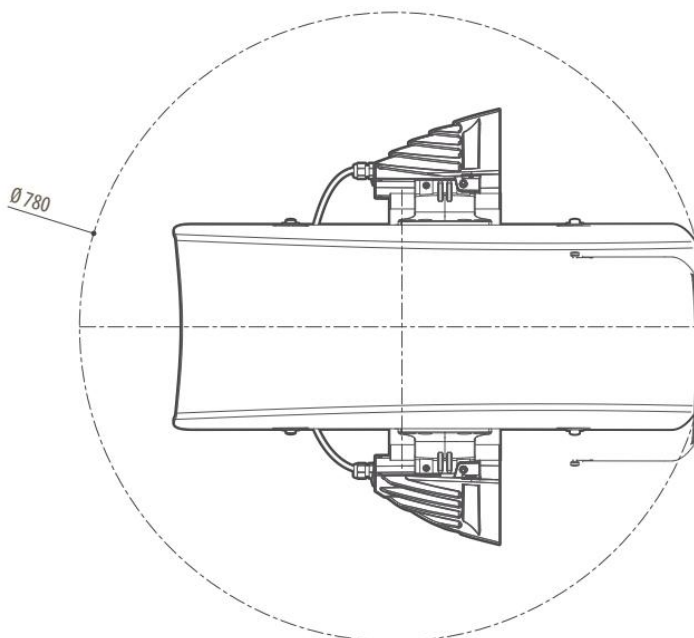
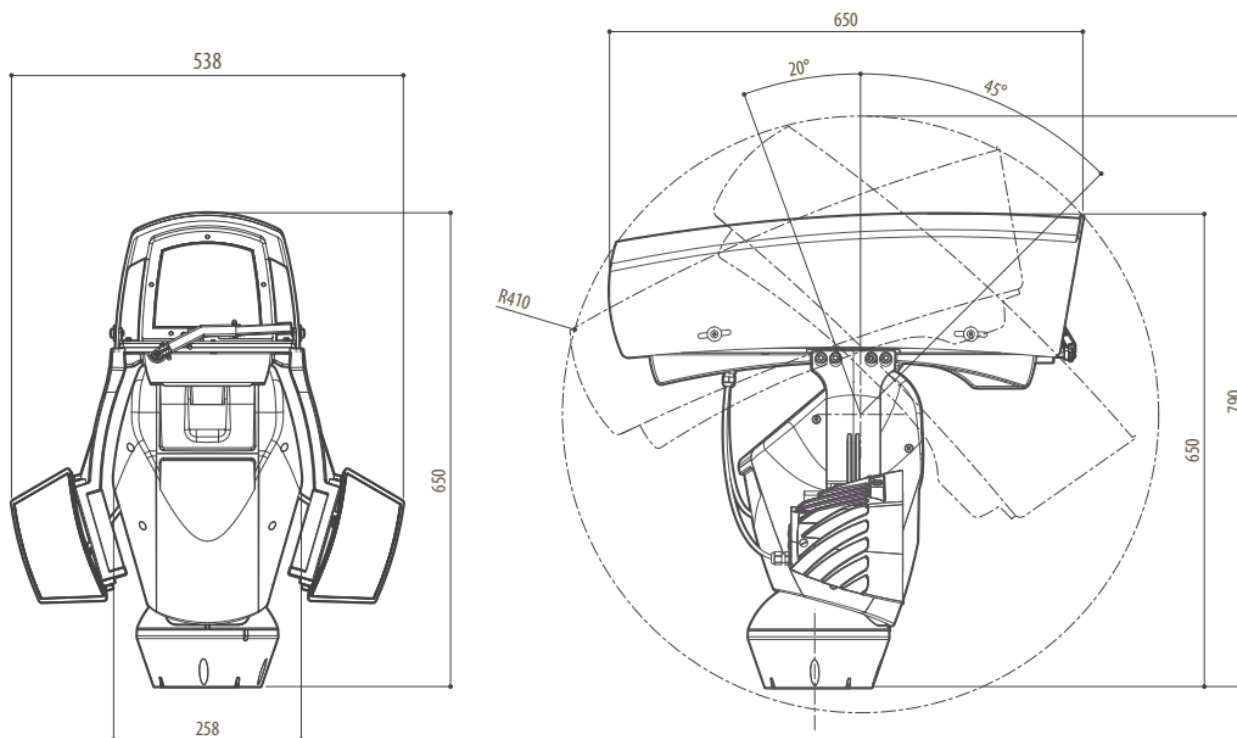
SPECIFICATIONS: HOUSING	
<b>GENERAL</b>	
Built in aluminium and ABS	
Epoxy polyester powder painting, RAL9002 colour	
Top mount (OTT)	
Transmission through toothed belt	
Slip-ring	
Electronic limit switches	
Plug installation thanks to connector and easy replacement on-site	
Zero backlash	
<b>MECHANICAL</b>	
Cable glands: 3xM16	
Horizontal rotation: continuous - 360 degrees continuous	
Vertical rotation: from +45° up to -20°	
Horizontal speed (variable): from 0.02°/s up to 20°/s through toothed belt	
Tilt speed (variable): from 0.02°/s up to 20°/s	
<b>COMMUNICATIONS</b>	
Ethernet connection: IEEE 802.3 100Base-Tx	
<b>PROTOCOLS</b>	
Pelco-D	

