



Security FAQs:

Q: Do the Cooper InVision IFM/ICM, Wireless Mesh Router and Gateway radio signals leave the plant? And what information do the signals contain?

A: Yes, if they are located at the edge of your facility, they have the potential to transmit a short range outside the plant, but the information they contain is limited to the IFM/ICM electronic serial number and the alarm type. Both values are unintelligible until the data is matched up with the ESN that's in the secure Command Center, and even when the data is transmitted back to the user, no sensitive data is contained in the transmission.

Q: How much bandwidth does the Gateway require, and will this affect my network operations?

A: During normal operation, the Gateway polls the Command Center every five minutes, which is an operation that transfers approximately 3 kilobytes across the Internet, contributing an average of about 82 bits per second to your total bandwidth utilization. Event communication is also about 3 kilobytes. Remote diagnostics and firmware upgrades will transfer significantly more data, but can tolerate very slow transfer speeds.

Q: I can't allow an Internet connection to your server; it opens up a security leak in my network.

A: The architecture of the Cooper InVision System was carefully designed by security experts following industry best practices, and its communication poses no new risks to your network security. If your facility currently contains no Internet connection, one can be established for the sole use of the Cooper InVision System such that it is isolated from the rest of your network and therefore poses no security risk to it.

Q: What kind of security measures does the Cooper InVision System have to avoid infiltrating my network and having sensitive data leaving my network?

A: 128 bit SSL encryption, outbound-only communication requiring no need to open incoming firewall ports, user and device password authentication for all network communications, user rights and restrictions, user activity auditing, SSL client and server certificate authentication, remotely managed security updates, firewall at the Command Center.



Q: Is the Cooper InVision Server backed up, what security measures do you have for your server?

A: Yes, the Cooper InVision Servers are backed up following industry best practices, which includes regular backups of all data and software and off-site storage of media. The network architecture of the Cooper InVision Servers includes a two-tier firewall design, all of which resides in an access-restricted, manned facility.

Q: What kind of data is stored on your servers?

A: Aside from general data recording of circuit openings and other on-going operational signals sent by the IFMs and ICMs, the only other data on the Cooper InVision server involves your circuit locations/descriptions, the IFM/ICM electronic serial numbers for the monitored circuits, the user role and contact information and escalation rules for issuing alerts by phone or e-mail.

Q: What can my employees do in the Command Center?

A: Depending on their assigned role, they can, at least, acknowledge and close alerts. Other roles allow for configuring devices, adjusting notification escalation rules, who gets called and the running of reports for diagnostic purposes.

Q: What security measures are in place for accessing the Command Center?

A: Access to the Command Center is by username and password only. Your administrator has full control to add and delete users and change passwords to protect access to your Command Center information.

General FAQs

Q: Can I add additional circuits to the system later?

A: Yes, provided the circuits are located within the wireless mesh router network, it's easy to add more IFMs and ICMs to increase your monitoring. If the new circuits are outside the network, it is possible to add more wireless mesh routers to expand coverage to include the new circuits.



Q: Can I expand the range of the router network to cover more of my plant?

A: Yes, by installing more wireless mesh routers.

Q: Can I hardwire the routers?

A: Yes, but the cord length is only 6 feet and if NEMA 4X is needed, provisions must be made for installing the power connection in accordance prevailing standards.

Q: Can I have my servicing electrical contractor have access to the command center?

A: Yes, and you may choose what security level to grant them.

Q: Can I interface the Cooper InVision System with my PBX for alerts?

A: Voice alerts are initiated from the Cooper InVision Servers by dialing a ten digit telephone number. You may receive calls on a direct (DID) telephone number, but it is not possible to dial extra digits to get through to an extension.

Q: Can I keep my UL ratings and Code compliance using IFMs and ICMs?

A: Yes. IFMs are classified as a fuse accessory and do not affect the ratings of fuses already installed. ICMs require conformance with tap rules, but can generally be installed in compliance with prevailing Code requirements.

