

NAE5510-ER2 Secure Control Panel Assembly Installation Instructions

MS-NAE5510-ER2



24-10973-0, Rev A

(barcode for factory use only)

Part No. 24-10973-0, Rev. A

Software Release 8.0

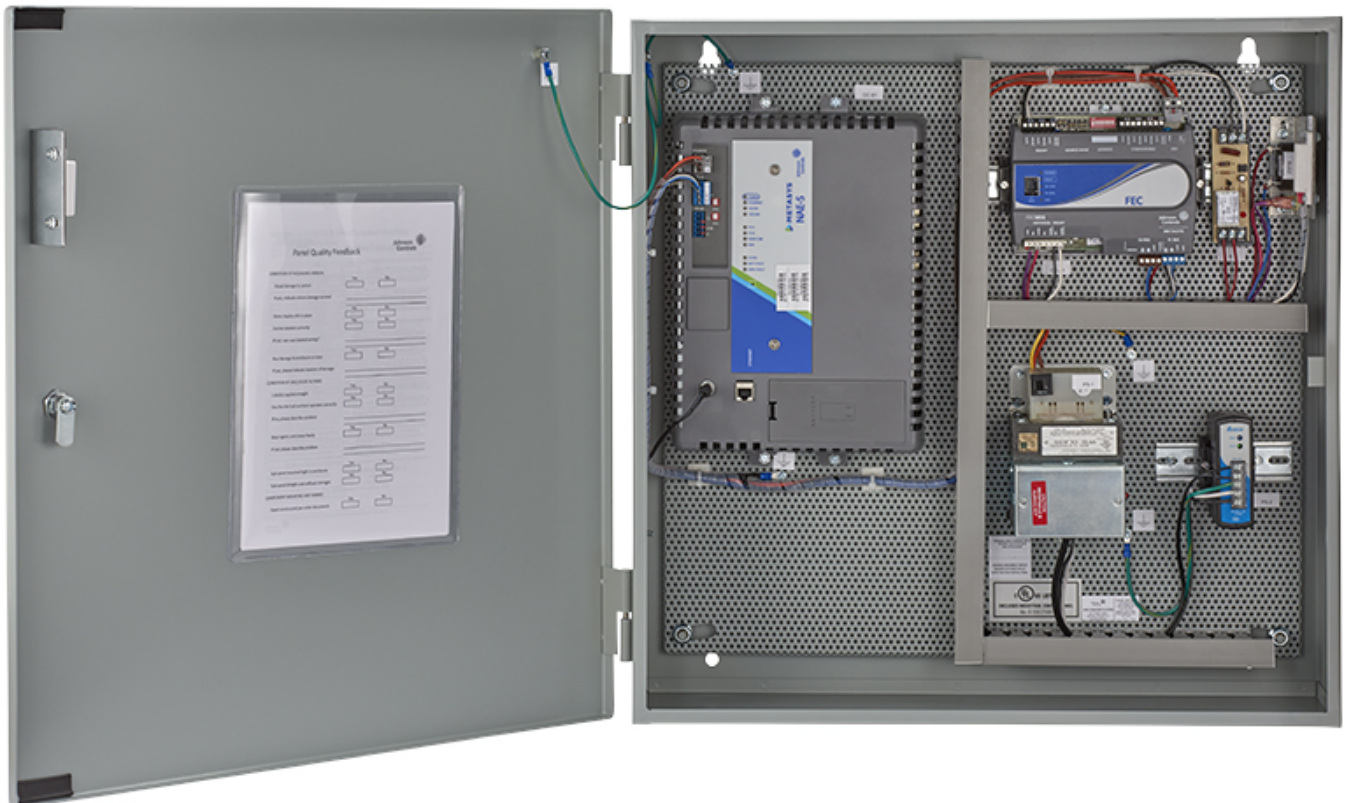
Issued April 2017

Application (United States and Canada)

The NAE5510-ER2 is a secure control panel assembly that consists of a secure Network Automation Engine (NAE551S-2), a Field Equipment Controller (FEC1611-1), power supplies, a loud audible alarm, and a temperature sensor. These *Metasys*® network family components provide a real-time energy monitoring and control system with built-in encryption technology. This document describes how to install the NAE5510-ER2.

The secure NAE-S, an integral component of the NAE5510-ER2, is a hardened version of the standard NAE55 that uses embedded encryption technology to protect and secure the building management system at the endpoint. The engine meets the Federal Information Processing Standard (FIPS 140-2), Security Level 2, that specifies the use of a cryptographic module and a tamper-proof housing. The NAE-S is also Common Criteria certified. The NAE-S monitors and controls networks of field-level building automation devices, including HVAC equipment, lighting, security, and access control equipment. [Figure 1](#) shows the NAE-S model.

