

Modbus TCP Communications Module (SCM-E-MBUS)



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

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REVISION HISTORY

Revision Code	Revision Date	Description
Rev. 1.0	06/2024	Final

PREFACE

Thank you for purchasing SolaHD SCM-E-MBUS!

This user manual defines how to use the communication functions of SCM-E-MBUS. 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.

INTRODUCTION

The SCM Series of SolaHD Communication Modules provide connectivity to one or two SDN-D Series power supplies using popular industrial protocols. The SCM-E-MBUS model provides Modbus TCP protocol support and an embedded web server with a graphical user interface (GUI) for setup and monitoring of 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 a Modbus TCP network.
- Monitoring and setup from common browsers, including Google Chrome, Microsoft Edge, Apple Safari, and Mozilla Firefox.
- Uploading and downloading of parameters and alarm setpoints via Modbus TCP
- Dual Ethernet ports to accommodate different network configurations.
- Built-in thermal sensor to measure the device's internal temperature. Since the SCM self-heating is minimal, this sensor approximates the external ambient temperature.

WHAT'S INCLUDED

SCM-E-MBUS ships with the following items:

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

ADDITIONAL REQUIREMENTS (NOT INCLUDED)

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

- Ethernet/RJ45 cable (shielded Cat6 or higher)
- Windows PC with Internet browser

COMPATIBLE DEVICES/APPLICATIONS

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

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

The SCM-E-MBUS functions with a variety of any Modbus TCP client devices. The web server is compatible with most MS Windows-based Internet browsers, 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 3,000 m
Weight/Dimensions	
H x W x D	140 x 25.5 x 106.9 mm (5.51 x 1.00 x 4.20 in), with sliding arm
	123.3 x 25.5 x 106.9 mm (4.85 x 1.00 x 4.20 in), without sliding arm
Net Weight	161g

1.2 COMMUNICATION SPECIFICATIONS

Item	Specification
Communication Protocol	Modbus TCP
Client/Server Role	Host PLC or PC act as Modbus TCP Client. SCM-E-MBUS act as Modbus TCP Server.
Topology	Star, Linear Bus, Ring
Transmission	One to one (unicast)
Transmission Speed	10Mbps, 100Mbps
Transmission Medium	Shielded Cat6 Twisted-pair cable
Maximum Transmission Distance	100 meters
Maximum number of Clients	4
Default IP Address	DHCP enabled
Server Port	502
Endianness	Little-Endian
Supports Function Codes	02 – Discrete Input 03 – Holding Register 04 – Input Register 06 – Write Single Register

1.3 CONSTRUCTION

The important parts of the SCM-E-MBUS 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-MBUS, one for Network and one for Module.

The table below defines the different status of both LED indicators.

LED Indicator	LED State	Summary	Definition
Module	Steady Off	No power	No power is supplied to the SCM.
	Steady Green	Device operational	Normal Operation.
	Flashing Red	Major Recoverable Fault	A Power Supply has a Major Recoverable Fault.
	Steady Red	Major Unrecoverable Fault	A Power Supply has a Major Unrecoverable 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, waiting for first Modbus message.
	Steady Green	Connected	An IP address is configured, at least one Modbus message received.
	Flashing Red	Connection timeout	An IP address is configured, and no Modbus message has been received. This means the device connection has timed out.
	Steady Red	Duplicate IP	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

The module performs several layers of initialization, including a-check for a firmware change, network initialization, and power on self-test. A complete startup sequence takes about 10 seconds.

STEP 1: At power up, the Module Status Indicator turns GREEN momentarily, then RED momentarily, then continuous Green. In the same sequence, the Network Status Indicator turns GREEN momentarily, then RED momentarily, then OFF until the module completes network initialization.

STEP 2: When network initialization completes, the Module and Network Status indicator turns OFF for approximately 3 seconds.

STEP 3: The Module Status indicator turns GREEN momentarily, then RED momentarily, then continuous GREEN. The Network Status Indicator turns GREEN momentarily, then RED momentarily, then turns OFF.

The module is now operational.

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).

Please take precautions to avoid product damage or data loss from ESD (Electrostatic Discharge).

- Transport the product within its static-safe packaging.
- Apply proper human grounding techniques (such as electrostatic wrist straps) before handling and installing the product.
- Ensure the installation environment (control cabinet or similar) is grounded and discharged before contact to with the product.

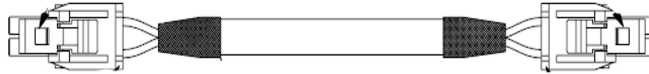
1.5.2 MODULE REPLACEMENT (POWER SUPPLY OR SCM)

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

1. Remove input power from power supplies.
2. Perform equipment installation and removal while power is removed.
3. Connect communications and power wiring while equipment is de-energized.
4. Restore input power only after installation and wire connection are complete.

1.5.3 SOLAHD POWER SUPPLIES (SDN-D SERIES)

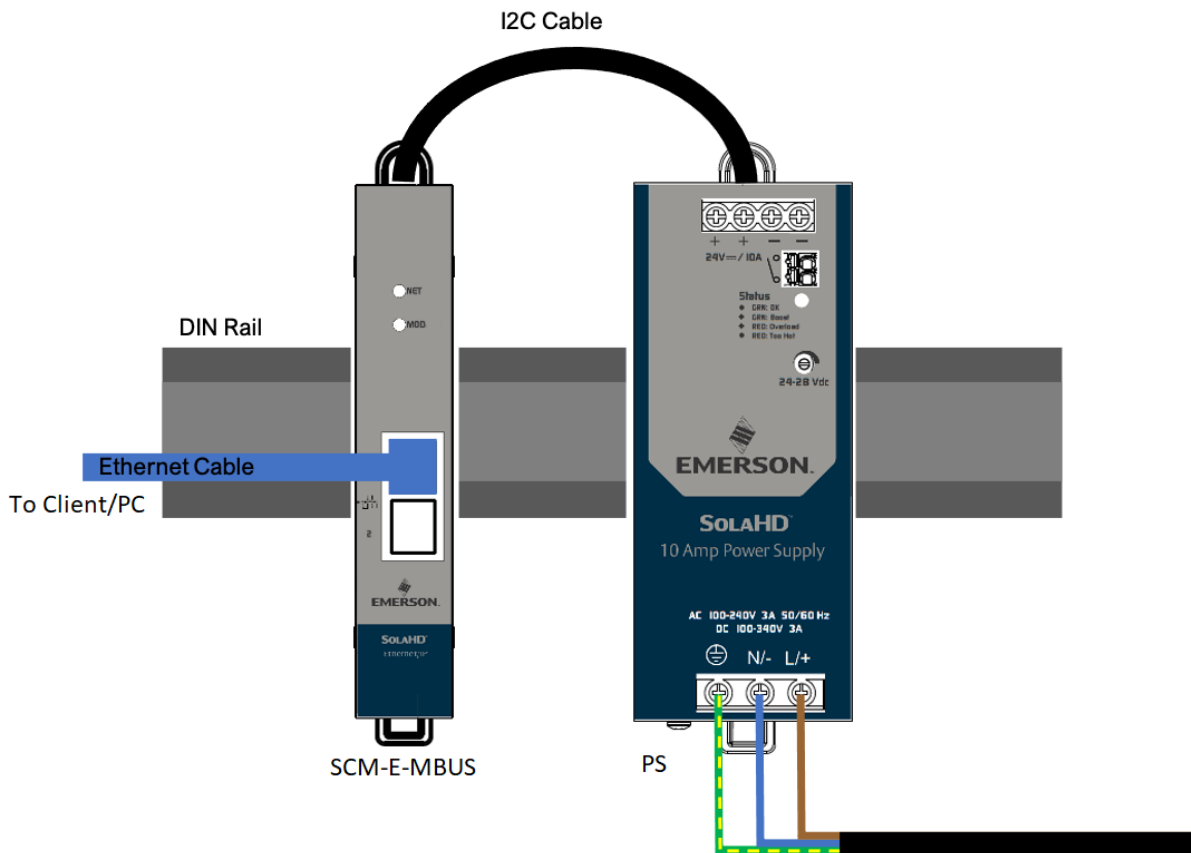
Each module (SCM-E-MBUS) includes 2 communication cables for connection of up to two SDN-D Power Supplies. Each cable connects from the port on top of a power supply to one of the 2 ports on the top of the SCM. The minimum configuration to attain an operating system includes input power, the SCM power supply cable and an Ethernet network connection to the RJ45 connector on front of the module. For the location of the I2C port, refer to [Section 1.3](#).



