



***NetworX***

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**NetworX Series<sup>TM</sup>**

**NX-590E Internet Interface**

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**Installation and Startup**

*These instructions do not purport to cover all details or variations in equipment nor to provide every possible contingency to be met during installation, operation, and maintenance. If further information is desired or if particular problems arise that are not covered sufficiently for the purchaser's purpose, the matter should be referred to GE Security, USA.*

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*Please refer to the current GE Security product catalog for detailed warranty information.*

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## Symbol Legend



### Warning

Indicates a procedure, practice, condition, or statement that, if not strictly observed, could result in personal injury.  
\* This symbol indicates electrical warnings and cautions.



### Caution

Indicates a procedure, practice, condition, or statement that, if not strictly observed, could result in damage to or destruction of equipment or property.  
\*\* This symbol indicates general warnings and cautions.



### Note

Indicates an essential or important procedure, instruction, condition, or statement.



### Tip

Indicates a user tip. Provides helpful information that is not normally defined in regular use, but from an experienced user.

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# 1. GENERAL DESCRIPTION

The NX-590E is a dual microprocessor-controlled Internet/Intranet interface used to connect the to the OH Network Receiver. This interface allows any or all events from the NetworX control series (NX) to be reported over the Network. For warranty information, please refer to the current GE Security Product catalog.

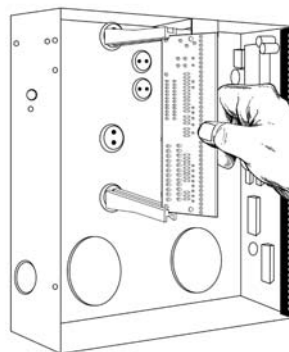
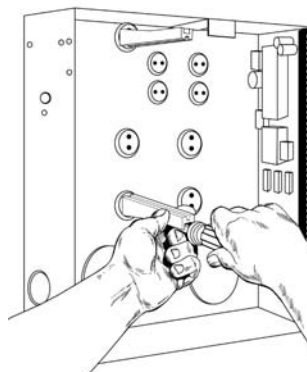
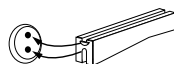
# 2. ENCLOSURE INFORMATION

Inside the can, several 2-holed insertion points have been constructed. This allows for either vertical or horizontal placement of the modules. **Notice that the insertion points have two sizes of holes -- a larger hole and a smaller hole.**

**Diagram 1:** The black plastic PCB guides are grooved on one edge where the PC Board will be seated. The end with the half-moon protrusion fits into the larger hole. The smaller hole is for the screw.

**Diagram 2:** Place the *first* black plastic PCB guide in the top insertion point, grooved edge downward. The half-moon protrusion will be in the large hole. It does not require force. Insert one of the provided screws into the smaller hole (from inside the can) to secure it in place. A screwdriver should reach through the notch that runs the length of the guide to tighten the screw. The *second* PCB guide should be positioned opposite of the first (grooved edge up) and placed in the lower insertion point, using the same procedures described above. Once mounted, screw it in securely.

**Diagram 3:** The PC board should slide freely in the grooves of both guides.



# 3. MODULE ADDRESS

The Internet module has a fixed address of **79**. When programming the interface module, enter the Program Mode and select the device address as 79. (See "PROGRAMMING THE MODULE", page 7.)

## 4. ENROLLING

The NetworX control panels have the ability to automatically find and store in memory the presence of all keypads, zone expanders, wireless receivers, and any other device on the keypad buss. This allows these devices to be supervised by the control panel. To enroll the devices, enter the Program Mode of the NX control panel using the procedure outlined in the NX Installation Manual. When the Program Mode is exited, the NX control will automatically enroll all the devices. The enrolling process takes about 12 seconds, during which time the "Service" LED will illuminate. When using the LCD Keypad, the "Service Required" message will be displayed. User codes will not be accepted during the enrolling process. Once a module is enrolled, if the control panel does not detect it, the "Service" LED will illuminate.

## 5. UNDERSTANDING THE LIGHTS

The Internet module has five (5) red LEDs along the front of the board and two more on the SIM module. These LEDs provide valuable information about the status of the Internet module and the network as shown in the following table.

LED	DESCRIPTION
DS1	<i>Flashes</i> each time the NX-590E has an opportunity to access the NetworX bus. It should be flashing about two times each second.
DS3	<i>Flashes</i> when it is waiting for a communication from the Ethernet Module.
DS4	<i>On</i> when waiting for a reply from a NetworX buss device.
DS5	<i>Flashes</i> when the NX-590E gets a packet from the Ethernet module.
DS6	<i>On</i> when the bus has a message to send to the network.
✎ <b>DS3 - DS6</b> will be off if the system is initialized, normal and waiting for a new event to report.	
L1	(on SIM module) <i>Flashes ON</i> Ethernet Activity
L2	(on SIM module) <i>Steady ON</i> when Ethernet Link is established with the 10BT cable.
DS2	The sixth LED is located toward the back of the board. It is used for hardware, and will only glow dimly when connected to the NX8 / NX8-E control.

## 6. WIRING

Wire the 3-position terminal on the Internet module to the NX control as follows: Positive to KP POS, COM to KP COM, and DATA to KP DATA. Connect the Ethernet Jack J16 (10BT) to a 10BT Ethernet capable hub, router or gateway. Do not use a CASCADE or X port in crossover mode.

