iCOM™ Network Alarm Router &
iCOM-E™ Encrypted Network Alarm Router

Description

The iCOM™ Network Alarm Router and iCOM-E™ Encrypted Network Alarm Router allow DMP Command Processor™ Panels to communicate over an Ethernet or a full-time Internet connection to a DMP SCS-1R Receiver. The iCOM/ iCOM-E are compatible with XR500 panels.

Operating as an interface between the panel and the network, the iCOM or iCOM-E installs inside the panel enclosure and communicates through a 462N Network Interface Card or connects directly to the panel using the nine-pin serial connector on J21 as shown in Figure 2.

These instructions apply to both the standard iCOM™ and the iCOM-E™. Please note the specific programming options for the iCOM-E™ version only and the specific installation steps for the iCOM/iCOM-E and XR500 panel.

iCOM-E™ Description

For High Security applications where the Advanced Encryption Standard (AES) Rijndael Encryption Algorithm is required or desired, use the iCOM-E™ Encrypted Network Alarm Router. The iCOM-E™ is NIST certified.

Note: The iCOM-E is not compatible with the XR500N, XR500E, or XR2500F panels.

Components

The following components are included:

- iCOM Network Alarm Router OR iCOM-E Encrypted Network Alarm Router
- 2-wire Power Cable
- DMP Model 356-2 Serial Cable
- 4-wire Keypad Programming Cable (to program the iCOM or iCOM-E)

What Else is Needed

Additional equipment needed to install, program, and use the iCOM or iCOM-E:

- DMP 32-character LCD keypad OR a computer with available serial communications port
- Hyperterminal communication (terminal emulation) software or Telnet (if using a computer to program the iCOM or iCOM-E)
- DMP Model 396 Programming Cable (if using a computer to program the iCOM or iCOM-E)
- Ethernet or full-time Internet connection
- DMP XR500 Command Processor™ Panel and 397 panel-to-iCOM cable
- 461 Interface Adaptor Card for XR500 panels without an available expansion slot

Wiring Notes for XR500 Panels

1. The network cable connected to the iCOM or iCOM-E J4 **Network Connector** cannot directly leave the building where the iCOM or iCOM-E is installed. You must connect the cable to another network device, such as a router or gateway, before establishing an external connection.
2. If you extend the power cable, you must use crimp connectors.
3. Program the iCOM/iCOM-E before plugging the 397 cable into the iCOM/iCOM-E from the RS-232 port, J21.
4. If you are programming the iCOM or iCOM-E with a computer, do not connect 2-wire Power Cable. See **Preparing to Program the iCOM or iCOM-E with a Computer** later in this document.

DMP

Digital Monitoring Products

Wiring the iCOM/iCOM-E and 462N Card

See the Wiring Notes above before completing these connection steps.

1. After properly installing the iCOM or iCOM-E in the enclosure, connect the Ethernet cable from your network to the iCOM or iCOM-E **Network Connector** (J4).
2. After programming, connect the supplied Model 356-2 Serial Cable to the 462N card J7 connector.
3. Attach the 356-2 cable from the 462N card to the iCOM or iCOM-E J3 **Serial Connector**.
4. Connect the 2-wire Power Cable to J2 **Power Connector**.
5. Connect the power cable red wire to terminal 7 on the panel.
6. Connect the power cable black wire to terminal 10 on the panel.

Configuring the 462N Card

To configure the 462N, adjust the jumper settings on the 462N as shown in Figure 1. Refer to the 462N Network Interface Card Installation Sheet (LT-0209) for installation and setup instructions.

