

Pan Tilt System

for ThermoView TV40 Thermal Imager Cameras



Users Manual

Warranty

The manufacturer warrants this instrument to be free from defects in material and workmanship under normal use and service for the period of two years from date of purchase. This warranty extends only to the original purchaser. This warranty shall not apply to fuses, batteries or any product which has been subject to misuse, neglect, accident, or abnormal conditions of operation.

In the event of failure of a product covered by this warranty, the manufacturer will repair the instrument when it is returned by the purchaser, freight prepaid, to an authorized Service Facility within the applicable warranty period, provided manufacturer's examination discloses to its satisfaction that the product was defective. The manufacturer may, at its option, replace the product in lieu of repair. With regard to any covered product returned within the applicable warranty period, repairs or replacement will be made without charge and with return freight paid by the manufacturer, unless the failure was caused by misuse, neglect, accident, or abnormal conditions of operation or storage, in which case repairs will be billed at a reasonable cost. In such a case, an estimate will be submitted before work is started, if requested.

The foregoing warranty is in lieu of all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. The manufacturer shall not be liable for any special, incidental or consequential damages, whether in contract, tort, or otherwise.

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The manufacturer does not warrant that the software described herein will function properly in every hardware and software environment. This software may not work in combination with modified or emulated versions of Windows operating environments, memory-resident software, or on computers with inadequate memory. The manufacturer warrants that the program disk is free from defects in material and workmanship, assuming normal use, for a period of one year. Except for this warranty, the manufacturer makes no warranty or representation, either expressed or implied, with respect to this software or documentation, including its quality, performance, merchantability, or fitness for a particular purpose. As a result, this software and documentation are licensed "as is," and the licensee (i.e., the User) assumes the entire risk as to its quality and performance. The liability of the manufacturer under this warranty shall be limited to the amount paid by the User. In no event shall the manufacturer be liable for any costs including but not limited to those incurred as a result of lost profits or revenue, loss of use of the computer software, loss of data, the cost of substitute software, claims by third parties, or for other similar costs. The manufacturer's software and documentation are copyrighted with all rights reserved. It is illegal to make copies for another person.

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Compliance Statement



The device complies with the requirements of the European Directives:

EC – Directive 2014/30/EU – EMC

EC – Directive 2011/65/EU – RoHS II

EN 61326-1: 2013

Electrical measurement, control and laboratory devices -
Electromagnetic susceptibility (EMC)

EN 50581: 2012

Technical documentation for the evaluation of electrical products with respect to
restriction of hazardous substances (RoHS)



Electromagnetic Compatibility Applies to use in Korea only. Class A Equipment
(Industrial Broadcasting & Communication Equipment)

This product meets requirements for industrial (Class A) electromagnetic wave
equipment and the seller or user should take notice of it. This equipment is intended
for use in business environments and is not to be used in homes.

Safety Information

These operating instructions are part of the user manual for the TV40 Thermal Imager Camera.

This document contains important information, which should be kept at all times with the instrument during its operational life. Other users of this instrument should be given these instructions with the instrument. Eventual updates to this information must be added to the original document. The instrument can only be operated by trained personnel in accordance with these instructions and local safety regulations.

Acceptable Operation

This instrument is intended only for the measurement of temperature. The instrument is appropriate for continuous use. The instrument operates reliably in demanding conditions, such as in high environmental temperatures, as long as the documented technical specifications for all instrument components are adhered to. Compliance with the operating instructions is necessary to ensure the expected results.

Unacceptable Operation

The instrument should not be used for medical diagnosis.

Replacement Parts and Accessories

Use only original parts and accessories approved by the manufacturer. The use of other products can compromise the operation safety and functionality of the instrument.



FLUKE
Process
Instruments

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13127 Berlin, Germany

A-TV-PT-xW-x



P&T UNIT ULISSE2
IP66
MADE IN ITALY

www.flukeprocessinstruments.com



A-TV-PTGW-230
Germanium Front Window 66mm in Glass Frame
230Vac +/- 10%, 1.1A, 50/60Hz

System SN: **348607002**

P&T SN: **119022810002**

Safety Symbol	Description
	Read all safety information before in the handbook
	Hazardous voltage. Risk of electrical shock.
	Warning. Risk of danger. Important information. See manual.
	Laser warning
	Earth (ground) terminal
	Protective conductor terminal
	Switch or relay contact
	DC power supply
	Conforms to European Union directive.
	Disposal of old instruments should be handled according to professional and environmental regulations as electronic waste.
	Conforms to relevant South Korean EMC Standards.
	International Ingress Protection Marking
	China RoHS



To prevent possible electrical shock, fire, or personal injury follow these guidelines:

- Read all safety information before you use the product.
- Use the product only as specified, or the protection supplied by the product can be compromised.
- Do not use the product around explosive gases, vapor, or in damp or wet environments.
- Carefully read all instructions.
- Do not use and disable the product if it is damaged.
- Do not use the product if it operates incorrectly.
- Do not apply more than the rated voltage between the terminals or each terminal and earth ground.



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



Before starting any operation, make sure the power supply is disconnected.



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



CAUTION! Device installation and maintaining must be performed by specialist technical staff only.



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! In order to reduce the risk of fire, only use UL Listed or CSA certified cables.



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



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

- 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 and verified 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.
- Be careful not to 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 secured and connected on a building or on a suitable structure. The device must be permanently secured and connected before any operation.
- The product is designed to house only cameras that are properly certified.
- A power disconnect device must be included in the electrical installation, and it must be very quickly recognizable and operated if needed.
- The separate protective earthing terminal provided on this product shall be permanently connected to earth.
- 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 surge voltage 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 windings, or by fitting UL 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 and the following rated operation conditions: Type 2 (SPDs permanently connected to the power network and intended for installation on the load side of the service equipment); Nominal Discharge Current (In) 20 kA min.
For example: FERRAZ SHAWMUT, STT2240SPG-CN, STT2BL240SPG-CN rated 120 Vac / 240 Vac, (In=20 kA). Maximum distance between installation and reduction is 5 m (16.4 ft).
- The device must be properly connected to the earth circuit.
- Equipment intended for installation in Restricted Access Location performed by specialist technical staff.
- Connect the device to a power source corresponding to the specification given in this document.

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For more information, contact your local office.

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1 Description

The Pan Tilt System is designed for remote monitoring of indoor and outdoor environments such as substation monitoring, coal or wood piles or other industrial applications where critical assets need to be monitored. The system is built off the TV40 series thermal imaging camera. Each camera comes standard with IR-Fusion® technology (thermal and visible images) for added detail on critical assets.

The pan tilt head is rated for outdoor environments and can rotate $\pm 360^\circ$ continuous and tilt from -40° to 90° . The advanced protection technology used has allowed an enhanced temperature range with -40°C (-40°F) to 50°C (122°F). The internal case temperature is constantly controlled, thus preventing condensation and guaranteeing an ideal operating temperature range for the camera.

The Pan Tilt Industrial software running on a Windows based computer provides a fully integrated thermal analysis of large areas without the need for multiple cameras. The software not only controls the pan tilt system, but also provides advanced alarming on changing temperatures over a historical time period, or differential temperatures between two discrete areas. Alarm output can be mapped to discrete I/O modules or output over a fieldbus network.

Figure 1-1: System Overview

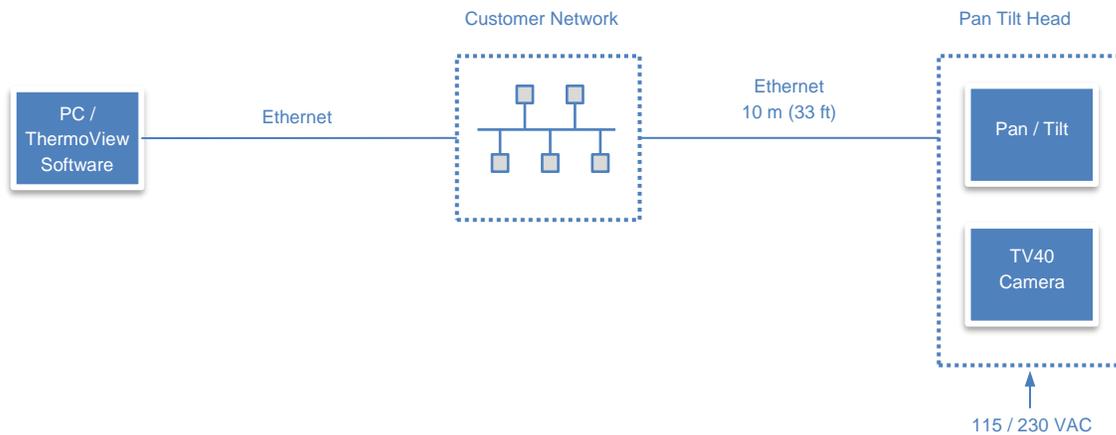
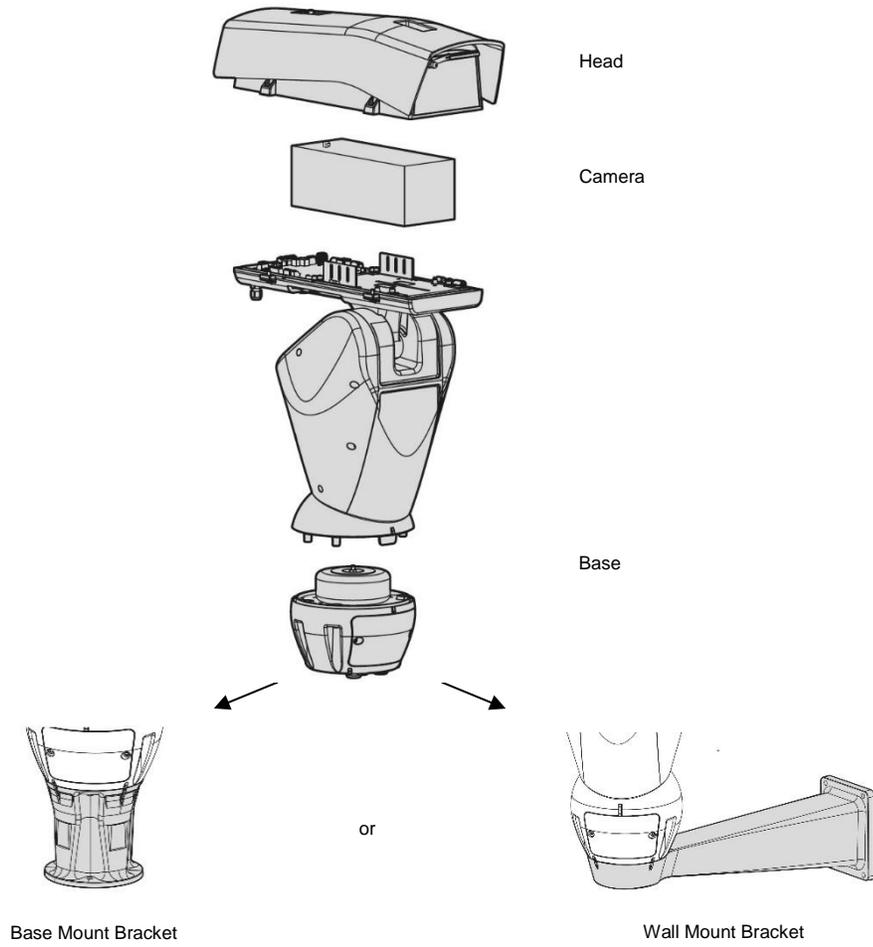