<b>ENVIRONMENT</b>	
Indoor/Outdoor	
Operating temperature (with heater - automatic on & off): -40 °C (-40 °F)/+85 °C (185 °F)	
Surge immunity: up to 2kV line to line, up to 4kV line to earth (Class 4)	
<b>CERTIFICATIONS</b>	
Electrical safety: EN60950-1	
Photobiological safety of lamps and lamp systems (LED illuminators): EN62471	
Electromagnetic compatibility: , EN55022 (Class A), FCC Part 15 (Class A)	
Immunity: EN50130-4	
Outdoor installation: EN60950-22	
IP protection degree: EN60529 (IP66)	
Resistant to salty fog: EN50130-5, EN60068-2-52	
EAC certification	
<b>ELECTRICAL</b>	
24VAC, 50/60Hz, 160W	
* The specification for this product may change without prior notice for product improvement.	

## 5 Camera dimensions

### 5.1 TCAM2500 – Pan/Tilt housing dimensions

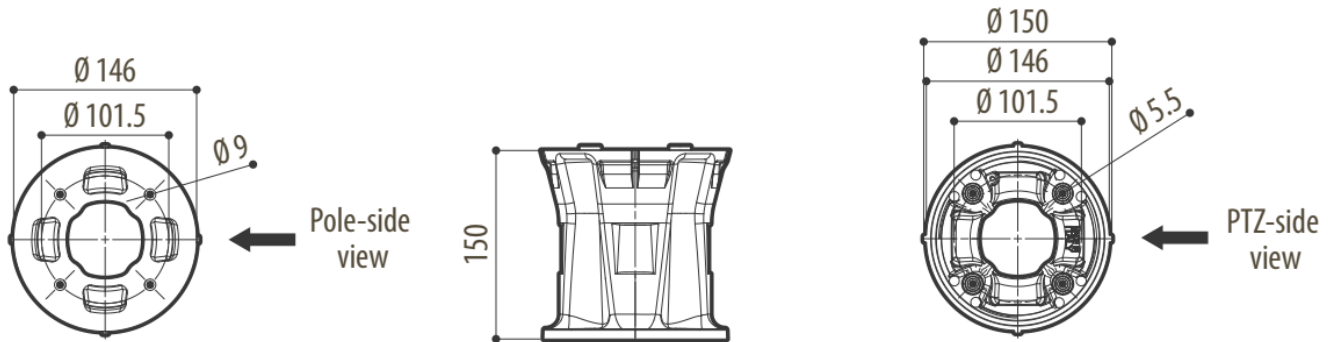
TCAM2500 with illuminators [Unit: mm]



