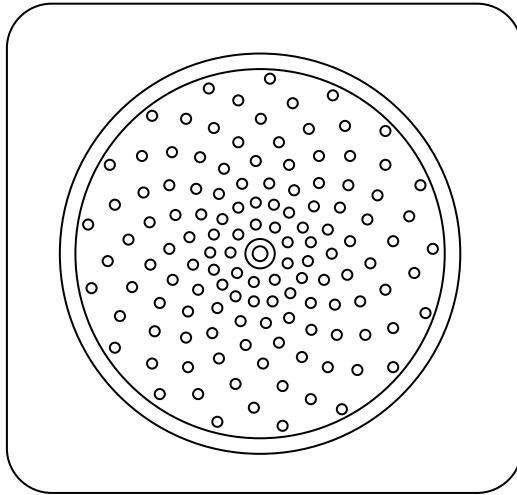




# SOUND DETECT FM USER MANUAL

PLEASE READ THIS MANUAL BEFORE SWITCHING THE UNIT ON.  
IMPORTANT SAFETY INFORMATION INSIDE.



ICI cameras fall under US Federal Law and Export Control.

## Revision History

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06.2024-001 Document created

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# 1. Disclaimers

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## 1-1 Terms and Conditions

Warranty Terms and Condition of Sale are made available online at:

<https://infraredcameras.com/support/terms-and-conditions-of-sale/>

## 1-2 U.S. Government Regulations

This product may be subject to U.S. Export Regulations. Please send any inquiries to [support@infraredcameras.com](mailto:support@infraredcameras.com)

## 1-3 Copyright

© 2022, Infrared Cameras, Inc. All rights reserved worldwide. No parts of the software including source code may be reproduced, transmitted, transcribed or translated into any language or computer language in any form or by any means, electronic, magnetic, optical, manual or otherwise, without the prior written permission of Infrared Cameras, Inc.

The documentation must not, in whole or part, be copied, photocopied, reproduced, translated or transmitted to any electronic medium or machine readable form without prior consent, in writing, from Infrared Cameras, Inc. Names and marks appearing on the products herein are either registered trademarks or trademarks of Infrared Cameras, Inc. and/or its subsidiaries. All other trademarks, trade names or company names referenced herein are used for identification only and are the property of their respective owners.

## 1-4 Quality Assurance

Infrared Cameras, Inc. is committed to a policy of continuous development; therefore we reserve the right to make changes and improvements on any of the products without prior notice.

## 1-5 Customer Help

For customer help, visit:

<https://infraredcameras.com/support/>

E-mail:

[support@infraredcameras.com](mailto:support@infraredcameras.com)

## 2. User Notice

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### 2-1 Calibration

Annual calibration to the thermal camera is recommended. Contact customer service to schedule maintenance.

### 2-2 Accuracy

For very accurate results, we recommend that you wait a minimum of 5 minutes after you have started the camera before measuring a temperature.

### 2-3 Cybersecurity

After the products are connected to the Internet, they may face risks including but not limited to network attacks, hacker attacks, virus infections, etc. The company will not be responsible for the abnormal operation of the products and any loss or liability caused therefrom shall be at your own risk.

### 2-4 Disposal of Electronic Waste

Electrical and electronic equipment (EEE) contains materials, components and substances that may be hazardous and present a risk to human health and the environment when waste electrical and electronic equipment (WEEE) is not handled correctly.

Equipment marked with the below crossed-out wheeled bin is electrical and electronic equipment. The crossed-out wheeled bin symbol indicates that waste electrical and electronic equipment should not be discarded together with unseparated household waste, but must be collected separately.

All local authorities have established collection schemes under which residents can dispose of equipment at a recycling center or other collection points, or WEEE will be collected directly from households. More detailed information is available from the administration of the relevant local authority. Always dispose of waste in accordance with local, state, and federal regulations.



## 2-5 Intended Use

The Sound Detect FM is a standalone system for localizing sound sources and acoustic analysis. It uses 128 microphones to locate acoustic sounds and visualizes them.

The device is not a measurement instrument for precise acoustic or other measurements. The dB readings produced by the device are not guaranteed to correspond to absolute sound pressure levels.

Environment of use: industrial and petrochemical buildings, electrical plants, environments with potential gas leaks, science labs, animal reserves as well as environmental conservatories, among others.

You agree that this product is for civilian use only, and shall not use applications that may infringe the rights of third parties, medical and safety devices or other applications where product failure may lead to life-threatening or personal injury, as well as weapons of mass destruction, chemical and biological weapons, nuclear explosions, unsafe use of nuclear energy, dangerous or humanitarian purposes. Any loss or liability caused therefrom shall be at the your own risk.

## 2-6 Manual Update

The user manual will be updated from time to time. To access the latest manuals, translations of manuals, and notifications, go to:

<https://infraredcameras.com/product-resources/>

The manufacturer reserves the right to alter the specifications of the product without prior notification. The manufacturer allows himself the right to modify without any preliminary opinion the technical specifications of the product.

## 2-7 Scope of Application

Infrared Cameras, Inc. issues generic manuals that cover several cameras within a model line.

This means that this manual may contain descriptions and explanations that do not apply to your particular camera model. This manual may contain technical inaccuracies or typographical errors.

## 2-8 Authoritative Versions

The authoritative version of this publication is English. In the event of divergences due to translation errors, the English text has precedence.

Any late changes are first implemented in English. Other languages may or may not be available.