Note: The XR500 panel does not require the 462N Card, but can use the 462N card in some installations. For standard XR500 installation, refer to the XR500 panel wiring on the next page.
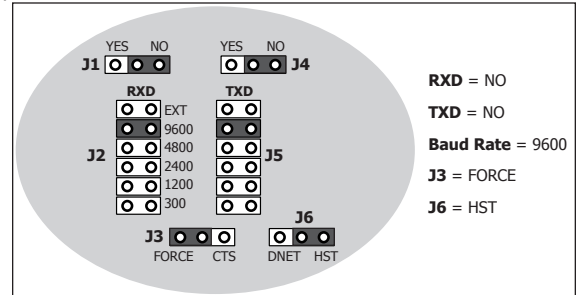

Figure 1: 462N Jumper Settings

Wiring the iCOM/iCOM-E and XR500 Panel

See the Wiring Notes on the previous page before completing these steps.

1. After properly installing the iCOM or iCOM-E in the enclosure, connect the Ethernet cable from your network to the iCOM or iCOM-E to J4 **Network Connector**.
2. Install a jumper on the top pair of headers next to the letter "R" on J23.
3. Reset the panel using the J16 jumper to activate RS-232 operation.
4. Connect a Model 397 Serial Cable to J21 RS-232 nine-pin connector on the XR500 panel.
5. Connect the 2-wire Power Cable to J2 **Power Connector**.
6. Connect the power cable red wire to terminal 7 on the panel.
7. Connect the power cable black wire to terminal 10 on the panel.
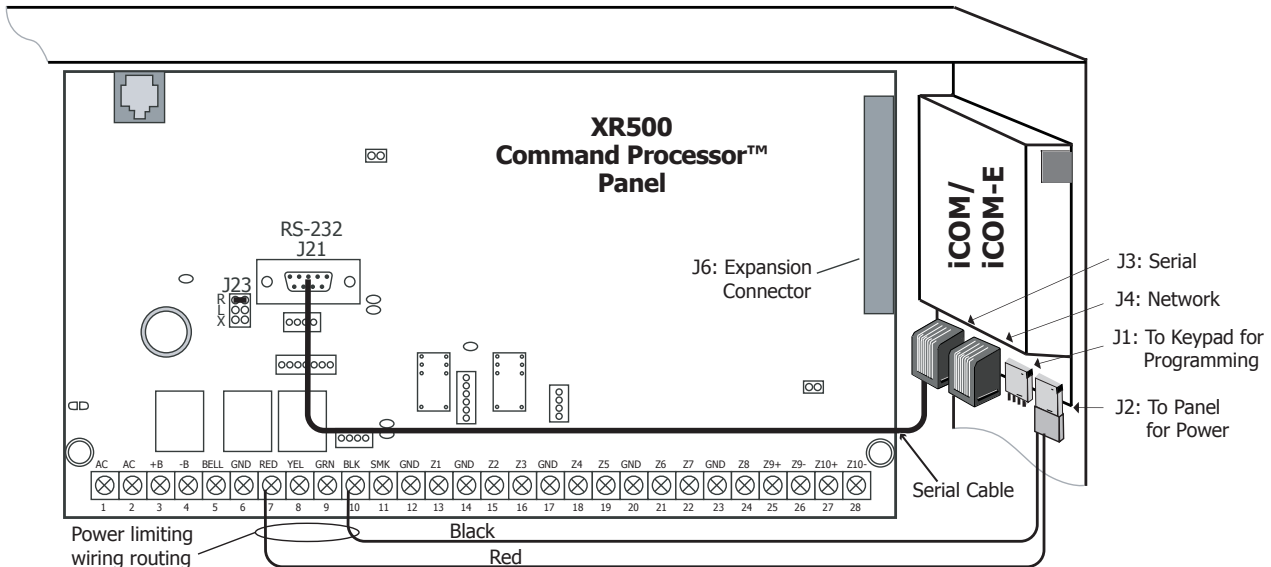

Figure 2: iCOM™/ iCOM-E™ and XR500 Installation and Power Wiring

Programming for Network Communication

You must program the XR500 for network communication.

1. Reset the panel using the J16 jumper.
2. From the keypad, enter 6653 and press COMMAND.
3. Press the COMMAND key until you reach the Communication programming section. For Communication Type, Select **NET** for Network communication.

iCOM or iCOM-E LED Indicators

Refer to Figure 4 for each LED location.