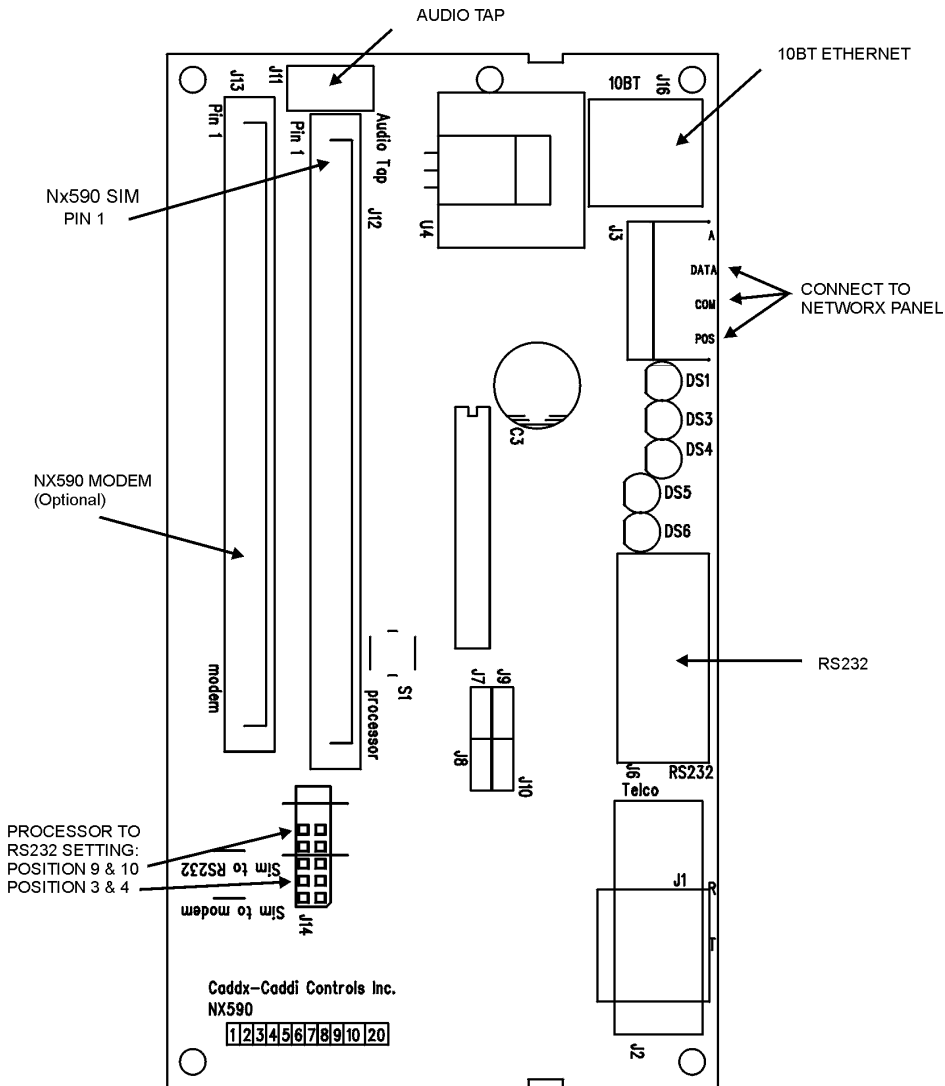
### MAXIMUM WIRE RUN

LENGTH (IN FEET)	250	500	1000	2000	2500
CONNECTED TO NX-8 / NX8-E	22	20	16	14	12
CONNECTED TO NX-320E	22	18	16	12	12

# 7. TERMINAL DESCRIPTION

TERMINAL	DESCRIPTION
POS	Connect to the KP POS terminal of the panel. Current draw is 100 mA for the NX-590E.
COM	Connect to the KP COM terminal of the panel.
DATA	Connect to the KP DATA terminal of the panel.
J16	Connect to 10BT network hub using a CAT5 patch cable.
J6	Connect to RS-232 Modem when unit is delivered with serial software.

# 8. CONNECTION DIAGRAM



# 9. PROGRAMMING THE MODULE

## A. USING THE LED KEYPAD

### Entering the Program Mode

To enter the Program Mode, press [\*]-[8]. At this time, the five function LEDs (Stay, Chime, Exit, Bypass, & Cancel) will begin to flash. Next, enter the "Go To Program Code" (Factory Default is [9]-[7]-[1]-[3]). If the "Go To Program Code" is valid, the "Service" LED will flash and the five function LEDs will illuminate steady. You are now in the Program Mode and ready to select the module to program.

### Selecting the Module to Program:

Next, enter the address of the Internet module, which is [7]-[9], followed by [#]. The Armed LED will illuminate while it is waiting for a programming location to be entered.

### Factory Defaulting the Module

If this is the first time the module has been used or if you want to load the factory defaults now enter [9]-[1]-[0]-[#]. The keypad will beep 3 times indicating that the loading is in progress. Remember you will erase any values you may have entered previously.

### Programming a Location:

Once the number of the module to be programmed has been entered, the "Armed" LED will illuminate while it is waiting for a programming location to be entered. Enter the desired programming location, followed by the [#] key. The Armed LED will begin to flash while a programming location is being entered. If the location entered is a valid location, the "Armed" LED will extinguish, the "Ready" LED will illuminate, and the zone LED's will show the binary data for the first segment of this location. To change the data, enter the data followed by [\*]. While entering new data, the "Ready" LED will begin flashing to indicate a data change in process. The flashing will continue until the new data is stored by pressing the [\*] key. Upon pressing the [\*] key, the keypad will advance to the next segment and display its data. This procedure is repeated until the last segment is reached. Pressing the [#] key will exit from this location, and the "Armed" LED will illuminate again waiting for a new programming location to be entered.

To review the data, repeat the above procedure entering the [\*] key without entering data first. Each time the [\*] key is pressed the next segment is displayed. If the desired location is the next sequential location, press the [POLICE] key. If the previous location is desired press the [FIRE] key. If the same location is desired press the [AUXILIARY] key. To review the data in a location, repeat the above procedure, pressing the [\*] key without any numeric data entry. Each time the [\*] key is pressed, the programming data of the next segment will be displayed for review.

### Exiting a Location:

After the last segment of a location is programmed, pressing the [\*] key will exit that location, turn the "Ready" LED off and the "Armed" LED on. As before, you are now ready to enter another programming location. If an attempt is made to program an invalid entry for a particular segment, the keypad sounder will emit a triple error beep (beep, beep, beep), and remain in that segment awaiting a valid entry.

**Exiting the Program Mode:**

When all the desired changes in programming have been made, it is time to exit the Program Mode. Pressing the [Exit] key will exit this programming level.

**B. USING THE LCD KEYPAD**

All steps required for programming are the same as the aforementioned LED keypad. The LCD keypad display will prompt you for the data required. While in the programming mode, and not in a location, the number in parenthesis is the location you were previously changing. For example, if the display reads, "Enter location, then # (5)", it is reminding you that location 5 was the last location you programmed. Refer also to "Programming Data" which follows.