Figure 1-2: System Components



2 Technical Data

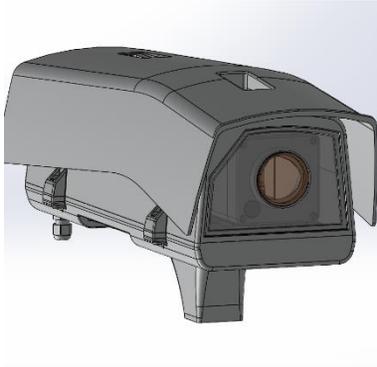
Unless otherwise stated, the standard specification of the TV40 thermal imager camera applies as per the user's manual "ThermoView® TV40 Series". Please note that different models with different specifications are available for the TV40 thermal imager camera.

2.1 Mechanical Specifications

Horizontal rotation	360°, continuous rotation
Vertical rotation	-40° to 90°
Horizontal speed	0.02°/s to 100°/s
Tilt speed	0.02°/s to 50°/s
Positioning accuracy	0.02°
Material	Aluminium and tecnopolymer, Epoxypolyester powder painting
Weight	pan tilt head: 20.4 kg (45 lb) camera: 1.5 kg (3.3 lb) additionally
Dimensions	see section 2.4 Dimensions , page 21

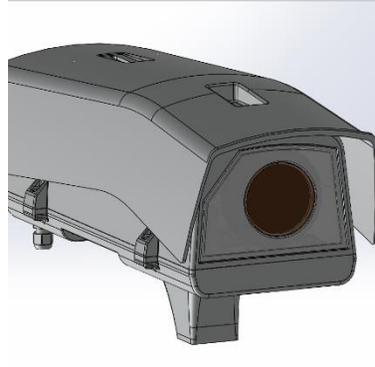
Due to the different lens sizes of the thermal camera, the pan/tilt head is delivered with different front windows. The front window consists of a glass frame with an embedded Germanium window in the center. The required size of the embedded Germanium window is related to the used lens type of the thermal camera.

Figure 2-1: Front Window Design and Camera Lens Type



Germanium window Ø 50 mm (2 in) for:

- camera with standard lens
- camera with wide lens 0.75x



Germanium window Ø 66 mm (2.6 in) for:

- camera with tele lens 2x
- camera with tele lens 4x

2.2 Electrical Specifications

Power 230 VAC / 1.1 A or 110 VAC / 2 A
50/60 Hz

Fuses see section 9.3 [Fuses Replacement](#), page 60

Ethernet – Pan Tilt Head

Connection Ethernet, 100 MBit/s (100 Base-Tx)
Connector RJ45
Addressing fixed IP address
Protocols TCP/IP version 4
http web server

Default Settings – Pan Tilt Head

IP Address 192.168.42.136
Subnet Mask 255.255.255.0
Gateway 192.168.42.1

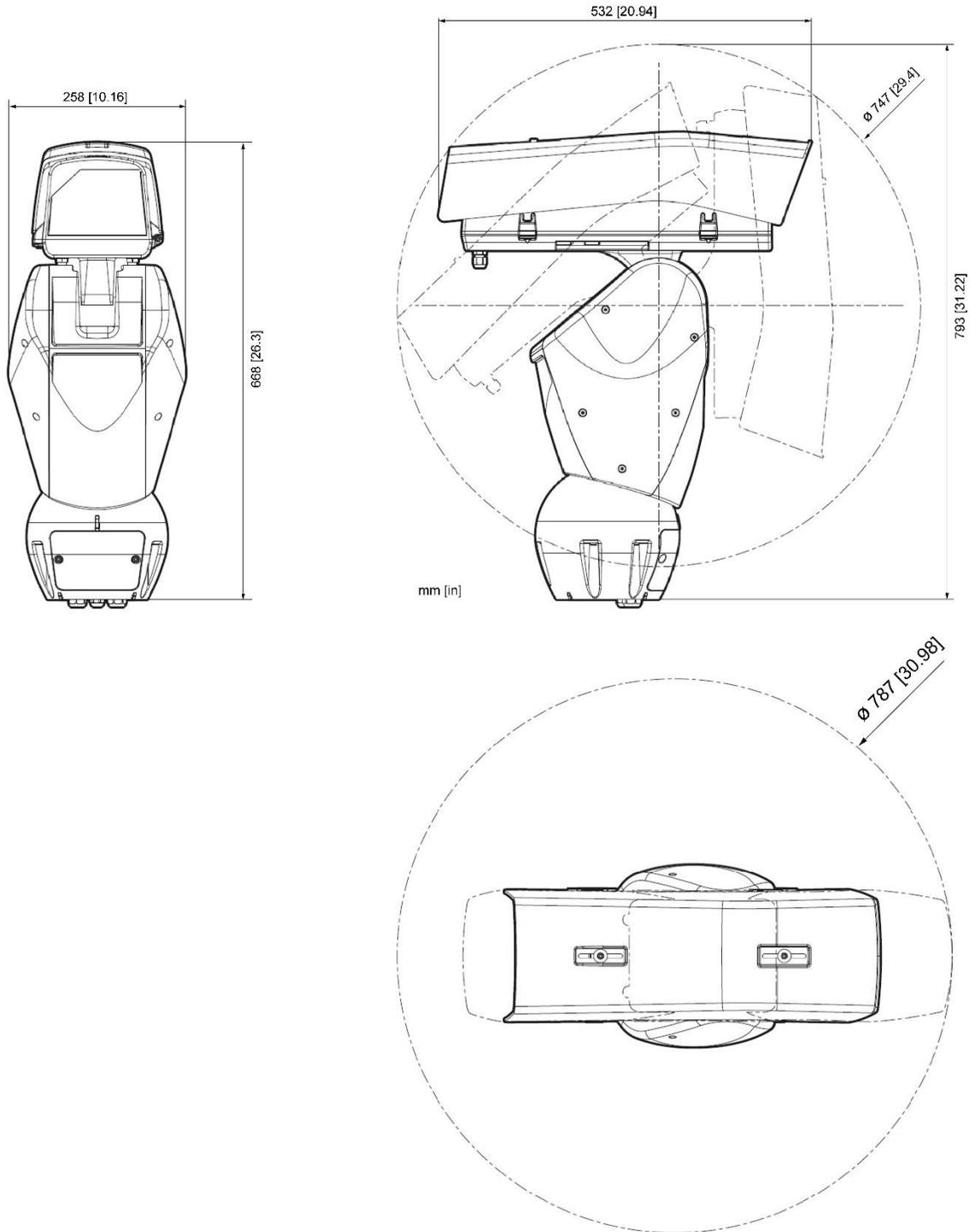
2.3 Environmental Specifications

The following specification considers the pan tilt head including camera.

Ingress protection	IP66 / IEC 60529
Operating temperature	-40°C to 50°C (-40°F to 122°F)
Storage temperature	-20°C to 65°C (-4°F to 149°F)
Wind resistance	max. 220 km/h (137 mile/hour)
Humidity	10% to 95%, non-condensing
Electrical Safety	EN60950-1, IEC60950-1
Warm up Period	5 min.

2.4 Dimensions

Figure 2-2: Dimensions



2.5 Scope of Delivery

The scope of delivery includes the following:

- Pan tilt head with sunshield
- Mounting material for assembling the TV40 thermal imager camera
- Power supply and Ethernet cable for internal wiring the TV40 thermal imager camera
- Operator's manual and configuration file (on data carrier)
- Ethernet cable 10 m (33 ft) with RJ45/RJ45 connectors, for indoor use only

Note

The TV40 thermal imager camera needs to be ordered separately.

3 Preparations



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



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



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.

	ATTENZIONE! Parti mobili pericolose. Non avvicinare dita e altre parti de corpo.
	WARNING! Hazardous moving parts. Keep fingers and other body parts away.
	AVERTISSEMENT! Parties mobiles dangereuses. Ne pas approcher les doigts au d'autres parties du corps.
	ACHTUNG! Gefährliche bewegliche Teile. Finger und andere Körperteile fernhalten.

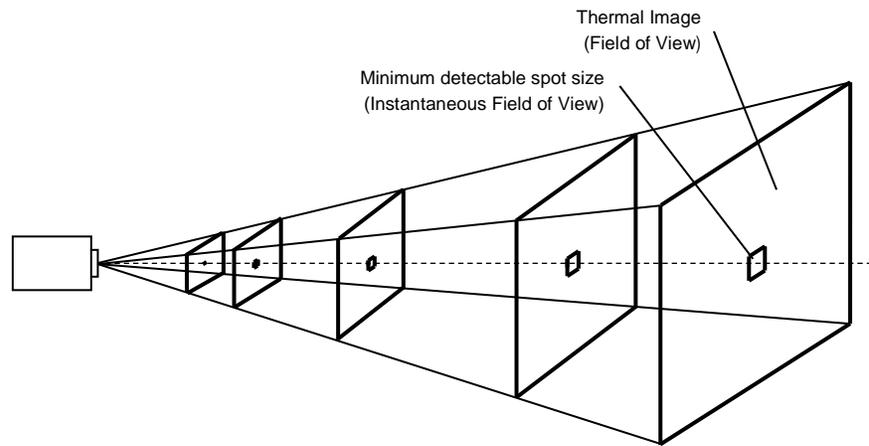
3.1 Positioning

System location depends on the application. Before deciding on a location, you need to be aware of the ambient temperature of the location, the atmospheric quality of the location, and the possible electromagnetic interference in that location. Wiring and conduit runs must be considered, including computer wiring and connections, if used.