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

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

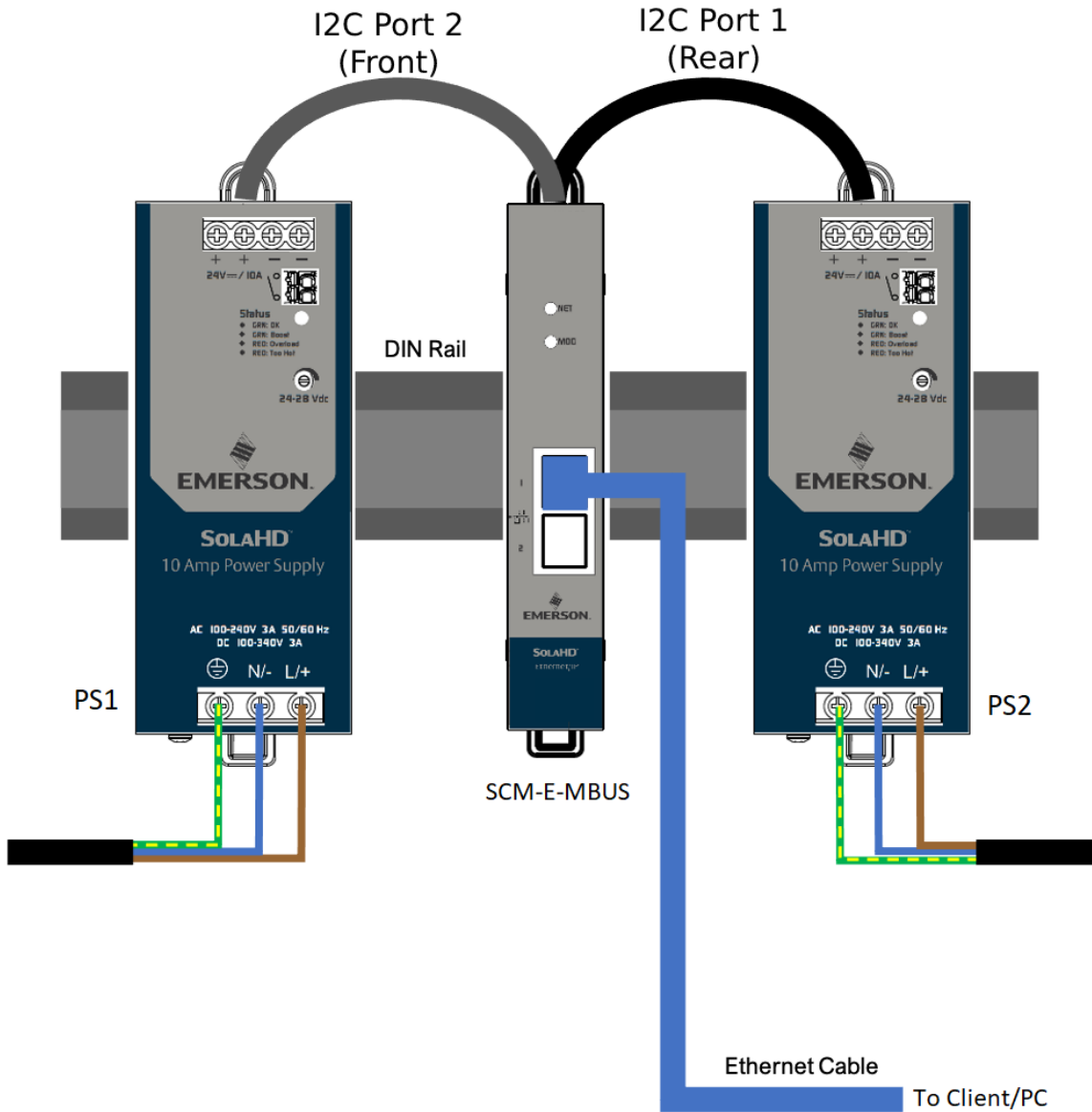
The set-up below shows typical connections of one SCM-E-MBUS to one SDN-D Power Supply.