**Table 9-1 (\*\*LCD KEYPAD ONLY\*\*)**

No. 00		No. 16	P	No. 32	5	No. 48	l	No. 64	"	No. 80	<
01	A	17	Q	33	6	49	m	65	#	81	=
02	B	18	R	34	7	50	n	66	\$	82	>
03	C	19	S	35	8	51	o	67	%	83	?
04	D	20	T	36	9	52	p	68	&	84	@
05	E	21	U	37	a	53	q	69	'	85	[
06	F	22	V	38	b	54	r	70	(	86	↑↓
07	G	23	W	39	c	55	s	71	)	87	]
08	H	24	X	40	d	56	t	72	*	88	^
09	I	25	Y	41	e	57	u	73	+	89	—
10	J	26	Z	42	f	58	v	74	,	90	`
11	K	27	0	43	g	59	w	75	-	91	{
12	L	28	1	44	h	60	x	76	.	92	
13	M	29	2	45	i	61	y	77	/	93	}
14	N	30	3	46	j	62	z	78	:	94	→
15	O	31	4	47	k	63	!	79	;	95	←

**C. PROGRAMMING DATA**

Programming data is always one of three types. One type of data is numerical, which can take on values from 0 -15, 0 - F, or 0 -255 depending on the segment size. The other type of data, feature selection data, is used to turn features on/off. It can also be used as character data for Internet names. Use the following procedures with these data types:

**Numerical Data**


Numerical data is programmed by entering a number from 0-255 on the numeric keys of the system keypad. To view the data in a location, a binary process is used. With this process, the LED's for zones 1 through 8 are utilized, and the numeric equivalents of their illuminated LED's are added together to determine the data in a programming location. The numeric equivalents of these LED's are as follows:

- Zone 1 LED = 1      Zone 3 LED = 4      Zone 5 LED = 16      Zone 7 LED = 64
- Zone 2 LED = 2      Zone 4 LED = 8      Zone 6 LED = 32      Zone 8 LED = 128

Example: If the numerical data to be programmed in a location is "66", press **[6]-[6]** on the keypad. The LED's for Zone 2 and Zone 7 will become illuminated indicating 66 is in that location ( $2 + 64 = 66$ ). Once the data is programmed, press the **[\*]** key to enter the data and advance to the next segment of that location. After the last segment of a location is programmed, pressing the **[\*]** key will exit that location, turn the "Ready" LED off and the "Armed" LED on. As before, you are now ready to enter another programming location. If an attempt is made to program a number too large for a particular segment, the keypad sounder will emit a triple beep, indicating an error, and remain in that segment awaiting a valid entry.

### **Feature Selection Data**

Feature selection data will display the current condition (on or off) of eight features associated with the programming location and segment selected. Pressing a button on the touchpad (1 thru 8) that corresponds to the "feature number" within a segment will toggle (on/off) that feature. Pressing any numeric key between **[1]** and **[8]** for selection of a feature will make the corresponding LED illuminate (feature ON). Press the number again, and the LED will extinguish (feature OFF). You will see that numerous features can be selected from within one segment. For instance, if all eight features of a segment are desired, pressing **[1]-[2]-[3]-[4]-[5]-[6]-[7]-[8]** will turn on LED's 1 thru 8 as you press the keys, indicating that those features are enabled.

 **LCD Keypad Users: The numbers of the enabled features will be displayed. However, the features not enabled will display a hyphen (-).** After the desired setting of features is selected for this segment, press the **[\*]** key. This will enter the data and automatically advance to the next segment of the location. When you are in the last segment of a location and press the **[\*]** to enter the data, you will exit that location. This will now turn the "Ready" LED off and the "Armed" LED on. As before, you are now ready to enter another programming location.

### **Character Data**


Character Data is used to enter LCD text when programming. An example of character data can be seen in programming locations 13-16 of this module, which takes the form of user@yourdomain.com. This information is programmed using the bottom line of the display as a text editor. (Refer to the **[\*]-[9]-[2]** feature in the NX148E manual.) Once a character location has been entered, the current data will be displayed on the bottom line. As is always the case, the top line will display the current location and segment number. The five (5) function keys, as well as the up and down arrow to the right of the display, are now used to edit the message prior to saving it back to the location storage.

An underscore (    ) in the display indicates the current cursor location. To move the cursor to the right, press the **[\*]** key. To move the cursor to the left, press the **[Cancel]** key. To change the character at the current cursor location, press the **Up** or **Down Arrow** until the desired character is displayed. An alternative and possibly faster method is to enter the 2-digit number found in Table 1.1 that corresponds to the desired character. To accept this character, press the **[\*]** key. The character will remain and the cursor will be advanced one space to the right. To insert spaces, press the **[Stay]** key. To delete characters, press the **[Chime]** key.

## 10. PROGRAMMING THE LOCATIONS


### LOCATION 0 PROGRAMMING THE MODE (8 SEGMENTS FEATURE SELECTION DATA)

Location 0 (zero) contains the module mode, i.e. system characteristics for operation on the Internet.

 If Location 0 / Segment 1 / Option 1 below is enabled (NX-590E is the primary reporting device and the control panel is backup). **NOTE: The NX-4 and NX-6 (V1) control panels CANNOT act as a backup to the NX-590E module.**

- All event categories should be disabled in Location 4 of the **control panel** (device 0). Failure to turn off these segments will cause events to be reported by both the control panel and the NX-590E (dual reporting).
- Test reports should be enabled (Loc 4 / Seg 1 / Opt 7 in control panel). Failure to leave test reports enabled will result in the control panel NOT backing up events that fail to communicate via the NX-590E. When properly set, test reports will be reported by the control panel and the NX-590E.

*Segment 1*      1 = Use Control Dialer as Backup to TCP/IP and Email. Clear this option if the control panel is primary/dual report. (**Refer to note in box above.**)  
2 = Enable if SIA; disable if Contact ID (factory default is 'off')  
3 = Use Receiver #2 as Backup  
4 = Send tag to on-site event recorder  
5-8 = Reserved

*Segment 2*      1 = Enable site initiated downloading (\*98 from a keypad).  
2 = Allow remote downloading to the system over the Internet. You should program this to 0 unless you absolutely have to program the system over the network. Private networks behind a firewall may want to take advantage of this feature.  
3 = Use DHCP (IP address is static if 0) ( *If this DHCP option is enabled, we strongly recommend that Polling in option 8 also be enabled.*)  
4 – 7 = Reserved  
8 = Enable AA polling (poll every period of less than 5 minutes)

*Segments 3-8*    Reserved

### LOCATION 1 PROGRAMMING PARTITIONS TO REPORT VIA INTERNET TO RECEIVER #1 (16 SEGMENTS OF FEATURE SELECTION DATA)

Location 1 contains the partition(s) that should be included when reporting over the Network. If you wish to exclude any partition from reporting, simply turn off the LED corresponding to that particular partition. If the partition LED is off, no event from that partition will report via network regardless of what is programmed elsewhere. Using **Table 10-1** enter the corresponding number of the partition(s) to include for each type of report found in Segments 1 –16. Factory default is all partitions on.