3.2 Distance to Object

The camera provides different lens models to accommodate a wide range of applications. Each individual lens provides different thermal images (Field of View) and minimum detectable pixel sizes (Instantaneous Field of View). The optical diagram below shows the principal graphical representation for measuring distance over the field of view. The manufacturer provides a tool for calculating image sizes, see section 10.1 [Field of View Calculator](#), page 62.

Figure 3-1: Field of View for the Camera



3.3 Bracket Mounting



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 pan tilt head, lenses and camera.



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



Do not attach the device upside down.

Different types of supports are available, see section 8 [Accessories](#), page 55. Choose a suitable bracket for the installation.

3.4 Cable 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.



You must use cables suited to the type of installation.



Check that all cables are adequately dimensioned.

3.5 Power Supply



When commencing installation make sure that the specifications for the power supply for the installation correspond with those required by the device.



Check that the power supply socket and cable are adequately dimensioned.



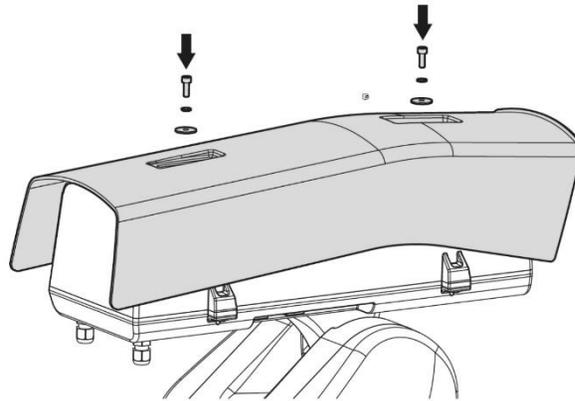
Electrical connections must be performed with the power supply disconnected and the circuit-breaker open.

4 Pan Tilt Head Assembly

4.1 Sunshield Mounting

Fix the sunshield to the housing using the screws and washers screwed into the upper body of the housing. It is recommended to fix the cover as far forward as possible to protect against sun reflection and water droplets.

Figure 4-1: Sunshield Mounting



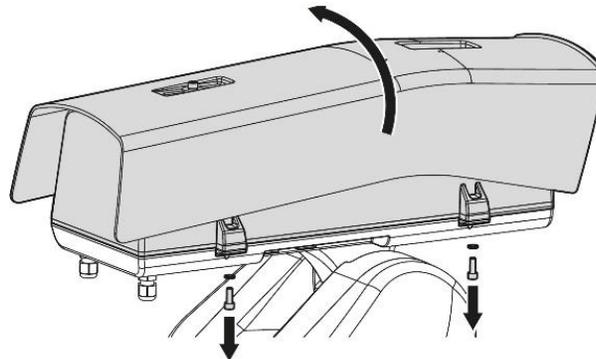
4.2 Housing Opening



Mechanical hazard.
Risk of crushing or shearing.

Loosen the 2 screws on the side, turn the upper half of the body about the opening hinge axis.

Figure 4-2: Open the Housing



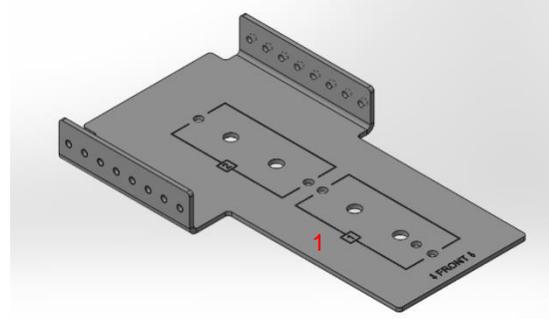
4.3 Camera Assembling

The camera is to be installed inside the housing using the appropriate sliders by means of the screws and washers provided. Pay attention to the fixing, the tightening torque is 2.1 Nm (18.6 lbf in).

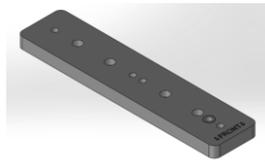
Check the used lens type for the camera and follow the specific assembling instructions given in the sections below.

4.3.1 Camera: Standard Lens, Wide Lens 0.75x, or Tele Lens 2x

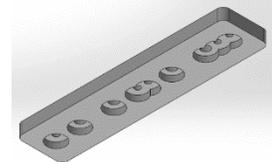
Note mounting position 1 for the camera on the camera slider.



Use the provided spacer to ensure the correct camera alignment.



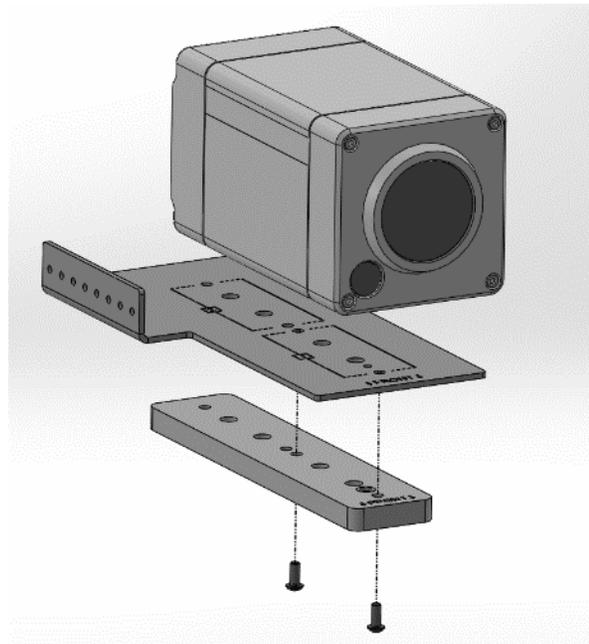
Top view



Bottom view

Assemble the camera, camera slider, and spacer as shown in the illustration.

Ensure the spacer is fitted in its right orientation – the countersinks remain underneath. Please also note the “FRONT” mark on the spacer.

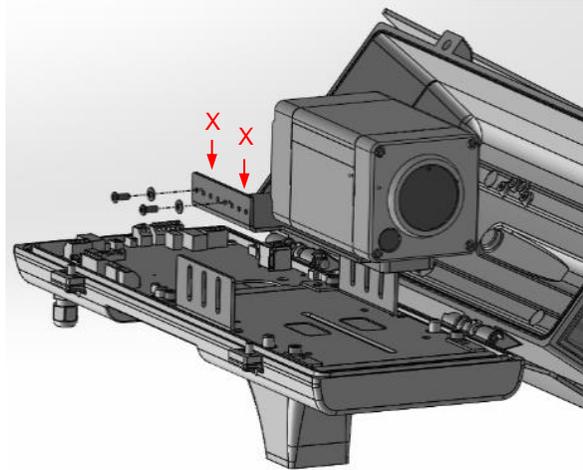


Note the mounting position X for the camera slider onto the main slider whereby X stands for:

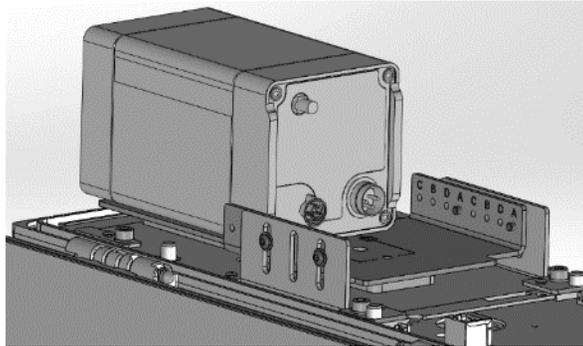
- A: camera with standard lens
- B: camera with wide lens 0.75x
- C: camera with tele lens 2x

Use the two outer slots on the main slider only! Do not use the middle one!

Place the camera in the housing and fasten the camera slider onto the main slider using the screws and washers.

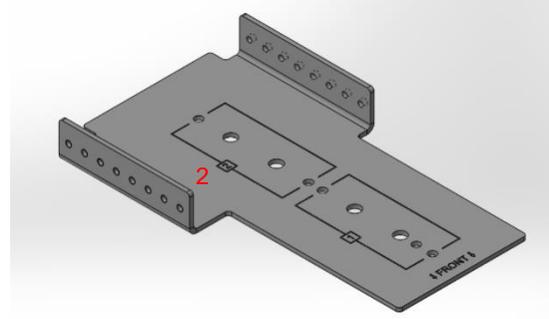


Fully assembled camera exemplary shown for a camera with standard lens at mounting position A.

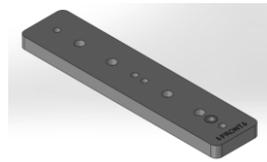


4.3.2 Camera: Tele Lens 4x

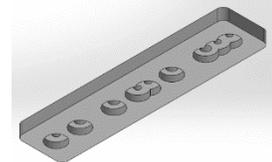
Note the mounting position 2 for the camera on the camera slider.



Use the provided spacer to ensure the correct camera alignment.



Top view



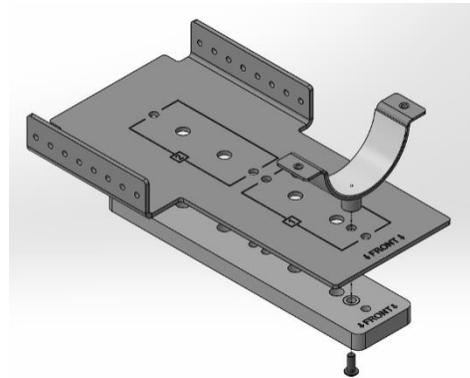
Bottom view

A dedicated clamp assembly is required to provide extra support due to the heaviness of the tele lens 4x. Use the provided M4 screws for the mounting.

