

# Security Cameras System

Installation Guide



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# Package Contents

## ButterflyMX Camera Gateway:

Camera Gateway

5V/5A DC USB-C power supply

## ButterflyMX Security Cameras (optional):

Dome / Bullet Camera	X3 1/4" drywall screws and anchors
RJ45 and barrel connector cable (attached)	Drilling template
7/64" Hex key	Waterproof cable gland

## 3rd Party Security Cameras (optional):

The ButterflyMX Camera Gateway is compatible the vast majority of IP ONVIF cameras.

View specific criteria on the [page 12](#).

## What is **NOT** included

Items listed below are not included with the ButterflyMX Security Cameras and must be sourced by the installer prior to installation. This is not an exhaustive list.

### PoE Switch

Cameras and gateways should be connected to a PoE switch that supports at least 1GB ports, PoE+ (Power over Ethernet Plus), and managed capabilities.

### Ethernet Cable

Use shielded Cat5e or Cat6 cables with a maximum run distance of 100m (328 ft). Avoid data jacks, extenders, or couplers; direct connections only.

# Before You Start

A site visit is required prior to installing ButterflyMX Security Cameras to determine the types and placements of cameras, the network architecture, and what additional ButterflyMX or third-party hardware may be required.

For pre-installation questions on connectivity, contact [SolutionsArchitecture@butterflymx.com](mailto:SolutionsArchitecture@butterflymx.com).

The Gateway must be installed in a weatherproof, secure location with ambient temperature. Recommended temperature: 50°F to 85°F (10°C to +29°C)

The Gateway will capture footage if internet goes down and upload to the cloud once internet connection has been restored.

*Audio is not supported on the ButterflyMX Camera System.*

## **All systems must be activated once installation is complete and while the installer is on-site.**

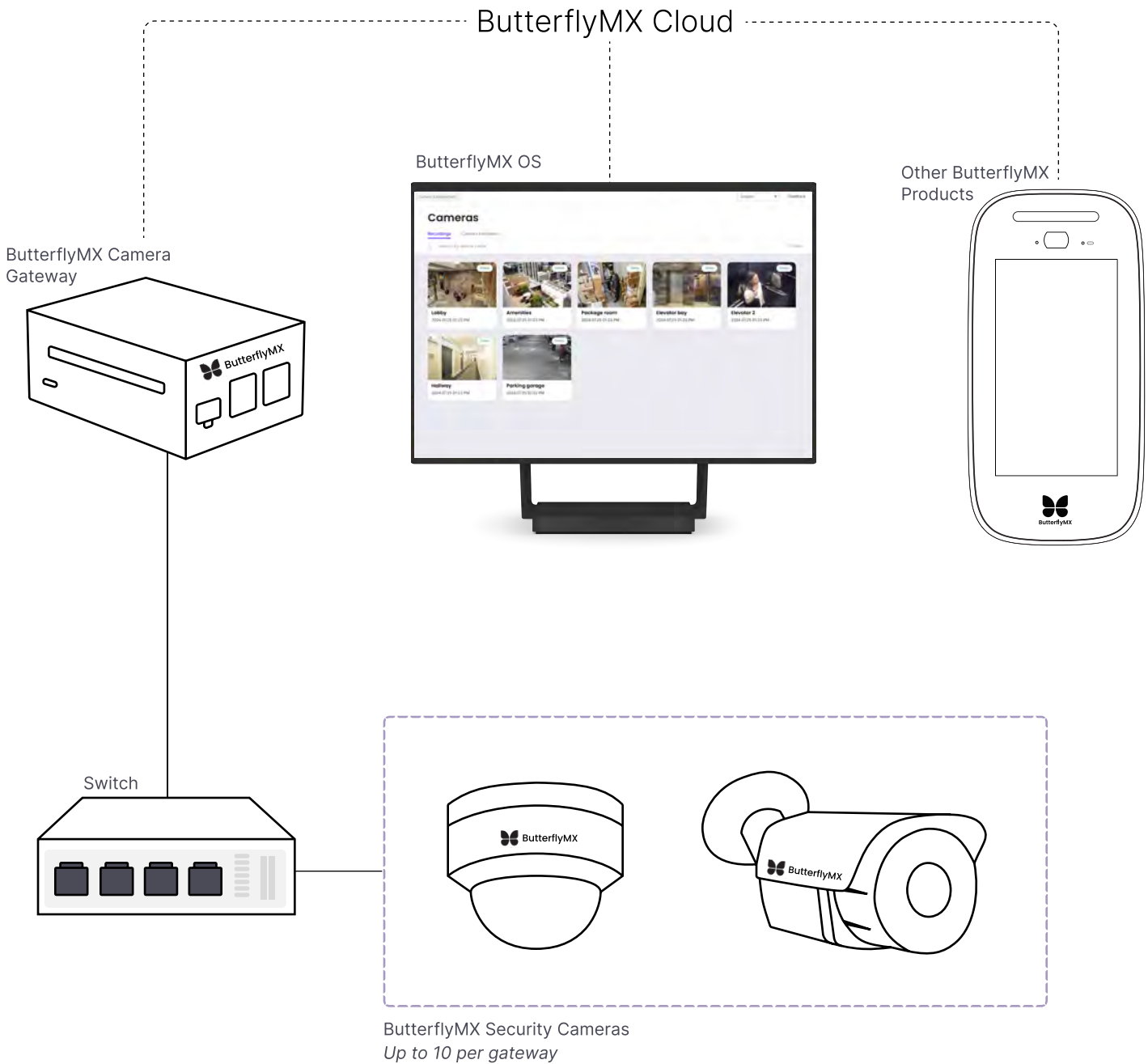
The activation process will verify all systems are operational, document installed hardware, and activate the system. Activation is done by calling ButterflyMX Support while the installer is on-site at (800) 398-4416, ext 2.



