

USER MANUAL

ECOM NANO™



TIECHE Engineered Systems

950 Enchanted Way, Suite 102

Simi Valley, CA 93065

Phone: +(888) 574 7330 Fax: +(805) 456 7767

Email: info@tiechesystems.com

Website: www.tiecheusa.com

Technology **I**ntegration for **E**nergy **C**onservation & **H**igher **E**fficiency

Document conventions

The following symbols are used to draw attention to important information.



The exclamation symbol is used to highlight material that requires caution or thought before implementation.



The light bulb symbol is used to highlight helpful information and practices.

Abbreviations

TCP/IP	: Transmission Control Protocol/Internet Protocol.
IP address	: Internet Protocol address.
SSL	: Secure Sockets Layer
LAN	: Local Area Network
NO/NC	: Normally Open/Normally Close.
I/O	: Input/Output.
LED	: Light Emitting Diode.
CSV	: Comma Separated Values.
CE	: European Conformity.
FCC	: Federal Communications Commission.
RoHS	: Restriction of Hazardous Substances Directive.
MAC address	: Media Access Control address.
SP	: Set Point.
DB	: Dead Band.
RTC	: Real Time Clock.
Sec	: Seconds.
Min	: Minutes.
IE	: Internet Explorer.
SMTP	: Simple Mail Transfer Protocol .
XML	: Extensible Markup Language.
+/-	: Positive (+)/Negative (-).
SNMP	: Simple Network Management Protocol. SNMP is widely used in network management for network monitoring.
WPA	: Wi-Fi Protected Access, a security protocols and security certification program developed by the Wi-Fi Alliance to secure wireless computer networks.
WPA2	: Wi-Fi Protected Access II, a security protocols and security certification program developed by the Wi-Fi Alliance to secure wireless computer networks.

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1 OVERVIEW

ECOM NANO is an IP based programmable controller that can be used for a variety of control, monitoring and energy conservation applications. The user friendly web based interface and advanced design of the ECOM NANO provide simple setup, installation and programming options. ECOM NANO combines the convenience of web access with real-time onboard control and data logging into a cost effective facility management system. ECOM NANO can be standalone or integrated to any IT or BAS platform by means of XML data exchange communication.

ECOM NANO has an expandable hardware architecture that can be scaled to meet the varying requirements of applications. Up to three expander boards per ECOM NANO can be added for increased point capacity (32 inputs and 36 outputs). In addition, the ECOM NANO supports a host of interfaces that include Bluetooth, Modbus, USB, RS485, Wi-Fi and GSM for wireless communications. Email, SNMP, and SMS handle system notifications and alarms while the onboard LCD display provides a local view of inputs, outputs, alarms and configurations.

ECOM NANO is technology rich with Ethernet ready hardware, built-in web server, and TCP/IP stacks that enable the controller to be accessible across Wired / Wireless LANs and the Internet. The static web pages are dynamically updated with real-time data of inputs/outputs, schedules, timers, counters, complex variables, kWh values and pseudo points. Integrated control logic enables control of output channels using custom, complex programming conditions.

This manual covers ECOM NANO features. Examples are used to help facilitate quick setup and functional use of the ECOM NANO.



1.1 GETTING STARTED

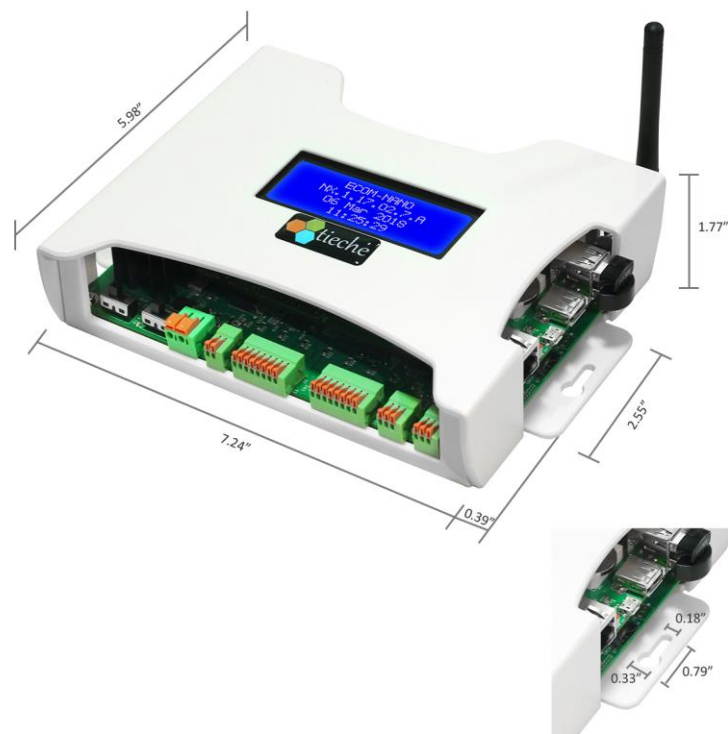
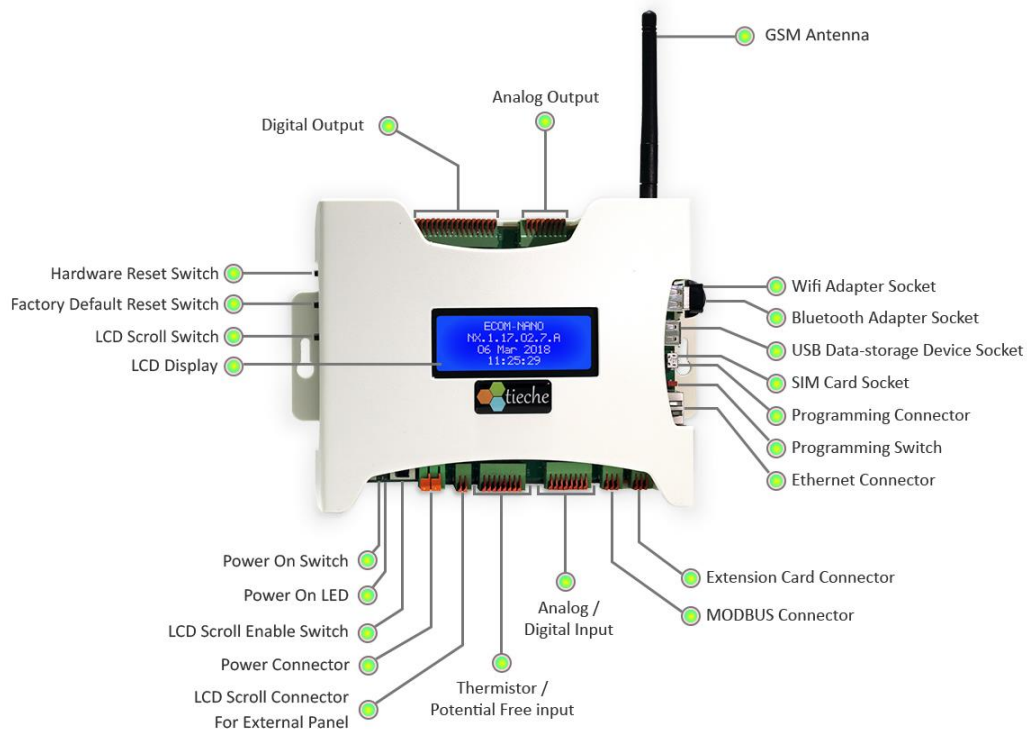
1.1.1 PACKAGE CONTENTS

The ECOM NANO is shipped ready to install. This package contains the below items.

1. ECOM NANO
2. Ethernet cable
3. Power supply
4. Mounting screws
5. Quick start guide



1.1.2 PHYSICAL LAYOUT AND DIMENSIONS



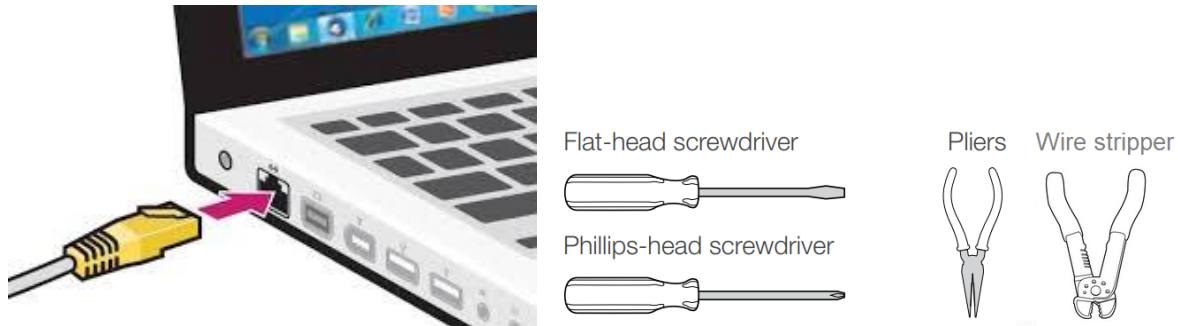
1.1.3 PRODUCT FEATURES

Protocol	64 Schedules
TCP/IP (IPv4 and IPv6)	Daily/Weekly/Monthly Schedules with selection option for holidays
DHCP: Dynamic Host Configuration Protocol	64 Alarms
Modbus: Supports RTU in master mode with up to 32 devices	Alarms with email and SMS notification
GSM: Global System for Mobile	64 kWh
XML: Extensible Markup Language	kWh calculator for single phase and three phase
SNMP: Simple Network Management Protocol	44 Switching Table
SMTP: Provides standard email communication for broadcasting email alarms. Supports SSL security.	User programmable Switching Tables to control Digital Outputs and Events through simplified ladder logic
Inputs	4 Programs (P & PI Control)
4 selectable binary/10K (Type-II) thermistor inputs	Proportional/Proportional Integral (P/PI) programs for closed loop control
4 selectable voltage/binary inputs	8 Programs (T Basic)
Expandable through ECOM NANO-X expansion modules – maximum of 32 inputs	Custom program using T basic
Outputs	Supports up to 100 lines per Program
4 analog and 8 digital outputs	4 Dash Boards
Expandable through ECOM NANO-X expansion modules – maximum of 36 outputs	Custom dashboards with on board graphics
Security	Backup/Restore
SSL	Simple Backup & Restore functions via USB
User Access	Data logging
3 password protected user access levels	Live data logging for up to 8 points
Up to 10 user accounts	On board memory data log
128 Counters	USB data log
64 Time based Counters with reset option	CSV download option
64 Event based Counters with reset option	Data log graphing capability
64 Timers	Alerts
Event based Timers with reset option	Controller power on alert email
64 Complex Variables	Alarm email notification
Values calculated through mathematical functions +, -, *, /, (), Sum, Product, Median, Avg, Min, Max	Alarm SMS notification
32 Events	Alarm notification on web pages
Events (Pseudo digital points)	SNMP
4 Global Variables	Recovery
Network shareable values for integrated control between multiple ECOM NANO controllers	Factory default reset option
64 Set Points	Warranty
Fixed as well as variable Set Points	2 Years
	Certification
	RoHS
	CE
	FCC Part 15-Subpart B-Class A

2 INSTALLATION

2.1 REQUIREMENTS

The ECOM NANO requires a PC with an Ethernet connection for programming and basic tools for mounting and installing the ECOM NANO.



2.2 UNPACKING

To begin the installation process, unpack the contents of the box. The package contains the below items.

1. ECOM NANO
2. Ethernet cable
3. Power supply
4. Mounting screws
5. Quick start guide



2.3 INSTALLATION & POWER CONNECTION

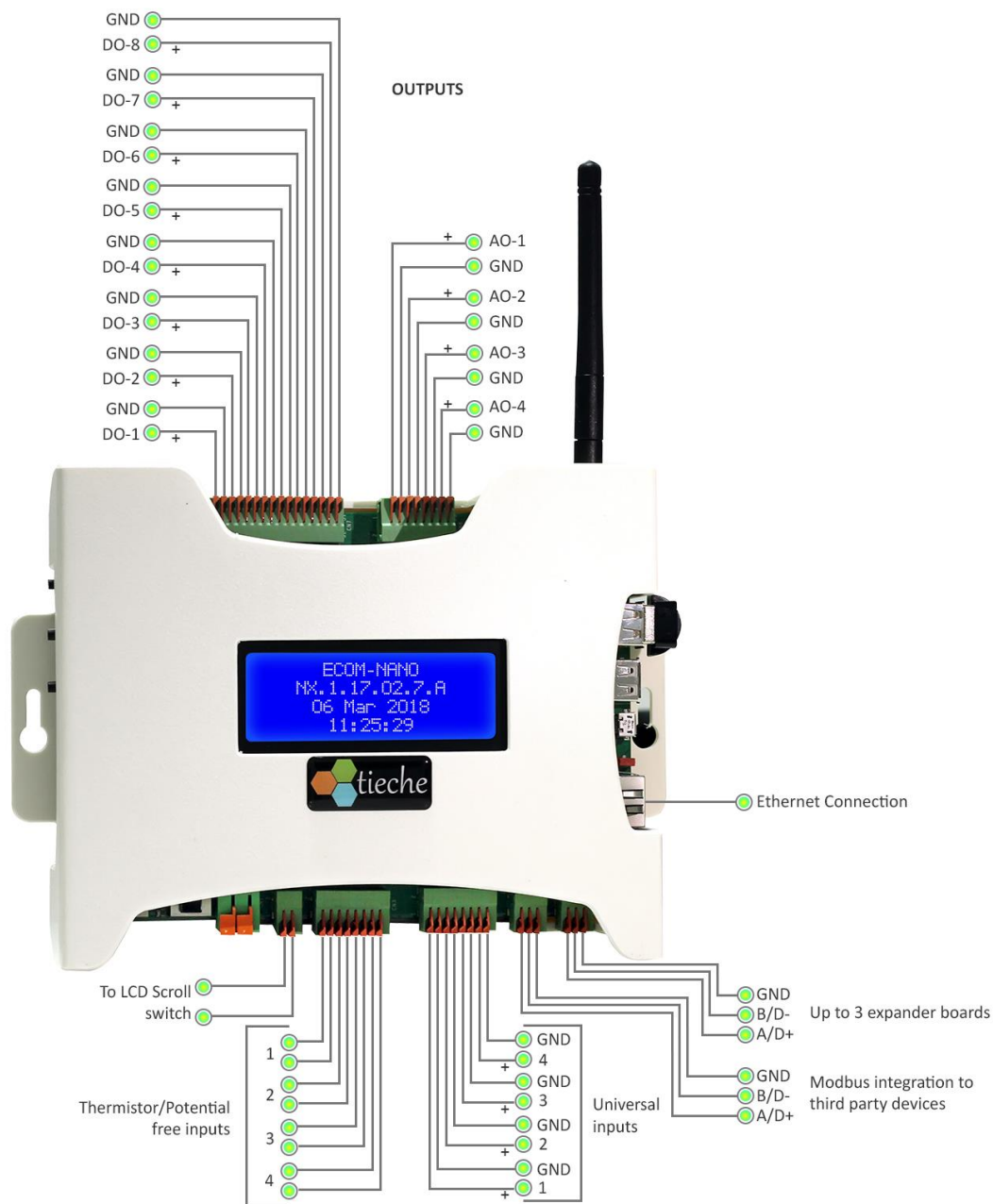


- Disconnect power supply before installation to prevent electrical shock and equipment damage.
- Make all connections in accordance with national and local electrical codes. Use stranded copper conductors only.
- Use electrostatic discharge precautions (e.g., use of wrist straps) during installation and wiring to prevent equipment damage.
- Avoid locations where severe shock or vibration, excessive moisture or corrosive fumes are present.
- Power supply should not exceed 12.6 VDC.
- Digital and Analog input should not exceed 10 VDC.

- Secure the ECOM NANO module to the wall using screws.
- Connect 12 VDC positive (+) and negative (-) wires to the power connector.
- Toggle the power switch to the ON position. The power LED will turn ON.
- It takes approximately 20 seconds for ECOM NANO to boot up. Once ready, the LCD screen will display the following screen.



2.4 WIRING DIAGRAM



3 COMMUNICATION

3.1 SETTING UP ECOM NANO

Power on the ECOM NANO, connect the Ethernet cable from ECOM NANO to the PC directly or via Ethernet switch.

ECOM NANO and PC direct connection



ECOM NANO and PC connection through Ethernet switch

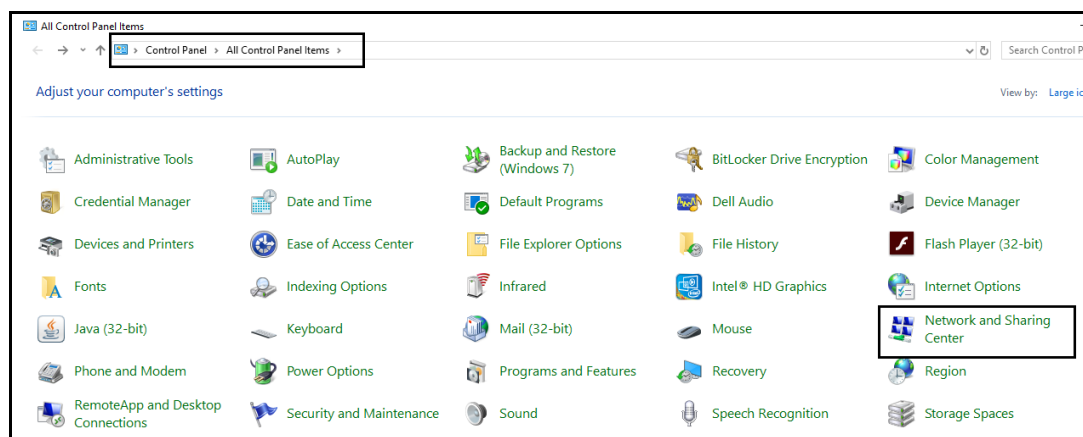


3.2 SETTING UP THE PC

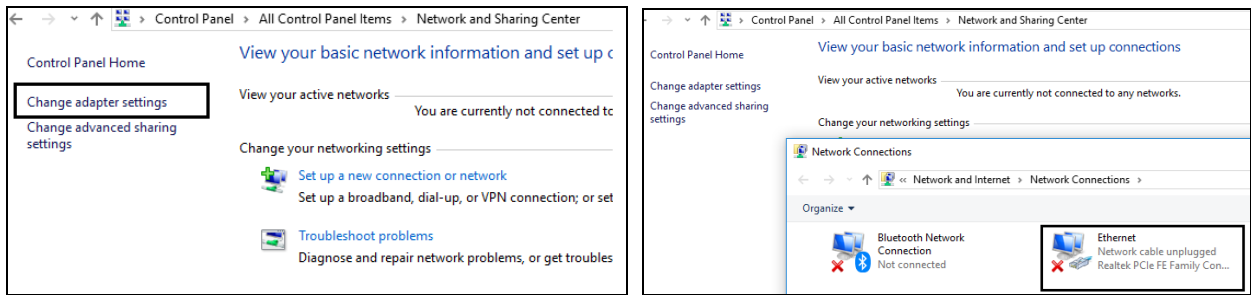


The pictures shown below are with reference to Microsoft Windows 10. The settings may vary for different versions of Windows.

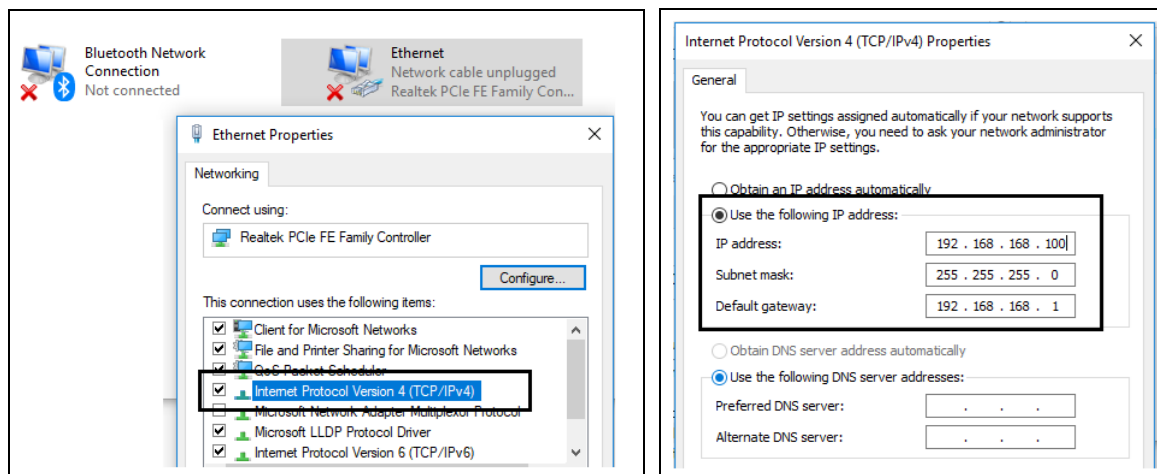
From the Windows start menu, go to Control Panel and click Network and Sharing Center.



Open Change adapter settings and double click on Ethernet adapter.



Double click on Internet Protocol Version 4(TCP/IPv4) and select “Use the following IP address”.



The default IP address of the controller is 192.168.168.99. Configure PC with the IP configuration shown in the above picture.

DNS server is not required for initial setup. These fields can be left blank.

Click OK and Close out of the Network Connections.

4 USER INTERFACE

4.1 LOGIN



Browser compatibility – IE 11 & above, latest versions of Google Chrome, Safari and Mozilla Firefox

Launch web browser and enter 192.168.168.99 (default controller IP address) in the address bar.