**Table 10-1**

1 = Partition 1	3 = Partition 3	5 = Partition 5	7 = Partition 7
2 = Partition 2	4 = Partition 4	6 = Partition 6	8 = Partition 8

<i>Segment 1</i>	Alarms and Restores	<i>Segment 9</i>	Tampers
<i>Segment 2</i>	Open/Close	<i>Segment 10</i>	Short Circuit & Ground Fault
<i>Segment 3</i>	Bypass	<i>Segment 11</i>	Sensor Lost
<i>Segment 4</i>	Zone Trouble	<i>Segment 12</i>	Sensor Low Battery
<i>Segment 5</i>	Power Trouble (AC Failure or Low Battery)	<i>Segment 13</i>	Expander Trouble
<i>Segment 6</i>	Siren & Telephone Fault	<i>Segment 14</i>	Failure To Communicate
<i>Segment 7</i>	Test Reports	<i>Segment 15</i>	Zone Activity Monitor
<i>Segment 8</i>	Program, Download & Log Full	<i>Segment 16</i>	Reserved

**LOCATION 2 PROGRAMMING PARTITIONS TO REPORT VIA INTERNET TO RECEIVER #2 (16 SEGMENTS OF FEATURE SELECTION DATA)**

Location 2 contains the partition(s) that should be included when reporting over the Network to Receiver #2. If you wish to exclude any partition from reporting, simply turn off the LED corresponding to that particular partition. If the partition LED is off, no event from that partition will report via network regardless of what is programmed elsewhere. Using **Table 10-1** on page 10, enter the corresponding number of the partition(s) to include for each type of report found in Segments 1 –16. Factory default is all partitions off.

<i>Segment 1</i>	Alarms and Restores	<i>Segment 9</i>	Tampers
<i>Segment 2</i>	Open/Close	<i>Segment 10</i>	Short Circuit & Ground Fault
<i>Segment 3</i>	Bypass	<i>Segment 11</i>	Sensor Lost
<i>Segment 4</i>	Zone Trouble	<i>Segment 12</i>	Sensor Low Battery
<i>Segment 5</i>	Power Trouble (AC Failure or Low Battery)	<i>Segment 13</i>	Expander Trouble
<i>Segment 6</i>	Siren & Telephone Fault	<i>Segment 14</i>	Failure To Communicate
<i>Segment 7</i>	Test Reports	<i>Segment 15</i>	Zone Activity Monitor
<i>Segment 8</i>	Program, Download & Log Full	<i>Segment 16</i>	Reserved

**LOCATION 3 PROGRAMMING THE PARTITIONS REPORTING VIA EMAIL ACCOUNT #1 (16 SEGMENTS OF FEATURE SELECTION DATA)**

Location 3 contains the partition(s) that should be included when reporting over the Internet to Email Account #1. If you wish to exclude any partition from reporting, simply turn off the LED corresponding to that particular partition. If the partition LED is not on, NO event from that partition will report via network regardless of what is programmed elsewhere. Use **Table 10-1** on page 10 to program which partitions to report for Segments 1–16. Factory default is all partitions off.

<i>Segment 1</i>	Alarms and Restores	<i>Segment 9</i>	Tampers
<i>Segment 2</i>	Open/Close	<i>Segment 10</i>	Short Circuit & Ground Fault
<i>Segment 3</i>	Bypass	<i>Segment 11</i>	Sensor Lost
<i>Segment 4</i>	Zone Trouble	<i>Segment 12</i>	Sensor Low Battery
<i>Segment 5</i>	Power Trouble (AC Failure or Low Battery)	<i>Segment 13</i>	Expander Trouble
<i>Segment 6</i>	Siren & Telephone Fault	<i>Segment 14</i>	Failure To Communicate
<i>Segment 7</i>	Test Reports	<i>Segment 15</i>	Zone Activity Monitor
<i>Segment 8</i>	Program, Download & Log Full	<i>Segment 16</i>	Reserved

**LOCATION 4 PROGRAMMING THE PARTITIONS REPORTING VIA EMAIL ACCOUNT #2 (16 SEGMENTS OF FEATURE SELECTION DATA)**

Location 4 contains the partition(s) that should be included when reporting over the to Email account 2. If you wish to exclude any partition from reporting, simply turn off the bit corresponding to that particular partition. If the partition LED is not on, NO event from that partition will report via network regardless of what is programmed elsewhere. Factory default is all partitions off.

<i>Segment 1</i>	Alarms and Restores	<i>Segment 9</i>	Tampers
<i>Segment 2</i>	Open/Close	<i>Segment 10</i>	Short Circuit & Ground Fault
<i>Segment 3</i>	Bypass	<i>Segment 11</i>	Sensor Lost
<i>Segment 4</i>	Zone Trouble	<i>Segment 12</i>	Sensor Low Battery
<i>Segment 5</i>	Power Trouble (AC Failure or Low Battery)	<i>Segment 13</i>	Expander Trouble
<i>Segment 6</i>	Siren & Telephone Fault	<i>Segment 14</i>	Failure To Communicate
<i>Segment 7</i>	Test Reports	<i>Segment 15</i>	Zone Activity Monitor
<i>Segment 8</i>	Program, Download & Log Full	<i>Segment 16</i>	Reserved

**LOCATIONS 5 – 12 RESERVED**

**LOCATIONS 13-16 RETURN EMAIL NAME FOR THIS MODULE (1 SEGMENT / 16 CHARACTER DATA)**

These locations are used to provide the name of this module in the form of user@yourdomain.com. This must be programmed for email, and the domain name must be one that your mail server accepts. Generally looking like any other user on the domain that you are connecting to works. Many mail servers reject emails from domains other than their own to prevent spamming.