## **ATTENTION**

- This installation guide walks certified installers through the process of installing the ButterflyMX Security Camera System.
- The ButterflyMX Camera Gateway is meant for indoor use only. Please ensure that it is installed in a secure, weatherproof location. ButterflyMX Security Cameras are IP66 certified, and are suitable for indoor and outdoor installation.
- Some installations will require specific mountings. If this is required, please contact your ButterflyMX representative to discuss options.
- Security camera systems must meet all relevant local, state, and federal codes. It is the responsibility of the installer and property manager to make sure all cameras are configured in a manner that is safe, effective, and meets all relevant codes and regulations.
- If installing the ButterflyMX Security Camera System with an Access Control System (ACS), the ACS must meet all relevant local, state, and federal codes. It is the responsibility of the installer to make sure all electric locking hardware, REX devices, and physical exit devices are configured in a manner that is safe, effective, and meets all relevant codes.

# System Overview



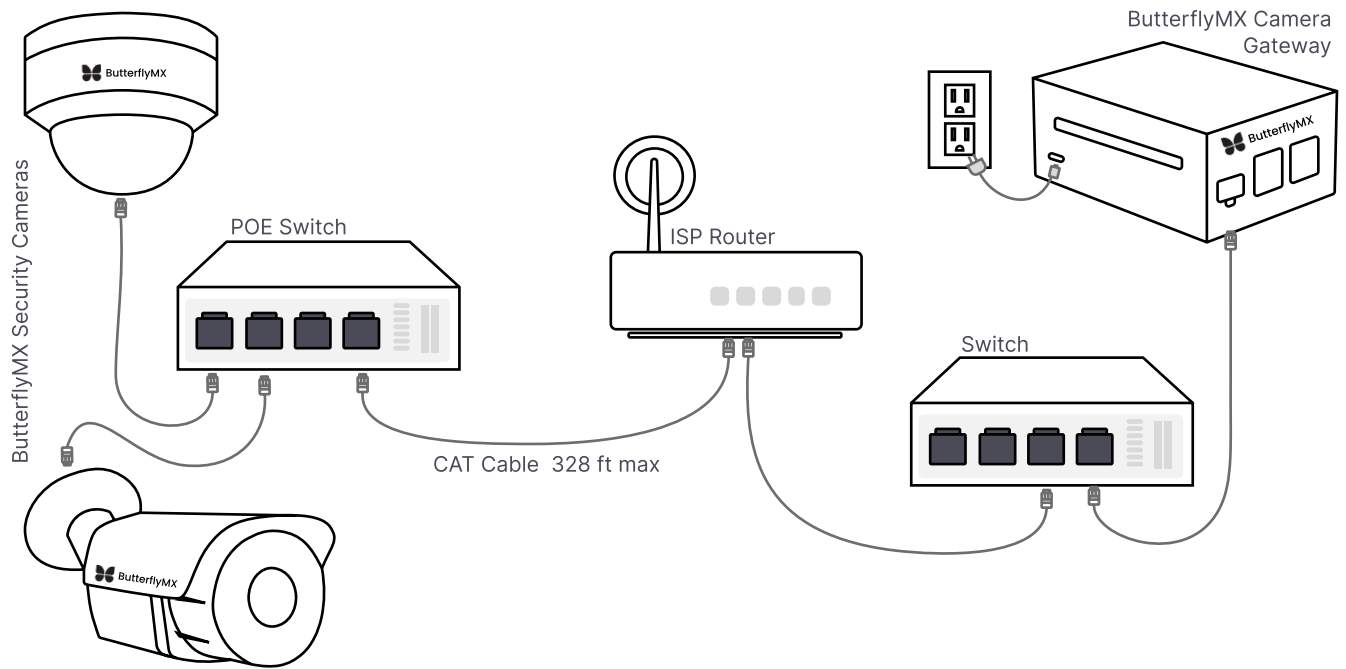
## ATTENTION!