Enter the default username and password and click

Login

User name : admin

Password : default@EcOM\$

Once logged in, go to network settings page of ECOM NANO and change the IP Address (Refer to section *Error! Reference source not found.*)

4.2 LOGOFF

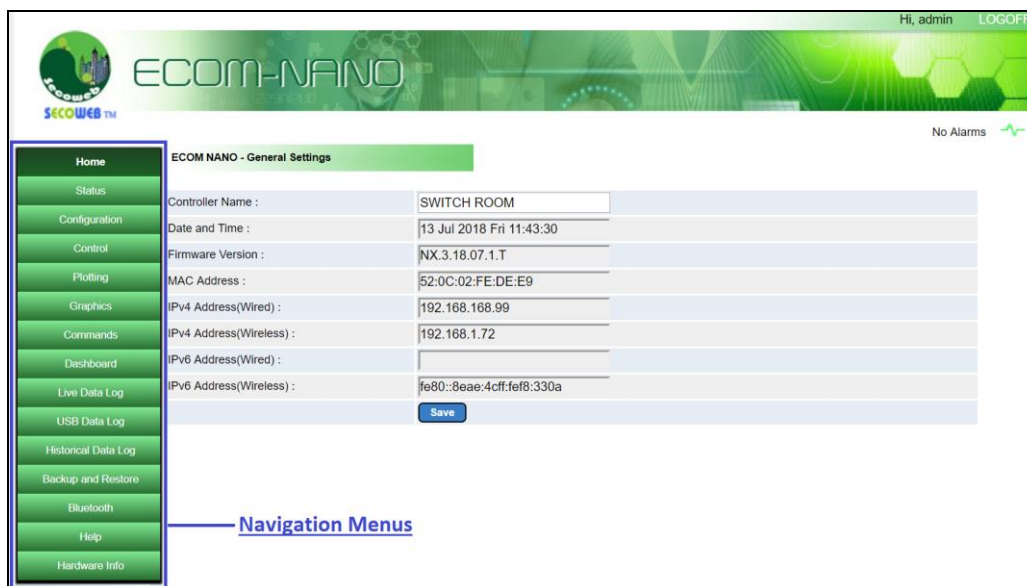
Use the **LOGOFF** to log out the application.

Use LOGOFF on any page to exit application.

ECOM NANO - General Settings	
Controller Name :	SWITCH ROOM
Date and Time :	13 Jul 2018 Fri 11:30:04
Firmware Version :	NX.3.18.07.1.T
MAC Address :	52:0C:02:FE:DE:E9
IPv4 Address(Wired) :	192.168.168.99
IPv4 Address(Wireless) :	192.168.1.72
IPv6 Address(Wired) :	
IPv6 Address(Wireless) :	fe80::8ae:4cff:fe8:330a
Save	

4.3 HOME

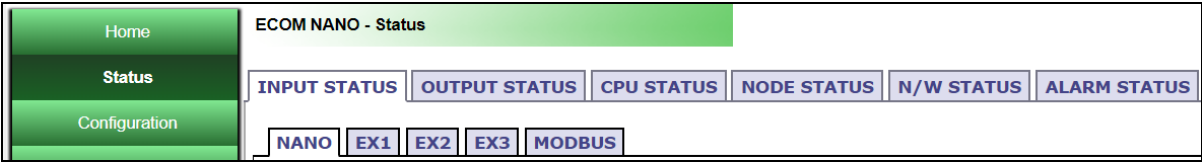
Successful login displays the home page with the general settings for the ECOM NANO.



- Controller Status : Controller Online 
: Controller Offline 
- Alarm Status : Active Alarms  . Click to navigate to alarm page
: No Alarms **No Alarms** . Click to navigate to alarm page
- Controller Name : Change controller name by entering a new name and click 
- Date and Time : Date and Time (24 hour format)
- Firmware Version : Firmware Version
- MAC Address : MAC Address
- IPv4 Address(Wired) : Current wired IPv4 Address
- IPv4Address(Wireless): Current Wireless IPv4 Address
- IPv6 Address(Wired) : Current Wired IPv6 Address
- IPv6 Address(Wireless): Current Wireless IPv6 Address

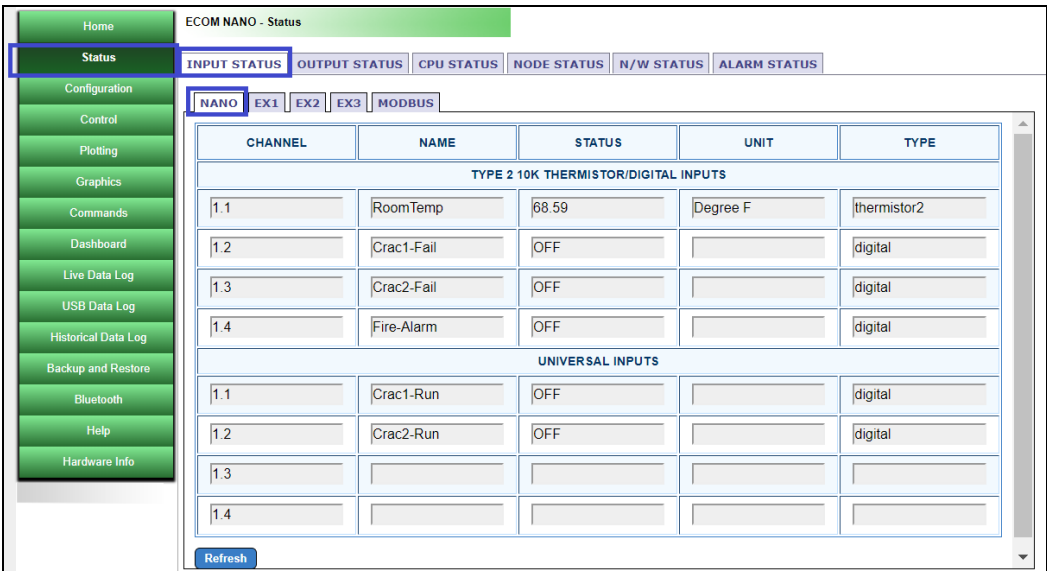
4.4 STATUS

This section displays the real-time status of the following.

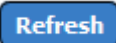


4.4.1 INPUT STATUS - NANO

Displays real-time status of the configured ECOM NANO inputs.
Go to **Configuration** menu to configure inputs.

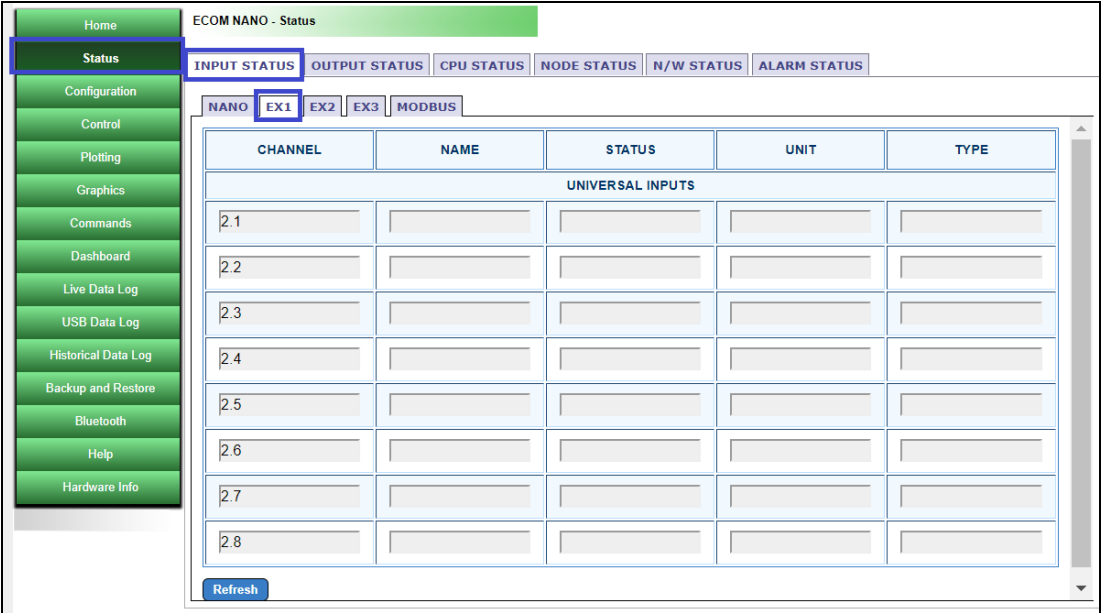


- CHANNEL : Channel number.
- NAME : Channel name.
- STATUS : Status/Value of the channel.
- Unit : Unit of measure of the channel.
- Type : Type of the channel – thermistor/digital/5V/10V

Click  to refresh this page.

4.4.2 EX1/EX2/EX3

Displays real-time status of the configured inputs in expansion modules.
Go to **Configuration** menu to configure inputs.

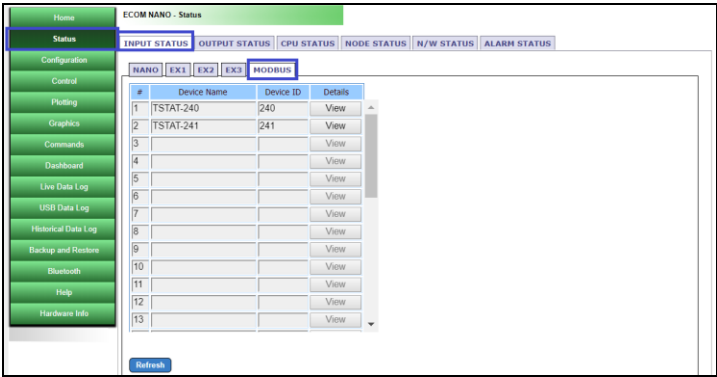


- CHANNEL : Channel number.
- NAME : Channel name.
- STATUS : Status/Value of the channel.
- Unit : Unit of measure of the channel.
- Type : Type of the channel – digital/5V/10V

Click  to refresh this page.

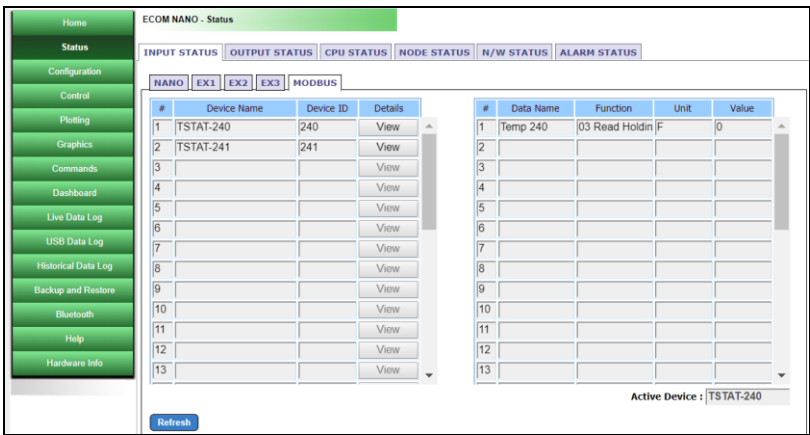
4.4.3 MODBUS

Displays real-time status of the configured MODBUS points.
Go to **Configuration** menu to configure inputs.



- Device Name : Device Name.
- Device ID : Device ID.

Click [View](#) to display the corresponding modbus device status.



- Data Name : Name of Modbus point.
- Function : Modbus functions
 - 01 Read Coil Status,
 - 02 Read Input Status
 - 03 Read Holding Registers,
 - 04 Read Input Registers
 - 05 Force Single Coil,
 - 06 Preset Single Register
 - 15 Force Multiple Coils,
 - 16 Preset Multiple Registers
- Unit : Unit of measure.
- Value : Value of the point.
- Active Device : Name of the active device.

Click [Refresh](#) to refresh this page.

4.4.4 OUTPUT - NANO

Displays real-time status of the configured ECOM NANO outputs.
Go to **Configuration** menu to configure outputs.

ECOM NANO - Status

Home | **Status** | Configuration | Control | Plotting | Graphics | Commands | Dashboard | Live Data Log | USB Data Log | Historical Data Log | Backup and Restore | Bluetooth | Help | Hardware Info

INPUT STATUS | **OUTPUT STATUS** | CPU STATUS | NODE STATUS | N/W STATUS | ALARM STATUS

NANO | EX1 | EX2 | EX3 | MODBUS

☒ Analog ☐ Digital

CHANNEL	NAME	STATUS	UNIT	TYPE	CONTROL	VALUE (%)	EXECUTE	DATA LOG
1.1	Damper	0.00	Percentage	analog-fixed	manual ▼		Execute	disabled
1.2					auto ▼		Execute	
1.3					auto ▼		Execute	
1.4					auto ▼		Execute	

Analog Output Status

ECOM NANO - Status

Home | **Status** | Configuration | Control | Plotting | Graphics | Commands | Dashboard | Live Data Log | USB Data Log

INPUT STATUS | **OUTPUT STATUS** | CPU STATUS | NODE STATUS | N/W STATUS | ALARM STATUS

NANO | EX1 | EX2 | EX3 | MODBUS

☒ Analog ☐ Digital

CHANNEL	NAME	STATUS	UNIT	TYPE	CONTROL	VALUE (%)	EXECUTE	DATA LOG
1.1	Damper	0.00	Percentage	analog-fixed	manual ▼		Execute	disabled
1.2					auto ▼		Execute	
1.3					auto ▼		Execute	
1.4					auto ▼		Execute	

- CHANNEL : Channel number.
- NAME : Channel name.
- STATUS : Status/Value of the channel.
- UNIT : Unit of measure of the channel.
- TYPE : Type of the channel – analog/analog-fixed.
- CONTROL : Select Auto/Manual
- VALUE (%) : Change CONTROL to Manual and enter VALUE in %.
- Click **Execute** to apply the VALUE. The STATUS changes to the new value.

Digital Output Status

CHANNEL	NAME	STATUS	UNIT	TYPE	CONTROL	VALUE	EXECUTE	DATA LOG
D1.1	CRAC1_Rur	OFF		digital	auto ▼		Execute	enabled
D1.2	CRAC2_Rur	OFF		digital	auto ▼		Execute	enabled
D1.3	CRAC3_Rur	OFF		digital	auto ▼		Execute	disabled
D1.4	Fan1	OFF		digital	manual ▼	ON ▼	Execute	disabled
D1.5	Cool1	OFF		digital	manual ▼	ON ▼	Execute	disabled
D1.6	Heat1	OFF		digital	auto ▼		Execute	disabled
D1.7	Filter1	OFF		digital	manual ▼	ON ▼	Execute	disabled
D1.8					auto ▼		Execute	

- CHANNEL : Channel number.
- NAME : Channel name.
- STATUS : Status/Value of the channel.
- UNIT : Unit of measure of the channel.
- TYPE : Type of the channel – digital.
- CONTROL : Select Auto/Manual.
- VALUE : Change CONTROL to Manual and select VALUE (ON/OFF).
- DATALOG : Datalog enabled/disabled.
- Click **Execute** to apply the VALUE. The STATUS changes to the new value.



Digital points are controlled using SWT (Switching Table) and ASI (T-Script).
 Analog points are controlled using PGM (Programs) and ASI (T-Script).
 Output need to be in Auto mode to be controlled using Switching Tables, Programs and Scripts.

4.4.5 EX1/EX2/EX3

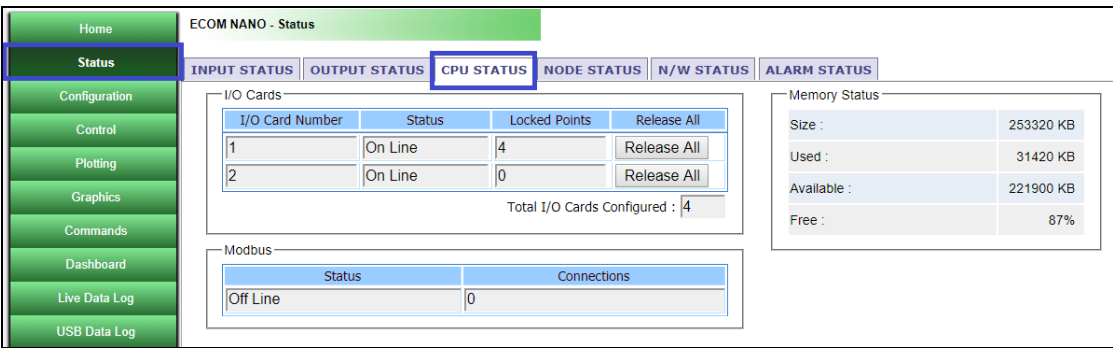
Displays real-time status of the configured outputs in expansion modules.
Go to **Configuration** menu to configure outputs.

CHANNEL	NAME	STATUS	UNIT	TYPE	CONTROL	VALUE (%)	EXECUTE	DATA LOG
2.1					auto ▼		Execute	
2.2					auto ▼		Execute	
2.3					auto ▼		Execute	
2.4					auto ▼		Execute	
2.5					auto ▼		Execute	
2.6					auto ▼		Execute	
2.7					auto ▼		Execute	
2.8					auto ▼		Execute	

- CHANNEL : Channel number.
- NAME : Channel name.
- STATUS : Status/Value of the channel.
- UNIT : Unit of measure of the channel.
- TYPE : Type of the channel – analog/digital.
- CONTROL : Select Auto/Manual
- VALUE : Change CONTROL to Manual and enter VALUE in % if the output is Analog and ON/OFF if the output is Digital.
- DATALOG : Datalog enabled/disabled.
- Click **Execute** to apply the VALUE. The STATUS changes to the new value.

4.4.6 CPU

Displays the status of I/O cards, Memory and Modbus.



I/O Cards

- I/O Card Number : I/O card number - 1 represents ECOM NANO built-in I/O card. I/O card number – 2 to 4 represents expansion cards.
- Status : Online/Offline.
- Locked Points : Number of points in Manual mode.
- Total I/O-Cards Configured : Number of I/O card configured.
- Click [Release All](#) to release the points and change it to Auto mode.

Modbus

- Status : Online/Offline.
- Connections : Number of Modbus connections.

Memory Status

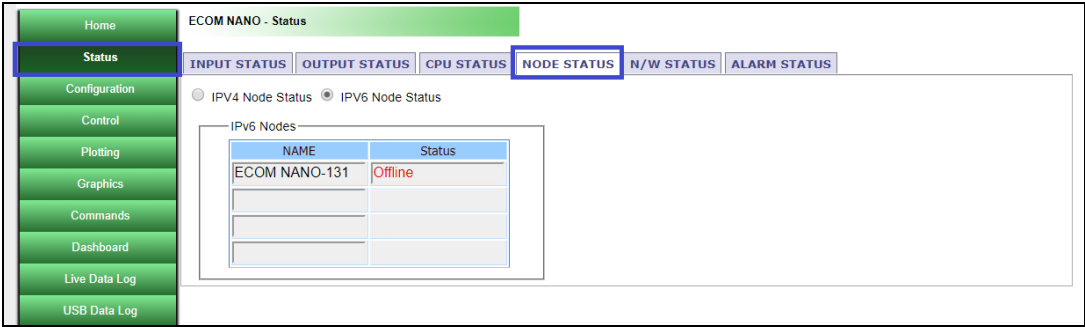
- Size : Total memory.
- Used : Used memory.
- Available : Available memory.
- Free : Percentage of free memory.



Locked points: Outputs configured in manual mode

4.4.7 NODE

Displays online/offline status of network devices.
Go to **Configuration** menu to configure Node.



Select IPv4 /IPv6 node status.

Name : Name of the node.
Status : Online/Offline.

4.4.8 NETWORK

Displays the following IPv4 and IPv6 wired/wireless network details.
Go to **Configuration** menu to configure Network.

Home	ECOM NANO - Status				
Status	INPUT STATUS	OUTPUT STATUS	CPU STATUS	NODE STATUS	N/W STATUS
Configuration	Interface	Wired	Wireless		
Control	MAC Address	52:0C:02:FE:DE:E9	8C:AE:4C:F8:33:0A		
Plotting	Status	OFF-LINE	ON-LINE		
Graphics	IPV4 Address	192.168.168.99	192.168.1.72		
Commands	IPV4 Subnet Mask	255.255.255.0	255.255.255.0		
Dashboard	IPV4 Gateway	192.168.168.1	192.168.1.1		
Live Data Log	IPV6 Address		fe80::8eae:4cff:fe8:330a		
USB Data Log	IPV6 Subnet Mask	0	0		
Historical Data Log	IPV6 Gateway				
Backup and Restore					

- MAC Address : Wired and wireless MAC address.
- Status : Wired and wireless network status - Online/Offline.
- IPV4 Address : Wired and wireless IPv4 network address.
- IPV4 Subnet Mask : Wired and wireless IPV4 subnet mask.
- IPV4 Gateway : Wired and wireless IPv4 gateway.
- IPV6 Local Address : Wired and wireless IPv6 local address.
- IPV6 Subnet Mask : Wired and wireless IPV6 subnet mask.
- IPV6 Gateway : Wired and wireless IPv6 gateway.

4.4.9 ALARM

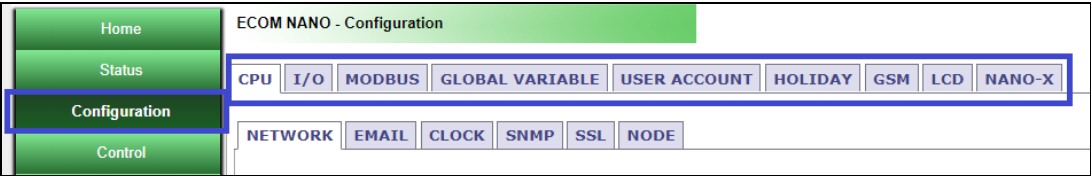
Displays Alarm status.
Go to **Control** menu to configure Alarm.

Home	ECOM NANO - Status					
Status	INPUT STATUS	OUTPUT STATUS	CPU STATUS	NODE STATUS	N/W STATUS	ALARM STATUS
Configuration	#	Name	Status	Level	Time	
Control	1	FireAlarm	Alarm	Critical	13-Jul-2018 11:50:15	
Plotting						
Graphics						

- Name : Alarm name.
- Status : Status of alarm - Alarm/Normal.
- Level : Alarm level – Critical/High/Medium/Low.
- Time : Time of status change.

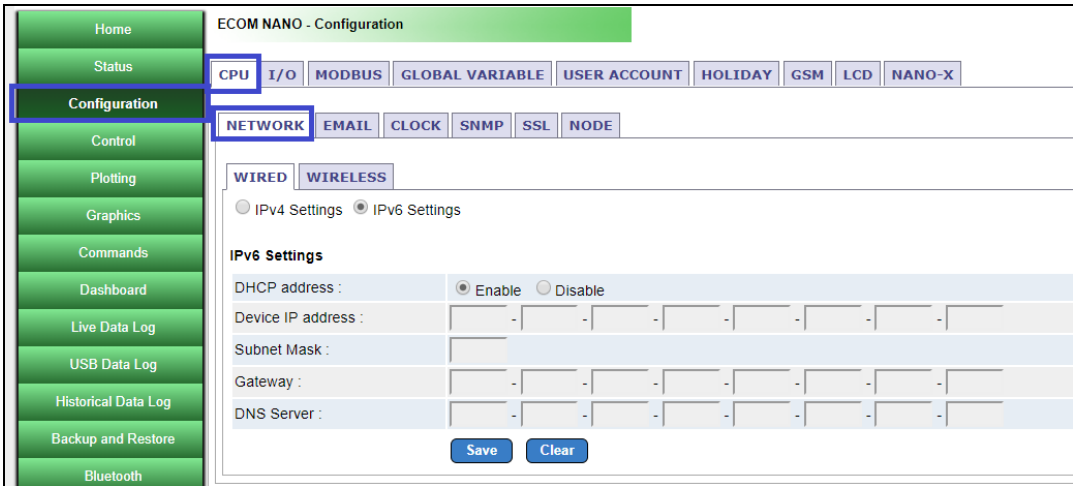
4.5 CONFIGURATION

This section is used to configure the following.



