

Application Guide

# IRC-3/FCC to EST3 Migration



imagination at work

## **IRC-3/FCC to EST3 Migration Application Guide**

**GE Security**  
**8985 Town Center Parkway**  
**Bradenton, FL 34202**  
**(941) 739-4200**

**Copyright © 2006 GE Security, Inc.**

This application guide is copyrighted by GE Security, Inc.. You may not reproduce, translate, transcribe, or transmit any part of this manual without express, written permission from GE Security.

This manual contains proprietary information intended for distribution to authorized persons or companies for the sole purpose of conducting business with GE Security. Unauthorized distribution of the information contained in this manual may violate the terms of the distribution agreement. Specifications subject to change without notice.

# IRC3-FCC to EST3 Migration Application Guide

## Contents

### Overview • 1

- Strategy • 1
- Why is migration necessary? • 1
- UL listing • 1
- General migration information • 1

### IRC-3 network controllers • 2

- CM1(N) and CM2(N)(D) control panel functions • 2
- ACP(-6) audio control panel • 2

### FCC network • 3

- FCCD display • 3
- FCCA(-4)(-6) audio control panel • 3
- PCPU polling CPU • 3
- DCPU display CPU • 3
- FCCOM series communications modules • 3
- Network wiring • 4
- Power supplies • 5
- Relays • 5
- Off-premises notification • 6
- Extinguishing systems • 6
- Audio sources • 6
- Amplifiers • 7

### Zone cards • 8

- ZA4-2 zone card • 8
- ZB8-2, ZB8-5, and ZB8-5/3 zone cards • 8
- Firefighter's telephone devices • 9
- Printer • 9

### Signaling line circuits (SLC) • 10

- ZAS-1(S) • 10
- ZAS-2 • 10

### Addressable devices • 11

- Device replacement • 11

### Annunciators • 12

- SAN / RASP / ISP96 • 12
- CMDN • 12
- Graphic annunciators • 12
- Computer based equipment • 12

### Appendix • 13

- UIO application notes • 13
- Compatibility lists • 13
- Retrofit wiring considerations • 13



## Strategy

**Strategy:** To secure the system upgrade by providing the most attractive price while maintaining the continuity of protection.

The key to implementing this strategy is the reuse of as much existing equipment and wiring as possible. Once the old panel equipment has been replaced, the field devices can be upgraded over time. Even when the entire system is being replaced, you have the advantage of maintaining the continuity of protection, by easily keeping the old field devices operating while the new ones are being installed.

## Why is migration necessary?

The IRC-3/FCC equipment is no longer capable of meeting the requirements of the latest UL fire alarm panel standards. Our policy of providing a migration path for control equipment permits the field devices to remain in place while allowing the fire alarm control equipment to be upgraded to the latest standards. This document provides the technical information needed to accomplish a successful migration from IRC-3/FCC control equipment to the state-of-the-art EST3 platform.

## UL listing

At the time the IRC-3/System Sensor equipment was manufactured it met all applicable listing standards. Over time, while the fire standards have changed, the installed equipment did not. Thus, it is not possible to list the older devices with controls meeting the latest codes and standards. GE Security has successfully qualified the operation of older IRC-3 devices with the 3-AADC1 for compatibility and operation.

## General migration information

IRC-3/FCC systems being upgraded to EST3 should utilize 3-SDU version 3.61 or later in order to support the functionality required to replace the most common IRC-3/FCC hardware.

In most system upgrades, the system cabinets must be replaced. Some jurisdictions may permit the existing cabinetry to be used as terminal cabinets.

Not all applications can be documented. Please contact GE Security (800 655-4497) for additional help.



# IRC-3 network controllers

## CM1(N) and CM2(N)(D) control panel functions

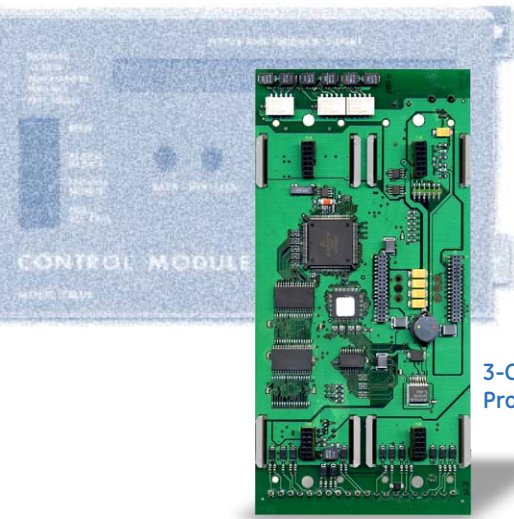
The functions of the CM1(N) and CM2(N)(D) are replaced by the 3-CPU3 modules and associated local rail modules and accessories as detailed in this document.