This is a system overview, NOT a wiring diagram. For 3rd party cameras, please refer to the manufacturer's documentation.

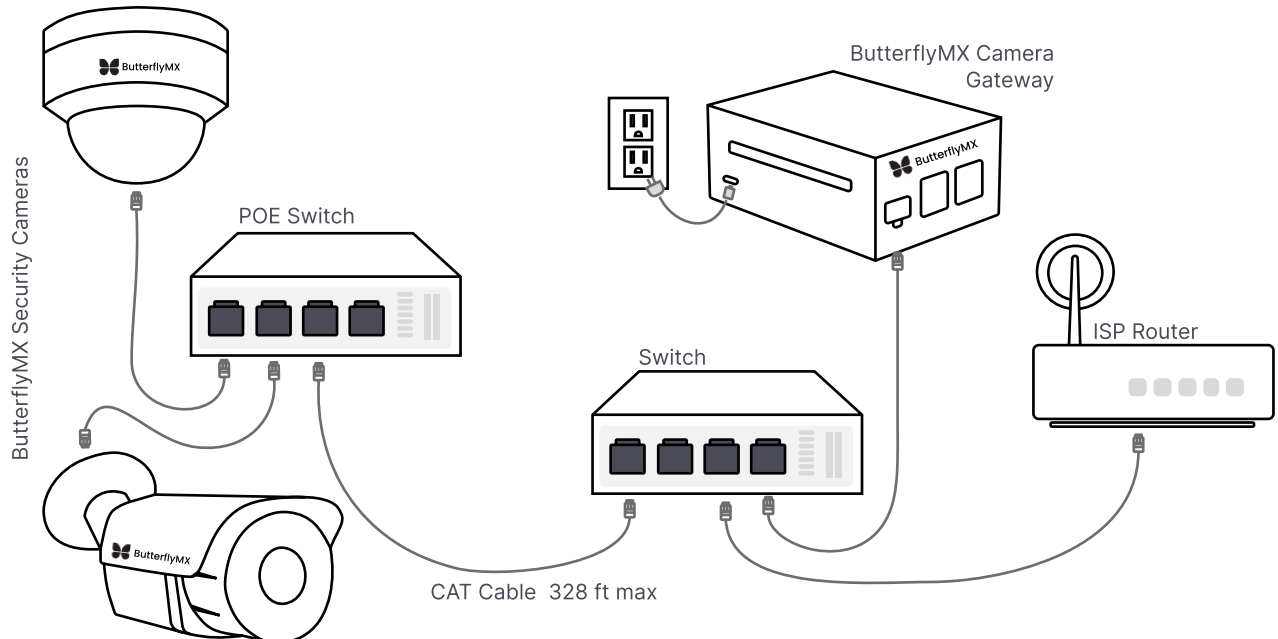
# Wiring Overview

ATTENTION: Cameras and gateways **must** be on the same LAN, regardless of the switches they are connected to.

## Different ISP Router Ports



## Daisy Chain Between Switches



# Network Requirements

## Internet

A stable internet connection is essential for optimal ButterflyMX Gateway performance. The client is responsible for setting up and maintaining this connection.

ButterflyMX Security Camera Systems require either a direct Ethernet connection or a Peer-to-Peer (P2P) connection.

