User Guide
A272-365 Rev. 1.3
11/2024

Ethernet/IP Communications Module (SCM-E-EIP)

SCM SolaHD Communication Module
For use with SolaHD™ SDN-D Power Supplies

SOLAHD

EMERSON.

TABLE OF CONTENTS

REVISION HISTORY

Revision Code	Revision Date	Description
Rev. 1	8/2022	Final
Rev. 1.1	3/2023	Miscellaneous text and illustration additions and changes.
Rev. 1.2	11/2023	Minor instruction clarifications. Illustration updates. Corrected Input Voltage Type values.
Rev. 1.3	11/2024	Added updates for SCM-E-EIP Phase 2 (2.01)

PREFACE

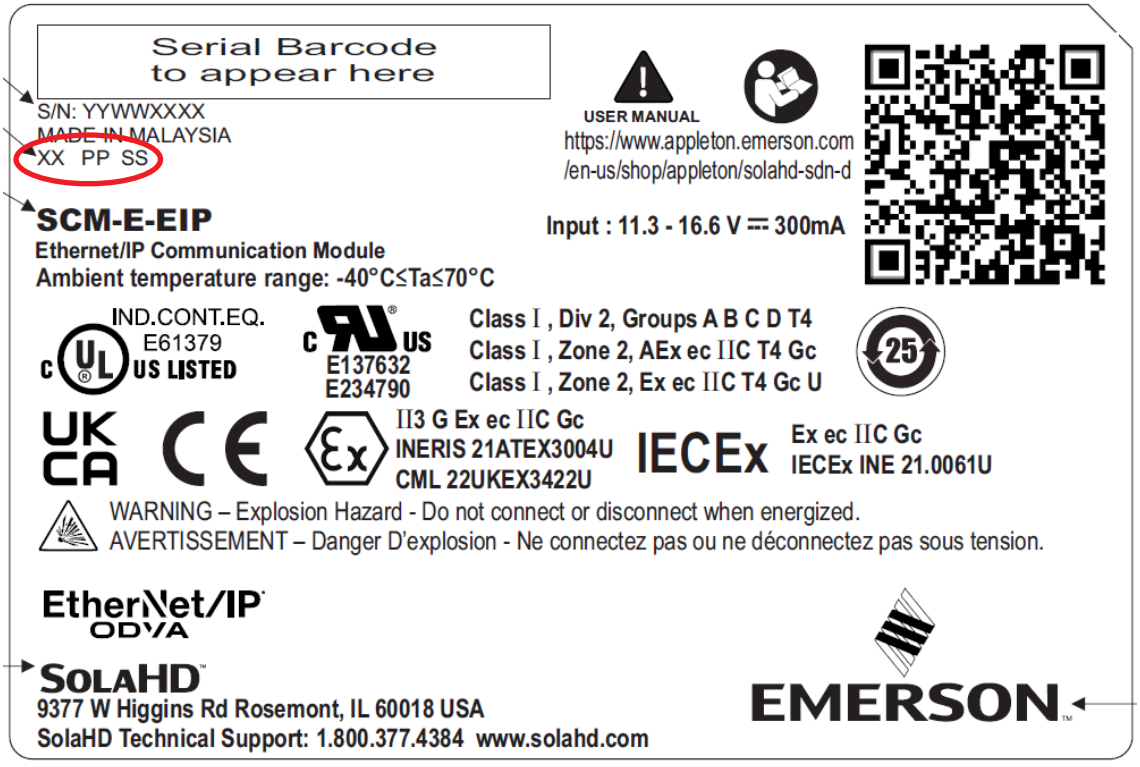
Thank you for purchasing SolaHD SCM-E-EIP!

This user manual defines how to use the communication functions of SCM-E-EIP. It also contains important safety instructions that must be followed during the installation and operation of the communication module. Before attempting to install the product, please read all safety, installation, operational warnings and instructions thoroughly.

You can also download the PDF version of this, and other documents, at **www.solahd.com**.

NOTICE

This manual applies to Phase 2 SCM-E-EIP models with the following revision number: xx 01 11. Revision number is located on the upper left section of the product label.



INTRODUCTION

The SCM Series of SolaHD Communication Modules provides network connectivity support for one or two SDN-D Series power supplies over popular industrial protocols. The SCM-E-EIP model provides Ethernet/IP protocol support, and is fully ODVA-conformant. The SCM-E-EIP also includes an embedded web server with a graphical user interface (GUI), to provide a simple means to monitor and configure SDN-D power supply data and parameters using a standard web browser.

FEATURES

- Provides a means to connect up to two SDN-D Power Supplies to an Ethernet/IP network
- Monitoring via an embedded webserver Graphical User Interface accessible via common browsers like Google Chrome, Microsoft Edge, and Mozilla Firefox
- Utilizes the Common Industrial Protocol (CIP) for its upper layers
- Uploading and downloading of parameters and setpoints via TCP
- Transfer of basic I/O data via User Datagram Protocol (UDP)-based implicit messaging
- Dual Ethernet ports to accommodate different network configurations
- Built-in thermal sensor to measure the device's internal temperature. Since the SCM generates minimal heat itself, the internal temperature of the SCM should approximate ambient temperature.

WHAT'S INCLUDED

SCM-E-EIP ships with the following items:

- 1 x SCM-E-EIP Ethernet/IP Communication Module
- 2 x SCM-E-EIP I2C cable
- SCM-E-EIP Safety Instruction Sheet

ADDITIONAL REQUIREMENTS (NOT INCLUDED)

The following items/accessories not included in the SCM-E-EIP package are also needed:

- Ethernet cable (with straight-through configuration, shielded Cat6 or higher)
- Windows PC with pre-installed internet browser

COMPATIBLE DEVICES/APPLICATIONS

SCM-E-EIP is compatible with the following SolaHD SDN-D power supplies:

- SDN1024100D version xx 06 10
- SDN2024100D version xx 05 16

As an ODVA-conformant Ethernet/IP adapter, the SCM-E-EIP should function properly with any other Ethernet/IP device meeting ODVA certifications. The web server embedded in the SCM-E-EIP should be compatible with any MS Windows-based Internet browser, including Google Chrome, Microsoft Edge, and Mozilla Firefox.

SAFETY INSTRUCTIONS

⚠ CAUTION - Risk of personal injury and explosion hazard.

SAVE THESE INSTRUCTIONS - This manual contains important instructions that should be followed during installation and maintenance.

Risk of personal injury and explosion hazard when used in a Class I, Division 2/Class I, Zone 2 environment.

Refer to the *"Safety Instruction Sheet - SCM Communications Modules"* provided with the product or located on our website at www.SolaHD.com. Be sure to adhere to all safety procedures provided in the sheet.

1. PRODUCT OVERVIEW

1.1 GENERAL SPECIFICATIONS

Environmental	
Operating Temperature	-40°C to 70°C
Storage Temperature	-40°C to 85°C
Relative Humidity	5-95% RH
Altitude	0 to 3,000m
Weight/Dimensions	
H x W x D	140 x 25.5 x 106.9 mm, with sliding arm 123.3 x 25.5 x 106.9 mm, without sliding arm
Net Weight	161g

1.2 COMMUNICATION SPECIFICATIONS

Item		Specification
Communication Protocol		Ethernet/IP (CIP), ODVA-conformant
Topology		Star, Linear Bus, Device Level Ring (DLR)
Transmission		One to one (unicast), one to many (multicast), and one to all (broadcast)
Transmission Speed		10Mbps, 100Mbps
Transmission Medium		Shielded Cat6 Twisted-pair cable
Maximum Transmission Distance		100 meters
Process Data	Class 1	Connection resource: 1 max.
	Packet interval (RPI)	100 ms maximum
	Connection type	Exclusive-Owner Connection
Explicit message	Class 3	Number of clients that can communicate at one time: 6
	UCMM	Number of clients that can communicate at one time: 6
Default IP Address		DCHP enabled

1.3 CONSTRUCTION

The important parts of the SCM-E-EIP Communication Module are as follows:

1.4 NETWORK AND MODULE STATUS INDICATORS

As shown in **Section 1.3**, there are two LED indicators on the SCM-E-EIP, one for Network and one for Module.

The table below defines the different status of both the Network and Module LED indicators compliant with CIP Specification as stated in Volume 2:EtherNet/IP Adaptation of CIP, Chapters 9-4.2 and 9-4.3.

LED Indicator	LED State	Summary	Definition
Module	Steady Off	No power	No power is supplied to the SCM.
	Steady Green	Device operational	CIP connection is established
	Flashing Green	Standby	The SCM is in the wait state.
	Flashing Red	Major Recoverable Fault	A Power Supply has a Major Recoverable Fault.
	Flashing Green / Red	Self-test	SCM is performing a self-test.
Network	Steady Off	Not powered, no IP address	The device is powered off, or is powered on but with no IP address configured.
	Flashing Green	No connections	An IP address is configured, but no CIP connections are established, and an Exclusive Owner connection has not timed out.
	Steady Green	Connected	An IP address is configured, at least one CIP connection is established, and an Exclusive Owner connection has not timed out.
	Flashing Red	Connection timeout	An IP address is configured, and an Exclusive Owner connection for which this device is the target has timed out.
	Steady Red	Duplicate IP	The SCM has detected that its IP address is already in use.
	Flashing Green / Red	Self-test	SCM is performing a self-test.

1.4.1 INDICATORS AT POWER UP

As stated in Volume 2:EtherNet/IP Adaptation of CIP 9-4.1.4, the Module Status indicator shall turn Green for approximately 0.25 second, turn Red for approximately 0.25 second, and then turn Green and hold that state until the power-up test has completed. Network Status indicator shall turn Green for approximately 0.25 second, turn Red for approximately 0.25 second, and then turn Off and hold that state until the power-up test has completed.

1.5 SETUP AND CONNECTIVITY

1.5.1 ELECTROSTATIC DISCHARGE

NOTICE

Always use ESD precautions when handling electronic circuit equipment as they contain parts and assemblies susceptible to damage by electrostatic discharge (ESD).

To prevent possible electrostatic discharge (ESD) from rendering the SCM non-functional and possible data corruption, it is recommended to take proper precautions when setting up the system or handling products.

- Avoid hand contact by transporting and storing SCMs in static-safe containers.
- Always be properly grounded (e.g., using antistatic wrist strap) when contacting SCM or plugging in or removing cables from power supply or host device.

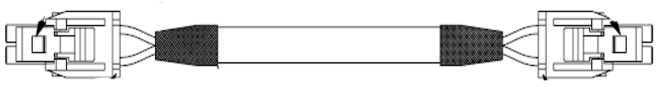
1.5.2 POWER SUPPLY REPLACEMENT

To avoid any data corruption, when changing one or both power supplies or SCM, it is recommended to follow these steps:

1. Turn off AC or DC input power to the power supplies,
2. Replace power supplies and/or SCM as intended,
3. Reconnect the mains and communication wiring,
4. Re-apply AC or DC input power to the power supplies.

1.5.3 SOLAHD POWER SUPPLIES (SDN-D SERIES)

Two cables are included with the SCM-E-EIP for interconnecting either one or two SDN-D power supplies. These cables are inserted into one of the I2C ports of the SCM-E-EIP. For the location of the I2C port, refer to **Section 1.3**.

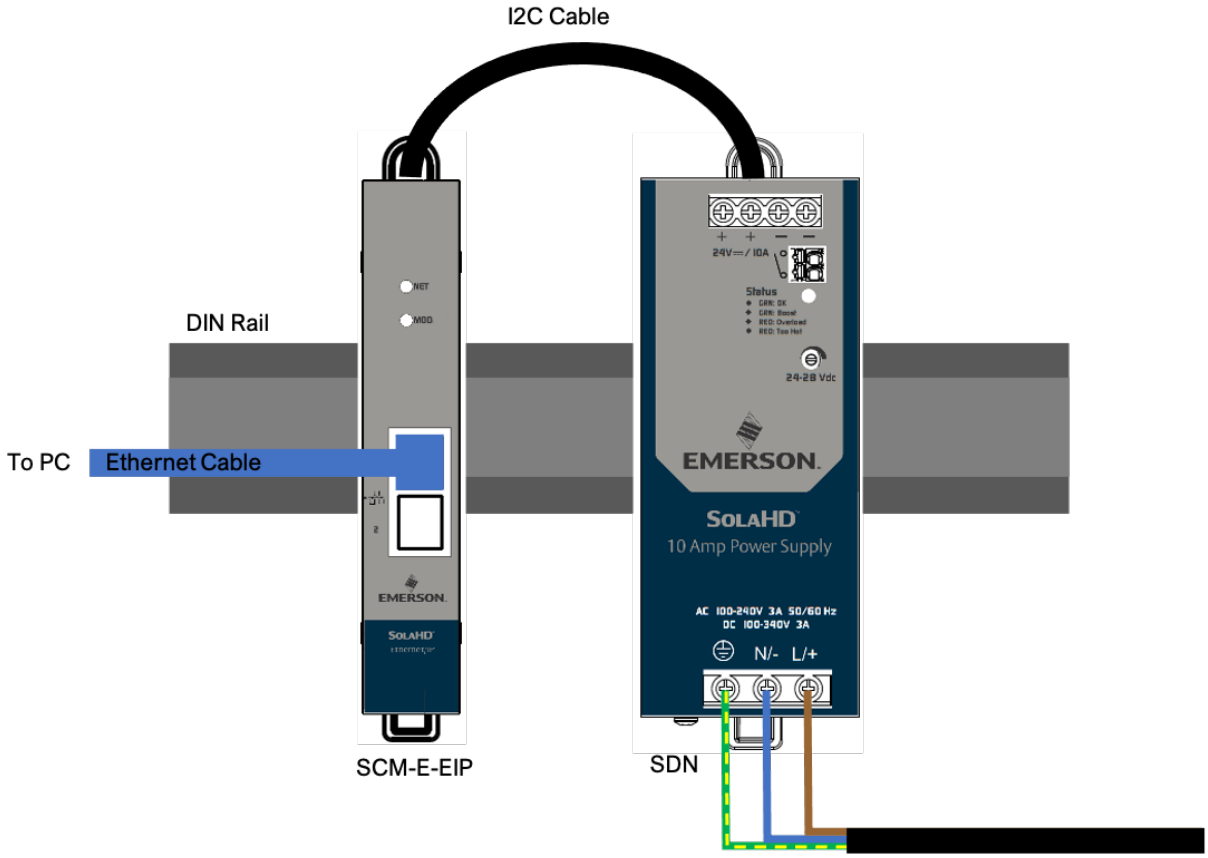


For the Ethernet port connectors, use a standard RJ45 cable (shielded Cat6 or higher).

The sections below show the wiring of the SCM-E-EIP to the SDN-D power supply.

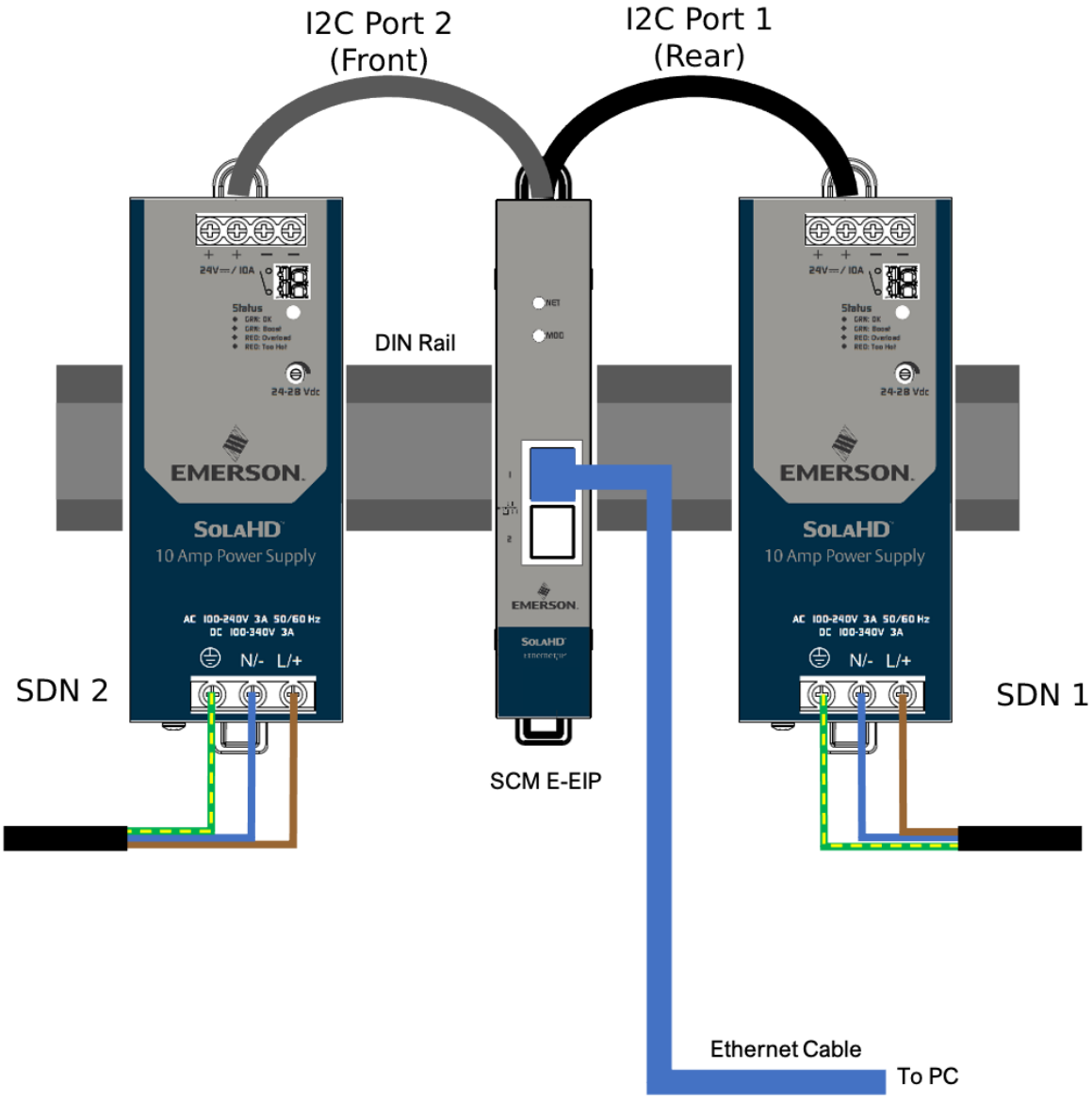
1.5.3.1 WIRING: SCM-E-EIP AND SDN-D 1:1 CONNECTION

The set-up below shows typical connections of one SCM-E-EIP to one SDN-D Power Supply.