Serial Communication LEDs

Transmit: A flashing green LED indicates the unit is transmitting serial data to the panel.

Receive: A flashing yellow LED indicates the unit is receiving its serial data from the panel.

Network LEDs

Error 1 & 2: For DMP internal use only.

Activity: A yellow flashing LED indicates activity on the network.

Link: A steady on green LED indicates the communication link to the network is okay.
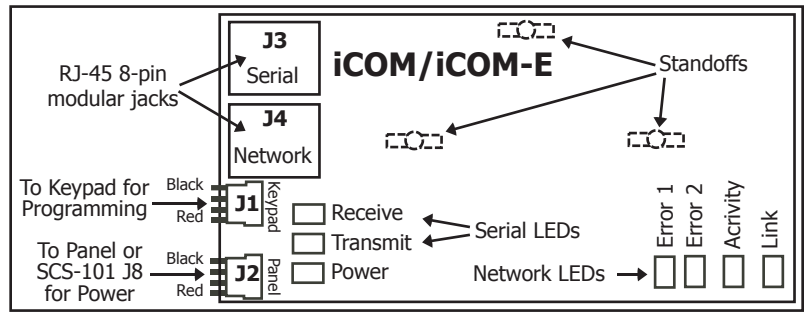

Figure 4: iCOM™/iCOM-E PCB

Preparing to Program the iCOM or iCOM-E

You may program the iCOM or iCOM-E with a DMP 32-character LCD keypad or a computer running Hyperterminal communication software.

Preparing to Program the iCOM or iCOM-E with a Keypad

To program the iCOM or iCOM-E with a DMP 32-character keypad, set the CURRENT KEYPAD ADDRESS to 1 (one) and select SUP for the KEYPAD MODE. These options are programmed in the Keypad Options menu. Refer to the keypad installation sheet for more information. After programming these two settings, follow the steps below.

1. Disconnect the 2-wire Power Cable from the iCOM or iCOM-E J2 **Power Connector**. See Figures 2 and 3.
2. Disconnect the 356-2 serial cable from the J3 **Serial Connector**.
3. Connect a DMP 32-character LCD keypad to the J1 **Programming Connector**.
4. Reconnect the power cable to the J2 **Power Connector**.
5. The keypad displays **iCOM PROGRAMMER or iCOM-E PROGRAMMER**. Press the COMMAND key to enter programming mode.

While programming the iCOM or iCOM-E with a keypad, press the COMMAND key to advance to the next programming option. To begin entering programming information press any top row Select key. You can return to the previous programming option by pressing the Back Arrow key.

Note: IP addresses and port numbers may need to be assigned by the network administrator. When entering an IP, Gateway, or Subnet Mask address be sure to enter all 12 digits and leave out the periods. For example, IP address 192.168.000.250 is entered as 192168000250.

Programming the iCOM or iCOM-E with a Keypad

| LOCAL IP ADDRESS |
| **192.168.000.250** |

Local IP Address

This is the iCOM or iCOM-E IP address. The Local IP Address must be unique and cannot be duplicated on other iCOM™ Network Alarm Routers or iCOM-E™ Encrypted Network Alarm Routers. When DHCP is set to YES the DHCP server IP address displays for reference. No change to the IP address can be made. Default value is **192.168.000.250**.

Note: Prior to entering a static IP Address, DHCP must first be set to No. See the DHCP Mode Enabled prompt for additional information.

| GATEWAY ADDRESS |
| **000.000.000.000** |

Gateway Address

The Gateway IP Address is needed to exit your local network. When DHCP is set to YES this prompt does not display. Default value is **000.000.000.000**.

| SUBNET MASK |
| **255.255.255.000** |

Subnet Mask

Enter the local subnet mask assigned to the iCOM or iCOM-E. When DHCP is set to YES this prompt does not display. Default value is **255.255.255.000**.