## 2-9 Training

To read about infrared training, visit:

<https://infraredtraininginstitute.com/>



### 3. Safety Information

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- Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- Do not disassemble or modify the device.
- If the device emits smoke, produces a peculiar smell, or makes unusual noises, turn off the power immediately, unplug the power cord, and contact the manufacturer immediately. If the product is not functioning correctly, contact the manufacturer.
- The explosion-proof mark of this equipment is Ex ic IIC T4 Gc. Do not use the device in an explosive environment that exceeds the explosion-proof marking.
- Do not pull by the cord or use any kind of pliers or tools to disconnect the cable.
- An easy-to-use disconnect device should be incorporated into the building installation wiring. Consult company safety officer about using the device.
- Do not use any damaged device, battery or cords.
- Do not directly touch the heat dissipation areas of the product to avoid severe burns. Avoid heat accumulation by maintaining a well ventilated environment.
- Protect the camera lens and the microphone array from any kind of foreign objects, dust or liquids.
- Clean the case with a damp cloth and a weak soap solution. Do not use abrasives, isopropyl alcohol, or solvents to clean the case or lens/screen.
- Be careful when cleaning the camera lens. Do not clean the camera lens too vigorously. This can damage the lens.
- Avoid condensation. Taking the imager from cold to hot environments will cause condensation. To protect the device, power on the device and wait until it becomes warm enough for the condensation to evaporate.
- Keep device out of reach of children.
- Storage: If you do not use the imager for a long period of time, put the device in a cool and dry environment. Store the device in an ambient temperature of -20°C to 60°C (-4°F to 140°F).

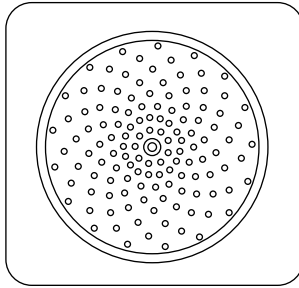
**THE ENCAPSULATION RATING IS ONLY APPLICABLE WHEN ALL THE OPENINGS ON THE CAMERA ARE SEALED WITH THEIR CORRECT COVERS, HATCHES, OR CAPS. THIS INCLUDES THE COMPARTMENTS FOR DATA STORAGE, BATTERIES, AND CONNECTORS.**

## 4. Technical Specifications

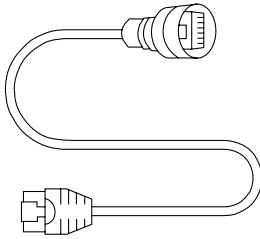
<b>Acoustic Measurement</b>	128 MEMS microphones
<b>Dynamic Range</b>	Low limit: < 25.7 dB High limit: > 132.5 dB
<b>Bandwidth</b>	2 kHz to 48 kHz, settings dependent
<b>Distance</b>	25 m (82') recommended, up to 120 m (394')
<b>Operation Range</b>	-10 °C to 50 °C (14 °F to 122 °F)
<b>Storage Range</b>	-20 °C to 60 °C (-4 °F to 140 °F)
<b>Humidity</b>	10% to 95%, non-condensing
<b>Dimensions</b>	183 mm X 169 mm X 85.4 mm (L x W x D ± 0.5 mm) (7.2" x 6.7" x 3.4" (L x W x H ± 0.02"))
<b>Weight</b>	1.3 kg (2.87 lbs)
<b>Power</b>	12V - 20V DC, ~ 14W
<b>Interface</b>	RJ45 Ethernet port
<b>Protocols</b>	RTSP/RTMP
<b>Video Format</b>	H.264 streaming
<b>Video Frame Rate:</b>	25 fps (minimum)
<b>Image Format</b>	JPG
<b>Image Polarity</b>	3 options
<b>Audio Format</b>	WAV
<b>Storage</b>	8 GB SD (up to 64 GB)
<b>Digital Camera</b>	8 MP, 3.04 mm fixed focus, 62° FOV
<b>IP Rating</b>	IP56
<b>Mounting:</b>	1/4" -20 UNC thread/M5 screws
<b>Automatic alarms</b>	
<b>Wireless network support</b>	

Specifications subject to change without further notice. Models and accessories subject to regional market considerations. License procedures may apply. Products described herein may be subject to US Export Regulations. Please refer to [support@infraredcameras.com](mailto:support@infraredcameras.com) with any questions.