1.5.3.2 WIRING: SCM-E-EIP AND SDN-D 1:2 CONNECTION

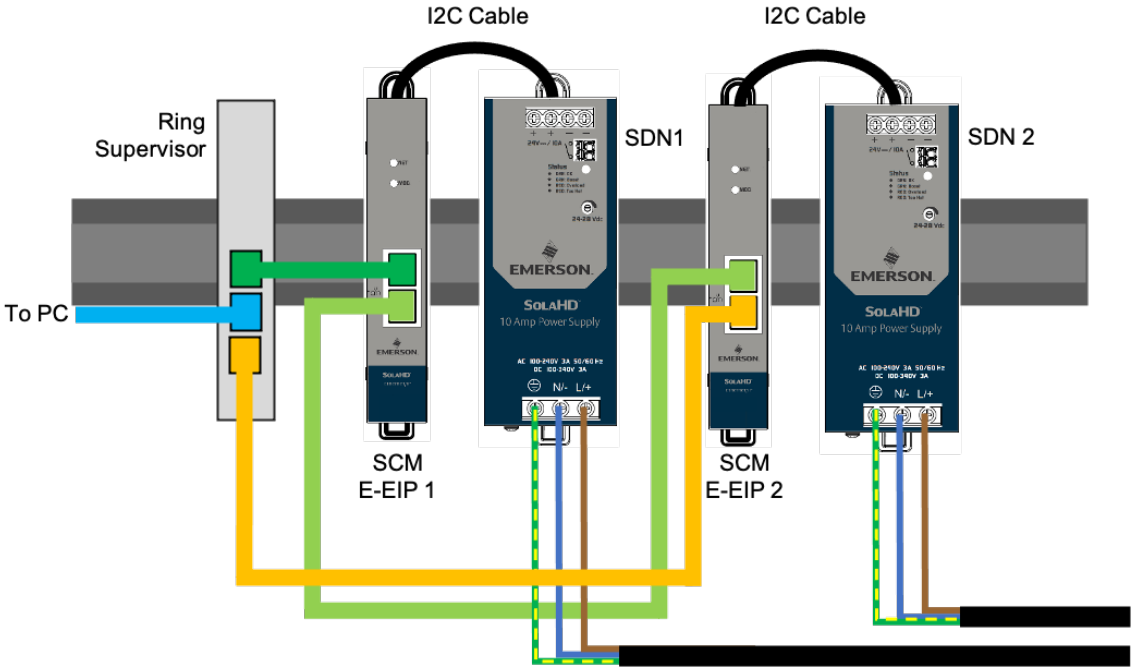
The set-up below shows typical connections of one SCM-E-EIP to two SDN-D Power Supplies.



1.5.3.3 WIRING: SCM-E-EIP AND SDN-D DEVICE LEVEL RING (DLR) CONNECTION

A Device Level Ring (DLR) network is a single fault tolerant network intended for the interconnection of automation devices without the need for additional switches.

The setup below shows the typical network connections for two SCM-E-EIP modules connected in a DLR topology. In this example, each SCM-E-EIP is connected to a single SDN-D Power Supply. This setup also makes use of a ring supervisor, a device that verifies the integrity of the ring, reconfigures the ring to recover from a single fault, and collects diagnostic information for the ring.

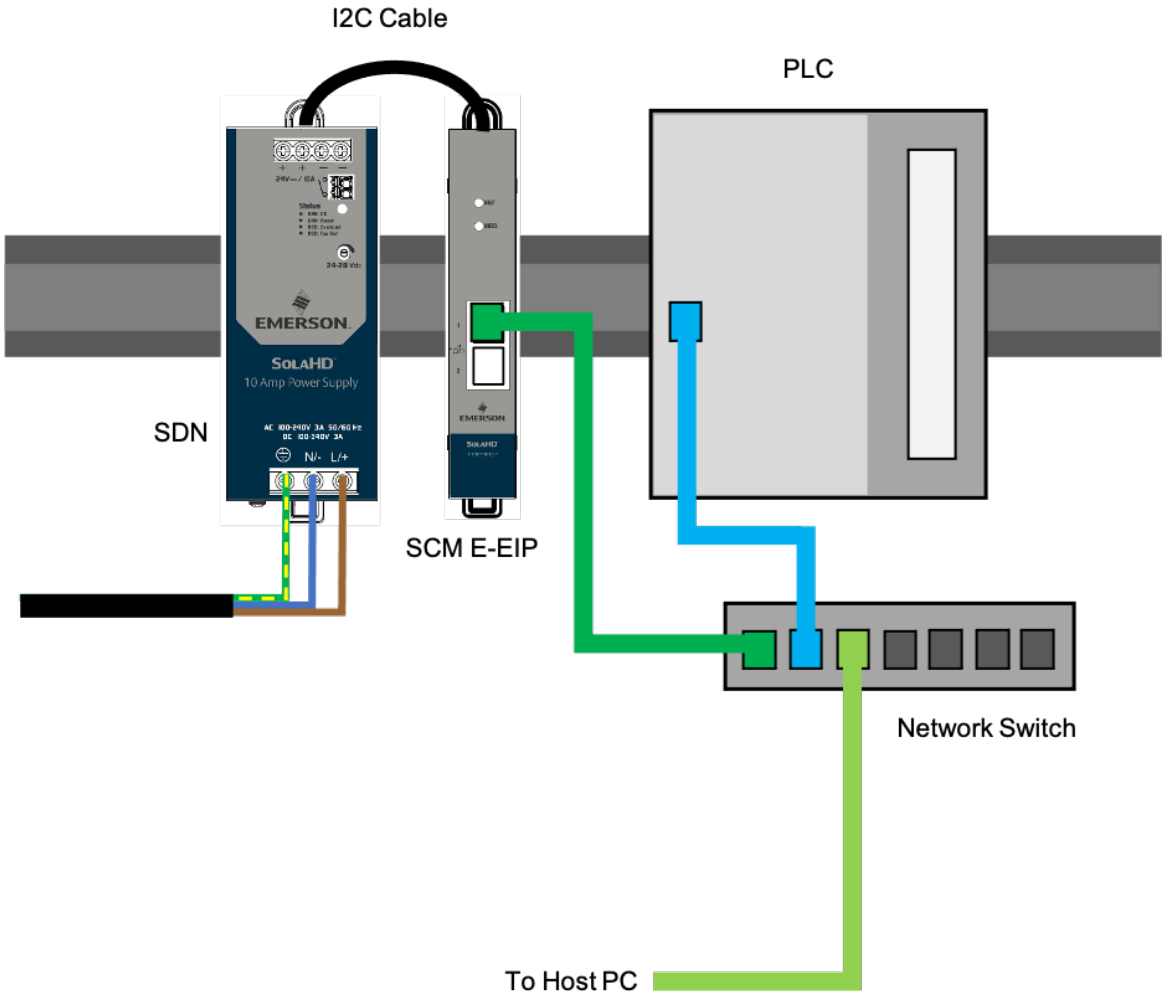


1.5.4 PLC CONNECTION

To connect a SolaHD SDN-D Power Supply to a PLC such as Allen Bradley Logix Processor, it must be wired either via a star topology or a ring topology as shown in the examples below. Both topologies make use of a network switch. For more details, refer to **Section 4 EDS File and Class 1, Class 3 data**.

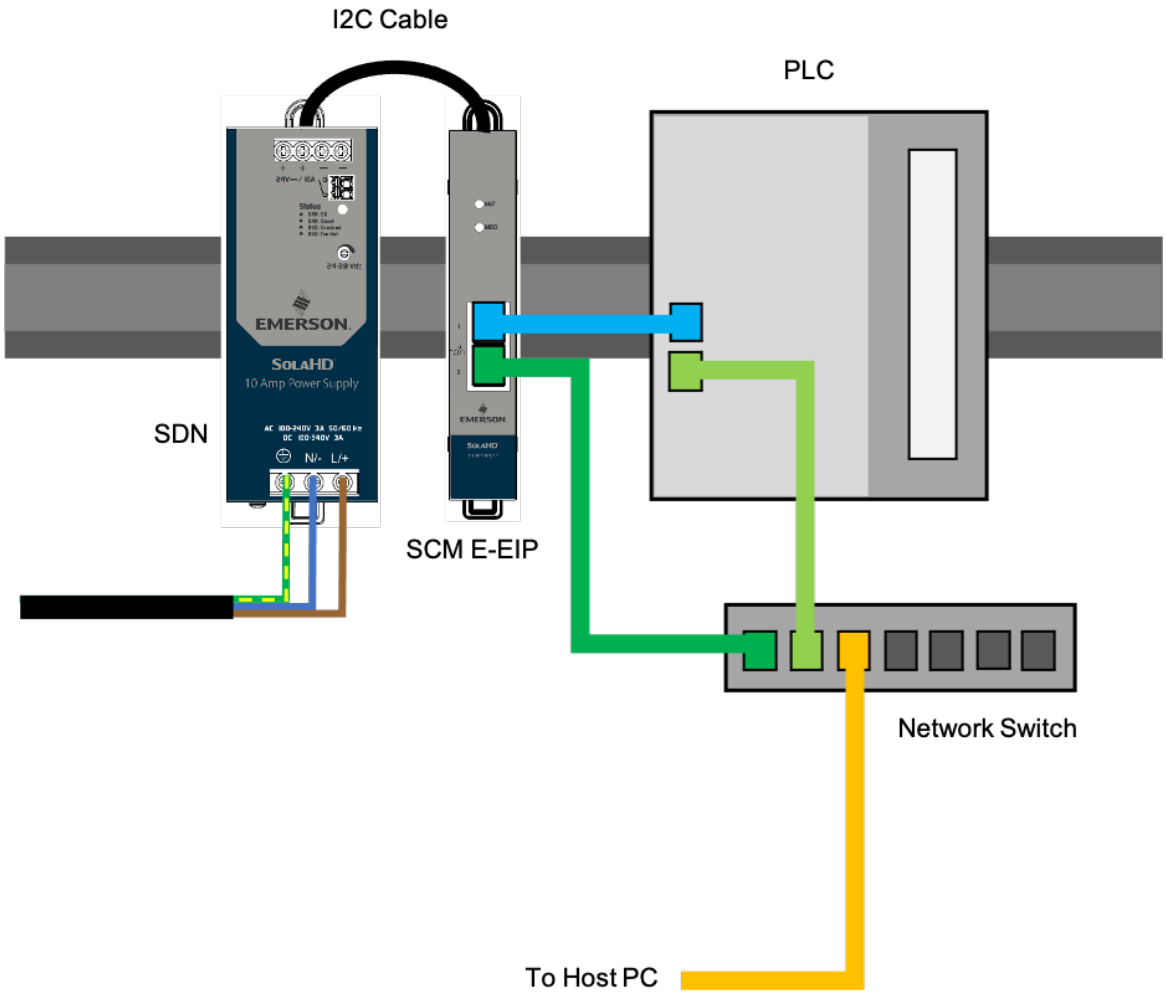
1.5.4.1 WIRING: STAR TOPOLOGY

The set-up below shows the wiring of a SCM-E-EIP - SDN-D Power Supply to a Rockwell Allen Bradley Logix Processor in star topology.



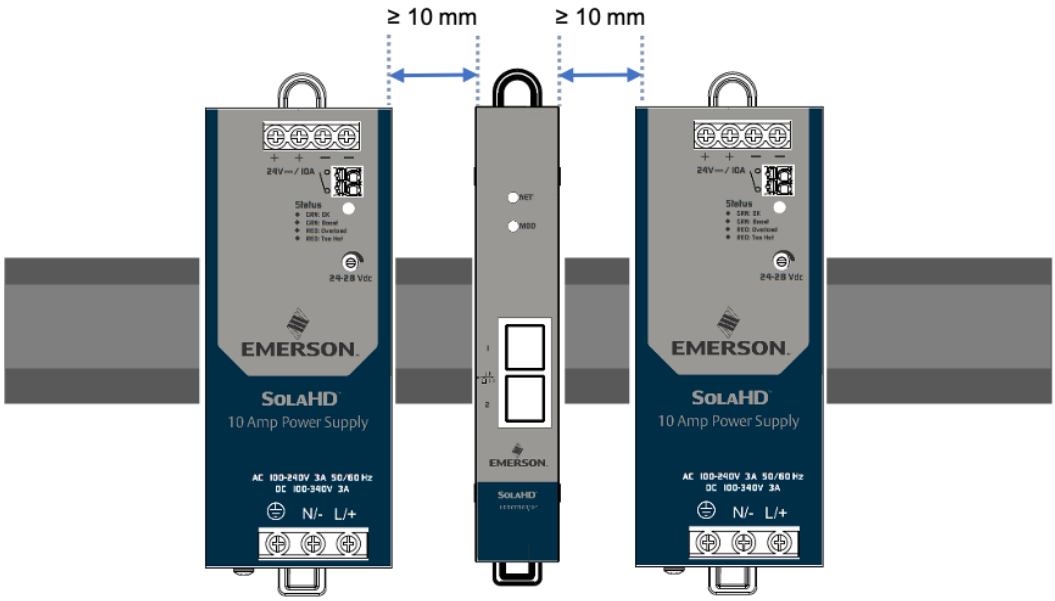
1.5.4.2 WIRING: DEVICE LEVEL RING (DLR) TOPOLOGY

The set-up below shows the wiring of a SCM-E-EIP - SDN-D Power Supply to a Rockwell Allen Bradley Logix Processor in ring topology.



1.5.5 SPACING

The setup below shows the spacing of the SCM-E-EIP to the SDN-D Power Supplies. Please note that all devices are mounted on a standard DIN-rail.



1.6 ACCURACY PARAMETERS

The measurement and calculation data of accuracy is shown in the table below. For the full list of SCM parameters, please refer to **Section 4.3.1**.

Parameter	Accuracy
SCM | Current on time	±1.0%
PS1, PS2 | Current turn on time	±3.0%
PS1, PS2 | Total turn on time	±3.0%
SCM | Temperature	±2.0°C
PS1 | Vout	±2%
PS1 | Iout	±2.5%
PS1 | Vin	±5.0%
PS2 | Vout	±2%
PS2 | Iout	±2.5%
PS2 | Vin	±5.0%
PS1 | Temperature	*
PS1 | Temperature	*

* see **Section 5.5** PSU temperature alarm

NOTES:

- The accuracy defined in the table above is valid over the entire operating input, load, Vout range and 0–60°C (unless specified otherwise)
- Iout accuracy at > 20% of max. operating load

1.7 PSU EVENTS

The events shown below can be flagged through communication with SCM-E-EIP.

Event	Event Code	Origin	Meaning
Short Circuit Protection	SCP/OCP	PSU	Short circuit fault occurred at the output of the power supply. This is triggered when the load current is greater than 150% of the rated load.
Overvoltage Protection	OVP	PSU	The output voltage of the power supply is greater than 32V for SDN10 and SDN20.
Power Boost	PB	PSU	Power supply loaded a reactive load which is less than 150% of the rated load but greater than 125% of the rated load.
Overtemperature Protection	OTP	PSU	Internal temperature of the power supply exceeding safe operating levels. This occurs when the main transformer temperature exceeds 125°C.
DC Status	DC OK DC NOT OK	PSU	DC OK flag becomes active when output voltage > 22, and < 28.5 Vdc. DC Not OK flag becomes active when output voltage < 21.5 or > 29 Vdc.

1.8 PSU STRESS LEVEL INDICATOR

Power supply stress indications are shown in table below.

Stress Indication	Stress Alarm Flag	Description and Required Action
Normal Stress	0x0000	Extended service life expected. Low thermal stress. No action needed.
Medium Stress	0x0001	Less optimal ambient temperature, and/or load combination. No risk of thermal overstress. Service life less than green stress mode, still high. Monitor load, line, and ventilation/air flow around power supply.
High Stress	0x0002	High thermal stress. Reduced service life. Check load, mains (for low mains such as 90-105Vac ~) and ventilation/airflow for high ambient thermal conditions. Reduce load and/or improve ventilation.

1.9 PRODUCT INFORMATION AND DEFAULT COMM. CONFIGURATION

The communication configuration and product information shown below can be read or written through SCM-E-EIP.

Name	Default Factory Settings	Process Data	CIP
Part Number	SCM-E-EIP	None	Read
Serial Number[1]	...	None	Read
Manufacturing Info[1]	...	None	Read
Manufacturer Name	SolaHD	None	Read
Model Revision[1]	...	None	Read
Primary Revision[1]	...	None	Read
Secondary Revision[1]	...	None	Read
MAC Address	00:00:00:00:00:00	None	Read

[1] *Factory dependent, no fixed value*

Default Communication			
DHCP	Enabled	None	Read/Write
IP Address	0.0.0.0	None	Read/Write
Subnet Mask	0.0.0.0	None	Read/Write
Gateway Address	0.0.0.0	None	Read/Write
Host Name			Read/Write
Domain name			Read/Write
DNS Server #1	0.0.0.0	None	Read/Write
DNS Server #2	0.0.0.0	None	Read/Write
Port 1			Read/Write
Port 2			Read/Write

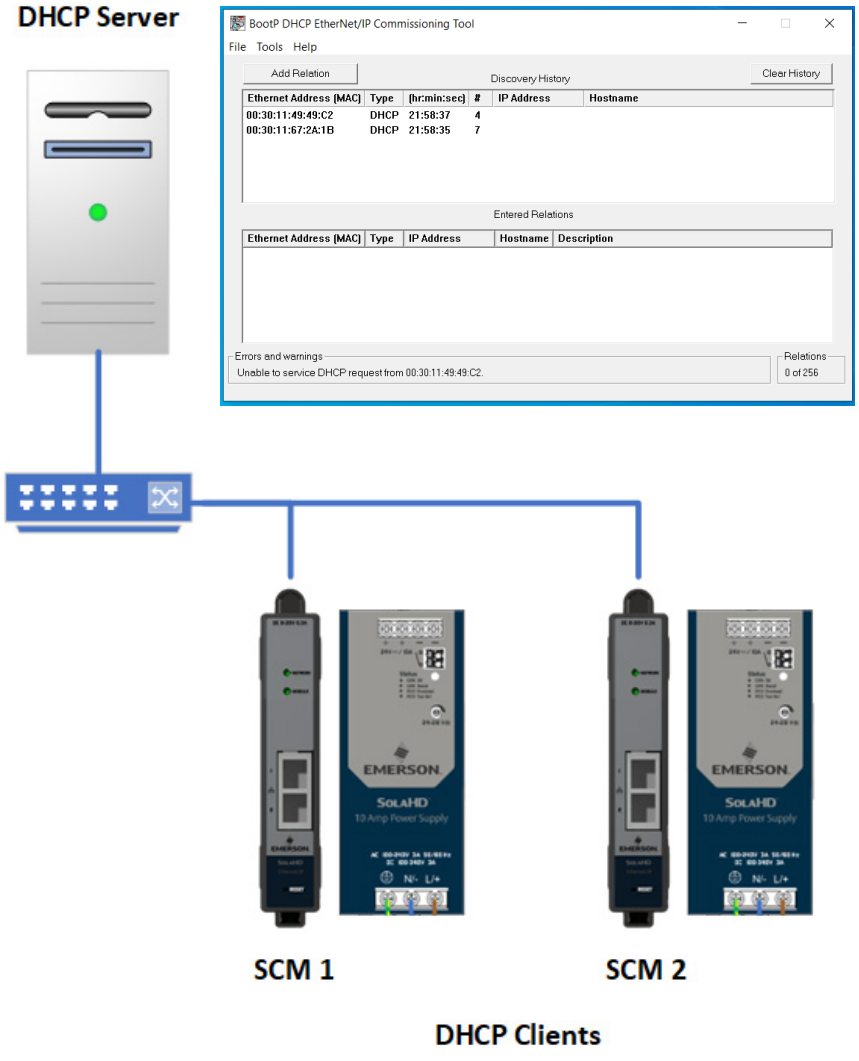
2. NETWORK CONFIGURATION/ IP SETTINGS

2.1 NETWORK CONFIGURATION

2.1.1 DHCP ENABLED CONFIGURATION

The SCM-E-EIP ships from the factory with DHCP Enabled by default. If a DHCP Server or DHCP server application (such as BootP-DHCP Ethernet/IP Tool) is present within the network where the SCM-E-EIP will be commissioned, the SCM-E-EIP will request an IP address from the DHCP server or DHCP server application upon boot up and initialization.