4.5.1 CPU - NETWORK

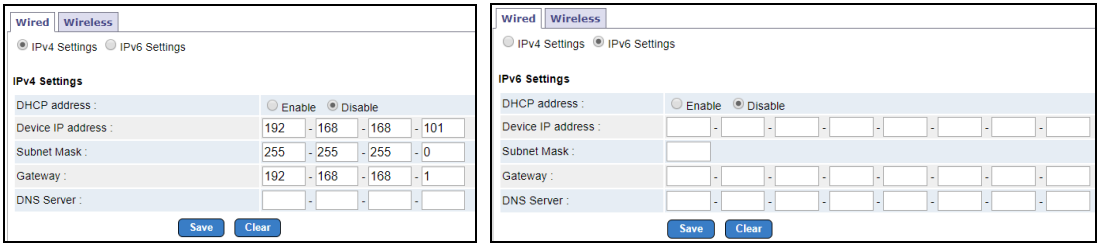
This section is used to configure wired(IPv4/IPv6)and wireless(IPv4/IPv6) network settings.



4.5.1.1 WIRED (IPv4/IPv6)

This section is used to configure wired IPv4/IPv6 network settings.

Static IP address configuration



- Select DHCP Disable for DHCP Address.
- Enter the IPv4/IPv6 address, Subnet Mask, Gateway and DNS Server (Optional).
- Click  .

Connect the controller and PC to the network having the same IP address range of ECOM NANO.

Restart ECOM NANO. Type in the newly configured IP address in the browser to access the controller.

Dynamic IP address configuration



The only way to identify the IP address of the ECOM NANO once it is set to DHCP is by means of the email sent out during boot up of the controller. Make sure the email settings are properly configured and working before changing the settings to DHCP.

- Select DHCP Address Enable and click .
- Restart ECOM NANO. Type in the dynamically assigned IP address from the boot up email to access the controller.

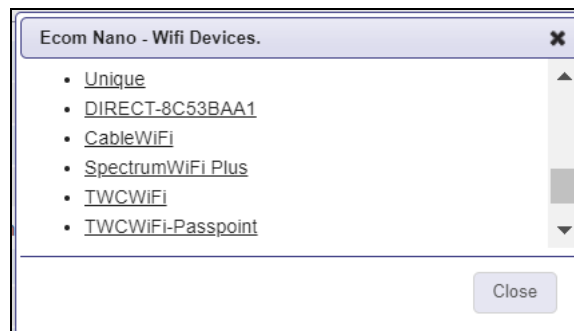
For sample boot up email refer **APPENDIX C – EMAIL SAMPLES.**

4.5.1.2 WIRELESS (IPv4/IPv6)

This section is used to configure wireless IPv4/IPv6 network settings.

Static IP address configuration

- Click . Select wireless network from the list.



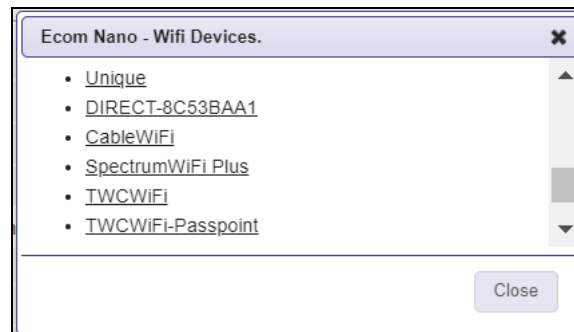
- Select security and provide password (WPA/WPA2)
- Enter WiFi password.
- Confirm password.
- Select IPv4/IPv6 Settings
- Select DHCP Address Disable.
- Provide the IPv4 address, Subnet Mask, Gateway and DNS Server (Optional).
- Click .
- Connect the controller and PC to the network having the same IP address range of ECOM NANO.
- Restart ECOM NANO. Type in the newly configured IP address in the browser to access the controller.

Dynamic IP address configuration



The only way to identify the IP address of the ECOM NANO once it is set to DHCP is by means of the email sent out during boot up of the controller. Make sure the email settings are properly configured and working before changing the settings to DHCP.

- Click . Select wireless network from the list.



- Select security and provide password (WPA/WPA2)
- Enter WiFi password.
- Confirm password.
- Select IPv4/IPv6 Settings
- Select DHCP Address Enable.
- Click .
- Connect the controller and PC to the network having the same IP address range of ECOM NANO.
- Restart ECOM NANO. Type in the dynamically assigned IP address from the boot up email to access the controller.

For sample boot up email refer APPENDIX C – EMAIL SAMPLES

4.5.2 EMAIL

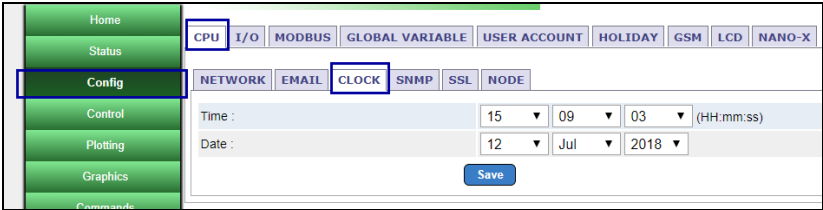
This section is used to configure email settings.

- SMTP Server Address : Enter SMTP server address.
- SMTP server authentication : Select if authentication is required for the email server.
- User name/Login name : Enter username for the account.
- Password : Enter password for the account.
- Name : Enter name of the sender.
- Email Address : Enter email address of the sender.
- Email #1 : Enter recipient1 email address. This email address is used to send boot up email and alarm emails.
- Email #2 : Enter recipient2 email address. This email address is used to send boot up email and alarm emails (Not mandatory).
- Click  .
- Click  to remove email settings.
- Click  . A test email is sent to the recipient email address.

For sample test email refer APPENDIX C – EMAIL SAMPLES.

4.5.3 CLOCK

This section is used to configure time and date.

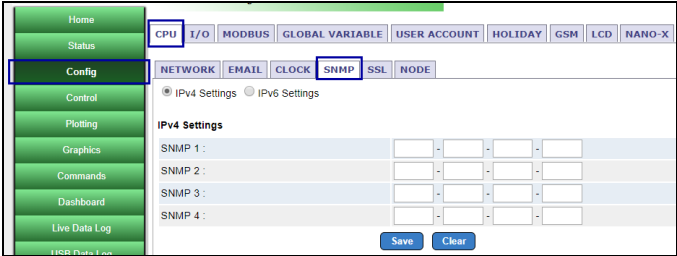


- Set time.
- Set date.
- Click .

New date and time is displayed on the Home page.

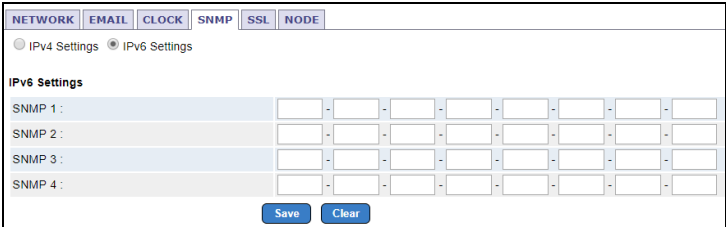
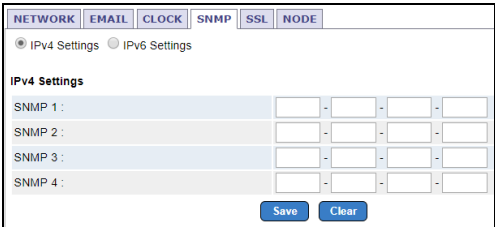
4.5.4 SNMP

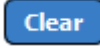
This section is used to configure up to four IP addresses (IPv4 /IPv6) to which SNMP messages is sent.



Once alarm is triggered, ECOM NANO sends SNMP messages.

IPv4/IPv6 Settings



- Enable IPv4/IPv6 Settings.
- Enter IPv4/IPv6 address.
- Click .
- Click  to remove SNMP IP addresses.

4.5.5 SSL

This section is used to upload SSL certificate and key file for secure web access.

- Click **Browse...** to select SSL key
- Click **Browse...** to select SSL certification
- Click **Upload**.

4.5.6 NODE

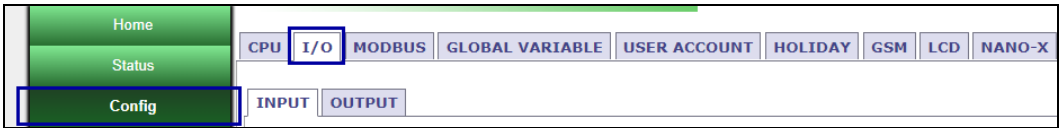
This section is used to configure up to four networked devices. ECOM NANO continuously monitors the devices and display the status as Online/Offline in Node Status page.

IPv4/IPv6 Nodes

- Select the IPv4/IPv6 Setting
- Enter the node name(15 characters) and IPv4/IPv6 address
- Click **Save**.

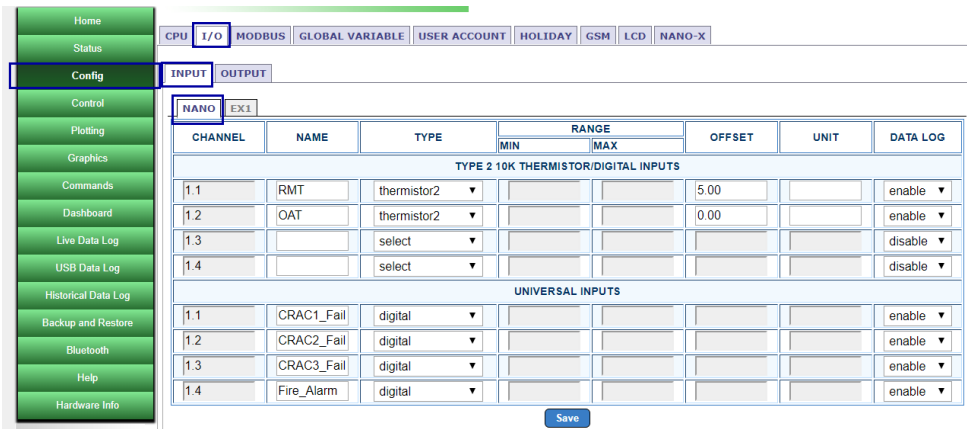
4.5.7 I/O

This section is used to configure inputs and outputs.



4.5.7.1 INPUT - NANO

This section is used to configure ECOM NANO inputs.



- NAME : Enter name of the input (up to 30 characters).
- TYPE : Select Analog 5V, Analog 10V, Digital, Thermistor (10K-Type II).
- MIN : Enter minimum value for analog input.
- MAX : Enter maximum value for analog input.
- OFFSET : Enter the value for offset correction for Analog 5V/Analog 10V/Thermistor. Offset can be positive or negative.
- UNIT : Enter description for unit of measure for Analog 5V/Analog 10V/Thermistor.
- DATALOG : Select enable/disable data logging.
- Click  .

4.5.7.2 EX1/EX2/EX3

This section is used to configure expansion card inputs.
Go to **NANO-X** in **Configuration** menu to enable EX1/EX2/EX3.

The screenshot shows the 'ECOM NANO - Configuration' interface. On the left is a vertical menu with options: Home, Status, Configuration (highlighted), Control, Plotting, Graphics, Commands, Dashboard, Live Data Log, USB Data Log, Historical Data Log, Backup and Restore, Bluetooth, Help, and Hardware Info. The main area has a sub-menu with CPU, I/O (highlighted), MODBUS, GLOBAL VARIABLE, USER ACCOUNT, HOLIDAY, GSM, LCD, and NANO-X. Below this, there are tabs for INPUT and OUTPUT, with INPUT selected. Under the INPUT tab, there are sub-tabs for NANO, EX1, EX2, and EX3. The EX1 tab is active, showing a table of 8 channels (2.1 to 2.8). Each channel has a NAME field, a TYPE dropdown menu (all set to 'select'), a RANGE section with MIN and MAX fields, an OFFSET field, a UNIT field, and a DATA LOG dropdown menu (all set to 'disable'). A 'Save' button is at the bottom right of the table.

CHANNEL	NAME	TYPE	RANGE		OFFSET	UNIT	DATA LOG
			MIN	MAX			
UNIVERSAL INPUTS							
2.1		select ▼					disable ▼
2.2		select ▼					disable ▼
2.3		select ▼					disable ▼
2.4		select ▼					disable ▼
2.5		select ▼					disable ▼
2.6		select ▼					disable ▼
2.7		select ▼					disable ▼
2.8		select ▼					disable ▼

- **NAME** : Enter name of the input (up to 30 characters).
- **TYPE** : Select Digital , 5V, 10V.
- **MIN** : Enter minimum value for analog input.
- **MAX** : Enter maximum value for analog input.
- **OFFSET** : Enter the value for offset correction for 5V/ 10V.
Offset can be positive or negative.
- **UNIT** : Enter description for unit of measure for 5V/ 10V.
- **DATALOG** : Select enable/disable data logging.
- Click  .

4.5.7.3 OUTPUT - NANO

This section is used to configure ECOM NANO outputs.

ECOM NANO - Configuration

CPU I/O MODBUS GLOBAL VARIABLE USER ACCOUNT HOLIDAY GSM LCD NANO-X

INPUT OUTPUT

NANO EX1 EX2 EX3

☒ Analog ☐ Digital

CHANNEL	NAME	TYPE	LOGIC	UNIT	DATA LOG
1.1	Damper	analog-	direct	Percentage	disable
1.2		analog	direct		disable
1.3		analog	direct		disable
1.4		analog	direct		disable

Save

Analog outputs

This section is used to configure analog outputs.

ECOM NANO - Configuration

CPU I/O MODBUS GLOBAL VARIABLE USER ACCOUNT HOLIDAY GSM LCD NANO-X

INPUT OUTPUT

NANO EX1 EX2 EX3

☒ Analog ☐ Digital

CHANNEL	NAME	TYPE	LOGIC	UNIT	DATA LOG
1.1	Damper	analog-	direct	Percentage	disable
1.2		analog	direct		disable
1.3		analog	direct		disable
1.4		analog	direct		disable

Save

- NAME : Enter name of the output (up to 30 characters).
- TYPE : Select analog/analog-fixed.
- LOGIC : Select direct/reverse.
- UNIT : Enter unit of measurement of the channel.
- DATALOG : Select enable/disable data logging.
- Click  .

Digital outputs

This section is used to configure digital outputs.

CHANNEL	NAME	TYPE	LOGIC	UNIT	DATA LOG
1.1	Damper	analog	direct	Percentage	disable
1.2		analog	direct		disable
1.3		analog	direct		disable
1.4		analog	direct		disable

- NAME : Enter name of the output (up to 30 characters).
- TYPE : Digital.
- LOGIC : Select direct/reverse.
- DATALOG : Select enable/disable data logging.
- Click .

4.5.7.4 EX1/EX2/EX3

This section is used to configure expansion card outputs.

CHANNEL	NAME	TYPE	LOGIC	UNIT	DATA LOG
2.1		digital	direct		disable
2.2		digital	direct		disable
2.3		digital	direct		disable
2.4		digital	direct		disable
2.5		digital	direct		disable
2.6		digital	direct		disable
2.7		digital	direct		disable
2.8		digital	direct		disable

- NAME : Enter name of the output (up to 30 characters).
- TYPE : Digital.
- LOGIC : Select direct/reverse.
- DATALOG : Select enable/disable data logging.
- Click .

4.5.8 MODBUS – PORT CONFIGURATION

This section is used to configure RS485 Modbus communication.

#	Name	Details	Delete
1	Default_COM_Config	View	Delete

COM Port Configuration

Configuration Name :

Port :

Baud Rate :

Parity :

Data Bit :

Stop Bit :

Mode :

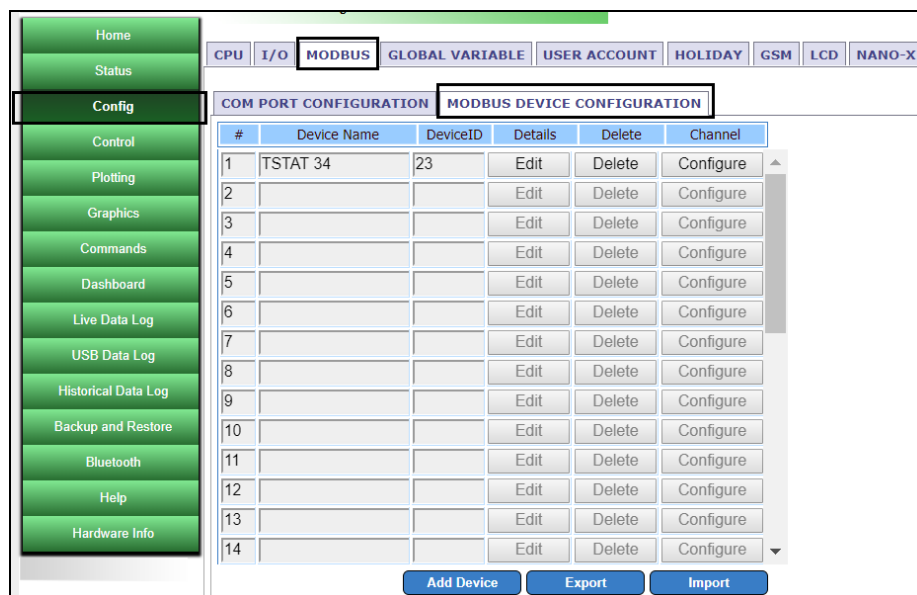
Maximum 10 configurations can be added. One default configuration is available.

- Configuration Name : Enter name of the port (up to 30 characters).
- Port : COM1.
- Baud rate : Select buad rate -9600/19200/38400/57600/115200.
- Parity : Select parity -None/Even/Odd/Mark/Space.
- Data bit : Select data bit - 8/7/6/5.
- Stop bit : Select - 1/1.5/2.
- Mode : RTU.
- Click .
- Click to clear the fields.

Once configured, the ports are listed in in MODBUS DEVICE CONFIGURATION.

4.5.9 MODBUS DEVICE CONFIGURATION

This section is used to configure Modbus device.



- Click **Add Device**.

- Device Name : Enter name of the device (up to 30 characters).
- Device ID : Enter device ID.
- COM Port Configuration : Select Port Configuration from the drop down list.
- Click **Save**.
- Click **Clear** to clear the fields.
- Click **Close** to close the screen.
- Newly added device is listed in Modbus device configuration page.

- Click **Configure** to enable configuration for the modbus device.

#	Device Name	DeviceID	Details	Delete	Channel
1	TSTAT 34	23	Edit	Delete	Configure
2			Edit	Delete	Configure
3			Edit	Delete	Configure
4			Edit	Delete	Configure
5			Edit	Delete	Configure
6			Edit	Delete	Configure
7			Edit	Delete	Configure
8			Edit	Delete	Configure
9			Edit	Delete	Configure
10			Edit	Delete	Configure
11			Edit	Delete	Configure
12			Edit	Delete	Configure
13			Edit	Delete	Configure
14			Edit	Delete	Configure

Add Device Export Import

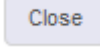
Active Device : TSTAT 34 Hide Edit Channels

- The status window of the selected modbus port is displayed on the right side.
- Click **Hide** to hide the status window.
- Click **Edit Channels** to configure the modbus points.

CHANNEL	DATA NAME	FUNCTION	ADDRESS	DATA SCALING	TYPE	RANGE MIN	RANGE MAX
1	Modoutput-1	01 Read Coil Status	1	select	digital	0	0
2	Modoutput-2	02 Read Input Status	1	select	digital	0	0
3	Modoutput-3	03 Read Holding Regi	1	0.01	analog	0	65530
4	Modoutput-4	04 Read Input Regi	1	0.1	analog	0	65530
5	Modoutput-5	05 Force Single Coil	1	select	digital	0	0
6	Modoutput-6	06 Preset Single Regi	1	0.1	analog	0	65530
7	Modoutput-7	15 Force Multiple Coil	1	select	digital	0	0
8	Modoutput-8	16 Preset Multiple Re	1	0.1	analog	0	65530
9		Select		select	select		
10		Select		select	select		
11		Select		select	select		
12		Select		select	select		
13		Select		select	select		
14		Select		select	select		

Save Clear Close

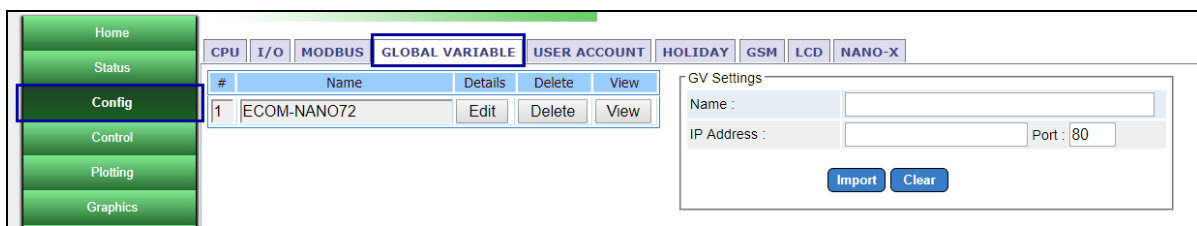
- DATA NAME** : Enter name of the data (up to 30 characters).
- FUNCTION** : Select the function
 - 01 Read Coil Status, 02 Read Input Status
 - 03 Read Holding Registers, 04 Read Input Registers
 - 05 Force Single Coil, 06 Preset Single Register
 - 15 Force Multiple Coils, 16 Preset Multiple Registers
- ADDRESS** : Enter the address form data to do read/write functions.
- DATA SCALING** : Select the scaling factor to be applied for the read value (0.01/0.1/1/10/100)
- TYPE** : This field will be automatically gets updated by the selection of FUNCTION (for FUNCTIONS 01/02/05/15 – TYPE is Digital and for FUNCTIONS 03/04/06/16 – type is Analog)

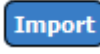
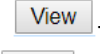
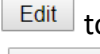
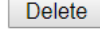
- RANGE MIN : Enter the minimum range for analog type.
 - RANGE MAX : Enter the maximum range for analog type.
 - UNIT : Enter the unit name (7 characters).
 - DATA LOG : Enable/disable datalog.
 - DATA TYPE : Select data type - signed(16 bit), unsigned(16 bit), signed(32 bit), unsigned(32 bit).
- Click  .
 - Click  the files.
 - Click  to close the pop up window.

