NESS-APX
IP REPORTING MODULE

INSTALLATION & SETUP GUIDE

NESS-APX IP Monitoring Module
Installation & Setup Guide
Rev1

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N55

CORPORATION

Innovative Electronic Solutions
www.ness.com.au

NSW Ph 02 8825 9222
sales@ness.com.au

VIC Ph 03 9875 6400
nessmelb@ness.com.au

QLD Ph 07 3399 4910
nessbris@ness.com.au

WA Ph 08 9328 2511
nessper@ness.com.au

SA Ph 08 8152 0000
adelaide@ness.com.au

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Welcome

Thank you for purchasing the NESS IP Reporting Module. The NESS APX Module is designed to help transition existing alarm monitoring solutions from traditional PSTN reporting to IP capable devices with minimal effort and at a low cost.

The current features of the NESS APX Module include:

- Full PSTN phone line emulation circuit that will interface with any alarm panel.
- 10/100 Base-T Ethernet
- Independent modem that supports downstream phones.
- 4x configurable inputs or outputs.
- Small physical size to fit inside existing installations.
- 12VDC power supply input.
- Emulates a full CID receiver.
- UDP and TCP based IP reporting protocols.
- Configurable 128, 192 or 256 bit AES encryption.
- Fully configurable through an Internet browser.
- Backup reporting options.
- 64 message queue.
- Industry standard DIN Rail mounting
- Online and remote upgradeable firmware

When receiving the NESS APX Module you should find the kit contains the items listed below. Please note that if you do not have the correct contents, you should contact your distributor immediately.

- NESS IP Reporting Module
- NESS IP Reporting Module Installation Manual
- 8x 1K Ohm resistors
- DIN Rail mounting strip
- 1x 330 Ohm EOL termination resistor

Document Conventions

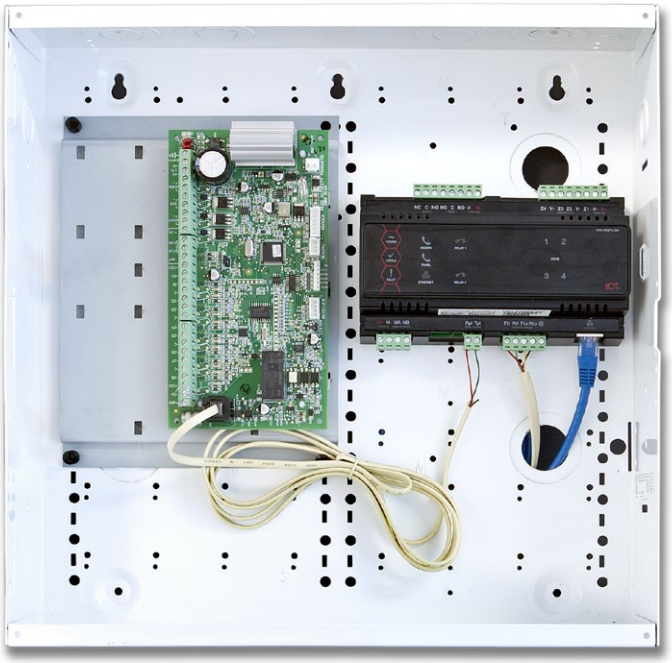
	Indicates a warning or cautionary message
	Indicates an important note or advisory information
	Indicates a hint or suggestion
[TEXT]	Bold text enclosed in brackets is used to show a section number or address of a programmable option or information on programming shortcut sequences

Mounting

The NESS APX Module is designed to mount on standard DIN Rail either in dedicated DIN cabinets or generic DIN Rail mounting strip. A section of this DIN Rail strip bas been provided as a mounting option.

When installing the NESS APX Module ensure that there is adequate clearance around all sides of the enclosure and air flow to the vents of the unit is not restricted. It is recommended to install the NESS APX Module in a location that will facilitate easy access for wiring. It is also recommended that the NESS APX Module is installed in electrical rooms, communication equipment rooms, closets or in a secure location near the security alarm panel.

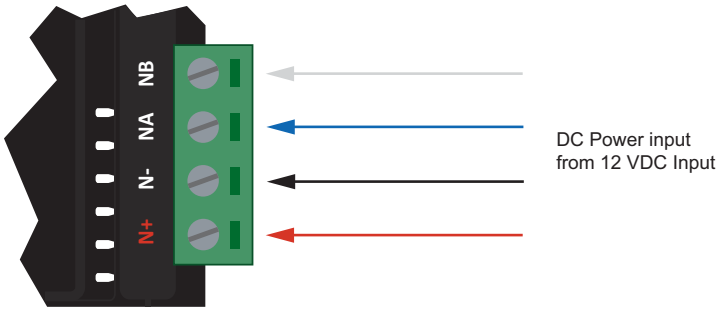
1. Hook the lower tabs under the bottom edge of the DIN Rail.
2. Push the enclosure against the DIN Rail mount until the upper tab clips over the upper rail.



NESS-APX shown installed in a Ness 14” metal housing.
Housing and D8x board are not supplied.

DC Power

Module power is supplied by the N+ and N- terminals.

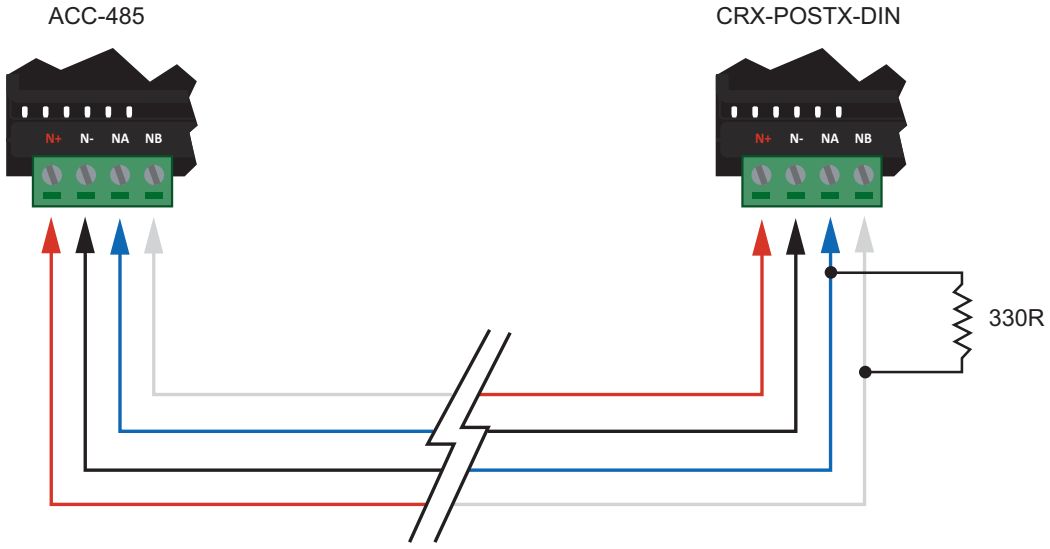


Standard DC Power Connection

Connection of the DC supply should be performed according to the diagram shown above. It is important that the N+ module power be 12VDC supplied from an independent battery backed power supply unit such as the PRT-PSU-DIN capable of supplying the required voltage.

Warning:

- The 12V N+ and N- DC power input must be supplied from only ONE point. Connections from more than one 12V supply may cause failure or damage to the NESS APX Module.
- The 330 Ohm EOL (End of Line) resistor provided in the accessory bag MUST be inserted between the NA and NB terminals of the ACC-485 module directly connected to the NESS APX Module.

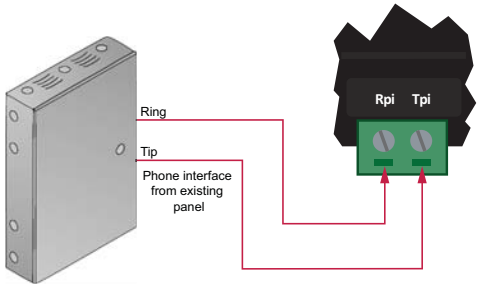


End of Line Resistor

Interface Connections

Panel Interface

The NESS APX Module has a fully featured PSTN phone line emulation circuit for interfacing to any PSTN device. This interface generates all of the appropriate voltages for powering the connected device. In most applications this device will be an alarm panel modem. The following diagram shows how to connect the existing PSTN device to the NESS APX Module. Simply connect the Tip and Ring from the device to the terminals marked Tpi (Tip Panel Input) and Rpi (Ring Panel Input).

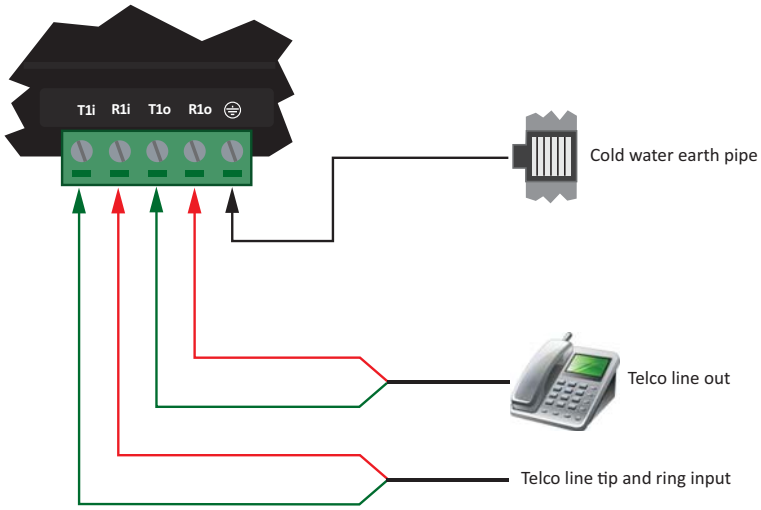


Wiring Interface to Existing Alarm Panel

Warning: NEVER connect the phone line emulator (terminals Rpi and Tpi) to a normal phone line. This will cause permanent damage to the NESS APX Module.

Telephone Dialler Interface

The NESS APX Module also has an outbound modem that can be used for PSTN – PSTN routing or as a backup to the IP Reporting. The telephone lines can be directly connected to the NESS APX Module using the onboard telephone connection terminals.



Telephone Line Connection

It is recommended that the earth connection for the telephone and main power supply (see page 6) earth be run separately and should be terminated on the cold water pipe or similar grounding point within the installation.