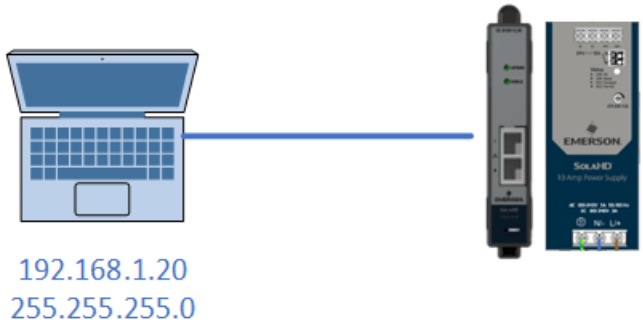
Note: The configuration of the DHCP server application is not mentioned in this user guide. Please see the specific user manual of the DHCP server application.



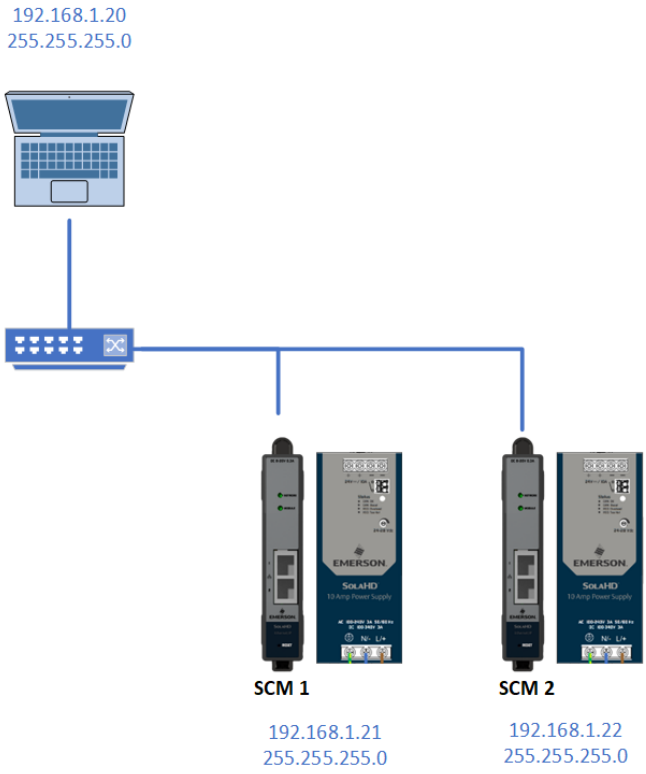
2.1.2 STATIC IP

The following example shows how to change the SCM(s) to a Static IP Address from a PC connected on the network (configured for example as 192.168.1.20) either by directly connecting to the ethernet ports of the PC and the SCM-E-EIP as shown in Section 2.1.2.1, or by connecting the SCM-E-EIP to a network where the computer used to configure the SCM-E-EIP is a part of, as shown in Section 2.1.2.2.

2.1.2.1 DIRECT CONNECTION CONFIGURATION



2.1.2.2 NETWORK CONNECTION CONFIGURATION

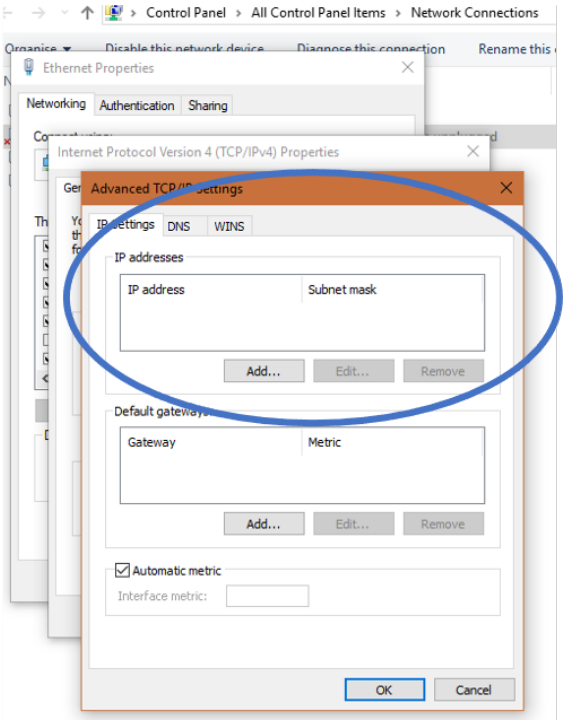


Note that SCM-E-EIP is DHCP-enabled by default. If the SCM-E-EIP is still configured for DHCP, it must be changed to Static. This can be done using the HMS IPConfig tool, described in the next section.

Step 1: Configure the PC's IP Address

1. Go to **Settings** > **Network and Internet** > **Change adapter options**.
2. Right-click on your Local Area Network (LAN) and select **Properties**.
3. Click **Internet Protocol Version 4 (TCP/IPv4)**.
4. Select **Use the following address** and click **Advanced**.
5. Add IP 192.168.1.20 and Subnet Mask 255.555.555.0

Step 2: Download and install the HMS IP Config Tool



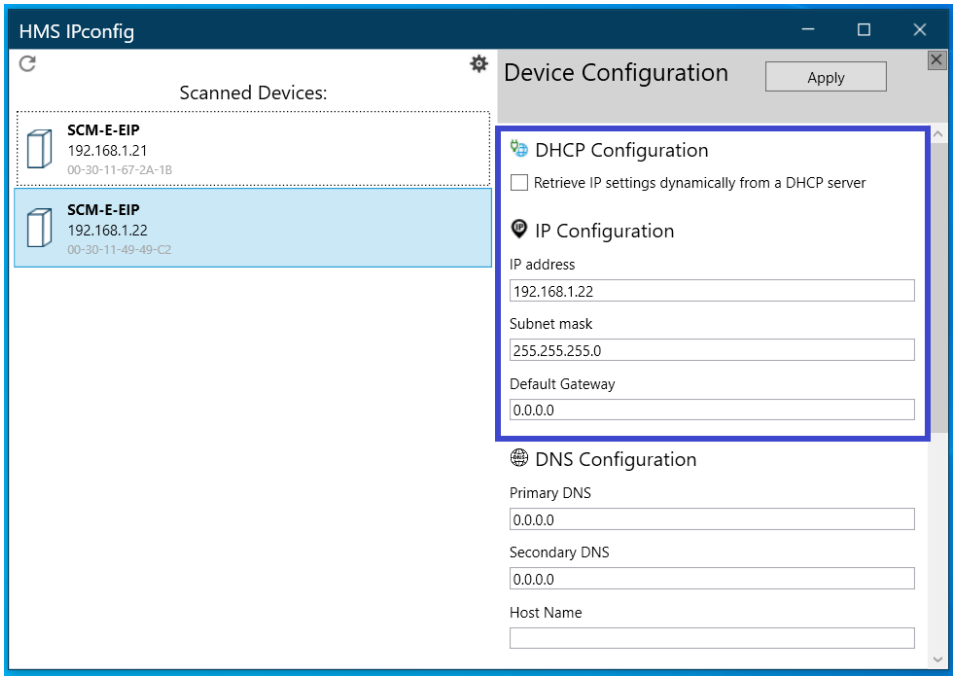
2.1.3 HMS IP CONFIG TOOL

HMS Ipconfig is a Windows-based tool for configuration of TCP/IP settings in HMS devices. Ipconfig will detect all compatible and active HMS devices on the local network. The devices do not have to be on the same Ethernet subnet as the computer running.

1. Click this **link** to download HMS IPConfig Tool from the Emerson website.
2. After the download is finished, unpack the items on the zip file and run the installer.
3. Connect the SCM-E-EIP to the PC where you installed the HMS IP Config tool, preferably via a direct connection.
4. Modify the IP address setting of the SCM-E-EIP accordingly, as shown in **Section 2.1.4**.

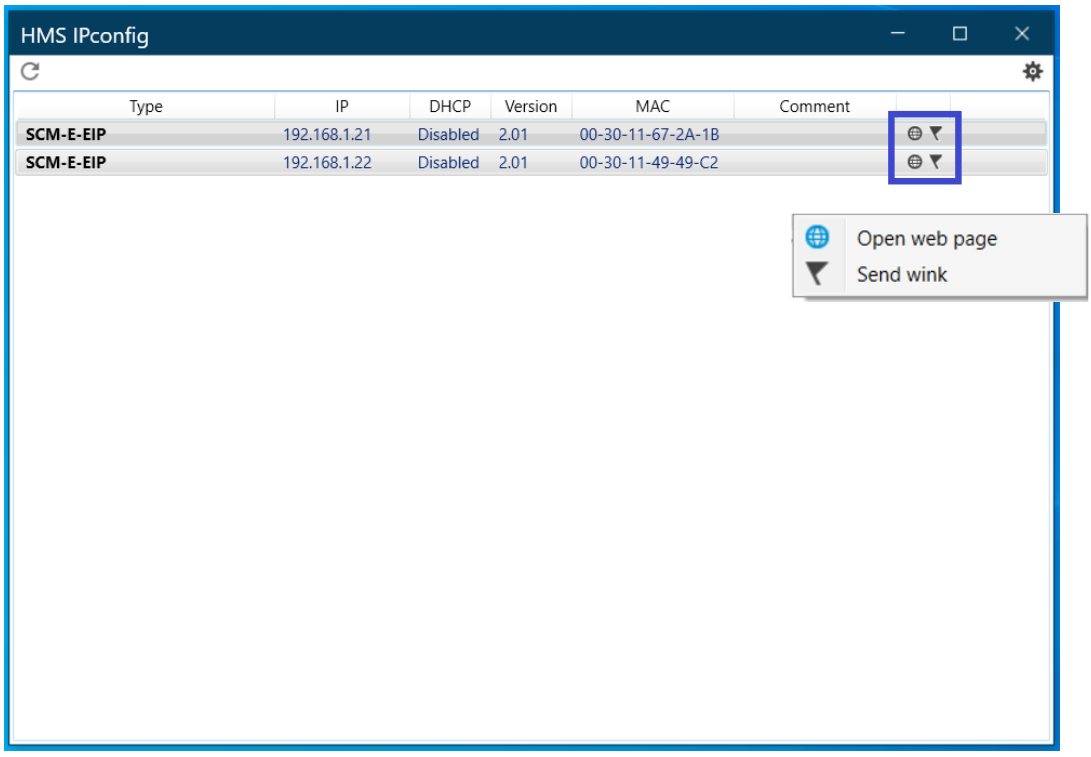
2.1.4 STATIC IP CONFIGURATION USING HMS IPCONFIG TOOL

1. Show the Device Configuration by clicking the Option icon.
2. Uncheck the DHCP Configuration to Disable dynamic IP setting from a DHCP server.
3. Type the IP Address, Subnet mask, Default Gateway (if applicable) in the IP Configuration section.
4. Type the Primary DNS, Secondary DNS, Host Name in the DNS Configuration (if applicable).



To help the installers in commissioning, the SCM-E-EIP has a feature to identify the physical device by blinking the Module and Network Status LEDs by pressing the Send wink icon.

Verify whether the static IP has been successfully configured by issuing a ping command to the IP address on Command Prompt or PowerShell (ping 192.168.1.21) or by pressing the Open web page icon. Pressing the Open web page icon will open the overview page of the SCM-E-EIP's web graphical user interface using the PC's default web browser.



3. MONITORING

3.1 WEBSERVER MONITORING

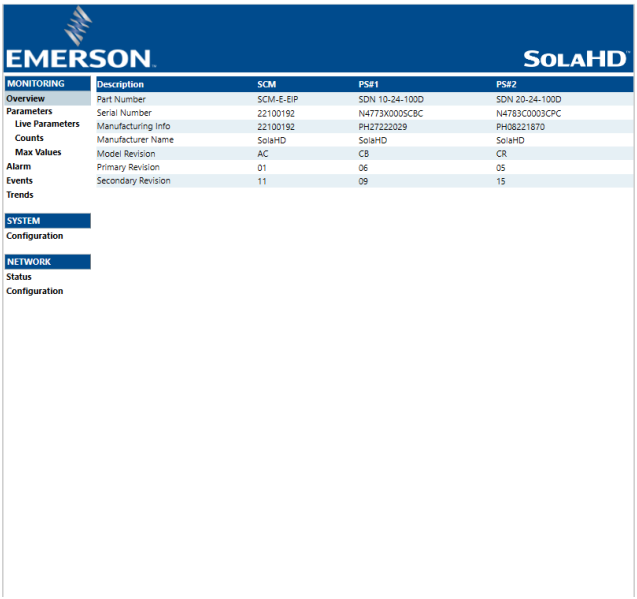
3.1.1 PROCEDURE

The SCM-E-EIP Communication Module comes with a webserver Graphical User Interface (GUI) that allows the user to monitor the different parameters and alarms from the device connected to it. It also allows the user to configure SCM-E-EIP network settings such as IP address and net mask.

This webserver can be opened by most browsers such as Google Chrome, Microsoft Edge, Mozilla Firefox, Safari, etc.

To open the SCM webserver, follow the instructions below:

1. Set-up the wiring of the SCM-E-EIP and the SOLAHD Power Supply. For information on the wiring setup of SOLAHD Power Supplies to the SCM-E-EIP, refer to **Section 1.5**.
2. Once the setup is finished, turn the devices on and configure the network. For instructions on how to configure the network, refer to **Section 2.1**. If the network is already configured, this step can be skipped.
3. To make sure the SCM is really connected to the network, the user can ping the device using the IP address set in Section 2.1. (e.g. 192.168.1.5). Type ping 192.168.1.5 at the command prompt. The Command Prompt can be opened by typing cmd in the Windows search bar and pressing Enter. (This step can be skipped.)
4. Once the connection is established, open the desired browser and type the IP address (192.168.1.5) on the address bar.
5. The webserver should be loaded with the default tab opened (Overview tab).

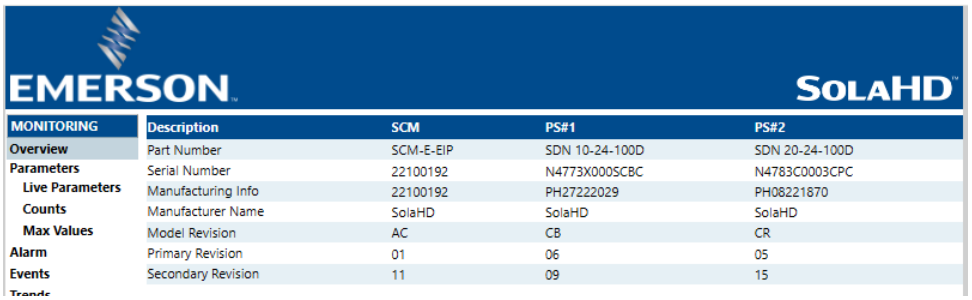


3.1.2 MENU HIERARCHY

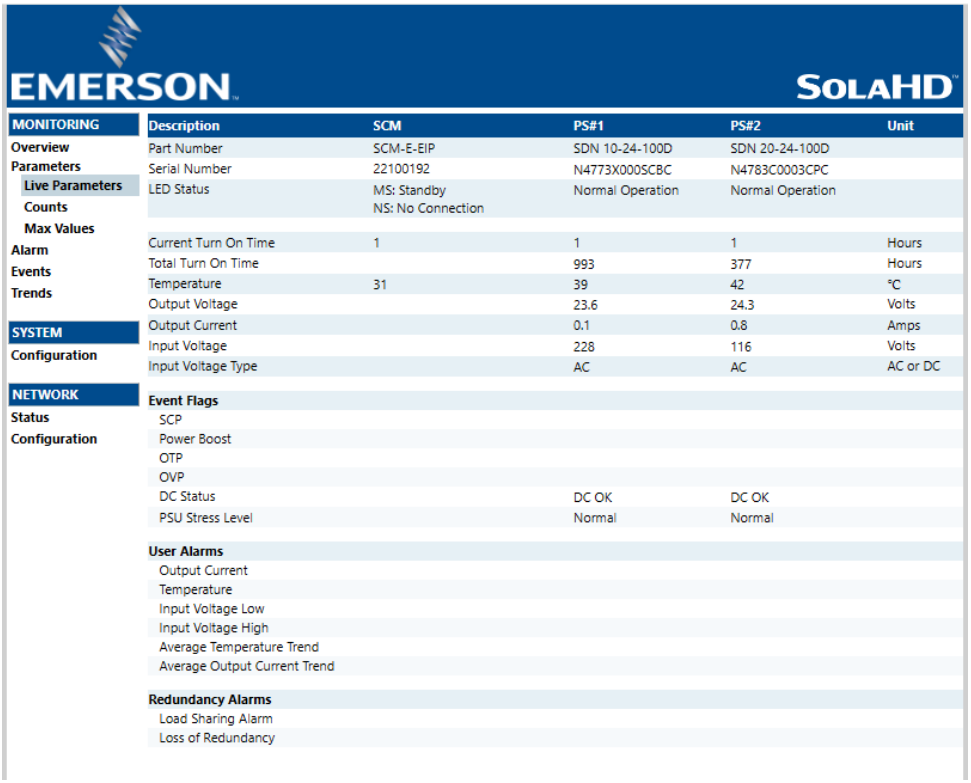
The webserver is divided into three main tabs: Monitoring, System and Network. The Monitoring tab contains Overview, Parameters, Alarms, Events, and Trends. The Parameters tab contains Live Parameters, Counts and Max Values. The System tab contains Configuration, while the Network tab contains Status and Configuration.