1:1 Connection of SCM-E-MBUS to one SDN-10-24-100-D Power Supply

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

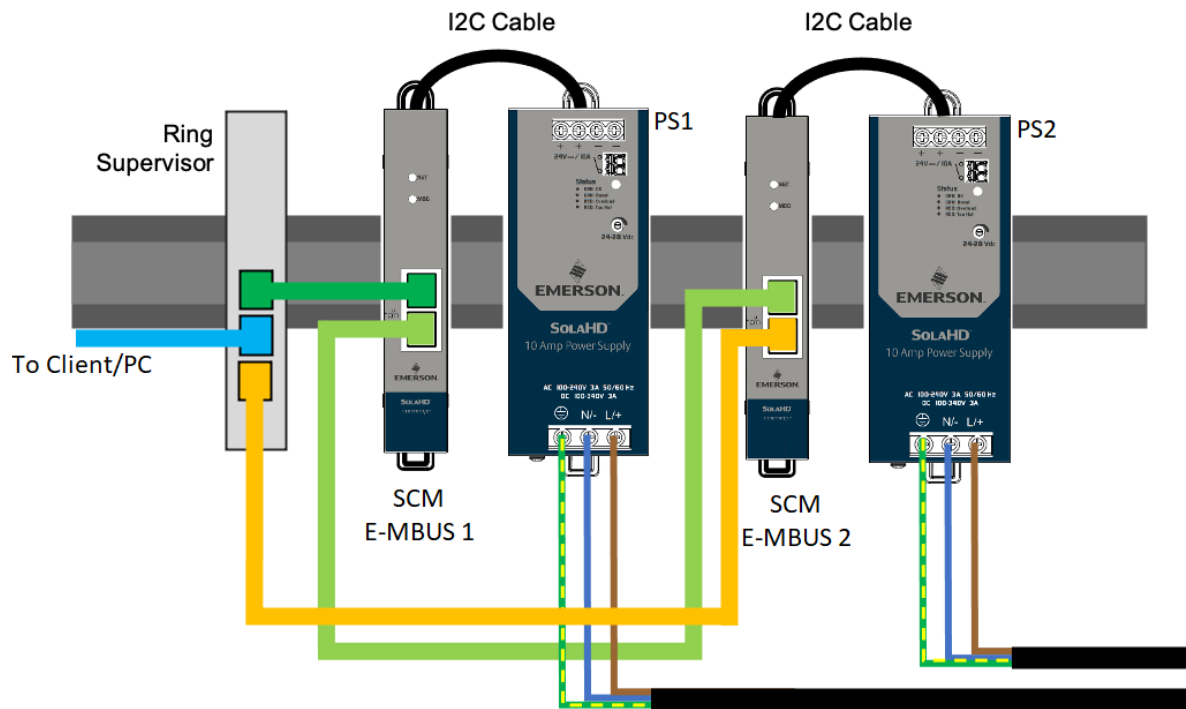
The set-up below shows typical connections of one SCM-E-MBUS to two SDN-D Power Supplies.



1:2 Connection of SCM-E-MBUS to Dual SDN-10-24-100-D Power Supplies

1.5.3.3 WIRING: SCM-E-MBUS AND SDN-D RING CONNECTION

A Ring topology enables interconnection of multiple automation devices without the need for additional switches. In effect, each Ethernet device has 2 RJ45 ports and an embedded single port switch, enabling continued communications under various adverse network conditions. The example below shows typical connections for 2 separate power supply subsystems operating on a ring network.



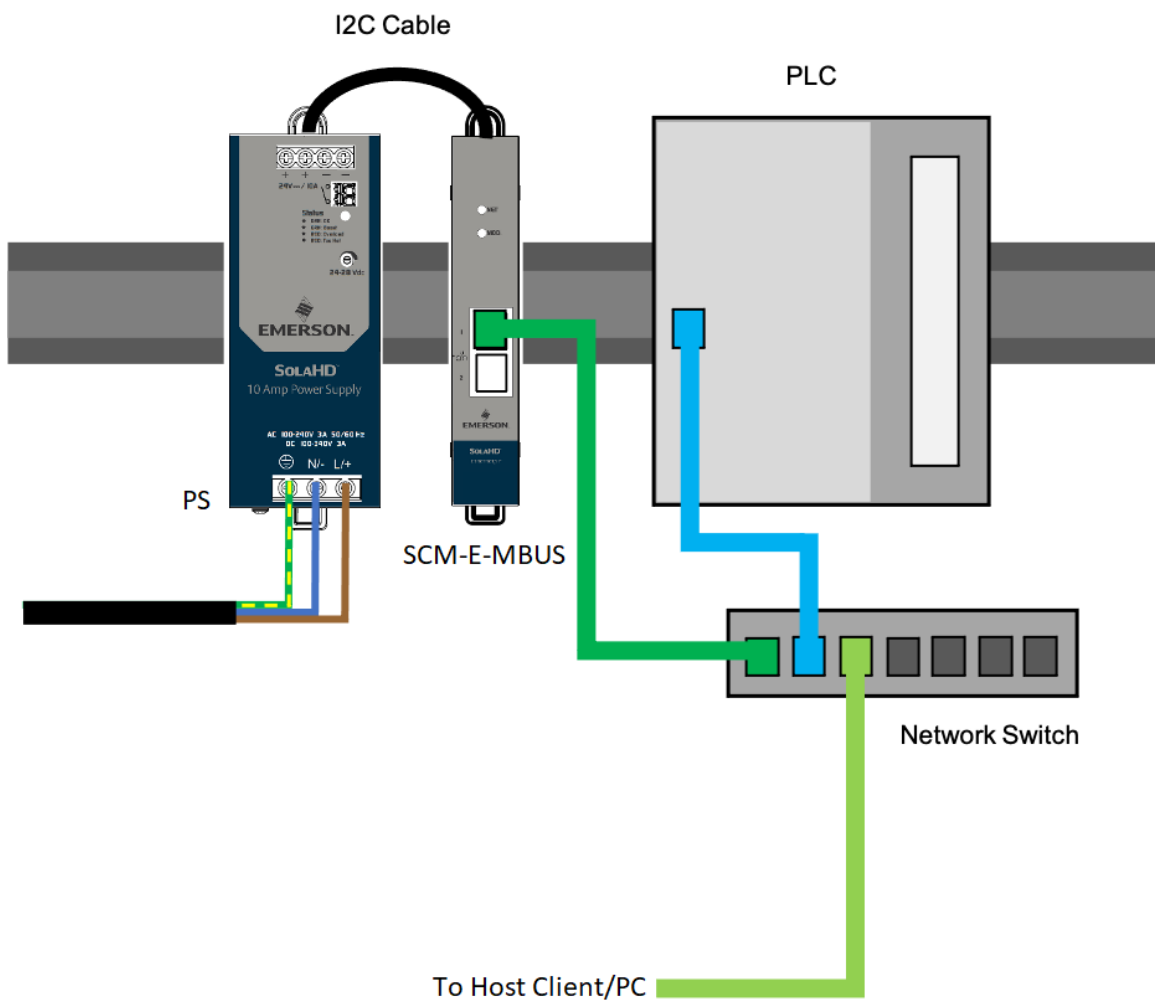
Ring Connection of SCM-E-MBUS to two separate Power Supplies

1.5.4 WIRING TOPOLOGY WITH MODBUS TCP CLIENT PLC

To connect a SolaHD SDN-D Power Supply to any PLC which supports Modbus TCP client, 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.