4.5.10 GLOBAL VARIABLE

This section is used to import global variable points from other ECOM NANO's in the same network.

ECOM NANO can import up to four global variables.

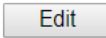


- Name : Enter name of the ECOM NANO controller be Imported (up to 30 characters).
- IP address : Enter IP address of the ECOM NANO to be imported. Global variable supports only IPv4.
- Port : For ECOM Nano the port number is 443.
- Click  to import the Global Variables.
- Click  to clear.
- Click  to view the global variable.
- Click  to edit.
- Click  to delete the point.

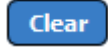
4.5.11 USER ACCOUNT - USER

This section is used to configure user accounts and view the blocked users. Up to 10 user accounts can be configured.

The configured users are listed on the left.

- User Name : User Name
- User Group : User Group – Admin, Viewer, Guest.
- Click  to edit the details of a user.
- Click  to delete a user. The default user **admin** cannot be deleted

Add/Edit Users

- Name : Enter name of the user.
- Password : Enter password.
- Re-enter password : Re-enter the password.
- User Group : Select user group - Admin/Viewer/Guest.
 - Admin : Can view and edit all data.
 - Viewer : Can only view the data.
 - Guest : Has view only access to 4 web pages – Home, Graphics, Dashboard and Hardware Info pages.
- Click  to save the user.
- Click  to clear.



Default users

- UserName: admin Password: default@Ec0M\$
- UserName: viewer Password: password@Ec0M\$
- UserName: guest Password : guest@Ec0M\$



Password policy

- Password must contain 8 characters.
- Maximum password length is 30 characters.
- Password must contain one capital letter(A-Z).
- Password must contain one small letter(a-z).
- Password must contain minimum one special character only from the following (!,@,#,\$,%,&).
- Password must contain one number(0-9).

4.5.12 PASSWORD

This section is used to change the password of the logged in user.

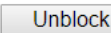
The screenshot shows the 'ECOM NANO - Configuration' interface. On the left is a vertical menu with options: Home, Status, Configuration (highlighted), Control, Plotting, Graphics, Commands, and Dashboard. The main area has a top bar with tabs: CPU, I/O, MODBUS, GLOBAL VARIABLE, USER ACCOUNT (highlighted), HOLIDAY, GSM, LCD, and NANO-X. Under 'USER ACCOUNT', there are sub-tabs: USER, PASSWORD (highlighted), and BLOCKED USERS. The 'PASSWORD' sub-tab contains a form with three input fields: 'User Name' (pre-filled with 'admin'), 'Password', and 'Re-enter Password'. A blue 'Save' button is at the bottom right of the form.

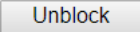
Username : Displays current user.
Password : Enter password.
Re-enter password : Re-enter password.
Click  to save the new password.

4.5.13 BLOCKED USERS

This section is used to view the list of blocked users and to unblock.

The screenshot shows the 'BLOCKED USERS' sub-tab selected. It displays a table with the following data:

User Name	User Group	Unblock
viewer	Viewer	

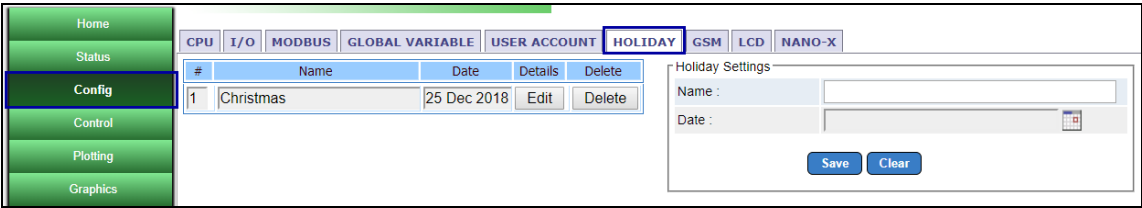
Click  to unblock user. Only admin users can unblock a user.



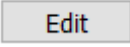
Ten attempts with wrong password will block a user.

4.5.14 HOLIDAY

This section is used to configure holidays. Up to 32 holidays can be configured.



The configured holidays are listed on the left.

- Name : Holiday name.
- Date : Date of the holiday.
- Click  to edit holiday configuration.
- Click  to delete a holiday.

Add/Edit Holiday

- Name : Enter holiday name.
- Date : Select holiday date from calender 
- Click  to save the holiday.
- Click  to clear.

4.5.15 GSM

This section is used to configure GSM settings. Up to 4 mobile numbers can be configured.

Name	Mobile Number	Account	Remarks	Alarm Enable
		Admin ▼		enable ▼
		Admin ▼		enable ▼
		Admin ▼		enable ▼
		Admin ▼		enable ▼

User Unlock Key: Save

- Name : Enter name (30 characters).
- Mobile number : Enter the mobile number with country code (Eg. +18051234567)
- Account : Admin.
- Remarks : Enter remarks.
- Alarm enable : Enable/Disable. Alarm notification is send to the user only if this Is enabled.
- Click  to save the details.
- User unlock key : Enter key (4 digit number). Eg. 1234.
- Click  to save the key.

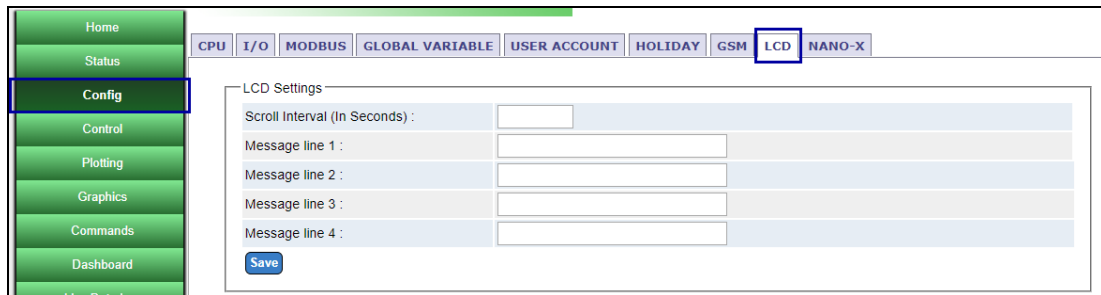


- Use country code before mobile numbers.
- Lock and unlock key is common for all 4 users.
- After unlocking the controller using the key, it will go to locked state if idle for 5 minutes.
- Depending on the request it takes 20 to 30 seconds to get a response from the controller.

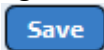
Refer Appendix F for SMS commands and Sample SMS received

4.5.16 LCD

This section is used to configure LCD screen messages. Supports up to 20 characters.



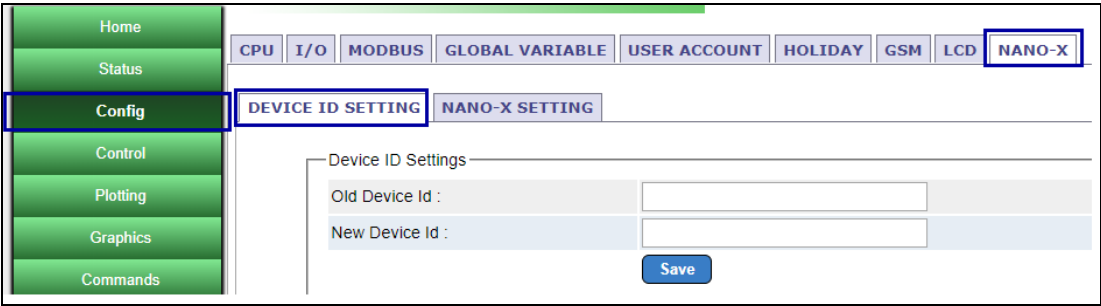
The screenshot shows a web interface for configuring the LCD screen. On the left is a vertical menu with buttons: Home, Status, Config (highlighted with a blue border), Control, Plotting, Graphics, Commands, and Dashboard. At the top, there is a horizontal navigation bar with tabs: CPU, I/O, MODBUS, GLOBAL VARIABLE, USER ACCOUNT, HOLIDAY, GSM, LCD (highlighted with a blue border), and NANO-X. The main content area is titled 'LCD Settings' and contains four rows of input fields. The first row is 'Scroll Interval (In Seconds) :' followed by a text input box. The next three rows are 'Message line 1 :', 'Message line 2 :', 'Message line 3 :', and 'Message line 4 :', each followed by a text input box. At the bottom left of the settings area is a blue 'Save' button.

- Scroll Interval : Enter Scroll Interval (1 - 999 Seconds)
- Message line 1 : Enter the message for row-1
- Message line 2 : Enter the message for row-2
- Message line 3 : Enter the message for row-3
- Message line 4 : Enter the message for row-4
- Click  to save.

Once configured, these messages are displayed in LCD screen under message section.

4.5.17 NANO-X – DEVICE ID SETTINGS

This section is used to configure expansion cards EX1/EX2/EX3. One expansion card is connected and configured at a time.

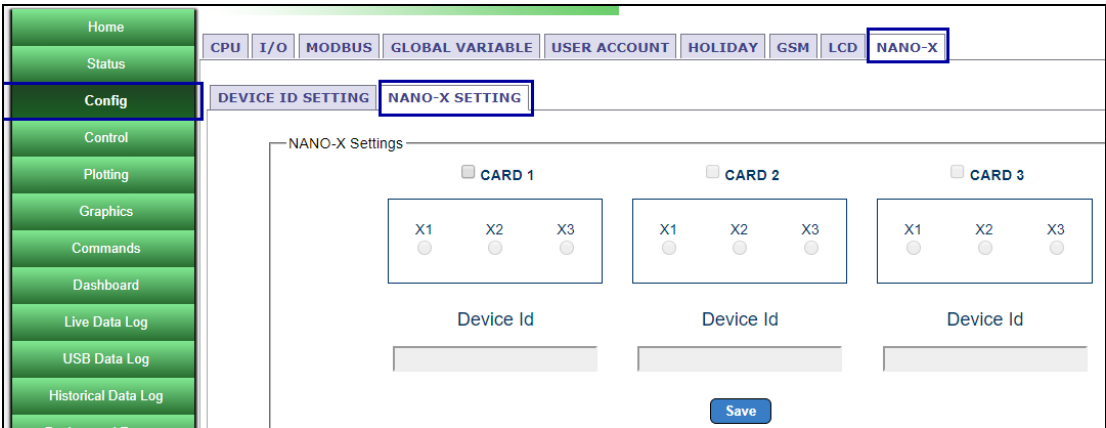


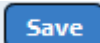
This section is used to configure device id for EX1/EX2/EX3.

- Old device ID : Enter old device ID (default ID is 255)
- New device ID : Enter new device ID.
- Click  to save.

4.5.18 NANO-X SETTINGS

This section is used to select the expansion card type.



- CARD 1/CARD 2/CARD 2 : Select card.
- X1/X2/X3 : Select card type.
- Device Id : The configured device Id is displayed here.
- Click  to save.

4.6 CONTROL

This section is used to configure and view status of the following control points/programs.

- CT1 : Counter-1 (Up to 64).
- CT2 : Counter-2 (Up to 64).
- TMR : Timer (Up to 64).
- CV : Complex Variable (Up to 64).
- EVT : Event (Up to 32).
- GV : Global Variable (Up to 04).
- SP : Set point (Up to 64).
- SCH : Schedule (Up to 64).
- ALM : Alarm (Up to 64).
- SWT : Switching Table (Up to 44).
- PGM : Program (Up to 04).
- kWh : kWh Calculator (Up to 64).
- ASI : Application Specific Instruction (Up to 8).

4.6.1 COUNTER1 (CT1)

Configure time based counter

#	Name	Value	Details	Delete	Reset
1	CRAC1_Run_CT1	0	Edit	Delete	Reset

Counter 1

Name :

Comments :

Condition :

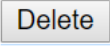
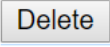
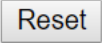
Increment Interval : (HH:mm:ss)

Auto Reset : ☐

Reset After :

Data Log : ☐

The configured counters are listed on the left.

- Name : Counter Name.
- Value : Current value.
- Details : Edit counter. Clicking on the  button will load the counter details to the right. Make changes to the counter and click .
-  : Delete counter. Click  button to delete the counter. Asks for a confirmation before deleting the counter.
-  : Reset counter to 0. Asks for a confirmation before resetting the counter.



- Editing and saving the counter will reset the counter to 0.
- Deleting a counter which is used in other controls or programs will cause undesired results in places where it is used.

Add/Edit counter

- Name : Enter name of the counter.
- Comments : Enter comments.
- Condition : Specify the condition for counting. The counter starts counting once the condition is True.
Select analog/digital point.
For analog points the condition will be less than (<), greater than (>), equal to (=) or not equal to (NOT =) a numeric value.
For digital points the condition will equal to (=) or not equal to (NOT =) ON/OFF.
- Increment interval : Increment interval in hour:minute:seconds.
- Auto Reset : Select Auto Reset to automatically reset a counter when it reaches a Certain value.
- Reset After : Specify the value after which the timer should reset.
- Data Log : Select to enable data logging.
- Click  to save the counter.
- Click  to clear the counter.

4.6.2 COUNTER2(CT2)

Configure event based counter

#	Name	Value	Details	Delete	Reset
1	CRAC1_Run_CT2	0	Edit	Delete	Reset

Counter 2

Name :

Comments :

Condition :

Schedule :

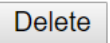
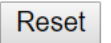
Auto Reset : ☐

Reset After :

Schedule :

Data Log : ☐

The configured counters are listed on the left.

- Name : Counter Name.
- Value : Current value.
- Details : Edit counter. Clicking on the  button will load the counter details to the right. Make changes to the counter and click  .
-  : Delete counter. Click  button to delete the counter. Asks for a confirmation before deleting the counter.
-  : Reset counter to 0. Asks for a confirmation before resetting the counter.



- Editing and saving the counter will reset the counter to 0.
- Deleting a counter which is used in other controls or programs will cause undesired results in places where it is used.



Counter 2 counts only when the condition is True. It will again count only once the condition becomes False and then again turns True.
Eg. If Counter 2 is used to count the number of times a Door is open, It will count 1 when the digital point Door is ON. To count 2, the Door will have to be OFF and again turned ON.

Add/Edit counter

- Name : Enter name of the counter.
- Comments : Enter comments.
- Condition : Specify the condition for counting. The counter starts counting once the condition is True.
Select analog/digital point.
For analog points the condition will be less than (<), greater than (>), equal to (=) or not equal to (NOT =) a numeric value.
For digital points the condition will equal to (=) or not equal to (NOT =) ON/OFF.
- Schedule : Select a schedule, specify equal to (=) or not equal to (NOT=) and select ON/OFF. The counter will start counting only when the **Condition** and **Schedule** is True.
- Auto Reset : Select Auto Reset to automatically reset a counter when it reaches a certain value.
- Reset After : Specify the value after which the timer should reset.
- Schedule : Select a schedule, specify equal to (=) or not equal to (NOT=) and select ON/OFF. The auto reset will work only when the count exceeds the **Reset After** value and the **Schedule** is True.
- Data Log : Select to enable data logging.
- Click  to save the counter.
- Click  to clear the counter.

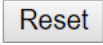
4.6.3 TIMER

Configure Timer

#	Name	Value	Details	Delete	Reset
1	RunTimeCrac1	01:32:50	Edit	Delete	Reset
2	RunTimeCrac2	00:31:59	Edit	Delete	Reset

Timer configuration panel on the right includes fields for Name, Comments, Condition (with dropdowns), Schedule (with dropdowns), Auto Reset checkbox, Reset After (HH:mm:ss), and another Schedule (with dropdowns). Save and Clear buttons are at the bottom.

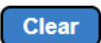
The configured timers are listed on the left.

- Name : Timer Name.
- Value : Current value.
- Details : Edit counter. Clicking on the  button will load the timer details to the right. Make changes to the timer and click .
-  : Delete timer. Click  button to delete the timer. Asks for a confirmation before deleting the timer.
-  : Reset timer. Asks for a confirmation before resetting the timer.



- Editing and saving the timer will reset the timer.
- Deleting a timer which is used in other controls or programs will cause undesired results in places where it is used.

Add/Edit timer

- Name : Enter name of the timer.
- Comments : Enter comments.
- Condition : Specify the condition for timer to start. The timer starts once the condition is True.
Select analog/digital point.
For analog points the condition will be less than (<), greater than (>), equal to (=) or not equal to (NOT =) a numeric value.
For digital points the condition will equal to (=) or not equal to (NOT =) ON/OFF.
- Schedule : Select a schedule, specify equal to (=) or not equal to (NOT=) and select ON/OFF. The timer will start counting only when the **Condition** and **Schedule** is True.
- Auto Reset : Select Auto Reset to automatically reset a counter when it reaches a certain value.
- Reset After : Specify the value (in hh:mm:ss format) after which the timer should reset.
- Schedule : Select a schedule, specify equal to (=) or not equal to (NOT=) and Select ON/OFF. The auto reset will work only when the value exceeds the **Reset After** value and the **Schedule** is True.
- Data Log : Select to enable data logging.
- Click  to save the timer.
- Click  to clear the timer.

4.6.4 COMPLEX VARIABLES

Configure complex variables

#	Name	Value	Details	Delete
1	tempavg	73.11	Edit	Delete

The configured CVs are listed on the left.

- Name : Complex Variable Name.
- Value : Current value.
- Details : Edit Complex Variable. Clicking on the  button will load the CV details to the right. Make changes to the Complex Variable and click .
-  : Delete Complex Variable. Click  button to delete the Complex Variable. Asks for a confirmation before deleting the Complex Variable.



- Deleting a Complex Variable which is used in other controls or programs will cause undesired results in places where it is used.

Add/Edit Complex Variable

Calculated Value

Name :

Unit :

Expression

Add

Channel Constant Sum Product Median

() + - * / Avg Max Min

Remove Selected

Expression

Data Log

Data Log : ☐

Save Clear

- Name : Enter name of the Complex Variable.
- Unit : Unit for the Complex Variable.
- Expression : Following expressions are available to construct a Complex Variable

Channel - Click on Channel to pick a Channel from the controller.

Constant - Click and enter a constant value.

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Value:

Data Log

Data Log :

☐

Save

Clear

Sum - Click to sum the values

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Function:

sum

Value:

...

Data Log

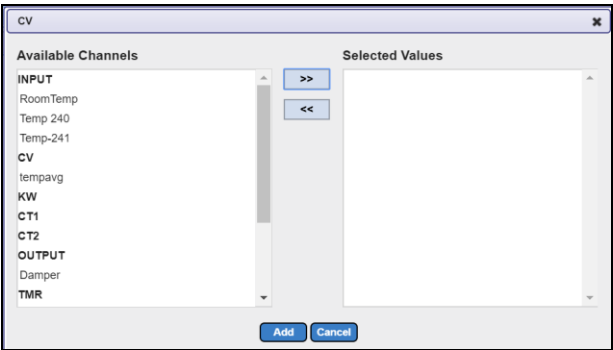
Data Log :

☐

Save

Clear

... - Click to select values



Select values from the left column and click



to add.

Added values can be removed by selecting them



and clicking

Click  to add the values or  to exit.

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Function:

sum

Value:

RoomTemp,Temp 240,Temp

Data Log

Data Log :

☐

Save

Clear

Product – Product of values

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Function:

product

Value:

...

Data Log

Data Log :

☐

Save

Clear

... - Click to select values

CV

Available Channels

INPUT

RoomTemp

Temp 240

Temp-241

CV

tempavg

KW

CT1

CT2

OUTPUT

Damper

TMR

Selected Values

>>

<<

Add

Cancel

Select values from the left column and click **>>** to add. Added values can be removed by selecting them and clicking **<<**.

Click **Add** to add the values or **Cancel** to exit.

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Function:

product

Value:

RoomTemp,Temp 240,Temp

Data Log

Data Log :

☐

Save

Clear

Median

– Median of values

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Function:

median

Value:

...

Data Log

Data Log :

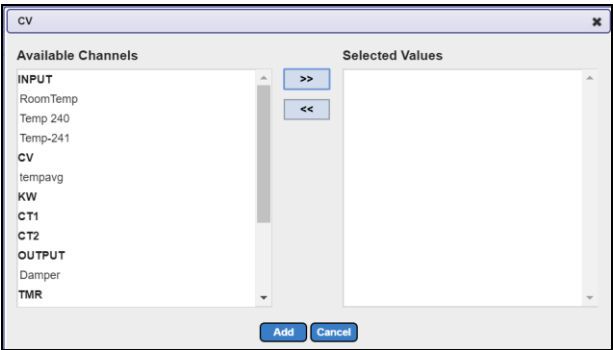
☐

Save

Clear

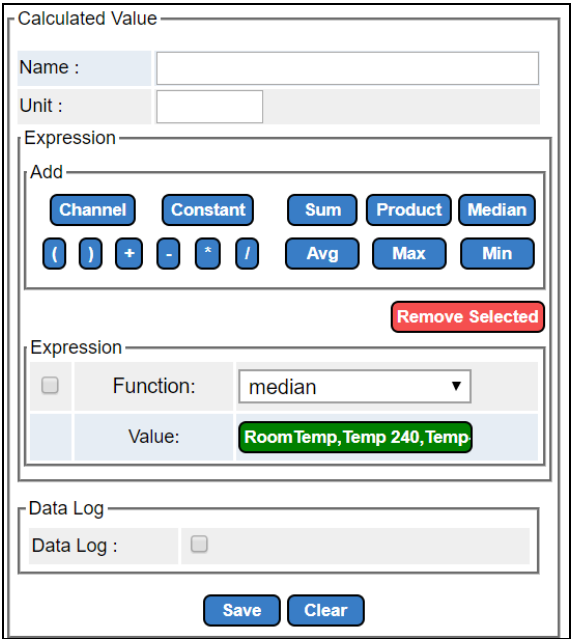
...