3.1.2.1 MONITORING TAB

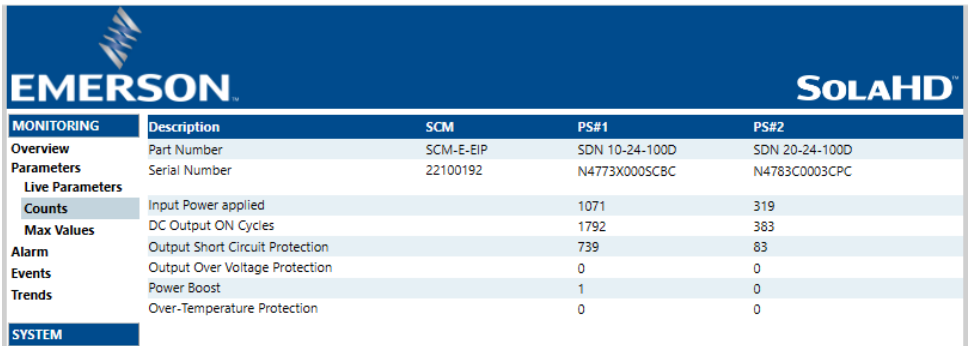
The Overview tab shows the identification of the module attached to the network such as module name, serial number, and firmware version.



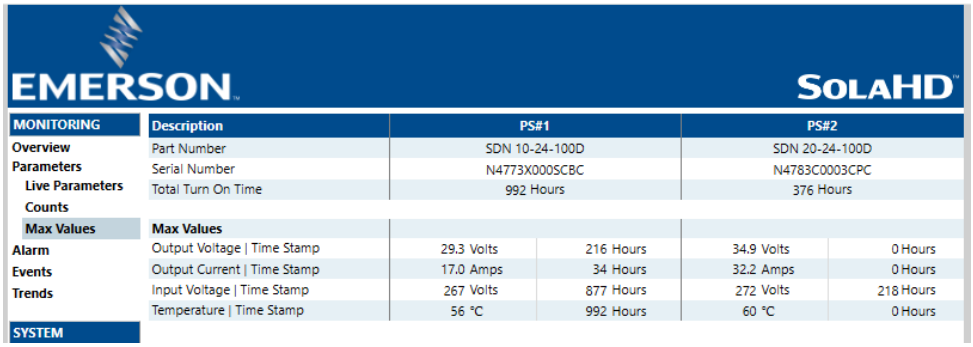
Under Parameters tab, the Live Parameters tab shows all the measurement data, event flags, user alarms and redundancy alarms of all devices (SDN-D Power supplies, etc.) connected to the communications module.



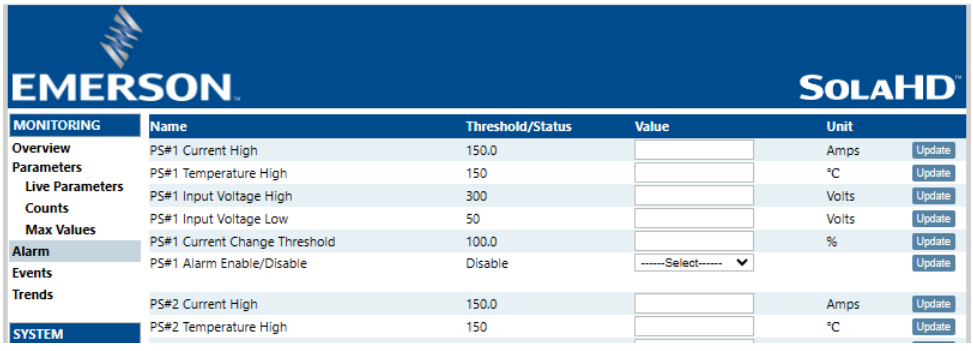
Under Parameters tab, the Counts tab shows all the accumulated count of the devices (SDN-D Power supplies, etc.).



Under Parameters tab, the Max Values tab shows all the maximum data of the devices (SDN-D Power supplies, etc.).



The Alarm tab allows the user to set threshold values to the device through the GUI. The threshold values are stored in a non-volatile memory in the SCM Device.



The GUI allows the user to input preferred limits by pressing the Update button on the right side. The value will be immediately saved in the non-volatile memory.

Once the PS1 or PS2 | Enable Alarm value is set to Enabled, the firmware will start evaluating the live parameter periodically and check if the parameter exceeds the threshold limit.

To prevent abrupt changes in the Alarm Bit Flag, hysteresis is added to the threshold. Initially the value of the bit flag is set to 0 upon startup of the device. The Bit Flag is set or reset if the value is above or below the hysteresis threshold.

The following table provides the allowable range for settable fields in the User Configurable Alarms. In case of SDN or SCM Temperature, the user needs to enter threshold depending on unit configured either in Fahrenheit or in Celsius from system configuration tab (refer to **Section 3.1.2.2**).The system will adjust the minimum and maximum values accordingly.

	Range		
Parameter	**Min**	**Max**	**Units**
SDN Current High	0	200	Amps
SDN Temperature High (°C)	-50	+150	Deg C
SDN Temperature High (°F)	-58	+302	Deg F
SDN Input Voltage High	140	300	V
SDN Input Voltage Low	50	200	V
SDN Average Output Current Change	0	100	%
SCM Temperature High (°C)	-50	+150	Deg C
SCM Temperature High (°F)	-58	+302	Deg F
SCM Average Temperature Limit	0	100	%

The user configurable Alarm Flags can be monitored according to the two tables below. Currently, only Bits 0-4 are used. The other bits are reserved for future functionality.

If an alarm limit is exceeded, the corresponding Bit position in the 32-bit Alarm Flag becomes High.

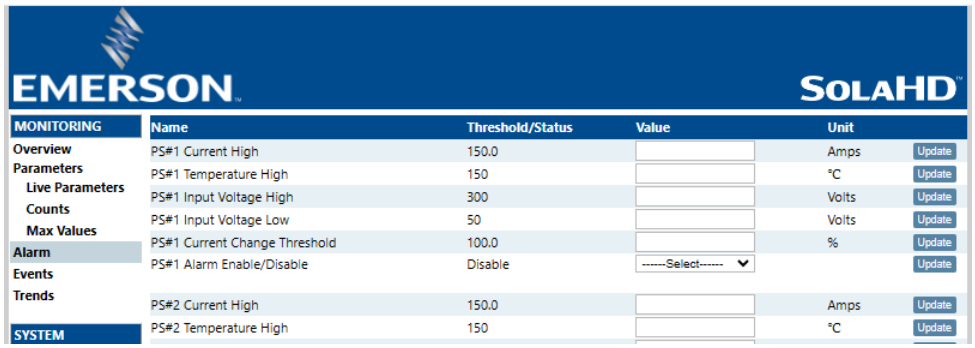
Bit Number	**Bits 5-31**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Description	"0 (reserved for future use)"	Average Current High > Threshold	Internal Temperature > Threshold	Output Current > Threshold	Input Voltage Low > Threshold	Input Voltage High > Threshold

Avg Current High	Internal Temp High	Output Current High	Input Voltage Low	Input Voltage High	Alarm Value
< Threshold	< Threshold	< Threshold	> Threshold	< Threshold	0x00000000
< Threshold	< Threshold	< Threshold	> Threshold	> Threshold	0x00000001
< Threshold	< Threshold	< Threshold	< Threshold	< Threshold	0x00000002
< Threshold	< Threshold	< Threshold	< Threshold	> Threshold	0x00000003
< Threshold	< Threshold	> Threshold	> Threshold	< Threshold	0x00000004
< Threshold	< Threshold	> Threshold	> Threshold	> Threshold	0x00000005

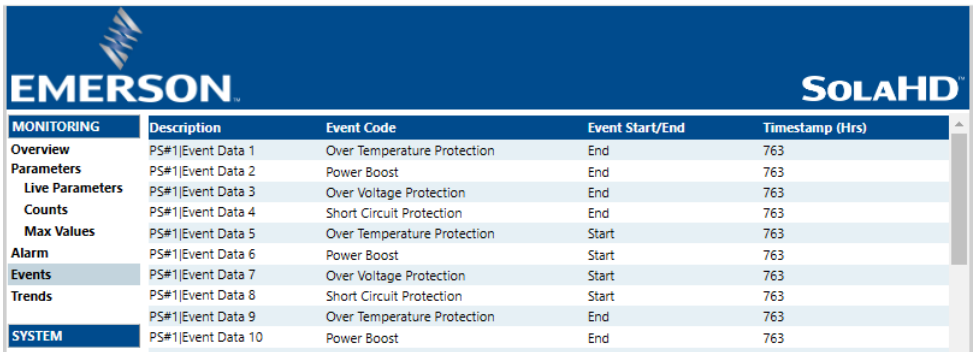
Avg Current High	Internal Temp High	Output Current High	Input Voltage Low	Input Voltage High	Alarm Value
< Threshold	< Threshold	> Threshold	< Threshold	< Threshold	0x00000006
< Threshold	< Threshold	> Threshold	< Threshold	> Threshold	0x00000007
< Threshold	> Threshold	< Threshold	> Threshold	< Threshold	0x00000008
< Threshold	> Threshold	< Threshold	> Threshold	> Threshold	0x00000009
< Threshold	> Threshold	< Threshold	< Threshold	< Threshold	0x0000000A
< Threshold	> Threshold	< Threshold	< Threshold	> Threshold	0x0000000B
< Threshold	> Threshold	> Threshold	> Threshold	< Threshold	0x0000000C
< Threshold	> Threshold	> Threshold	> Threshold	> Threshold	0x0000000D
< Threshold	> Threshold	> Threshold	< Threshold	< Threshold	0x0000000E
< Threshold	> Threshold	> Threshold	< Threshold	> Threshold	0x0000000F
> Threshold	< Threshold	< Threshold	> Threshold	< Threshold	0x00000010
> Threshold	< Threshold	< Threshold	> Threshold	> Threshold	0x00000011
> Threshold	< Threshold	< Threshold	< Threshold	< Threshold	0x00000012
> Threshold	< Threshold	< Threshold	< Threshold	> Threshold	0x00000013
> Threshold	< Threshold	> Threshold	> Threshold	< Threshold	0x00000014
> Threshold	< Threshold	> Threshold	> Threshold	> Threshold	0x00000015
> Threshold	< Threshold	> Threshold	< Threshold	< Threshold	0x00000016
> Threshold	< Threshold	> Threshold	< Threshold	> Threshold	0x00000017
> Threshold	> Threshold	< Threshold	> Threshold	< Threshold	0x00000018
> Threshold	> Threshold	< Threshold	> Threshold	> Threshold	0x00000019
> Threshold	> Threshold	< Threshold	< Threshold	< Threshold	0x0000001A
> Threshold	> Threshold	< Threshold	< Threshold	> Threshold	0x0000001B
> Threshold	> Threshold	> Threshold	> Threshold	< Threshold	0x0000001C
> Threshold	> Threshold	> Threshold	> Threshold	> Threshold	0x0000001D
> Threshold	> Threshold	> Threshold	< Threshold	< Threshold	0x0000001E
> Threshold	> Threshold	> Threshold	< Threshold	> Threshold	0x0000001F

Enabling/Disabling Alarm Flags:

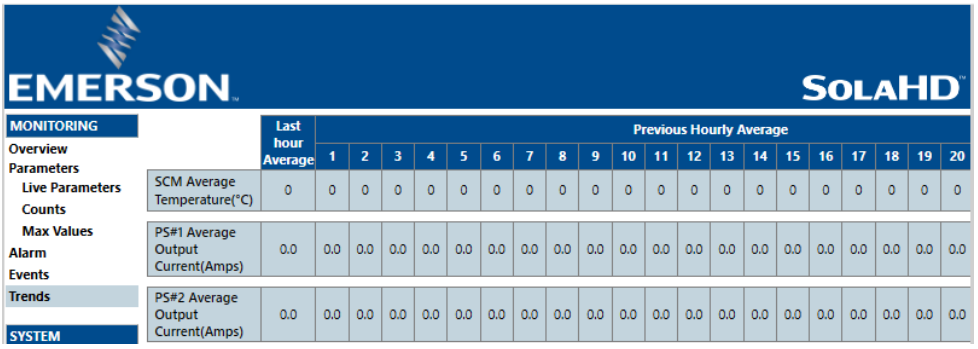
The alarm flag for each PSU, SCM and for Redundancy can be enabled or disabled according to user needs. If the ENABLE ALARM is disabled, the SCM-E-EIP ignores the value set in the threshold value and always returns a 0x00000000 value in the alarm flag.



The Events tab shows all the flagged alarms, their corresponding code, and description. It also contains a download button to save the flagged events in a csv file.



The Trends tab shows last hour and 24 hours averaging calculation data of SCM temperature and SDN-D power supplies output current.

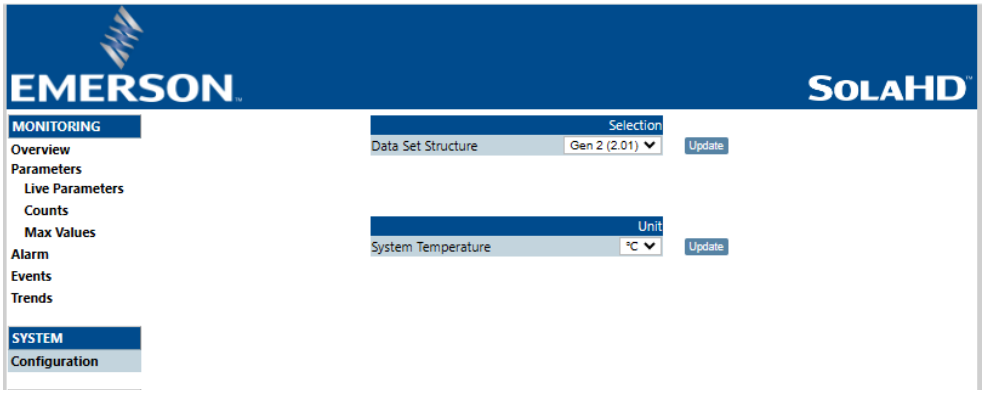


3.1.2.2 SYSTEM TAB

Under the System tab, the Configuration tab allows the user to set system temperature unit to either Fahrenheit or Celsius to the device through the GUI. The unit set is stored in a non-volatile memory in the SCM Device.

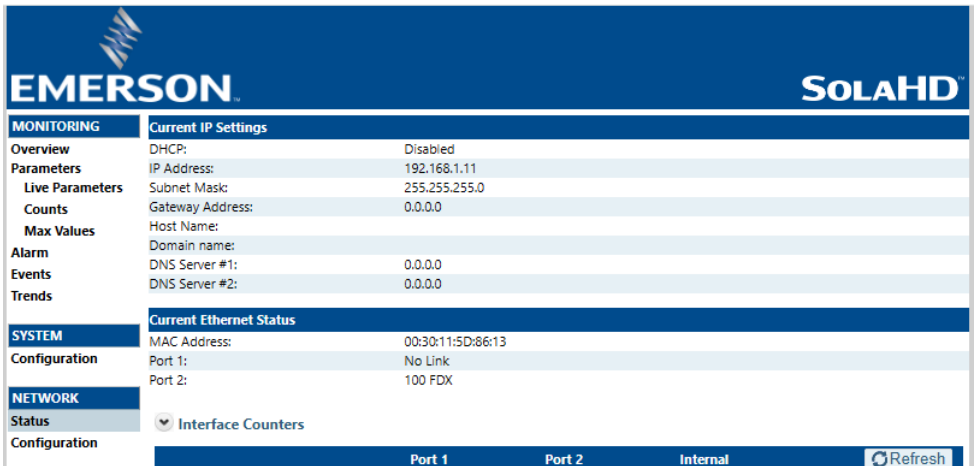
The Configuration tab also allows the user to change the dataset structure (Process Data, Application Data Instance and Web GUI structure) of the SCM. Gen 2 (2.01) refers to the dataset for Phase 2 SCM as specified in this document.

In case of Gen 1 (1.12) dataset, please refer to User Guide Rev 1.2 for the complete Process Data, Application Data and Web GUI structure.

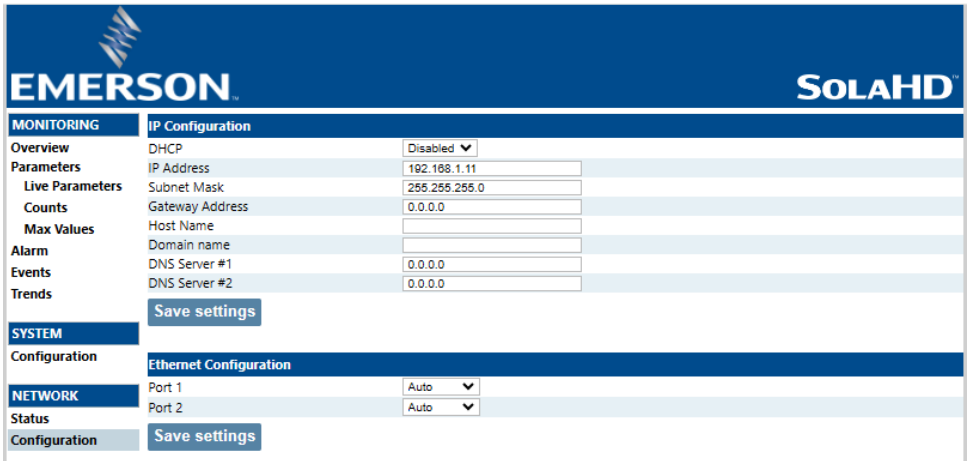


3.1.2.3 NETWORK TAB

The Status tab shows the status of the network such as its current IP settings and current Ethernet status.



The Configuration tab allows the user to change current IP configuration such as the IP address, subnet mask, gateway address, and DNS servers. By changing this configuration, the SCM Module will lose the existing connection. The status of the DHCP can also be changed in this tab. **Note:** A power cycle or Type 0 Reset is required for the changes in IP configuration to take effect.



4. EDS FILE AND CLASS 1, CLASS 3 DATA

This section describes how to utilize information in the PLC system using a Class 1 data connection.

The Allen Bradley Logix Processor is used as an example.

Prior to setting up a connection to the Allen Bradley Logix Processor, the user must:

- Install Studio 5000 software. Studio 5000 is a design and configuration software for the Allen-Bradley® ControlLogix® and CompactLogix™ controllers.
- Configure the Network IP settings. For details regarding the IP configuration, refer to **Section 2.1**.

4.1 EDS FILE

This section describes setting up a Class 1 IO connection with an Allen Bradley Logix Processor through an EDS File. EDS files are text files used by network configuration tools to help identify products and easily commission them on a network. The knowledge of assembly instance numbers, data size, data types, etc. are no longer needed when this method is used. In lieu of this, however, is the EDS file. The EDS file must be imported to the EDS repository in order to be accessed by the Logix Designer.