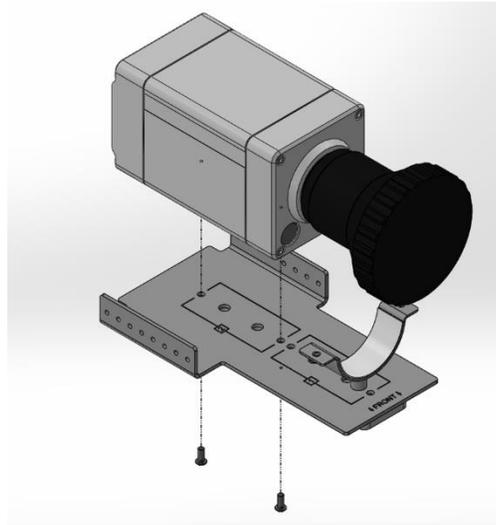


Fit the bottom half of the clamp by using a screw that goes through the second hole on the camera slider and the spacer to the clamp bush.

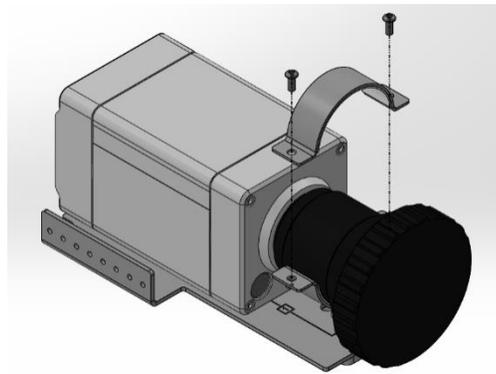
Ensure the spacer is fitted in its right orientation – the countersinks remain underneath. Please also note the “FRONT” mark on the spacer.



Attach the camera to the camera slider and the spacer like shown.

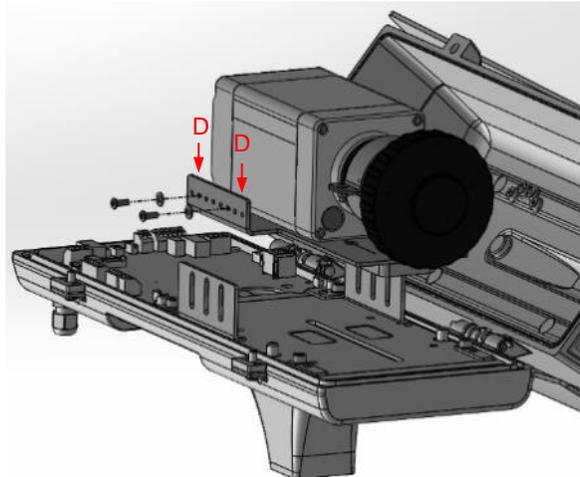


Close the clamp assembly with the top half by using the screws.

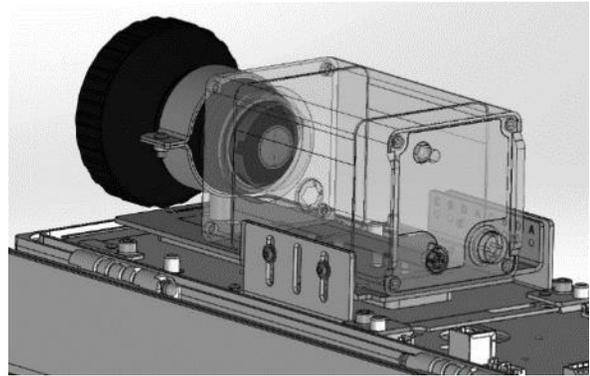


Note the mounting position D for the camera slider onto the main slider. Use the two outer slots of the main slider only! Do not use the middle one!

Place the camera in the housing and fasten the camera slider onto the main slider using the screws and washers.



Fully assembled camera.



4.4 Camera Connections

The electronics board is designed to provide power supply and a data line to the camera. The LD10 LED ON indicates that the camera power supply terminal has the required voltage level.

Figure 4-3: Main Board

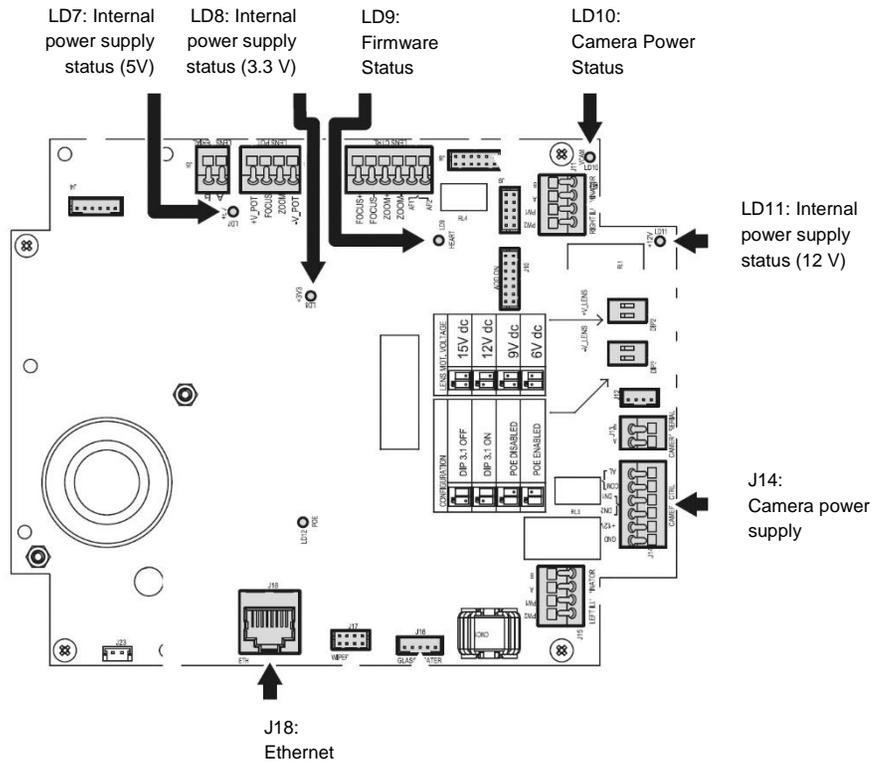
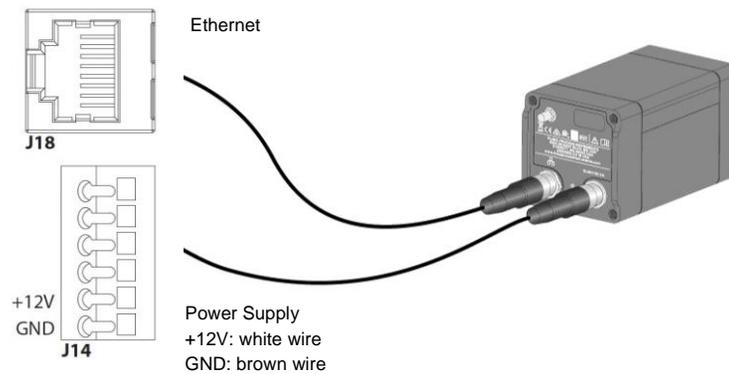


Figure 4-4: Camera Connections





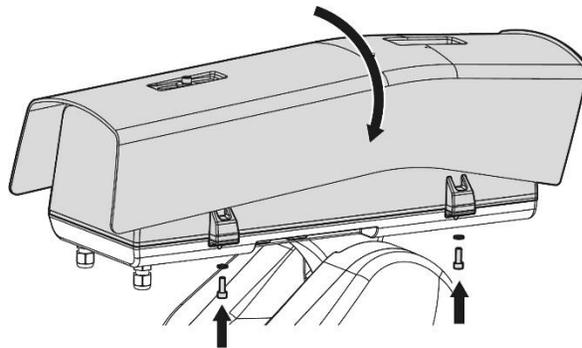
Power supply cable
from camera to
J14 connector

Ethernet cable
from camera to
J18 connector

4.5 Housing Closing

After installation and wiring, close the housing again. Check that the gasket of the housing is present and in good condition. Pay attention to the fixing, the tightening torque is 6 Nm (53.1 lbf in).

Figure 4-5: Closing the Housing



5 Pan Tilt Head 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 guarantee.

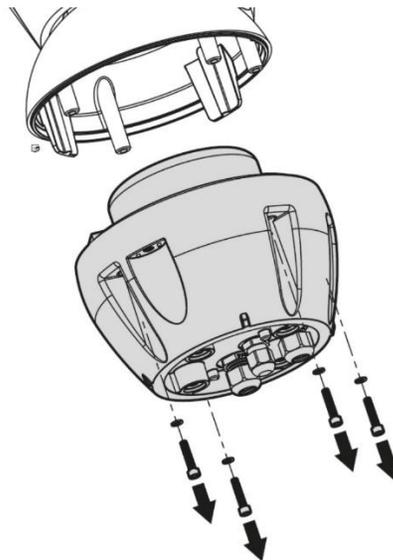


When this instrument is being used in a critical process that could cause property damage and personal injury, the user should provide a redundant device or system that will initiate a safe process shutdown in the event that this instrument should fail.

5.1 Preparations

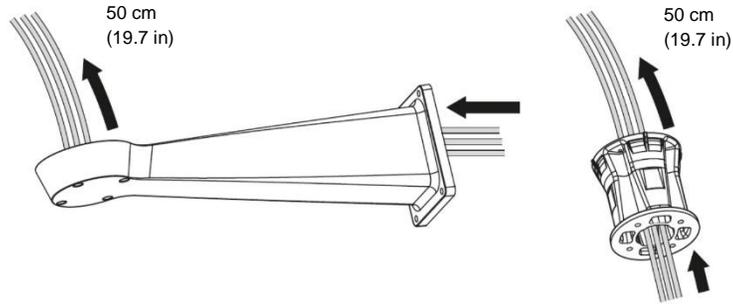
Remove the base from the unit.

Figure 5-1: Removal



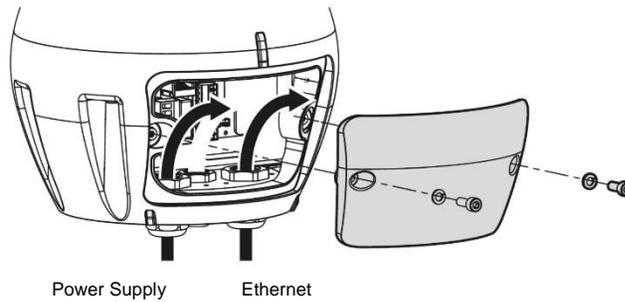
Insert the cables into the support so that they protrude by about 50 cm (19.7 in).