<b>Location 13</b>	Email Name of This Module (chars 1-16)
<b>Location 14</b>	Email Name of This Module (chars 17-32)
<b>Location 15</b>	Email Name of This Module (chars 33-48)
<b>Location 16</b>	Email Name of This Module (chars 49-64)

**LOCATIONS 17-28 RESERVED**

**LOCATIONS 29-36 EMAIL ACCOUNT NAMES (1 SEGMENT / 16 CHARACTER DATA)**

These locations are used to provide the name of email accounts you wish data to be sent to in the form of user@yourdomain.com and otheruser@otherdomain.net these must be functional email accounts that are known to work. A large variety of devices can be utilized including computers, cell phones, pagers and devices. For example, a dealer may want Troubles mailed to his cell phone, Openings and Closings emailed to his home computer, and Alarms sent to the central station. **NOTES:** 1) Make sure the account works before you program it. 2) Keep good records since email addresses change more often than most other items.

<b>Location 29</b>	Name of Email Account 1 (chars 1-16)
<b>Location 30</b>	Name of Email Account 1 (chars 17-32)
<b>Location 31</b>	Name of Email Account 1 (chars 33-48)
<b>Location 32</b>	Name of Email Account 1 (chars 49-64)
<b>Location 33</b>	Name of Email Account 2 (chars 1-16)
<b>Location 34</b>	Name of Email Account 2 (chars 17-32)
<b>Location 35</b>	Name of Email Account 2 (chars 33-48)
<b>Location 36</b>	Name of Email Account 2 (chars 49-64)

**LOCATIONS 37-40      NAME FOR YOUR EMAIL SERVER (1 SEGMENT / 16 CHARACTER DATA)**

These locations are used to provide the server for email in the form of mail.yourdomain.com. This must be programmed for email. Confirm that this server accepts email from the domain name of the NX-590E since many mail servers reject emails from domains other than their own to prevent spamming.


- Location 37**                      Name of Mail Server (chars 1-16)
- Location 38**                      Name of Mail Server (chars 17-32)
- Location 39**                      Name of Mail Server (chars 33-48)
- Location 40**                      Name of Mail Server (chars 49-64)

**LOCATIONS 41 - 44      RESERVED**

**LOCATIONS 45- 52      IP ADDRESSES (1 SEGMENT DECIMAL DATA)**

If you turned on static IP's instead of Dynamic in location 0, you will need to program locations 45, 52, and 54 with the appropriate IP addresses. Otherwise, the NX-590E will use the assigned DHCP Server

- Location 45**                      IP Address For This Module
- Location 46**                      IP Address For Primary Receiver
- Location 47**                      IP Address For Secondary Receiver
- Location 48**                      IP Address For On-Site Event Recorder
- Location 49**                      Reserved
- Location 50**                      Reserved
- Location 51**                      IP Address Mail Server
- Location 52**                      IP Address of Gateway

 **It is necessary to power down the NX-590E module and power it back up in order initialize the new IP address.**

**LOCATION 53      IP ADDRESS FOR DOWNLOAD COMPUTER (1 SEGMENT DECIMAL DATA)**

Location 53 contains the address for the download computer. The default is 0.0.0.0.

**LOCATION 54      SUBNET MASK (1 SEGMENT DECIMAL DATA)**

Location 54 contains the subnet mask (typically **255.255.255.0**). However, we suggest you call your Network administrator. This location must be configured so that all IP addresses up to and including the local gateway are allowed. When using cable modem/DSL, this will generally be the same as the computer. To obtain your IP address, gateway, and subnet mask, use one of the following steps:

- ◆ For Windows 9X and Windows ME -- At the DOS prompt, type "ipconfig"
- ◆ For Windows 2000 & XP -- At the COMMAND prompt, type "ipconfig"

**LOCATIONS 55-57      PORT ADDRESSES (4 SEGMENTS DECIMAL DATA)**

These locations contain the IP ports used by the TCP/IP receiver. You should never change these except as directed by your central station provider.

- Location 55**                      Receiver Alarm Port
- Location 56**                      Receiver Download Port
- Location 57**                      Email Port

**LOCATIONS 58-59      RESERVED**

**LOCATION 60 SIA OR CONTACT ID ACCOUNT NUMBER (8 SEGMENTS HEX DATA)**

This location contains the SIA or Contact ID account number. Contact your usual source of account number and dial number for installations.

*✍ It is important to add leading zeros to create an 8-digit number.*

**LOCATION 61 PHONE LINE RECEIVER NUMBER (4 SEGMENTS DECIMAL DATA)**

This location contains the phone line receiver number associated with this account. Contact your usual source of account number and dial number for installations.

**LOCATION 62 LINE NUMBER (4 SEGMENTS DECIMAL DATA)**

This location contains the line number associated with this account. Contact your usual source of account number and dial number for installations. If you have a Sure-Gard receiver with line A, enter as line 11.

**LOCATION 63 TIMERS AND COUNTERS (3 SEGMENTS DECIMAL DATA)**

This location sets the number of attempts and the number of seconds to access the network. Ordinarily, these segments should not be changed. The defaults are balanced to provide a number of network attempts that satisfy UL requirement if the alarm must be dialed back. The unit will make the number of attempts in Segment 1 until the number of seconds in Segment 2 is exhausted. If UL Polling is turned on, the time is this number plus 30 seconds. The default will yield a polling time of less than 90 seconds under most conditions.