- ButterflyMX Camera Gateways, Dome Cameras, and Bullet Cameras are not compatible with Wi-Fi.
- P2P connections require a clear line of sight between devices, regardless of distance.

**Local Network:** All Security Cameras and Camera Gateways must be on the same local network; they don't need to be plugged into the same network switch.

**Latency:** Aim for a network latency of under 50 milliseconds for optimal performance.

**Network Segmentation:** For enhanced security and bandwidth management, consider placing security cameras on a separate VLAN from intercoms and other devices.

**DSL:** ButterflyMX Security Camera Systems are not supported on DSL connections.

## Bandwidth

Cameras record 24/7. Footage is recorded locally and uploaded to the cloud at intervals to avoid network saturation.

We use constant bit rates (CBR) for all video streams to ensure consistent video quality 24/7. Cameras stream at 2MP (1920×1080) full HD with a constant bitrate of 2000 Kbps.

### Minimum Bandwidth Requirements

- Local Network: 2 Mbps per camera
- Internet: 600 Kbps per camera

## IP/DHCP

By default, ButterflyMX devices use DHCP to obtain an IP address.

## Firewall

If there is a firewall at the property, you may need to whitelist the Camera Gateway's MAC address. MAC addresses for Camera Gateways are displayed on the device.

## Required Ports

Port Number	Inbound/Outbound	Service Name
22	Outbound	Remote Support Tunnel
5353	Outbound	Local Network Discovery
443	Outbound	HTTPS
554	Inbound & Outbound (Local)	Camera Video Streaming
3702	Inbound & Outbound (Local)	Camera Device Discovery & Communication
53	Outbound	Common DNS Resolution
67/68	Inbound & Outbound (Local)	Common Dynamic IP Assignment
80	Inbound & Outbound	Camera Service
80	Outbound	Camera Storage Service

# Camera Gateway Hardware Specifications

The Gateway must be installed in a weatherproof, secure location with ambient temperature, 50°F to 85°F (10°C to +29°C).

Audio is not supported on the ButterflyMX Camera System.

The Gateway will continue to capture footage even if the internet connection is lost. Once the internet connection is restored, the recorded footage will be uploaded to the cloud.



<b>Dimensions</b>	3.5 in (90 mm) L x 2.6 in (66 mm) W x 1.6 in (41 mm) H
<b>Weight</b>	0.5 lb (0.23 kg)
<b>CPU</b>	Broadcom 2.4GHz quad-core 64-bit Arm Cortex-A76
<b>Onboard Storage</b>	Baseline model capacity = 1TB via SSD (7 days with 10 cameras)
<b>Connectivity</b>	Ethernet, 10/100/1000 Mbps
<b>Power Supply</b>	5V/5A DC power via USB-C (included)
<b>Power Consumption</b>	7 watts max

## Power Consumption

Each Gateway requires 7 watts and each camera requires 8 watts of power. The installer must calculate the power budget prior to installation to ensure the power supply is sufficient for all cameras.

## Battery Backup

Access to live camera footage and recorded video relies on your network's uptime. To ensure a reliable connection, collaborate with your network provider and installer to verify that all network devices are equipped with proper backup systems for redundancy.

Maintain network operation during power outages by connecting network equipment to a generator-backed power circuit, installing a dedicated UPS (Uninterruptible Power Supply) to support critical network infrastructure, or implementing other reliable network management strategies.

The battery backup duration depends on several factors, including the number and type of devices, as well as their usage. Performance may vary.



# Installation Setup Recommendations

## Installation Criteria

When choosing an installation location, **prioritize field coverage, mounting height and orientation, and power availability** (e.g., switch wattage) to ensure optimal camera performance and image quality.

**Mount cameras at a height that prevents tampering** (typically 8–10 feet) while allowing a clear view of the area. Avoid extreme angles that may cause distortion or make identification difficult.

**Use appropriate housings to protect cameras** from weather, dust, and vandalism. For public spaces, choose vandal-resistant housings.

Be sure to **select a location with adequate lighting and visibility**, particularly at night.

**Position cameras in well-lit areas** for clear visibility, particularly at night.

Ensure camera placement and accompanying signage **comply with local privacy laws and regulations**.

## Wiring and Power

**Use Cat5e or Cat6 Ethernet cables for PoE** to support reliable power and data transmission. For outdoor installations, use weather-resistant cables.