Q: Can I list competitive fuse catalog numbers in the system?

A: Yes, any fuse part number can be entered into the Command Center.

Q: Can I monitor an individual piece of equipment?

A: Yes, but even a single piece of equipment will require the installation of the Cooper InVision Gateway and at least one Wireless Mesh Router before and IFM or ICM can be installed successfully on a single piece of equipment.



Q: Can I monitor anything else other than the status of my fuses, circuit breakers and switches (voltage, amps, vibration, gases)?

A: Yes, anything that creates a voltage differential can be monitored, including fuses, circuit breakers, and switches.

Q: Can I monitor circuits above 600Vac?

A: Not at this time. Both IFMs and ICMs are rated only up to 600Vac.

Q: Can I monitor dc voltage circuits?

A: Yes. Both the IFM and ICM can monitor circuits up to 600 volts. On dc circuits, the IFM/ICM must be installed with the correct polarity.

Q: Can I monitor my high-speed fuses and other fuse types not covered by the IFM selection?

A: Yes, by using the ICM, provided the circuit is not over the 600 volts.

Q: Can the Cooper InVision System interface with other systems?

A: The Cooper InVision System is designed to be open and flexible regarding the interoperability with external systems. However, no existing interface applications exist, and the ability to interface with external systems requires extensive software customization. Such customizations are generally regarded as cost prohibitive and extend over a long period of time.

Q: Does the Cooper InVision System and its hardware meet agency and Code standards?

A: Yes, the components are UL Listed, FCC certified, or both.

Q: Exactly how does the Cooper InVision System reduce my down time – it doesn't prevent fuse or circuit breakers from opening – where's the payoff?

A: The downtime reduction is made possible by eliminating the time lost in the notification and response process. It actively alerts maintenance personnel that a circuit is open, tells them where it's located and the correct replacement fuse to bring when troubleshooting and restoring power.



Q: How are three-phase circuits monitored?

A: An IFM or ICM is installed on each phase. The three may be associated together in the Command Center to detect single-phase events.

Q: How big a coverage area can the Wireless Mesh Routers and Gateway provide?

A: The coverage area of the Wireless Mesh Router network is significantly influenced by environmental factors. Under optimal conditions, a single Gateway and Wireless Mesh Network can cover one square kilometer (or a length at most one linear kilometer). If the coverage area of a single Wireless Mesh Network is insufficient for the application, multiple gateways and routers configured with independent network identifiers can be used.

Q: How can I install an ICM and not violate compliance with the NEC®?

A: By following the tap rules contained in Section 240.21(B)(1).

Q: How can my maintenance personnel acknowledge an alert that's faxed?

A: Acknowledging an alert that's been faxed can be made by logging into the Cooper InVision Command Center and performing an acknowledgement.

Q: How do I keep the IFM installed on the right fuse?

A: Each IFM has an area for marking its circuit and/or phase location.

Q: How does the Cooper InVision System work?

A: Intelligent Fuse and Circuit Monitors detect opened fuses and circuit breakers, and send signals through a Wireless Mesh Network that get sent over the internet to the Cooper InVision Command Center. In turn, the Command Center will send an alert by e-mail or telephone call to designated maintenance personnel for their follow up.

Q: How has the Cooper InVision System performed where it's been installed?

A: One customer has saved a potential downtime cost and lost production of up to \$1,000,000 in just the first six months of operation.



Q: How long do the batteries last in the IFM/ICM?

A: Up to 4.5 years.

Q: How many circuits can I monitor?

A: Current estimates are up to 1,500 circuits with a single Gateway and Wireless Mesh Network. Multiple Gateways and independent networks can be installed to increase the scalability of your installation.

Q: How many escalations levels can I have?

A: Escalations can be configured for up to 10 levels.

Q: How much faith can I have in the system?

A: Current testing has resulted in 99.999% event transmission reliability for correctly installed IFMs/ICMs.

