# FLIR®

# FH-Series R PTZ Quick Install Guide



**Camera Body with Sunshield Attached**



**Pan-Tilt Unit**

This guide describes how to mount and connect an FH-Series R PTZ camera to the pan-tilt unit (PTU).

# 1 Check Contents

The camera kit includes:

- a T10 Torx wrench
- two 10-pin connectors for I/O terminal blocks
- a 24V AC input terminal block
- a 24V AC power supply (PN T912422)
- a two-pin connector for 24V AC input terminal block
- two screws
- two spring washers
- two flat washers

- two two-pin connectors for 24V AC output terminal blocks - not supported
- one three-pin connector for the 12V DC terminal block - not supported

The camera kit also includes a seal insert with a single large hole to accommodate the cable from the PTU.

If any of these items are missing or damaged, contact your dealer or Teledyne FLIR Support.



*Seal Insert*

> ⚠️ **Caution**
>
> - Teledyne FLIR recommends only trained personnel install the camera.
> - Before installing an FH-Series R PTZ camera, Teledyne FLIR recommends reading and understanding the *FH-Series Installation and User Guide* (427-0102-00-10). To download the guide, scan the QR code at right.
> - Except as described in these guides, do not open an FH-Series R PTZ camera or attempt to disassemble it. Attempting to disassemble the camera can cause permanent damage and voids the warranty.
> - Electrostatic discharge (ESD) or careless handling can cause damage to the camera. To avoid damaging electrostatic-sensitive components, always handle the camera with care.
> - Be careful not to leave fingerprints on the FH-Series R PTZ camera's infrared optics.

# 2 Select a Location

FH-Series R PTZ cameras are intended to be mounted at an installation height of at least 4.4 m (14 ft).

**Supplying Power to the Camera**

The camera can be powered by the 24V AC (±10%), or by a PoE IEEE 802.3bt 50W class 6 or 70W class 8. Teledyne FLIR recommends the 24V AC or a 70W class 8 PoE. When using the 24V AC or a 70W class 8 PoE, the camera's operating temperature range is -40°C to 70°C (-40°F to 158°F), with cold start at -40°C (-40°F), 0-95% relative humidity. PoE 50W class 6 limits low-temperature operation. For more information, see the camera's installation and user guide.

Nominal power consumption is 15W; with heaters enabled, 70W.

> ⚠️ **Important**   Using PoE to power the camera requires four-pair power. The Ethernet cable from the PoE switch or injector must support four-pair power.

> ⚠️ **Warning**
>
> - Operating the camera outside the specified operating temperature range can cause permanent damage.
> - Failure to properly ground the camera can cause permanently damage. Make sure the camera is properly grounded.
> - At the mounting location, secure the camera before supplying power to it.
> - The camera itself does not have a power on/off switch. Do not supply power to the camera until you have completely finished connecting it.
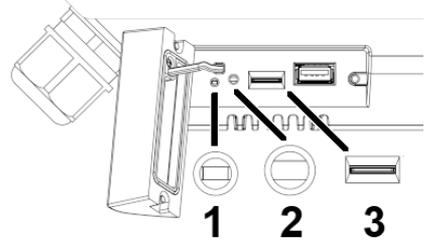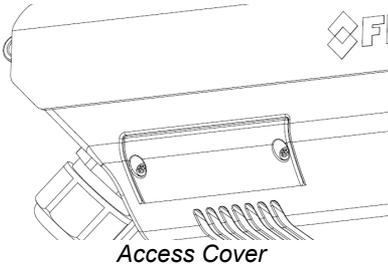
## Supplying Power to the PTU

The PTU can be powered by the 24V AC (±25%), 50/60 Hz. Power consumption is ≤80W. 24V DC ± 10% is supported. In order to avoid overheating, make sure the power supply is capped correctly.

# 3 Connect the Camera

Teledyne FLIR recommends connecting the camera on a bench or in a lab and configuring it for networking before mounting it. However, circumstances can dictate mounting the camera before connecting it and configuring it for networking. Adjust these steps accordingly.

## Side Panel Interfaces

A microSD card slot and a reset / default button are on a panel on the side of the camera, behind an access cover.