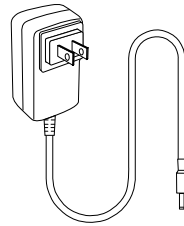
## 5. Package Includes



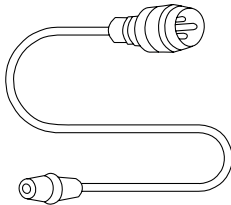
Sound Detect FM device



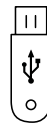
Ethernet Cable



Power Adapter



Coaxial Cable

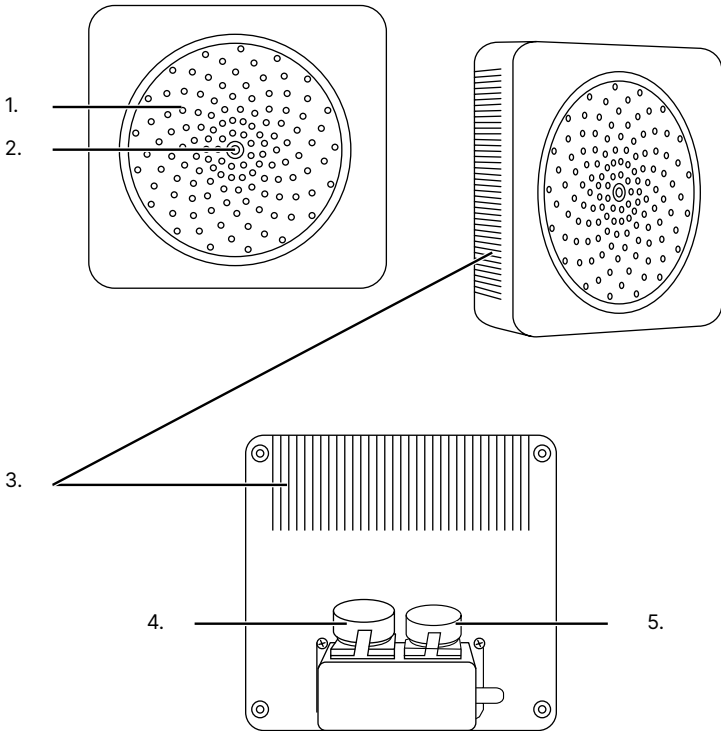


Software USB Drive

**ENSURE ALL SYSTEM EQUIPMENT AND COMPONENT ITEMS ARE PRESENT BEFORE CONTINUING.**

## 6. Structure

### 6-1 Appearance and Definitions of Interface



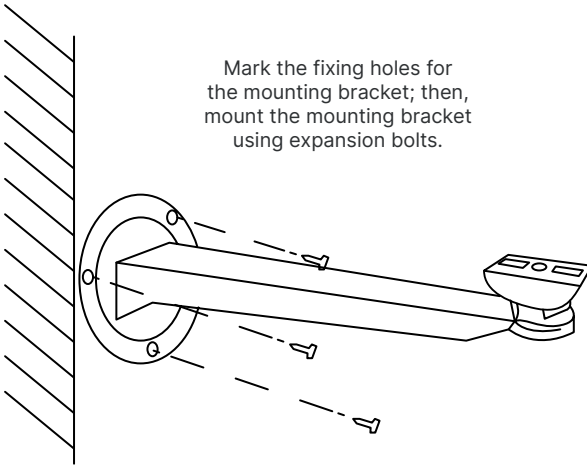
- |                     |                       |
|---------------------|-----------------------|
| 1. Microphone Array | 4. Communication Port |
| 2. Video Camera     | 5. Power Port         |
| 3. Heat Sinks       |                       |

**THE HEAT SINKS WILL BECOME HOT WHILE USING THE DEVICE. BEWARE OF TOUCHING THEM. LONG TERM CONTACT MAY CAUSE BURNS.**

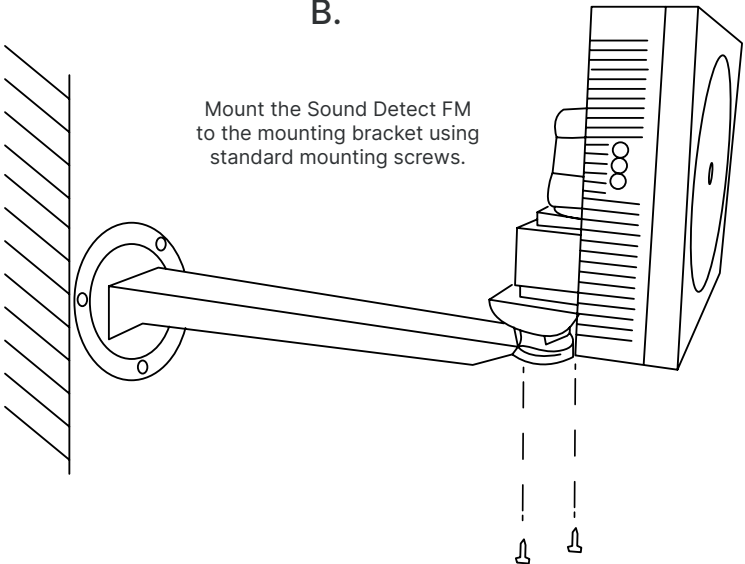
## 7. Quick Start Instructions

### 7-1 Set Up: Fixed Wall Installation

A.



B.



C.

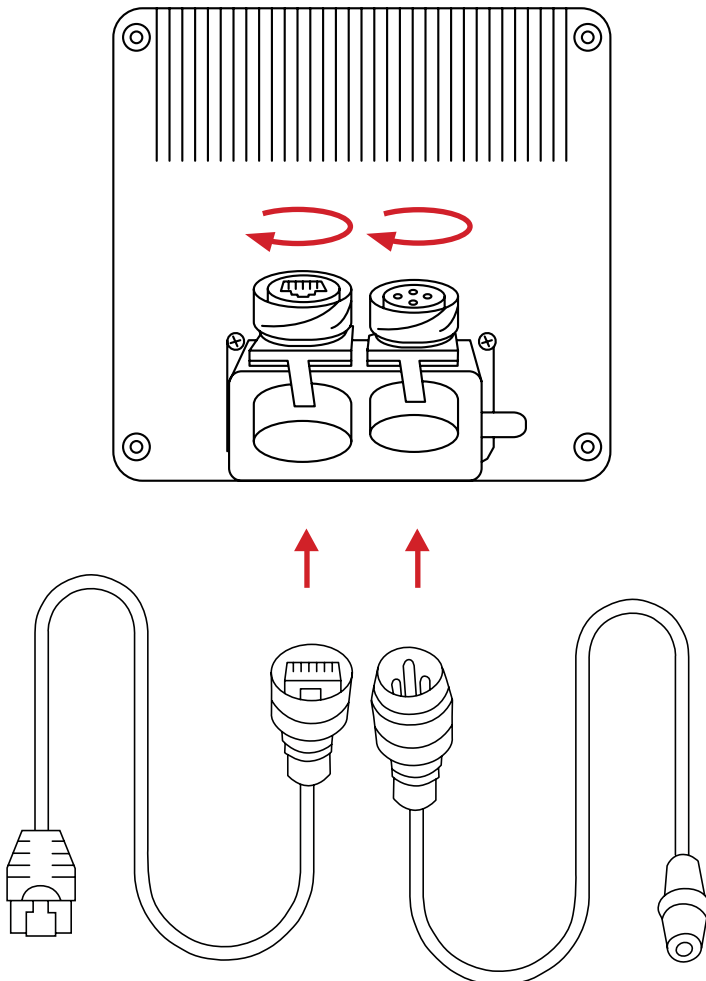
Remove the caps from the ports.