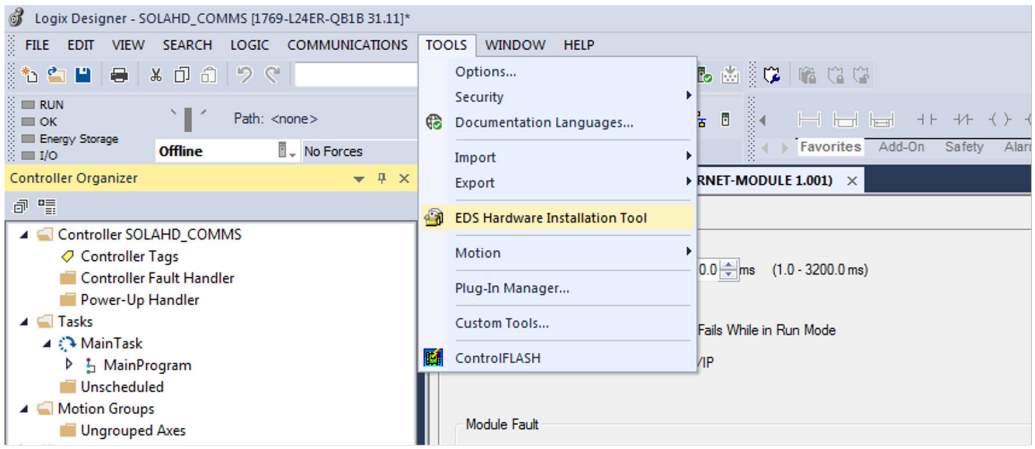
The EDS file for the SCM-E-EIP can be downloaded from the following location:

https://www.appleton.emerson.com/catalog/en-us/shop/appleton/solahd-sdn-d

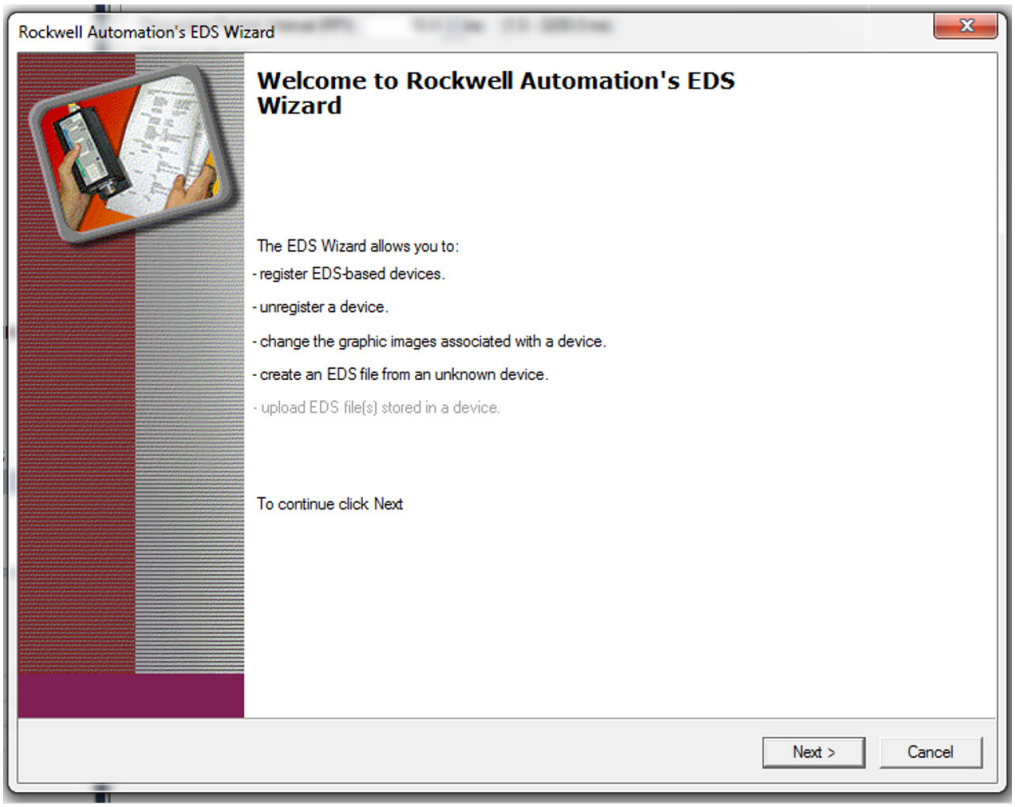
at the DOCUMENTS & DRAWINGS tab under SOFTWARE DOWNLOADS & DRIVERS.

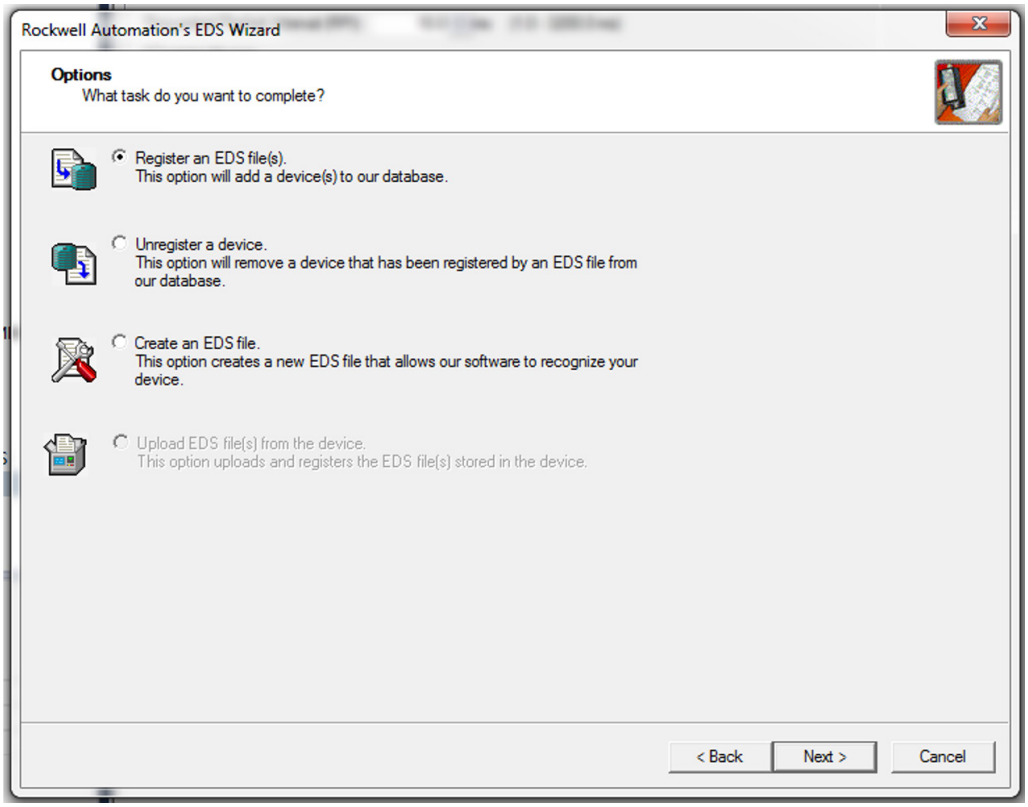
The procedure below is the Class 1 IO connection set-up of the SCM Module to the Allen Bradley CompactLogix using the EDS file method:

1 To import the EDS file, select EDS Hardware Installation Tool under Tools. This will prompt the Rockwell Automation EDS Wizard to open.

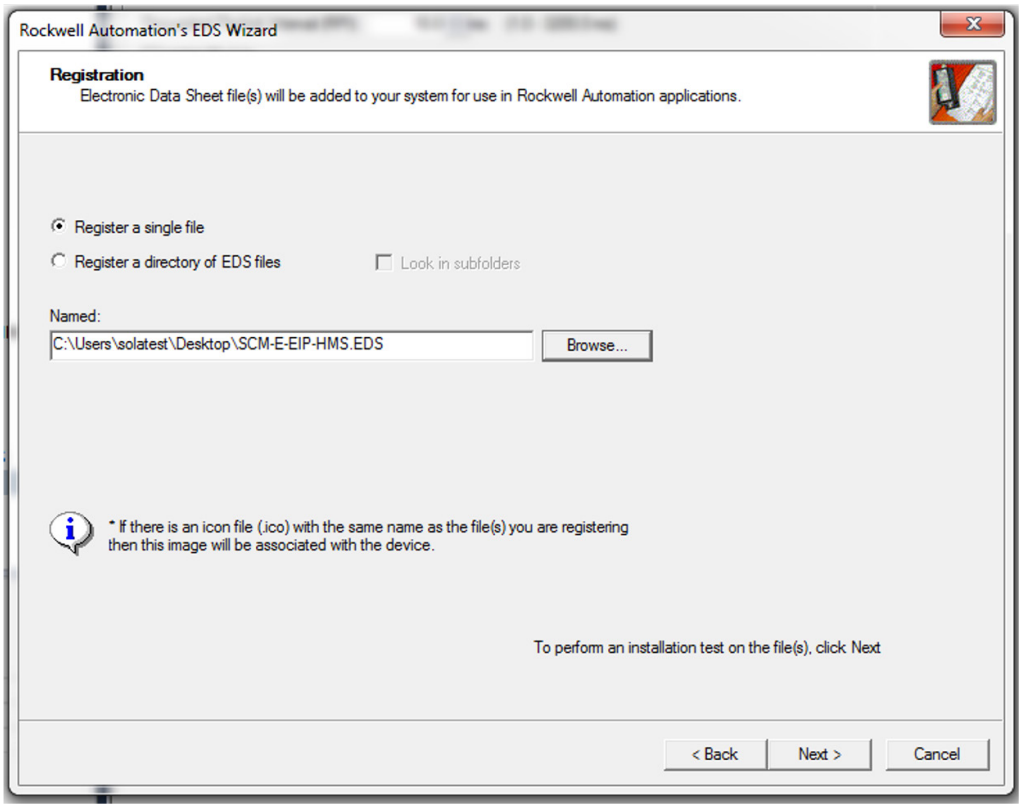


2 Click Next until you reach the Registration process.

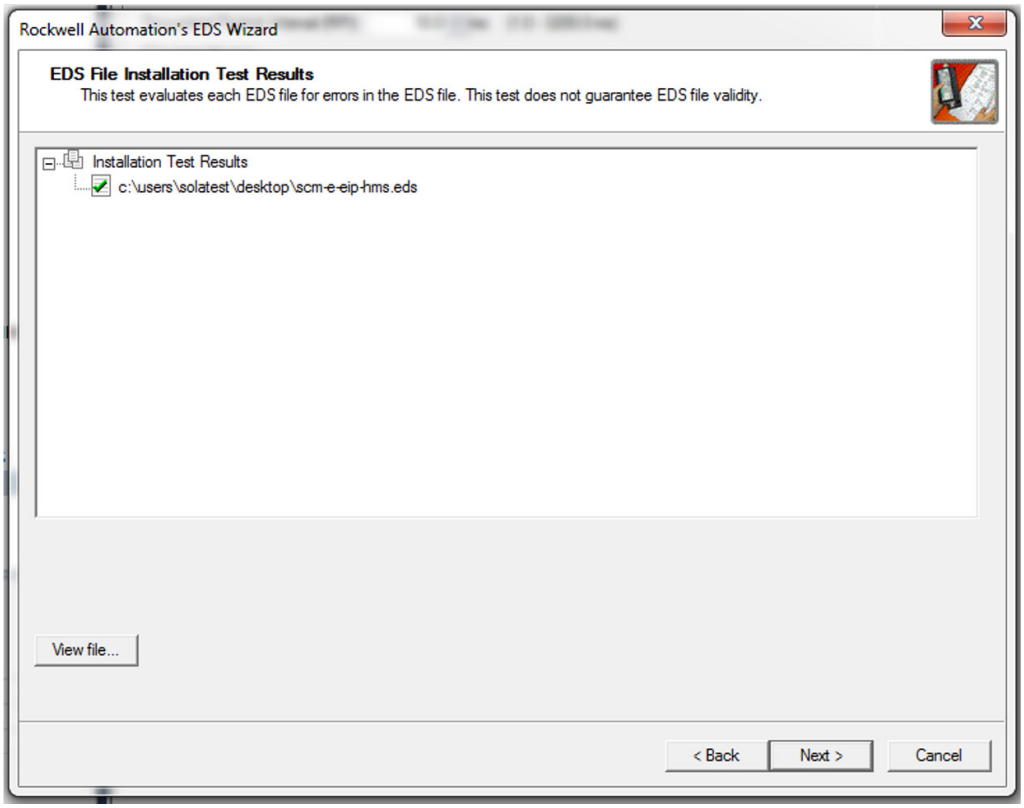


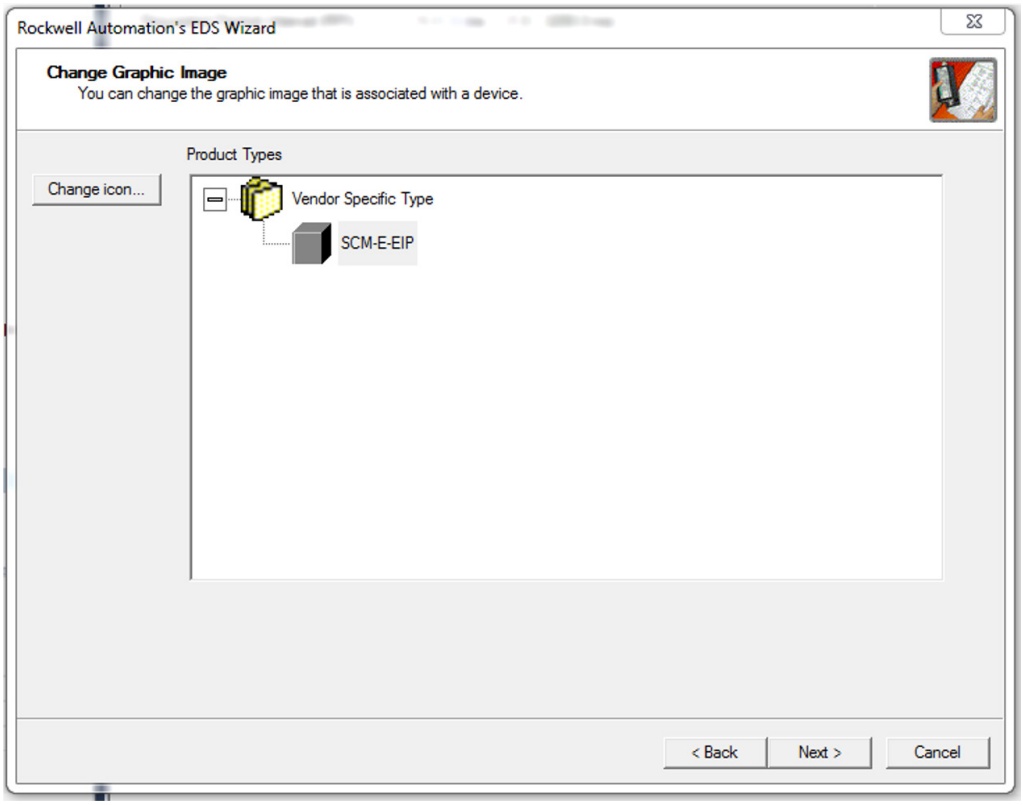

Rockwell Automation's EDS Wizard
Options
What task do you want to complete?
Register an EDS file(s).
This option will add a device(s) to our database.
Unregister a device.
This option will remove a device that has been registered by an EDS file from our database.
Create an EDS file.
This option creates a new EDS file that allows our software to recognize your device.
Upload EDS file(s) from the device.
This option uploads and registers the EDS file(s) stored in the device.
< Back
Next >
Cancel

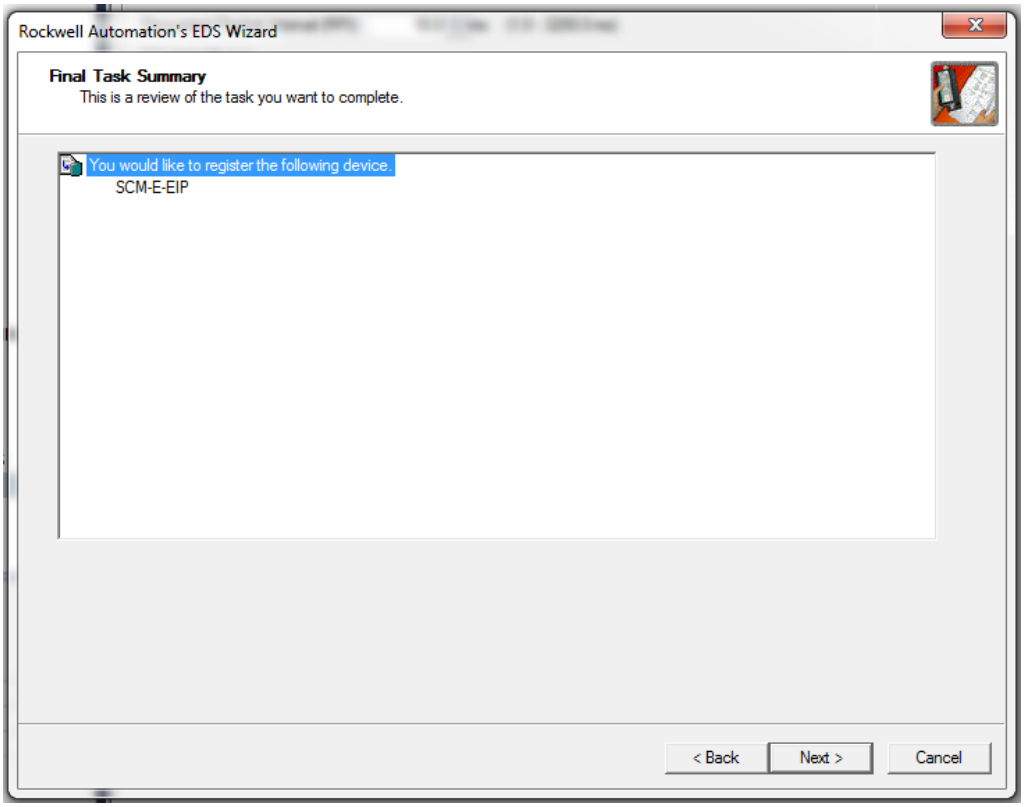
3 Tick 'Register a single file' and click the Browse button to select the EDS file on the host PC.