**Secure and conceal cables** to prevent tampering and environmental exposure.

**Safeguard equipment with uninterruptible power supplies (UPS)** and surge protectors, especially in areas prone to electrical surges or instability.

## Network Configuration

**Place cameras on a dedicated Virtual Local Area Network (VLAN)** to isolate them from other devices, reducing network congestion and enhancing security.

**Monitor available bandwidth** and configure Quality of Service (QoS) settings to prioritize camera traffic, especially when multiple cameras are streaming simultaneously.

### ATTENTION!

Cameras can only be adjusted manually. Bring a camera feed viewer to ensure the desired location is within the camera's field of view.

# Camera Gateway Installation

## Installation Steps and Notes

- 1.** Place the Camera Gateway on a flat surface close with 2 in clearance to ensure proper air circulation to avoid overheating and stress on the wires.
- 2. Plug Gateway into power outlet and PoE switch for ethernet.**  
The Gateway needs to be plugged into internet and power **separately**.
- 3. Confirm the Gateway is connected to the Internet.**  
The Gateway discovers cameras at one-minute intervals. Ensure the network allows communication between the cameras and the Gateway.

## Wiring Guide

Connection Path	Compatible Cables	Max Run Length
Security cameras to PoE switch	Ethernet: CAT6A, CAT6, CAT5e	328 ft
Camera Gateway to PoE switch	(RJ45 terminations)	Never splice Ethernet cables. Do not use couplers, extenders, or data jacks.
PoE switch to router		
Camera Gateway to power outlet	5V/5A DC USB-C power supply	5 ft

# Security Camera Installation

## Dome Camera Installation Steps

- 1. Detach plates from the Camera.**

Remove 3 screws to detach the front dome plate from the Camera and back plate.

*The mounting holes cannot be accessed without taking the top of the camera off.*
- 2. Detach the light sensor and ground cables to remove the dome.**

Avoid stressing the wires and causing a potential breakage / disconnect.
- 3. Mount the camera on the wall or ceiling.**

Drill mounting holes prior to installation. Use the provided drilling template to ensure accurate screw placement.

Mount cameras with screws and anchors appropriate to the wall or ceiling material.
- 4. Adjust the tilt and zoom.**

Adjust the zoom and focus by loosening the flat head dials on the lens of the camera.

Move the camera to adjust the tilt (0-90°). For ceiling installations, ensure the camera is placed vertically and angled away from the cable entry.
- 5. Reattach light sensor, ground cables, and front dome.**

Take care to prevent pinching while reattaching the dome.
- 6. Connect camera to PoE switch with CAT cable.**

Camera settings are adjusted automatically once cameras and gateway are connected to the internet.
- 7. Close cable cover.**

Close the cover of the barrel connector to avoid water or dust damage.

### ATTENTION!

Always use proper ESD protection when installing Cameras and Gateways.

# Security Camera Installation

## Bullet Camera Installation Steps

- 1. Mount the Camera on the wall or ceiling.**

Drill mounting holes prior to installation, using the provided drilling template to ensure accurate screw placement.

Mount Cameras with screws and anchors appropriate to the wall or ceiling material.
- 2. Adjust the tilt** by loosening the 2 hex screws from the ball joint.

Move the Camera to adjust the tilt and pan (0-180°, non-concurrent).

*For ceiling installations, ensure the Camera is placed vertically and angled away from the cable entry.*
- 3. Connect Camera to PoE switch with CAT cable.**

Camera settings are adjusted automatically once cameras and Gateway are connected to the internet.
- 4. Close cable cover.**

Close the cover of the barrel connector to avoid water or dust damage.

### ATTENTION!

Always use proper ESD protection when installing Cameras and Gateways.

# Security Camera Installation

## 3rd Party Camera Installation Steps

All Security Camera System installations, using ButterflyMX or 3rd party cameras, require a ButterflyMX Camera Gateway.

### 1. Determining 3rd Party Camera Compatibility

The ButterflyMX Camera Gateway is compatible the vast majority of IP ONVIF cameras.

- Compatible with all cameras using ONVIF 20.06 and above (June 2020 and beyond).
- Compatible with 99% of ONVIF cameras using firmware versions earlier than 20.06.
- Not compatible with analog cameras.

Verify compatibility through the ONVIF website (<https://www.onvif.org/conformant-products/>) or reach out to your ButterflyMX representative.

### 2. Verify username and password

Be prepared to provide each camera's username and password during provisioning with ButterflyMX Support.