1.5.4.1 WIRING: PLC-MODBUS TCP CLIENT STAR TOPOLOGY

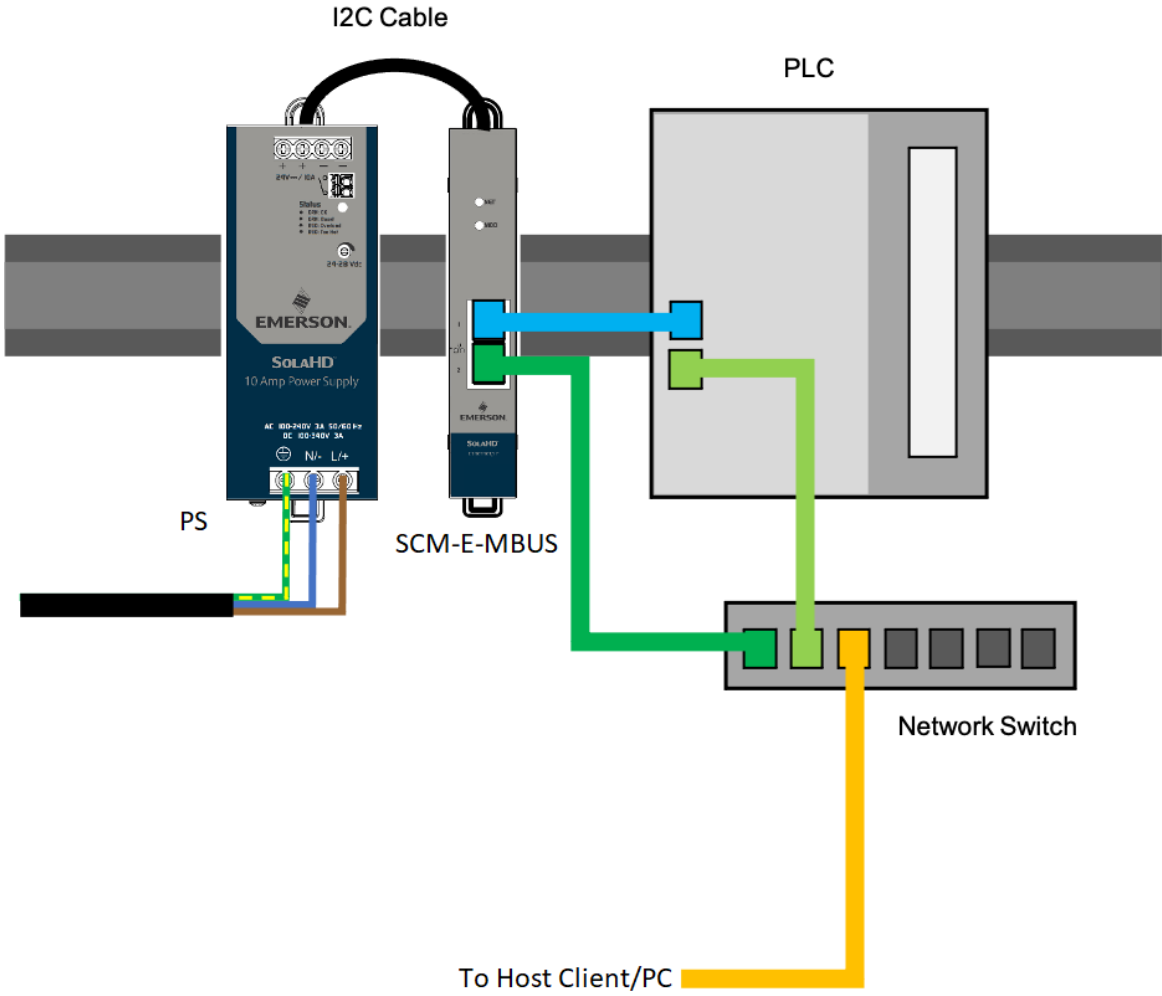
The set-up below shows the wiring of a SCM-E-MBUS - SDN-D Power Supply to a PLC which supports Modbus TCP client in star topology.



Star Connection of SCM-E-MBUS to PLC and Client/PC

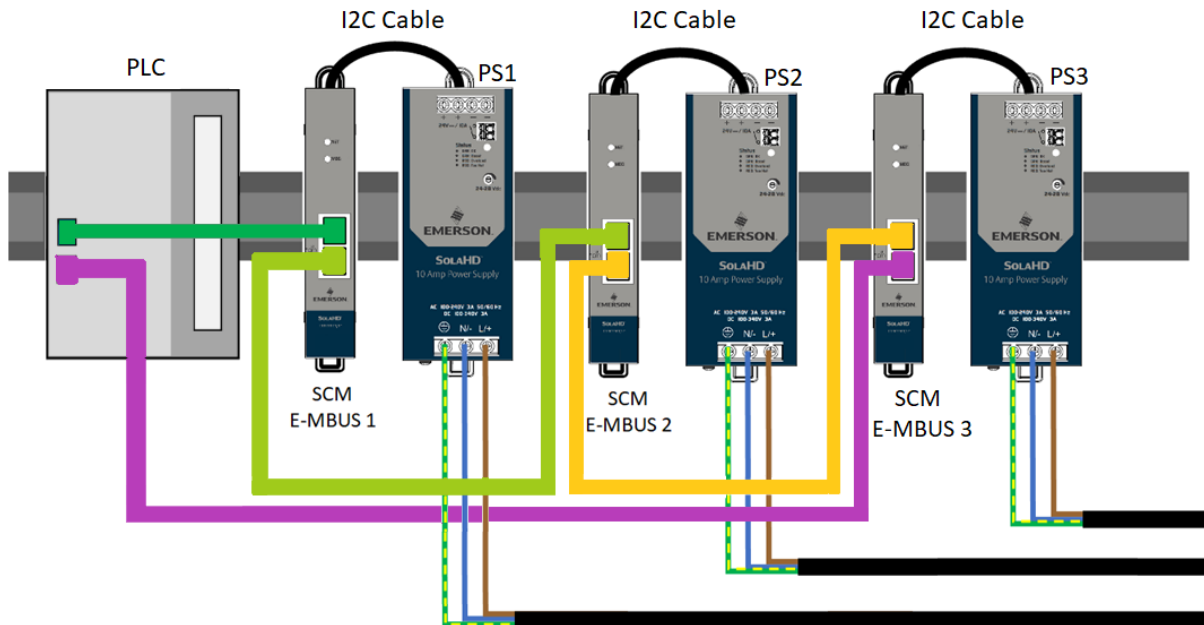
1.5.4.2 WIRING: PLC-MODBUS TCP CLIENT RING TOPOLOGY

The set-up below shows the wiring of a one SCM-E-MBUS and one SDN-D Power Supply to a PLC which support Modbus TCP client in ring topology.



Ring Connection of SCM-E-MBUS to PLC and Client/PC

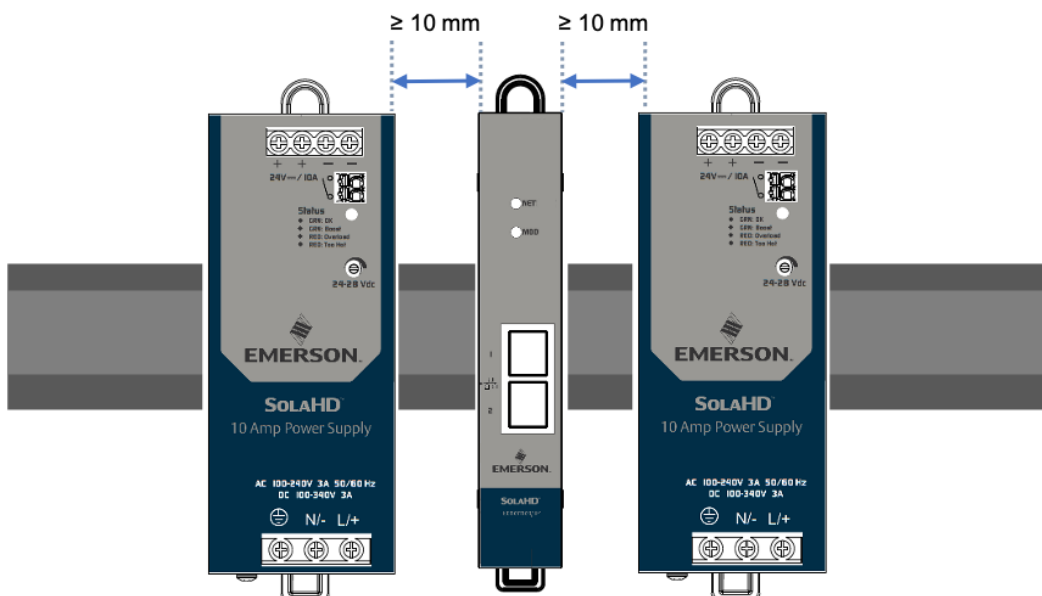
The set-up below shows the wiring of a three SCM-E-MBUS and three SDN-D Power Supply to a PLC which support Modbus TCP client in ring topology.