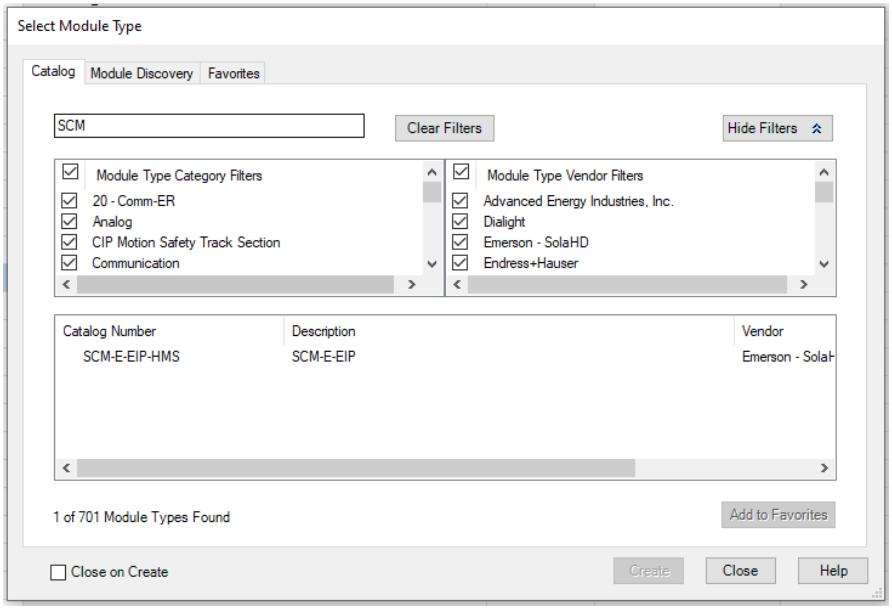
4 Click Next until the prompt ends.



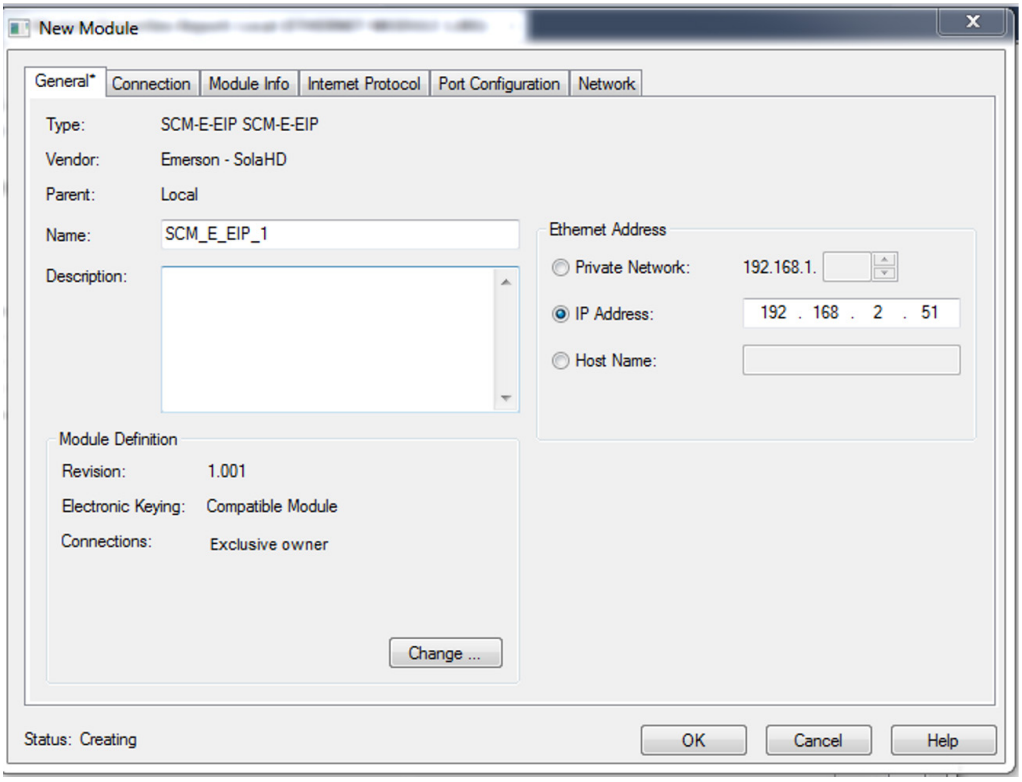

Rockwell Automation's EDS Wizard
Change Graphic Image
You can change the graphic image that is associated with a device.
Product Types
Change icon...
Vendor Specific Type
SCM-E-EIP
< Back
Next >
Cancel


Rockwell Automation's EDS Wizard
Final Task Summary
This is a review of the task you want to complete.
You would like to register the following device.
SCM-E-EIP
< Back
Next >
Cancel

5 After importing the EDS file, the device can now be added to the Ethernet network. Like in the Generic Ethernet Module method, in order to communicate with I/O modules such as the SCM-E-EIP, they must be added to the I/O Configuration folder first. Create new module by right clicking Ethernet and selecting New Module. Ethernet is located under the I/O Configuration folder in the Controller Organizer window. SCM-E-EIP can now be filtered using the keyword “SCM” or “SOLAHD”. Select "SCM-E-EIP" and click the Create button.



6 Enter the desired name that will be shown in the controller tags, description, and IP address of the module.



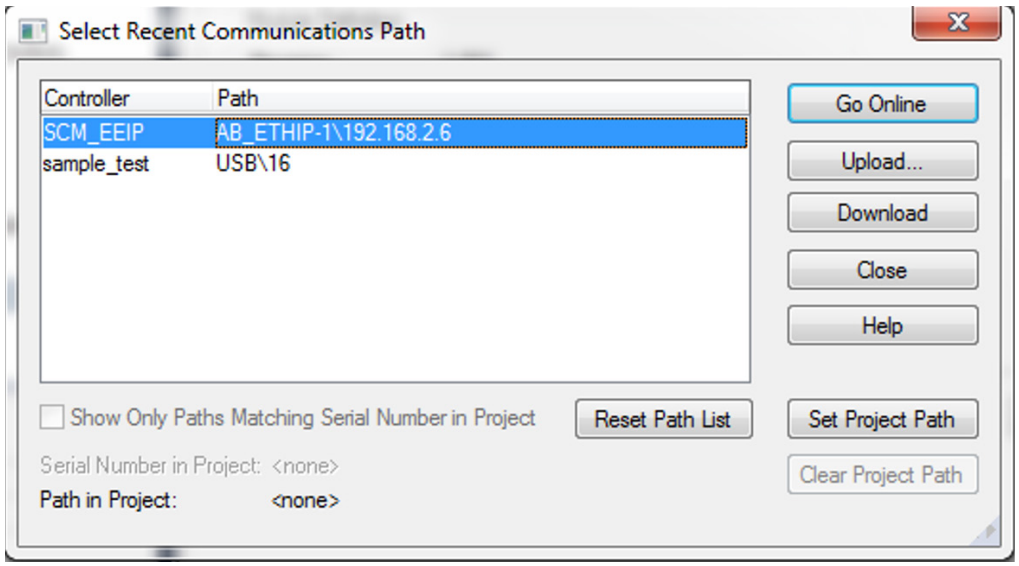
4.2 ROCKWELL ALLEN-BRADLEY LOGIX PROCESSOR MONITORING

Before the data can be accessed, the connection and network setup of SCM-E-EIP to Allen-Bradley Logix Processor should be completed first.

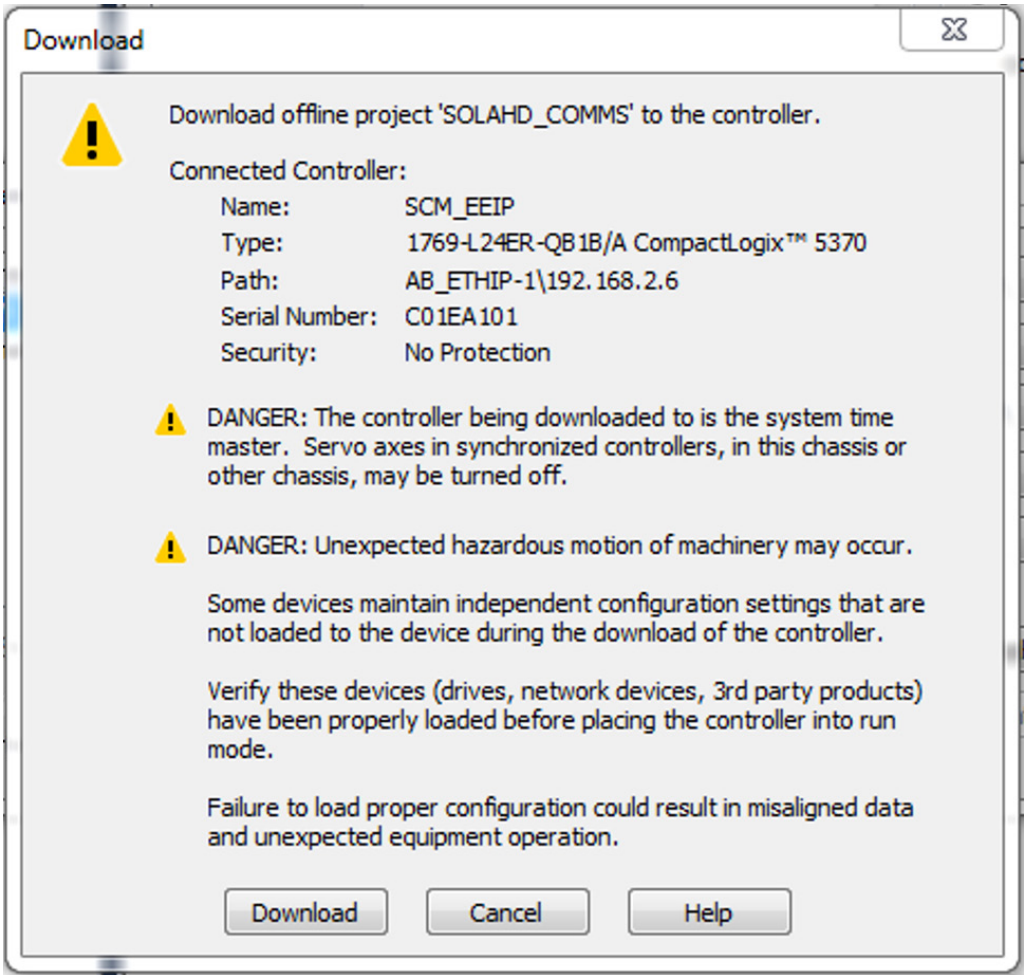
To monitor the data using Rockwell Allen-Bradley Logix Processor, follow the instructions below:

1 Once the connection is established, you may select the path and download the program to the PLC. To set the device path, click on the RSWho button as shown below. This will scan the network using the network interface card on your PC to locate the PLC. Ensure the PLC is set to PROG or REM before going online to download the program.

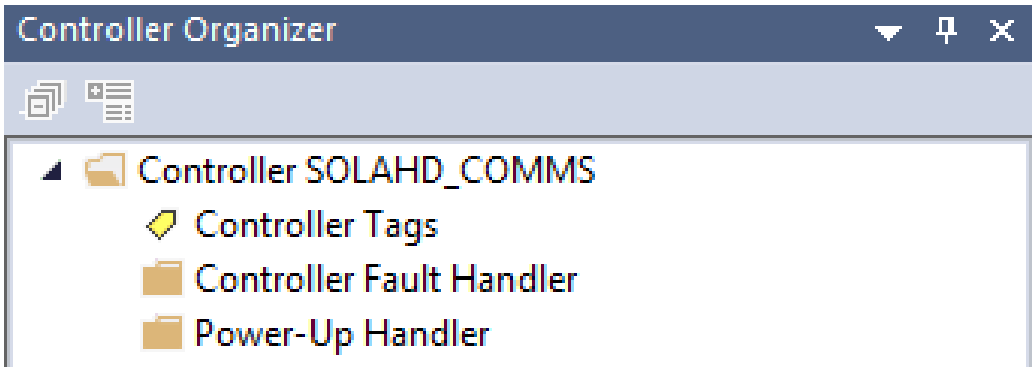
2 To download the program to the PLC, click on the Go Online button in the Select Recent Communications Path window.



3 Click 'Download' on the next prompt.



4 After downloading the program to the PLC, data can now be accessed through the controller tags.



4.3 I/O DATA AND EXPLICIT MESSAGING CONNECTIONS

The SCM is capable of supporting both Class 1 I/O Data and Class 3 Explicit Messages.

4.3.1 CLASS 1 I/O DATA (PROCESS DATA)

Class 1 I/O Data is supported through the Assembly Object Producing Instance (64h). The Class 1 I/O data block is defined in the table below.

Parameter	Data Type	Resolution	Accuracy
SCM | Serial No.	UDINT	-	-
SCM | Status LED	WORD	-	-
SCM | Temperature	SINT	1 °C	+-2.0°C
SCM | Time On Now	UDINT	1 sec	-
SCM | Alarm Flag	DWORD	-	-
Reserved Bytes	BYTE [16]	-	-
P1 | Serial Number	STRING [14]	-	-
Reserved Bytes	BYTE [2]	-	-
P1 | Device Model	UINT	-	-
P1 | Temperature	SINT	1 °C	(Note 2)
P1 | Vout	REAL	0.1 V	+-2 %
P1 | Iout	REAL	0.1 A	+-2.5 % (Note 3)
P1 | Vin	UINT	1 V	+-5 %
P1 | Vin Type	UINT	-	-
P1 | LED Status	WORD	-	-
P1 | Event Flags	WORD	-	-
P1 | Time On Now	UDINT	-	-
P1 | Lifetime On	UDINT	-	-
P1 | Count DC On	UINT	-	-
P1 | Count SCP	UINT	-	-
P1 | Count OVP	UINT	-	-
P1 | Count Pboost	UINT	-	-
P1 | Count PowerIn	UINT	-	-
P1 | Count OTP	UINT	-	-
P1 | Max Vout	REAL	0.1 V	+-2 %
P1 | Max Iout	REAL	0.1 A	+-2.5 % (Note 3)
P1 | Max Vin	UINT	1 V	+-5 %
P1 | Max Temp	SINT	1 °C	(Note 2)
P1 | Max Vout Timestamp	UDINT	1 sec	-
P1 | Max Iout Timestamp	UDINT	1 sec	-
P1 | Max Vin Timestamp	UDINT	1 sec	-

Parameter	Data Type	Resolution	Accuracy
P1 | Max Temp Timestamp	UDINT	1 sec	-
P1 | Alarm Flag	WORD	-	-
P1 | Stress Level	WORD	-	-
P1 | DC OK	WORD	-	-
Reserved Bytes	BYTE [20]	-	-
P2 | Serial Number	STRING [14]	-	-
Reserved Bytes	BYTE [2]	-	-
P2 | Device Model	UINT	-	-
P2 | Temperature	SINT	1 °C	Note 2
P2 | Vout	REAL	0.1 V	+-2 %
P2 | Iout	REAL	0.1 A	+-2.5 % (Note 3)
P2 | Vin	UINT	1 V	+-5 %
P2 | Vin Type	UINT	-	-
P2 | LED Status	WORD	-	-
P2 | Event Flags	WORD	-	-
P2 | Time On Now	UDINT	-	-
P2 | Lifetime On	UDINT	-	-
P2 | Count DC On	UINT	-	-
P2 | Count SCP	UINT	-	-
P2 | Count OVP	UINT	-	-
P2 | Count Pboost	UINT	-	-
P2 | Count PowerIn	UINT	-	-
P2 | Count OTP	UINT	-	-
P2 | Max Vout	REAL	0.1 V	+-2 %
P2 | Max Iout	REAL	0.1 A	+-2.5 % (Note 3)
P2 | Max Vin	UINT	1 V	+-5 %
P2 | Max Temp	SINT	1 °C	Note 2
P2 | Max Vout Timestamp	UDINT	1 sec	-
P2 | Max Iout Timestamp	UDINT	1 sec	-
P2 | Max Vin Timestamp	UDINT	1 sec	-
P2 | Max Temp Timestamp	UDINT	1 sec	-
P2 | Alarm Flag	WORD	-	-
P2 | Stress Level	WORD	-	-
P2 | DC OK	WORD	-	-
Reserved Bytes	BYTE [20]	-	-
RED | Alarm Flag	DWORD	-	-

Parameter	Data Type	Resolution	Accuracy
Reserved Bytes	BYTE [12]	-	-

NOTES:
- Unless specified otherwise, the accuracy defined in the table above is valid over the entire operating input, load, Vout range and 0–60°C.
- P1, P2 Temperature (power supply internal ambient temperature) accuracy at > 50°C
- Iout accuracy at > 20% of max. operating load

4.3.2 CLASS 3 APPLICATION DATA INTERFACE

Parameter attributes values can be accessed by Class 3 Explicit Message through the ADI Object (0xA2) with supported services Get_Attribute_Single and Set_Attribute_Single.