Figure 1: NAE5510-ER2 Component Layout



Panel Dimensions

Figure 2 and Figure 3 show the dimensions, mounting holes, and holes for external connections to the NAE5510-ER2. The pre-punched holes are labeled for the best entrance points for the cables and wires listed. The NAE5510-ER2 enclosure is 24 x 24 x 6.6 inches (609 x 609 x 167 mm). The depth is slightly greater with the panel door installed. The panel includes a T-45 keylock.

Figure 2: NAE5510-ER2 Mounting Holes and Dimensions, in. (mm)

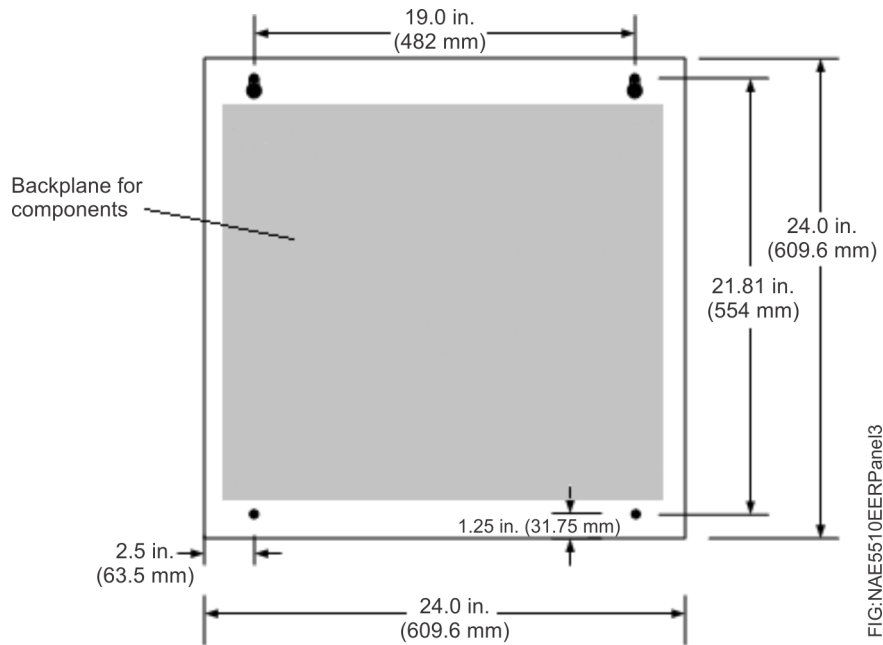
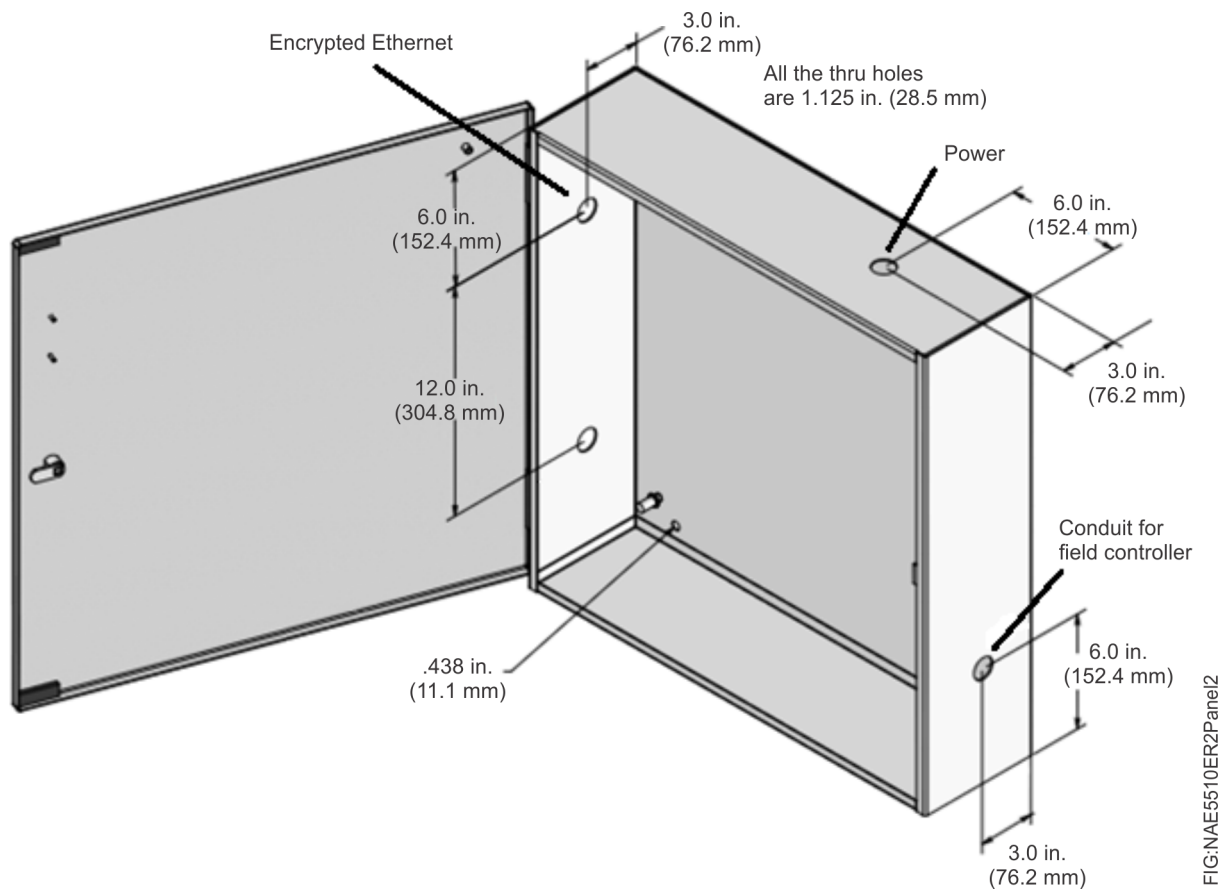