Figure 5-2: Cable Lead Through Wall Mount Bracket (left) and Wall Mount Bracket (right)



Open the hatch by undoing the screws as shown in the figure below. Insert the cables into the cable glands holding the base at about 20 cm (7.9 in) from the support.

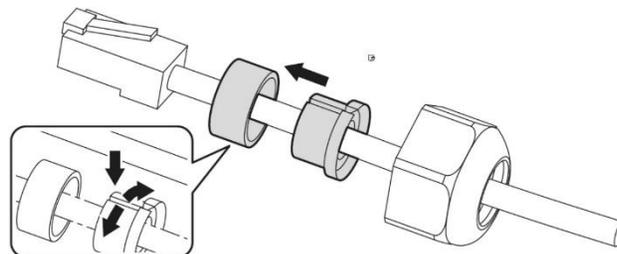
Figure 5-3: Hatch Opening



Use the power cable and the Ethernet network cable provided by the manufacturer. The Ethernet cable is already fitted with a connector, so it is necessary to use the special seal provided.

Tightening torque: 2.7 Nm (23.9 lbf in)

Figure 5-4: Ethernet Cable Gland

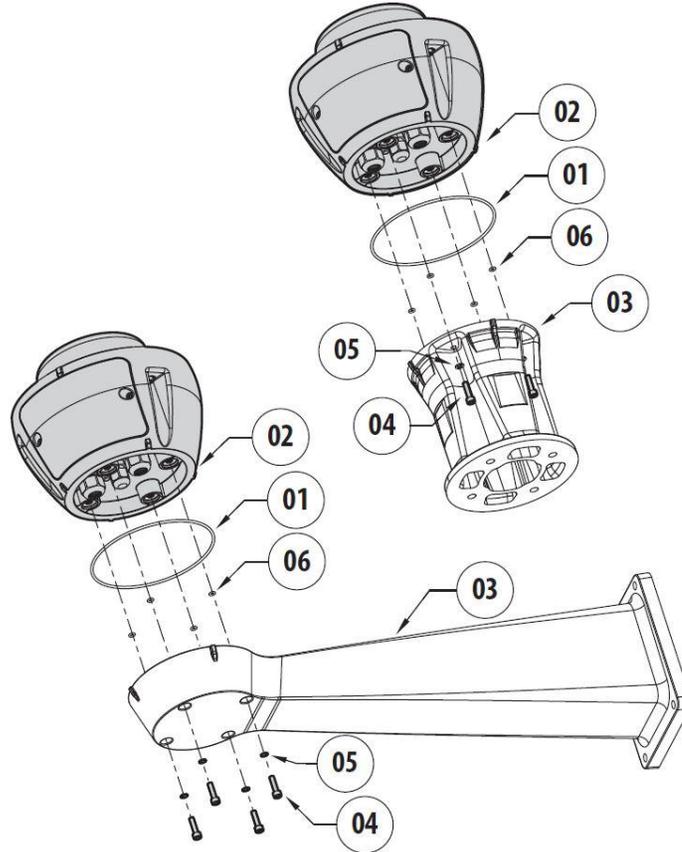


Once you have positioned the gasket (01), fix the base (02) onto the bracket (03) with screws (04), serrated washers (05) and screw rings (06). Use the screws and washers provided with the support.

Tightening torque: 6 Nm (53.1 lbf in)

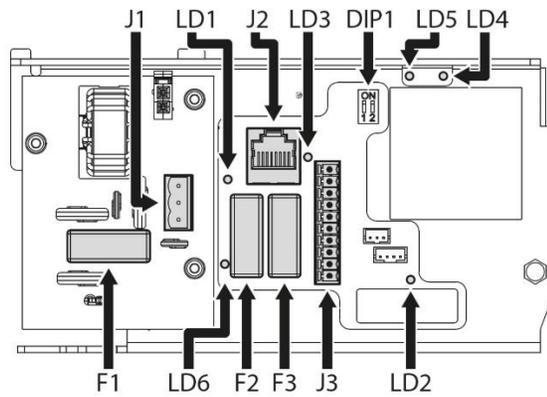
Note
Put some thread-locker into the holes for screws (Loctite 243®).

Figure 5-5: Fixing the Base to the Brackets



5.2 Connector Board

Figure 5-6: Connector Board



The connector board provides the following components:

Table 5-1: Board Description

Components	Function
J1	Connector: power supply line
J2	Connector: Ethernet RJ45
J3	Connector: Not used
DIP1	Switch: Operating Mode
F1	Fuse: power line
F2	Fuse: pan tilt electronic power supply
F3	Fuse: not used
LD1, LD3	LED: Ethernet line status (link and activity)
LD2	LED: Firmware status
LD4, LD5	LED: Status of the communication line with the camera (link and activity)
LD6	LED: power status

5.3 Power Supply Cable

Depending on the version, the device can be provided with different power supply voltages. The power supply voltage is indicated on the product identification label.



Electrical connections must be performed with the power supply disconnected and the circuit-breaker open.



When commencing installation make sure that the specifications for the power supply for the installation correspond with those required by the device.



Check that the power supply socket and cable are adequately dimensioned.

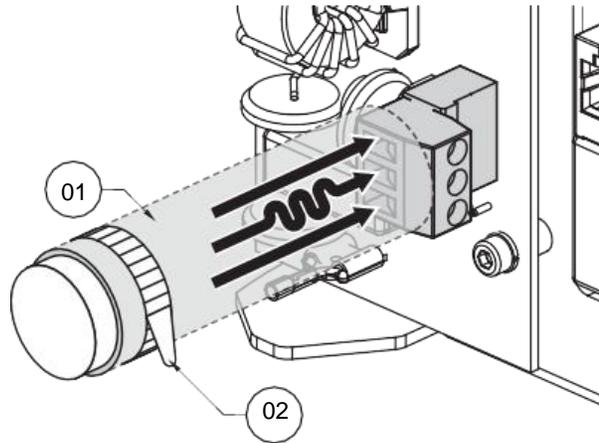


Earth cable should be about 10 mm (0.39 in) longer than the other two, so that it will not be disconnected accidentally if pulled.

Cut the cables to the correct length and make the connections. Connect the power supply to the connector.

The power supply cable must be covered by the silicone sheath (01) supplied. The silicone sheath must be fastened with the corresponding cable tie (02).

Figure 5-7: Power Supply Line



Perform the connections following the instructions reported in the table below. The removable connector is supplied in the kit.

Table 5-2: Connections of the Power Supply Line

Color	Terminal
Power Supply 230 VAC	
blue	N (neutral)
yellow/green	⏚
brown	L (Phase)
Power Supply 120 VAC	
blue	N (neutral)
yellow/green	⏚
brown	L (Phase)

5.4 Ethernet Cable

Use the supplied Ethernet cable provided in a length of 10 m (33 ft). Please note, the supplied Ethernet cable is not for outdoor use. Link the RJ45 connector of the Ethernet cable to the J2 connector on the connector board.

5.5 Operating Mode

The operating mode is preset to “Camera Master” with the system’s shipment via switch DIP1. See the table below for the settings of switch DIP1.

Table 5-3: Setting of DIP1

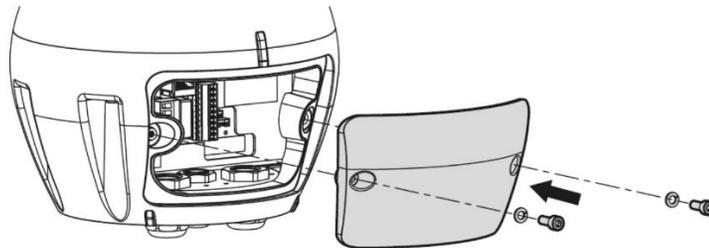
Function	SW1	SW2	Description
Master Selection	ON		Not used
	OFF		Camera Master mode, (delivery status)
Factory Default		ON	enabled
		OFF	disabled (delivery status)

5.6 Fixing

Replace the connector cover being careful not to crush the cables when closing.

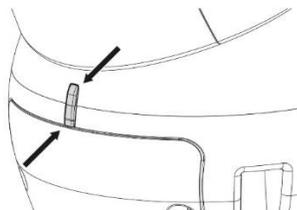
Pay attention to the fixing. Tightening torque: 6 Nm (53.1 lbf in).

Figure 5-8: Cover Closing



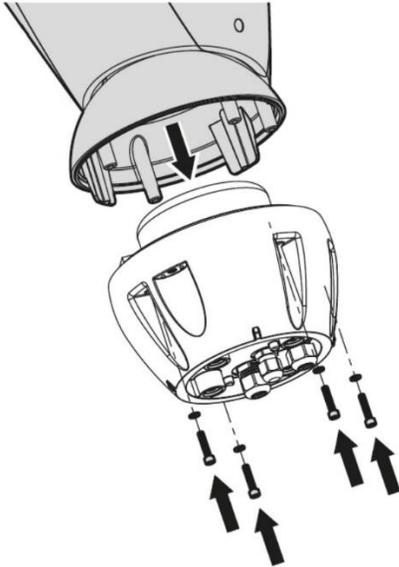
Place the unit body on the base aligning the reference marks. Insert the unit body anti-tipping columns in the holes on the base. Be especially careful not to damage internal components during installation.

Figure 5-9: Aligning to the Reference Marks



Fasten the upper body to the base using the fixing screws. Check that a base gasket is present and in good condition.

Figure 5-10: Fixing of Upper Body and Base



6 Operation

6.1 Switching On



Make sure that the system and other components of the installation are closed so that it is impossible to come into contact with live parts.



Do not stay in the vicinity of the pan tilt head when it is powered. Act on the system only in the absence of a power supply.



Make sure that all parts of the system are fastened down firmly and safely.

Note

The automatic pre-heating (De-Ice) process could be started whenever the device is switched on and the ambient temperature is below 0°C (32°F). The procedure is necessary to guarantee correct operation of the devices even at low temperatures. The duration ranges depending on environmental conditions (from 60 min. up to 120 min.).

The unit is switched on by connecting the power supply.

To switch off the unit disconnect the power.

7 Configuration

7.1 IP Address

The pan tilt head is configured to provide an absolute IP address with the preset of 192.168.42.136

Configuring the IP address of the PC as belonging to the same subnet, e.g.