Refer to “Network wiring” on page 5 for network wiring information.

## ACP(-6) audio control panel

The functions of all versions of the ACP can be replaced with the 3-ASU/FT. See “Firefighter’s telephone devices” on page 11 for information on the reuse of modules and telephones.

CM Control Panel



3-CPU3 Central Processor Unit

# FCC network



## FCCD display

The functions of the FCCD can be replaced by the 3-LCD or 3-LDCXL1 and a 3-CPU3.

## FCCA(-4)(-6) audio control panel

The functions of all versions of the FCCA can be replaced with the 3-ASU/FT. See “Firefighter’s telephone devices” on page 11 for information on the reuse of modules and telephones.

## PCPU polling CPU

The functions of the PCPU are replaced by the 3-CPU3 modules. For FCOM series plug-in board replacements, refer to the specific model numbers in this document.

## FIB-S fiber optic splitter

There is no functional replacement for the FIB-S.

## DCPU display CPU

The functions of the DCPU are replaced by the 3-CPU3 modules. For FCOM series plug-in board replacements, refer to the specific model numbers in this document.

## FCOM series communications modules

### FCOM-232

The FCOM-232 RS-232 wiring has the same 50-foot limitation as the EST3 RS-232 wiring. It is reasonable to expect the existing FCOM-232 RS-232 wiring to work between an EST3 node and the peripheral device it is connected to.

### FCOM-485(D)

The FCC network PCPU RS-485 circuits connected all nodes together on the *same* pair of conductors, while EST3 node to node connections use a separate isolated pair between every two of nodes. Even though the data rate on the EST3 is four times that of the FCOM-485, it is reasonable to expect the existing FCC network wiring to work between two EST3 nodes, as long as it meets code requirements.

### FCOM-FIB

The multimode optical fiber that connected IRC-3/FCC nodes equipped with FCOM-FIB modules together can be reused in an EST3 system by equipping the EST3 with a 3-FIBMB Fiber Optic Motherboard and two MMXVR Multimode Transceivers.

**Note:** The fiber optic budget of the MMXVR transceiver and FCOM-FIB are both 10 dB. Verify the fiber loss is less than 10 dB before making this substitution.

## FCOM-20

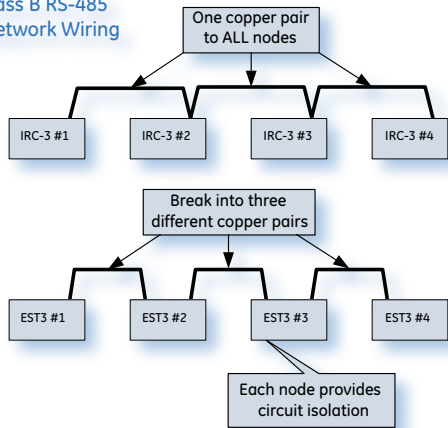
The FCOM-20 was used to connect nodes over a pair of small gauge (22 to 26 AWG) telephone wires. While not a direct replacement, the 3-NSHM1/2 short haul modems can be used to connect two EST3 nodes together over *two pairs* of telephone wires. The FCOM-20 provided two circuits for Class A operation.

## Network wiring

In most applications, IRC-3 network wiring can be reused to support an EST3 network as shown in Figure 1 and Figure 2.