*Access Cover*

| Side Panel | |
|---|---|
| 1 | **LED status indicator—**Solid green indicates the camera is powered and operating. |
| 2 | **Recessed Default / Reset button—**To press the button, Teledyne FLIR recommends using a cell phone SIM or memory card tray eject tool or something similar. | • To reboot and reset the camera to its previously saved settings, press the button for between 1-3 seconds. <br> • To reboot and reset the camera to its factory default settings, press the button for at least 10 seconds. |
| 3 | **microSD card slot** | |

a. Loosen and remove the screws that secure the access cover.

b. Insert a microSD card into the slot.

| ⚠ **Important** | Use a preformatted microSD card or format it with a single partition using the camera's web page or a PC. For more information, see the camera's installation and user guide. |
|---|---|

| ◈ **Tip** | Access the camera's web page, open the Recording page, and make sure the camera recognizes the microSD card. |
|---|---|

c. To ensure that the camera remains waterproof, store the access cover anti-drop strap inside the camera.

d. Close and lock the access cover.

**Primary Connections**

a. Through slots in the sunshield, use the Torx wrench supplied with the camera to loosen and remove the two screws that secure the camera's top cover and that are closest to the hinges. Then, loosen and remove the other two screws.



You do not need to remove the sunshield to open the cover. Nonetheless, if you want to remove the sunshield, loosen and remove the screws that attach it to the camera body. Then, carefully remove the sunshield.

b. Open the camera cover to expose the inside of the camera body and the following connections.

| | Connection | Description | |
|---|---|---|---|
| 1 | LAN (56V⎓1.6A) PoE 802.3bt  | When the camera is mounted on the PTU, attach the RJ45 plug on the cable from the PTU tilt motor housing to the RJ45 port. **LEDs—**Solid green indicates an active connection. Flashing orange indicates data traffic between the camera and the network. | |
| 2 | BNC x 2  | **T/V—**Analog visible or thermal video output; supports OSD | Attach to these connectors analog video cables rated RG59U or higher. |
| 3 | T/V  THERMAL ANALOG VIDEO OUTPUT | Analog thermal video output; no OSD | You can configure the video format of the T/V connector and the on-screen display (OSD) using the camera's web page. |
| 4 | 10-pin terminal block x 2 | To the appropriate pins on a ten-pin connector included in the camera kit, connect wires from alarm or audio I/O devices, or from IR LED illuminators. For pin assignments, see below. Then, plug the connectors into the terminal blocks. | |
| 5 | POWER INPUT  24V AC / DC 7.2A | When the camera is mounted on the PTU, connect the 24V AC wires from the PTU to a two-pin connector included in the camera kit. Then, plug the connector into the terminal block. 24V DC ± 10% is supported. In order to avoid overheating, make sure the power supply is capped correctly. | |
| 6 |  | Anchor a ground strap to this grounding lug and connect it to the nearest earth-grounding point. | |
| | **Not supported** | | |
| | ILLUMINATION POWER OUT 1 AC24V | ILLUMINATION POWER OUT 2 AC24V | 12V DC⎓4A (IN) |

## 10-Pin Terminal Blocks
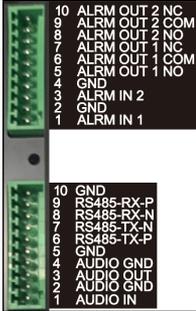


When the camera is mounted on the PTU, connect the RS-422 wires on the cable from the PTU to the RS-485 pins on the connector that you plug into the appropriate 10-pin terminal block.
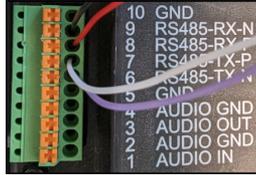


See example from FH camera
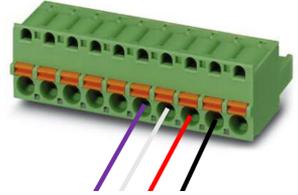
| RS-422 Wires | | 10-Pin Terminal Block | |
|---|---|---|---|
| Label | Color | Pin | Label |
| RX- | Purple | 6 | RS-485-TX-N |
| RX+ | White | 7 | RS-485-TX-P |
| TX+ | Red | 8 | RS-485-RX-P |
| TX- | Black | 9 | RS-485-RX-N |
| DC12V | Black | 10 | GND |