Ring Connection of three separate power supplies

1.5.5 SPACING

The setup below shows the spacing of the SCM-E-MBUS 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 as shown in table below. For full list of SCM parameters, please refer to [Section 4.3.1](#).

Parameter	Accuracy
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%

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

Power supply stress indications are shown in table below.

Stress Indication	Description and Action
Green	Extended service life expected. Low thermal stress. No action needed.
Amber	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.
Red	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.

1.7 EVENTS

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

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.
Oversvoltage Protection	OVP	PSU	The output voltage of the power supply is greater than 32V.
Power Boost	PB	PSU	Power supply load which is less than 150% of the rated load but greater than 125% of the rated load.
Over Temperature 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	PSU	DC OK flag becomes active when output voltage > 22, and < 28.5 Vdc.
	DC NOT OK		DC Not OK flag becomes active when output voltage < 21.5 or > 29 Vdc.

Event	Event Code	Origin	Meaning
PSU Stress Level	Normal Medium High	PSU	Power supply stress level can be occurred in terms of Normal, Medium, and High. Refer to stress indication table in Section 1.6 .

1.8 PRODUCT INFORMATION AND DEFAULT COMM. CONFIGURATION

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

Name	Default Factory Settings	Process Data	CIP
Part Number	SCM-E-MBUS	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 ²	XX:XX:XX:XX:XX:XX	None	Read

¹ Factory dependent, no fixed value

² Specified as a unique identified.

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	Auto assigned		Read/Write
Domain name	Auto assigned		Read/Write
DNS Server #1	0.0.0.0	None	Read/Write
DNS Server #2	0.0.0.0	None	Read/Write
Port 1	User Configurable		Read/Write
Port 2	User Configurable		Read/Write

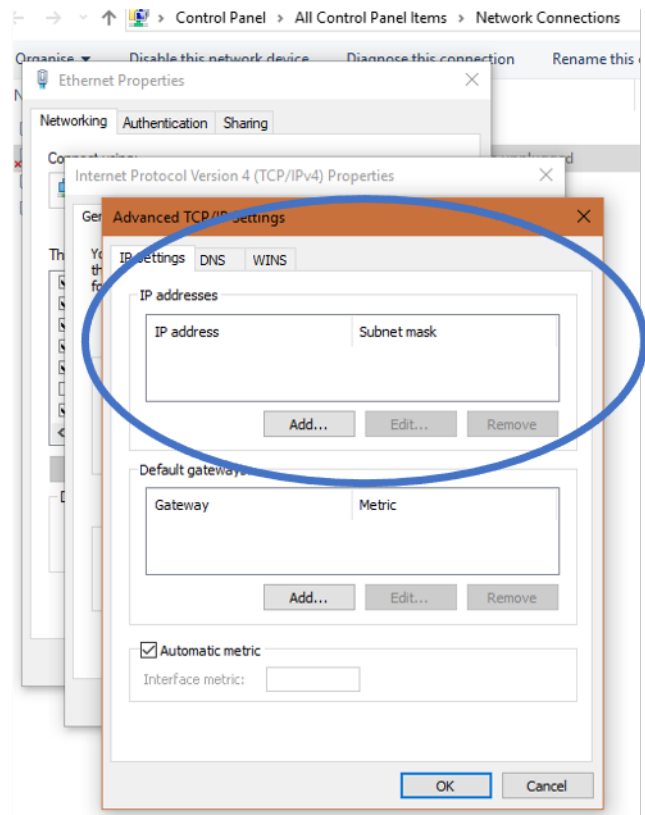
2. NETWORK CONFIGURATION/ IP SETTINGS

2.1 NETWORK CONFIGURATION

2.1.1 STATIC IP

The following example shows how to change to a Static IP Address of 192.168.1.5 from a PC connected on the network. Note that by default, SCM-E-MBUS is DHCP-enabled. If there is no DHCP server available, or the user doesn't want to use DHCP server, then it must be changed to Static. This can be done using the HMS IPConfig tool, described in the next section.

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 192.168.1.5 and Subnet Mask 255.255.255.0



2.1.2 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 the IPConfig tool.
2. Select HMS IP Config – Utility for module TCP/IP configuration.
3. After the download is finished, unpack the items in the zip file and run the installer.
4. Connect the SCM-E-MBUS to the PC where you installed the HMS IP Config tool, preferably using a direct connection.
5. Follow the [HMS IPConfig User Guide](#).
6. Click Next until you reach the Registration process.

3. MONITORING

3.1 WEBSERVER MONITORING

3.1.1 PROCEDURE

The SCM-E-MBUS 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-MBUS 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-MBUS and the SOLAHD Power Supply. For information on the wiring setup of SOLAHD Power Supplies to the SCM-E-MBUS, refer to [Section 1.5.1](#).
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, skip this step.
3. To make sure that 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) in the address bar.
5. The webserver should be loaded with the default tab opened (Overview tab).

MONITORING	Description	SCM	PS#1	PS#2
Overview	Part Number	SCM-E-MBUS	SDN 10-24-1000	SDN 10-24-1000
Parameters	Serial Number	22100175	N47730018CB	N47730011CCBC
Live Parameters	Manufacturing Info	22100175	PH2722049	PH2722049
Counts	Manufacturer Name	SolaHD	SolaHD	SolaHD
Max Values	Model Revision	AC	CB	CB
Alarm	Primary Revision	01	06	06
Events	Secondary Revision	01	09	09
Trends				
SYSTEM				
Configuration				
NETWORK				
Status				
Configuration				

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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, firmware version, and uptime.

EMERSON		SOLAHD		
MONITORING	Description	SCM	PS#1	PS#2
Overview	Part Number	SCM-E-MBUS	SDN 10-24-100D	SDN 10-24-100D
Parameters	Serial Number	22100175	N4773X001BCBC	N4773X001CCBC
Live Parameters	Manufacturing Info	22100175	PH27222048	PH27222049
Counts	Manufacturer Name	SolaHD	SolaHD	SolaHD
Max Values	Model Revision	AC	CB	CB
Alarm	Primary Revision	01	06	06
Events	Secondary Revision	01	09	09
Trends				

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.