Figure 1: Node-to-node network wiring

Class B RS-485  
Network Wiring



Class A RS-485  
Network Wiring

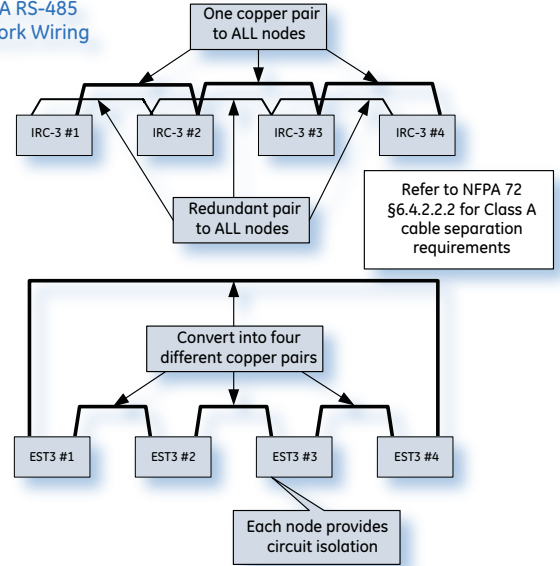
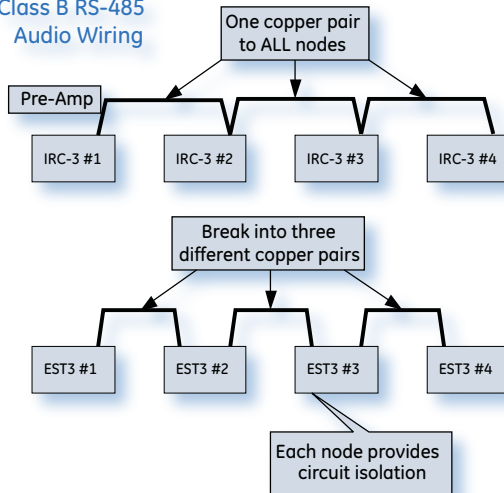
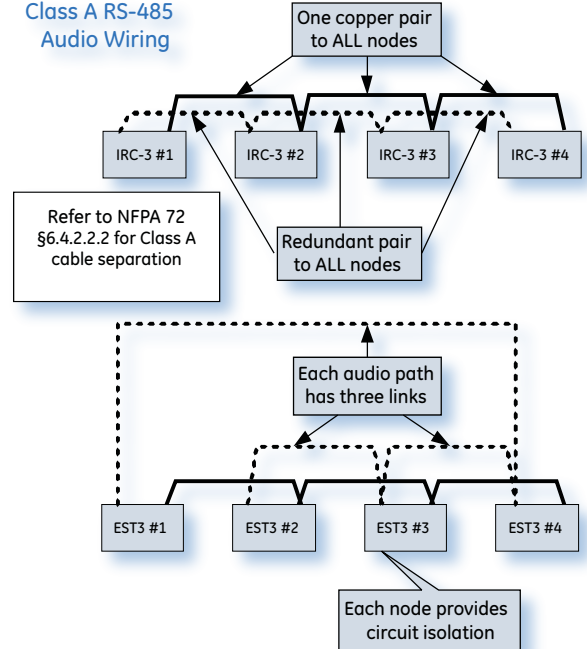


Figure 2: Node-to-node audio wiring

Class B RS-485  
Audio Wiring



Class A RS-485  
Audio Wiring





### COMM-3(S)

The COMM-3 card provided RS-485 and RS-232 connections for the CM1(N), RMDP-1N and CM2(N)(D). The COMM-3S provides only an RS-232 port.

The IRC-3 network RS-485 circuit connected all nodes together on the *same* pair of conductors, while EST3 node to node connections use a separate isolated pair between every two of nodes. Even though the data rate on the EST3 is four times that of the IRC-3, it is reasonable to expect the existing IRC-3 network wiring to work between two EST3 nodes, as long as it meets code requirements and wiring specifications.

The IRC-3 RS-232 wiring has the same 50 foot limitation as the EST3 RS-232 wiring. It is reasonable to expect the existing IRC-3 RS-232 wiring to work between an EST3 node and the peripheral device it is connected to.

### SO-FIB

The multimode optical fiber that interconnected IRC-3 nodes equipped with SO-FIB modules can be reused in an EST3 system by equipping the EST3 with a 3-FIBMB Fiber Optic Motherboard and two MMXVR Multimode Transceivers.