| RMT IP ADDRESS |
| **000.000.000.000** |

Remote IP Address

The Remote IP Address is the receiver or computer network address where the iCOM or iCOM-E is to transmit messages. When Panel Mode is set to NO this prompt does not display. Default value is **000.000.000.000.**

```
┌─────────────────────────┐
│ TCP COMM ENABLED        │
│ YES          NO         │
└─────────────────────────┘
```

TCP Comm Enabled

This setting tells the iCOM or iCOM-E whether you are using TCP communications. Default value is **NO**.

```
┌─────────────────────────┐
│ LOCAL/RMT PORT          │
│ 2001                    │
└─────────────────────────┘
```

Local/Rmt Port

Local/Remote identifies the port used to communicate messages to and from the panel. Valid range is 1 to 65,535. Default value is **2001**.

```
┌─────────────────────────┐
│ TELNET PORT             │
│ 9999                    │
└─────────────────────────┘
```

Telnet Port

Use this port to connect to the iCOM or iCOM-E to perform Telnet programming. Default value is **9999**.

```
┌─────────────────────────┐
│ RS232 BAUD RATE         │
│ 9600                    │
└─────────────────────────┘
```

RS232 Baud Rate

This value identifies the rate at which data is exchanged between the computer serial port and the iCOM or iCOM-E RJ45 connector.   To change the baud rate, enter the new value. Valid baud rates are: 300, 1200, 2400, 4800, 9600, and 19200. Default value is **9600**.

```
┌─────────────────────────┐
│ PANEL MODE              │
│ YES            NO       │
└─────────────────────────┘
```

Panel Mode Enabled

This configures the iCOM or iCOM-E for installation on an XR500 panel. When connecting to a panel NO is not used. Default value is **YES**.

```
┌─────────────────────────┐
│ DHCP MODE               │
│ YES          NO         │
└─────────────────────────┘
```

DHCP Mode Enabled

Note: This option appears only if Panel Enabled Mode is set to **YES**. If Panel Enabled Mode is changed to **NO** then DHCP Mode must be reset to **NO** and the iCOM or iCOM-E must use the Local IP Address number.

If the iCOM or iCOM-E has a dynamic IP address press the Select key below **YES**. When set to **YES** the iCOM or iCOM-E must operate in **DHCP MODE**. When the **DHCP MODE** option is set to NO, the iCOM or iCOM-E must use the IP address entered in **Local IP Address**. The default value is **YES**.

Note: When DHCP Mode is set to Yes, any static IP Address entered at the Local IP Address prompt is replaced by a dynamic IP Address when programming is finished. To immediately refresh the connected router ARP cache after programming, power down and power up the iCOM or iCOM-E.

```
┌─────────────────────────┐
│ TELNET ENABLED          │
│ YES          NO         │
└─────────────────────────┘
```

Telnet Enabled (iCOM-E only)

If you select **Yes** for Telnet Enabled, telnet programming is allowed. Selecting **No** for Telnet Enabled does not allow telnet programming. Any future programming must be completed locally if Telnet Enabled is **NO**. By default, telnet programming is enabled.

Note: If **NO** is selected for **TELNET ENABLED**, the **PASSWORD ENABLED** and **TELNET PASSWORD** prompts do not appear.

```
┌─────────────────────────┐
│ PASSWORD  ENABLED       │
│ YES          NO         │
└─────────────────────────┘
```

Password Enabled

To require a password for iCOM or iCOM-E programming via telnet, press the Select key under **YES**. To allow iCOM or iCOM-E programming without a password, press the Select key under **NO**. The default value is **YES**.

Note: For Fire Protective Signaling use, this option must be programmed **YES**.

```
┌─────────────────────────┐
│ TELNET PASSWORD         │
│ -                       │
└─────────────────────────┘
```

Telnet Password

This option only displays if Password Enabled is set to **YES**. The default password is **NEW**.

Enter a password with up to 8 alphanumeric characters. The password displays on the keypad as it is entered for programming, so be certain that no unauthorized individuals are able to view the display as you enter characters.

```
PASSPHRASE
-
```

Passphrase (iCOM-E only)

In order to communicate using encryption, all iCOM-E units reporting to the SCS-1R receiver must have the same Passphrase. The SCS-101 installed in the receiver must also be programmed with the same Passphrase. To clear the Passphrase press any Select Key and then press the COMMAND key.