EMERSON		SOLAHD			
MONITORING	Description	SCM	PS#1	PS#2	Unit
Overview	Part Number	SCM-E-MBUS	SDN 10-24-100D	SDN 10-24-100D	
Parameters	Serial Number	22100175	N4773X001BCBC	N4773X001CCBC	
Live Parameters	LED Status	MS: Device Operational	Normal Operation	Normal Operation	
Counts		NS: Connected			
Max Values					
Alarm	Current Turn On Time	64	64	64	Hours
Events	Total Turn On Time		1202	1468	Hours
Trends	Temperature	31	38	57	°C
	Output Voltage		24.5	25.0	Volts
	Output Current		0.1	9.0	Amps
	Input Voltage		230	219	Volts
	Input Voltage Type		AC	AC	AC or DC
SYSTEM					
Configuration					
NETWORK					
Status	Event Flags				
Configuration	SCP				
	Power Boost				
	OTP				
	OVP				
	DC Status		DC OK	DC OK	
	PSU Stress Level		Normal	Normal	
	User Alarms				
	Output Current				
	Temperature				
	Input Voltage Low				
	Input Voltage High				
	Average Temperature Trend				
	Average Output Current Trend				
	Redundancy Alarms				
	Load Sharing Alarm				
	Loss of Redundancy				

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

EMERSON		SOLAHD		
MONITORING	Description	SCM	PS#1	PS#2
Overview	Part Number	SCM-E-MBUS	SDN 10-24-100D	SDN 10-24-100D
Parameters	Serial Number	22100175	N4773X001BCBC	N4773X001CCBC
Live Parameters				
Counts	Input Power applied		1122	885
Max Values	DC Output ON Cycles		4007	2923
Alarm	Output Short Circuit Protection		1110	561
Events	Output Over Voltage Protection		0	0
Trends	Power Boost		469	212
	Over-Temperature Protection		0	0
SYSTEM				

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

EMERSON		SOLAHD			
MONITORING	Description	PS#1		PS#2	
Overview	Part Number	SDN 10-24-100D		SDN 10-24-100D	
Parameters	Serial Number	N4773X001BCBC		N4773X001CCBC	
Live Parameters	Total Turn On Time	1202 Hours		1468 Hours	
Counts					
Max Values	Max Values				
Alarm	Output Voltage Time Stamp	29.5 Volts	232 Hours	28.5 Volts	1403 Hours
Events	Output Current Time Stamp	18.0 Amps	8 Hours	18.1 Amps	924 Hours
Trends	Input Voltage Time Stamp	256 Volts	512 Hours	260 Volts	689 Hours
	Temperature Time Stamp	85 °C	500 Hours	86 °C	910 Hours
SYSTEM					

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.

EMERSON		SOLAHD			
MONITORING	Name	Threshold/Status	Value	Unit	
Overview	PS#1 Current High	200.0	<input type="text"/>	Amps	Update
Parameters	PS#1 Temperature High	150	<input type="text"/>	°C	Update
Live Parameters	PS#1 Input Voltage High	300	<input type="text"/>	Volts	Update
Counts	PS#1 Input Voltage Low	50	<input type="text"/>	Volts	Update
Max Values	PS#1 Current Change Threshold	100.0	<input type="text"/>	%	Update
Alarm	PS#1 Alarm Enable/Disable	Disable	-----Select-----		Update
Events					
Trends	PS#2 Current High	200.0	<input type="text"/>	Amps	Update
	PS#2 Temperature High	150	<input type="text"/>	°C	Update
SYSTEM					
Configuration	PS#2 Input Voltage High	300	<input type="text"/>	Volts	Update
	PS#2 Input Voltage Low	50	<input type="text"/>	Volts	Update
NETWORK					
Status	PS#2 Current Change Threshold	100.0	<input type="text"/>	%	Update
Configuration	PS#2 Alarm Enable/Disable	Disable	-----Select-----		Update
	SCM Temperature High	150	<input type="text"/>	°C	Update
	SCM Average Temperature Limit	100.0	<input type="text"/>	%	Update
	SCM Alarm Enable/Disable	Disable	-----Select-----		Update
	Redundancy Alarm Enable/Disable	Disable	-----Select-----		Update

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.

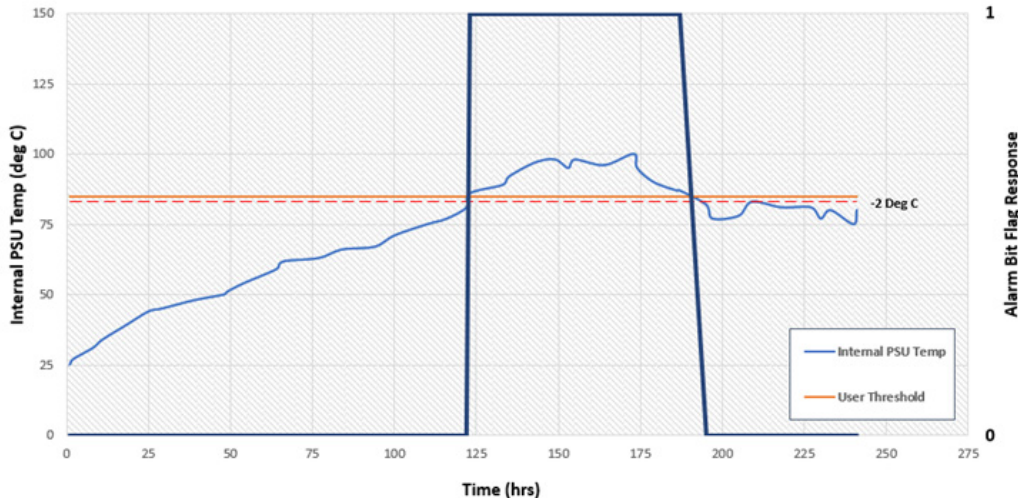
To prevent abrupt changes in the Alarm Bit Flag, hysteresis is added to the threshold. The setting for the hysteresis value is at $\pm 5\%$ of the threshold value (other than PSU temperature alarm). Initially the value of the bit flag is set to 0 upon startup of the device. The Bit Flag is set or reset if the value is above or below the hysteresis threshold.

PSU Temperature Alarm:

Recommended threshold is 85 Deg 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. Hysteresis for PSU temperature alarm is 0 deg C, -2 deg C.