- Segment 1**                      Number of network attempts (Factory default is 2)
- Segment 2**                      Time in seconds for overall network attempt
- (✍ Minimum 30 seconds.* Factory default is 30)
- Segment 3**                      Polling time in seconds (Factory default is 10)

**LOCATIONS 63 - 94            RESERVED**

# 11. PROGRAMMING WORKSHEET

DEFAULTS ARE SHOWN IN BOLD ITALICS

LOC	PAGE	DESCRIPTION	DEFAULT	PROGRAMMING
0	10	MODULE MODE OF OPERATION		
		SEG 1 1 = Use control dialer as backup to TCP/IP and email 2 = Backup Format (Off = CID, On = SIA) 3 = Use Receiver #2 as Backup 4 = Send Tag to On-Site Event Recorder 5-8 = Reserved	OFF OFF OFF OFF ----	
		SEG 2 <b>1 = Enable site initiated downloading (*98 from keypad)</b> <b>2 = Enable remote initiated downloading</b> 3 = Use DHCP services (static IP of unit if OFF) ☞ If enabled, it is recommended that option 8 also be enabled. 4 - 7 = Reserved 8 = Polling enable (for UL AA)	<b>ON</b> <b>ON</b> OFF ---- OFF	
	SEG 3-8 RESERVED			
1	10	PARTITIONS TO REPORT BY INTERNET TO RECEIVER #1		
		<b>1 = Alarms and Restores <input type="checkbox"/></b> <b>2 = Open/Close <input type="checkbox"/></b> <b>3 = Bypass <input type="checkbox"/></b> <b>4 = Zone Trouble <input type="checkbox"/></b> <b>5 = Power Trouble (AC Failure or Low Battery) <input type="checkbox"/></b> <b>6 = Siren &amp; Telephone Fault <input type="checkbox"/></b> <b>7 = Test Reports <input type="checkbox"/></b> <b>8 = Program, Download &amp; Log Full <input type="checkbox"/></b> <b>9 = Tamper <input type="checkbox"/></b> <b>10 = Short Circuit &amp; Ground Fault <input type="checkbox"/></b> <b>11 = Sensor Lost <input type="checkbox"/></b> <b>12 = Sensor Low Battery <input type="checkbox"/></b> <b>13 = Expander Trouble <input type="checkbox"/></b> <b>14 = Failure to Communicate <input type="checkbox"/></b> <b>15 = Zone Activity Monitor <input type="checkbox"/></b> <b>16 = Reserved</b>		

LOC	PAGE	DESCRIPTION	DEFAULT	PROGRAMMING
2	11	PARTITIONS TO REPORT BY INTERNET TO RECEIVER #2		
		1 = Alarms and Restores <input type="checkbox"/> 2 = Open/Close <input type="checkbox"/> 3 = Bypass <input type="checkbox"/> 4 = Zone Trouble <input type="checkbox"/> 5 = Power Trouble (AC Failure or Low Battery) <input type="checkbox"/> 6 = Siren & Telephone Fault <input type="checkbox"/> 7 = Test Reports <input type="checkbox"/> 8 = Program, Download & Log Full <input type="checkbox"/> 9 = Tamper <input type="checkbox"/> 10 = Short Circuit & Ground Fault <input type="checkbox"/> 11 = Sensor Lost <input type="checkbox"/> 12 = Sensor Low Battery <input type="checkbox"/> 13 = Expander Trouble <input type="checkbox"/> 14 = Failure to Communicate <input type="checkbox"/> 15 = Zone Activity Monitor <input type="checkbox"/> 16 = Reserved		
3	11	PARTITIONS TO REPORT BY INTERNET TO EMAIL ACCOUNT #1		
		1 = Alarms and Restores <input type="checkbox"/> 2 = Open/Close <input type="checkbox"/> 3 = Bypass <input type="checkbox"/> 4 = Zone Trouble <input type="checkbox"/> 5 = Power Trouble (AC Failure or Low Battery) <input type="checkbox"/> 6 = Siren & Telephone Fault <input type="checkbox"/> 7 = Test Reports <input type="checkbox"/> 8 = Program, Download & Log Full <input type="checkbox"/> 9 = Tamper <input type="checkbox"/> 10 = Short Circuit & Ground Fault <input type="checkbox"/> 11 = Sensor Lost <input type="checkbox"/> 12 = Sensor Low Battery <input type="checkbox"/> 13 = Expander Trouble <input type="checkbox"/> 14 = Failure to Communicate <input type="checkbox"/> 15 = Zone Activity Monitor <input type="checkbox"/> 16 = Reserved		
4	12	PARTITIONS TO REPORT BY EMAIL ACCT #2 TO RECEIVER		
		1 = Alarms and Restores <input type="checkbox"/> 2 = Open/Close <input type="checkbox"/> 3 = Bypass <input type="checkbox"/> 4 = Zone Trouble <input type="checkbox"/> 5 = Power Trouble (AC Failure or Low Battery) <input type="checkbox"/> 6 = Siren & Telephone Fault <input type="checkbox"/> 7 = Test Reports <input type="checkbox"/> 8 = Program, Download & Log Full <input type="checkbox"/> 9 = Tamper <input type="checkbox"/> 10 = Short Circuit & Ground Fault <input type="checkbox"/> 11 = Sensor Lost <input type="checkbox"/> 12 = Sensor Low Battery <input type="checkbox"/> 13 = Expander Trouble <input type="checkbox"/> 14 = Failure to Communicate <input type="checkbox"/> 15 = Zone Activity Monitor <input type="checkbox"/> 16 = Reserved		
5-12	12	RESERVED		
13	12	EMAIL NAME OF THIS MODULE (char 1-16)		