**Note:** *The fiber optic budget of the MMXVR transceiver is 10 dB while the SO-FIB budget was 14dB. Verify the fiber loss is less than 10 dB before making this substitution.*

### SO-20(D)

The SO-20(D) was used to connect nodes over a pair of small (22 to 26 AWG) gauge telephone wires. While not a direct replacement, the 3-NSHM1/2 Short Haul Modems can be used to connect two EST3 nodes together over *two pairs* of telephone wires. The SO-20D provided two circuits for Class A operation

### FIB-20

The FIB-20 was used to connect nodes over a pair of multimode fiber optic cables. The multimode fiber that connected FIB-20s together can be reused in an EST3 system by equipping the EST3 with a 3-FIBMB fiber optic motherboard and two MMXVR multimode transceivers.

**Note:** *The fiber optic budget of the both MMXVR transceiver is 10 dB. Verify the fiber loss is less than 10 dB or less before making this substitution.*

## Power supplies

### PS4B, PS8B, APS4B

The 3-xPS family of EST3 internal power supplies should be capable of feeding all the loads previously fed by the PS4B, PS8B, or APS4B.

Booster supplies can be used to feed external loads previously fed by PS4B, PS8B, or APS4B power supplies

## Relays

### ARM-8 / ARA-1

ARM-8 and ARA-1 relays can be reused. The suggested mounting is the MFC-A cabinet.

### ZB0-8 relay card

The ZB0-8 Relay Card provided eight independent unsupervised relays. The closest functional equivalent providing six relays is a SIGA-UIO6(R) and the appropriate Signature modules. Use SIGA-CR relay modules for Form C dry contacts. Use SIGA-CC1/2 for supervised outputs, depending on the application.

### ZR8-2 relay card

The functions of the ZR8-2 Relay Card can be replaced with SIGA-CR or SIGA-MCR modules.

## Off-premises notification

### Reverse polarity and master box

The 3-OPS off-premises signaling module can directly replace the RPM reverse polarity module for reverse polarity and local energy master box applications.

### DACT

A 3-MODCOM can replace the existing third party DACT (dialer).

Existing third party DACTs can be reused by connecting them the alarm, trouble, and supervisory contacts on the 3-CPU3 processor.

## Extinguishing systems

### FSCP/ZRM to SIGA-REL

**Note:** The FSCP/ZRM supported two independently programmed release circuits, the two circuits on the SIGA-REL activate together. If two independent circuits are required, two SIGA-RELS are required.

End of Line relays are required for use with the SIGA-REL. The abort and manual release stations and notification appliances are typically reusable. The FSCP panel can not be used with the SIGA-REL.

**Application note:** The UL listings of the FSCP/ZRM differ from those of the SIGA-REL. The SIGA-REL is currently listed for release of agents covered under the following NFPA Standards: 11, 11A, 12, 12A, 13, 15, 16, 17.

## Audio sources

### Prerecorded messages

#### MVMP(RM) and MVMR(RM)

For a limited number of messages, the SIGA-MDM is a functional substitute for MVMP(RM) and MVMR(RM) modules. For a large number of messages, the 3-ASU is the best replacement.

#### RAAM-A

The SIGA-MDM is a functional substitute for the RAAM-A.

MVMR Multiple Voice  
Message Module



SIGA-MDM Digital  
Message Module

## Banked audio

### ATP amplifier terminal panel

Components of the ATP are suitable for reuse with EST3 banked audio systems. Refer to the EST3 documentation for details.

### URSM supervision modules

URSM modules can be reused. The SIGA-RM1 is a functional Signature replacement.

## Amplifiers

### AA75(P)(T) amplifiers

The AA75 series amplifiers provided power limited 50W at 25Vrms. These amplifiers also generated a periodic 1kHz tone burst for circuit supervision.

AA75 series amplifiers can be replaced with 3-ZAxx series amplifiers and a 3-ASU.



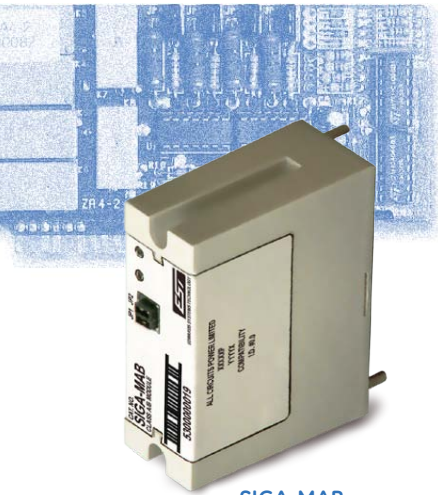
3-ASU Audio Source Unit

AA75 Audio Amplifier

## Zone cards

The Class B Zone Card functions can be replaced by the SIGA-UIO, SIGA-MAB, SIGA-CT1/2 or SIGA-CC1 modules. Note the rating and function differences in the table below. Because of the wide flexibility in applications wiring, use care in selecting the most appropriate replacement module.