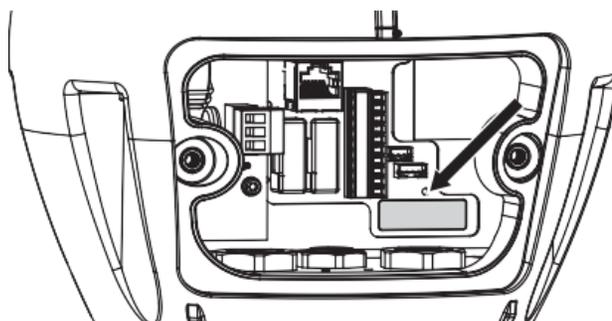
IP address: 192.168.42.1

Subnet mask 255.255.255.0

7.1.1 MAC address

The device MAC address is found on the label located inside the cover of the base connectors, as seen in the figure below.

Figure 7-1: Label for the MAC Address



7.2 Web Interface

The first operation in configuring the device consists in connecting to the web interface. To operate correctly, the pan tilt system must be configured according to the camera installed.

To access the web interface of the product, simply use a browser to connect to `http://<IP address>` whereby `<IP address>` stands for the IP address of the pan tilt system.

Note

Browsers supported: Microsoft Internet Explorer, Google Chrome, Mozilla Firefox.

The preset login data is:

User: admin

Password: admin

Note

The login data must typically be entered twice.

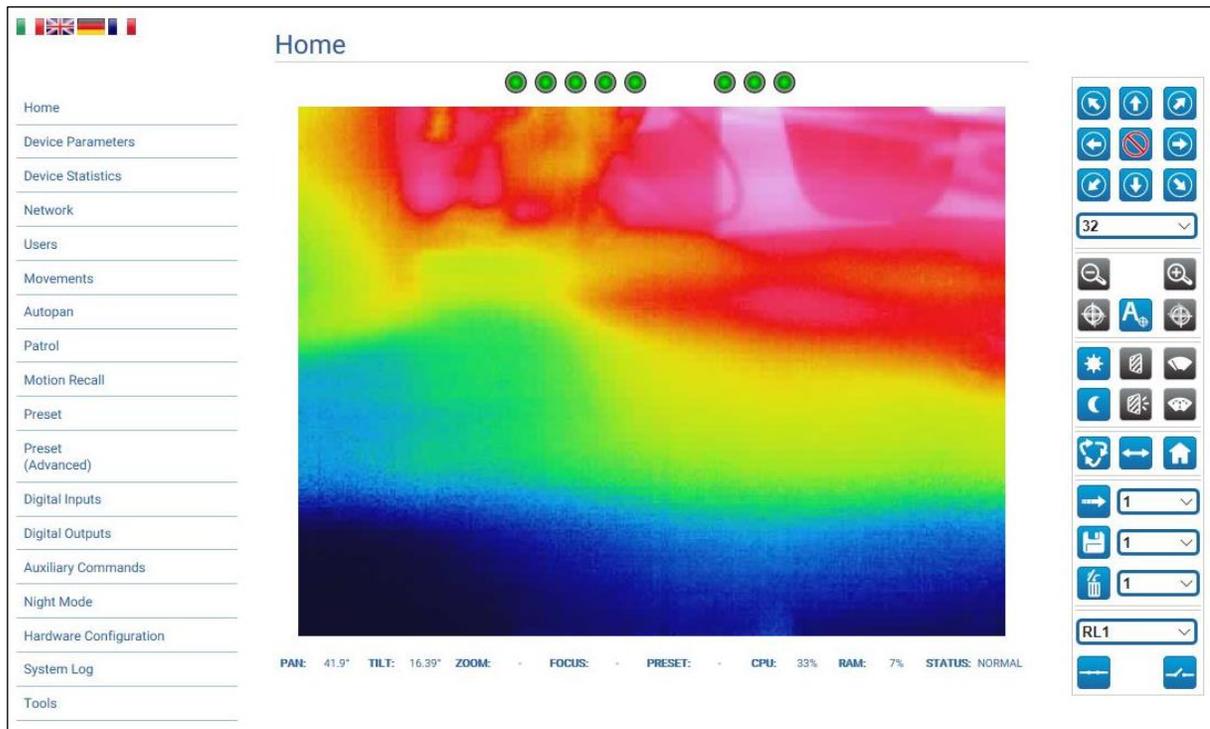
7.2.1 Home Page

The product control interface is displayed if login is successful. On the Home page, the operator can view the system status, view the camera snapshot, and move the unit.

7.2.1.1 Image Stream

This space shows a preview of the thermal image stream. The resolution and its frame rate are fixed.

Figure 7-2: Home Page with Image Stream



During normal operation mode, the System Log menu item is highlighted in yellow and accompanied by an attention signal if an alarm has been triggered.

Figure 7-3: System Log



7.2.1.2 Horizontal and Vertical Movement

The virtual keyboard as shown below allows you to move the unit. Use the drop-down menu under the virtual keyboard to set the speed.

Figure 7-4: Virtual Keyboard for Movements



The unit can also move by clicking directly on the thermal image in the desired direction.

7.2.1.3 Preset Management

The preset management provides the following controls.



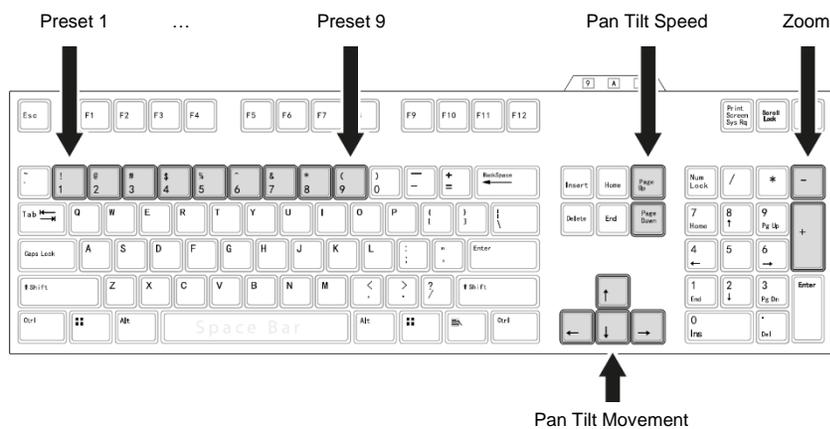
Run Patrol:
The patrol function requires at least 2 presets to have been saved. The speed of movement and waiting times can be configured, see section 7.2.11 [Preset \(Advanced\)](#) , page 51.

Run Autopan:
Continuous recall of the 2 configured positions, see section 7.2.7 [Autopan](#) , page 49.

Go to Home Position:
Recalls the preset number 1 position.

It is possible to control the device via the PC keyboard using the keys indicated below.

Figure 7-5: Device Control Using the Keyboard



7.2.2 Device Parameters

From the menu entry Device Parameters it is possible to set the name of the device and view other additional information.

Figure 7-6: Device Parameters

Device Parameters

Device Name	ulisse2
Product Code	UPTB2SWA00A
Serial Number	119022810001
MAC Address	00:21:A6:00:24:8E
Firmware Version: CPU Board	1.6.1
Firmware Version: Motor Board	1.6.1
Firmware Version: Housing Board	1.6.1
Hardware Revision	1
Major Revision	1
Minor Revision	1

7.2.3 Device Statistics

From the menu entry Device Statistics all of the statistics are gathered during device operation are provided in read-only mode.

Figure 7-7: Device Statistics

Device Statistics

Pan Degrees (°)	1322085
Tilt Degrees (°)	535311
Power Ups	96
Working Hours (h)	1644
Housing Board Maximum Temperature (°C)	51
Housing Board Minimum Temperature (°C)	0
Motors Board Maximum Temperature (°C)	69
Motors Board Minimum Temperature (°C)	0
CPU Board Maximum Temperature (°C)	47
CPU Board Minimum Temperature (°C)	22

7.2.4 Network

From menu entry Network it is possible to change the setting of the pan tilt network. New network parameters can be entered here. Please note, with a changed network parameter the communication will be interrupted and the user has to login again using these new network parameters.

Addressing:

- IP version: IPv4
- Address Type: STATIC
- IP Address: the pan tilt head is preset with the following address 192.168.42.136
- Subnet Mask: 255.255.255.0
- Gateway: e.g. 192.168.42.1

DNS: disabled

NTP Server: It is also possible to specify if the device needs to be synchronized with an external NTP (Network Time Protocol) server.

- **DISABLED:** Select this option if you do not wish to synchronize date and time of the device.
- **DHCP:** Select this option if you wish to synchronize the date and time of the device with those of an NTP server (Network Time Protocol) indicated by the DHCP server.
- **STATIC:** Select this option if you wish to synchronize date and time of the device with those of the NTP (Network Time Protocol) server specified by the static address.

PC Sync: This allows you to synchronize the date and time of the product with that of the PC that you are using (you need to re-execute the command after each unit switch on-off cycle).

Figure 7-8: Network Page

The screenshot shows the Network configuration page with the following settings:

Network	
IP Version	IPv4
Address Type	STATIC
IP Address (IPv4)	192.168.42.50
Subnet Mask (IPv4)	255.255.255.0
Gateway (IPv4)	192.168.42.1
DNS Auto Discovery	DISABLED
Primary DNS	8.8.8.8
Secondary DNS	8.8.4.4
Date & Time	2019-12-11 13:13:50 UTC
NTP Server	DISABLED
PC Sync	DISABLED
UPNP	ENABLED
Zeroconf	ENABLED
Multicast Discovery	ENABLED
WS Discovery	ENABLED

7.2.5 Users

From the menu entry User Configuration it is possible to manage all users that have access to the device.

Administrator type users can access the complete configuration of the device.

Users such as Operators, Users and Anonymous have limited access to the management pages.

Users with limited access can only access the pages:

- Home (move the pan tilt head and reference the presets)
- Device Parameters
- Device Statistics

The password can only contain the following characters (a-z, A-Z, 0-9, ,_+@%/-()^*[]{}#;~).

Figure 7-9: User Page

The screenshot shows a web interface titled "Users". It contains a form with two rows. The first row has a label "Username" on the left and a text input field containing "admin" on the right. The second row has a label "Privilege" on the left and a dropdown menu showing "Administrator" on the right. The form is enclosed in a light gray border.

7.2.6 Movements

From the menu entry Movements is possible to control, via web, all pan tilt parameters.