LOC	PAGE	DESCRIPTION	DEFAULT	PROGRAMMING
14	12	EMAIL NAME OF THIS MODULE (char 17-32)		
15	12	EMAIL NAME OF THIS MODULE (char 33-48)		
16	12	EMAIL NAME OF THIS MODULE (char 49-64)		
17-28	12	RESERVED		
29	12	EMAIL ACCOUNT #1 (char 1-16)		
30	12	EMAIL ACCOUNT #1 (char 17-32)		
31	12	EMAIL ACCOUNT #1 (char 33-48)		
32	12	EMAIL ACCOUNT #1 (char 49-64)		
33	12	EMAIL ACCOUNT #2 (char 1-16)		
34	12	EMAIL ACCOUNT #2 (char 17-32)		
35	12	EMAIL ACCOUNT #2 (char 33-48)		
36	12	EMAIL ACCOUNT #2 (char 49-64)		
37	13	MAIL SERVER (char 1-16)		
38	13	MAIL SERVER (char 17-32)		
39	13	MAIL SERVER (char 33-48)		
40	13	MAIL SERVER (char 49-64)		
41-44	13	RESERVED		
45	13	IP ADDRESS FOR THIS MODULE	<i>0.0.0.0</i>	
46	13	IP ADDRESS FOR PRIMARY RECEIVER	<i>0.0.0.0</i>	
47	13	IP ADDRESS FOR SECONDARY RECEIVER	<i>0.0.0.0</i>	
48	13	IP ADDRESS FOR ON-SITE EVENT RECORDER	<i>0.0.0.0</i>	
49-50	13	RESERVED		
51	13	IP ADDRESS MAIL SERVER	<i>0.0.0.0</i>	
52	13	IP ADDRESS OF GATEWAY	<i>0.0.0.0</i>	
53	13	IP ADDRESS FOR DOWNLOAD COMPUTER	<i>0.0.0.0</i>	
54	13	IP ADDRESS SUBNET MASK	<i>255.255.255.0</i>	
55	13	RECEIVER ALARM PORT	<i>9-9-9-9</i>	
56	13	RECEIVER DOWNLOAD PORT	<i>9-9-9-8</i>	
57	13	EMAIL PORT	<i>0-0-2-5</i>	
58-59	13	RESERVED		
60	14	ACCOUNT NUMBER (Hex) ⚠ Add leading zeros!!	<i>00001000</i>	
61	14	RECEIVER NUMBER (Decimal)	<i>0001</i>	
62	14	LINE NUMBER (Decimal)	<i>0001</i>	
63	14	TIMERS & COUNTERS USED		
		SEG 1 – Number of network attempts	<i>2</i>	
		SEG 2 – Time in seconds for overall network attempt	<i>30</i>	
		SEG 3 – Polling time in seconds	<i>10</i>	
64-94	14	RESERVED		

## 12. FREQUENTLY ASKED QUESTIONS

### **Do I have to setup an IP address for the NX-590E module?**

Absolutely, you must setup a static IP address or use DHCP to get a dynamic IP address. Failure to do so will result in the NX-590E not able to function at all.

### **What locations I need to setup to assign a static IP to the NX-590E module?**

Location 0, Segment 2, Bit 3 must be set to 0

Location 45, must be set to the assigned IP address like 3.18.147.166

Location 52, must be set to the Assigned Gateway address like 3.18.144.1

Location 54, must be set to the Subnet Mask like 255.255.252.0

IP address, Gateway address, and Subnet mask are parameter your IT person would be able to provide for the location where the NX-590E would be installed.

### **What locations I need to setup to assign a dynamic IP using DHCP to the NX-590E module?**

Location 0, Segment 2, Bit 3 must be set to 1

Locations 45, 52, and 54 are not used in this scenario.

Your IT person would be able to tell you if the network supports dynamic IP addressing for your installation.

### **How do I setup the NX-590E to send events as e-mail messages only?**

Location 1, Segments 1-16 must be set to '-' to disable reporting to Receiver 1

Location 2, Segments 1-16 must be set to '-' to disable reporting to Receiver 2

Location 3, Segments 1-16 must enable needed segments in used partitions (see NX-590E Installation and Startup document for segments definition) for email 1; otherwise must be set to '-' to disable reporting

Location 4, Segments 1-16 must enable needed segments in used partitions (see NX-590E Installation and Startup document for segments definition) for email 2; otherwise must be set to '-' to disable reporting

Locations 3-16, a 64 characters space for the 'From:' field in the e-mail message. A valid name like [fieldpanel1@yourdomain.com](mailto:fieldpanel1@yourdomain.com) should be used.

Locations 29-32, a 64 characters space for the 'To:' field in the e-mail message. A valid name like [john@yourdomain.com](mailto:john@yourdomain.com) should be used. This for e-mail 1.

Locations 33-36, a 64 characters space for the 'To:' field in the e-mail message. A valid name like [john@yourdomain.com](mailto:john@yourdomain.com) should be used. This for e-mail 2.

Locations 37-40 a 64 characters space for the mail server name. A valid name like [mailhost.indsys.ge.com](mailto:mailhost.indsys.ge.com) should be used.

Location 51, mail server IP address

Location 57, Email port, default is 025.

### **How do I setup the NX-590E to send events to Receiver 1 only?**

Location 1, Segments 1-16 must enable needed segments in used partitions (see NX-590E Installation and Startup document for segments definition)

Location 2, Segments 1-16 must be set to '-' to disable reporting to Receiver 2

Location 3, Segments 1-16 must be set to '-' to disable reporting to Email 1

Location 4, Segments 1-16 must be set to '-' to disable reporting to Email 2

Location 46, IP address for Receiver 1

Location 55, Receiver Alarm Port number

### **How do I setup the NX-590E to send events to Receiver 2 only?**

Location 1, Segments 1-16 must be set to '-' to disable reporting to Receiver 1

Location 2, Segments 1-16 must enable needed segments in used partitions (see NX-590E Installation and Startup document for segments definition)

Location 3, Segments 1-16 must be set to '-' to disable reporting to Email 1

Location 4, Segments 1-16 must be set to '-' to disable reporting to Email 2

Location 47, IP Address for Receiver 2

Location 55, Receiver Alarm Port number

### **How much bandwidth will the NX panel will utilize on my network?**

The NX panel event message size is 54 bytes and the poll message is 20 bytes. Typically, a panel might generate an Arm and a disarm event one a day and an alarm when one occurs. The poll message could be sent at a rate of once a second to once every 255 seconds. The default setting is every 10 seconds. So, the NX panel adds very negligible load on the network.

## **13. GLOSSARY**

### **DHCP**

Short for ***Dynamic Host Configuration Protocol***, a protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network. In some systems, the device's IP address can even change while it is still connected. DHCP also supports a mix of static and dynamic IP addresses.

Dynamic addressing simplifies network administration because the software keeps track of IP addresses rather than requiring an administrator to manage the task. This means that a new computer can be added to a network without the hassle of manually assigning it a unique IP address. Many ISPs use dynamic IP addressing for dial-up users.

DHCP client support is built into Windows 95 and NT workstation. NT 4 server includes both client and server support.

### **E-MAIL**

Short for ***electronic mail***, the transmission of messages over communications networks. Another common spelling for e-mail is email. The messages can be notes entered from the keyboard or electronic files stored on disk. Most mainframes, minicomputers, and computer networks have an e-mail system. Some electronic-mail systems are confined to a single computer system or network, but others have gateways to other computer systems, enabling users to send electronic mail anywhere in the world. The same message can be sent to several users at once. This is called broadcasting. Companies that are fully computerized make extensive use of e-mail because it is fast, flexible, and reliable.