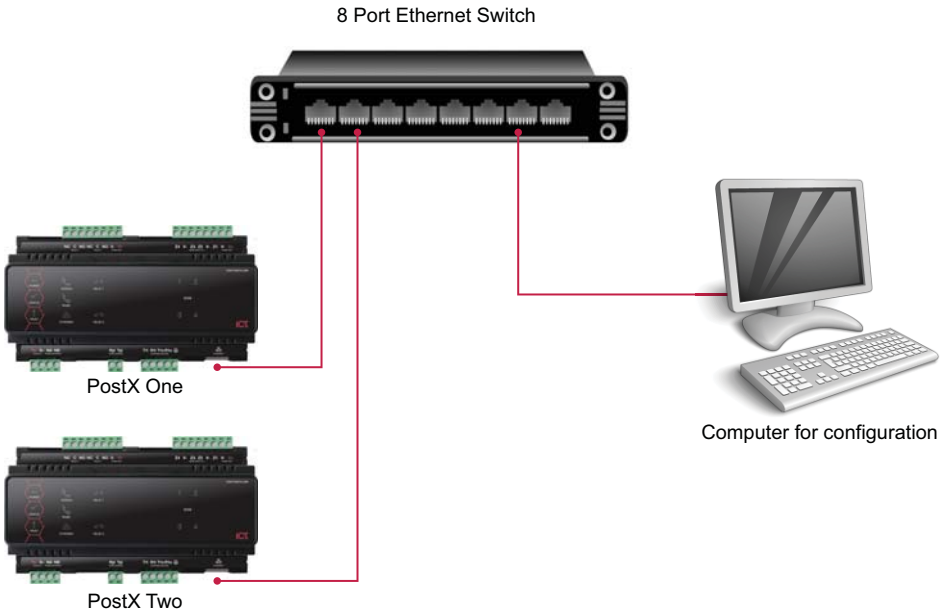
Ethernet 10/100 Network Interface

The NESS APX Module can communicate over a 10/100 Ethernet network using the TCP/IP protocol. This is used for IP Reporting and configuration of the unit using an Internet browser.

The default IP address is set to a static IP address of 192.168.1.2 with a subnet mask of 255.255.255.0. These IP address settings are commonly used for internal networks. There are a number of ways to change the IP address of the NESS APX Module. Refer to the section Default Static IP Address Mode (see page 9) for details.

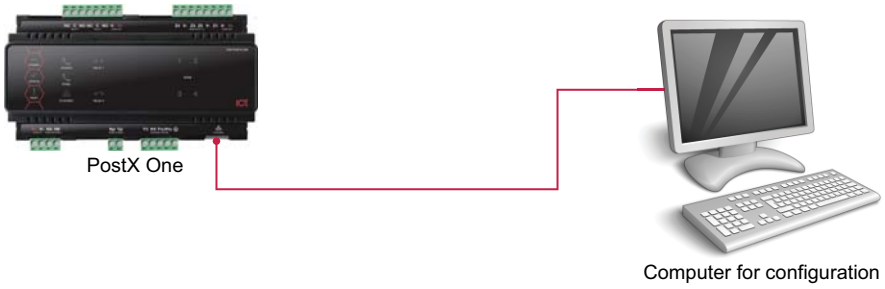
When installing an Ethernet connection, the NESS APX Module should be interfaced using a standard segment (<100M in length) and should be connected to a suitable Ethernet hub or switch.

Installing the NESS APX Module on an active network requires knowledge of the configuration and structure for the network. Always consult the network or system administrator and ask them to provide you with a fixed IP Address that can be assigned to the NESS APX Module.



Ethernet 10/100 Switch/Hub Connection

Temporary direct connections can be used for onsite configuration by using a standard Ethernet cable.



Ethernet 10/100 Direct Connection

Ethernet Configuration

This section details how to establish an Ethernet connection with the NESS APX Module. When theNESS APX Module comes out of the box it is set to a static IP address of 192.168.1.2. If your computer network is on this subnet, and no other computer on the network has the IP address of 192.168.1.2 then you will be able to connect to the NESS APX Module straight away.

Installing the NESS APX Module on an active network requires knowledge of the configuration and structure for the network. Always consult the network or system administrator and ask them to provide you with a fixed IP address that can be assigned to the NESS APX Module.

Establishing Ethernet Connection

NESS IP Reporting Module IP Settings

Before attempting to connect to the NESS APX Module it is necessary to know the IP address that it is currently set to. The default factory setting for the IP address of the NESS APX Module will be:

192.168.1.2

The suggested methods for connecting your PC or laptop to the NESS APX Module include via either a switch/hub or a direct connection as shown in the section Ethernet 10/100 Network Interface (see page 9).

PC/Laptop IP Settings

You should then configure your PC or laptop's network interface to use the following settings:

IP Address: 192.168.1.4 – 192.168.1.254

Subnet Mask: 255.255.255.0

Please select the IP address for your PC or laptop from the range given above; ensuring it is not currently in use by any other device connected to your network. For information on configuring the network interface for your PC or laptop, please visit the Web Support Centre for your particular operating system. Guides for the following operating systems can be found at:

- **Microsoft® Windows XP**

  http://www.microsoft.com/resources/documentation/windows/xp/all/proddocs/en-us/howto_enable_dhcp.mspx?mfr=true
- **Microsoft® Windows Vista**

  http://windows.microsoft.com/en-US/windows-vista/Change-TCP-IP-settings
- **Microsoft® Windows 7**

  http://windows.microsoft.com/en-US/windows7/Change-TCP-IP-settings

Should the IP address need to be restored to the default value, please refer to the section on IP Troubleshooting (see page 9) for more details.

Web Interface – User Login

Configuration for the NESS APX Module is done through the built in web interface. To access, open an Internet browser (such as Internet Explorer or Mozilla Firefox) and type the IP address of the NESS APX Module into the address bar. As all of the web pages in the NESS APX Module are secure, the login screen will appear first. You must have a valid username and password to continue.

Users

By default, the NESS APX Module comes with two users for the web interface:

Username	Password	Access Level
admin	admin	Administrator
user	user	User

Web Interface Login

Once you enter a valid username and password, the Web Server home page is displayed. From here you can access all of the other pages through the menu on the left.

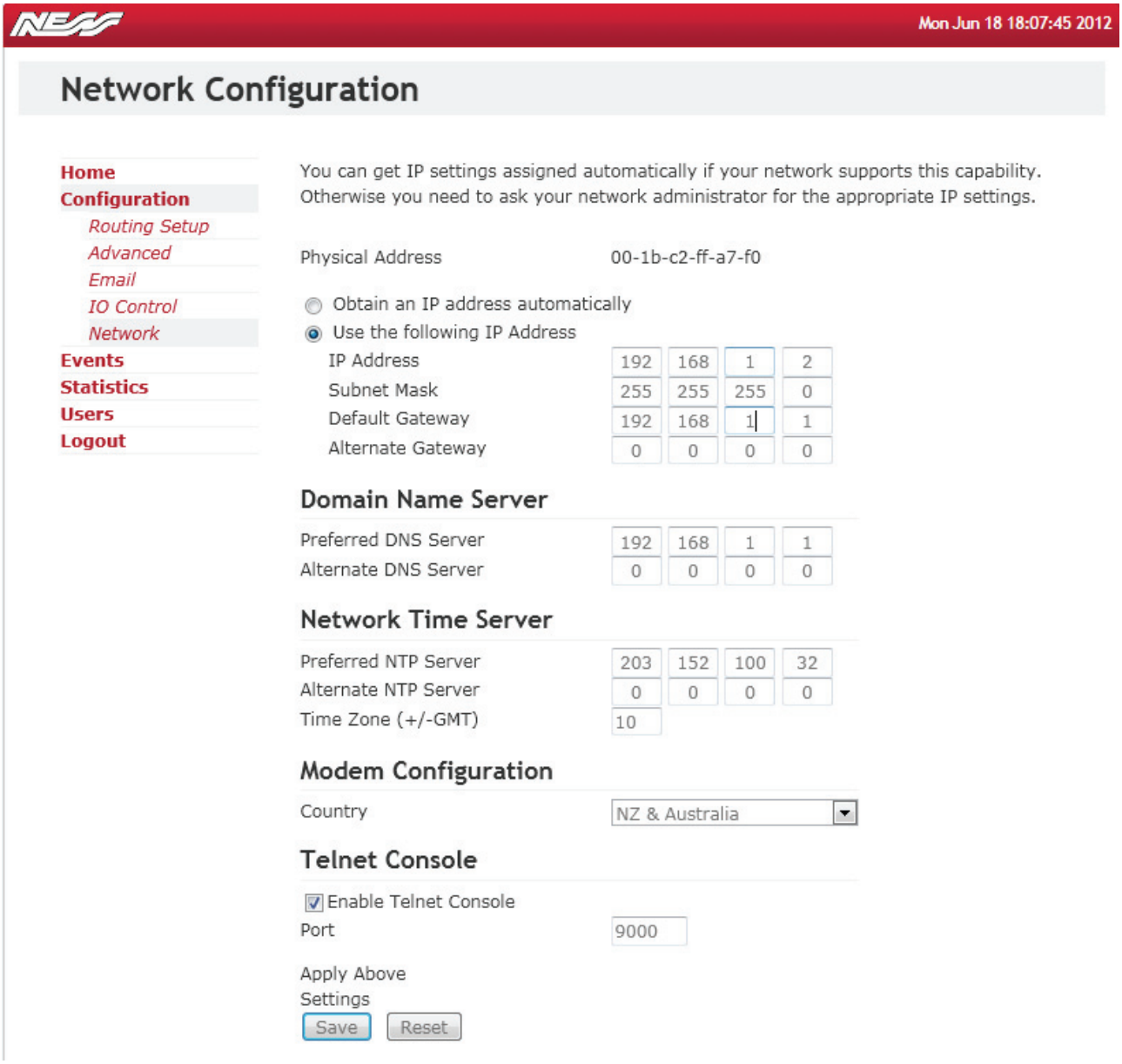
Please refer to Web User Management for more details about user login.

Web Interface – Network Setup

If you can connect to the NESS APX Module the easiest way to change the IP address is using the web interface. Open up an Internet browser (e.g. Internet Explorer or Mozilla Firefox) and type the IP address of the NESS APX Module into the address bar. The User Login screen will come up as shown in the figure below. Enter a valid username and password to login as an Administrator.