To enable encryption type an 8 to 16-character Passphrase using alphanumeric characters. If you leave the Passphrase blank, the iCOM-E communicates with other iCOM-E units, but the data is not encrypted. The Passphrase is blank by default.

Note: *DO NOT LOSE THE PASSPHRASE.* A lost or forgotten Passphrase requires that every iCOM-E unit reporting in to the same SCS-101 at the receiver be individually reprogrammed with a new Passphrase.

```
STOP PROGRAMMER
```

Stop Programmer

This option provides a way to exit programming mode when you are programming the iCOM or iCOM-E. When **STOP PROGRAMMER** appears on the keypad press any Select key to end programming.

```
REMOVE KEYPAD
```

Remove Keypad

REMOVE KEYPAD displays after you press any Select key to end programming.

Preparing to Program the iCOM or iCOM-E with a Computer

To program the iCOM or iCOM-E with a computer, connect the 396 Programming Cable from the iCOM or iCOM-E **Serial Connector** (J3) to an unused COM port on your computer. Refer to Figure 4 for connector locations.

The instructions below are specifically written for programming your iCOM or iCOM-E using Hyperterminal, which is available on most computer Windows operating systems.

1. Connect the Model 396 Programming Cable from the iCOM or iCOM-E J3 **Serial Connector** to a COM port on your computer. Do **NOT** connect the 2-wire Power Cable to the iCOM or iCOM-E at this time.
2. Click Start > Programs > Accessories > Communications > Hyperterminal.
3. Double-click Hypertrm.exe.
4. Type a name for your connection, such as iCOM or iCOM-E, then click OK.
5. From the "Connect Using" drop-down menu select Direct to COM 1, or the COM port you are using to connect the iCOM or iCOM-E router, then click OK.
6. In the COM Properties window, select the following settings:
   - Bits per second: 9600
   - Data Bits: 8
   - Parity: None
   - Stop Bits: 1
   - Flow Control: None
7. Click OK in the COM Properties window.

Note: You must complete step 9 within 15 seconds after completing step 8 (applying power to the iCOM/iCOM-E).

8. Connect the 2-wire Power Cable to the iCOM or iCOM-E J2 **Power Connector**.
9. Within 15 seconds of connecting the power cable, type xxx and press the Enter key.

Note: If you were unable to type **xxx** in lower case and press Enter within 15 seconds after connecting power to the iCOM or iCOM-E, disconnect the power from the iCOM or iCOM-E. Wait a few seconds and repeat steps 8 and 9.

After you type **xxx** in lower case and press Enter, a screen similar to Figure 5 below displays.

The IP addresses and other values shown may vary from what you see on your screen.

Note: IP addresses and port numbers may need to be assigned by the network administrator. When entering an IP, Gateway, or Subnet Mask address be sure to use the standard xxx.xxx.xxx.xxx format then press Enter.

To configure each setting, type the line number or letter for that setting, press Enter, and the screen prompts you for the setting you need to enter.

Programming the iCOM or iCOM-E with a Computer

The programming options are the same whether you are programming with a computer or a keypad. Specific instructions are provided for programming the iCOM or iCOM-E with either a computer running Hyperterminal or a keypad.

Local IP Address

This is the iCOM or iCOM-E IP address. To set the Local IP Address type **1** and press Enter to display **Enter Local IP Address**. The Local IP Address must be unique and cannot be duplicated on other iCOM or iCOM-E™ Network Alarm Routers. Type the address and press Enter. The default Local IP Address is **192.168.000.250**.