## 5.2 Mounting Arm Dimensions [Unit: mm]

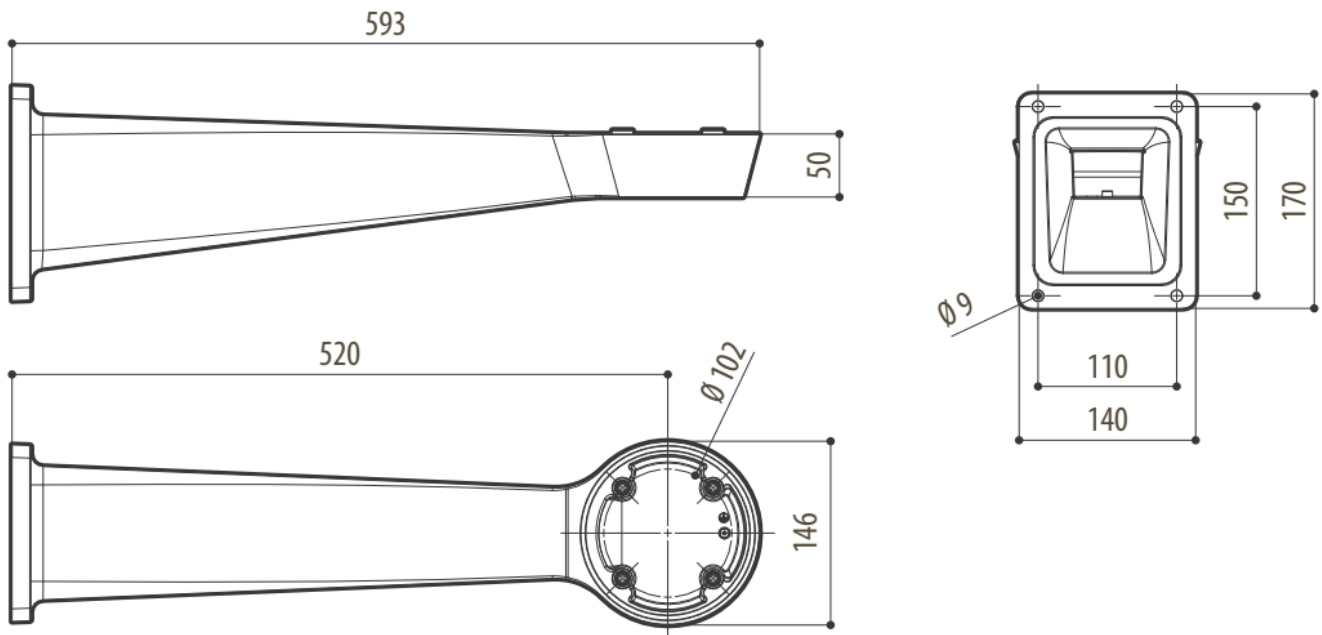
### 5.2.1.1 Parapet Bracket, Option A04

- Made of diecast aluminum.
- Epoxypolyester power paint.
- Internal cable management.
- Unit Weight: 1.6kg (3.5lb).



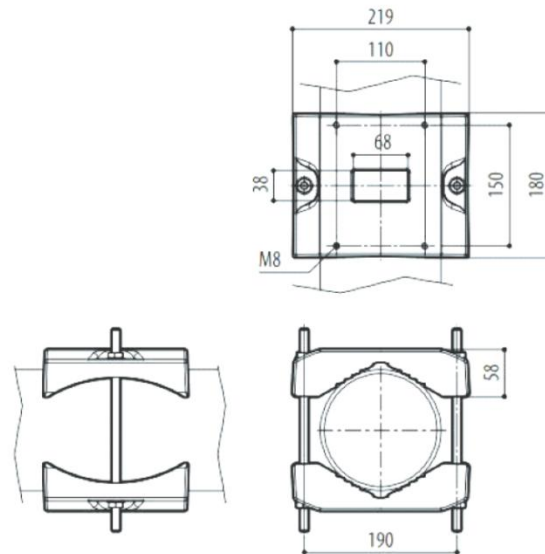
### 5.2.1.2 Wall Mount Bracket, Option A08

- Made of diecast aluminum.
- Epoxypolyester power painting.
- Wall bracket with internal cable channel.
- Unit Weight: 3.1 Kg (6.6lb).



### 5.2.1.3 Pole Mount Bracket with Arm, Option A13 (includes A08)

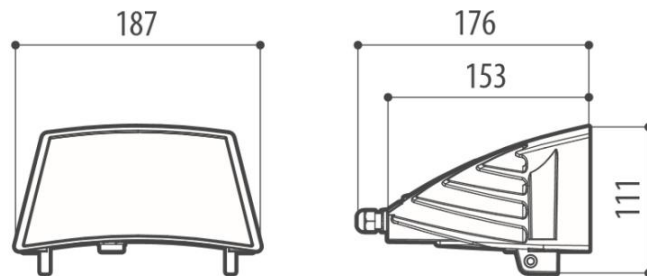
- Pole Installation
- Pole Diameter: 80-150mm(3.14-5.9in)



## 5.3 Accessory: Illuminator

### Illuminator

- Adjustable built-in twilight sensor for automatic activation
- Die-cast aluminium body.
- Unit weight: 1.5kg (3.3lbs)



### 5.4 Junction Box Dimensions

**Installation Note:** All integration components are supplied with the TCAM2500 including supporting arm, all cabling to a junction box, and the junction box. End user will connect to the TCAM2500 through the junction box.