- Click to select values



Select values from the left column and click  to add. Added values can be removed by selecting them and clicking .

Click  to add the values or  to exit.



() - Brackets

The screenshot shows the 'Calculated Value' interface. At the top, there are fields for 'Name' and 'Unit'. Below these is the 'Expression' section, which includes a grid of buttons: 'Channel', 'Constant', 'Sum', 'Product', 'Median', '(', ')', '+', '-', '*', '/', 'Avg', 'Max', and 'Min'. A 'Remove Selected' button is located to the right of the grid. Below the grid is a list of expressions, each with a checkbox, a 'Function' dropdown, and a 'Value' dropdown. The list contains three entries: 1) Function: '(', Value: 'RoomTemp'; 2) Function: '+', Value: 'Temp 240'; 3) Function: ')'. At the bottom of the interface is a 'Data Log' section with a 'Data Log' checkbox and 'Save' and 'Clear' buttons.

Click (open a bracket, add expression and close the bracket by clicking), the closing bracket.

+ - Click to add two values.

- - Click to subtract two values.

* - Click to multiply two values.

/ - Click to divide two values.

Avg - Average

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Function:

avg

Value:

...

Data Log

Data Log :

☐

Save

Clear

...

 - Click to select values

CV

Available Channels

INPUT

RoomTemp

Temp 240

Temp-241

CV

tempavg

KW

CT1

CT2

OUTPUT

Damper

TMR

Selected Values

>>

<<

Add

Cancel

Select values from the left column and click

>>

 to add. Added values can be removed by selecting them and clicking

<<

Click

Add

 to add the values or

Cancel

 to exit.

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Function:

avg

Value:

RoomTemp,Temp 240,Temp

Data Log

Data Log :

☐

Save

Clear

Max

- Maximum

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Function:

max

Value:

...

Data Log

Data Log :

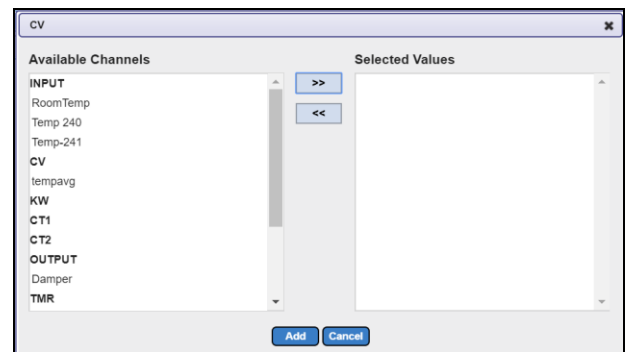
☐

Save

Clear

...

- Click to select values



Select values from the left column and click

>>

to add. Added values can be removed by selecting them and clicking

<<

Click **Add** to add the values or **Cancel** to exit.

Min

- Minimum

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Function:

min

Value:

...

Data Log

Data Log :

☐

Save

Clear

...

 - Click to select values

CV

Available Channels

Selected Values

INPUT

RoomTemp

Temp 240

Temp-241

CV

tempavg

KW

CT1

CT2

OUTPUT

Damper

TMR

>>

<<

Add

Cancel

Select values from the left column and click

>>

 to add. Added values can be removed by selecting them and clicking

<<

.

Click

Add

 to add the values or

Cancel

 to exit.

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☐

Function:

min

Value:

Room Temp,Temp 240,Temp

Data Log

Data Log :

☐

Save

Clear

Remove Selected

- Remove expressions.

Calculated Value

Name :

Unit :

Expression

Add

Channel

Constant

Sum

Product

Median

(

)

+

-

*

/

Avg

Max

Min

Remove Selected

Expression

☒

Function:

sum

Value:

Room Temp,Temp 240

☒

Function:

*

☒

Value:

2

Data Log

Data Log :

☐

Save

Clear

Select the Function or Value to be removed and click

Remove Selected

Data Log : Select to enable data logging.

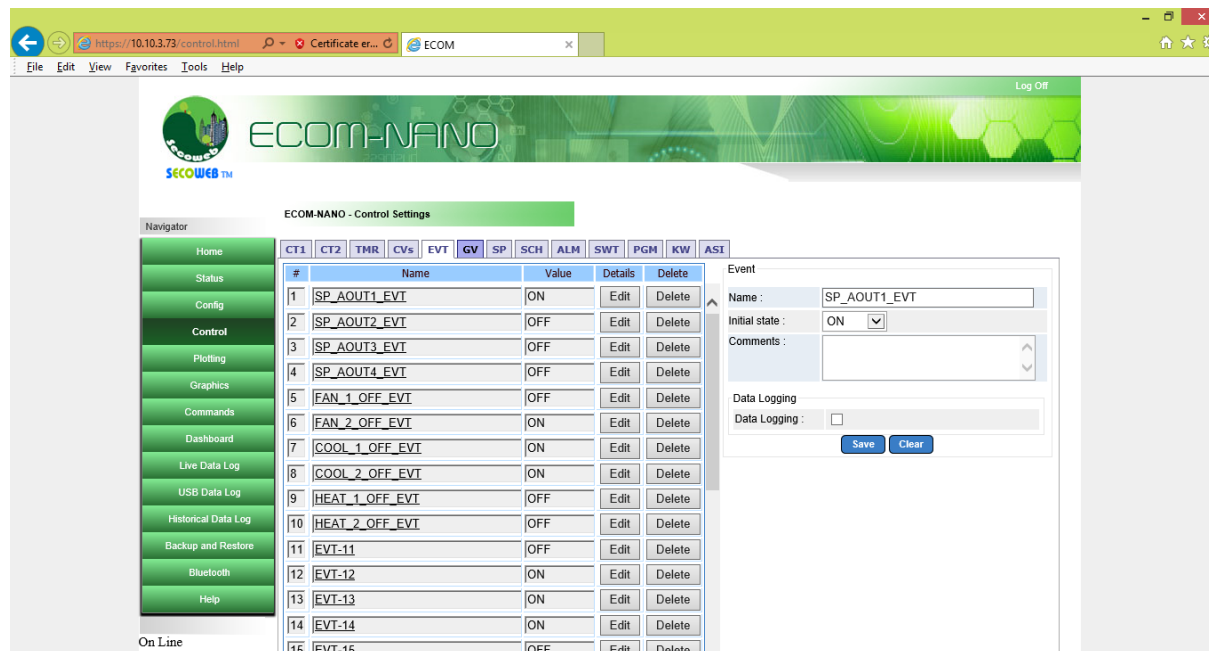
Click **Save** to save the Complex Variable.

Click **Clear** to clear the Complex Variable.

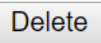
4.6.5 EVT

Configure Events.

Events are pseudo digital points which comes handy in switching tables, programs and scripts.



The configured events are listed on the left.

- # : Event number.
- Name : Event Name.
- Value : Current value.
- Details : Edit Event. Clicking on the  button will load the event details to the right. Make changes to the event and click .
-  : Delete Event. Click  button to delete the Event. Asks for a confirmation before deleting the Event.



- Deleting an Event which is used in other controls or programs will cause undesired results in places where it is used.

The Events used in Switching Tables are displayed as links. Hovering the mouse over it shows the Switching Table to which the Event is attached. See picture below.

1	CRAC_Timer_Event	ON	Edit	Delete
2	CRAC1_Event	OFF	Edit	Delete
3	CRAC2_Event	ON	Edit	Delete
4	CRAC3_Event	ON	Edit	Delete
5	AC1_Off	OFF	Edit	Delete

CRAC1-Event-ON-ST
Running

Clicking on the Event will display the view only status of the switching table.

SWT

Switching Table

Name : CRAC1-Event-ON-ST

Comments :

Output : ☐ CRAC1_Event ON

Momentary output : ☐ Duration : Sec(s)

Latch : ☐

ON Time Delay : 00:00:00 (HH:mm:ss) ☐ 00:00:00

OFF Time Delay : 00:00:00 (HH:mm:ss) ☐ 00:00:00

AND Block 1 of 4(Status: FALSE)

CRAC_Timer < 0002:00:00

CRAC1_FAIL_EVT Not = ON

select select

select select

select select

AND Block 2 of 4(Status: FALSE)

CRAC_Timer > 0004:00:00

CRAC_Timer < 0006:00:00

CRAC1_FAIL_EVT Not = ON

select select

select select

select select

Close

Add/Edit Event

- Name : Enter name of the Event.
- Initial State : Select ON or OFF.
- Comments : Enter comments.
- Data Log : Select to enable data logging.

Click

Save

 to save the Event.

Click

Clear

 to clear the Event.

4.6.6 GV

Configure Global Variables.

- Global Variables are used to share data points across multiple ECOM Controllers. Inputs, Outputs, Counters, Timers (value in seconds), CVs, Events, Set points, Schedules and KW points can be configured as Global Variables.

Navigation: **HOME → CONTROL → GV**

CT1CT2TMRCVsEVTGVSPSCHALMSWTPGMKWASI

#	Name	Value	Details	Delete
1	GV_71_Room_Temp	-34.05	Edit	Delete

Global Variable

Name :

Channel Name :select

Comments :

Save

Clear

The configured Global Variables are listed on the left.

- # : Global Variable number.
- Name : Global Variable Name.
- Value : Current value.
- Details : Edit Global Varibale. Clicking on the

Edit

 button will load the Global Varibale details to the right. Make changes to the Global Varibale and click

Save

.
- Delete

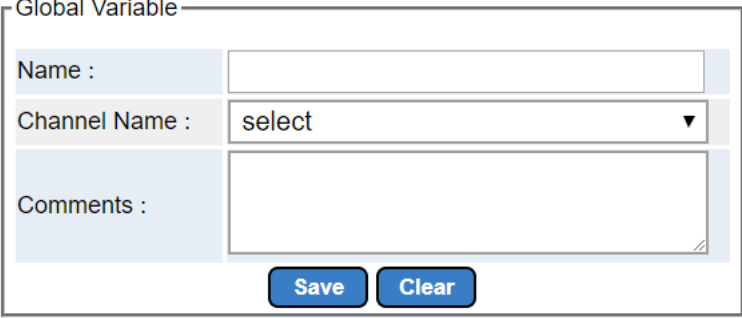
 : Delete Global Variable. Click

Delete

 button to delete the Global Variable. Asks for a confirmation before deleting the Global Varibale.



- Deleting a Global Variable which is used in other controls or programs will cause undesired results in places where it is used.

Add/Edit Global Variable

Global Variable

Name :

Channel Name :

Comments :

Name : Enter name of the Global Variable.

Channel Name : Select the Channel.

Comments : Enter comments.

Click to save the Global Variable.

Click to clear the Global Variable.

Refer Section to know how to use the Global Variable

4.6.7 SP

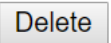
Configure Set Points.

Navigation: **HOME → CONTROL → SP**

The screenshot displays the ECOM-NANO Control Settings web interface. On the left is a green sidebar with a 'Navigator' menu containing options: Home, Status, Config, Control, Plotting, Graphics, Commands, Dashboard, Live Data Log, USB Data Log, Historical Data Log, Backup and Restore, Bluetooth, and Help. The 'Control' menu is selected. The main area shows a table of 15 set points with columns for #, Name, Value, Details, and Delete. The table lists various set points like AOUT1_SP, AOUT2_SP, AOUT3_SP, AOUT4_SP, and several SP-TH and SP-AIN points. On the right, a 'Setpoint' configuration panel is shown for 'AOUT1_SP'. It includes fields for Name, Comments, Value / Point (set to 100), Condition (Enabled, SP_AOUT1_EVT = ON), and Data Logging (unchecked). Buttons for 'Save' and 'Clear' are at the bottom of the panel.

#	Name	Value	Details	Delete
1	AOUT1_SP	100	Edit	Delete
2	AOUT2_SP	0	Edit	Delete
3	AOUT3_SP	0	Edit	Delete
4	AOUT4_SP	100	Edit	Delete
5	SP-5-TH1	73.54	Edit	Delete
6	SP-6-TH2	74.84	Edit	Delete
7	SP-7-TH3	73.74	Edit	Delete
8	SP-8-AIN-1	100.75	Edit	Delete
9	SP-9-AIN-2	0.11	Edit	Delete
10	SP-10-AIN3	0.18	Edit	Delete
11	SP-11-AIN-4	100.75	Edit	Delete
12	SP-12-AOUT-1	100	Edit	Delete
13	SP-13-AOUT-2	0	Edit	Delete
14	SP-14-AOUT-3	0	Edit	Delete
15	SP-15-AOUT-4	100	Edit	Delete

The configured Set Points are listed on the left.

- # : Set Point number.
- Name : Set point Name.
- Value : Current value.
- Details : Edit Set Point. Clicking on the  button will load the Set Point details to the right. Make changes to the Set Point and click .
-  : Delete Set Point. Click  button to delete the Set Point. Asks for a confirmation before deleting the Set Point.



- Deleting an Set Point which is used in other controls or programs will cause undesired results in places where it is used.

Add/Edit Set Point

- Name : Enter name of the Set Point.
- Comments : Enter comments.
- Value/Point : There is option to either enter a constant value or pick a point. Select Constant to enter a value. Select Point to pick a point.
- Condition : Select Enable Condition to add a condition.
For analog points the condition will be less than (<), greater than (>), equal to (=) or not equal to (NOT =) a numeric value.
For digital points the condition will equal to (=) or not equal to (NOT =) ON/OFF.
- If condition false : There is option to either enter a constant value or pick a point. Select Constant to enter a value. Select Point to pick a point.
If the condition is True then the value on the top section will be used as the Set Point. If the condition is False, then the value below is used.
- Data Log : Select to enable data logging.

Click  to save the Event.

Click  to clear the Event.

Paste example screen shot

4.6.8 SCH

Configure schedules.

Navigation: **HOME → CONTROL → SCH**

CT1CT2TMRCVsEVTGVSPSCHALMSWTPGPKWASI

#	Name	Value	Details	Delete
1	LeadLagSchd	ON	Edit	Delete

Schedule

Name :

Schedule :

select

Time Between :And(In 24 Hrs)

Data Log

Data Log :

Holiday Settings

Holiday Settings :

Save

Clear

The configured Schedules are listed on the left.

- # : Schedule number.
- Name : Schedule Name.
- Value : Current value.
- Details : Edit Schedule. Clicking on the

Edit

 button will load the Schedule details to the right. Make changes to the Schedule and click

Save

.
- Delete

 : Delete Schedule. Click

Delete

 button to delete the Schedule. Asks for a confirmation before deleting the Schedule.

!

- Deleting an Schedule which is used in other controls or programs will cause undesired results in places where it is used.

Daily Schedule

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UM-EN-R-201807-A

Schedule

Name :

Schedule : Daily ▾

Time Between : And (In 24 Hrs)

Daily

Every : day(s)

Data Log

Data Log : ☐

Holiday Settings

Holiday Settings : ☐

Save **Clear**

Name : Enter name of the schedule (Up to 20 characters).

Schedule : Select DAILY.

Time Between : Enter start time and end time in 24-hour format.

Every : Enter duration/frequency of days for this schedule. For example, setting Every 5 days will run the schedule on every 5th day.

Data Log : Select to enable data logging.

Holiday Settings : Select Holiday Settings to apply Holidays to the schedule.

Refer Holiday Section on how to configure Holidays.

Click **Save** to save the Schedule.

Click **Clear** to clear the Schedule.

The schedule in the above picture turn on at 8.00 AM and turn off at 5.00 PM every single day. In the daily section, if Every is configured for 2 days, the schedule will turn on every alternate day.

Weekly schedule

The screenshot shows a 'Schedule' configuration window. At the top, there's a 'Name' field. Below it, 'Schedule' is set to 'Weekly' via a dropdown. 'Time Between' has two empty input fields followed by 'And' and another empty field, with '(In 24 Hrs)' in parentheses. A 'Weekly' section contains an 'Every' field set to '1' with 'week(s)' next to it. Below this, 'On' is followed by checkboxes for 'Mon', 'Tue', 'Wed', 'Thu', 'Fri', 'Sat', and 'Sun'. At the bottom of the form are two checkboxes: 'Data Log' and 'Holiday Settings'. Below these are two buttons: 'Save' and 'Clear'.

- Name : Enter name of the schedule (Up to 20 characters).
- Schedule : Select WEEKLY.
- Time Between : Enter start time and end time in 24-hour format.
- Every : Enter the duration/frequency of weeks.
- On : Select day of the week on which the schedule need to run.
For example, setting Every 2 weeks and selecting Monday will run the schedule on Monday every alternate week.

Data Log : Select to enable data logging.

Holiday Settings : Select Holiday Settings to apply Holidays to the schedule.

Refer Holiday Section on how to configure Holidays.

Click  to save the Schedule.

Click  to clear the Schedule.

The schedule in the above picture turn on at 8.00 AM and turn off at 5.00 PM from Monday to Friday every week.

Monthly schedule

- Name : Enter name of the schedule (Up to 20 characters).
- Schedule : Select MONTHLY.
- Time Between : Enter start time and end time in 24-hour format.
- Day : Enter day of the month.
- Month : Select the month for the schedule.
For example, setting Day to 1 and selecting January will run the schedule every 1st day of January.

Data Log : Select to enable data logging.

Holiday Settings : Select Holiday Settings to apply Holidays to the schedule.

Refer Holiday Section on how to configure Holidays.

Click  to save the Schedule.

Click  to clear the Schedule.

The schedule in the above picture turn on at 11:00:00 PM and turn off at 11:59:59 PM on 31st December.

4.6.9 ALM

Configure alarms.

Navigation: **HOME → CONTROL → ALM**

CT1	CT2	TMR	CVs	EVT	GV	SP	SCH	ALM	SWT	PGM	KW	ASI
#	Name	Status	Level	Time	Details	Delete						
1	FireAlarm	Normal	Critical	29 Jun 2018 18:28:43	Edit	Delete						

Alarm

Name :

Condition :

Level :

Email : ☐ Email #1 ☐ Email #2

SNMP : ☐

Description :

Comments :

Data Log : ☐

The configured Set Points are listed on the left.

- # : Alarm number.
- Name : Alarm Name.
- Status : Alarm Status – **Alarm** or **Normal**.
- Level : Critical/High/Medium/Low.
- Time : Date/Time of status change.
- Details : Edit Alarm. Clicking on the button will load the Alarm details to the right. Make changes to the Alarm and click .
- : Delete Alarm. Click button to delete the Alarm. Asks for a confirmation before deleting the Alarm.



- Deleting an Alarm which is used in other controls or programs will cause undesired results in places where it is used.

Add/Edit Alarm

Alarm

Name :

Condition

select ▼ select ▼

Level : select ▼

Email : Email #1 ☐ Email #2 ☐

SNMP : ☐

Description :

Comments :

Data Log

Data Log : ☐

Save Clear

Name : Enter name of the Alarm.

Condition : Specify the condition for Alarm. The Alarm gets triggered once the condition is True.

Select analog/digital point.

For analog points the condition will be less than (<), greater than (>), equal to (=) or not equal to (NOT =) a numeric value.

For digital points the condition will equal to (=) or not equal to (NOT =) ON/OFF.

Level : Select Critical/High/Medium/Low.

Email : Select receipient Email #1/ Email # 2 for sending email alerts to email IDs configured in the Email section.

Description : Enter description.

Comment : Enter comment.

Data Log : Select to enable data logging.

Click  to save the Alarm.

Click  to clear the Alarm.

Paste example screen shot

If any active alarms are present, all pages display an alarm icon  on the top right corner of the screen and display **No Alarms** when there are no active alarms.

For sample alarm email refer APPENDIX C – EMAIL SAMPLES

4.6.10 SWT

Configure switching tables.

Switching table is an easy to use ladder logic for controlling digital outputs and event (pseudo digital points).

Navigation: **HOME → CONTROL → SWT**

CT1	CT2	TMR	CVs	EVT	GV	SP	SCH	ALM	SWT	PGM	KW	ASI
#	Name	O/P	Run	Details	Delete	Latch						
1	CRAC1-Event-ON-ST	ON	Stop	View	Delete	☐						
2	CRAC2-Event-ON-ST	OFF	Stop	View	Delete	☐						
3	CRAC3-Event-ON-ST	ON	Stop	View	Delete	☐						
4	CRAC1-OR-CRAC2-Fail-ST	OFF	Stop	View	Delete	☐						
5	CRAC2-OR-CRAC3-Fail-ST	OFF	Stop	View	Delete	☐						
6	CRAC3-OR-CRAC1-Fail-ST	OFF	Stop	View	Delete	☐						
7	CRAC1-ON-ST	ON	Stop	View	Delete	☐						
8	CRAC2-ON-ST	OFF	Stop	View	Delete	☐						
9	CRAC3-ON-ST	OFF	Start	Edit	Delete	☐						

Add New Start All Stop All

The configured Switching Tables are listed.

- # : Switching Table number.
- Name : Switching Table Name.
- O/P : Status of the Switching Table.
- Run : Click / to start/stop Switching Table.
- Details : Edit/View Switching Table.
 Click to make changes to a Switching Table. Switching Table should be in Stopped state for editing.
 A running Switching Table can be viewed. Click on to view the status of the Switching Table.
- Delete : Delete Switching Table. Click to delete the Switching Table. Asks for a confirmation before deleting the Switching Table. A Switching Table should be in stopped state to delete it.
- Latch : This will be selected if Latch is enabled in the Switching Table. Latch can be disabled without stopping the Switching Table by deselecting this.

[Add New](#) - Add new Switching Table

[Start All](#) - Start all Switching Tables

[Stop All](#) - Stop all Switching Tables.

Add new Switching Table

SWT

Switching Table

Name :

Comments :

Output :

select

select

Momentary output :

☐

Duration :

Sec(s)

Latch :

☐

ON Time Delay :

00:00:00

(HH:mm:ss)

OFF Time Delay :

00:00:00

(HH:mm:ss)

AND Block 1 of 4

select

select

select

select

select

select

select

select

select

select

AND Block 2 of 4

select

select

select

select

select

select

select

select

select

select

Save

Clear

Close

- Name : Enter Switching Table name.
- Comments : Enter comments.
- Output : Select the Output/Event to be controlled and specify whether it should be ON or OFF when the Switching Table condition turns True.
- Momentary output : Select if the Output/Event is controlled only momentarily. When the Switching Table condition is True the Output/Event will change the state for the specified duration and goes back to the earlier state.
- Duration : Duration for the momentary output to be in the specified state.
- Latch : Select Latch to retain the status once the Switching Table turns True. For Eg. If Latch is selected for a Switching Table to turn Fan ON when the Room Temperature goes about 72 F, Fan will turn ON and will remain ON even when the Room Temperature goes below 72 F.
- ON Time Delay : Enter ON Time Delay in hh:mm:ss format. Once the Switching Table condition is True, the Output/Event will be turned ON only after the time delay.
- OFF Time Delay : Enter OFF Time Delay in hh:mm:ss format. Once the Switching Table condition is False, the Output/Event will be turned OFF only after the time delay.