ZA Zone Card



**SIGA-MAB**  
Signal Module

### ZA4-2 zone card

The Class A Zone Card functions can be replaced by the SIGA-UIO or SIGA-MAB modules. Note the ratings differences in the table below.

Module	2-wire smoke capable [1]	NAC current ratings
ZA4-2	Yes	24 VDC @ 3.5 A 25 Vrms @ 100 W 70 Vrms @ 100 W
SIGA-UIO	Yes	24 VDC @ 2.0 A 25 Vrms @ 50 W 70 Vrms @ 35 W
SIGA-MAB	Yes	24 VDC @ 2.0 A 25 Vrms @ 50 W 70 Vrms @ 35 W

[1] Refer to compatibility documents to determine compatible detectors.

### ZB8-2, ZB8-5, and ZB8-5/3 zone cards

Module	2-wire smoke capable [1]	Class B IDC EOL resistor	NAC current ratings	Class B NAC EOL resistor
ZB8-2	Yes	Alarm = 3.9 k Ohm Supv = 15 k Ohm Sec = 6.8 k Ohm	24 VDC @ 3.5 A 25 Vrms @ 100 W 70 Vrms @ 100 W	15 k Ohm
SIGA-UIO	Yes	47 k Ohm	24 VDC @ 2.0 A 25 Vrms @ 50 W 70 Vrms @ 35 W	47 k Ohm
SIGA-MAB	Yes	47 k Ohm	24 VDC @ 2.0 A 25 Vrms @ 50 W 70 Vrms @ 35 W	47 k Ohm
SIGA-CT1/2	No	47 k Ohm	N/A	N/A
SIGA-CC1	N/A	N/A	24 VDC @ 2.0 A 25 Vrms @ 50 W 70 Vrms @ 35 W	47 k Ohm

[1] Refer to compatibility documents to determine compatible detectors.

## Firefighter's telephone devices

### Remote modules

The existing FAST/System Sensor modules can be reused; however these modules do not provide the ring tone feature available on the SIGA-CC1 unless a BSM busy signal module is installed.

**Application note:** *The old modules do not meet the four-state requirement (NFPA 72 §4.4.7.2.2).*

### Handsets/Warden stations

The old FAST remote telephone handsets and warden stations are compatible with the 3-FTCU.

## Printer

### PT-1S

The PT-1S is directly compatible with the 3-RS232 Communications Card. Rewiring of the connectors is required and remember to set baud rates at both the printer and the panel.

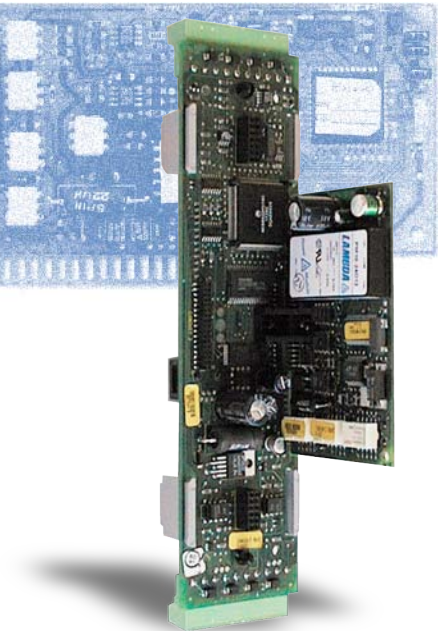
### RSAN-PRT

There is no compatible in-panel printer to replace the RSAN-PRT.



# Signaling line circuits (SLC)

ZAS-1(S) Analog Device Interface Card



3-AADC Addressable Analog Device Controller

## ZAS-1(S)

The ZAS-1(S) supports up to 96 Sensors and 96 module addresses. The functions of the ZAS-1(S) can be replaced with the 3-AADC(1) module as detailed below.

### No FAST UIO/RZB support required

The existing “ZAS” circuit can be connected to a 3-AADC if the circuit is not connected to a Fire Alarm Systems Technology (FAST) UIO/RZB module.