To help ensure your NESS APX Module cannot be configured by invalid users, change the default passwords for the web interface before commissioning the installation.

IP Configuration



There are two options for configuring the IP address of the NESS APX Module:

- **IP Configuration via DHCP**

  To enable the DHCP service, select the **Obtain an IP address automatically** option.

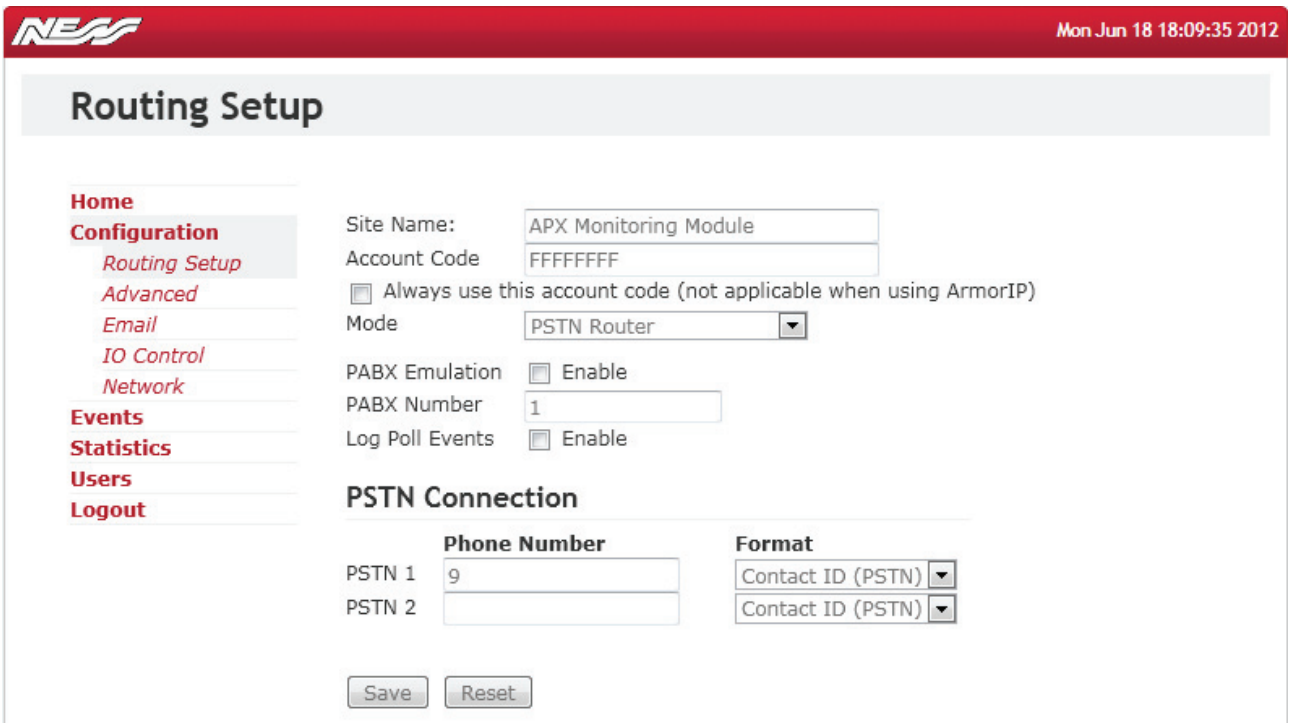
- **Static IP Configuration**

  To assign a static IP, select the **User the following IP Address** option and enter the new IP address, subnet mask and default gateway you wish to use.

  Once all the changes have been made, click **Save** to save the changes. You must restart the NESS APX Module for the changes to take effect.

Web Interface - Routing Setup

To configure the routing options select the **Routing Setup** link using the web interface. The following diagram shows an example configuration for the NESS APX Module. Note that this example uses all the features, and therefore they are all displayed. As you select the features (for example Backup PSTN Reporting) they will become visible.



General Options

These options are general across all modes of operation.

- **Site Name**

  The site name should be set to a useful name as it is included with each ArmorIP reporting message sent to the monitoring station.
- **Account Code**

  This is the account code that is sent with each ArmorIP or Contact ID reporting message sent to the monitoring station.
- **Always use this Account Code**

  Selecting this option will replace the account code in the received Contact ID message with this account code. It will only use the first 4 digits of the account code entered.
- **PABX Emulation**

  If the alarm panel the NESS APX Module is connecting to is expecting to dial through a PABX this option needs to be enabled. When the PABX number is dialled the NESS APX Module starts the dial tone again until the panel starts dialling the external line.
- **PABX Number**

  This is the number the panel dials to obtain an external line and must be set if the PABX emulation is enabled.
- **Log Poll Events**

  Log the send poll and received ACK poll events. Disabling this option will leave more space for other events in the buffer.

Routing Mode

The NESS APX Module operates in two different modes, IP Reporting and PSTN Router.

- **IP Reporting**

  In this mode the NESS APX Module will send any Contact ID messages that it receives from the connected alarm panel to the IP address configured. To set this up change the mode to be 'IP Reporting' and enter the primary IP address into the IP 1 field. This is the IP address of the monitoring station you wish to report to.

  Before setting these options you must contact your monitoring station to find out the IP address(s), the IP port and the reporting format they use. Once you know all of these details you can enter them into the IP configuration.

  When the poll time is enabled the NESS APX Module will send a poll message to the monitoring station every x seconds (depending on the configuration). It is recommended to use this option to help monitor the Internet link between your NESS APX Module and the monitoring station. If the poll message fails the NESS APX Module does not attempt to send it through a backup reporting path, it will continue to send this event to the server at IP 1. When the connection does fail to IP 1, all non poll messages will be attempted to be sent over any configured backup channels.

  To use a backup IP connection set IP 2 to be non-zero. After eight failed attempts of sending a message to IP 1, the NESS APX Module will then attempt to send the message to IP 2. If the *Backup the IP connection to the PSTN connection below* option is checked and the NESS APX Module fails to send the message to IP 2, then the NESS APX Module will attempt to send the message using the phone number in PSTN 1. If the message cannot be sent, the NESS APX Module will attempt to send it using PSTN 2 provided there is a phone number configured.

  Most networks will have a firewall between the NESS APX Module and the Internet. It is necessary to configure the firewall to allow the IP messages through so the NESS APX Module can communicate with the monitoring station. If the port being used is 10000 and you are using ArmorIP (UDP) the firewall must let UDP packets on 10000 through, both inbound and outbound.

- **PSTN Router**

  In this mode the NESS APX Module will only attempt to send the received Contact ID messages using the PSTN modem to the phone numbers that are configured. It discards the phone number the alarm panel is attempting to report to and will only report to the phone numbers configured.

  When the poll time is enabled the NESS APX Module will send a poll message to the monitoring station every x seconds (depending on the configuration). It is recommended to use this option to help monitor the PSTN Link between your NESS APX Module and the monitoring station.

  The NESS APX Module will attempt to dial the phone number configured in PSTN 2 if it cannot connect to a monitoring station using the phone number in PSTN 1.

IP Reporting Formats

The NESS APX Module supports seven IP reporting formats and two PSTN reporting formats. For all IP based formats the IP address and port of the monitoring station must be entered.

- **ArmorIP (UDP)**

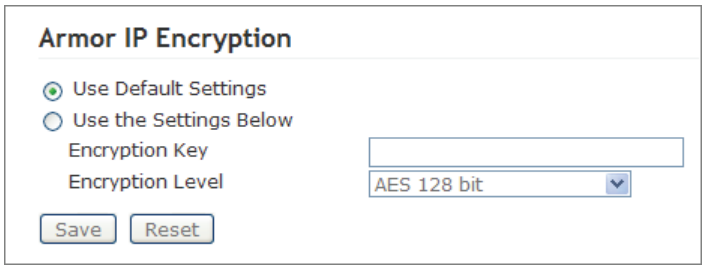
  This format communicates with an ArmorIP server using UDP as the transport layer. When using this format the account code must be set to be the same **8 digit code** as is saved in the ArmorIP server the NESS APX Module is communicating with.

- **ArmorIP (TCP)**

  This format communicates with an ArmorIP server using TCP as the transport layer. When using this format the account code must be set to be the same **8 digit code** as is saved in the ArmorIP server the NESS APX Module is communicating with.

- **ArmorIP-E (UDP)**

  This is the encrypted version of the ArmorIP protocol. It uses an AES encryption algorithm that is selectable for 128, 192 or 256 bit encryption. The following diagram shows the settings for the ArmorIP encryption. These can be found on the *Advanced* page on the NESS APX Module. If *Use Default Settings* is selected, make sure that this is also selected in the ArmorIP server. When this is selected, no other details need to be entered. If you want to increase the security, use a custom key that must be entered in both the NESS APX Module and the ArmorIP server.



For maximum security it is recommended using an encryption key that contains both letters and numbers and does not form a known word.

  This format uses the UDP layer as the transport mechanism.

- **ArmorIP-E (TCP)**

  This is the encrypted version of the ArmorIP protocol, same as detailed above. This format uses the TCP later though as its transport mechanism.

- **Contact ID (UDP)**

  This format is an ASCII based format that only contains the Contact ID message. In all instances, the message will be 16 characters long with the format detailed below.

  The form of the message is: ACCT MT QXYZ GG CCC S, where:

ACCT	4 Digit Account Number
MT	2 Digit Message Type
Q	1 Digit Event Qualifier
XYZ	3 Digit Event Code
GG	2 Digit Group Number
CCC	3 Digit Zone Number
S	1 Digit Checksum

  To acknowledge this message the server must send back an identical copy of this message. UDP is used as the transport layer for this protocol.

- **Contact ID (TCP)**

  This format is identical to Contact ID (UDP) except it uses TCP as the transport layer.

- **CSV-IP**

  Not used in the current model of Ness APX IP Module.

- **Patriot LS30**

  This TCP format communicates with the LS30 task in Patriot alarm monitoring software.

PSTN Reporting Formats

- **Contact ID**

  This is the standard Ademco Contact ID protocol. If the poll is enabled, a valid 4 digit client code must be entered in the *Account Code* field in the *Routing Setup* web page. The poll message will be generated using this account code and all other messages will be sent using the account code received from the panel.