ADI Inst. #	Parameter	Data Type	Size (Bytes)	Units	Get/Set
1	SCM | Part Number	CHAR[]	16		Get Access only
2	SCM | Serial No.	UINT32	4		Get Access only
3	SCM | Mfg. Info	UINT32	4		Get Access only
4	SCM | Mfr. Name	CHAR[]	16		Get Access only
5	SCM | Model Rev	CHAR[]	2		Get Access only
6	SCM | Pri FW Rev	UINT16	2		Get Access only
7	SCM | Sec FW Rev	UINT16	2		Get Access only
8	SCM | Status LED	UINT16	2	See Section 4.3.3	Get Access only
9	SCM | Time On Now	UINT32	4	seconds	Get Access only
10	SCM | Temperature	SINT16	2	°C	Get Access only
11-99	Reserved				
100	P1 | Device Model	UINT16	2	9 - SDN10; 10 - SDN20; 11- SDN40	Get Access only
101	P1 | Part Number	CHAR[]	14		Get Access only
102	P1 | Serial Number	UINT8	14		Get Access only
103	P1 | Mfg. Info	CHAR[]	12		Get Access only
104	P1 | Mfr. Name	CHAR[]	16		Get Access only
105	P1 | Mfg. ID	UINT32	4		Get Access only
106	P1 | Model Rev	CHAR[]	2		Get Access only
107	P1 | Pri FW Rev	UINT16	2		Get Access only
108	P1 | Sec FW Rev	UINT16	2		Get Access only
109	P1 | Vout	FLOAT	4	Volts	Get Access only
110	P1 | Iout	FLOAT	4	Amps	Get Access only
111	P1 | Vin	UINT16	2	Volts	Get Access only
112	P1 | Temperature	SINT16	2	°C	Get Access only
113	P1 | LED Status	UINT16	2	See Section 4.3.4	Get Access only

ADI Inst. #	Parameter	Data Type	Size (Bytes)	Units	Get/Set
114	P1 | Event Flags	BITS16	2	See Section 4.3.5	Get Access only
115	P1 | Time On Now	UINT32	4	seconds	Get Access only
116	P1 | Lifetime On	UINT32	4	seconds	Get Access only
117	P1 | Vin Type	UINT16	2	1 - AC; 0 - DC	Get Access only
118	P1 | Count DC On	UINT16	2	count	Get Access only
119	P1 | Count SCP	UINT16	2	count	Get Access only
120	P1 | Count OVP	UINT16	2	count	Get Access only
121	P1 | Count Pboost	UINT16	2	count	Get Access only
122	P1 | Count PowerIn	UINT16	2	count	Get Access only
123	P1 | Count OTP	UINT16	2	count	Get Access only
124	P1 | Max Vout	FLOAT	4	Volts	Get Access only
125	P1 | Max Iout	FLOAT	4	Amps	Get Access only
126	P1 | Max Vin	UINT16	2	Volts	Get Access only
127	P1 | Max Temp	SINT16	2	°C	Get Access only
128	P1 | Max Vout TS	UINT32	4	seconds	Get Access only
129	P1 | Max Iout TS	UINT32	4	seconds	Get Access only
130	P1 | Max Vin TS	UINT32	4	seconds	Get Access only
131	P1 | Max Temp TS	UINT32	4	seconds	Get Access only
132 - 199	Reserved				
200	P2 | Device Model	UINT16	2	9 - SDN10; 10 - SDN20; 11- SDN40	Get Access only
201	P2 | Part Number	CHAR[]	14	Get Access only	Get Access only
202	P2 | Serial Number	UINT8	14	Get Access only	Get Access only
203	P2 | Mfg. Info	CHAR[]	12	Get Access only	Get Access only
204	P2 | Mfr. Name	CHAR[]	16	Get Access only	Get Access only
205	P2 | Mfg. ID	UINT32	4	Get Access only	Get Access only
206	P2 | Model Rev	CHAR[]	2	Get Access only	Get Access only
207	P2 | Pri FW Rev	UINT16	2	Get Access only	Get Access only
208	P2 | Sec FW Rev	UINT16	2	Get Access only	Get Access only
209	P2 | Vout	FLOAT	4	Volts	Get Access only
210	P2 | Iout	FLOAT	4	Amps	Get Access only
211	P2 | Vin	UINT16	2	Volts	Get Access only
212	P2 | Temperature	SINT16	2	°C	Get Access only
213	P2 | LED Status	UINT16	2	See Section 4.3.4	Get Access only
214	P2 | Event Flags	BITS16	2	See Section 4.3.5	Get Access only
215	P2 | Time On Now	UINT32	4	seconds	Get Access only
216	P2 | Lifetime On	UINT32	4	seconds	Get Access only
217	P2 | Vin Type	UINT16	2	1 - AC; 0 - DC	Get Access only

ADI Inst. #	Parameter	Data Type	Size (Bytes)	Units	Get/Set
218	P2 | Count DC On	UINT16	2	count	Get Access only
219	P2 | Count SCP	UINT16	2	count	Get Access only
220	P2 | Count OVP	UINT16	2	count	Get Access only
221	P2 | Count Pboost	UINT16	2	count	Get Access only
222	P2 | Count PowerIn	UINT16	2	count	Get Access only
223	P2 | Count OTP	UINT16	2	count	Get Access only
224	P2 | Max Vout	FLOAT	4	Volts	Get Access only
225	P2 | Max Iout	FLOAT	4	Amps	Get Access only
226	P2 | Max Vin	UINT16	2	Volts	Get Access only
227	P2 | Max Temp	SINT16	2	°C	Get Access only
228	P2 | Max Vout TS	UINT32	4	seconds	Get Access only
229	P2 | Max Iout TS	UINT32	4	seconds	Get Access only
230	P2 | Max Vin TS	UINT32	4	seconds	Get Access only
231	P2 | Max Temp TS	UINT32	4	seconds	Get Access only
232 - 299	Reserved				
300	P1 | Current High	FLOAT	4	Volts	Set / Get Access
301	P1 | Temp High	SINT16	2	Amps	Set / Get Access
302	P1 | Vin High	UINT16	2	Volts	Set / Get Access
303	P1 | Vin Low	UINT16	2	Volts	Set / Get Access
304	P1 | AvgIoutLimit	FLOAT	4	%	Set / Get Access
305 - 331	Reserved				
332	P2 | Current High	FLOAT	4	Volts	Set / Get Access
333	P2 | Temp High	SINT16	2	Amps	Set / Get Access
334	P2 | Vin High	UINT16	2	Volts	Set / Get Access
335	P2 | Vin Low	UINT16	2	Volts	Set / Get Access
336	P2 | AvgIoutLimit	FLOAT	4	%	Set / Get Access
337 - 363	Reserved				
364	SCM | Temp High	SINT16	2	°C	Set / Get Access
365	SCM | AvgTempLimit	FLOAT	4	%	Set / Get Access
366 - 399	Reserved				
400	P1 | Alarm Flag	BITS32	4	See Section 4.3.6	Get Access only
401	P2 | Alarm Flag	BITS32	4	See Section 4.3.6	Get Access only
402	P1 | Enable Alarm	UINT16	2	0 - Disable; 1 - Enable	Set / Get Access
403	P2 | Enable Alarm	UINT16	2	0 - Disable; 1 - Enable	Set / Get Access
404	SCM | Alarm Flag	BITS32	4	See Section 4.3.6.2	Get Access only

ADI Inst. #	Parameter	Data Type	Size (Bytes)	Units	Get/Set
405	SCM | Enable Alarm	UINT16	2	0 - Disable; 1 – Enable	Set / Get Access
406	RED | Alarm Flag	BITS32	4	See Section 4.3.6.3	Get Access only
407	RED | Enable Alarm	UINT16	2	0 - Disable; 1 - Enable	Set / Get Access
408	P1 | Stress Level	BITS16	2	See Section 1.8	Get Access only
409	P2 | Stress Level	BITS16	2	See Section 1.8	Get Access only
410	P1 | DC OK	BITS16	2	0 - DC OK 1 - DC NOT OK	Get Access only
411	P2 | DC OK	BITS16	2	0 - DC OK 1 - DC NOT OK	Get Access only
412	Temperature Unit	UINT16	2	0 - °C; 1 - °F	Set / Get Access
413 - 499	Reserved				Get Access only
500	P1 | Event Data 1	STRUCT	8	Refer to Section 4.3.7	Get Access only
501	P1 | Event Data 2	STRUCT	8	Refer to Section 4.3.7	Get Access only
502	P1 | Event Data 3	STRUCT	8	Refer to Section 4.3.7	Get Access only
503	P1 | Event Data 4	STRUCT	8	Refer to Section 4.3.7	Get Access only
504	P1 | Event Data 5	STRUCT	8	Refer to Section 4.3.7	Get Access only
505	P1 | Event Data 6	STRUCT	8	Refer to Section 4.3.7	Get Access only
506	P1 | Event Data 7	STRUCT	8	Refer to Section 4.3.7	Get Access only
507	P1 | Event Data 8	STRUCT	8	Refer to Section 4.3.7	Get Access only
508	P1 | Event Data 9	STRUCT	8	Refer to Section 4.3.7	Get Access only
509	P1 | Event Data 10	STRUCT	8	Refer to Section 4.3.7	Get Access only
510	P1 | Event Data 11	STRUCT	8	Refer to Section 4.3.7	Get Access only
511	P1 | Event Data 12	STRUCT	8	Refer to Section 4.3.7	Get Access only
512	P1 | Event Data 13	STRUCT	8	Refer to Section 4.3.7	Get Access only
513	P1 | Event Data 14	STRUCT	8	Refer to Section 4.3.7	Get Access only

ADI Inst. #	Parameter	Data Type	Size (Bytes)	Units	Get/Set
514	P1 | Event Data 15	STRUCT	8	Refer to Section 4.3.7	Get Access only
515	P1 | Event Data 16	STRUCT	8	Refer to Section 4.3.7	Get Access only
516	P1 | Event Data 17	STRUCT	8	Refer to Section 4.3.7	Get Access only
517	P1 | Event Data 18	STRUCT	8	Refer to Section 4.3.7	Get Access only
518	P1 | Event Data 19	STRUCT	8	Refer to Section 4.3.7	Get Access only
519	P1 | Event Data 20	STRUCT	8	Refer to Section 4.3.7	Get Access only
520	P1 | Event Data 21	STRUCT	8	Refer to Section 4.3.7	Get Access only
521	P1 | Event Data 22	STRUCT	8	Refer to Section 4.3.7	Get Access only
522	P1 | Event Data 23	STRUCT	8	Refer to Section 4.3.7	Get Access only
523	P1 | Event Data 24	STRUCT	8	Refer to Section 4.3.7	Get Access only
524	P1 | Event Data 25	STRUCT	8	Refer to Section 4.3.7	Get Access only
525	P1 | Event Data 26	STRUCT	8	Refer to Section 4.3.7	Get Access only
526	P1 | Event Data 27	STRUCT	8	Refer to Section 4.3.7	Get Access only
527	P1 | Event Data 28	STRUCT	8	Refer to Section 4.3.7	Get Access only
528	P1 | Event Data 29	STRUCT	8	Refer to Section 4.3.7	Get Access only
529	P1 | Event Data 30	STRUCT	8	Refer to Section 4.3.7	Get Access only
530	P1 | Event Data 31	STRUCT	8	Refer to Section 4.3.7	Get Access only
531	P1 | Event Data 32	STRUCT	8	Refer to Section 4.3.7	Get Access only
532	P1 | Event Data 33	STRUCT	8	Refer to Section 4.3.7	Get Access only
533	P1 | Event Data 34	STRUCT	8	Refer to Section 4.3.7	Get Access only
534	P1 | Event Data 35	STRUCT	8	Refer to Section 4.3.7	Get Access only

ADI Inst. #	Parameter	Data Type	Size (Bytes)	Units	Get/Set
535	P1 | Event Data 36	STRUCT	8	Refer to Section 4.3.7	Get Access only
536	P1 | Event Data 37	STRUCT	8	Refer to Section 4.3.7	Get Access only
537	P1 | Event Data 38	STRUCT	8	Refer to Section 4.3.7	Get Access only
538	P1 | Event Data 39	STRUCT	8	Refer to Section 4.3.7	Get Access only
539	P1 | Event Data 40	STRUCT	8	Refer to Section 4.3.7	Get Access only
540	P1 | Event Data 41	STRUCT	8	Refer to Section 4.3.7	Get Access only
541	P1 | Event Data 42	STRUCT	8	Refer to Section 4.3.7	Get Access only
542	P1 | Event Data 43	STRUCT	8	Refer to Section 4.3.7	Get Access only
543	P1 | Event Data 44	STRUCT	8	Refer to Section 4.3.7	Get Access only
544	P1 | Event Data 45	STRUCT	8	Refer to Section 4.3.7	Get Access only
545	P1 | Event Data 46	STRUCT	8	Refer to Section 4.3.7	Get Access only
546	P1 | Event Data 47	STRUCT	8	Refer to Section 4.3.7	Get Access only
547	P1 | Event Data 48	STRUCT	8	Refer to Section 4.3.7	Get Access only
548	P1 | Event Data 49	STRUCT	8	Refer to Section 4.3.7	Get Access only
549	P1 | Event Data 50	STRUCT	8	Refer to Section 4.3.7	Get Access only
550	P1 | Event Data 51	STRUCT	8	Refer to Section 4.3.7	Get Access only
551	P1 | Event Data 52	STRUCT	8	Refer to Section 4.3.7	Get Access only
552	P1 | Event Data 53	STRUCT	8	Refer to Section 4.3.7	Get Access only
553	P1 | Event Data 54	STRUCT	8	Refer to Section 4.3.7	Get Access only
554	P1 | Event Data 55	STRUCT	8	Refer to Section 4.3.7	Get Access only
555	P1 | Event Data 56	STRUCT	8	Refer to Section 4.3.7	Get Access only

ADI Inst. #	Parameter	Data Type	Size (Bytes)	Units	Get/Set
556	P1 | Event Data 57	STRUCT	8	Refer to Section 4.3.7	Get Access only
557	P1 | Event Data 58	STRUCT	8	Refer to Section 4.3.7	Get Access only
558	P1 | Event Data 59	STRUCT	8	Refer to Section 4.3.7	Get Access only
559	P1 | Event Data 60	STRUCT	8	Refer to Section 4.3.7	Get Access only
560	P1 | Event Data 61	STRUCT	8	Refer to Section 4.3.7	Get Access only
561	P1 | Event Data 62	STRUCT	8	Refer to Section 4.3.7	Get Access only
562	P1 | Event Data 63	STRUCT	8	Refer to Section 4.3.7	Get Access only
563	P1 | Event Data 64	STRUCT	8	Refer to Section 4.3.7	Get Access only
564	P2 | Event Data 1	STRUCT	8	Refer to Section 4.3.7	Get Access only
565	P2 | Event Data 2	STRUCT	8	Refer to Section 4.3.7	Get Access only
566	P2 | Event Data 3	STRUCT	8	Refer to Section 4.3.7	Get Access only
567	P2 | Event Data 4	STRUCT	8	Refer to Section 4.3.7	Get Access only
568	P2 | Event Data 5	STRUCT	8	Refer to Section 4.3.7	Get Access only
569	P2 | Event Data 6	STRUCT	8	Refer to Section 4.3.7	Get Access only
570	P2 | Event Data 7	STRUCT	8	Refer to Section 4.3.7	Get Access only
571	P2 | Event Data 8	STRUCT	8	Refer to Section 4.3.7	Get Access only
572	P2 | Event Data 9	STRUCT	8	Refer to Section 4.3.7	Get Access only
573	P2 | Event Data 10	STRUCT	8	Refer to Section 4.3.7	Get Access only
574	P2 | Event Data 11	STRUCT	8	Refer to Section 4.3.7	Get Access only
575	P2 | Event Data 12	STRUCT	8	Refer to Section 4.3.7	Get Access only

ADI Inst. #	Parameter	Data Type	Size (Bytes)	Units	Get/Set
576	P2 | Event Data 13	STRUCT	8	Refer to Section 4.3.7	Get Access only
577	P2 | Event Data 14	STRUCT	8	Refer to Section 4.3.7	Get Access only
578	P2 | Event Data 15	STRUCT	8	Refer to Section 4.3.7	Get Access only
579	P2 | Event Data 16	STRUCT	8	Refer to Section 4.3.7	Get Access only
580	P2 | Event Data 17	STRUCT	8	Refer to Section 4.3.7	Get Access only
581	P2 | Event Data 18	STRUCT	8	Refer to Section 4.3.7	Get Access only
582	P2 | Event Data 19	STRUCT	8	Refer to Section 4.3.7	Get Access only
583	P2 | Event Data 20	STRUCT	8	Refer to Section 4.3.7	Get Access only
584	P2 | Event Data 21	STRUCT	8	Refer to Section 4.3.7	Get Access only
585	P2 | Event Data 22	STRUCT	8	Refer to Section 4.3.7	Get Access only
586	P2 | Event Data 23	STRUCT	8	Refer to Section 4.3.7	Get Access only
587	P2 | Event Data 24	STRUCT	8	Refer to Section 4.3.7	Get Access only
588	P2 | Event Data 25	STRUCT	8	Refer to Section 4.3.7	Get Access only
589	P2 | Event Data 26	STRUCT	8	Refer to Section 4.3.7	Get Access only
590	P2 | Event Data 27	STRUCT	8	Refer to Section 4.3.7	Get Access only
591	P2 | Event Data 28	STRUCT	8	Refer to Section 4.3.7	Get Access only
592	P2 | Event Data 29	STRUCT	8	Refer to Section 4.3.7	Get Access only
593	P2 | Event Data 30	STRUCT	8	Refer to Section 4.3.7	Get Access only
594	P2 | Event Data 31	STRUCT	8	Refer to Section 4.3.7	Get Access only
595	P2 | Event Data 32	STRUCT	8	Refer to Section 4.3.7	Get Access only
596	P2 | Event Data 33	STRUCT	8	Refer to Section 4.3.7	Get Access only

ADI Inst. #	Parameter	Data Type	Size (Bytes)	Units	Get/Set
597	P2 | Event Data 34	STRUCT	8	Refer to Section 4.3.7	Get Access only
598	P2 | Event Data 35	STRUCT	8	Refer to Section 4.3.7	Get Access only
599	P2 | Event Data 36	STRUCT	8	Refer to Section 4.3.7	Get Access only
600	P2 | Event Data 37	STRUCT	8	Refer to Section 4.3.7	Get Access only
601	P2 | Event Data 38	STRUCT	8	Refer to Section 4.3.7	Get Access only
602	P2 | Event Data 39	STRUCT	8	Refer to Section 4.3.7	Get Access only
603	P2 | Event Data 40	STRUCT	8	Refer to Section 4.3.7	Get Access only
604	P2 | Event Data 41	STRUCT	8	Refer to Section 4.3.7	Get Access only
605	P2 | Event Data 42	STRUCT	8	Refer to Section 4.3.7	Get Access only
606	P2 | Event Data 43	STRUCT	8	Refer to Section 4.3.7	Get Access only
607	P2 | Event Data 44	STRUCT	8	Refer to Section 4.3.7	Get Access only
608	P2 | Event Data 45	STRUCT	8	Refer to Section 4.3.7	Get Access only
609	P2 | Event Data 46	STRUCT	8	Refer to Section 4.3.7	Get Access only
610	P2 | Event Data 47	STRUCT	8	Refer to Section 4.3.7	Get Access only
611	P2 | Event Data 48	STRUCT	8	Refer to Section 4.3.7	Get Access only
612	P2 | Event Data 49	STRUCT	8	Refer to Section 4.3.7	Get Access only
613	P2 | Event Data 50	STRUCT	8	Refer to Section 4.3.7	Get Access only
614	P2 | Event Data 51	STRUCT	8	Refer to Section 4.3.7	Get Access only
615	P2 | Event Data 52	STRUCT	8	Refer to Section 4.3.7	Get Access only
616	P2 | Event Data 53	STRUCT	8	Refer to Section 4.3.7	Get Access only
617	P2 | Event Data 54	STRUCT	8	Refer to Section 4.3.7	Get Access only

ADI Inst. #	Parameter	Data Type	Size (Bytes)	Units	Get/Set
618	P2 | Event Data 55	STRUCT	8	Refer to Section 4.3.7	Get Access only
619	P2 | Event Data 56	STRUCT	8	Refer to Section 4.3.7	Get Access only
620	P2 | Event Data 57	STRUCT	8	Refer to Section 4.3.7	Get Access only
621	P2 | Event Data 58	STRUCT	8	Refer to Section 4.3.7	Get Access only
622	P2 | Event Data 59	STRUCT	8	Refer to Section 4.3.7	Get Access only
623	P2 | Event Data 60	STRUCT	8	Refer to Section 4.3.7	Get Access only
624	P2 | Event Data 61	STRUCT	8	Refer to Section 4.3.7	Get Access only
625	P2 | Event Data 62	STRUCT	8	Refer to Section 4.3.7	Get Access only
626	P2 | Event Data 63	STRUCT	8	Refer to Section 4.3.7	Get Access only
627	P2 | Event Data 64	STRUCT	8	Refer to Section 4.3.7	Get Access only
628	SCM | Average Temp	STRUCT	8	Refer to Section 4.3.7	Get Access only
629	P1 | Average Iout	STRUCT	8	Refer to Section 4.3.7	Get Access only
630	P2 | Average Iout	STRUCT	8	Refer to Section 4.3.7	Get Access only

4.3.3 SCM LED STATUS DETAIL

Module LED State	Network LED State	Decimal Value	Hex Value
No Power[2]	No IP Address[2]	0	0
Standby	No IP Address[3]	16	10
Standby	No Connection	17	11
Standby	Connection Timeout	19	14
Device Operational	Connected	34	22
Device Operational	Connection Timeout	36	24
Major Recoverable Fault	No IP Address[3]	64	40
Major Recoverable Fault	No Connection	65	41

Module LED State	Network LED State	Decimal Value	Hex Value
Major Recoverable Fault	Connected	66	42
Major Recoverable Fault	Connection Timeout	68	44
Major Recoverable Fault	Duplicate IP[3]	72	48
Major Unrecoverable Fault[2]	No IP Address	128	80
Major Unrecoverable Fault[2]	No Connection	129	81
Major Unrecoverable Fault[2]	Connected	130	82
Major Unrecoverable Fault[2]	Connection Timeout	132	84
Major Unrecoverable Fault[2]	Duplicate IP	136	88

NOTES:

1. Please refer to the table in **Section 1.4** for the LED Pattern and behavior behind the LED states.
2. The state cannot be reported because there will be no response from the SCM.
3. The state cannot be reported because the ethernet is disconnected.