All online services and Internet Service Providers (ISPs) offer e-mail, and most also support gateways so that you can exchange mail with users of other systems. Usually, it takes only a few seconds or minutes for mail to arrive at its destination. This is a particularly effective way to communicate with a group because you can broadcast a message or document to everyone in the group at once.

Although different e-mail systems user different formats, there are some emerging standards that are making it possible for users on all systems to exchange messages. In the PC world, an important e-mail standard is MAPI. The CCITT standards organization has develop the X.400 standard, which attempts to provide a universal way of addressing messages. To date, though, the de facto addressing standard is one used by the Internet system because almost all e-mail systems have an Internet gateway.

### **ETHERNET**

A local-area network (LAN) architecture developed by Xerox Corporation in cooperation with DEC and Intel in 1976. Ethernet uses a bus or star topology and supports data transfer rates of 10Mbps. The Ethernet specification served as the basis for the IEEE 802.3 standard, which specifies the physical and lower software layers. Ethernet uses the CSMA/CD access method to handle simultaneous demands. It is one of the most widely implemented LAN standards.

A newer version of Ethernet, called 100Base-T (or Fast Ethernet) supports data transfer rates of 100Mbps. And the newest version, Gigabit Ethernet supports data rates of 1 gigabit (1,000 megabits) per second.

## FIREWALL

A system designed to prevent unauthorized access to or from a private network. Firewalls can be implemented in both hardware and software, or a combination of both. Firewalls are frequently used to prevent unauthorized Internet users from accessing private networks connected to the Internet, especially intranets. All messages entering or leaving the intranet pass through the firewall, which examines each message and blocks those that do not meet the specified security criteria.

There are several types of firewall techniques:

- **Packet filter:** Looks at each packet entering or leaving the network and accepts or rejects it based on user-defined rules. Packet filtering is fairly effective and transparent to users, but it is difficult to configure. In addition, it is susceptible to IP spoofing.
- **Application gateway:** Applies security mechanisms to specific applications, such as FTP and Telnet servers. This is very effective, but can impose performance degradation.
- **Circuit-level gateway:** Applies security mechanisms when a TCP or UDP connection is established. Once the connection has been made, packets can flow between the hosts without further checking.
- **Proxy server:** Intercepts all messages entering and leaving the network. The proxy server effectively hides the true network addresses.

In practice, many firewalls use two or more of these techniques in concert. A firewall is considered a first line of defense in protecting private information. For greater security, data can be encrypted.

## GATEWAY

In networking, a combination of hardware and software that links two different types of networks. Gateways between e-mail systems, for example, allow users on different e-mail systems to exchange messages.

## IP

Abbreviation of **Internet Protocol**, pronounced as two separate letters. IP specifies the format of packets, also called datagrams, and the addressing scheme. Most networks combine IP with a higher-level protocol called Transport Control Protocol (TCP), which establishes a virtual connection between a destination and a source.

IP by itself is something like the postal system. It allows you to address a package and drop it in the system, but there's no direct link between you and the recipient. TCP/IP, on the other hand, establishes a connection between two hosts so that they can send messages back and forth for a period of time.

The current version of IP is *IPv4*. A new version, called *IPv6* or *IPng*, is under development.

## IP ADDRESS

An identifier for a computer or device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 1.160.10.240 could be an IP address.

Within an isolated network, you can assign IP address at random as long as each one is unique. However, connecting a private network to the Internet requires using registered IP addresses (called Internet addresses) to avoid duplicates.

The four numbers in an IP address are used in different ways to identify a particular network and a host on that network. The InterNIC Registration Service assigns Internet addresses from the following three classes.

- Class A – supports 16 million hosts on each of 127 networks
- Class B – supports 65,000 hosts on each of 16,000 networks

- Class C – supports 254 hosts on each of 2 million networks

The number of unassigned Internet addresses is running out, so a new classless scheme called CIDR is gradually replacing the system based on classes A, B, and C and is tied to adoption of IPv6.

**NETWORK** A group of two or more computer systems linked together. There are many types of computer networks, including:

Local-area networks (LANs): The computers are geographically close together (that is, in the same building). Most LANs connect workstations and personal computers. Each node (individual computer in a LAN has its own CPU with which it executes programs, but it is also able to access data and devices anywhere on the LAN. This means that many users can share expensive devices, such as laser printers, as well as data. Users can also use the LAN to communicate with each other, by sending e-mail or engaging in chat sessions. LANs are capable of transmitting data at very fast rates, much faster than data can be transmitted over a telephone line; but the distances are limited, and there is also a limit on the number of computers that can be attached to a single LAN.

- Wide-area networks (WANs): A computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local-area networks (LANs). Computers connected to a WAN are often connected through public networks, such as the telephone system. They can also be connected through leased lines or satellites. The largest WAN in existence is the Internet.

In addition to these types, the following characteristics are also used to categorize different types of networks:

- Topology: The geometric arrangement of a computer system. Common topologies include a bus, star, and ring.
- Protocol: The protocol defines a common set of rules and signals that computers on the network use to communicate. One of the most popular protocols for LANs is called *Ethernet*. Another popular LAN protocol for PCs is the *IBM token-ring network*.
- Architecture: Networks can be broadly classified as using either peer-to-peer or client/server architecture.

Computers on a network are sometimes called *nodes*. Computers and devices that allocate resources for a network are called *servers*.

**TCP** Abbreviation of Transmission Control Protocol, and pronounced as separate letters. TCP is one of the main protocols in TCP/IP networks. Whereas the IP protocol deals only with packets, TCP enables two hosts to establish a connection and exchange streams of data. TCP guarantees delivery of data and also guarantees that packets will be delivered in the same order in which they were sent.



## SYSTEM NOTES

# 14. SPECIFICATIONS

<b>OPERATING POWER</b>	12VDC Supplied from NX-4, NX-4V2, NX-6, NX-6V2, NX-8, NX-8V2, NX-8E or NX-320E
<b>CURRENT DRAW</b>	120 mA during communication / 90mA standby
<b>OPERATING TEMPERATURE</b>	32 to 120 degrees F
<b>DIMENSIONS</b>	6.0" Wide
	3.25" High
	1.0" Deep
<b>SHIPPING WEIGHT</b>	1 lb.



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