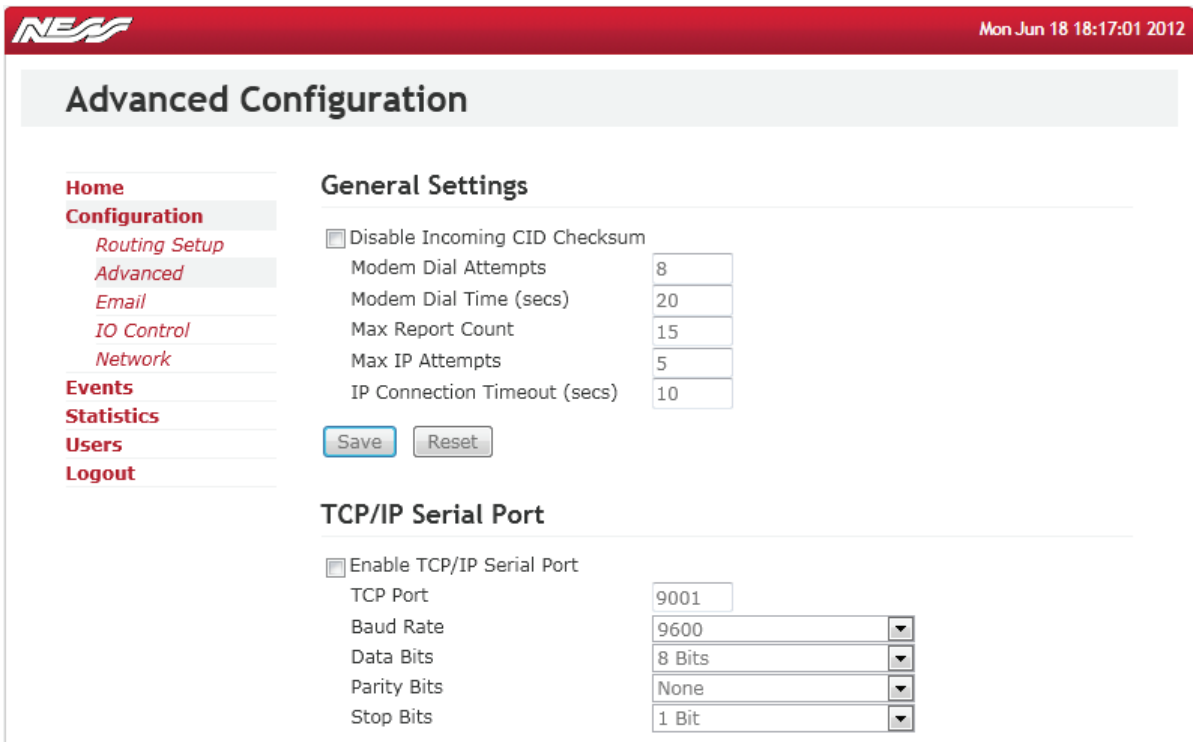
- **SIA**

  This is the standard SIA 2000 protocol. If the poll is enabled, a valid 6 digit client code must be entered into the *Account Code* field in the *Routing Setup* web page. The poll message will be generated using this account code and all other messages will be sent using the account code received from the panel.

E-mail Events

The NESS APX Module can also be configured to send an email to a selected address when an inbound message is received from the attached panel. This can be sent on every event that is received, or once the event buffer is full (approximately 8 messages). To use this option, the email settings must be set up.

Advanced Configuration – General Settings



- **Modem Dial Attempts**

  The Modem Dial Attempts is the maximum number of attempts the NESS APX Module will make to dial a PSTN monitoring station. Once this number of attempts is exceeded the NESS APX Module will change to use the next phone number or reporting path.

- **Modem Dial Time**

  The Modem Dial Time is the length of time in seconds between phone calls.

- **Max Report Count**

  The Maximum Report Count is the maximum number of Contact ID messages that will be sent to the monitoring station in one connection. When this is exceeded the NESS APX Module disconnects from the monitoring station and waits for the period of time set in Modem Dial Time before attempting to call the monitoring station again (if there are more messages to send).

- **Max IP Attempts**

  The Max IP Attempts is the maximum number of times the NESS APX Module will attempt to send a message to a monitoring station for the IP formats.

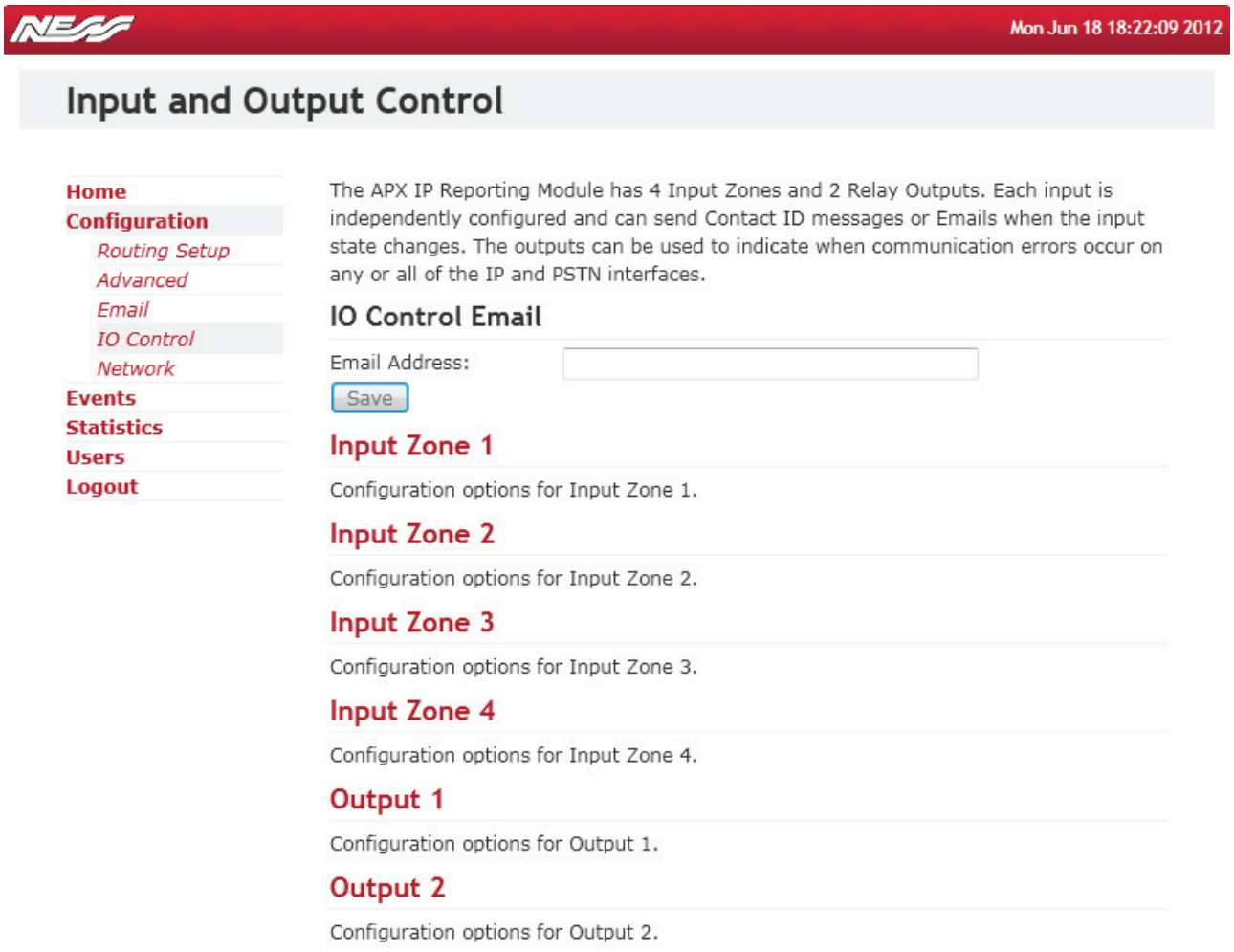
- **IP Connection Timeout**

  The IP Connection Timeout is the number of seconds the NESS APX Module waits for a response for an IP message.

Web Interface - I/O Control

The NESS APX Module has 4 inputs and 2 outputs. Each input is independently configured and can send Contact ID message or emails when the input state changes. The outputs can be used to indicate when communication has been lost on both the IP and PSTN interfaces.

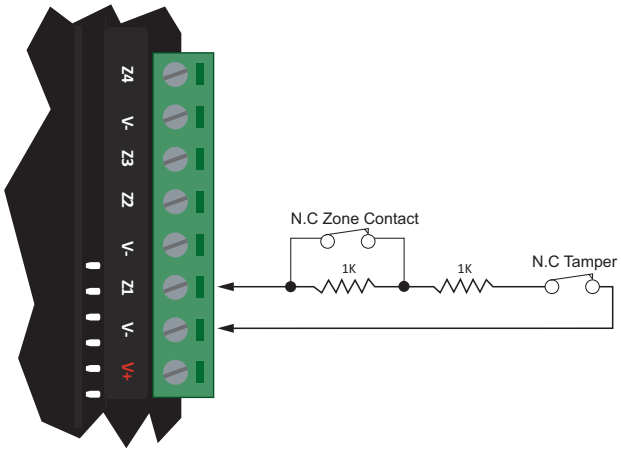
General Setup



Zone Inputs

The NESS APX Module can monitor the state of up to 4 zone inputs using EOL monitored or dry contact devices such as magnetic switches, PIR motion detectors and temperature thermostats. Devices connected to these zones can be installed to a maximum distance of 300m (1000ft) from the NESS APX Module when using 22 AWG wire. Each zone input may be individually configured for normally opened or normally closed configurations with or without EOL resistors for tamper and short condition monitoring.

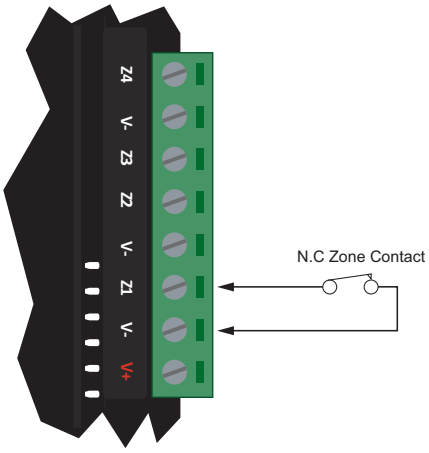
When using a zone with the EOL resistor configuration, the NESS APX Module generates an alarm condition when the state of a zone changes between open and closed and generates a tamper alarm condition when a wire fault (short circuit) or a cut wire (tampered) in the line occurs.