### FAST UIO/RZB support required

#### Hardware requirements

In order to support the FAST UIO/RZB the following hardware requirements must be met:

- The 3-CPU3 *must* have a date code later than 07031. Models 3-CPU, 3-CPU1, and 3-CPU3s with earlier date codes will not work.
- The SLC *must* originate from a 3-AADC1. A 3-AADC will not work.
- Each RZB must have a capacitor kit (P/N 3-RZBCAP) installed.

#### Software requirements

In order to support the FAST UIO/RZB the following software requirements must be met:

- The EST3 network must be configured with 3-SDU version 3.61 or later.
- The 3-AADC1 must use microcode version 3.6 or later

### ZFIR / ZFIT ZAS circuit fiber optic interface

The ZFIR and ZFIT modules are *not* supported by the 3-AADC1. The only functional replacement is two EST3 nodes networked over fiber.

## ZAS-2

The ZAS-2 is directly replaceable with the 3-SxDC(1). The 3-SxDC(1) is directly compatible with all Signature devices installed on the ZAS-2 circuit.

The 3-SxDC(1) do not provide the stand alone alarm relay that was provided on the ZAS-2.

# Addressable devices

All existing FAST/ System Sensor addressable devices can be reused with the 3-AADC1 module

## Device replacement

Some old FAST/System Sensor addressable devices have no equivalent and may no longer be available. This section provides some alternative solutions.

Original equipment	System Sensor replacement	Functional Signature replacement (for use on Signature circuit)
M500MF Monitor Module	Still valid	SIGA-CT1
M500CS Control Module	M500SF = Sup. NAC M500RF = dry contact	SIGA-CC1 SIGA-CR
M500XF Isolator Module	Still Valid	SIGA-IM
M501 Mini-Module		SIGA-CT1
1551F Ion Sensor	1251FB [1]	SIGA-IS
2551F Photo Sensor	2251FB [1]	SIGA-PS
2551TF Photo w/Heat	2251TFB [1]	SIGA-PHS
5551F Heat Sensor, Fixed	5251FB [1]	SIGA-HFS
5551FR Heat Sensor, RoR	5251RB [1]	SIGA-HRS
B501BH Sounder Base	B501BHT	SIGA-AB4G
DH500F Duct Detector	DH200PLF w/200 series sensor	SIGA-SD

[1] Replacement is low profile, use B210LPF base or F110 Retrofit flange for mounting to existing B501-B base.



Signature Detector

2551 Series Sensor



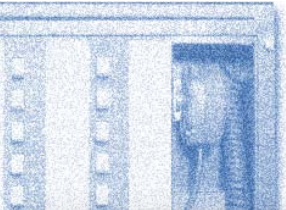
# Annunciators

## SAN / RASP / ISP96

The functions of the SAN, RASP, and ISP series annunciators can be duplicated using the 3-ANNCPU3 in conjunction with ANN or ENVOY series annunciation equipment.

A second option is to utilize the appropriate control/display modules on the operator layer of EST3 local rail modules.

SAN Serial Annunciator



## SDR-32(K) lamp driver

The existing driver circuitry must be replaced with a 3-ANNCPU3 and Envoy graphic drivers (3-EVDVR-A). Each 3-EVDVR-A supports 24 LEDs.

**Application note:** Determine the voltage and current of the existing annunciator LEDs. Old LEDs drew considerable current and may not be compatible with Envoy drivers (4.5 mA @ 5.3 VDC).

## SIN-16 annunciator input receiver module

The existing driver circuitry must be replaced with a 3-ANNCPU3 and Envoy 3-EVDVR-A graphic drivers. Each 3-EVDVR-A supports 12 switches. Please verify wiring.

## SRU-8 relay module

The functions of the SRU-8 can be duplicated using a SIGA-UIO6 motherboard and SIGA-MCR relays.

## CMDN

The text annunciation functions can be replaced with a 3-LCD(XL1) on a system node.



3-ANN Annunciator

## Graphic annunciators

Please refer to “SDR-32(K) lamp driver,” above.

## Computer based equipment

### CGP to FireWorks

The CGP computer hardware is not compatible with the EST3 protocol and must be replaced with FireWorks hardware. The drawing format used by the CGP is no longer supported by the manufacturer. Drawing files must be recreated in any format supported by FireWorks.