D.

Insert the Ethernet cable into the left port and rotate the locking mechanism to the right to secure the cable.

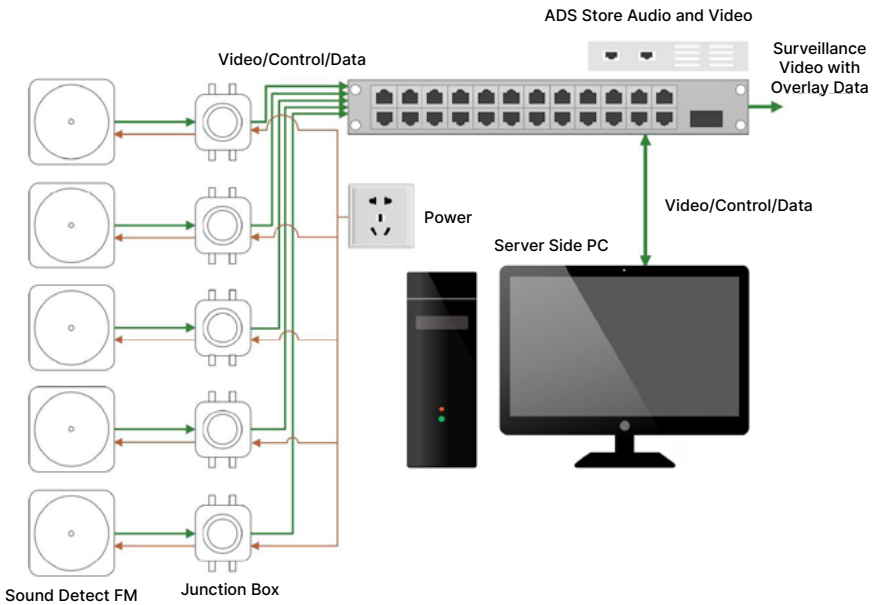
E.

Insert the Power cable into the right port and rotate the locking mechanism to the right to secure the cable.



## F.

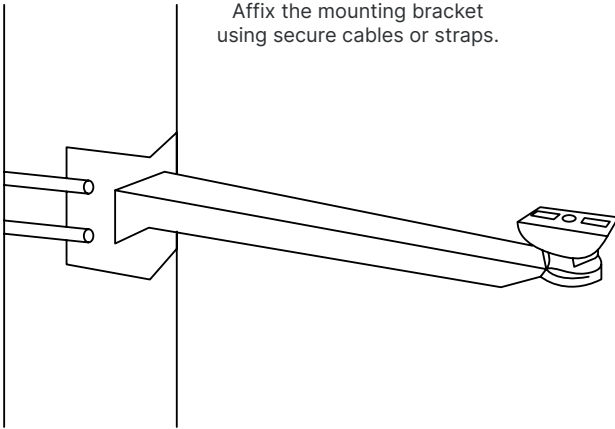
Follow the basic system map to finish connecting the system.



## 7-2 Set Up: Fixed Column Installation

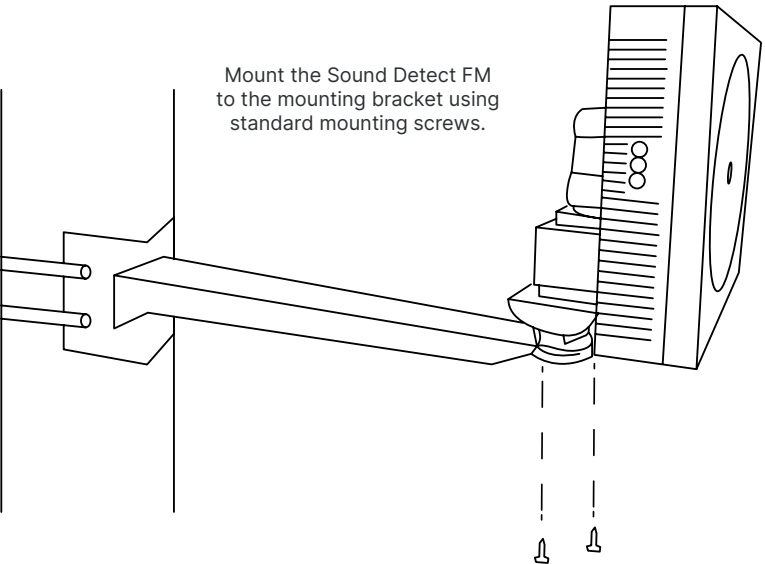
A.

Affix the mounting bracket using secure cables or straps.



B.

Mount the Sound Detect FM to the mounting bracket using standard mounting screws.





C.