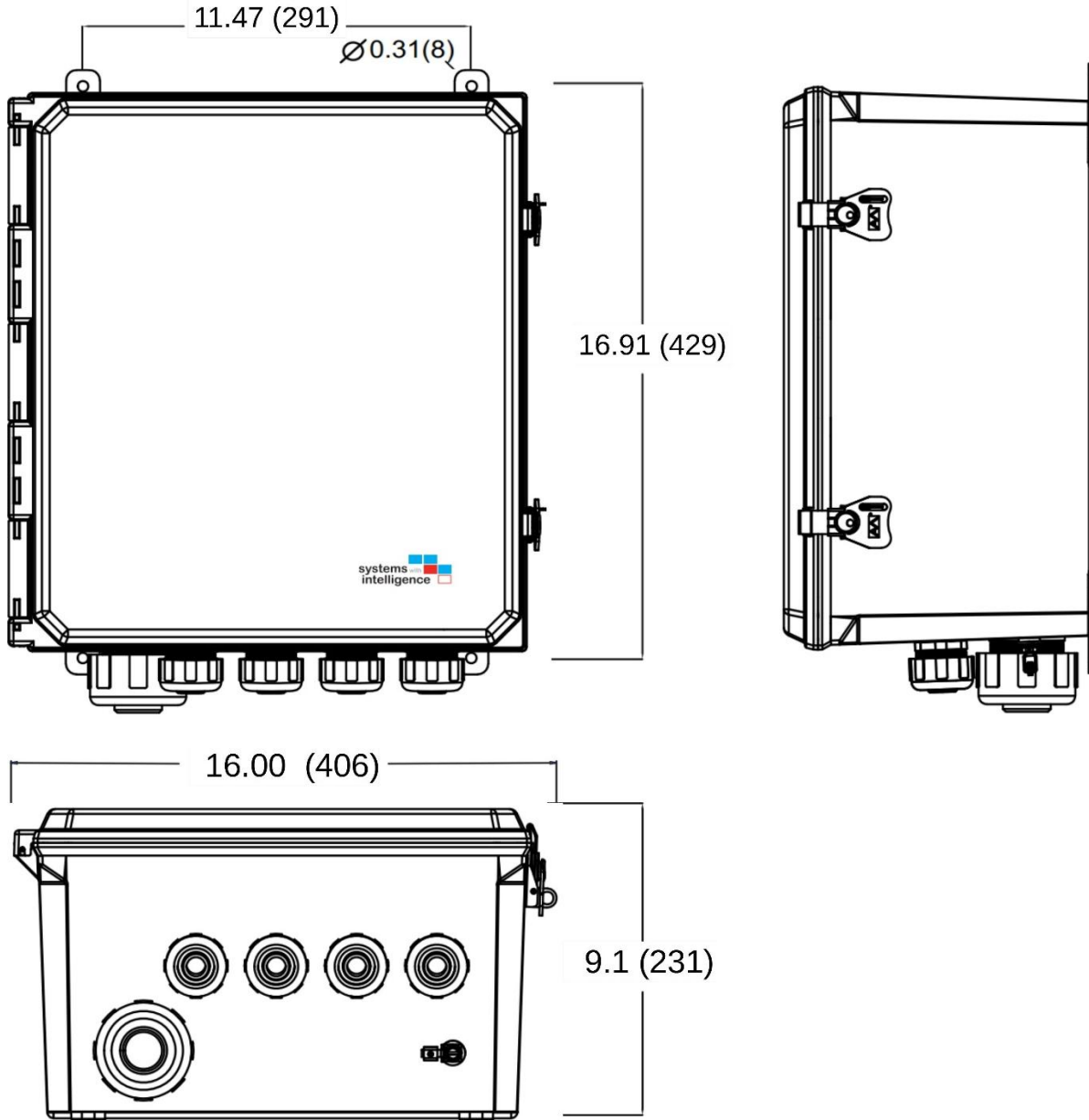


Figure 5-1 Junction box dimensions

## 6 Preparing the product for use

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Any change that is not expressly approved by the manufacturer will invalidate the warranty.



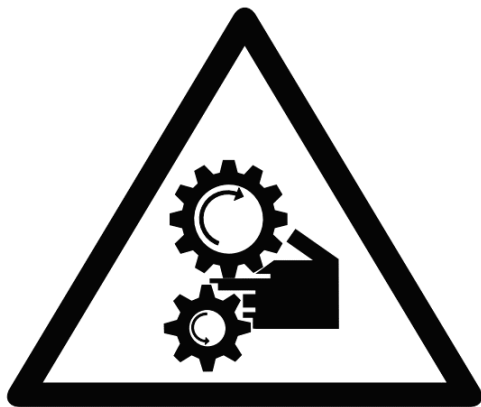
The unit must not be dismantled or tampered with. The only exceptions are those concerning the assembly and maintenance operations stipulated in this manual.

### 6.1 Safety precautions before use

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The appliance includes moving parts. Make sure that the unit is positioned where it is inaccessible under normal operating conditions. Attach the warning label supplied with the appliance, placing it near the unit so that it can be seen easily.