There are four AND Blocks in a Switching Table. Each AND Block can have up to 5 entries. All the

conditions in the AND Block should be True for the whole AND Block to become True.

Specify the condition in AND Block. Select analog/digital point. For analog points the condition will be less than (<), greater than (>), equal to (=) or not equal to (NOT =) a numeric value. For digital points the condition will equal to (=) or not equal to (NOT =) ON/OFF.

Right click on the value columns to bring up Set Point. Select a Set Point and click OK.

Click **Save** to save the Switching Table.

Click **Clear** to clear the Switching Table.

Click **Close** to close the Switching Table.

Viewing a running Switching Table

CT1	CT2	TMR	CVs	EVT	GV	SP	SCH	ALM	SWT	PGM	KW	ASI
#	Name	O/P	Run	Details	Delete	Latch						
1	CRAC1-Event-ON-ST	ON	Stop	View	Delete	☐						
2	CRAC2-Event-ON-ST	OFF	Stop	View	Delete	☐						
3	CRAC3-Event-ON-ST	ON	Stop	View	Delete	☐						
4	CRAC1-OR-CRAC2-Fail-ST	OFF	Stop	View	Delete	☐						
5	CRAC2-OR-CRAC3-Fail-ST	OFF	Stop	View	Delete	☐						
6	CRAC3-OR-CRAC1-Fail-ST	OFF	Stop	View	Delete	☐						
7	CRAC1-ON-ST	ON	Stop	View	Delete	☐						
8	CRAC2-ON-ST	OFF	Stop	View	Delete	☐						
9	CRAC3-ON-ST	OFF	Start	Edit	Delete	☐						

Add NewStart AllStop All

Click [View](#) to view a running Switching Table.

SWT
✕

Switching Table

Name : CRAC1-Event-ON-ST

Comments :

Output : ● CRAC1_Event ON

Momentary output : ☐ Duration : Sec(s)

Latch : ☐

ON Time Delay : 00:00:00 (HH:mm:ss) ☐ 00:00:00

OFF Time Delay : 00:00:00 (HH:mm:ss) ☐ 00:00:00

AND Block 1 of 4(Status: FALSE)			AND Block 2 of 4(Status: TRUE)		
CRAC_Timer	<	0002:00:00	CRAC_Timer	>	0004:00:00
CRAC1_FAIL_EVT	Not =	ON	CRAC_Timer	<	0006:00:00
select	select		CRAC1_FAIL_EVT	Not =	ON
select	select		select	select	
select	select		select	select	

[Close](#)

The status of each AND Block is represented by Green (True) and Red (False) as shown in the figure below.

The Switching Table will be True if even one of the AND Block is True.

The status of the running Switching Table is represented near the Output. The Green LED represents the

Switching Table condition as True and the grey LED represents it as False.

Output :		CRAC1_Event	ON
Output :		CRAC2_Run	ON

Hover the mouse over the Output to view the status of the Output/Event.

Output :		CRAC1_Run	ON
Momentary output :	☐	Duration : CRAC1_Run : ON	Sec(s)
Output :		CRAC2_Run	ON
Momentary output :	☐	Duration : CRAC2_Run : OFF	Sec(s)

Hover the mouse over the Switching Table conditions to view the status/value.

AND Block 1 of 4(Status: FALSE)			
CRAC_Timer	<	0002:00:00	
CRAC1_FAIL_EVT	CRAC_Timer : 05:05:31	Not =	ON
select	select		

AND Block 1 of 4(Status: FALSE)			
CRAC_Timer	<	0002:00:00	
CRAC1_FAIL_EVT	Not =	ON	
select	CRAC1_FAIL_EVT : OFF		

4.6.11 PGM

Configure Programs.

Programs are used to control Analog points using Proportional/Proportional Integral logic.

Navigation: **HOME → CONTROL → SWT**

#	Name	I/P	O/P	S/P	Algorithm	Run	Details	Delete
1	DAMPER-PGM	76.44	10.89	76.00	PI	Stop	View	Delete

[Start All](#) [Stop All](#)

Program

Name :

Input :

Output :

Setpoint : (Unit)
☒ Constant ☐ Point

Algorithm :

Time Delay(sec) :

Dead Band :

Gain (Kp) :

Logic :

Comments :

Trigger

Passive Value :

Time Delay(sec) :

[Save](#) [Clear](#)

The configured Programs are listed on the left.

- # : Program number.
- Name : Program Name.
- I/P : Input status.
- O/P : Output status.
- S/P : Set Point.
- Algorithm : P – Proportional, PI – Proportional Integral.
- Run : Click [Start](#) / [Stop](#) to start/stop Program.

- **Details** : Edit/View Program.
Click  to make changes to a Program. Program should be in Stopped state for editing.
A running Program Table can be viewed. Click on  to view the status of the Program.
- **Delete** : Delete Program. Click  to delete the Program. Asks for a confirmation before deleting the Program. A Program should be in stopped state to delete it.

[Start All](#) - Start all Programs.

[Stop All](#) - Stop all Programs.

Add new Program

Program

Name :

Input :

select

▼

Output :

select

▼

Setpoint :

(Unit)

☒ Constant

☐ Point

Algorithm :

Proportional

▼

Time Delay(sec) :

Dead Band :

Gain (Kp) :

Logic :

select

▼

Comments

Trigger

select

▼

select

▼

select

▼

Passive Value :

Time Delay(sec) :

Save

Clear

- Name

: Enter Program Name.
- Input

: Select Input.
- Output

: Select Analog output that need to be controlled.
- Set Point

: Enter or select Set Point. Select Constant to enter the Set Point value or Select Point and pick a Set Point. The Program tries control the Output so that the Input stays in the range of the Set Point.
- Unit

: Unit for Set Point.
- Algorithm

: Select Proportional or Proportional Integral Algorithm.
- Time Delay (secs)

: Enter time delay in seconds. This represents the delay in controlling the Output.
- Dead Band

: Enter Dead Band. This is a range in which no action is performed.
(E.g. Setpoint = 70 , Dead band = 10. Then Dead band region= 65 to 75.
- Gain (Kp)

: Enter Gain.
- Logic

: Select Direct or Reverse.
- Comments

: Enter comments.
- Trigger

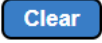
: Select the Trigger condition. Only Digital values can be chosen for a Trigger.
- Passive Value

: Enter Passive Value. The Output is set to the Passive Value if the Trigger

condition is False. Once the Trigger condition is True, then the Program will control the Output.

Time Delay (sec) : Enter Time Delay. Time Delay for the Passive Value.

Click  to save the Program.

Click  to clear the Program.

Add caution

The Analog output should be in **Auto** mode for the Program to control it. To change to Auto mode

4.6.12 kWh

Configure kWh.

Navigation: **HOME → CONTROL → kWh**

CT1CT2TMRCVsEVTGVSPSCHALMSWTPGMKWASI

#	Point	Total	Edit	Delete	Details	Reset
1	KW	15295.4	Edit	Delete	Details	Reset

KW

Point :

Power Supply Type: select

Input1(Supply Current) : select

Constant

Point

Voltage:

Power Factor:

Scan Interval (Sec):

Comments :

Save

Clear

The configured kWh are listed on the left.

- # : kWh number.
- Point : Point Name.
- Total : Total kWh.
- Edit : Edit kWh.
Click

Edit

 to make changes to kWh.
- Delete : Delete kWh. Click

Delete

 to delete the kWh. Asks for a confirmation before deleting the kWh.
- Details : Click

Details

 to display the details of kWh.

KW-Details [All values are in Kilowatt Hour (kWh)]		
Point :	KW	
Total :	15307.09	☐ Datalog
Start Date & Time :	07-06-2018 15:05:20	
Current Minute :	1.7	☐ Datalog
Previous Minute :	2.54	☐ Datalog
Current Hour :	37.38	☐ Datalog
Previous Hour :	153.11	☐ Datalog
Current Day :	2207.87	☐ Datalog
Previous Day :	3824.36	☐ Datalog
Current Week :	10056.06	☐ Datalog
Previous Week :	5250.09	☐ Datalog
Current Month :	15307.09	☐ Datalog
Previous Month :	0	☐ Datalog
Select: All None		

Close

Select Datalog to enable data logging.

Click All to log all points.

Click None to deselect all points.

- Reset : Click **Reset** to reset the kWh values. There are two options for reset.

ECOM-NANO	
☒	Reset KWCalculator completely
☐	Reset KWCalculator but keep Date and Total
Ok Cancel	

Reset kWh calculator completely will reset the whole values.

Reset kWh calculator but keep Date and Total will retain the Total till date and resets all other values.

Add kWh

KW

Point :	
Power Supply Type:	select
Input1(Supply Current) :	select
Voltage:	☒ Constant ☐ Point
Power Factor:	
Scan Interval (Sec):	
Comments :	
Save Clear	

Point : Enter kWh point name.

Power Supply Type : Select Single Phase/Three Phase.

Input1 (Supply Current) : Select channel. If Power Supply Type is Single Phase, only one Input need to be selected as shown in the above picture. If the Power Supply Type is Three Phase then three inputs need to be selected as shown below.

KW

Point :	
Power Supply Type:	Three Phase
Input1(Supply Current) :	select
Input2(Supply Current) :	select
Input3(Supply Current) :	select
Voltage:	☒ Constant ☐ Point
Power Factor:	
Constant:	
Scan Interval (Sec):	
Comments :	
Save Clear	

Voltage : Voltage can be a constant of a Point. Select Constant to enter a value or Select a Point.

Power Factor : Enter Power Factor.

Constant : Constant for kWh calculation. The default is 1.73.

Scan Interval (Sec) : Enter Scan Interval in seconds. The default is 3 seconds.
Comments : Enter comments.

Click  to save the kWh.

Click  to clear the kWh.

4.6.13 ASI

The screenshot displays the ECOM-NANO Control Settings web interface. The browser address bar shows <https://10.10.3.73/control.html#>. The page features a green header with the ECOM-NANO logo and a 'Log Off' link. A left sidebar contains a 'Navigator' menu with options: Home, Status, Config, Control, Plotting, Graphics, Commands, Dashboard, Live Data Log, USB Data Log, Historical Data Log, Backup and Restore, Bluetooth, and Help. The main content area is titled 'ECOM-NANO - Control Settings' and includes a tabbed interface with tabs for CT1, CT2, TMR, CVs, EVT, GV, SP, SCH, ALM, SWT, PGM, KW, and ASI. The ASI tab is active, showing a table with columns: #, Name, Run, Simulate, Details, and Delete. Below the table are links for 'Add New', 'StartAll', and 'StopAll'. The status 'On Line' is displayed at the bottom left of the main area.

The screenshot shows the 'Script Editor' window. It has a 'Script Editor' tab and a 'Simulator' tab. The 'Name' field is set to 'MOTOR_ON'. Buttons for 'Save', 'Import', 'Export', 'Print', and 'Close' are visible. The script content is as follows:

```
1 start
2
3
4
5
6 End
```

The status bar at the bottom indicates 'Line 6, Column 3'. The Windows taskbar at the bottom shows the system clock as 1:58 AM on 5/19/2016.

4.7 PLOTTING

View graph of logging enabled points.

Navigation: **Home** → **Plotting**

ECOM-NANO - Plotting

Channel:	select ▼		
Start Time :	10 Jul 2018 14:40:45	Duration	select ▼
		Interval	select ▼
Plot			

- Channel : Select Channel.
- Start Time : Pick time from which graph need to be plotted.
- Duration : Select duration of plot.

select

01 hr

30 min

20 min

10 min

- Interval : Select data interval.

select

05 sec

10 sec

15 sec

30 sec

01 min

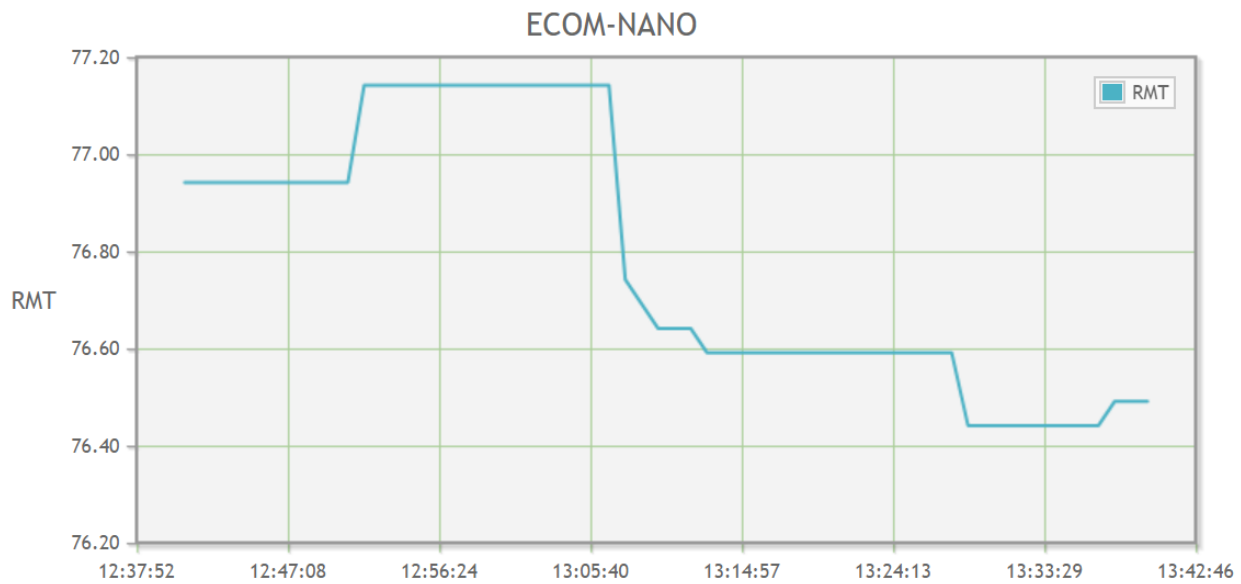
05 min

Click

Plot

ECOM-NANO - Plotting

Channel:	RMT		
Start Time :	10 Jul 2018 12:40:45	Duration 01 hr	Interval 01 min
Plot			

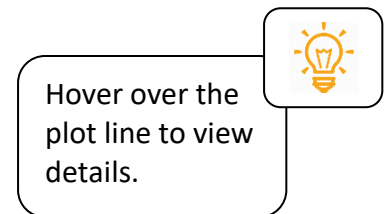


Sample graph - Analog point.



Hover over the
plot line to view
details.

Sample graph - Digital point.



4.8 GRAPHICS

Display Input/Output status.
Navigation: **Home** → **Graphics**

ECOM-NANO - Graphics			
IP Address : 192.168.168.101		Date : 10 Jul 2018	
Memory : Total: 253320KB		Time : 14:52:10	
Used: 93316KB (36.84%) Free: 160004KB (63.16%)			
NANO		EX - 1	
Input	Output	Input	Output
76.74 RMT	10.89 % DAMPER		
77.57 OAT	ON CRAC1 Run		
OFF CRAC1 Fail	ON CRAC2 Run		
OFF CRAC2 Fail	OFF CRAC3 Run		
OFF CRAC3 Fail			
OFF Fire Alarm			

4.9 COMMANDS

Execute Commands.

Navigation: **Home** → **Commands**

ECOM-NANO - Commands

COMMAND

Command :

Command History :

Command	Date/Time (MM/dd/yyyy HH:mm:ss)	User
REBOOT	06-Jul-2018 14:14:57	admin
ESTATNANO	06-Jul-2018 14:07:24	admin
REBOOT	06-Jul-2018 13:36:06	admin

Command : Enter Command.

Click to execute the command. The output of the command will be shown in a popup window.

Response

Command : ESTAT
 Current Date And Time : 10-Jul-2018 15:02:21
 Firmware Version : NX.2.18.06.4.T
 Wired IPv4 Address : 192.168.168.101
 Wired IPv6 Address :
 Wireless IPv4 Address : 192.168.1.71
 Wireless IPv6 Address : fe80::8eae:4cff:fef8:2f19
 Boot Time : 07-Jul-2018 10:19:38
 Up Time : 3 Day(s), 4 Hour(s), 42 Minute(s), 44 Second(s)
 Default IP Address : 192.168.168.99
 Default Subnet Mask : 255.255.255.0
 Default Gateway : 192.168.168.1
 Default DNS Server :
 Mac Address : 9A:19:10:55:BB:0B
 On Board Ram Memory :
 Size : 253320, Used : 94128, Free : 159192,

 NANO

 Status : Detected

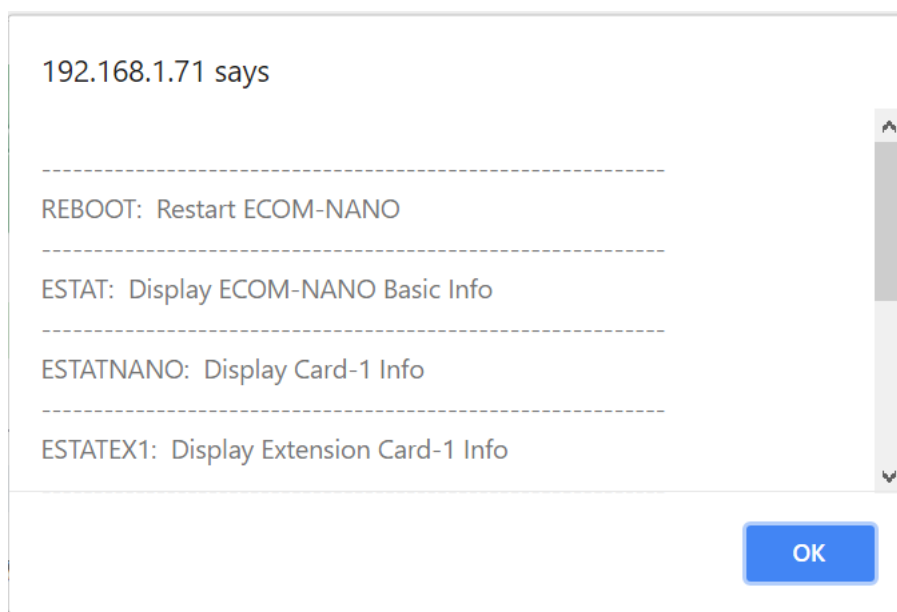
 Type2 10K Thermistor/Digital Inputs
 <

Click to close the popup.

Click to select the result.

Click to print the result.

Click to view the list and commands.

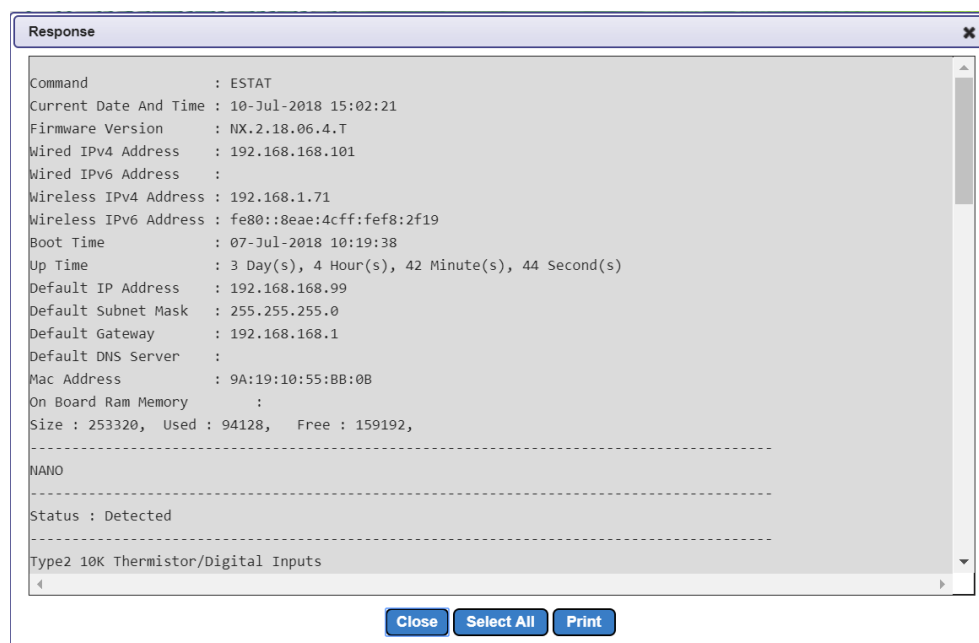


Commands

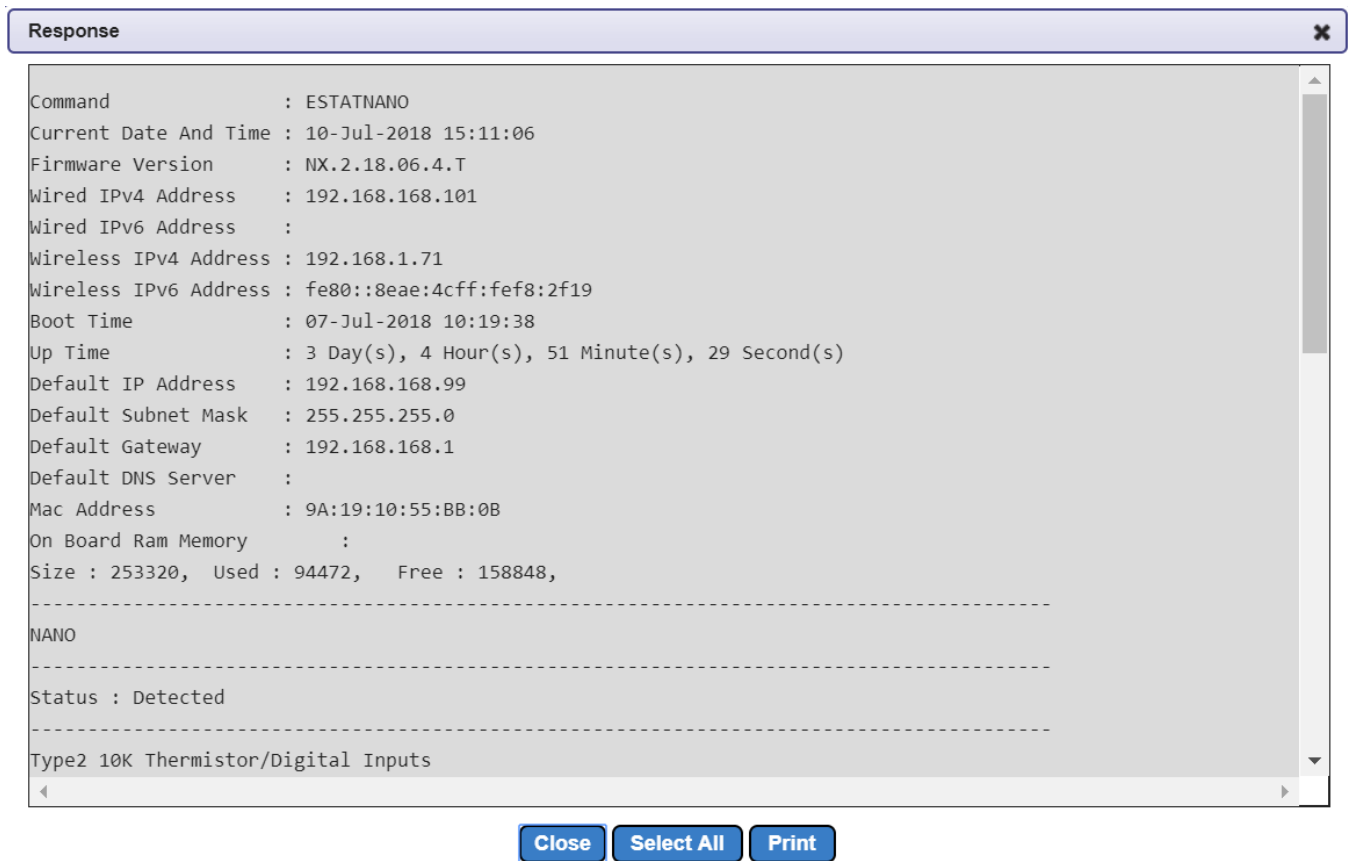
REBOOT - Restart ECOM NANO

ESTAT - Display ECOM NANO Basic Info

ESTAT command is used to display the details of all expansion cards connected to the ECOM-Nano. ESTAT command will provide an output in a popup window as shown below.