Figure 3: NAE5510-ER2 Panel Dimensions Showing Holes for External Connections, in. (mm)



Mounting

Notes:

- The NAE5510-ER2 panel can be hung with 5/16 in. (8 mm) or 3/8 in. (9.5 mm) diameter hex head bolts or lag screws. The enclosure should be mounted on a wall or structure capable of supporting its weight (approximately 75 lb/28 kg). The screws are not included with the panel.
 - Prior to mounting the panel, carefully remove the zip ties from the components that are attached for shipping purposes. Install the battery before applying power to the NAE-S in the panel.
1. Select a suitable mounting location.
 2. Fasten the enclosure panel on the wall using appropriate screws or connectors for the material you are mounting.
 3. Use the provided holes to pull power, encrypted network communications, and field controller bus cables. See [Figure 3](#).

Location Considerations

For proper installation and subsequent operation of the devices in the NAE5510-ER2 Panel assembly, follow these recommendations:

- Allow for proper clearance of device casing, cables, and door for easy access to hardware.
- Install at the following environmental conditions: ambient temperature of 32°F to 104°F (0°C to 40°C) with a relative humidity of 0 to 95%, noncondensing.
- Ensure proper ventilation of devices, and avoid areas where corroding, deteriorating, or explosive vapors, fumes, or gasses may be present.
- The panel should be mounted vertically on a wall in a secure mechanical room.

Wiring

Important: Make all wiring connections in accordance with local, national, and regional regulations. Do not exceed the NAE5510-ER2's electrical rating.

The NAE5510-ER2 includes one model FEC1611-1 B-ASC device on an MS/TP field bus connected to Trunk 1 of the NAE-S. The included FEC1611-1 is configured at device address 4. The trunk is not grounded. If the FEC1611-1 included in the panel is the only device on its own field bus, ground the field bus that contains only the included FEC1611-1. When integrating two existing MS/TP field buses into the panel, make sure that when incorporating the included FEC1611-1 onto an existing field bus, that its address is unique to the grounded bus to which you add the device. For more information on grounding the FEC1611-1, refer to the *MS/TP Bus Cable Recommendations* section of the *MS/TP Communications Bus Technical Bulletin (LIT-12011034)*.

Power

The NAE5510-ER2 has multiple devices powered from the same transformer, a 120–24 VAC power supply (PAN-PWRSP-0). Be sure to maintain consistent polarity among all controllers. Connect the COM terminals from each controller to the same terminal on the secondary side of the transformer. A separate Delta® PSU (Power Supply Unit) model DRP-24V48W1AZ, 24 VDC power supply is provided for powering the crypto device.

CAUTION

Risk of Electric Shock. Disconnect the power supply before making electrical connections to avoid electric shock.

Communications

The NAE5510-ER2 uses encrypted Ethernet communications through an RJ-45 cable that plugs directly into the NAE-S.

Important: Use only unshielded Ethernet cable in order to prevent electrical ground loops and reduce Electro-Magnetic Interference (EMI).