EOL Resistor Zone Configuration

When using the EOL resistor configuration, the zone input is in the closed state when there is 1k Ohm resistance between the terminal and ground. If the zone contact opens, leaving 2k Ohm resistance between the terminal and ground, the zone moves into the open state.

Each zone input can use a different input configuration. When using the No Resistor configuration (i.e. EOL Resistor option not checked), the NESS APX Module only monitors the opened and closed state of the connected input device generating the (OPEN) alarm and (CLOSED) sealed conditions.



Normally Closed Zone Configuration No Resistors

Contact ID Messages

Each input can be independently configured to send an Ademco Contact ID message when the zone changes state. These messages will be sent using the settings defined in the router setup. So if this is set to use IP Reporting, the Contact ID messages generated will be sent using IP reporting to IP address, IP 1 first, just the same as when a Contact ID message is received.

- **Account Code**

  This is a 4 digit code that the monitoring station uses to identify where the Contact ID message has come from.

- **Event / Alarm Code and Tamper Code**

  This is the standard 3 digit Contact ID event code to indicate the type of event that is being reported. The following table shows some example event codes that may be used.

  It is recommended that you always consult your monitoring station for more details regarding the specific event codes to use.

Event Code	Event Type
130	Burglary Alarm
140	General Alarm
146	Silent Burglary
150	24 hour Non-Burglary
300	System Trouble
380	Sensor trouble

- **Group Number**

  The Group Number or Area Number is a 2 digit code to indicate the group or area that the even belongs to. Use 00 to indicate there is no specific group or area information.

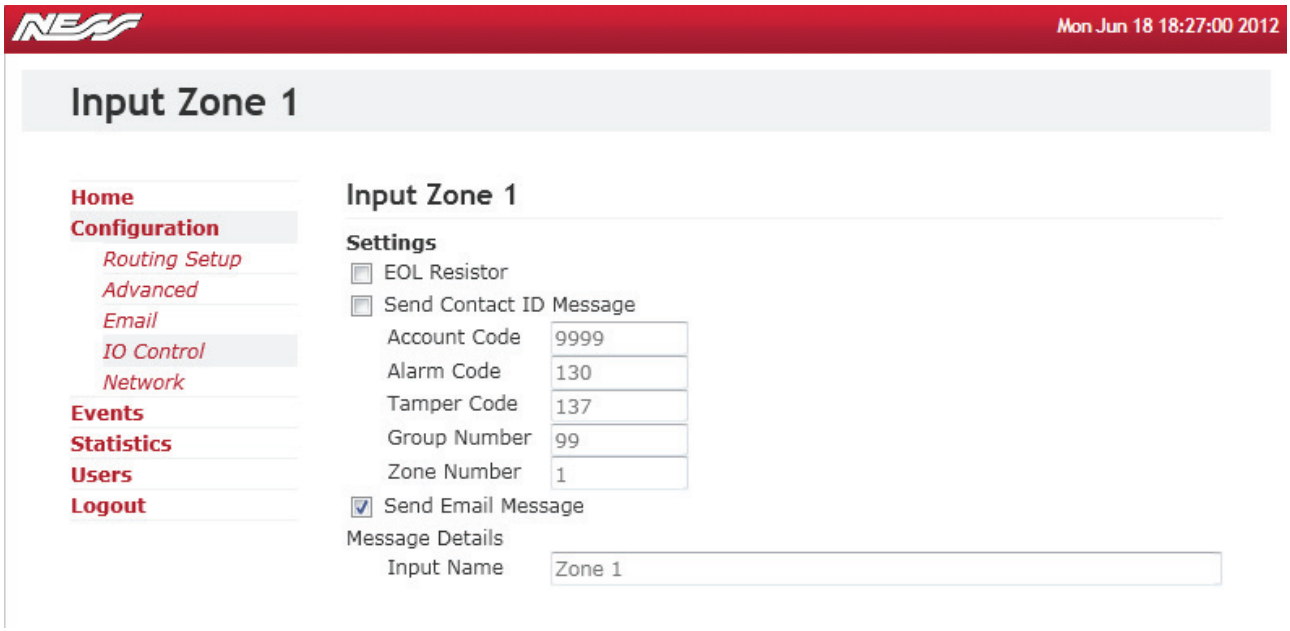
- **Zone Number**

  The Zone Number or User Number is the 3 digit code to indicate the specific zone that has had the event. Use 000 to indicate that there is no specific zone or user information.

E-mail Messages

Each input can also be configured to send an e-mail when the zone changes state. This e-mail is sent to the e-mail address saved in the main Input Output Control Settings configuration page, labelled as *IO Control Email*.

To have a zone send an e-mail, the *Send Email Message* option must be enabled.



For the settings shown above, when the zone opens, the following e-mail will be sent by the NESS APX Module:

Site Name:	ICT NESS APX Module
Zone Message:	Zone 1 Opened
Time Stamp:	Fri Jul 27 14:52:55 2011

The NESS APX Module should be configured to send the appropriate message when the input changes state.

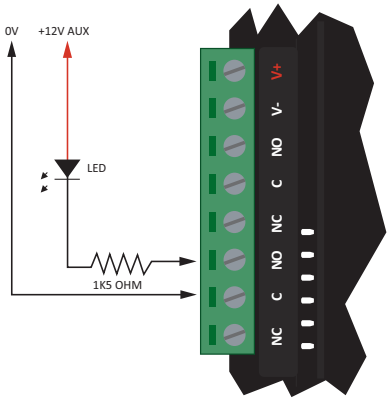
Programmable Outputs

The NESS APX Module has 2 programmable outputs (PGM's). These PGM's can be configured to be outputs that are activated when the NESS APX Module loses the IP, PSTN or either connections. Additionally, the PGMS can also be used to activate bell sirens, lighting circuits, door locks, relay accessory products and other automation points.

In order to enter any of the IP troubleshooting modes, Relay 1 on the NESS APX Module will enable briefly on startup. To prevent this from occurring, ensure that at least one of the zone inputs is wired directly to V-.

PGM Outputs 1 and 2

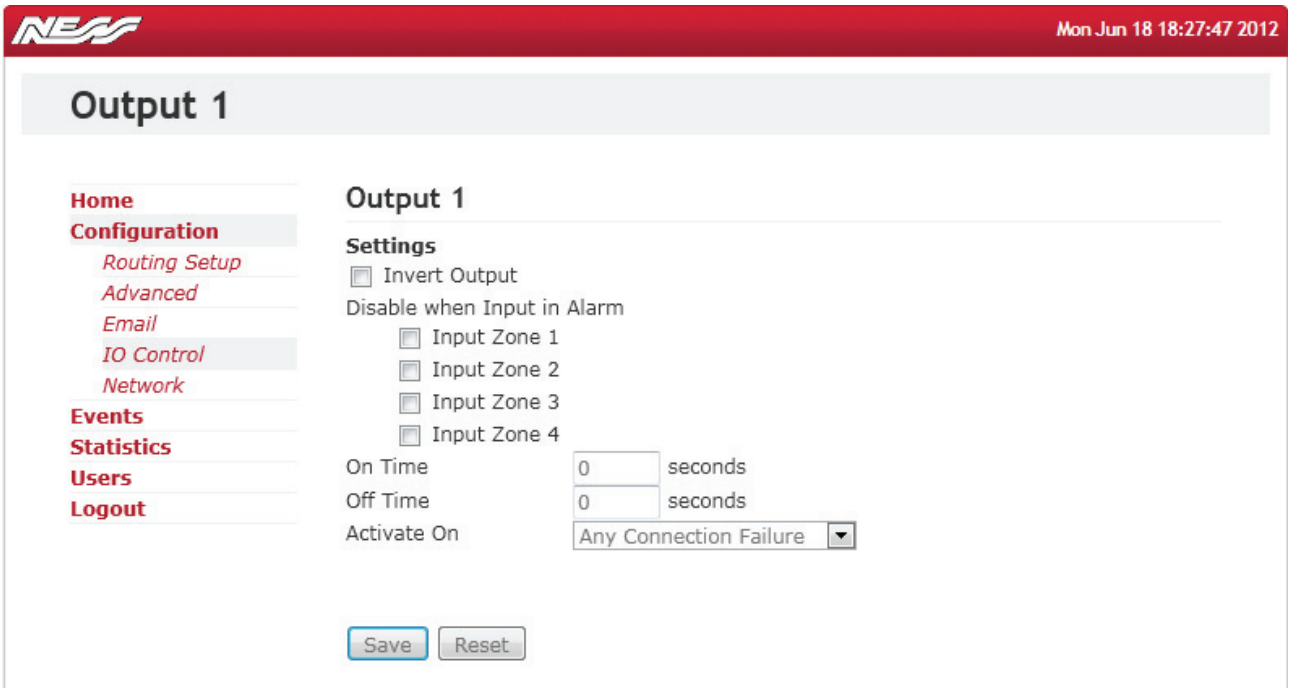
The 2 PGM Outputs each have a FORM C output relay. The connection example below shows the control of an external LED indicator.



PGM Connection (PGM 2 Shown)

Warning: Switching inductive loads that can produce high back EMF voltages or large voltage induced spikes can cause the NESS IPR Module to behave unexpectedly and should be avoided. A suitable isolation circuit must be installed between the relay contacts of the NESS APX Module and the inductive load.

The following diagram shows the various settings that can be applied to these 2 PGM outputs.