**Warning!**

Do not power the camera while it is inside the packaging.

**Warning!**

The camera spins during initialization.

**Warning!**

Hazardous moving parts – keep fingers and other body parts away.

Note: always use the supplied JB to power it.

### 6.2 Unpacking

When the product is delivered, make sure that the package is intact and that there are no signs that it has been dropped or scratched.

If there are obvious signs of damage, contact the supplier immediately. Keep the packaging in case you need to send the product for repairs.



Unpack the sunshield of the device, taking care not to damage the housing.

### 6.3 Box content: - Installation Components

Check the contents to make sure they correspond with the list of materials – see Figure 6-1: a) positioning unit; b) wall or parapet mount; c) In-line junction box with wires; d) Main junction box (117/234Vac to 24Vac)

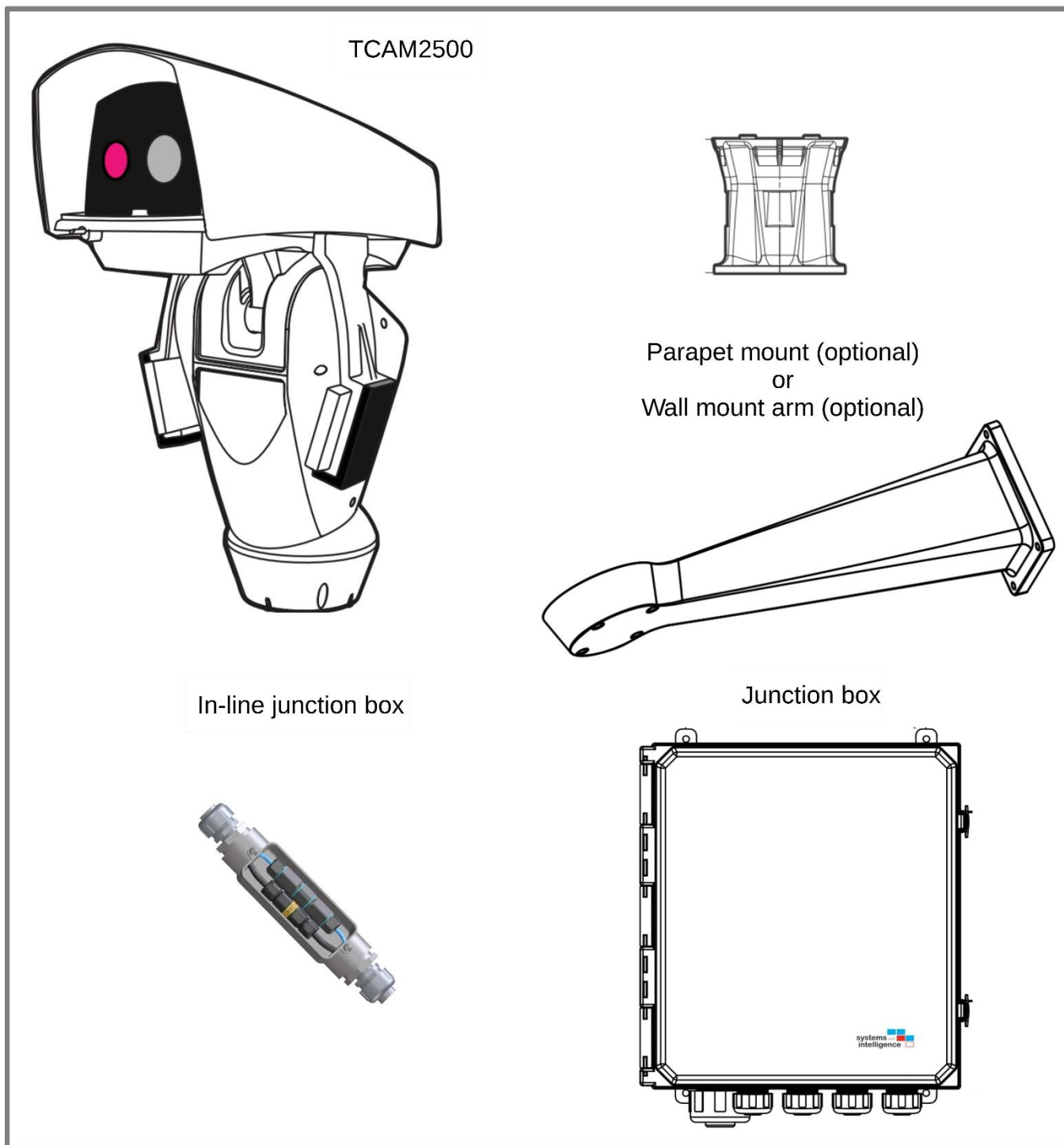


Figure 6-1 Installation Components

## 6.4 Safely disposing of packaging material

The packaging material can all be recycled. The installer will be responsible for separating the material for disposal, and in any case for compliance with the legislation in force where the device is to be used. When returning a faulty product, we recommend using the original packaging for shipping.

