

WHITE PAPER

Direct installation view

Streamlined and secure camera installation

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Summary

Direct installation view represents a significant advancement in streamlining and securing surveillance system deployments. By simplifying the crucial first step of physical camera alignment, it empowers installers to work more efficiently and safely, reducing labor costs and installation times.

The feature enables installers to connect to a network camera using Bluetooth® technology during setup and check the camera's field of view in real time in their mobile device. This enables them to adjust the field of view and rotation in real-time without guesswork or calling the office for feedback.

Robust security architecture, including limited access, time-based expiry, secure boot, and advanced protocol usage, ensures that this convenience doesn't introduce new vulnerabilities. This approach reflects our commitment to delivering solutions that enhance operational efficiency while maintaining the highest standards of cybersecurity.

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1 Introduction

Successful deployment of a video surveillance system depends on smooth installation and precise alignment of each camera. Achieving the optimal field of view (FOV) while physically mounting a camera has typically been logistically challenging, leading to increased installation times, higher labor costs, and potential security vulnerabilities.

Direct installation view is a feature designed to overcome these challenges. It enables the installer to connect through Bluetooth to the camera's live view from a smartphone, tablet, or laptop.

This white paper presents the operational enhancements that this feature brings, with an extra focus on the robust security framework that ensures integrity throughout the installation process.

2 Traditional installation challenges

Traditional methods for installing and fine-tuning cameras can be inefficient and logistically challenging. They can also potentially expose your system to cybersecurity threats.

Achieving the correct camera orientation typically requires a two-person team: one installer physically adjusting the camera (often from a ladder or lift) and another at a computer, providing real-time feedback on the live view. This back-and-forth process is time-consuming and prone to miscommunication.

While the mobile app AXIS Installer significantly simplifies live viewing of video during installation, its traditional use demands that the installer's mobile device be connected to the same network as the camera. Providing the installer with your network password carries inherent security risks if not managed meticulously and if temporary users or passwords are not promptly removed post-installation.

Furthermore, additional steps to create camera-specific user accounts for installers adds to setup time and management overhead.

These challenges highlight the need for a solution that accelerates installation, reduces labor, and minimizes potential security exposures.

There are specialized devices available for simplifying installation, which can provide a dedicated, secure internal Wi-Fi network for camera connection. While effective, they still involve a more complex process than a direct Bluetooth connection, including user creation on the camera.

3 Direct installation view functionality



Direct installation view simplifies the installation process while maintaining security.

By letting a single installer see the camera's live view on their mobile device while physically adjusting the camera, direct installation view turns a slow, back-and-forth process into a straightforward one-person task. This makes it especially valuable for non-motorized cameras, where getting the physical alignment right on site is essential.

When the camera is in factory default state and powered on, it automatically enters installation mode. The camera's integrated Bluetooth Low Energy (BLE) chip starts transmitting a signal, discoverable within approximately 10 meters or 30 feet.

Using the AXIS Installer app, the installer scans for nearby cameras and connects directly to the camera over Bluetooth. No network credentials or user accounts are required. During this connection, the camera streams a low-resolution live video feed to the app. The installer can then physically adjust the camera's position and rotation while seeing the result in real time, verify the field of view, and take a snapshot for documentation.

The connection is peer-to-peer, which means it links the installer's device directly to the camera without touching the corporate or surveillance network. Through this connection, the installer can only view the live feed and capture a snapshot. No administrative commands or configuration changes are possible.

When the installer disconnects, all further camera configuration (such as network settings, recording parameters, and analytics) can be handled by authorized personnel through standard network-based procedures. The Bluetooth access point doesn't reopen unless the camera is reset to factory default.

4 Benefits

The direct installation view enhances efficiency in surveillance system deployments. Single-person installation is possible when you don't need a second person to monitor the live view from a remote location. The installer can rapidly adjust the camera and verify the field of view in real-time directly from their mobile device. Installation is also faster and easier without the time-consuming steps of logging into networks or creating temporary camera user accounts. Reduced labor time and the need for fewer personnel per installation contribute to lower operational costs.

5 Security architecture

A primary concern with any new connectivity method is security. The following measures ensure that the convenience of direct installation view doesn't introduce new vulnerabilities.

Peer-to-peer isolation. The Bluetooth connection is a direct link between the camera and the installer's mobile device. It doesn't touch the corporate or surveillance network, which means there's no exposure of network credentials and no risk of the installer's device gaining broader network access.

Limited functionality. What an installer can do through the Bluetooth connection is enforced at the protocol level, not just by convention. Viewing and adjusting the live feed and capturing a snapshot are the only available actions. Administrative commands, network configuration, and other sensitive operations simply aren't accessible through this interface, and can't be unlocked by attempts to manipulate the connection.

Time-limited access. Installation mode is temporary by design. It automatically disables approximately two hours after the camera boots up. It also closes immediately when the first user account is created on the camera. This means that once the device is brought into the network, the Bluetooth access point is permanently gone.

Secure boot and AXIS OS integrity. During startup, AXIS OS verifies the integrity of all software components, including the BLE chip's firmware, using secure boot. This protects against tampered or rogue software running on the camera before the installer even connects.

Advanced Bluetooth protocol. The solution uses Bluetooth 5.4, a modern and secure protocol that is significantly more robust against potential exploits compared to older Bluetooth versions.

Up-to-date BLE firmware. The BLE chip's firmware is updated as part of the standard AXIS OS update process. This means that keeping the camera up to date automatically keeps the Bluetooth implementation up to date too. It simplifies maintenance and ensures the Bluetooth connection remains secure over time without any additional steps.

Protection against overload attacks. The specific implementation of the Bluetooth and network protocols in AXIS OS is designed to prevent denial-of-service (DoS) or overload attacks. The exposed interfaces and available commands are minimal, making such attacks impractical or ineffective.

6 Pre-staging and direct installation view

Direct installation view is typically unavailable if a camera has undergone pre-staging or initial configuration prior to site delivery. For security reasons, the Bluetooth access is automatically disabled once an administrator account is created during the pre-staging phase.

However, if pre-staging was limited to assigning a static IP address, you can restore access by performing a factory reset while specifically selecting the option to **retain IP settings**. This process removes the admin user and reactivates installation mode while keeping the required network configuration intact. Note that any other custom configurations, such as image settings, analytics, or recording schedules, will be lost during this reset. For cameras requiring complex pre-configuration, it is best to use standard network-based installation tools rather than the direct installation view.

7 Compatibility

Direct installation view is progressively introduced across various Axis camera models. For the most up-to-date compatibility list, check Axis product documentation.

About Axis Communications

Axis enables a smarter and safer world by improving security, safety, operational efficiency, and business intelligence. As a network technology company and industry leader, Axis offers video surveillance, access control, intercoms, and audio solutions. These are enhanced by intelligent analytics applications and supported by high-quality training.

Axis has around 5,000 dedicated employees in over 50 countries and collaborates with technology and system integration partners worldwide to deliver customer solutions. Axis was founded in 1984, and the headquarters are in Lund, Sweden.