4.3.4 POWER SUPPLY LED STATUS DETAIL

Power Supply LED Indicator	Meaning	GUI Display	Decimal Value	Hex Value
Green Steady	Normal Operation	Normal Operation	1	01
Green Blinking	Heavy Load	Normal Operation	5	05
Green Blinking, Red Blinking (alternating)	Power Boost	Abnormal Operation	6	06
Red Blinking	Short Circuit	Abnormal Operation	4	04
Red Steady	Over Temperature Protection	Abnormal Operation	2	02
Red Steady	Overvoltage Protection	Abnormal Operation	2	02
Off	No DC Output	Abnormal Operation	0	00

4.3.5 POWER SUPPLY EVENT FLAGS DETAIL

	Bit Value							
Byte [1]	15	14	13	12	11	10	9	8
	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Byte [0]	7	6	5	4	3	2	1	0
	Power Down	Over Temperature Protection	Reserved	Power Boost	Over Voltage Protection	Reserved	Short-Circuit Protection	Reserved

4.3.6 USER ALARM EVENT FLAGS DETAIL

4.3.6.1 PSU1 AND PSU2 ALARM FLAG

Bit	31	30	29	28	27	26	25	24
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Bit	23	22	21	20	19	18	17	16
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Bit	15	14	13	12	11	10	9	8
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Bit	7	6	5	4	3	2	1	0
Value	Reserved	Reserved	Reserved	Average Current Trend High	Power Supply Temperature High	Output Current Hight	Input Voltage Low	Input Voltage High

4.3.6.2 SCM ALARM FLAG

Bit	31	30	29	28	27	26	25	24
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Bit	23	22	21	20	19	18	17	16
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Bit	15	14	13	12	11	10	9	8
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Bit	7	6	5	4	3	2	1	0
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Average Ambient Temp Trend High	Ambient Temp High

4.3.6.2 REDUNDANCY ALARM FLAG

Bit	31	30	29	28	27	26	25	24
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Bit	23	22	21	20	19	18	17	16
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Bit	15	14	13	12	11	10	9	8
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Bit	7	6	5	4	3	2	1	0
Value	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Loss of Redundancy Alarm	Load Sharing Alarm

4.3.7 EVENT DATA STRUCTURE DETAIL

ADI #	Event Data					
	STRUCT [8]					
ADI Inst	Byte [7]	Byte [6]	Byte [5]	Byte [4]	Byte [3] Byte [2]	Byte [1] Byte [0]
500-563	P1 | Event timestamp[N]				P1 | Event Start[N]	P1 | Event Code[N]
564-627	P2 | Event timestamp[N]				P2 | Event Start[N]	P2 | Event Code[N]

4.3.7.1 EVENT CODE DEFINITION

Byte [1] Byte [0]	
Event Code Value	Event Description
0x0008	SCP (Short Circuit Protection)
0x000A	OVP (Over Voltage Protection)
0x000B	Power Boost
0x000F	OTP (Over Temperature Protection)
0x00FF	No Event

4.3.7.2 EVENT START DEFINITION

Byte [2] Byte[1]	Event Start
0	End
1	Start
1	No Event (also refer to Event Code)

4.3.7.3 EVENT TIMESTAMP DEFINITION

Timestamp Definition (Little Endian format)				Conversion	
Byte [4]	Byte [5]	Byte [6]	Byte [7]	Hex	Dec (seconds)
0xC8	0x89	0x00	0x00	0x000089C8	35,272

4.3.8 24-HOUR AVERAGE DEFINITION

4.3.8.1 SCM AVERAGE TEMPERATURE DETAIL

	Byte [0]	Byte [1]	Byte [2]	Byte [3]	Byte [4]	Byte [5]	Byte [6]	Byte [7]		Byte [48]	Byte [49]
SCM | Average Temp	Temp [0]		Temp [1]		Temp[2]		Temp[3]		---	Temp[24]	
	Current Hour Average Temp		Previous Hour Average Temp							Previous 24-Hour Average Temp	

4.3.8.2 P1 AND P2 AVERAGE OUTPUT CURRENT DETAIL

	Byte [0]	Byte [1]	Byte [2]	Byte [3]	Byte [4]	Byte [5]	Byte [6]	Byte [7]		Byte [96	Byte [97]	Byte [98]	Byte [99]
P1 | Average Iout	Iout [0]				Iout [1]				---	Iout[24]			
	P1 Current Hour Average Iout				P1 Previous Hour Average Iout					P1 Previous 24-Hour Average Iout			

	Byte [0]	Byte [1]	Byte [2]	Byte [3]	Byte [4]	Byte [5]	Byte [6]	Byte [7]		Byte [96	Byte [97]	Byte [98]	Byte [99]
P2 | Average Iout	Iout [0]				Iout [1]				---	Iout[24]			
	P2 Current Hour Average Iout				P2 Previous Hour Average Iout					P2 Previous 24-Hour Average Iout			

5. USER ALARMS AND DIAGNOSTICS

5.1 OUTPUT CURRENT

When the power supply output current is greater than the user configured threshold, an alert is generated. The threshold is configurable via the Alarms Page. This is useful to ensure power supply utilization and detect any overload conditions.

5.2 SCM TEMPERATURE

When the real time sensed SCM ambient temperature exceeds the user configured threshold, an alarm is generated. The threshold is user configurable via the Alarms Page. The recommended threshold setting is 85°C, which is the worst case SCM ambient temperature.

5.3 INPUT VOLTAGE LOW

When the real time sensed PSU mains voltage goes below input voltage low threshold, an alarm is generated. The threshold is user configurable via the Alarms Page. This alert can be useful to indicate a low mains voltage condition.

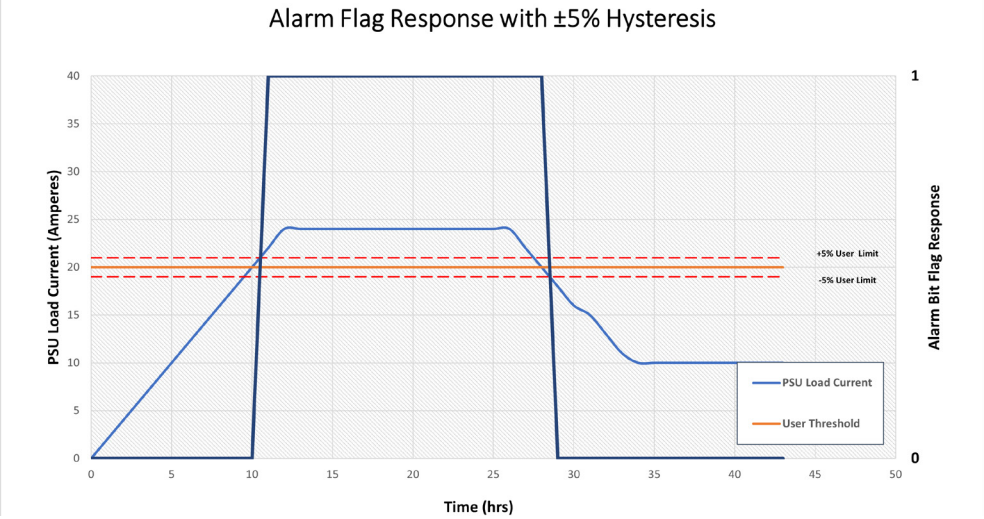
5.4 INPUT VOLTAGE HIGH

When the real time sensed PSU mains voltage goes above input voltage high threshold, an alarm is generated. The threshold voltage is user configurable via the Alarms Page. This alert can be useful to indicate a high mains voltage condition.

NOTES:

- The Upper and Lower Hysteresis for the above alarms is set to ±5% of the user configured threshold

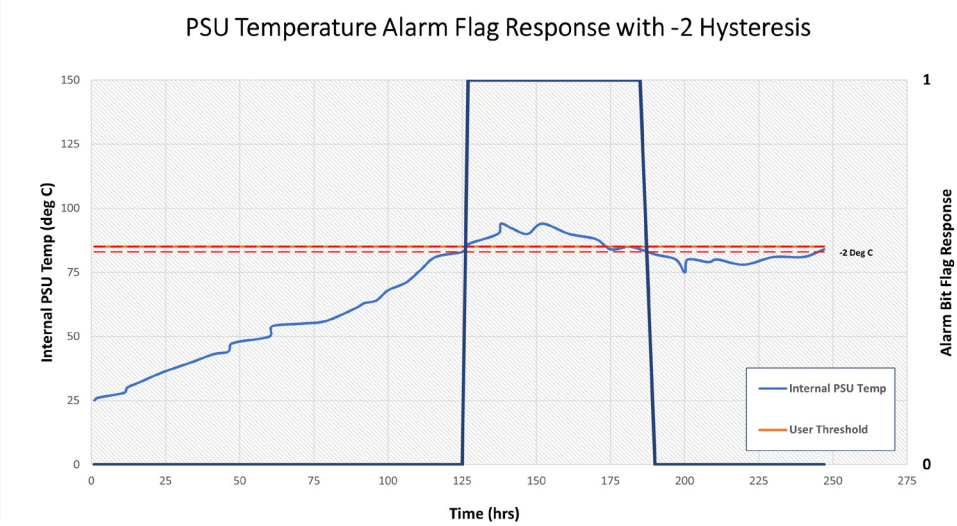
In the example below, the PSU Current High Alarm (Output Current) is set to 20A. With 5% hysteresis, or 1A, the alarm bit will be set to 1 when the load current is equal to or greater than 21A. The alarm bit will be set to 0 when the temperature is less than or equal to 19A.



5.5 PSU TEMPERATURE

When the real time sensed PSU internal temperature exceeds the user configured threshold, an alarm is generated. The threshold is user configurable via the Alarms Page. Recommended threshold is 85°C for SDN-D 10A and SDN D 20A. This is maximum operating temperature (internal) of the power supply. The power supply can continue to operate beyond this threshold, with reduced service life, till shutdown occurs (auto-recoverable) due to internal over temperature protection. Upper and lower hysteresis for PSU temperature alarm is 0°C (actual set threshold) and -2 °C (-2°C of set threshold), respectively.

In the example below, the SDN-D 10A Internal PSU Temperature Alarm is set to 85 deg C. The alarm bit will be set to 1 when the temperature is greater than 85 deg C. The alarm bit will be set to 0 when the temperature is less than or equal to 83 deg C (hysteresis).



5.6 AVERAGE SCM TEMPERATURE AND OUTPUT CURRENT TREND

The output current trend alarm can be useful to detect /alert abnormal load operation resulting in excessive current draw increase over longer periods.

The SCM temperature trend can be useful to indicate increased cabinet temperature or ambient around the SCM/power supplies over longer periods. Due to low self-rise of SCM, the SCM temperature sensor mimics the SCM surrounding temperature. See App note Temperature Sensing Using the SolaHD (SCM-E-EIP) Communication Module

The SCM internal temperature Tscm and Iout (Output Current for each power supply as applicable) hourly average is compared with 24 hours prior hourly average. If the percent difference between present average value and the 24 hours prior hourly average is greater than the user configurable percentage limit / trend change, SCM generates an alarm. See table below for explanation.

Hour	Values																							
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	B	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	C	B	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

24	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A	0
25	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
26	Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B
27	AA	Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C
28	AB	AA	Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D
29	AC	AB	AA	Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E

Hourly Average Recording in SCM

HOUR 0 is power on.

HOUR 1 - 29 are hourly instances when Tscm, Iout average values are made available within SCM.

A = First hourly average (of Tscm or Iout).

B= (Shift first average to next position) and record new hourly average.

C= Shift first two averages (A, B) to next positions and record new hourly average and so on.

X = 24th hourly average calculated and stored in array.

Compute the percent difference between 25th hour average Y and A (array element 0 to array element 24).

If percent difference (Y:A) is greater than user configurable threshold (in %). For example, the percent difference yields 11% and the user configurable threshold is set to 10%, an alarm is generated.

On the next hour (hour 26), after shifting and recording a new average, compute percent difference of Z to B (array element 0 to array element 24) and compare to user configurable threshold.

On the next hour (hour 27), after shifting and recording a new average, compute percent difference of AA to C (array element 0 to array element 24) and compare to user configurable threshold. And so on.

NOTES:

- SCM On time is used for Tscm, Iout average calculation.

- Only hourly average increase will be used to determine alarm condition (decreasing trend does not trigger alarm).
- The SCM will not trigger an alarm until the 25th hour average value is calculated.
- After 25 hours of run time, at any given instant, 25 average values are stored in the SCM for T scm, and Iout (output current per power supply).
- If the user changes threshold while in operation, the comparison will be done immediately with the new threshold and check the alarm condition respectively. The next calculation and comparison will be done again at original scheduled SCM hourly instance.

5.7 LOAD SHARING ALARM

The SDN-D Power Supply Series in redundancy guarantees a worse case 60/40 output current sharing ratio.

When the two supplies' outputs are connected in redundancy, the SCM sets an alarm when the ratio of the output currents is greater than 60/40.

This alarm can be used to adjust/trim the Vout of each power supply to be closer and/or ensure cabling from each power supply to load is comparable (in length and wire size). This promotes improved load current sharing, and in turn longer life for both power supplies in redundancy.

Load Sharing Alarm = PS1 load current/PS2 load current <2/3 or >3/2 (and PS1+PS2 > 50% load)

NOTES:

- The load sharing alarm is triggered only when load condition is about 50% of nominal load.
- The load sharing alarm is valid for same rated power supplies
- The load sharing alarm is triggered only when Redundancy Alarm is Enabled via Alarms Page

5.8 LOSS OF REDUNDANCY ALARM

The SCM ensures reliable redundant operation of two power supplies (outputs connected in parallel). The SCM will monitor the sum of the respective output currents and provide an alarm when the sum of the output currents is greater than the allowable output current on the lower rated power supply.

Loss of Redundancy = PS1 output current +PS2 output current > lower rated PS (output current nominal rating)

This alert can be used to ensure net load can be supported in the event one of the redundant power supplies is non-operational.

NOTES:

- The loss of redundancy alarm is also valid for different rated power supplies
- Loss of redundancy alert will also be triggered if one of the two redundant power supplies becomes non-performing (DC OK status = NOT OK).

5.9 TOTAL USE TIME MONITORING

The PLC or host device program can monitor the total use-time of the power supplies and set a warning condition when the use-time reaches an early warning threshold as well as an alarm when it reaches the critical warning threshold.

Early Alert = Total On time > early threshold in hours of operation

Critical Alert = Total ON time > critical threshold in hours of operation

This can help manage power supply assets by automatically scheduling replacement based on actual on time/ usage and recommended replacement schedule.

6. TROUBLESHOOTING

6.1 TROUBLESHOOTING

Problem	Possible Cause	Solution
Module and Network LED indicators are off.	Loose connection. The I2C cable connecting SCM-E-EIP to the power supply isn't connected properly.	Check connection between SCM-E-EIP and power supply. Make sure the cables are inserted to their corresponding headers properly.
	No power connection. Problems with connected SDN-D power supply.	Check SDN-D status LED, wiring, and input power for proper operation.
Module LED indicator is blinking green, but Network LED is OFF.	The SCM-E-EIP is in DHCP Configuration but there is no DHCP server present in the network .	Disable the SCM-E-EIP Enable DHCP. Enable Configuration if applicable.
	The SCM-E-EIP is in DHCP Configuration and there is DHCP server present in the network.	Check if the network cable is correct and check for loose connection or break in continuity in the cable. Verify the SCM-E-EIP's MAC address shows in the DHCP application and check if the SCM-E-EIP is registered in the DHCP.
	Static IP Address has not been configured or is not properly configured.	The configured static IP Address does not belong to the network subnet. Check the SCM-E-EIP IP Address and Subnet Mask and correct. Refer to Section 2.1.2.
Module LED indicator is steady red.	Major Unrecoverable Fault.	Perform power cycle. If issue persists, contact technical support.
Module LED indicator is blinking red.	One of the PSUs connected to the SCM-E-EIP encountered a major recoverable fault.	Check the status of the SDN-D power supplies connected to the SCM and correct any issues.

Problem	Possible Cause	Solution
IO Fault or Messaging Error on PLC; Network LED indicator is blinking red.	The Implicit Messaging Connection (Class 1) between SCM and PLC has timed out.	Check the configuration on the PLC to ensure the correct EDS file is used, the IP address is correct, and the network connection with the SCM is good. Verify there are not multiple Class 1 connections.
Network error; Network LED indicator is steady red.	The SCM-E-EIP has a duplicate IP Address within the network.	Disconnect the SCM-E-EIP from the network. Connect to a Private LAN and reconfigure the IP Address.
Unable to load GUI; Network LED indicator is blinking or steady green.	The browser application or the PC network connection might have encountered an error.	Verify correct IP address, restart the browser and check if the GUI will show up. Restart the PC if the problem persists.
	The SCM-E-EIP might have entered a hang up state or the internal filesystem has been damaged or corrupted.	Restart the SCM-E-EIP. If problem persists, contact technical support.
The GUI logo and format is not Emerson.	The SCM-E-EIP internal filesystem has been damaged or corrupted	Contact technical support.
The SDN-D Power Supply data does not show up on the GUI or on the PLC.	SDN-D Power Supply and/or SCM-E-EIP might be in a fault state.	Restart the affected SDN-D Power supply. If problem persists, restart the SCM-E-EIP. If problem persists, contact technical support.

The information in this manual is provided as a guide for installation, operation, and maintenance. It does not affect or exceed our obligations under the Terms and Conditions of Sale.

Note that unit specifications are subject to change without notice.

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WARRANTY

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