- **Invert Output**

  When enabled, the state of the output will be inverted.
- **On Time**

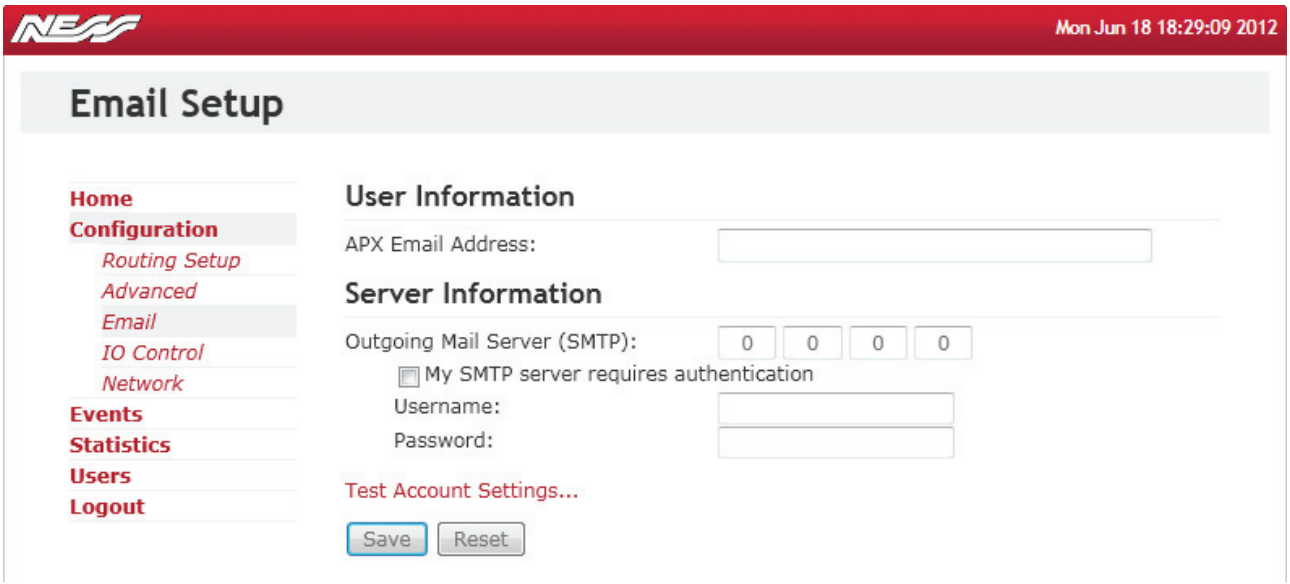
  When the On Time is configured to be non-zero, the output will activate for this number of seconds and then turn off. If the Off Time is also configured to be non-zero, the output will only remain off for the period of time set, before turning on again for the On Time. Configuring both the On and Off Time creates a pulsed output. The On Time can be configured with a value ranging from 0-255 seconds.
- **Off Time**

  When the On and Off Time are configured to be non-zero, the output will pulse on and off for the period of time set. The Off Time can be configured with a value ranging from 0-255 seconds.
- **Activate On**

  The output can be activated based on the selected failure. Below is a list of the available options:
  - Any Connection Failure
  - Any IP Connection Failure
  - Any PSTN Connection Failure
  - Primary IP Connection Failure
  - Both IP Connection Failure
  - Primary PSTN Connection Failure
  - Both PSTN Connection Failure
  - Primary Gateway Connection Failure

Web Interface - E-mail Setup

The NESS APX Module can send an E-mail to a selected address when an inbound message is received from the attached panel. If this option is being used the outgoing mail server (SMTP) must be set up. The e-mail is set up in the "Email" web pages in the NESS APX Module as shown in the diagram below.



To ensure the e-mails get through and are not stopped by spam filters, valid e-mail address must be entered. The NESS APX Module does not receive any e-mail, so you can use any active e-mail address.

The IP address of the SMTP server that is to be used needs to be entered. If the SMTP server is not provided by the ISP (Internet Service Provider) the NESS APX Module is using, then authentication will be required. Enter the username and password for the account into the appropriate fields on the web page shown above.

Once the settings are entered, click on **Test Account Settings…** This takes you to a new web page, where you will enter in your e-mail address and click send. The NESS APX Module will attempt to send an e-mail to the address previously specified. If it does not get through in a reasonable amount of time, please re-check your settings.

Duplicate Configuration

The NESS APX Module configuration can be uploaded and downloaded to allow easy duplication of the programming of the device. After the network settings for the NESS APX Module are defined, including IP address, subnet mask and gateway, all other settings can be downloaded from a configuration file.

Creating a Configuration File

To create a configuration file, set up a NESS APX Module with all the required settings. Open the Windows command prompt (Start->All Programs->Accessories->Command Prompt) and type in the following command using the IP address of the NESS APX Module:

```
tftp –i 192.168.1.2 GET config.bin
```

This will create a file called "config.bin" in the same directory where you typed in the command. This file is the default configuration file you can download to any other NESS APX Module.

Downloading a Configuration File

Once a configuration file has been created, it can be downloaded to any other NESS APX Module. Open the Windows command prompt (Start > All Programs > Accessories > Command Prompt) and change to the directory where the configuration file has been saved. Type in the following command using the IP address of the NESS APX Module:

```
tftp –i 192.168.1.2 PUT config.bin
```

Restart the NESS APX Module for the new configuration to take effect.

Web User Management

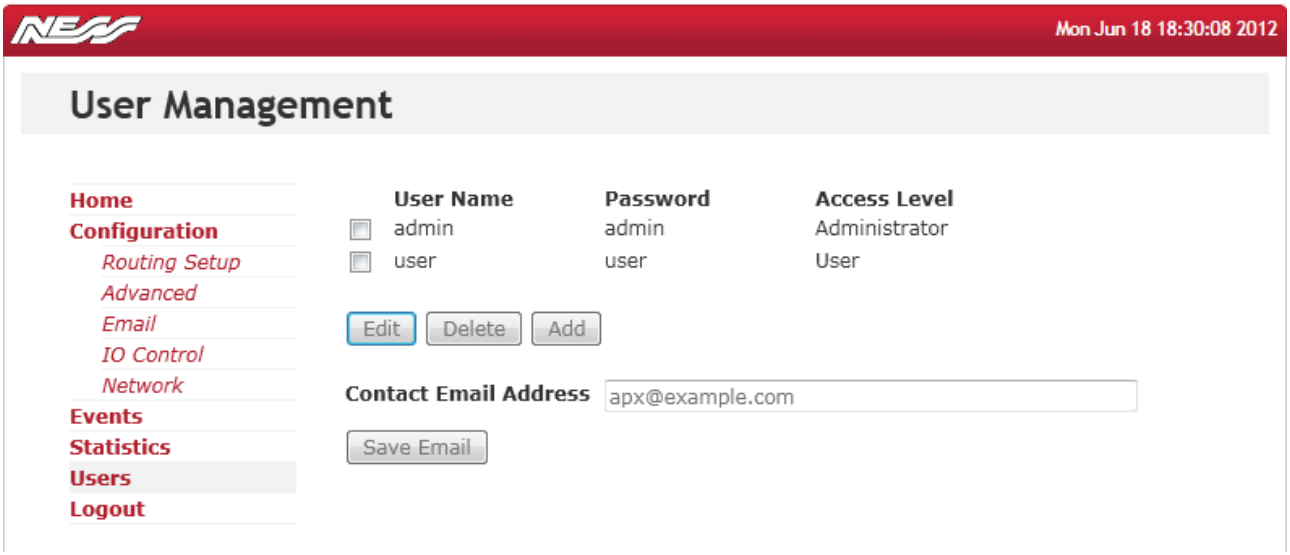
To access any web pages in the NESS APX Module, the user must be logged in. The NESS APX Module supports up to 4 users with 2 different access levels.

Setup

To add or edit users to the NESS APX Module, navigate to the User Management web page. To do so, you must be logged in as an Administrator user. To add a new user, simply click the **Add** button, upon which a new page will be opened. Enter in the details of the new user here and click Save.

To edit an existing user, click on the appropriate checkbox and then click **Edit**. This will open a new page where you can edit the user's settings.

To delete a user, again select the appropriate checkbox and click **Delete**. The NESS APX Module will not delete Administrative users, so they are not accidentally deleted leaving no valid login. If you wish to delete an Administrator, first edit the user and change their access level to None or User, and then delete the user.



The default admin user cannot be deleted from the system. To ensure the security of your NESS APX Module, please make sure you change the password for this user account from the default.

Access Levels

The NESS APX Module supports 2 access levels, Administrator and User. When logged in with an Administrator account, the user can access all pages and change any parameter. In comparison, the User access level only allows access to the home page and to the events web page.

Default Users

The NESS APX Module comes with two default users:

Username	Password	Access Level
admin	admin	Administrator
user	user	User

IP Troubleshooting

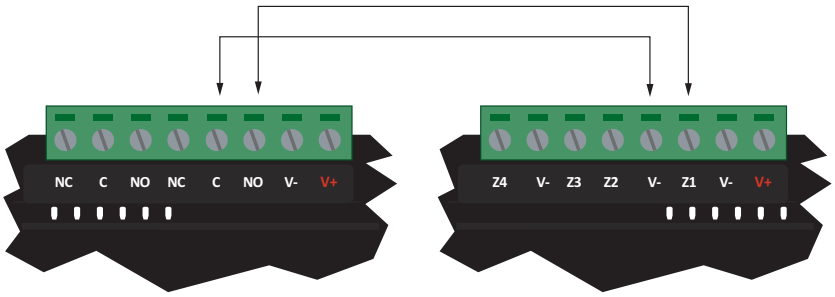
In the event of the IP address of NESS APX Module becoming unknown, the following 3 modes will allow you to re-establish Ethernet connection to the NESS APX Module.

In order to enter any of the IP Troubleshooting modes, Relay 1 on the NESS APX Module will enable briefly on startup. To prevent this from occurring, ensure that at least one of the zone inputs is wired directly to V-.

Default Static IP Address Mode

To change the IP address to a static address of 192.168.1.2 and a subnet mask of 255.255.255.0 complete the following steps:

1. Connect the terminals for Zone 1 and NO of Relay 1 together. Repeat the procedure for the V- and C terminals as shown in the diagram below.

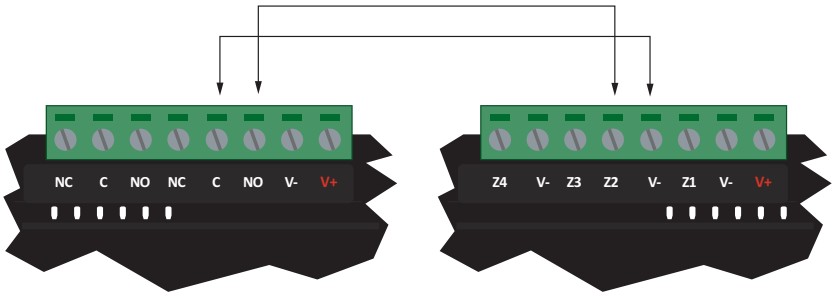


2. Enable DC supply to the NESS APX Module.

DHCP IP Address Mode

The NESS APX Module support Dynamic IP Address Allocation (DHCP). To use this, there must be a DHCP server on the network you are attempting to connect to. If you cannot select DHCP from the web interface, complete the following steps:

1. Connect the terminals for Zone 2 and NO of Relay 1 together. Repeat the procedure for the V- and C terminals as shown in the diagram below.