Note: Prior to entering a static IP Address, DHCP must first be set to No. See DHCP Mode Enabled for additional information.

```
**Digital Monitoring Products Ethernet Bridge**
              ...............            iCOM
Firmware Version: 103    10/01/03
Ethernet Address: 0 90 C2 80 15 10
*************Programmable Parameters***********
 1.   Local IP Address.........192.168.000.250
 2.   Gateway Address..........000.000.000.000
 3.   Subnet Mask..............255.255.255.000
 4.   Remote IP Address........000.000.000.000
 5.   Enable TCP Comms.........N
 6.   Local/Remote Port........2001
 7.   Telnet Port..............9999
 8.   RS232 Baud Rate..........9600
 9.   Panel Mode Enabled.......Y
 A.   Password Enabled.........Y
 B.   DHCP Mode Enabled........Y
 C.   Telnet Enabled...........Y
 D.   Passphrase...............
 S.   SAVE AND EXIT
 X.   EXIT WITHOUT SAVE
*************************************************
Enter Command ( 1 to 9, A to D, S, X ) and Enter. >
```

Note: Options C and D are only available with the iCOM-E.

Figure 5: Computer Programming Screen

Gateway Address

You need the Gateway IP Address to exit your local network. This IP address is not included in your subnet. To configure your Gateway Address type **2** and press Enter to display **Enter Gateway Address**. Type the address and press Enter. The default is **000.000.000.000**.

Subnet Mask

To configure your Subnet Mask type **3** and press Enter to display **Enter Subnet Mask**. Type the address and press Enter. The default is **255.255.255.000**.

Remote IP Address

The Remote IP Address is the receiver or computer network address where the iCOM or iCOM-E is to transmit messages. To configure your Remote IP Address, type **4** and press Enter to display **Enter Remote IP Address**. Type the address and press Enter. The default is **000.000.000.000**.

Enable TCP Comms

The Enable TCP Communications tells the iCOM or iCOM-E whether you are using TCP communications. To configure this setting type **5** and press Enter to display **TCP Comms (Y or N)**. The default is **N**.

Local/Rmt Port

Local/ Remote identifies the port used to communicate messages to and from the panel. If a setting change is required, type **6** and press Enter to display **Local/Rmt Port #**. Type the new setting and press Enter. The default is **2001**. Valid range is 1 to 65,535.

Telnet Port

Use this port to connect to the iCOM or iCOM-E to perform Telnet programming. The default Telnet Port setting is **9999**. If a setting change is required, type **7** and press Enter to display **Enter Telnet Port #**. Type the new setting and press Enter.

RS232 Baud Rate

The Baud Rate identifies the rate at which data is exchanged between the computer serial port and the iCOM or iCOM-E RJ45 connector. The default setting for the RS-232 Baud Rate is **9600**. Leave this setting at 9600 when installing the iCOM or iCOM-E on a panel. If problems appear that might be related to communications, try adjusting this setting to a lower rate, such as 2400, to see if a lower baud rate helps improve communications. Valid baud rates are: 300, 1200, 2400, 4800, 9600, and 19200.

To change this setting, type **8** and press Enter to display **Enter RS232 Baud Rate**. Type in the new baud rate and press Enter. If you change the baud rate on the iCOM or iCOM-E, change the baud rate on the 462N card to match the iCOM or iCOM-E baud rate. See Figure 1 for jumper settings to adjust the baud rate.

Panel Mode Enabled
This setting tells the iCOM or iCOM-E whether it is installed on a panel. The default value is **Yes**, which configures the iCOM or iCOM-E for installation on an XR500 panel.

To configure this setting type **9** and press Enter to display **Enable Panel Mode (Y or N)**. To configure the iCOM or iCOM-E for use in a panel, type **Y** and press Enter. When connecting to a panel **N** is not used. The default is **Y**.

Password Enabled
This setting selects whether or not a password is required before making any programming changes to the iCOM or iCOM-E through a Telnet connection. The default is **Y**.

To adjust this setting type **A** and press Enter. Type **Y** for the iCOM to require a password, or type **N** to allow iCOM or iCOM-E programming without a password. When No is selected, type **xxx** in lower case and press Enter.

Note: For Fire Protective Signaling use, this option must be programmed **Yes**.