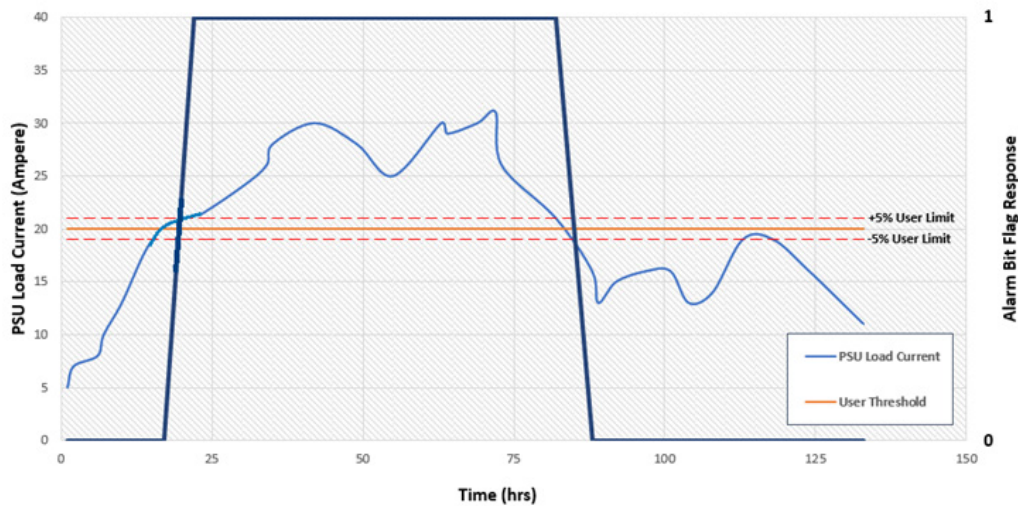
In the example below, the SDN-D 10A Internal PSU Temperature Alarm is set to 85 deg C. The alarm bit will be set to 1 when the temperature is greater than 85 deg C. The alarm bit will be set to 0 when the temperature is less than or equal to 83 deg C (hysteresis).

PSU Temperature Alarm Flag Response with -2 Hysteresis



In another example below, the PSU Current High Alarm 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.

Alarm Flag Response with ±5% Hysteresis



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.

Parameter	Range		Units
	Min	Max	
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	Register 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
≤ 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

Avg Current High	Internal Temp High	Output Current High	Input Voltage Low	Input Voltage High	Register Value
> 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-MBUS ignores the value set in the threshold value and always returns a 0x0000 value in the alarm flag.

MONITORING	Name	Threshold/Status	Value	Unit	
Overview	PS#1 Current High	200.0		Amps	Update
Parameters	PS#1 Temperature High	150		°C	Update
Live Parameters	PS#1 Input Voltage High	300		Volts	Update
Counts	PS#1 Input Voltage Low	50		Volts	Update
Max Values	PS#1 Current Change Threshold	100.0		%	Update
Alarm	PS#1 Alarm Enable/Disable	Disable	-----Select-----		Update
Events					
Trends	PS#2 Current High	200.0		Amps	Update
SYSTEM	PS#2 Temperature High	150		°C	Update
Configuration	PS#2 Input Voltage High	300		Volts	Update
	PS#2 Input Voltage Low	50		Volts	Update
NETWORK	PS#2 Current Change Threshold	100.0		%	Update
Status	PS#2 Alarm Enable/Disable	Disable	-----Select-----		Update
Configuration					
	SCM Temperature High	150		°C	Update
	SCM Average Temperature Limit	100.0		%	Update
	SCM Alarm Enable/Disable	Disable	-----Select-----		Update
	Redundancy Alarm Enable/Disable	Disable	-----Select-----		Update

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

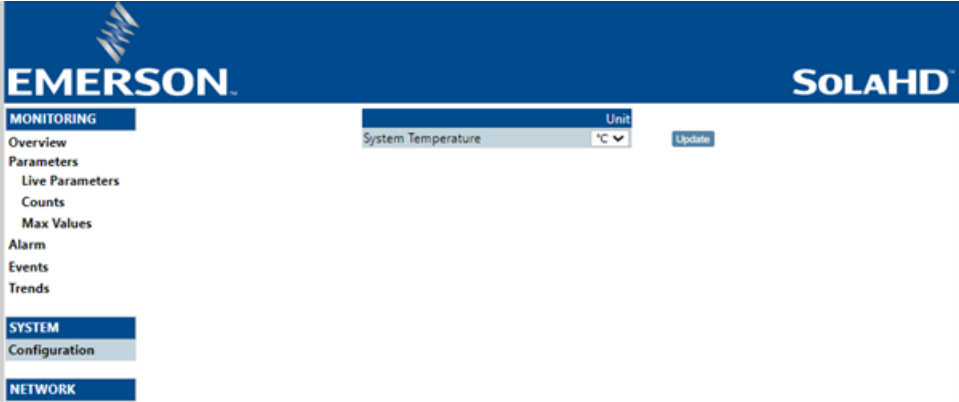
MONITORING	Description	Event Code	Event Start/End	Timestamp (Hrs)
Overview	PS#1 Event Data 1	Over Temperature Protection	End	2172
Parameters	PS#1 Event Data 2	Power Boost	End	2172
Live Parameters	PS#1 Event Data 3	Over Voltage Protection	End	2172
Counts	PS#1 Event Data 4	Short Circuit Protection	End	2172
Max Values	PS#1 Event Data 5	Over Temperature Protection	Start	2172
Alarm	PS#1 Event Data 6	Power Boost	Start	2172
Events	PS#1 Event Data 7	Over Voltage Protection	Start	2172
Trends	PS#1 Event Data 8	Short Circuit Protection	Start	2172
	PS#1 Event Data 9	Over Temperature Protection	End	2131
SYSTEM	PS#1 Event Data 10	Power Boost	End	2131

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

EMERSON SOLAHD		Last hour Average	Previous Hourly Average																			
		Average	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MONITORING																						
Overview																						
Parameters																						
Live Parameters	SCM Average Temperature(F)	88	86	86	86	86	84	86	86	84	84	86	84	84	86	84	84	84	84	84	84	84
Counts																						
Max Values																						
Alarm																						
Events																						
Trends																						
	PS#1 Average Output Current(Amps)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PS#2 Average Output Current(Amps)	9.0	7.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
SYSTEM																						

3.1.2.2 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.



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 screenshot displays the 'NETWORK' section of the EMERSON SOLAHD interface, specifically the 'Status' tab. It is divided into two main sections: 'Current IP Settings' and 'Current Ethernet Status'.

Current IP Settings	
DHCP:	Disabled
IP Address:	XXX:XXX:XXX:XXX
Subnet Mask:	XXX:XXX:XXX:XXX
Gateway Address:	0.0.0.0
Host Name:	
Domain name:	
DNS Server #1:	0.0.0.0
DNS Server #2:	0.0.0.0

Current Ethernet Status	
MAC Address:	XX:XX:XX:XX:XX:XX
Port 1:	100 FDX
Port 2:	No Link

Below the Ethernet status, there are expandable sections for 'Interface Counters', 'Media Counters', and 'Modbus TCP Statistics'. The 'Modbus TCP Statistics' section is currently expanded, showing the following data:

Modbus Connections:	0
Connection ACKs:	0
Connection NACKs:	0
Connection Timeouts:	0
Process Active Timeouts:	0
Processed messages:	0
Incorrect messages:	0

A 'Refresh' button is located at the bottom right of the Modbus TCP Statistics section.

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 DHCP configuration 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.

The screenshot displays the 'NETWORK' section of the EMERSON SOLAHD interface, specifically the 'Configuration' tab. It shows the 'IP Configuration' section with various fields for user input.