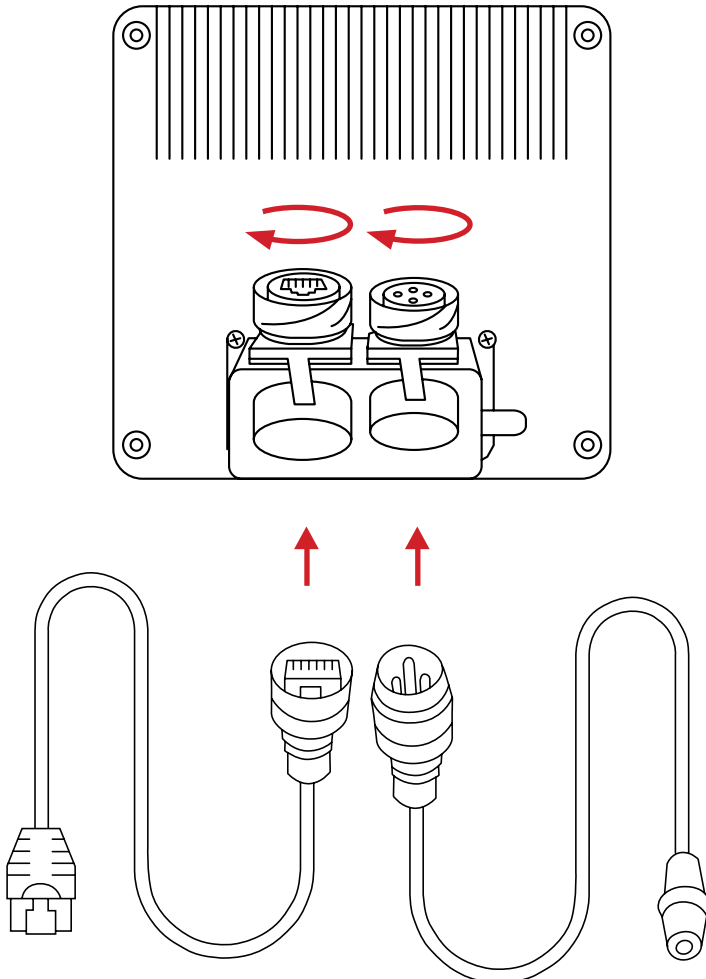
Remove the caps from the ports.

D.

Insert the Ethernet cable into the left port and rotate the locking mechanism to the right to secure the cable.

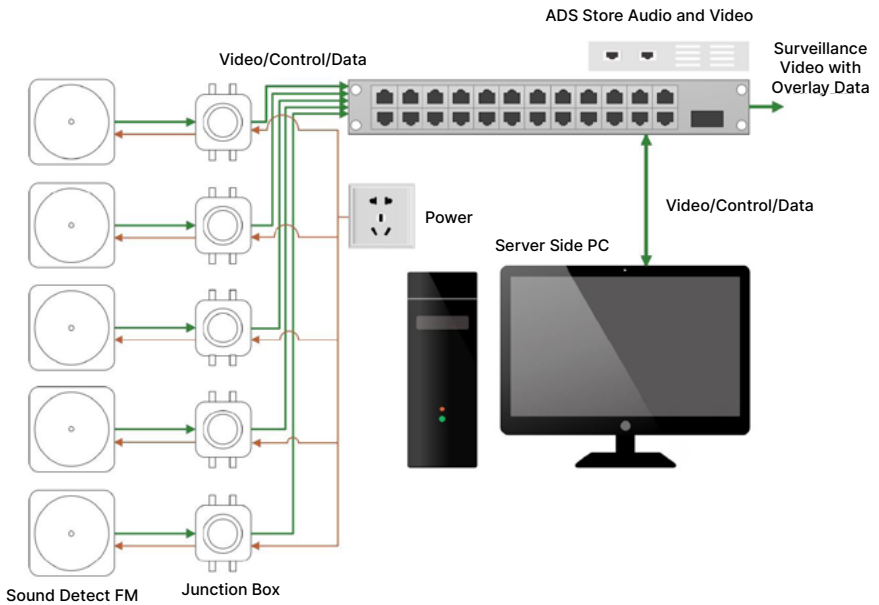
E.

Insert the Power cable into the right port and rotate the locking mechanism to the right to secure the cable.



## F.

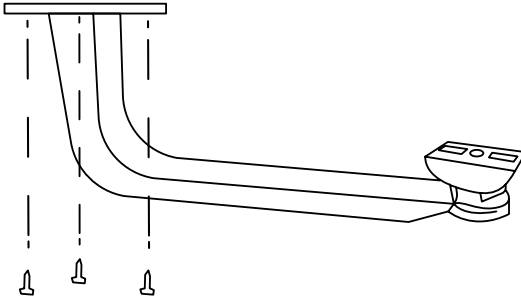
Follow the basic system map to finish connecting the system.



### 7-3 Set Up: Hanging Fixed Installation

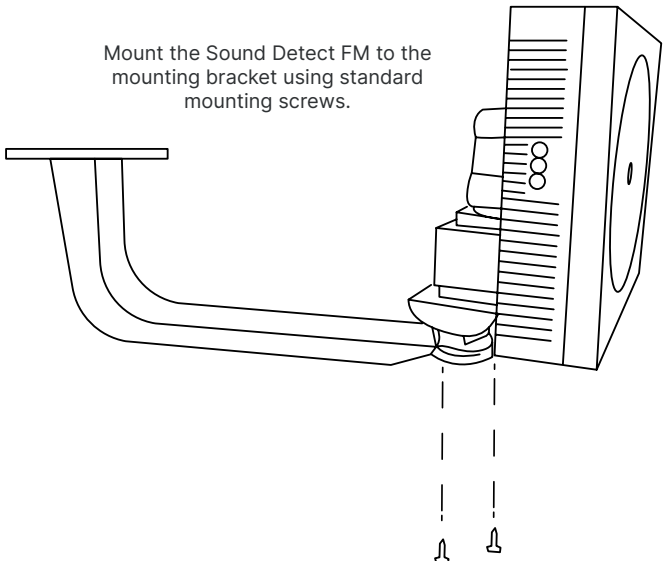
#### A.