Password
If you selected **Yes** for Password Enabled, **Password** appears as the next item in the programming menu. Enter an alphanumeric password up to 8 characters long. Enter the password as all caps. The default password is **NEW**.

DHCP Mode Enabled
This setting configures the iCOM or iCOM-E to enter DHCP mode and allow the use of a dynamic IP address.

To adjust this setting type **B** and press Enter to display **Enable DHCP Mode** (**YES** or **No**). Select No for the iCOM or iCOM-E to require a static IP address. Select Yes to enable the iCOM or iCOM-E to use dynamic IP addresses by entering DHCP mode. The default is **Y**.

Note: When DHCP Mode is set to Yes, any static IP Address entered at the Local IP Address prompt is replaced by a dynamic IP Address when you Save and Exit. To immediately refresh the connected router ARP cache after Save and Exit, power down and power up the iCOM or iCOM-E.

Telnet Enabled (iCOM-E only)
If you select **Yes** for Telnet Enabled, telnet programming is allowed. Selecting **No** for Telnet Enabled disables telnet programming. Any future programming must be completed locally if Telnet Enabled is **No**. By default, telnet programming is enabled. To adjust this setting type **C** and press Enter.

Passphrase (iCOM-E only)
In order to communicate using encryption, all iCOM-E units reporting to the SCS-1R receiver must have the same Passphrase. The SCS-101 installed in the receiver must also be programmed with the same Passphrase.

To enable encryption and enter the Passphrase, type **D** and press Enter to display **Enter Passphrase**. Type an 8 to 16-character Passphrase using alphanumeric characters. If you leave the Passphrase blank, the iCOM-E communicates with other iCOM-E units, but the data is not encrypted. The Passphrase is blank by default.

 Note: *DO NOT LOSE THE PASSPHRASE*. A lost or forgotten Passphrase requires that every iCOM-E unit reporting to the SCS-101 at the receiver be individually reprogrammed with a new Passphrase.

Save and Exit
To save your programming changes and exit the programming mode, type **S** and press Enter. Programming changes do not take affect until you Save and Exit.

Exit Without Saving
To exit programming mode without saving changes type **X** and press Enter.

Completing the Installation
After you finish programming the iCOM or iCOM-E, disconnect the keypad from the iCOM or iCOM-E J1 **Programming Connector**. Connect the 356-2 cable to the iCOM or iCOM-E J3 **Serial Connector** and the 462N card J7 connector. The iCOM or iCOM-E now communicates as programmed.

Notes
- Supervision signals between premises alarm equipment and supervising station alarm receiver equipment shall be managed by the supervising station alarm receiver equipment and not an intermediary network agent, device, or service.
- Messages are transmitted via the User Datagram Protocol (UDP) or Transmission Control Protocol (TCP).
- Accommodates a minimum of 65,000 distinct account numbers.
- Device Network addressing must not make use of public Domain Name Servers (DNS).
- Each message sent between the premises and supervising station alarm receiver equipment is encrypted. The iCOM-E™ is 128-bit encrypted.

Specifications

Operating Voltage	12 VDC Nominal
Current Draw	78.1mA
Dimensions	3" W x 5.5" H x 0.75" D

Product Compatibility

SCS-1R Receiver with SCS-101 Card installed

XR100/XR500 Command Processor Panels

Listings and Approvals

California State Fire Marshal (CSFM)

FCC Part 15

NIST AES Algorithm Certificate #66 for iCOM-E only. See
http://csrc.nist.gov/cryptval/aes/aesval.html

Underwriters Laboratories (UL) Listed

ANSI/UL 365	Police Connected Burglar
ANSI/ UL 609	Local Burglar
ANSI/ UL 1023	Household Burglar
ANSI/ UL 1076	Proprietary Burglar
ANSI/ UL 1610	Central Station Burglar
ANSI/ UL 1635	Digital Burglar
ANSI/ UL 985	Household Fire Warning

Standard Line Security

Encrypted Line Security

Note: The iCOM-E cannot be exported outside the United States.

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