Verify that the username and password is correct prior to installation.

### 3. Install 3rd party cameras according to manufacturer's documentation.

3rd party IP cameras must be discoverable, and connected to the same network as ButterflyMX Gateway. Sometimes, cameras plugged into an NVR may need to be factory reset before they can be detected.

### 4. Configure Camera Settings

When connecting a third-party camera to the ButterflyMX Gateway and OS, additional configuration on the camera settings web page are required.

Modify these settings on the 3rd party camera's configuration page to ensure a steady connection:

- Compression: H264 cameras
- Frame Rate: 15 fps
- Live Stream and Video Recordings: HQ HD 1080P, 2000 kbps
- Compression: H264

Be sure to enable automatic firmware updates or set a reminder to regularly check for firmware updates.

# Security Camera Installation

## Testing and Calibration

- 1.** Before completing the installation, verify each camera's functionality by testing its network connection, video feed, and power supply.
- 2.** Adjust the camera's tilt and zoom (if applicable) as needed to ensure optimal visibility.
- 3.** Use a remote camera viewer tool or connect to the camera via a web browser to confirm the field of view (FOV) before finalizing the installation. An IP camera tester with PoE power testing and IP discovery capabilities can also be used.

# Security Camera Installation

## Provisioning and Configuration



### **Activation is required.**

All systems must be activated once installation is complete and while the installer is on-site.

Cameras will not function without activation.

The activation process verifies all systems are operational, documents installed hardware, and activates the system. Activation is completed by calling ButterflyMX Support at (800) 398-4416, ext. 2 while the installer is on-site.

Be prepared to provide username and password of 3rd party cameras, if applicable.

Please schedule installations with this requirement in mind.

### **ButterflyMX will onboard the client.**

All documentation can be found on <https://butterflymx.com/resources/installers/documentation>

# Alternative Mounting Options

Peripheral camera mounting hardware must be sourced separately by the installer.

The ButterflyMX Dome Camera is compatible with most round junction boxes or mounts. Recommendations for the Bullet Camera are provided below.

Wiring raceways (e.g., conduit or cable trays) are not included and must also be sourced and installed by the installer.

<b>Brand</b>	<b>Style</b>	<b>Model Number</b>
VEEZOOM	Junction box	VZ-X646M
WiTi	Right angle	BK06
WiTi	Straight extension	BK05C
WiTi	Right angle extension	BK05D
WEILALIFE	Junction box	WHY 8.0



# Troubleshooting

## Common Installation Issues

<b>Device Offline</b>	<p>Confirm that the camera or Gateway is securely connected to the network.</p> <p>Run a diagnostic test with a laptop or alternate device connected to the same port to verify network functionality.</p>
<b>Frequent Disconnects</b>	<p>Frequent disconnections may indicate an unstable network connection or intermittent power.</p> <p>Inspect all physical connections, as well as the network switch or router. Check if other devices experience similar connectivity issues to rule out network faults.</p>
<b>Poor Video Quality</b>	<p>Inspect the camera lens for obstructions or dirt.</p> <p>Ensure the network bandwidth meets the requirements, especially for high-resolution streaming.</p>
<b>Device Not Powering On</b>	<p>Verify that the device is connected to a PoE switch or injector delivering the appropriate amount of power.</p> <p>Check the power source, inspect cable integrity, and, if possible, use a PoE tester to troubleshoot.</p>
<b>3rd Party Camera Connection Failure</b>	<p>Confirm camera compatibility and proper device setup within the network. Reset or repair the devices if needed</p> <p>Outdated firmware can cause connectivity problems. Check the camera manufacturer's website for available firmware updates.</p>

## Diagnostic Checks

**Ethernet Port Light Diagnostics**

The ethernet port will communicate the status of the internet connection using two LED lights on the left and right of the port:

### Normal operation

Left ethernet light = Solid green  
Right ethernet light = Blinking amber

If the Gateway is not connecting to the Internet and shows a light pattern other than the above, please contact ButterflyMX Support.

### Power Cycling

To power cycle the Gateway, disconnect the power supply for 15 seconds, then plug back in. Verify the Gateway is receiving power by checking that its ethernet port light is illuminated.

## ButterflyMX Support

(800) 398-4416, ext. 2  
Mon—Fri 6am-10pm ET  
Sat—Sun 8am-8pm ET

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