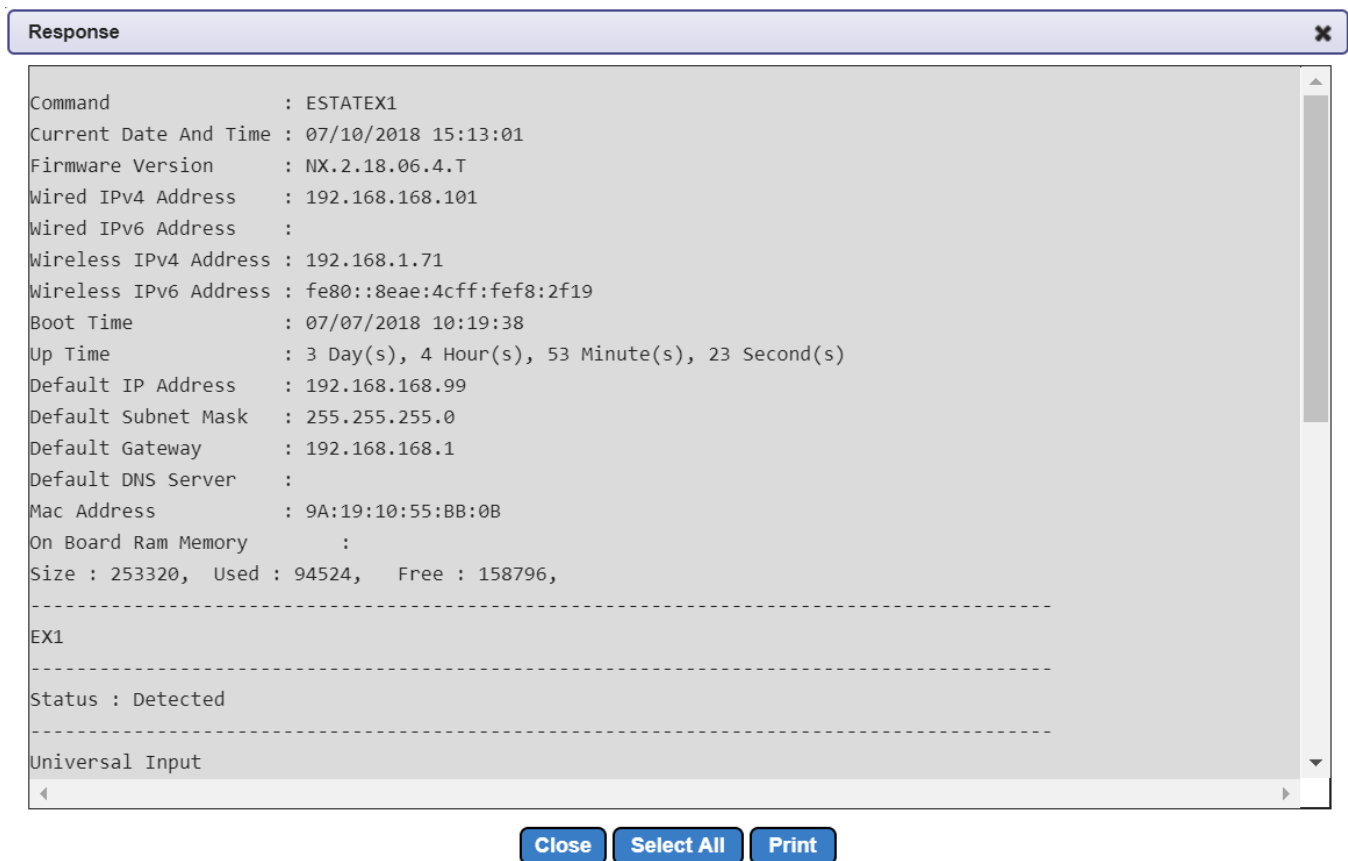


ESTATNANO - Display Card-1 Info



ESTATEX1 - Display Extension Card-1 Info

ESTATEX1 command is used to get input and output details of specific expansion card/IO card (EX1). While execution, details will be displayed as follows.



LOCKED - Display Used Output Channels

Locked command is used to get information about channels that are in manually controlled mode (locked points). Details will be displayed in a popup window as shown below.

Response ✕

```

Firmware Version      : NX.2.18.06.4.T
Wired IPv4 Address    : 192.168.168.101
Wired IPv6 Address    :
Wireless IPv4 Address : 192.168.1.71
Wireless IPv6 Address : fe80::8eae:4cff:fef8:2f19
Boot Time             : 07/07/2018 10:19:38
Up Time               : 3 Day(s), 4 Hour(s), 54 Minute(s), 17 Second(s)
Default IP Address    : 192.168.168.99
Default Subnet Mask   : 255.255.255.0
Default Gateway       : 192.168.168.1
Default DNS Server    :
Mac Address           : 9A:19:10:55:BB:0B
On Board Ram Memory   :
Size : 253320, Used : 94652, Free : 158668,
-----
Locked Points
-----
CATEGORY                NAME                TYPE        STATUS
-----
No Locked Points Found
-----

```

Close
Select All
Print

LISTALL - List All Control Channels

Listall command is used to get a list of all channels configured on ECOM-Nano with it's category name and current value. The output will be displayed in a popup window as follows.

Response ✕

List of points

CATEGORY	NAME	CURRENT VALUE
EX INPUT CHANNEL	RMT	76.24
	OAT	77.07
	CRAC1_Fail	OFF
	CRAC2_Fail	OFF
	CRAC3_Fail	OFF
	Fire_Alarm	OFF
EX OUTPUT CHANNEL	DAMPER	10.89
	CRAC1_Run	ON
	CRAC2_Run	ON
	CRAC3_Run	OFF
EVENT	CRAC_Timer_Event	ON
	CRAC1_Event	ON
	CRAC2_Event	ON
	CRAC3_Event	OFF
	AC1_OR_AC2_Fail	OFF
	AC2_OR_AC3_Fail	OFF

Close

Select All

Print

LISTTABLES - List All Switching Tables

This command can be used to list details of all switching tables configured on ECOM-Nano. When executed the command, result will be displayed in a popup window as shown below.

Response✕

```

Command          : LISTTABLES
Current Date And Time : 07/10/2018 15:18:27
Firmware Version   : NX.2.18.06.4.T
Wired IPv4 Address  : 192.168.168.101
Wired IPv6 Address  :
Wireless IPv4 Address : 192.168.1.71
Wireless IPv6 Address : fe80::8eae:4cff:fef8:2f19
Boot Time          : 07/07/2018 10:19:38
Up Time            : 3 Day(s), 4 Hour(s), 58 Minute(s), 49 Second(s)
Default IP Address  : 192.168.168.99
Default Subnet Mask : 255.255.255.0
Default Gateway     : 192.168.168.1
Default DNS Server  :
Mac Address         : 9A:19:10:55:BB:0B
On Board Ram Memory :
Size : 253320, Used : 95256, Free : 158064,

-----
Switching Tables
-----

```

Name	Channel	Value to set	Latch	OnTimeDelay	OffTimeDelay
CRAC1-Event-ON-ST	CRAC1_Event	ON	Disabled	00:00:00	00:00:00

Close
Select All
Print

LOGICSTAT - Display All Control Channel Status

Response✕

```

On Board Ram Memory :
Size : 253320, Used : 95292, Free : 158028,

+-----+
|Counter 1|
+-----+
| #|          Name|      Value|      Condition|      Reset After|      DataLog|
+-----+
| 1|          CT1|    28346|          TRUE|          N/A|          NO|
+-----+

+-----+
|Counter 2|
+-----+
| |          |          |          CONDITION|          AUTORESET|
+-----+
| #|          Name|      Value|      Condition|      Schedule|      Reset After|      Schedule|      Data Log|
+-----+
| 1|          CRAC1_COUNTER|      31|          TRUE|          N/A|          N/A|          N/A|          NO|
+-----+
| 2|          CRAC2_COUNTER|      32|          TRUE|          N/A|          N/A|          N/A|          NO|
+-----+
| 3|          CRAC3_COUNTER|      30|          FALSE|          N/A|          N/A|          N/A|          NO|
+-----+

```

Close
Select All
Print

Command History

ECOM-NANO - Commands

COMMAND

Command :

Run

Help

Command History :

Command	Date/Time (MM/dd/yyyy HH:mm:ss)	User
LOGICSTAT	10-Jul-2018 15:21:02	admin
LOGICSTAT	10-Jul-2018 15:19:52	admin
LISTTABLES	10-Jul-2018 15:18:28	admin
LISTTABLES	10-Jul-2018 15:15:41	admin
LISTALL	10-Jul-2018 15:14:48	admin
LOCKED	10-Jul-2018 15:13:55	admin
ESTATEX1	10-Jul-2018 15:13:02	admin
ESTATNANO	10-Jul-2018 15:11:07	admin
ESTAT	10-Jul-2018 15:02:23	admin
REBOOT	06-Jul-2018 14:14:57	admin
ESTATNANO	06-Jul-2018 14:07:24	admin
REBOOT	06-Jul-2018 13:36:06	admin

Include in info

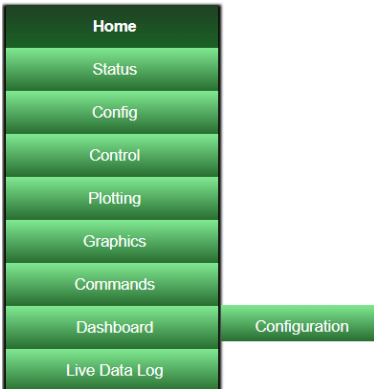
Command history displays up to last 40 successfully executed commands, Date/Time and the User.

Only admin can execute commands and see the output.

Commands are not case sensitive.

4.10 DASHBOARD

Configure and view up to 4 Dashboards.
Navigation: **Home** → **Dashboard**



Click on Configuration menu.



: Create new dashboard



: Save dashboard.



: Edit selected dashboard

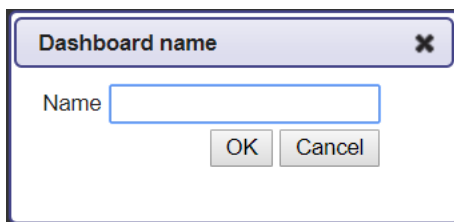


: Delete selected dashboard

Creating a dashboard



Click to create a dashboard.



Name : Enter dashboard name.

Click  to create the dashboard.

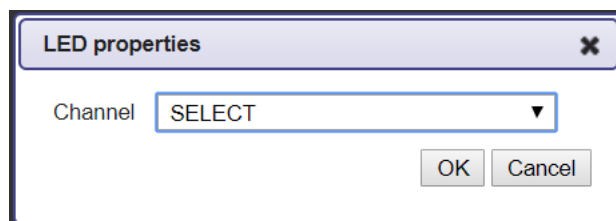
Click  to cancel.

Adding graphics to the dashboard



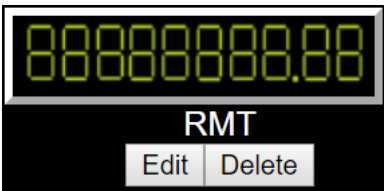
: LED.

Click on LED, select Channel. Channel can be analog or digital.



Click  to add LED to the Dashboard.

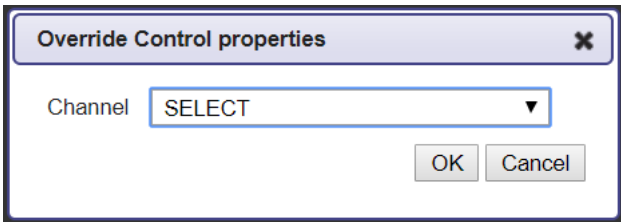
Click  to cancel.



Click **Edit** to edit the LED.
Click **Delete** to delete the LED. It will ask for a confirmation.



: Override Control.
Click on Override Control, select Channel. Override Control works only with Digital points.



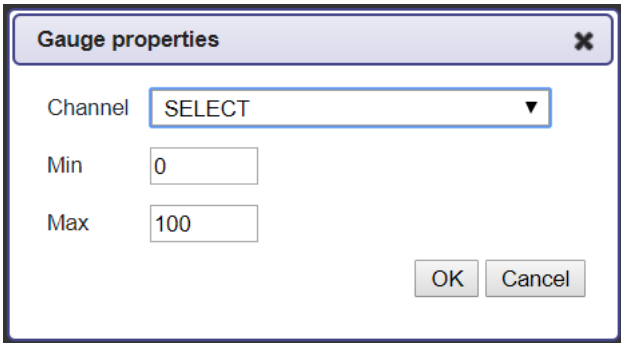
Click **OK** to add Override Control to the Dashboard.
Click **Cancel** to cancel.



Click **Edit** to edit the Override Control.
Click **Delete** to delete the Override Control. It will ask for a confirmation.



: Gauge.
Click on Gauge, select Channel. Gauge works only with Analog points.



Select Analog channel.
Enter minimum value.
Enter maximum value.

Click to add Gauge to the Dashboard.

Click to cancel.



Click to edit the Gauge.

Click to delete the Gauge. It will ask for a confirmation.



: AC Unit

Click on AC Unit.

AC Unit properties

Name

Channel

SELECT

Type

SELECT

Add

Delete...

Up

Dn

OK

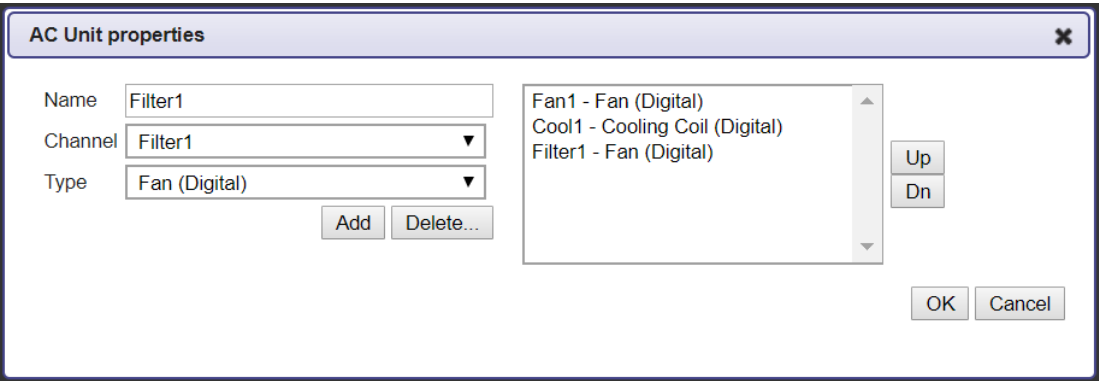
Cancel

Name : Enter Name for AC Unit.

Channel : Select Channel.

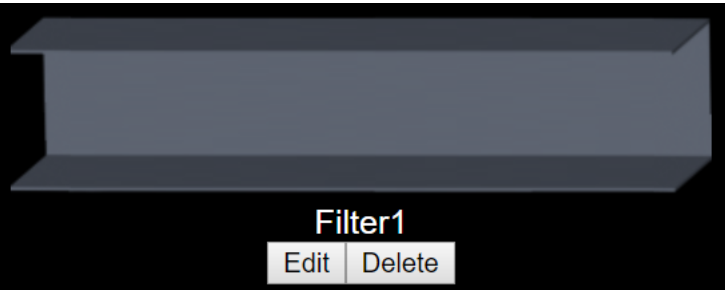
Type : Select Type. Available Types are Filter (Digital), Filter (Analog), Fan (Digital), Cooling Coil (Digital), Heating Coil (Digital)

Click .



To remove an added graphic, select and click  .

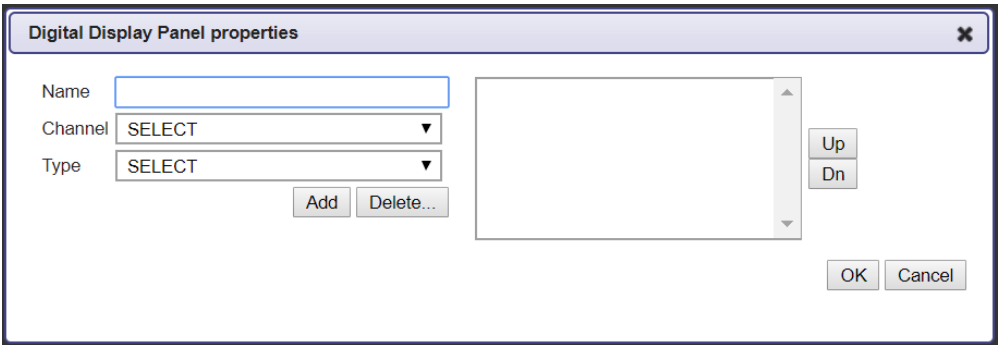
Click   keys to rearrange the order of the graphics.



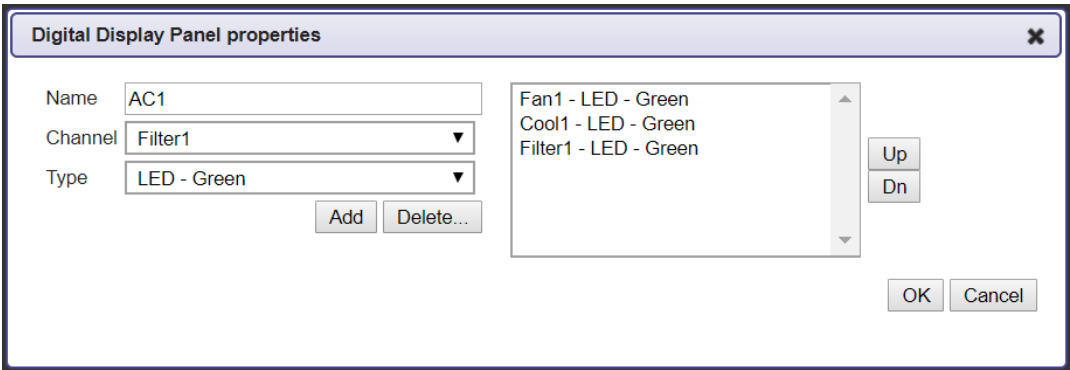
Click  to edit the AC Unit.
Click  to delete the AC Unit. It will ask for a confirmation.



: Digital display panel.
Click on Digital display panel.

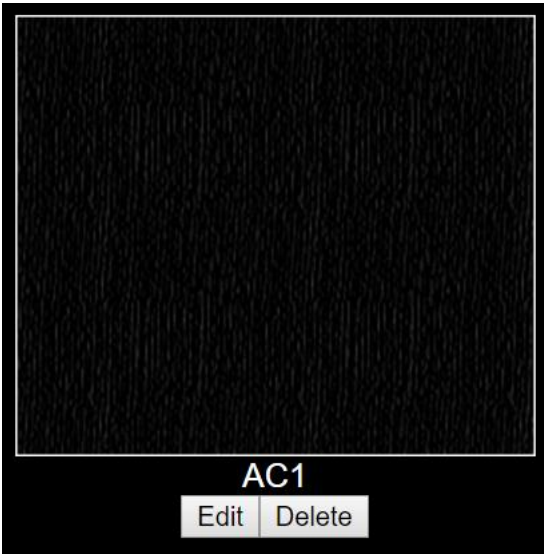


Name : Enter Name for Digital display panel.
Channel : Select Channel. Only Digital channels are supported.
Type : Select Type. Available Types are LED – Red, LED – Green.
Click  .



To remove an added graphic, select and click  .

Click   keys to rearrange the order of the graphics.



Click  to edit the Digital display panel.

Click  to delete the Digital display panel. It will ask for a confirmation.

 : Setpoint smiley.
Click on Setpoint smiley.

Setpoint Smiley Graphics

Channel

SELECT

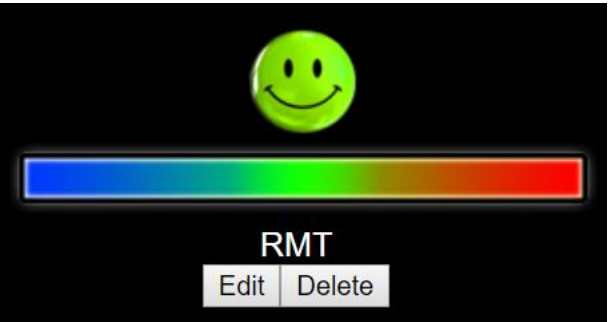
Setpoint

Deadband

OK

Cancel

Channel : Select Channel. Only Analog channels are supported.
Setpoint : Enter Setpoint.
Deadband : Enter Deadband.
Click .