- **Offset Pan:** The pan tilt system has a mechanically defined 0° position. The Offset Pan function allows the definition of a different 0° position using software.
- **Economy Mode:** It reduces the motor's torque when the pan tilt system is at standstill to decrease consumption. Do not enable in the presence of strong wind or vibrations.
- **Maximum Speed:** Sets the maximum manual speed.
- **Ramp Type:** This allows you to select the pan tilt accelerations.
(Acceleration/deceleration time: 1 = 1.1 s, 2 = 0.95 s, 3 = 0.8 s, 4 = 0.5 s)
- **Speed with Zoom:** When enabled, this parameter automatically slows down the pan tilt speed, based on the Zoom factor.
- **Tilt Factor:** Sets the reduction factor of the tilt axis manual speed. Movement speed factor calculation:
 $\text{Tilt axis speed} = \text{Tilt nominal speed} / \text{Tilt factor}$.
- **Pan Limits:** Enables the limits of Pan.
- **Pan Start:** Sets the start limit of Pan.
- **Pan End:** Sets the end limit of Pan.
- **Tilt Start:** Sets the start limit of Tilt.
- **Tilt End:** Sets the end limit of Tilt.
- **Sensitivity:** It enables selection of detection system sensitivity of unwanted Pan and Tilt movements. If the threshold set is surpassed, the system will calibrate Pan and Tilt.

Figure 7-10: Movements Page

Movements

Options	
Offset Pan (*) [0.00 ÷ 359.99]	0.00
Economy Mode	ENABLED

Manual Controls	
Maximum Speed (*s) [0.02 ÷ 100.00]	20.00
Ramp Type	4
Tilt Factor	1

Movement Limits	
Pan Limits	DISABLED
Tilt Start (*) [-39.99 ÷ 90.00]	90.00
Tilt End (*) [-40.00 ÷ 89.99]	-40.00

Position Check	
Sensitivity	MID

7.2.7 Autopan

From the menu entry Autopan it is possible to specify the preset autopan start and end. It is possible to set the speed with which the distance is to be covered.

Figure 7-11: Autopan Page

Autopan

From Preset	1
To Preset	2
Outward Movement Speed (*s) [0.02 ÷ 100.00]	100.00
Return Movement Speed (*s) [0.02 ÷ 100.00]	100.00

7.2.8 Patrol

From menu entry Patrol it is possible to specify the preset patrol start and end. It is possible to specify whether the scan of the presets needs to be carried out randomly or otherwise.

Figure 7-12: Patrol Page

Patrol

First Preset [1 ÷ 250]	<input type="text" value="1"/>
Last Preset [2 ÷ 250]	<input type="text" value="250"/>
Random Mode	<input type="text" value="DISABLED"/>

7.2.9 Motions Recall

In the Motions Recall menu item, you can specify the time intervals after which the pan tilt system will execute certain functions.

- **Type:** This parameter selects the function to execute once the time interval of inactivity is up. The functions which can be activated are Home, Autopan and Patrol.
- **Timeout:** This parameter specifies the duration of the inactivity interval.
- **Cyclic Re-calibration:** This parameter specifies after how many hours the system must execute a new axes calibration procedure. Sets value 0 to disable the function.

Figure 7-13: Motions Recall Page

Motion Recall

Type	<input type="text" value="NONE"/>
Timeout (s) [60 ÷ 3600]	<input type="text" value="3600"/>
Cyclic Re-calibration (h) [0 ÷ 168]	<input type="text" value="0"/>

7.2.10 Preset

From the menu entry Preset a number of parameters relative to the presets can be configured:

- **Scan Speed:** The speed, measured in degrees to the second, at which a preset is reached by explicit operator request.
- **Speed of Movements Default:** The speed used in autopan and patrol operations.
- **Impose Default Speed:** The default speed will also be set as the scanning speed for all presets.
- **Default Dwell Time:** The amount of time, in seconds, it stays in each preset by default.
- **Impose Default Pause:** The default pause will be set for all presets.

Figure 7-14: Preset Page

Preset

Scan Speed (* /s) [0.02 ÷ 100.00]	<input type="text" value="100.00"/>
Speed of Movements Default (* /s) [0.02 ÷ 100.00]	<input type="text" value="100.00"/>
Impose Default Speed	<input type="text" value="NO"/>
Default Dwell Time (s) [0 ÷ 3600]	<input type="text" value="5"/>
Impose Default Pause	<input type="text" value="NO"/>

7.2.11 Preset (Advanced)

In the Preset (Advanced) section it is possible to customize the speed and pause values for each preset, in addition to enabling/disabling the presets themselves.

The speed and pause values are used for Patrol management.

Figure 7-15: Preset (Advanced) Page

Preset (Advanced)

Preset ID	<input type="text" value="1"/>
Enabled	<input type="text" value="YES"/>
Pan	-141.89°
Tilt	-15.13°
Zoom	-
Focus	-
Movements Speed (* /s) [0.02 ÷ 100.00]	<input type="text" value="100.00"/>
Dwell Time (s) [0 ÷ 3600]	<input type="text" value="5"/>

7.2.12 Digital Inputs

This menu is not relevant to the user.

7.2.13 Digital Outputs

This menu is not relevant to the user.

7.2.14 Auxiliary Commands

This menu is not relevant to the user.

7.2.15 Night Mode

This menu is not relevant to the user.

7.2.16 Hardware Configuration

The submenu Snapshot is the only relevant one for the user. To establish the communication and to get an image stream from the camera enable the item Snapshot and provide the following instruction:

`http://192.168.42.50:55000/www/camera/ir`

whereby `192.168.42.50` stands for the current IP address of the camera and must be adapted accordingly.

Figure 7-16: Hardware Configuration Page

The screenshot shows the 'Hardware Configuration' page with four sections:

- Serial Port:** Protocol (PELCO D), ACK Sending (DISABLED), Baudrate (2400), Serial Type (RS485), Data Bits (8), Parity Check (NONE), Stop Bits (1).
- Snapshot:** Snapshot (ENABLED), Snapshot URI (`http://192.168.42.50:55000/www/camera/ir`), Snapshot autorefresh (DISABLED).
- Lens Characteristics:** Lens (NONE).
- Accessories:** Wiper (NOT PRESENT), Illuminators (NOT PRESENT), Heated Glass (NOT PRESENT), Wash System (NOT PRESENT).

7.2.17 System Log

The System Log menu can be used to view the history of events. The system can detect different types of status changes. The buttons below the log window allow you to select the filter by level of criticality.

- **Error Level:** Displays only critical errors.
- **Warning Level:** Displays errors that could compromise proper functioning.
- **Download Files:** Allows you to download the log files.

Figure 7-17: System Log Page

7.2.18 Tools

From menu entry Tools it is possible to re-set the predefined values for the entire configuration of the device or only for several specific sections.

Figure 7-18: Tools Page

RESET PRESETS: resets all presets settings to their factory values. All other parameters remain unchanged.
RESET PARAMS: resets all parameter settings including all presets to their factory values. Network and system parameters remain unchanged.
RESET ALL: resets all parameter settings including all presets and network and system parameters to their factory values (not recommended)
UPLOAD CONFIGURATION: loads a previously saved backup file to the device. As a fallback option, there is a backup file on the data carrier with a configuration at the time of delivery.

DOWNLOAD CONFIGURATION: saves a backup file containing the complete device configuration including all parameters, presets, network and system parameters.

Note

It is not recommended to execute RESET ALL, because here the communication parameters are also reset and the communication is interrupted. Instead, run UPLOAD CONFIGURATION and load your last backup file into the device.

7.3 Transmission Factor

The front window in the pan tilt housing is made from Germanium. To avoid erroneous readings for the infrared camera, ensure that the correct transmission factor for that window is set in the thermal imaging software!

8 Accessories

8.1 Base Mount Bracket

The base mount bracket (A-TV-PT-WBTAB) is used to mount the pan tilt head for instance on a balustrade. The bracket comes with an internal cable channel.

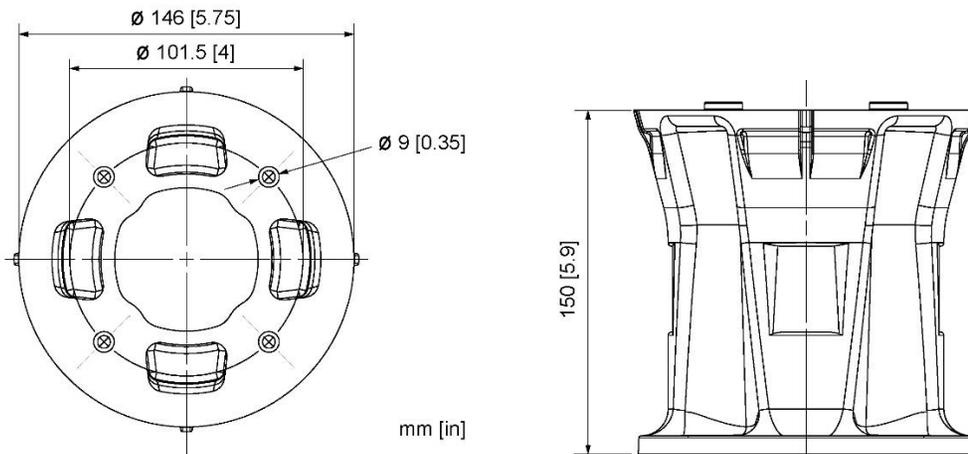
Weight	1.6 kg (3.5 lb)
Material	die-cast aluminum, powder painted