Mark the fixing holes for the mounting bracket on the ceiling; then, mount the mounting bracket using expansion bolts.



#### B.

Mount the Sound Detect FM to the mounting bracket using standard mounting screws.



C.

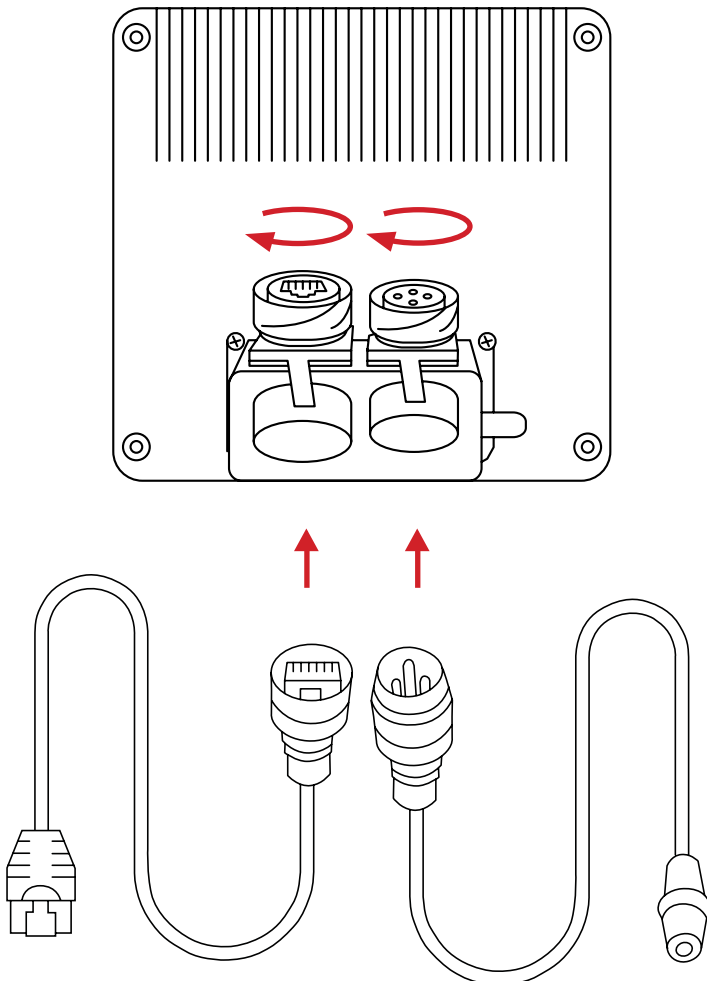
Remove the caps from the ports.

D.

Insert the Ethernet cable into the left port and rotate the locking mechanism to the right to secure the cable.

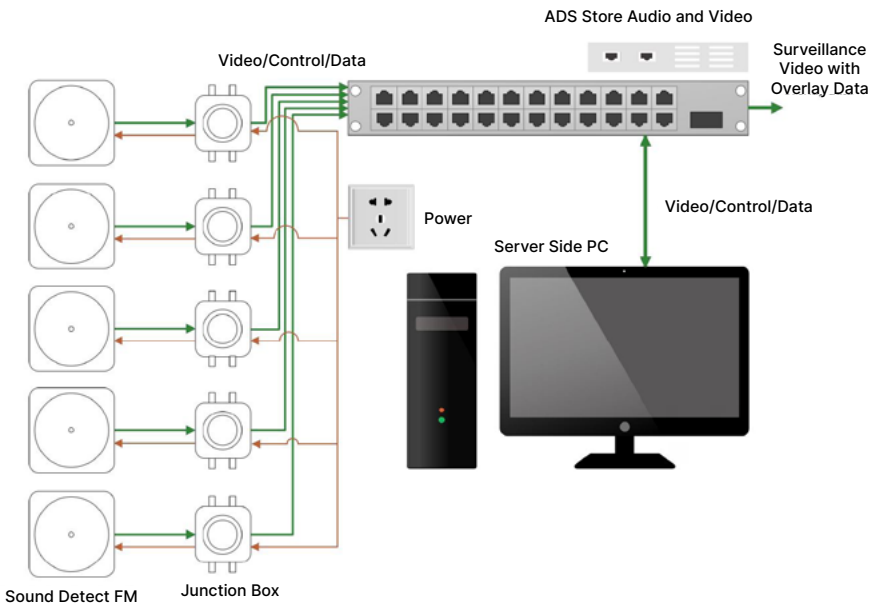
E.

Insert the Power cable into the right port and rotate the locking mechanism to the right to secure the cable.