# 4 Configure for Networking

To discover the camera on the network, Teledyne FLIR recommends using the FLIR Discovery Network Assistant (DNA) tool. Version 2.3.0.25 and later support FH-Series R PTZ cameras, does not require a license to use, and is a free download from the Teledyne FLIR website. You can also configure the camera for networking using the camera's web page, or a supported VMS. Using the DNA tool or the camera's web page for initial configuration requires using the default admin user or any user assigned the admin or expert role.

| Task | DNA tool | Camera's web page |
|---|---|---|
| Discover camera IP address | • | |
| Configure IP address, mask, and gateway | • | • |
| Configure IP address, mask, and gateway for more than one camera at the same time | • | |
| Change user credentials | • | • |
| Configure DNS settings, MTU, and Ethernet speed | | • |

| | Notes | • For information about using the supported VMS to configure the camera, see the VMS documentation.<br>• For information about accessing the camera's web page, see the camera's installation and user guide. |
|---|---|---|

By default, DHCP is enabled on the camera and a DHCP server on the network assigns the camera an IP address. For example, if the camera is managed by Teledyne FLIR's Horizon or Meridian VMS and the VMS is configured as a DHCP server, the VMS automatically assigns the camera an IP address.

If the camera is managed by Teledyne FLIR's Latitude VMS or is on a network with static IP addressing, you can manually specify the camera's IP address using the DNA tool or the camera's web page. The camera's default IP address is 192.168.0.250.

**To manually specify the camera's IP address using the DNA tool:**

a. Run the DNA tool (DNA.exe) by double-clicking .

The Discover List appears, showing compatible devices on the LAN segment and their current IP addresses.
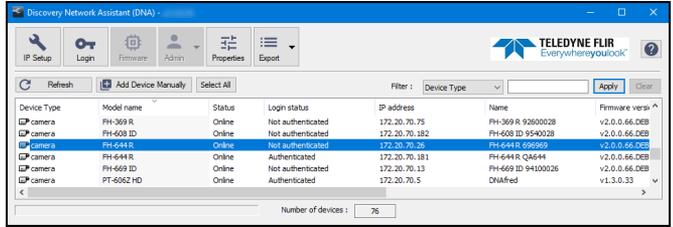


In the DNA Discover List, verify that the camera's status is *Online*.

If this is the first time you are configuring the camera or if it is the first time after resetting the camera to its factory defaults, DNA automatically authenticates the camera with the default password for the camera's admin user (*admin*).

If the admin user password has been changed, you need to authenticate the camera.

In the DNA Discover List, select the camera and click **Login**.

In the **DNA - Login** window, type the password for the admin user. If you do not know the admin user password, contact the person who configured the camera's users and passwords.



Click **Login**, wait for ✔ Ok status to appear, and then click **Close**.
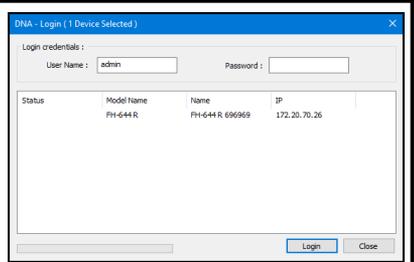
In the DNA Discover List, verify that the camera's status is *Authenticated*.

b. Change the camera's IP address.

Right-click the camera and select **IP Setup**.

In the **DNA - IP Setup** window, clear *Use DHCP* and specify the camera's *IP address*. You can also specify the *Mask* (default: 255.255.255.0) and *Gateway*.

Then, click **Update**, wait for ✔ Ok status to appear, and then click **Close**.
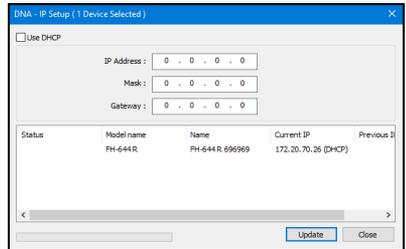
**Close the Cover**

Disconnect the camera.

Then, to prevent damaging the camera's internal components while moving it from the bench or lab to its mounting location, close the camera cover and either re-attach the sunshield or make sure to bring it to the mounting location.