Figure 8-1: Base Mount Bracket



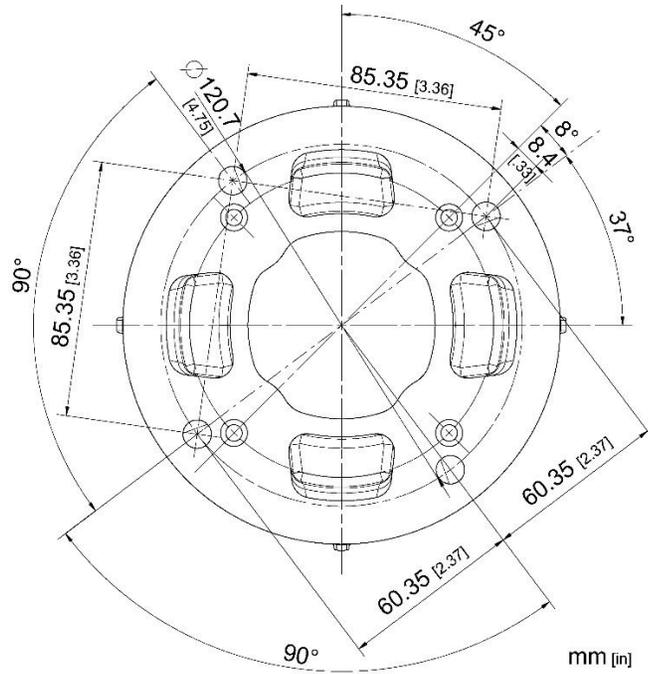
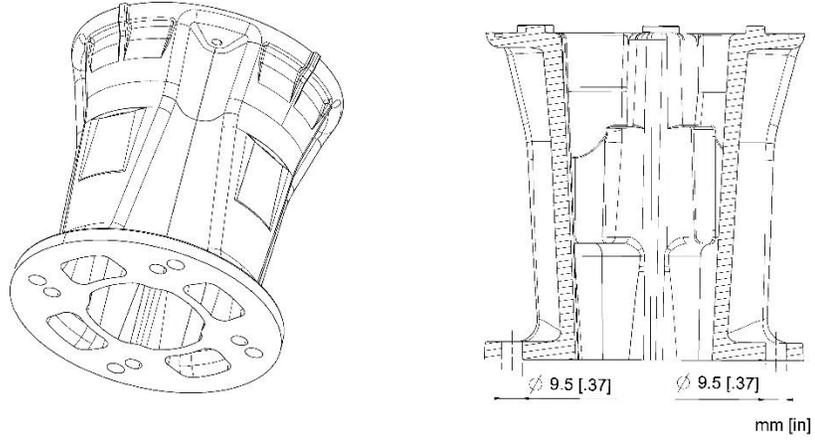
For the mechanical installation, see the footprint for the bracket in the figure below.

Figure 8-2: Dimensions



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8.2 Wall Mount Bracket

The wall mount bracket (A-TV-PT-WBA) is used to mount the pan tilt head on a wall of a building or solid fence. The bracket comes with an internal cable channel.

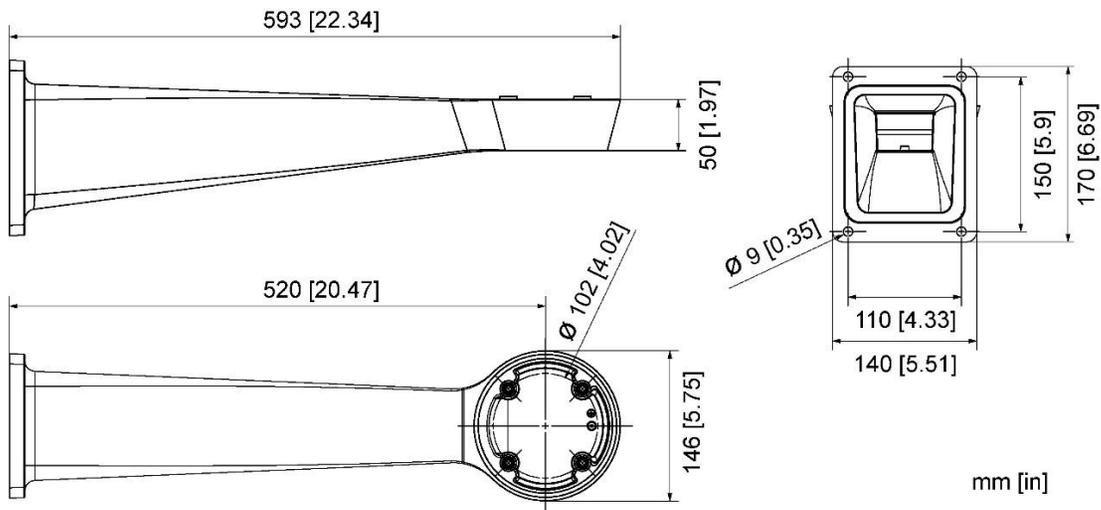
Weight	3.1 kg (6.8 lb)
Material	die-cast aluminum, powder painted

Figure 8-3: Wall Mount Bracket



For the mechanical installation, see the footprint for the wall mount bracket in the figure below.

Figure 8-4: Dimensions



8.3 Fiber Optic to Ethernet Converter (A-CON-1FO-1RJ45)

The Fiber Optic Converter (A-CON-1FO-1RJ45) is an industrial Ethernet converter with 1x Ethernet port and 1x fiber optic port. The converter is DIN-rail or wall mountable.

Communications

Standard	IEEE 802.3, 802.3u, 802.3ab, 802.3x, IEEE 802.3z
LAN	10/100/1000Base-T (X), 1000Base-SX
Transmission Distance	Ethernet: max. 100 m (328 ft) Multi-mode: up to 550 m (1804 ft)
Transmission Speed	up to 1000 Mbps

Optical Fiber

Multi-mode	wavelength: 850 nm parameters: 50/125 μm , 62.5/125 μm
------------	---

Interface

Connectors	1 x RJ45 port, 1 x SC type fiber optic 6-pin removable screw terminal (power & relay)
------------	--

Power

Power Consumption	3.5 W
Power Input	12 to 48 VDC, redundant dual inputs

Mechanism

Dimensions (W x H x D)	30 x 140 x 95 mm (1.18 x 5.51 x 3.74 in)
Enclosure	IP30, metal shell with solid mounting kits
Mounting	DIN-rail, wall

Protection

Power Reverse	Present
Overload current	Present

Environment

Operating Temperature	-10 to 60°C (14 to 140°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Humidity	10 to 95% (non-condensing)
Storage Humidity	10 to 95% (non-condensing)

9 Maintenance



Before doing any technical work on the device, disconnect the power supply.



Maintenance must be carried out by personnel trained to operate on electrical circuits.

Our sales representatives and customer service staff are always at your disposal for questions regarding applications, calibration, repair, and solutions to specific problems. Please contact your local sales representative if you need assistance. In many cases, problems can be solved over the telephone. If you need to return equipment for servicing, calibration or repair, please contact our Service Department before shipping. Phone numbers are listed at the beginning of this document.

9.1 Factory Default

Follow the procedure to reset the pan tilt head to default factory settings.

- Switch off the unit.
- Open the connector housing cover.
- Locate the switch DIP1 on the connector board.
- Turn switch SW2 to ON.
- Close the connector housing cover.
- Power the unit.
- Wait 60 seconds.
- Switch off the unit.
- Open the connector housing cover.
- Turn switch SW2 to OFF.
- Close the connector housing cover.
- Power the unit.

Note

The described factory default procedure does not affect the thermal camera.

9.2 Troubleshooting

Note

Contact the technical support team if the problems listed below persist or you have any other issues that are not described here.

Table 9-4: Troubleshooting

Symptom	Probable cause	Remedy
Power does not turn on.	Wiring error, blown fuse.	Make sure the connections are correct. Check the continuity of the fuses and replace them with the indicated models should they fail.
No communication	IP address mismatch	If auto-allocation fails, the system automatically sets the address http://192.168.0.100 In worth case, use an ONVIF compatible VMS or a network sniffer to find the current IP address of the device (IP scan utility).

9.3 Fuses Replacement



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

9.3.1 Pan Tilt Head

If necessary, the connector board's fuses can be replaced, see section 5.2 [Connector Board](#), page 37. The new fuses must comply with the directions given in the table.

Table 9-5: Fuses Replacement

Voltage	Fuse F1	Fuse F2	Fuse F3
120 VAC 50/60 Hz 240 VAC 50/60 Hz	T 4A H 250V 5x20	T 6.3A H 250V 5x20	T 4A H 250V 5x20

9.4 Cleaning the Window

Always keep the front window of the pan tilt housing free from contaminations. Care should be taken when cleaning. To clean the window, do the following:

1. Lightly blow off loose particles with “canned” air (used for cleaning computer equipment) or a small squeeze bellows (used for cleaning camera lenses).
2. Gently brush off any remaining particles with a soft camel hair brush or a soft lens tissue (available from camera supply stores).
3. Clean remaining “dirt” using a cotton swab or soft lens tissue dampened in distilled water. Do not scratch the surface.

For fingerprints or other grease, use any of the following:

- Denatured alcohol
- Ethanol
- Kodak lens cleaner

Apply one of the above to the window. Wipe gently with a soft, clean cloth until you see colors on the surface, then allow to air dry. Do not wipe the surface dry, as this may scratch the surface.

If silicones (used in hand creams) get on the window, gently wipe the surface with Hexane. Allow to air dry.

Note

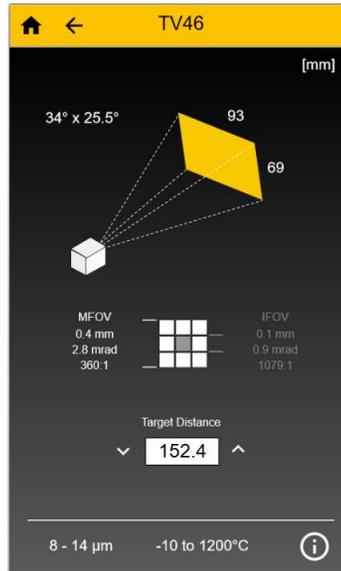
Do not use any ammonia or any cleaners containing ammonia to clean the window. This may result in permanent damage to the windows surface!

10 Appendix

10.1 Field of View Calculator

It is important that the thermal camera is mounted at a distance from the target, sufficient to be able to “see” the entire area of interest. For this reason, the manufacturer provides a field of view calculating software called “Spot Size Calculator”, which allows the calculation of the thermal image size (Field of View FOV) and the pixel size (Instantaneous Field of View IFOV) for a given lens, based on a specific camera mounting distance.

Figure 10-1: Field of View Calculator for the Thermal Camera



The “Spot Size Calculator” tool is available via the following stores and locations:

<p>As app for Windows 10 based desktop computers, see Windows Store</p>		
<p>As app for Android mobiles, see Google Play Store</p>		
<p>As App for the iOS mobiles (iPhone and iPad), see App Store</p>		
<p>As html5 web page, see http://m.flukeprocessinstruments.com/SpotSizeCalculator/index.html</p>		