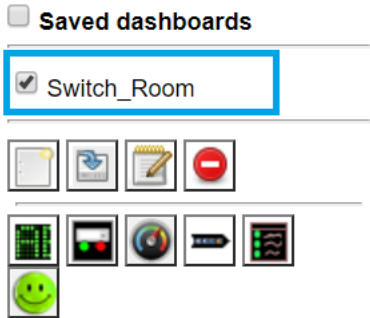


Click  to edit the Setpoint smiley.
Click  to delete the Setpoint smiley. It will ask for a confirmation.



Click  to save the dashboard.

Editing a dashboard

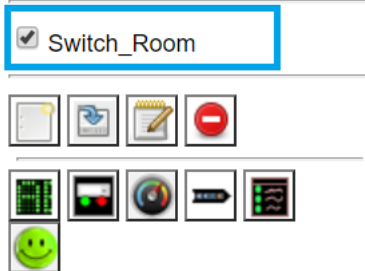




Select the dashboard to be edited and click .

Deleting a dashboard

☐ **Saved dashboards**

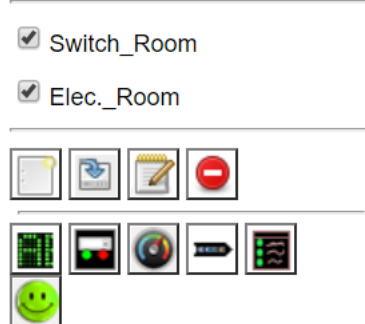


Select the dashboard to be edited and click .



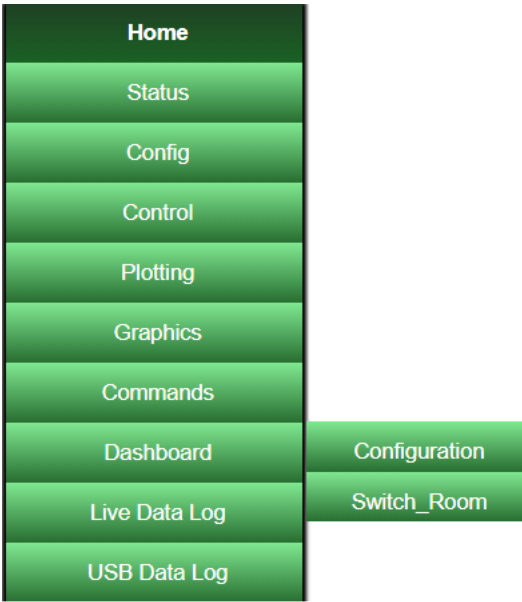
To delete all dashboards, select Saved dashboard and click .

☒ **Saved dashboards**

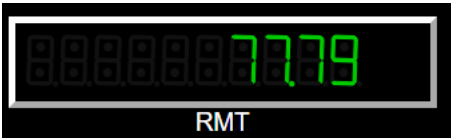


View Dashboard

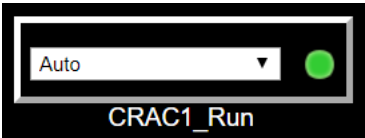
Click on the Dashboard menu and select the newly created Dashboard.



LED :



Override Control :

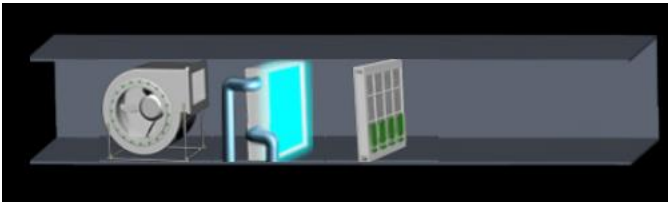


Select Auto, ON or OFF.

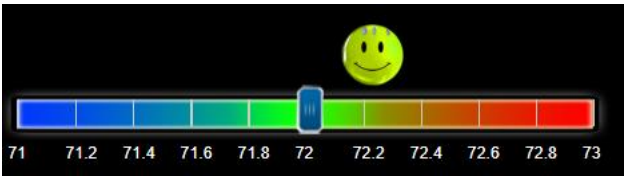
Gauge :



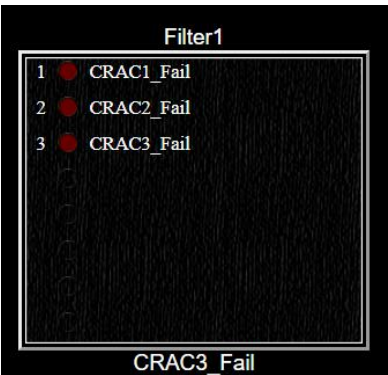
AC Unit :



Setpoint Smiley :



Digital display panel :



4.11 LIVE DATA LOG

Displays live data log for up to 8 channels.
Navigation: **Home** → **Live Data Log**

Refresh Rate 01 sec ▼

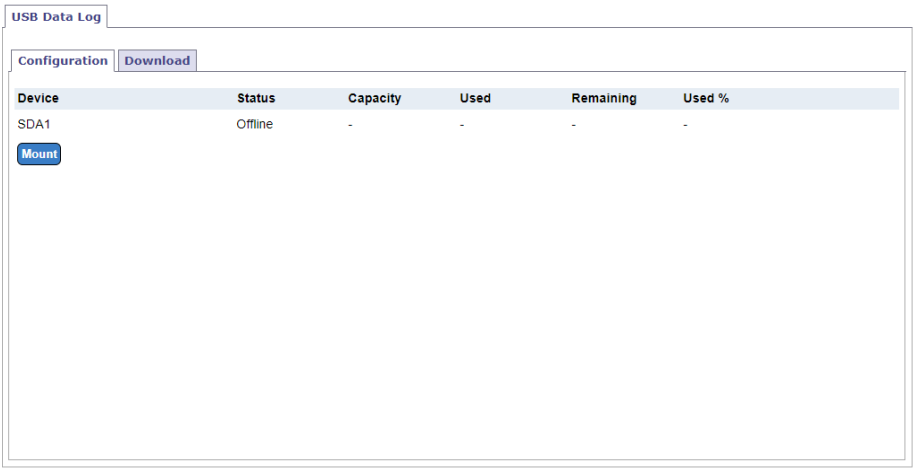
DATE (dd-MM-yyyy)	TIME (HH:mm:ss)	CHANNEL NAME							
		RMT ▼	OAT ▼	CRAC1_ ▼	CRAC2_ ▼	CRAC1_ ▼	CRAC2_ ▼	CRAC3_ ▼	select ▼
11-Jul-2018	10:55:13	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:12	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:11	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:10	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:09	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:08	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:07	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:06	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:05	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:04	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:03	78.39	79.77	OFF	ON	OFF	OFF	OFF	—
11-Jul-2018	10:55:02	78.39	79.77	OFF	ON	OFF	OFF	OFF	—

Select Refresh Rate – 01 sec, 05 sec, 10 sec, 1 min, 30 min, 1 hr.
Select Channels.

Click **Print Data** to print the Live Data Log.

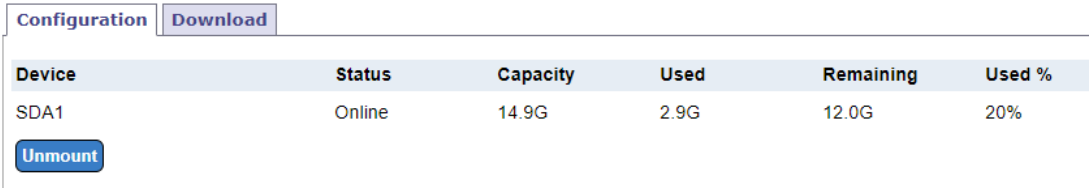
4.12 USB DATA LOG

Download data log to USB.
Navigation: **Home** → **Live Data Log**



Mounting USD drive

Connect USB to ECOM-Nano and click **Mount** .



Once mounted, select the download tab to initiate download to USB.
Click **Unmount** to unmount the USB.

USB Data Log

Configuration **Download**

RMT_06-Jul-2018_16_15_55.csv	OAT_06-Jul-2018_16_15_55.csv	CRAC1_Fail_06-Jul-2018_16_15_55.csv
CRAC2_Fail_06-Jul-2018_16_15_55.csv	DOOR_06-Jul-2018_16_15_55.csv	Fire_Alarm_06-Jul-2018_16_15_55.csv
DAMPER_06-Jul-2018_16_15_55.csv	CRAC1_Run_06-Jul-2018_16_15_56.csv	CRAC2_Ran_06-Jul-2018_16_15_56.csv
CRAC1_COUNTER_06-Jul-2018_16_15_56.csv	CRAC1_COUNTER2_06-Jul-2018_16_15_56.csv	Daily_26-Jun-2018_15_54_04.csv
Weekdays_06-Jul-2018_16_15_56.csv	Weekends_06-Jul-2018_16_15_56.csv	High_Temp_Alarm_06-Jul-2018_16_15_56.csv
Low_Temp_Alarm_06-Jul-2018_16_15_56.csv	Door_Open_Alarm_06-Jul-2018_16_15_56.csv	CRAC2_Run_07-Jul-2018_13_44_27.csv
CRAC3_Fail_07-Jul-2018_14_21_17.csv		

Refresh

Click on the filename to download the CSV file. The file is downloaded to the Downloads folder of the logged in user.

Click **Refresh** to refresh the page.

4.13 HISTORICAL DATA LOG

Download historical data log.

Navigation: **Home** → **Historical Data Log**

Start Time :	11 Jul 2018 11:07:45	
End Time :	11 Jul 2018 11:07:45	
Channel Name :	select ▼	Log Interval : select ▼
Document format :	CSV	
	Download	

Start Time : Select start date and time.

End Time : Select end date and time.

Channel Name : Select Channel.

Log Interval : Select Log Interval – 05 sec, 10 sec, 15 sec, 30 sec, 1 min, 10 min, 30 min, 1 hr.

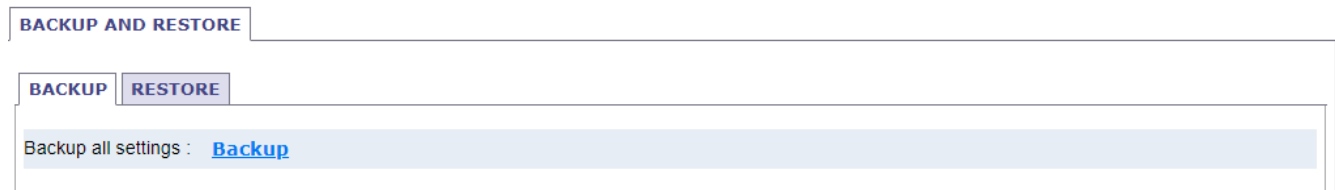
Document format : CSV.

Click [Download](#) to download the CSV file. The file is downloaded to the Downloads folder of the logged in user.

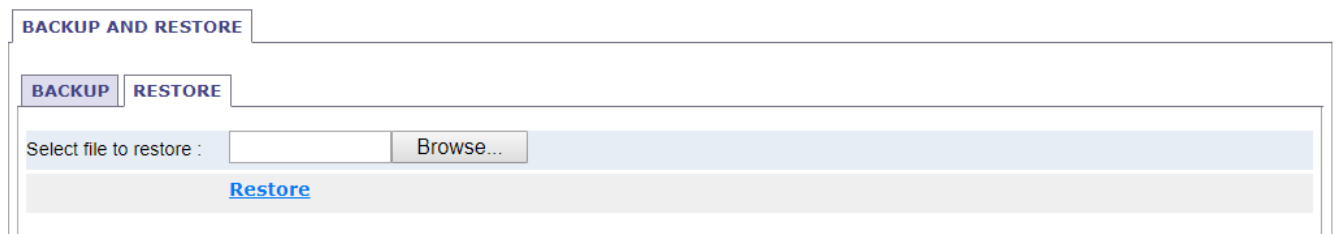
4.14 BACK UP & RESTORE

Backup/Restore controller settings.

Navigation: **Home** → **Backup and Restore**

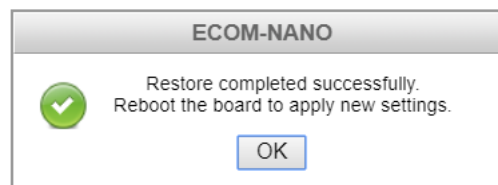


Click [Backup](#) to backup controller settings. The backup file is downloaded to the Downloads folder of the logged in user. The extension of the file is .bak.



Click [Browse...](#) to select the backup file.

Click [Restore](#) to restore the controller settings from an earlier backup. Restore takes few seconds to few minutes depending on the settings of the controller. Once successful it shows the following message. Reboot the board to apply the new settings.



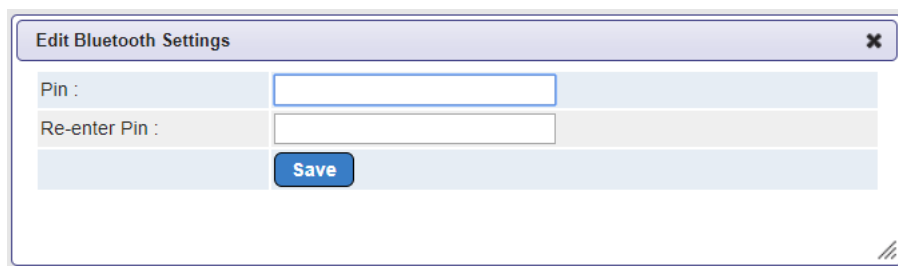
4.15 BLUETOOTH

Configure Bluetooth pin.

Navigation: **Home** → **Bluetooth**

#	User Type	Pin
1	Admin	Reset Pin

Click  to change the Bluetooth pin. Default pin is 1234.



The dialog box titled "Edit Bluetooth Settings" contains two input fields: "Pin :" and "Re-enter Pin :". Below these fields is a blue "Save" button. The dialog has a close button (X) in the top right corner and a small icon in the bottom right corner.

Pin : Enter Bluetooth pin. Supports only four digits (0 – 9)

Re-enter Pin : Re-enter Bluetooth pin.

Click  .

Only admin users have access to Bluetooth.

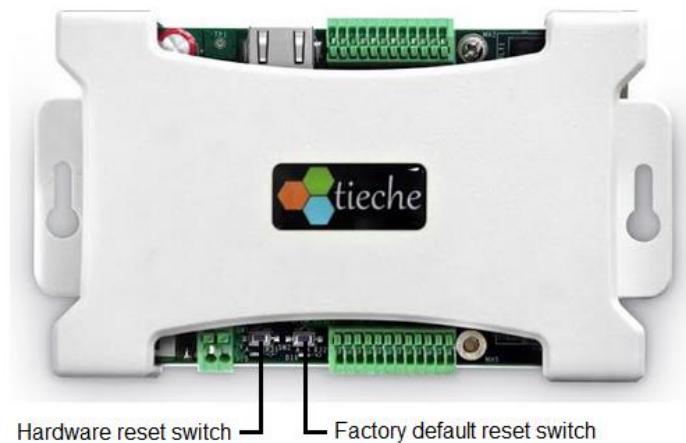
4.16 HELP

The Help file provides a list of the maximum number of points/controllers supported by the ECOM Nano.



4.17 HARDWARE INFO

APPENDIX A - RESET FUNCTION



Take a picture and blow up to show switches.

Show the blow up to the right and draw lines from the below detail 1 and 2 to the image

- Hardware reset switch : Reboot the controller.
- Factory default reset switch : Used for the following functions.
 1. Network & Password Reset
Press and hold the factory default reset switch for 10 seconds. After 10 seconds the heart beat LED starts blinking continuously in very short intervals. At this point release the switch and restart the controller.
This action resets user name, password and network configuration to default. All other configurations and data log are retained.
 2. Factory Default Reset
Press and hold the factory default reset switch for 20 seconds. After 10 seconds the heart beat LED starts blinking continuously in very short intervals. Continue to press and hold the switch. After 20 seconds the heart beat LED turns OFF. At this point release the switch and restart the controller.
This action resets all the configurations to factory default state and clears all data logs.

Factory Default Settings:

User Name : admin
Password : default@Ec0M\$
IP Address : 192.168.168.99

APPENDIX B - XML DATA

Data exchange links and formats.

XML data includes details for inputs, outputs, alarms and schedules.

IPv4 xml link : <http://192.168.168.99/cgi-bin/ECOM.xml>

IPv6 xml link : [http://\[IPv6 address\]/cgi-bin/ECOM.xml](http://[IPv6 address]/cgi-bin/ECOM.xml)

XML format

```
<NodeID>
<CurrentTime>12:38:01</CurrentTime>
<CurrentDate>Oct 26, 2017</CurrentDate>
- <Sensor id="0" Channel="1000">
  <SensorName>Input_1</SensorName>
  <SensorValue>5.00</SensorValue>
  <SensorUnits>V1</SensorUnits>
  <SensorAlert>None</SensorAlert>
  <SensorRelay>00.00</SensorRelay>
  <SensorLTValue>00.00</SensorLTValue>
  <SensorGTValue>00.00</SensorGTValue>
</Sensor>
- <Sensor id="1" Channel="1001">
  <SensorName>Input_2</SensorName>
  <SensorValue>10.00</SensorValue>
  <SensorUnits>V2</SensorUnits>
  <SensorAlert>None</SensorAlert>
  <SensorRelay>00.00</SensorRelay>
  <SensorLTValue>00.00</SensorLTValue>
  <SensorGTValue>00.00</SensorGTValue>
</Sensor>
- <Sensor id="2" Channel="1002">
  <SensorName>Input_3</SensorName>
  <SensorValue>15.02</SensorValue>
  <SensorUnits>V3</SensorUnits>
  <SensorAlert>None</SensorAlert>
  <SensorRelay>00.00</SensorRelay>
```

Change
screenshot
with new xml

APPENDIX C – EMAIL SAMPLES

Test email

ECOM MICRO: ECOM MICRO- FLOOR 1:Test Mail ➤ Inbox x

secoweb@tiechesystems.com

to me ▼

Controller name: ECOM MICRO- FLOOR 1

Wired IPv4 address: 192.168.1.51

Wired IPv6 address: fe80:0:0:5610:ecff:fec8:1041

Date and Time: 29 JUN 2018 FRI 09:11:26

Change
screenshot

Boot up email

ECOM-MICRO : ECOM MICRO- FLOOR 1 : Turned ON ➤ Inbox x

secoweb@tiechesystems.com

to me ▼

Controller name: ECOM MICRO- FLOOR 1

Wired IPv4 address: 192.168.1.51

Wired IPv6 address: fe80:0:0:5610:ecff:fec8:1041

Date and Time: 29 JUN 2018 FRI 09:40:51

Active Alarms

Alarm Name: RMT-HIGH-ALARM

Level: Critical

Date and Time: 29-Jun-2018 09:37:07

Alarm Name: OAT-HIGH-ALARM

Level: High

Date and Time: 29-Jun-2018 09:39:03

Alarm Name: SAT-HIGH-ALARM

Level: Medium

Date and Time: 29-Jun-2018 09:37:30

Alarm Name: RMT-1-HIGH-ALARM

Level: Low

Date and Time: 29-Jun-2018 09:39:28

Email when alarm is generated

ECOM MICRO : ECOM MICRO- FLOOR 1 : RMT-1-HIGH-ALARM : Low : Alarm
Generated ➤ Inbox x

secoweb@tiechesystems.com

to me ▼

Fri, Jun 29, 10:08 PM

Controller Name: ECOM MICRO- FLOOR 1

Alarm Name: RMT-1-HIGH-ALARM

Status: Alarm

Level: Low

Date and Time: 29-Jun-2018 09:37:37

Comments: Testing Alarm -4

Email when alarm returns to normal

ECOM MICRO : ECOM MICRO- FLOOR 1 : RMT-1-HIGH-ALARM : Low : Alarm
Returned to Normal ➤ Inbox x

secoweb@tiechesystems.com

to me ▼

Fri, Jun 29, 10:06 PM

Controller Name: ECOM MICRO- FLOOR 1

Alarm Name: RMT-1-HIGH-ALARM

Status: Normal

Level: Low

Date and Time: 29-Jun-2018 09:35:33

Comments: Testing Alarm -4

APPENDIX D – LCD DISPLAY INFO

APPENDIX E – SMS COMMAND

APPENDIX F – SMS MESSAGES



APPENDIX G – ECOM NANO - TECHNICAL SPECIFICATIONS

Processor	Expansion Capability
536 MHz, High Performance, 32 bit embedded microcontroller	Supports up to 32 inputs and 36 outputs through ECOM NANO-X expansion modules
Memory	Real Time Clock
256 MB Operating RAM 256 MB NAND Flash Operating system and controller configuration	+/-1 minute per month
Supply Voltage	Memory Back up
Rated: 12 VDC +/-5%, 2.0 Amps	10 years for NAND flash memory
Communications	Wiring Terminals
IEEE 802.3 Ethernet 10/100 BaseT 2 EIA-485, 250kbps 3 USB 2.0 ports IEEE 802.15.1 Bluetooth 2.0 802.11b/g/n Wi-Fi GSM-Quad-Band-850/900/1800/1900 MHz	Power
Inputs	Stranded copper wire 18 to 22 (AWG) 0.75 to 0.34 (mm ²)
4 selectable binary/thermistor inputs	Input /Output/RS-485
12 bit A/D converter Binary: Dry Contact 10K, thermistor (Type-II)	Stranded copper wire 20 to 24 (AWG) 0.5 to 0.25 (mm ²)
4 selectable voltage /binary inputs	User Interfaces
12 bit A/D converter Impedance: 6.2k ohm 0 - 5/10 VDC Analog 10V Digital input 10V over voltage protection	User friendly web interface Android application Monitor and control via SMS Email alerts 4 X 20 character LCD display Power on LED Heart beat LED Digital output LED
Outputs	
4 Analog voltage outputs	
0-10 VDC +/-5% Output Power: 50mA @ 10 VDC 16 bit D/A converter	
8 Digital outputs	
0/10 VDC Output Power: 50 mA @ 10 VDC	

APPENDIX G – ECOM NANO-X - TECHNICAL SPECIFICATIONS