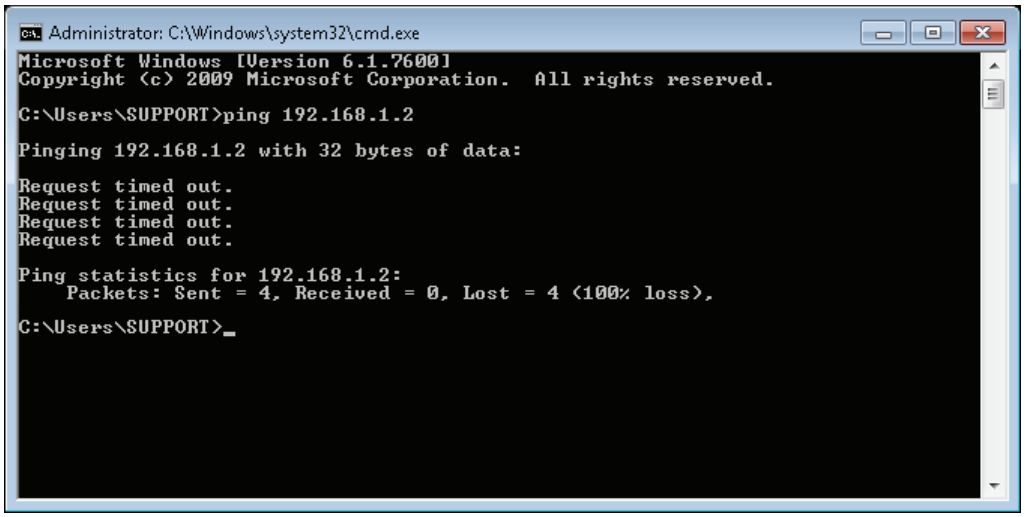


2. Enable DC supply to the NESS APX Module.

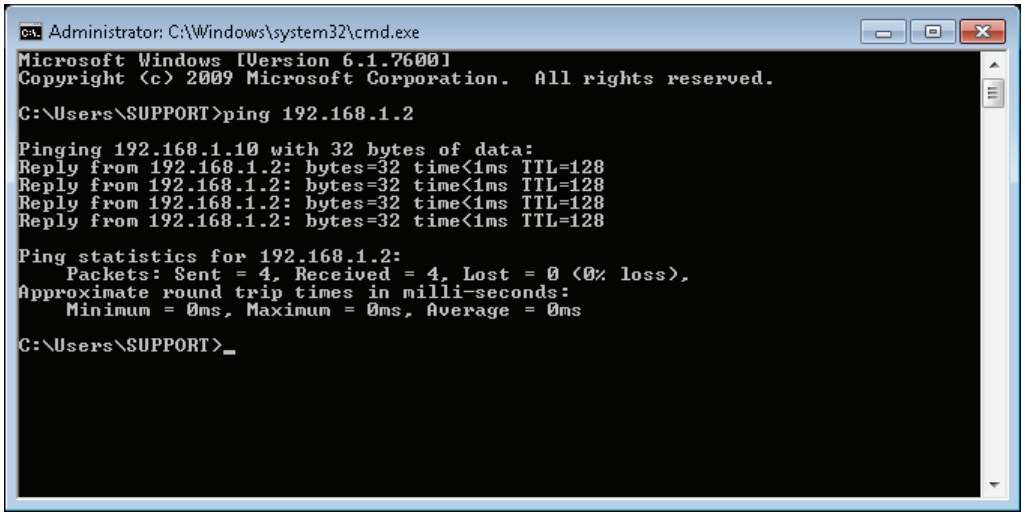
Confirm IP Address via Command Line

Ping is an application that runs in Microsoft Windows and is a very useful tool for helping to diagnose an IP address related issue. It can be used to test a connection with the NESS APX Module. The following instructions detail how to ping a device:

1. Open a command prompt (Click Start->Run, then type "cmd" into this window and click "OK").
2. Type `ping 192.168.1.2` into the command prompt and press ENTER.
3. Wait for the command prompt to respond. The first of the images below shows a ping attempt where the IP address was not found. The second image shows a successful ping attempt where the IP address was found.



Console screenshot of a Ping where the IP address cannot be found

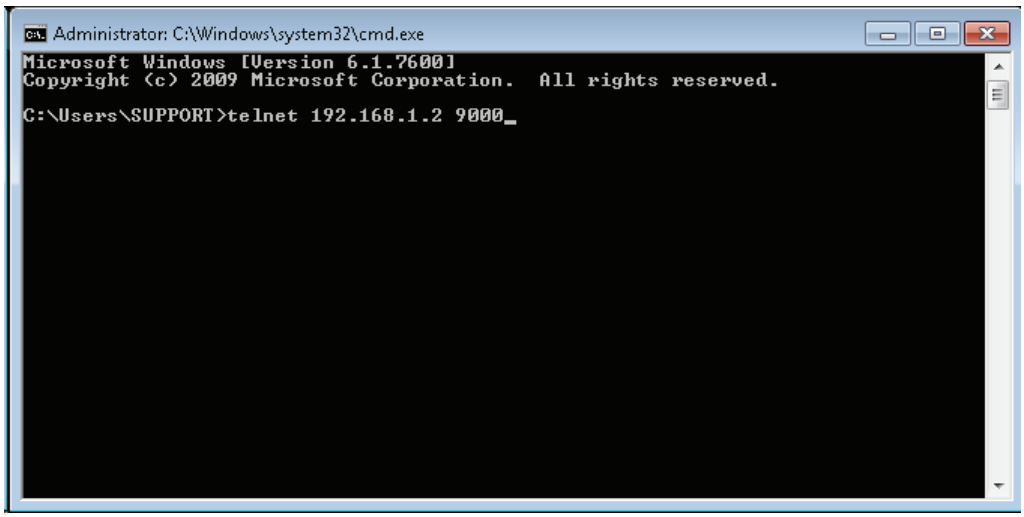


Console screenshot of a Successful Ping

Command Line Interface

The NESS APX Module also provides a command line interface to help with setup diagnostics. This can be accessed through a Telnet session. The following instructions detail how to establish a Telnet session.

1. Open a command prompt (Click Start | Run, then type "cmd" into this window and click "OK").
2. Type **ping 192.168.1.2 9000** into the command prompt and press ENTER.
3. Wait for the command prompt to respond. The command prompt "ICTNET>" will come up when a connection has been established, as shown by the diagram below. To terminate the telnet session, type "exit" into the command prompt.



Starting a Telnet Session

To start using the RS485 interface, apply DC power to the NESS APX Module and connect the ACC-485 to both the NESS APX Module and an available serial port on your computer. Open a terminal program such as HyperTerminal or TeraTerm with the baud rate set to 38400 (38400, 8, n, 1). Press ENTER or ESC to get the command prompt.

It is recommended that only users with Telnet experience use this feature.

Command Line Interface Commands

Command	Example	Description
arp -1	arp -a	Lists all the entries in the ARP table (IP address and MAC address details)
arp -d	arp -d	Deletes the ARP cache. This is useful if the IP address of a device you are trying to talk to has changed.
boot	boot	Restarts the NESS APX in boot mode. Note that this will disable the command line interface.
default	default	Defaults the NESS APX to factory settings
dhcp	dhcp	Displays the DHCP client details
dhcp -d	dhcp -d	Starts the DHCP server discovery process. Note: This does not change the NESS APX into the DHCP mode. The IP address, subnet mask and default gateway values obtained during the discovery process will become the new settings used in network configuration web interface for static IP configuration when the NESS APX restarts.
emac	emac	Displays statistics for the Ethernet interface
exit	exit	Disconnects an active telnet session
ipconfig	ipconfig	Lists the details of the UIP setup, IP address, gateway, subnet mask etc
ipconfig -all	ipconfig -all	Extended IP configuration details
ping	ping 192.168.1.1	Sends a ping command to the selected IP address
restart	restart	Restarts the NESS APX
set ip	set ip 192.168.1.56	Sets the IP address. The NESS APX must be restarted for the change to take effect.
set gateway	set gateway 192.168.1.1	Sets the gateway address. The NESS APX must be restarted for the change to take effect.
set mask	set mask 255.255.0.0	Sets the subnet mask. The NESS APX must be restarted for the change to take effect.
set dnsl	set dnsl 1952.168.1.1	Sets the primary DNS server. The NESS APX must be restarted for the change to take effect
set ntpl	set ntpl 202.156.2.125	Sets the primary SNTP server. The NESS APX must be restarted for the change to take effect
sntp	sntp 202.156.2.125	Updates the time from the SNTP server at the given IP address. This can be used to confirm the SNTP server is working before you save it in the network configuration.
system	system	Displays the system details including serial number and software version
time	time	Displays the current time stored in the NESS APX

Command Line Interface Commands for the NESS APX Module

LED Indicators

The NESS APX Module includes comprehensive front panel diagnostic indicators that can aid the installer in diagnosing faults and conditions. In some cases an indicator may have multiple meanings depending on the status indicator display at the time.

Status Indicator

The Status indicator displays module status of the NESS APX Module.

State		Description
✓ ✓ ✓	Continuous slow flash	Module operating normally
✓	Constantly on	Module starting up

Fault Indicator

The Fault indicator LED is lit any time the module is operating in a non-standard mode.

State		Description
! ! !	Continuous slow flash	Module is in boot mode awaiting firmware update

Power Indicator

The Power indicator is lit whenever the correct module input voltage is applied across the N+ and N- terminals.

State		Description
~	Constantly on	Correct module input voltage applied
~	Constantly off	Incorrect module input voltage applied

Modem Indicator

The Modem indicator will show the status of the onboard modem.

State		Description
	Constantly on	Onboard modem is off hook
	Constantly off	Onboard modem is not active

Panel Indicator

The Panel indicator will show the status of the subscriber phone.

State		Description
	Constantly on	Subscriber phone is off hook
	Constantly off	Subscriber phone is not active

Ethernet Indicator

The Ethernet indicator will show the status of the ethernet connection.

State		Description
	Constantly on	"Live" ethernet connection detected
	Constantly off	No ethernet connection detected
	Continuous fast flash	Ethernet packet transmitted/received

Relay 1/Relay 2 Indicators

The Relay 1 and Relay 2 indicators will show the status of the lock output relay.