Q: How often will my circuits be monitored?

A: Your circuits are monitored 24/7, 365. The Cooper InVision System is a full, real-time monitoring system that's constantly working to alert you to any open condition on monitored circuits.

Q: Will my employees accept this technology? Won't they think they're being spied upon?

A: Employees should accept and embrace the Cooper InVision System, provided they're given an explanation of how the system can provide increased productivity to keep a facility profitable and increase efficiency.

Q: I already have a wireless network; can I get the IFMs/ICMs to communicate with it?

A: No. The Cooper InVision System is designed as a stand-alone system to ensure its stability and reliability.



Q: If my system needs servicing, who will perform it?

A: A Cooper Bussmann certified field technician.

Q: Is training my employees going to be difficult?

A: No. Initial training will be performed via Webex and the system will come with access to documentation for basic troubleshooting procedures.

Q: My maintenance personnel only have walkie-talkies, how will/can they be notified of an open fuse/circuit breaker?

A: You can direct the alert to be directed to a central dispatch area, such as a security office, for forwarding to maintenance personnel over your walkie-talkie systems.

Q: My maintenance procedures for dealing with open circuits are fine as they are. Why should I consider the Cooper InVision System?

A: The Cooper InVision System offers you an active approach to restoring power, saving the lost time needed to become aware of a problem. Further, the Cooper InVision System has diagnostic reporting capabilities that can help identify power distribution problems for remedial action.

Q: What happens during a power failure – does my Cooper InVision System need my attention to get it going again?

A: No. The Cooper InVision system is designed to reactivate itself automatically after power is restored. Use of a UPS is recommended for powering the Cooper InVision Gateway so that it can capture events that may occur when power is restored.

Q: What happens if enough routers fail and the IFM/ICM signals no longer get to the Gateway?

A: The Cooper InVision System will issue an alert notifying you of missed IFM/ICM heartbeat signals. This indicates the Gateway is no longer receiving their signals from the Routers. Basic troubleshooting can then isolate and identify the problem Routers in the mesh network.



Q: What happens if my network goes down? Will my Cooper InVision System still work?

A: If your network fails, any alarms sent to the Gateway from the IFMs/ICMs will be stored for sending and will be sent to the Command Center once your network is restored.

Q: What happens if the Internet is interrupted or a data cable accidentally cut, are there alternate communications means for the Gateway to get an alert to my maintenance personnel?

A: Assuming the disruption happens after an alert is sent to the Command Center and alert notifications are normally sent by e-mail, the Command Center can have its notification escalation rules configured to place a phone call to your personnel or other designated people outside your plant. If the disruption happens before an alert signal is sent to the Command Center, then the Cooper InVision System cannot issue an alert notification until the disruption is fixed and the alert signal received.

Q: What happens if the phone lines are dead?

A: Alerts can be assigned to cell phone numbers. Also, the alert escalation rules can be configured to issue e-mail notifications to any designated person inside or outside your plant.

Q: What information does an open circuit alert give my maintenance personnel?

A: At the very least, it will alert your maintenance personnel that a circuit has opened and its location. Further information can be programmed into the Command Center to provide the replacement fuse catalog number and the level of personnel protective equipment needed to perform service on the affected circuit.

Q: What kinds of power supply circuits do I need for the Gateway and Routers? Dedicated, UPS?

A: Both the wireless mesh routers and Gateway use 120Vac, 50-60Hz power, with the Gateway also capable of being run on 240Vac, 50-60Hz power. Ideally, the circuits are dedicated or have very few other loads to minimize the chances of power failure. Cooper Bussmann also recommends the Gateway be installed with a customer-supplied UPS so its computer does not need rebooting after a short power outage. Power circuits for the Wireless Mesh Routers should be within six feet of where the Routers are to be mounted.



Q: What software and hardware is required to use the Cooper InVision System?