At the mounting location, to connect the camera, remove the sunshield if necessary and open the cover again.
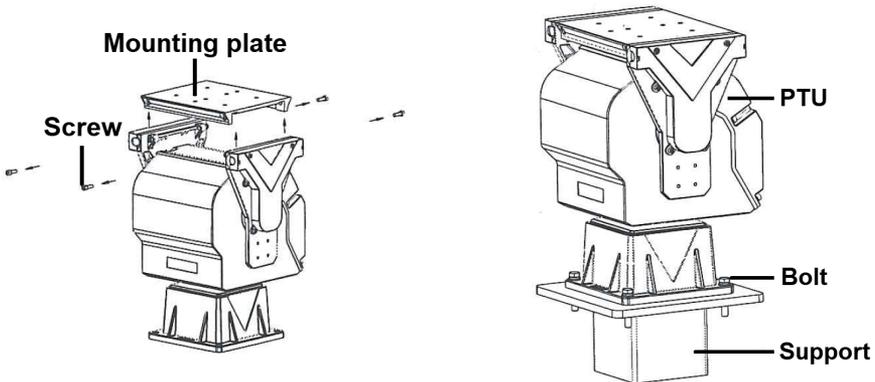
# 5 Mount the PTU and the Camera

Before mounting the PTU, connect it to the power supply to confirm that the PTU can complete its start-up self-test. After this self-test, continue with the installation.

> ⚠️ **Important**
>
> Mount the PTU horizontally to ensure that the camera pans parallel to the horizon; that is, the installation roll angle needs to be zero degrees (0°).

a.  Using a hexagonal wrench, remove the four screws that secure the PTU mounting plate to the arms of the PTU. Then, remove the plate.

b.  Using the PTU base as a template, mark and drill holes in the mounting surface.

c.  Attach the camera to the mounting plate using the two screws, two spring washers, and two flat washers included in the camera kit.

d.  Using the hexagonal wrench and the screws removed above, re-attach the mounting plate with the camera attached to the arms of the PTU.



e.  Align the bolt holes on the base of the PTU to the bolt holes on the mounting plate. Then, using four M8x45 hexagonal bolts, four M8 nuts, and four Ø 8 flat washers, attach the PTU to the mounting surface.

# 6 Connect the Camera and the PTU

> ⚠️ **Caution**
>
> Carefully following these instructions makes sure water does not enter the camera and ensures its long-term reliability. Teledyne FLIR is not responsible for damage to the camera cause by not adhering to these instructions.

Cables enter the camera body through liquid-tight 3/4" NPT compression glands, each with a seal insert. To accommodate the thicker cable from the PTU, you need to replace one of the multi-cable seal inserts with the single-cable seal insert included in the camera kit.

**Gland nut**

**Seal plugs**

Carefully loosen and remove one of the gland nuts. Then, remove the multi-cable seal insert.

Route the cable from the PTU through the single-cable seal insert. Attach the seal insert to the gland.

If you need to route additional cables through the other glands, remove the appropriate number of cable gland seal plugs. However, make sure seal plugs are securely in place for all unused gland seal holes.
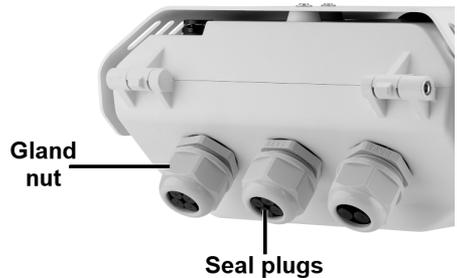
> ⚠️ **Important**
>
> Before installing the camera, ensure that all unused cable gland nuts are fully tightened to maintain proper sealing and preserve the unit's ingress protection rating.

Route cables through the seals before terminating and connecting them. To ensure the seals are watertight, the cable outer diameter must be between 0.23"-0.29".

Re-attach the gland nuts, but leave them loose until you have finished routing and connecting all of the cables.

Using the information in 3 Connect the Camera, connect cables and wires from the PTU tilt motor housing to the camera.

To ensure a watertight seal, fully tighten the gland nuts.