### CCA to FireWorks

The CCA computer hardware is not compatible with the EST3 protocol and must be replaced with FireWorks hardware.

### VDU-3 to 3-VDUT

The VDU-3 is not compatible with the EST3 protocol and must be replaced with the 3-VDUT software and a suitable computer.



## UIO application notes

A UIO requires 12 consecutive addresses.

A dedicated 24 VDC source must be used to power the UIO modules.



## Compatibility lists

For compatibility lists, refer to the GE Security/EST web site.

## Retrofit wiring considerations

The latest versions of NFPA 72 require a higher level of system survivability than may have been required when the original IRC-3/FCC system was installed. When considering reuse of existing wiring, keep the following code requirements in mind.

### Extracts from NFPA 72, 2002

**6.4.2.2.2\*** All styles of Class A circuits using physical conductors (e.g., metallic, optical fiber) shall be installed such that the outgoing and return conductors, exiting from and returning to the control unit, respectively, are routed separately. The outgoing and return (redundant) circuit conductors shall not be run in the same cable assembly (i.e., multi-conductor cable), enclosure, or raceway.

*Exception: The outgoing and return (redundant) circuit conductors shall be permitted to be run in the same cable assembly, enclosure, or raceway under any of the following conditions:*

- (1) For a distance not to exceed 3 m (10 ft) where the outgoing and return conductors enter or exit the initiating device, notification appliance, or control unit enclosures.
- (2) Single conduit/raceway drops to individual devices or appliances.
- (3) Single conduit/raceway drops to multiple devices or appliances installed within a single room not exceeding 92.9 m<sup>2</sup> (1000 ft<sup>2</sup>) in area.

## 6.9\* Emergency Voice/Alarm Communications.

### 6.9.1 Emergency Voice/Alarm Communications System Requirements.

Section 6.9 provides information that shall be used in the design and application of emergency voice/alarm communications, the primary purpose of which is to provide dedicated manual and automatic facilities for the origination, control, and transmission of information and instructions pertaining to a fire alarm emergency to the occupants, including fire department personnel, of the building.

### 6.9.2 Emergency Voice/Alarm Communications System Application.

Where required, Section 6.9 shall apply to systems used for partial evacuation or relocation of occupants.

*Exception: If emergency voice/alarm communications are used to automatically and simultaneously notify all occupants to evacuate the protected premises during a fire emergency, manual or selective paging shall not be required, but, if provided, shall meet the requirements of 6.9.3.*

**6.9.3 Selective Paging.** Emergency voice/ alarm communications service shall be provided by a system with automatic or manual voice capability that is installed to provide voice instructions to the building occupants.

*Exception: If emergency voice/alarm communications are used to automatically and simultaneously notify all occupants to evacuate the protected premises during a fire emergency, manual or selective paging shall not be required, but, if provided, shall meet the requirements of 6.9.3.*

#### **6.9.4 Survivability from Attack by Fire.**

**6.9.4.1** Subsection 6.9.4 shall apply only to systems used for partial evacuation or relocation of occupants. The requirements of 6.9.4 shall apply to both audible (tone and voice) and visible notification appliance circuits.

**6.9.4.2\*** Survivable fire alarm systems shall be designed and installed such that attack by fire within an evacuation signaling zone shall not impair control and operation of the notification appliances outside the evacuation signaling zone. Performance features provided to assure survivability shall be described and technical justification provided in the documentation submitted to the authority having jurisdiction with the evaluation required in 6.4.3.1.

**6.9.4.3** All circuits necessary for the operation of the notification appliances shall be protected until they enter the evacuation signaling zone that they serve. Any of the following methods shall be considered acceptable as meeting the requirements of this subsection:

- (1) A 2-hour rated cable or cable system
- (2) A 2-hour rated enclosure
- (3)\* Performance alternatives approved by authority having jurisdiction

**6.9.4.4** Monitoring of the integrity of speaker amplifiers, tone-generating equipment, and two-way telephone communications circuits shall be in accordance with 4.4.7.2.