A: The Cooper InVision Downtime Reduction System is self-contained and only requires access to the internet over your local network. The only customer-supplied equipment may be a UPS to keep the Gateway powered during short power failures. The Command Center may be accessed from any Flash-enabled web browser.

Q: What type of payback can I expect?

A: The payback depends on the nature and the downtime costs associated with your particular operations, the number of critical circuits you're monitoring and their openings. To see how the Cooper InVision Downtime Reduction System can reduce your downtime costs, and give you an idea of the payback it can provide, go to www.cooperbussmann.com/invision and visit the Downtime Reduction Calculator.

Q: Where can I obtain more information on the Cooper InVision Downtime Reduction System?

A: Visit the Cooper InVision Web site at www.cooperbussmann.com/invision.

Q: Where do I get the Cooper InVision components serviced?

A: Contact your local Cooper InVision authorized distributor.

Q: When should I use an IFM or ICM?

A: IFMs are used for quick, easy and convenient installation by snapping onto existing fuses. ICMs are used to monitor circuit breakers, switches or fuses for which an IFM model is unavailable, and must be wired into the circuits.

Q: Will my personnel receive training on using the Command Center? If so, where and how? Will new employees get this training, too?

A: Training will be made available for all Cooper InVision™ customers to attend via webex at www.cooperbussmann.com/invision



Q: Will the Mesh Router Network interfere with my existing wireless network?

A: A site assessment will be performed prior to installation to determine which wireless frequencies are currently present within the facility to ensure that there are no conflicts that could compromise the performance of the systems.

Q. We don't blow many fuses

A. That may be the perception, but research has shown that most industrial facilities are unaware of all circuit activity that occurs during off shifts. Only by consistently monitoring and recording all your open circuit activity can you be sure. The Cooper InVision System is capable of logging all openings on monitored circuits and providing performance reports on the reliability of your power distribution system and equipment.

Q. We are required to troubleshoot the machine before we replace the fuse so the downtime reduction you are offering me is not going to help.

A. The Cooper InVision System was never designed to replace the entire troubleshooting process. Identifying an open fuse will bring you closer to determining the cause, for which an open fuse is only a symptom. Its primary benefit is that it actively alerts your maintenance personnel that a circuit has opened, saving you the time to become aware a problem exists. Further, it can inform your maintenance personnel of the correct replacement fuse catalog number to take along with the correct level of PPE needed for servicing that particular circuit. That saves back and forth travel from the troubled circuit to the parts crib and back. That's where the Cooper InVision System offers you the time savings.

Q. We keep "squirrel holes" right next to all our enclosures so we don't need to know what type of fuse to bring; it's already there.

A: While your maintenance personnel may have the replacement fuse already at the panel, they still need to be told the circuit is open, where it's located and the correct level of PPE required for servicing that panel. The primary benefit of the Cooper InVision System is the speed of notification. Additionally, the reporting capabilities of the Command Center will make it easier for you to manage your replacement fuse inventory.



Q. I don't have time to take on this installation. I like the product, but I do not have time for this.

A: With the Cooper InVision System, there is nothing for you to install. The majority of the site assessment and all of the installation is performed by Cooper Bussmann personnel or contractors. All you have to provide is a list of critical circuits you want monitored and basic information on the people that will be interacting with the Cooper InVision Command Center.

Q. There is not any room in my enclosure to wire in the ICM.

A: ICMs may be mounted in an external enclosure, provided the wire runs conform to the prevailing tap rules and Code requirements.

Q. We have a remote location, but there is no Ethernet drop there.

A: Depending on the specific details of your location, coverage may be possible by locating the Gateway where there is an Ethernet drop and using additional Wireless Mesh Routers to extend mesh coverage to the desired area.

Q. My network is unreliable here. Is there any redundancy built into the path from the Gateway to the Server?

A: Yes. In addition to the TCP protocol's error detection and retransmission capabilities, the Gateway's software is programmed to queue alerts until it can access the internet for sending to the Command Center.