## 6.5 Preparatory work before installation

### 6.5.1 Attaching the bracket



For installations subject to vibrations, only use the parapet bracket.

Different types of supports are available. Choose a suitable bracket for the installation and follow all the instructions in the suggested chapter.



Take special care when attaching and fastening down the apparatus. The clamping system must be able to support at least 4 times the weight of the entire equipment, including P&T, lenses and camera.



The device should be assembled vertically. Any other position could impair the performance of the appliance.



Do not attach the device upside down.

### 6.5.2 Cables management



The connection cables should not be accessible from the outside. It is necessary to fasten the cables securely to the support in order to prevent excessive weight pulling them out accidentally.

Insert the cables into the support so that they protrude by about 50cm. You must use cables suited to the type of installation.

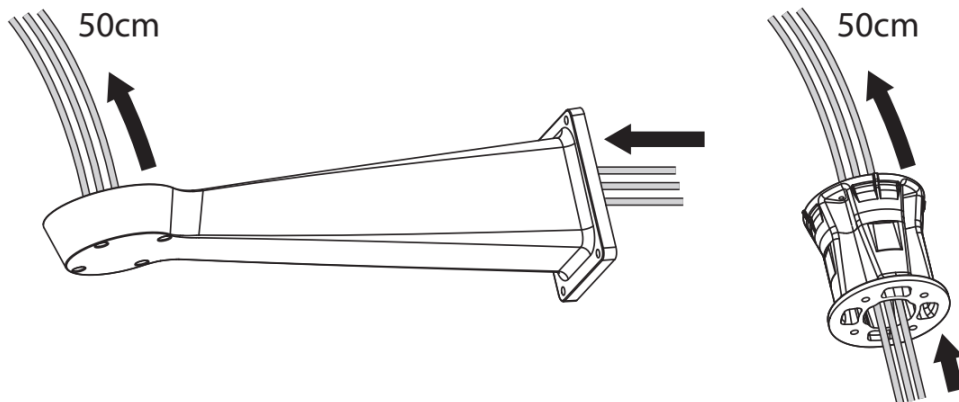


Figure 6-2 Cable insert diagram

## 7 Installation



Never, under any circumstances, make any changes or connections that are not shown in this handbook. Failure to follow the connection instructions that are given in the handbook may create serious safety hazards for people and for the installation.



Do not change the wiring in the product as it is supplied to you. Failure to follow this instruction may create serious safety hazards for people and for the installation, and will also invalidate the warranty.