**6.9.4.5** The secondary (standby) power supply shall be provided in accordance with 4.4.1.5, 4.4.1.6.1, and 4.4.1.6.2.

*Exception: Where emergency voice/alarm communications are used to notify all occupants automatically and simultaneously to evacuate the protected premises during a fire emergency in meeting the requirements of 4.4.1.5.3, the secondary supply shall be required to be capable of operating the system during a fire or other emergency condition for a period of 5 minutes rather than 2 hours.*

**6.9.4.6** Where the fire command center control equipment is remote from the central control equipment, the interconnecting wiring shall be installed with resistance to attack from a fire using one of the following methods:

- (1) A 2-hour rated cable or cable system
- (2) Routing the cable through a 2-hour rated enclosure
- (3) Performance alternatives approved by the authority having jurisdiction

*Exception: Buildings protected by an automatic sprinkler system installed per NFPA 13, Standard for the Installation of Sprinkler Systems, and the interconnecting cables between the fire command center and the control equipment are installed in metal raceways.*

**\* ANNEX**

**A.6.4.2.2.2** A goal of 6.4.2.2.2 is to provide adequate separation between the outgoing and return cables. This separation is required to help ensure protection of the cables from physical damage. The recommended minimum separation to prevent physical damage is 305 mm (1 ft) where the cable is installed vertically and 1.22 m (4 ft) where the cable is installed horizontally.

**A.6.9** Recorded voice messages for fire alarm systems (where used) should be prepared in accordance with this Code by persons who are experienced with the operation of building's fire alarm systems and are knowledgeable of the building's construction, layout, and fire protection plan, including evacuation procedures. The proposed voice messages should be approved by the authority having jurisdiction prior to being implemented.

Persons who record the messages for fire alarm systems should be able to read and speak the language used for the message clearly, concisely, and without an accent that would have an adverse effect on intelligibility.

**A.6.9.4.2** One or more of the following means might be considered acceptable to provide a level of survivability consistent with the intent of this requirement:

- (1) Installing a fire alarm system in a sprinklered building
- (2) Routing notification appliance circuits separately
- (3) Using short-circuit fault tolerant signaling line circuits for controlling evacuation signals

The requirement for notification appliances to operate in those evacuation signaling zones that are not attacked by fire will also require that circuits and equipment that are common to more than one evacuation signaling zone be designed and installed such that the fire will not disable them. For instance, a signaling line circuit used to control notification appliances in multiple evacuation signaling zones should be properly designed and installed so that one fire would not impair the signaling line circuit rendering the notification appliances serving more than one evacuation signaling zone inoperative. Power supplies, including remote power supplies, should be addressed as part of the design.

**A.6.9.4.3(3)** Paragraph 6.9.4.3 requires the protection of circuits as they pass through fire areas other than the one served. This is to delay possible damage to the circuits from fires in areas other than those served by the circuits. This is done to increase the likelihood that circuits serving areas remote from the original fire will have the opportunity to be actuated and serve their purpose. Note that the protection requirement would also apply to a signaling line circuit that extends from a master fire alarm control unit to another remote fire alarm control unit where notification appliance circuits might originate.

U.S.  
T 888-378-2329  
F 866-503-3996

Canada  
T 519 376 2430  
F 519 376 7258

Asia  
T 852 2907 8108  
F 852 2142 5063

Australia  
T 61 3 9259 4700  
F 61 3 9259 4799

Europe  
T 32 2 725 11 20  
F 32 2 721 86 13

Latin America  
T 305 593 4301  
F 305 593 4300

[www.gesecurity.com](http://www.gesecurity.com)

© 2005 General Electric Company  
All Rights Reserved

*EST, Signature Series, and Genesis Series* are registered trademarks of GE Security, Inc.

## GE: Building on a rich legacy of innovation. Focused squarely on the future.

GE offers powerful solutions that protect people and property with some of the most innovative technology ever developed. From integrated life safety systems to intuitive video control, all our products undergo rigorous scrutiny throughout their development to make sure they bring long-term value to every application. In fact, we invest more in market research than any other systems manufacturer. So it comes as no surprise that our solutions can be found maintaining secure environments in some of the world's most important buildings.

When you invest in GE systems and products you invest in a legacy that spans more than a century of innovation, and a corporate mandate that focuses squarely on the future. We're already at the forefront of emerging new technologies like biometrics and trace detection. And we're investing heavily in new security solutions that will make your world safer.



imagination at work