Important: To preserve the current configuration for all *Mefasys* system users, including last login time, always upload the controller into the SCT before making changes and downloading a database. User configuration information is stored in the archive database. The archive database is restored during a device download. When an older archive is downloaded into the NAE-S, the most recent user password, properties, and login time are lost.

Physical Security

Important: The temperature application from the current distribution media must be downloaded into the FEC1611-1 that is included in the NAE5510-ER2 panel. The application name is Tamper_SW_Temp_Sec_Alarm_Rev1.caf. This application is provided on the Johnson Controls® Branch Purchase Package (BPP) and the ABCS Media Purchase Package at Release 8.1. Refer to the *Controller Tool Online Help (LIT-12011147)* for detailed instructions on how to use the Controller Configuration Tool (CCT). The media also includes the firmware file for the encryption module and External DarkNode module, plus two DPI filter examples.

When the NAE5510-ER2 door is opened, a loud, audible access alarm sounds, regardless of the door position. To silence the alarm, shut the door immediately.

The following three values are monitored at the network engine and are to be mapped at the *Metasys* Server or BACnet Operator Workstation (B-OWS). The monitored values are:

- **Panel Temperature Alarm (MV)** (Normal/Alarm)
- **Panel Temp (AI)** Current internal temperature of the panel (range 32°F to 120°F [0°C to 49°C])
- **Panel Tamper Switch (BI)** Open/closed indication (Normal/Alarm). When the contact is open, the door is closed.

Repair Information

If a component of the NAE5510-ER2 fails to operate within its specifications, return it to Johnson Controls®. To request a return authorization, contact the Johnson Controls Repair Center in Louisville, Kentucky at 1-502-671-7312 for assistance.

Ordering Information

Table 1: NAE5510-ER2 Ordering Information (United States and Canada Only)

Product Code Number	Description
MS-NAE551S-2	Secure NAE-S Network Automation Engine: Requires a 24 VAC power supply. This model is a BACnet BTL-Listed controller at PR12. Includes an Ethernet port and one MS-BAT1010-0 Data Protection Battery. Supports up to 100 devices on each N2 or BACnet MS/TP trunk.
MS-NAE551S-702	Replacement secure NAE-S. Requires a 24 VAC power supply. This model is a B-BC controller and includes an Ethernet port and one MS-BAT1010-0 Data Protection Battery. Supports up to 100 devices on each N2 or BACnet MS/TP trunk.
MS-NAESCBL-0	Diagnostic cable and nonmetallic reset probe.
MS-FEC1611-1	This model is a B-ASC 10-Point Field Equipment Controller with 2 UI, 1 BI, 3 BO, and 4 CO; 24 VAC; FC and SA Bus Support.
MS-BAT1010-0	Replacement data protection battery for the secure NAE-S. Rechargeable gel cell battery with a typical life of 3 to 5 years at 70°F (21°C).
PAN-PWRSP-0	96 VA 120/24 VAC Power Assembly (Transformer, receptacle, 5 A, over current circuit breaker)
DRP-24V48W1AZ (Rev04)	DeltaPSU CliQ Power Supply System, provides 24 VDC power to the crypto device.

Technical Specifications (United States and Canada Only)

Product	MS-NAE5510-ER2
Dimensions	24 x 24 x 6.6 in. (609 x 609 x 167 mm) enclosure with T-45 keylock and control panel assembly
Ambient Conditions	32 to 122°F (0 to 50°C); 10 to 90% RH, 86°F (30°C) maximum dew point
Ambient Storage	-40 to 158°F (-40 to 70°C); 5 to 95% RH, 86°F (30°C) maximum dew point
Power Requirement	120 VAC, 50/60 Hz
Shipping Weight	75 lb (28 kg)
Shipping Restriction	The Bureau of Industry and Security of the U.S. Department of Commerce has restricted the shipment of this product to the following countries, per Export Administration Regulations (EAR(B)1): Cuba, Iran, North Korea, Sudan, and Syria.
Compliance	<p>United States: UL 508A and CCN NITW Industrial Control Panel Listed, FCC Compliant to CFR47, Part 15, Subpart B, Class A</p> <p>Canada: cUL CSA-C22.2 No. 14, CCN NITW7, Industrial Control Equipment; IC Compliant to ICES-003 Class A</p> <p>BACnet International: BACnet Testing Laboratories™ (BTL) 135-2010 Listed BACnet Building Controller (B-BC)</p>

The performance specifications are nominal and conform to acceptable industry standard. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.

North American Emissions Compliance

United States

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the users will be required to correct the interference at their own expense.

Canada

This Class (A) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la Classe (A) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.



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