State		Description
	Constantly on	Relay output is **ON**
	Constantly off	Relay output is **OFF**

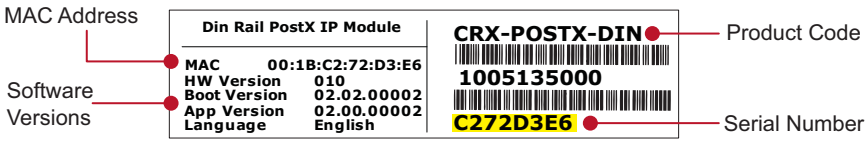
Zone Status Indicators

Whenever a zone input on the NESS APX Module changes state, the zone status will be displayed on the front panel indicator (1-4) corresponding to the physical input number (Z1-Z4). This allows you to easily walk test verification of zone inputs.

State		Description
1 1 1	Continuous fast flash	Zone is in a SHORT state
1	Constantly on	Zone is in a CLOSED state
1	Constantly on	Zone is in an OPEN state
1 1 1	Continuous fast flash	Zone is in a TAMPER state

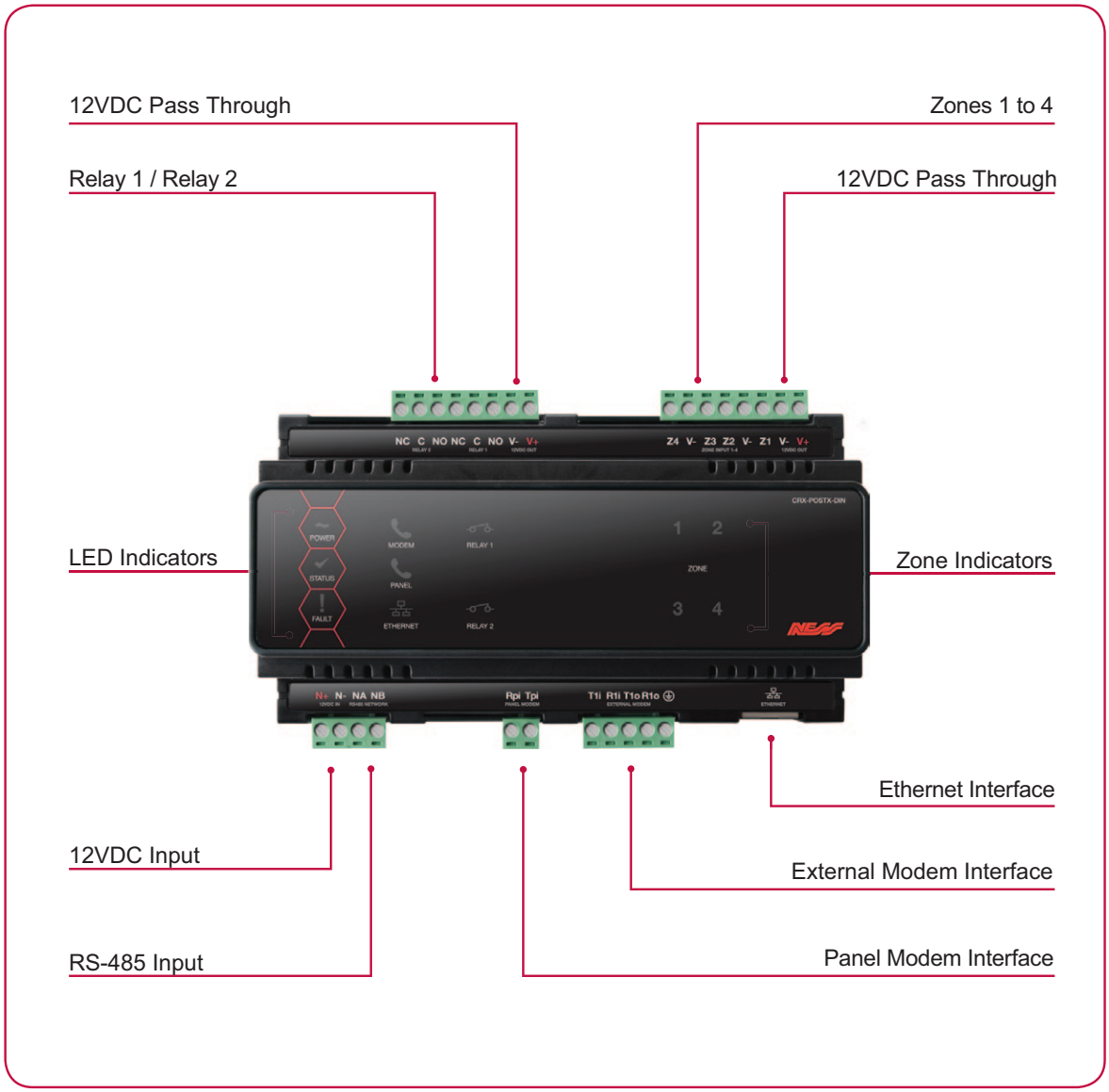
Identification Sticker Details

Every NESS APX Module has a unique identification sticker located on the unit. The identification sticker contains details that may be of use to you, such as the MAC address of the NESS APX Module. An example of the identification sticker is shown in the diagram below.



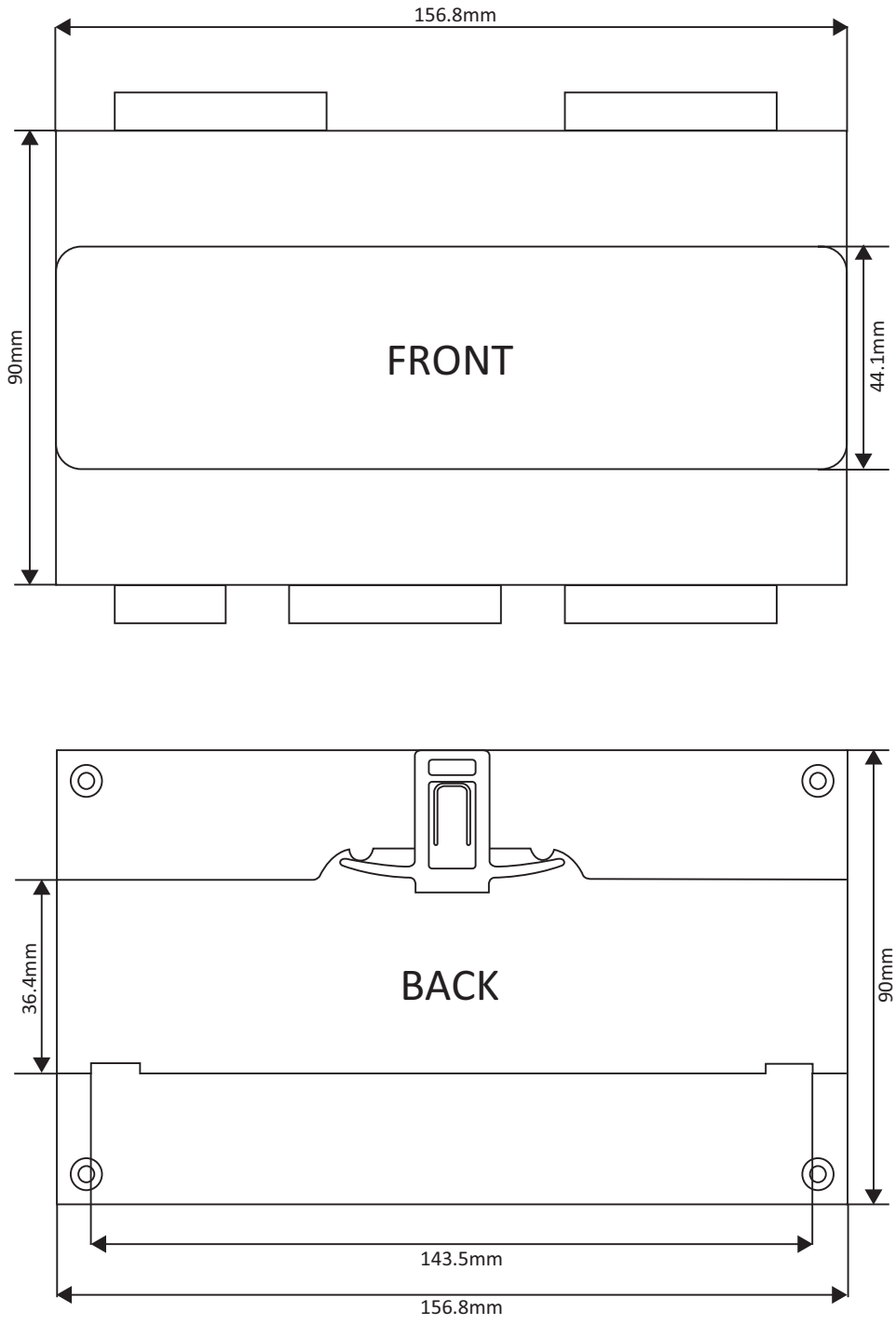
Mechanical Diagram

The mechanical diagram shown below outlines the essential details needed to help ensure the correct installation of the NESS APX Module.



Mechanical Layout

The mechanical layout shown below outlines the essential details needed to help ensure the correct installation of the NESS APX Module.



Technical Specifications

The following specifications are important and vital to the correct operation of the NESS APX Module. Failure to adhere to the specifications will result in any warranty or guarantee that was provided becoming null and void.

Power Supply	
DC Input Voltage	12VDC (+/-10%)
Operating Current	110mA (Typical)
	220mA (Peak, Panel Off Hook)
Low Voltage Cutout	8.7VDC
Low Voltage Restore	10.5VDC
Communication	
RS-485	RS485 Menu Interface
Ethernet	10/100 Auto Negotiation
Full PSTN Emulation	
Modem Security Reporting	
Outputs	
PGM Outputs	2 FORM C Relay Outputs, 7A 250V Max
Inputs	
Zone	4x
Dimensions	
Dimensions (L x W x H)	156.8 x 90 x 60mm (6.17 x 3.54 x 2.36")
Weight	453g (15.98oz)
Temperature	
Operating	5˚- 55˚ Celsius (41˚ - 131˚ Fahrenheit)
Storage	-10˚- 85˚ Celsius (14˚ - 185˚ Fahrenheit)
Humidity	0%-85% (Non-Condensing)

It is important that the unit is installed in a dry cool location that is not affected by humidity. Do not locate the unit in air conditioning or a boiler room that can exceed the temperature or humidity specifications.