## F.

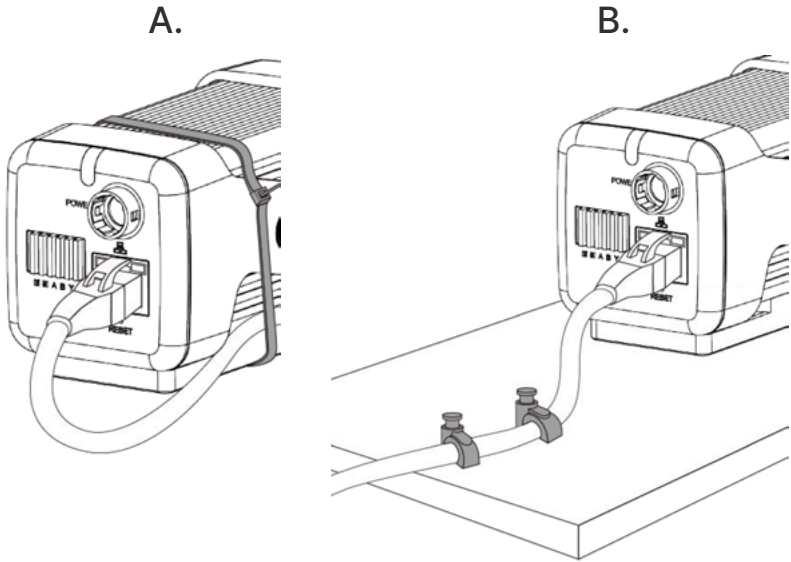
Follow the basic system map to finish connecting the system.



## 8. Operation Instructions

### 8-1 Cable Management

In installations where the camera is subject to vibrations or shocks the power cord may need an external cable management to avoid power port failure. The following images show two cable management solutions.



### 8-2 Power On/Off the device

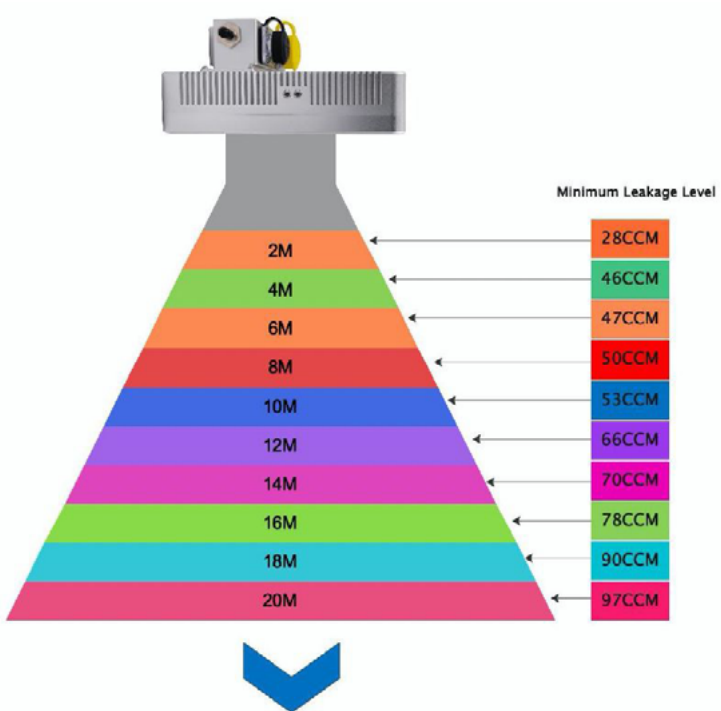
The device powers on when power is supplied to the device through the power cable.

**DO NOT PUT THE DEVICE IN A CASE WHILE THE POWER LED IS ON.**

**DO NOT PLACE THE DEVICE IN A CASE WHILE THE HEAT SINKS ARE HOT. BE CAREFUL WHEN TOUCHING THE HEAT SINKS AND STORING THE DEVICE.**

### 8-3 Sound Detect FM Minimum Leakage

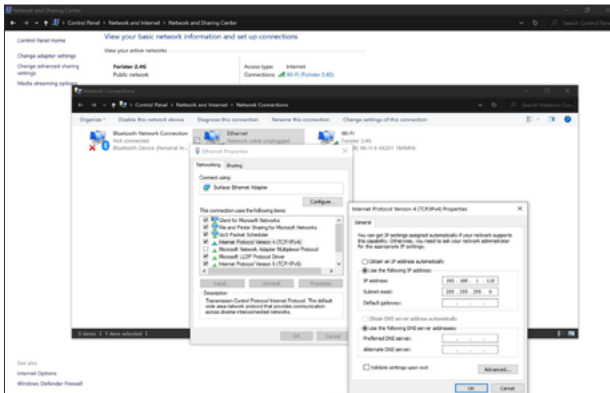
Sound Detect FM Minimum Leakage	
(Pressure 0.5Mpa, 20-40kHz site environment noise 40dB)	
Distance to Sound Source (m)	Leakage CCM( $\pm 1$ )
0.5-2	28
2-4	46
4-6	47
6-8	50
8-10	53
10-12	66
12-14	70
14-16	78
16-18	90
18-20	97



## 8-4 IP Address Configuration

### 8-4-1 Static IP Address Configuration

The Sound Detect FM comes configured with static IP address for the infrared camera. The camera lies at 192.168.10.117. Connecting the computer requires setting the IPv4 settings of the Ethernet port to a static IP address in the same "Class C." We suggest applying 192.168.0.18 with a subnet mask of 255.255.255.0. There is no need to set a gateway as this is a direct connection from the computer to the cameras with no router.



Be sure the static IP address is set by doing the following:

1. Click on Windows icon.
2. Click on Settings.
3. Click on Network and Internet.
4. Click on Ethernet.
5. Click on Change Adapter Settings.
6. Right click on Ethernet and choose properties.
7. Double click on Internet Protocol Version 4 (TCP/IPv4) Properties.
8. The IP address should read 192.168.0.18. If it does not, click in the box and fill in the correct number.
9. The Subnet Mask should read 255.255.255.0. If it does not, click in the box and fill in the correct number.
10. Click Ok.