**Close and Secure the Cover**

Using the Torx wrench, alternately tighten the four screws that secure the cover to the camera; torque to 8+0.5 kgf-cm.

| ⚠ **Caution** | To ensure the camera's IP66 / IP67 dust / water ingress ratings, properly and securely close the camera cover and tighten the screws. Failure to do so can void the camera's warranty. |
|---|---|

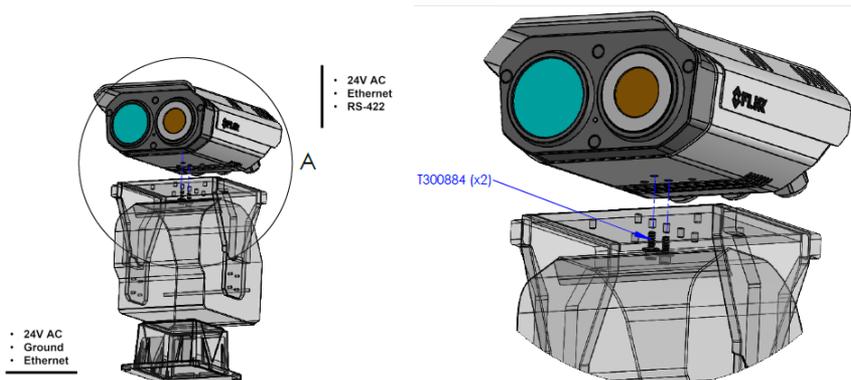Re-attach the sunshield, if relevant.

**Connect the PTU**

Connect the following cables and wires from the PTU base.

| Label | Color / Description |
|---|---|
| AC24V | Red + |
| | Black - |
| Ethernet | RJ45 plug |
| Yellow and green | Ground |

| ⚠ **Warning** |
|---|
| The yellow and green grounding wire must be reliably grounded. Grounding resistance must be less than 4 Ω. |

# 7 Check the Boresight

At the factory, the visible video image was aligned with the thermal video image. Users assigned the role of admin or expert can fine tune the video image alignment to the scene using the camera's web page. For more information, see the camera's installation and user guide.

| ⚠ | **Caution** | When adjusting the camera's boresight, exercise extreme caution. |
|---|---|---|

# 8 Heaters and Fans

⚠ **Important**

- If the camera is installed on a pole or exposed to the external environment, the power supply to the camera should be switched on.
- Even if the camera is not operating, the heaters need to be run every day to avoid build up of condensation inside the camera.
- Set the background heater to Auto and set the High and Low Thresholds to the ambient temperature.
- Set the Start Operation to Both (heaters will run on both Thermal and Visible).
- If there is a large temperature differential between day and night:
  - the Low and High Thresholds should be reset as close to the ambient temperature as possible.
  - the Duration should be set to 2 hours.

**Caution**: Not running the heaters every day while the camera is exposed to the elements can lead to moisture build up that will cause damage to the electronic components.

The Heaters & Fans page provides configuration settings for:
- Defogging.
- Deicing.
- Automatic background heating features.
- Temperature information for camera components.
- Status information for the camera's onboard heaters and cooling fan.
- By default the Background Heater Control is turned off. When configuring the camera, it is recommended to turn it on Auto Mode.

- The Thermometer readings, Heaters, and Fans will function based on the user supplied settings of the Background Heater Control.



Select the units of temperature that appear on the page: Celsius, Fahrenheit, or Kelvin. On FH-Series R PTZ R cameras, note that this setting is independent of the Units setting on the Radiometry Page.

**To manually activate defogging or deicing on one of the camera's sensors or on both of them:**

1. Under Triggered by user, select the Duration (0.5, 1, or 2 hours).

2. Select the Operation.

3. Click **Thermal**, **Visible**, or **Both**. The status of the heater(s) changes from Off to On.

To deactivate the operation, click **Stop**.

**Background Heater Control**

It is recommended to set the background heater control to Auto. You can specify:

- Thermal and visible image heater power levels (0-15). At least 60W of power is recommended to run the heaters.

- Temperatures at which the heaters activate (Low Threshold) and deactivate (High Threshold). It is recommended to set:

  o Low Threshold  - set to the ambient temperature.

  o High Threshold - set close to the ambient temperature.

> ⚠️ **Important**
>
> If early condensation is seen on the window of the camera, you may need to:
>
> 1. Adjust settings for Low and High Threshold.
>
> 2. Set Duration to 2 hours.