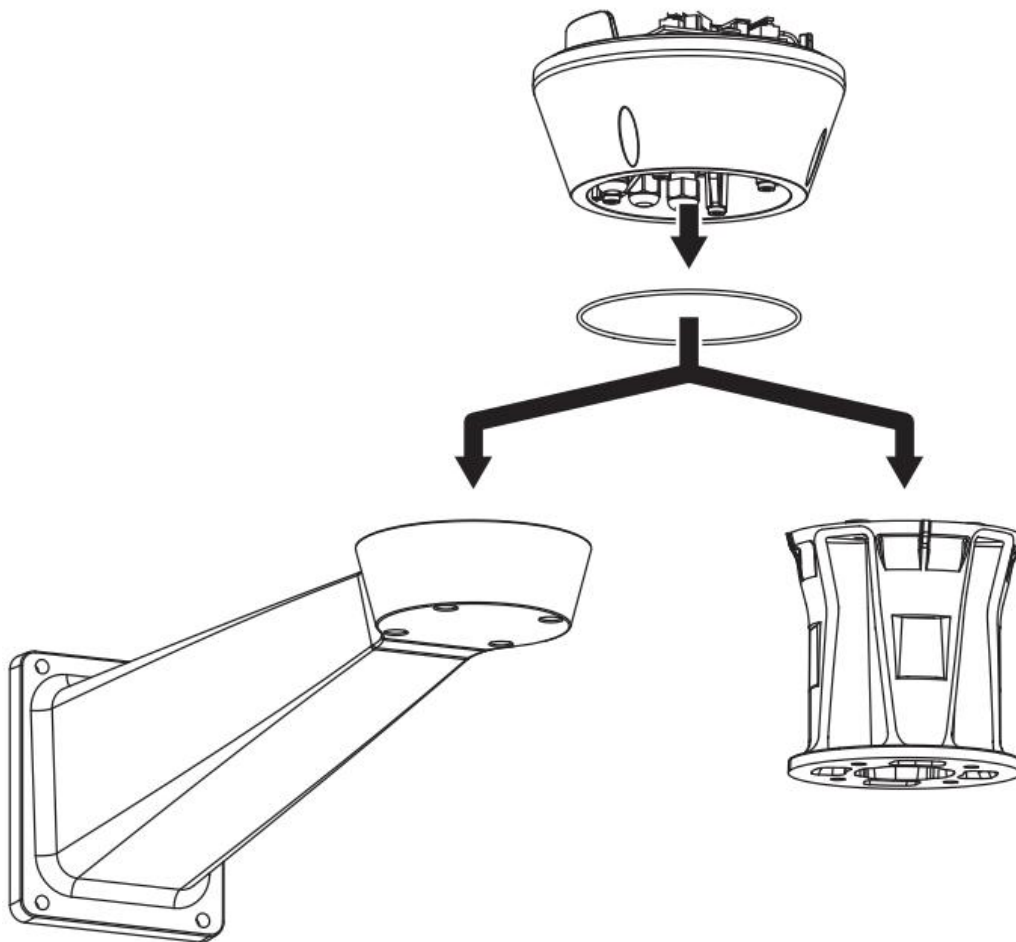


Figure 7-1 Installation

## 7.1 Fixing the base to the support



Use the screws and the washers supplied with the base.

Align the 3 notches on the base with those on the support as shown in the following figure. Once you have positioned the gasket (01), fix the base (02) onto the bracket (03) with screws (04), serrated washers (05) and screw rings (06).