## 8-4-2 Dynamic IP Address Configuration

The dynamic IP address is used to connect the Acoustic Imaging Guardian and the host within the same network segment, and it is automatically assigned by the router. You can view the local IP address by using the `ipconfig` command in the command terminal. Both wired and wireless connections support dynamic IP settings.

## 8-5 IR Flash Pro

Software arrives installed on computers and tablets purchased from ICI as complete systems and it will launch automatically on startup. A copy of the software is provided on the Software USB Drive. Documentation can be found online on the IR Flash Pro web page under the Downloads section or at this address:

<https://infraredcameras.com/ir-flash-pro-manual/>

- **Processor:** Intel i5 Quad core or above
- **RAM:** 4 GB or above
- **OS:** Windows 8/8.1/10
- **Hard Drive:** 256 GB or above
- **Resolution:** 1920 x 1080

## 9. Cleaning and Maintenance

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**CONTACT CUSTOMER SERVICE TO SCHEDULE REGULAR MAINTENANCE.**

### 9-1 Cleaning the device

Dust, grease, and fingerprints produce harmful substances and can lead to a decline in performance, or cause scratches. However, cleaning of the microphone array is not suggested to be performed by the user, as this may damage the device. Contact customer service to schedule maintenance.

If the user decides to clean the microphone array: indirect low pressure air from a distance can be used to blow particles away from the conical holes of the microphones. No direct and/or highly compressed air should be applied to the microphone array. If the suggested method doesn't work and the microphone array is still badly soiled, contact customer service to schedule maintenance. ICI is not responsible for any damage caused by the user in an attempt to clean the microphone array.

Do not use corrosive chemicals on the device.

### 9-2 Disinfecting the Camera Surface

Do not use corrosive cleaning solutions on the optical glass components. It is recommended to disinfect the camera surface regularly with a non-corrosive sanitizing product. Follow the directions provided by the manufacturer of the cleaning solution. Adhere to the sanitation protocols and cleaning schedule set forth by the employer.

### 9-3 Device Calibration

It is recommended to have the device(s) re-calibrated annually. Contact customer service to schedule maintenance.

### 9-4 Maintenance

Do not try to repair or open the enclosure of the device or the battery. Do not use any damaged devices, batteries or cords. Protect the device and accessories from dirt, dust, impacts and liquids.

The intended usage conditions and instructions are described in this user manual. Please read and follow the instructions carefully in order to avoid damage to the device and accessories. If problems occur, contact your distributor for support.

### **10-5 Storage**

When the equipment is not in use, the device should be placed in a dust-free and moisture-free environment with a stable temperature and humidity.

**DO NOT USE CORROSIVE CLEANING SOLUTIONS ON THE OPTICAL GLASS COMPONENTS. DISINFECT THE CAMERA SURFACE REGULARLY WITH A NON-CORROSIVE SANITIZING PRODUCT.**

**CALIBRATE YOUR DEVICES ANNUALLY. CONTACT CUSTOMER SERVICE TO SCHEDULE MAINTENANCE.**

## 10. Troubleshooting

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If the user encounters any problems while using the imager, refer to the following options. If the problem persists, disconnect the power and contact the customer support department.

### 10-1 Device does not power on

- Reconnect cables

### 10-2 Device shuts off unexpectedly

- Reconnect cables

### 10-3 No image

- If lens is foggy, use professional equipment to clean the lens

### 10-4 Unclear or dark visible images

- Turn on lights in imaging area
- Use a flashlight
- If lens is foggy, use professional equipment to clean the lens

### 10-5 Camera out of focus

- Move closer to the object
- If lens is foggy, use professional equipment to clean the lens

### 10-6 Data is missing or has strange readings

- Turn off the device; then, turn it back on
- To ensure the accuracy of measurements, you are recommended to wait for 5 to 10 minutes after turning on the device before taking measurements.
- Device is at proper height
- Adjust distance
- Send the device in for recalibration

## 11. About ICI

---

ICI manufactures complete systems and software. We can provide complete engineering, software, and OEM solutions. Our Fortune 500 clients rely on us for infrared equipment and thermography training (which we offer through the Infrared Training Institute).

In addition to providing custom germanium, silica, and sapphire optics, we also build windows for enclosures, as well as custom pan and tilt units. We can even provide customizable explosion-proof systems.

Our knowledge and experience stems from years of using infrared imaging and temperature measurement instruments to provide solutions to: managers, engineers, scientists, inspectors and operators in space, power companies, medical, pulp and paper, food industry, research and development, and various process industries. You can see our products and services used in industrial, commercial, and government applications worldwide. Additionally, our ICI 7320 was awarded "Product of the Month" by NASA\*. Originally named Texas Infrared (still DBA), Infrared Cameras, Inc. has been in business since March, 1995.

Thank you for your dedicated and continued support.

Infrared Cameras, Inc.  
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Beaumont, TX 77705

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Toll Free: (866) 861-0788  
International: (409) 861-0788

Customer Support: [support@infraredcameras.com](mailto:support@infraredcameras.com)  
Website: [www.infraredcameras.com](http://www.infraredcameras.com)

You may reach a customer care representative by phone or email during regular business hours: Monday – Friday 8:00AM - 5:00PM CST.

\*Volume 33 No. 2, February 2009 edition of NASA Tech Briefs