**Status Information**

Down the right side of the Heaters & Fans page, the following status information appears:

- **Thermometers—**Temperatures for camera components

- **Heaters—**Status of the camera's heaters (On or Off)

- **Fans—**Status of the camera's cooling fan (On or Off)

# 9 Attach the Camera to a Supported VMS

After you have mounted the camera and discovered or defined its IP address, attach the camera to a supported VMS using its discovery/attach procedure.
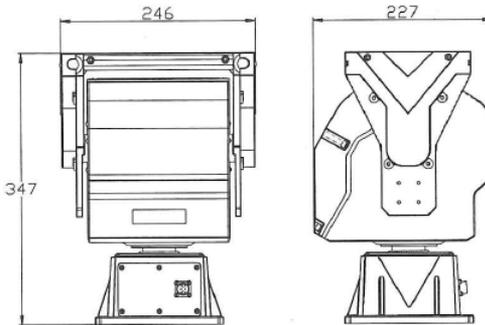
# Camera and PTU Dimensions and Weight

The camera's weight is 11.3 lbs / 5.1 kg. Including the sunshield, the camera's dimensions are:
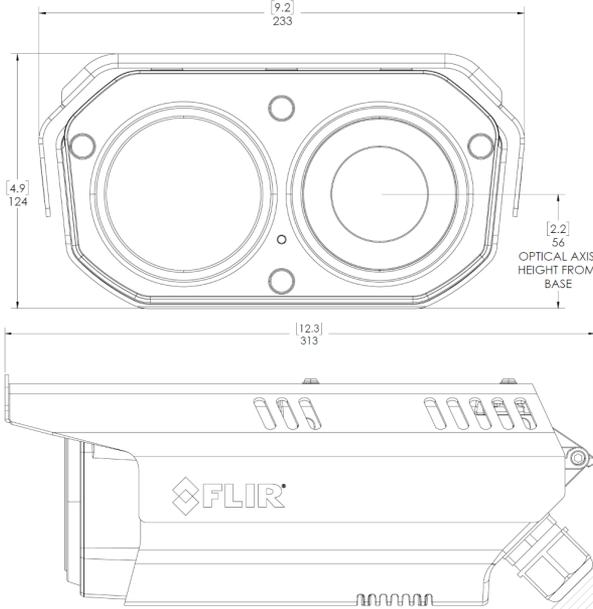


Units: [in]
mm

The weight of the PTU is 28.7 lbs / 13 kg. The PTU dimensions are (mm):



# Register the Product

Register the product at https://customer.flir.com.
For warranty information, see https://www.flir.com/support-center/warranty/security/flir-security-product-warranties/.

# Contact Information

**Teledyne FLIR LLC**
Antennvägen 6
PO Box 7376
SE-187 15 Täby Stockholm County
187 66
Sweden
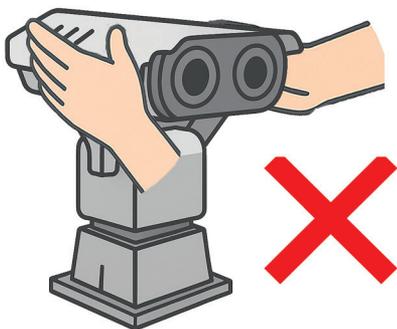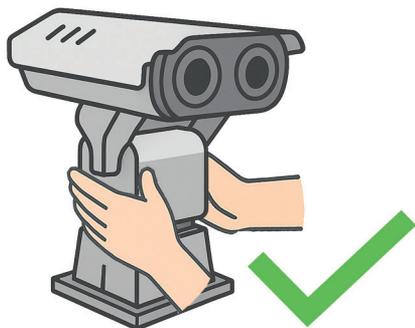Support: [https://support.flir.com/](https://support.flir.com/)

# CAUTION

The Pan & Tilt pedestal is a precision-engineered device that requires careful handling to prevent damage. To maintain its optimal performance and accuracy:



**NEVER LIFT OR HANDLE THE PEDESTAL BY THE TILT PLATFORM.**



**NEVER LIFT OR HANDLE THE ASSEMBLED UNIT BY THE CAMERA MODULE.**



**ALWAYS MOVE AND HANDLE THE CAMERA BY HOLDING THE BASE OF THE PEDESTAL.**

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