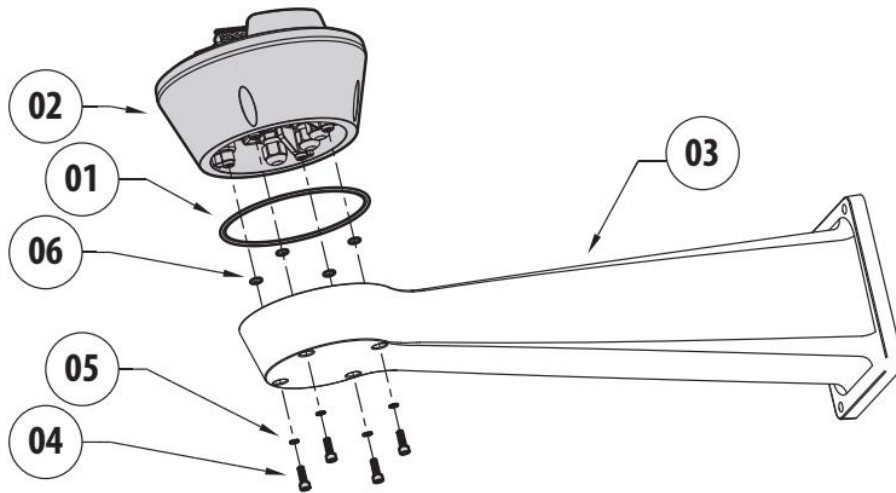


Figure 7-2 Mounting arm order

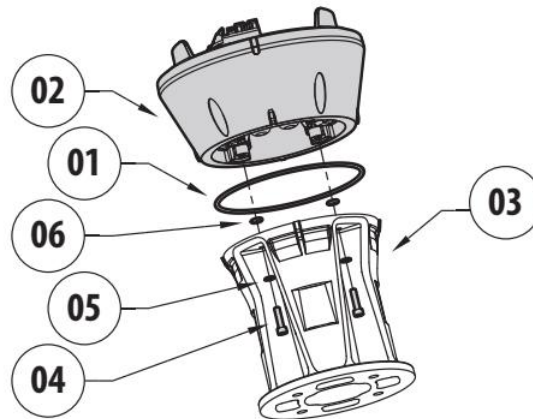


Figure 7-3 Parapet mount order

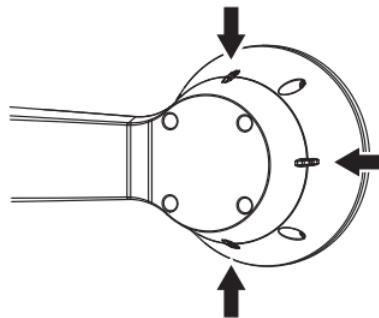


Figure 7-4 Aligning the 3 notches

7.2 Junction Box for a single TCAM2500 – CJB4006

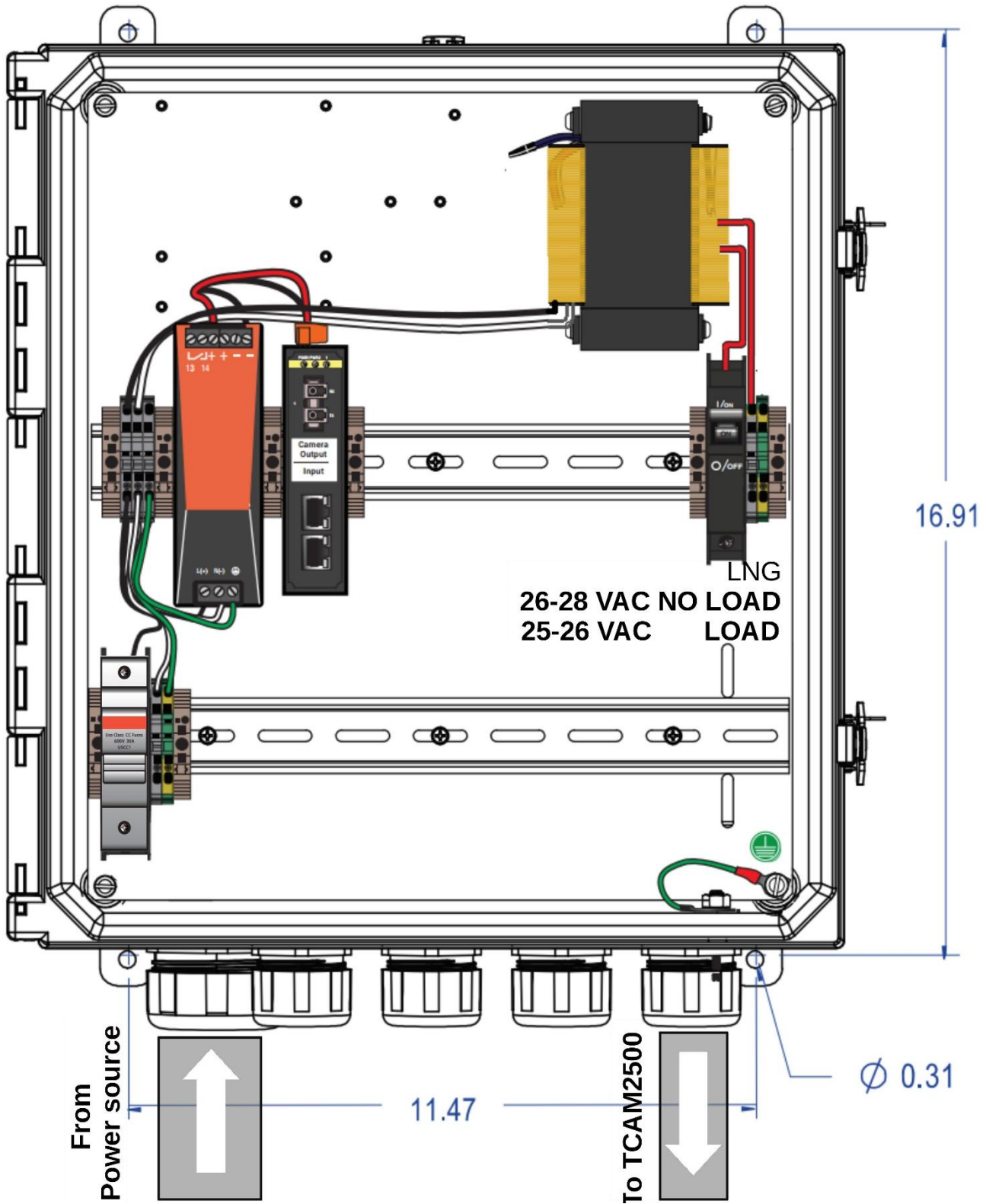


Figure 7-5 CJB4006

## 8 Cleaning

### 8.1 Window and plastic cover cleaning

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Avoid ethyl alcohol, solvents, hydrogenated hydrocarbide, strong acid and alkali. Such products may irreparably damage the surface.

We recommend using a soft cloth with neutral soaps diluted with water or specific products to clean the glasses lenses.

### 8.2 Cleaning the germanium window

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Cleaning the window take care not to scratch or damage the outer surface treated with carbon coating. Damage to this coating could also interfere with the transparency of the surface to infrared light.

Cleaning should be done with mild soap diluted with water.

## 9 Disposal of waste material

Your product is designed and manufactured with high quality materials and components which can be recycled and reused. This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste. Please dispose of this equipment at your Community waste collection or Recycling center following your local guidelines.

# TCAM2500

2021.07.12

## Installation Guide



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