DHCP	Disabled
IP Address	XXX:XXX:XXX:XXX
Subnet Mask	XXX:XXX:XXX:XXX
Gateway Address	0.0.0.0
Host Name	
Domain name	
DNS Server #1	0.0.0.0
DNS Server #2	0.0.0.0

A 'Save settings' button is located below the configuration fields. Below the IP Configuration section, the 'Ethernet Configuration' section is partially visible.

4. REGISTER MAP

The SCM-E-MBUS data map explains the information and parameters accessible using the Modbus protocol.

4.1 DATA FORMAT AND READ/WRITE EXAMPLES

The bytes order of data format in Modbus response is little endian system. The supported data format is shown in the table below:

Datatype	Description
UINT8	Unsigned 8-bit means 1 byte and packed 2 bytes per register in high-low order.
SINT16/UINT16	16-bit signed/unsigned integer occupy per register.
SINT32/UINT32	32-bit signed/unsigned integer spanning 2 registers consecutively. The lower-addressed register is the high order half.
FLOAT	32-bit IEEE floating point number spanning 2 registers consecutively. The lower-addressed register is the high order half.

4.1.1 COMMAND AND RESPONSE EXAMPLES

The example shown below in [Section 4.1.1.1](#) describes typical command and response frame structure in Modbus TCP protocol.

4.1.1.1 READ FIXED/FRU DATA

Example: How to Read SCM Part Number - SCM Part Number parameter data type is UINT8 format, and Register address is 0xA441.

- Offset Address : 0x0800.
- Function Code : 0x03
- Number of registers: 0x0008 (Because parameter size is 16 bytes)

Request Structure:

Trans. ID		Protocol ID		Length		Unit ID	Function Code	Address Reg.		No. of read Reg.	
Hi Byte	Lo Byte	Hi Byte	Lo Byte	Hi Byte	Lo Byte			Hi Byte	Lo Byte	Hi Byte	Lo Byte
00	00	00	00	00	00	00	03	08	00	00	08

NOTES:

- Trans. ID, Protocol ID, Length, Unit ID it set by Master. All data in this table represented in hex format.
- In response data bytes order is little endian system.

Response Structure:

Function Code	Number of Bytes	Value of Registers Sequence															
		1		2		3		4		5		6		7		8	
		Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
03	10	43	53	2D	4D	2D	45	42	4D	53	55	20	20	20	20	00	20

Data: 0x53434D2D452D4D425553202020202000, Converted to ASCII = "SCM-E-MBUS"

Error Response

Trans. ID		Protocol ID		Length		Unit ID	Function Code	Exception Code
Hi Byte	Lo Byte	Hi Byte	Lo Byte	Hi Byte	Lo Byte	00	83	XX*
00	00	00	00	00	00			

Where the exception response's exception function code is the same as the original request function code plus 128 (0x83).

*Refer to [Section 4.2](#) for a list of possible exception codes.

4.1.1.2 READ INT16 DATA FORMAT

Example: How to Read SCM Part Temperature - SCM Temperature parameter data type is INT16 format, and Register address is 0xA45B.

- Offset Address : 0x081A
- Function Code : 0x03
- Number of registers : 0x0001 (Because parameter size is 2 bytes)

Request Structure:

Trans. ID		Protocol ID		Length		Unit ID	Function Code	Address Reg.		No. of read Reg.	
Hi Byte	Lo Byte	Hi Byte	Lo Byte	Hi Byte	Lo Byte			Hi Byte	Lo Byte	Hi Byte	Lo Byte
00	00	00	00	00	00	00	03	08	1A	00	01

Response Structure:

Function Code	Number of Bytes	Value of Register	
		1	
		Hi Byte	Lo Byte
03	02	00	21

Data = 0x0021 = 33°C (INT16)

Error Response

Trans. ID		Protocol ID		Length		Unit ID	Function Code	Exception Code
Hi Byte	Lo Byte	Hi Byte	Lo Byte	Hi Byte	Lo Byte	00	83	XX*
00	00	00	00	00	00			

*Refer to [Section 4.2](#) for a list of possible exception codes.

4.1.1.3 READ UINT32 DATA FORMAT

Example: How to Read SCM Turn ON Time - SCM Turn ON Time parameter data type is UINT32 format, and Register address is 0xA459.

- Offset Address : 0x0818
- Function Code : 0x03
- Number of registers : 0x0002 because parameter size is 4 bytes.

Request Structure:

Trans. ID		Protocol ID		Length		Unit ID	Function Code	Address Reg.		No. of read Reg.	
Hi Byte	Lo Byte	Hi Byte	Lo Byte	Hi Byte	Lo Byte			Hi Byte	Lo Byte	Hi Byte	Lo Byte
00	00	00	00	00	00	00	03	08	18	00	02

Response Structure:

Function Code	Number of Bytes	Value of Registers			
		1		2	
		Hi Byte	Lo Byte	Hi Byte	Lo Byte
03	04	16	AB	00	00

Data = 0x000016AB = 5803 Seconds (UINT32)

Error Response

Trans. ID		Protocol ID		Length		Unit ID	Function Code	Exception Code
Hi Byte	Lo Byte	Hi Byte	Lo Byte	Hi Byte	Lo Byte	00	83	XX*
00	00	00	00	00	00			

*Refer to [Section 4.2](#) for a list of possible exception codes.

4.1.1.4 READ FLOAT DATA FORMAT

Example: How to Read PS1 Output Voltage - PS1 output voltage parameter data type is FLOAT format, and Register address is 0xA4C7.

- Offset Address : 0x0886
- Function Code : 0x03
- Number of registers : 0x0002 because parameter size is 4 bytes.

Request Structure:

Trans. ID		Protocol ID		Length		Unit ID	Function Code	Address Reg.		No. of read Reg.	
Hi Byte	Lo Byte	Hi Byte	Lo Byte	Hi Byte	Lo Byte			Hi Byte	Lo Byte	Hi Byte	Lo Byte
00	00	00	00	00	00	00	03	08	86	00	02

Response Structure:

Function Code	Number of Bytes	Value of Registers			
		1		2	
		Hi Byte	Lo Byte	Hi Byte	Lo Byte
03	04	99	9A	41	C1

Data = 0x41C1999A = 24.2 V (FLOAT)

Error Response

Trans. ID		Protocol ID		Length		Unit ID	Function Code	Exception Code
Hi Byte	Lo Byte	Hi Byte	Lo Byte	Hi Byte	Lo Byte	00	83	XX*
00	00	00	00	00	00			

Where the exception response's exception function code is the same as the original request function code plus 128 (0x86).

* Refer to [Section 4.2](#) for a list of possible exception codes.

4.1.1.5 WRITE USER ALARM CONFIG DATA

Example: How to Write SCM Temperature High User Configurable Limit - SCM temperature high parameter data type is INT16 format, and Register address is 0xB1FD.

- Offset Address : 0x15BC
- Function Code : 0x06 to write single register.
- Data Value : 0x0032 (50°C), (Make sure this value is within specified range)

Request Structure:

Trans. ID		Protocol ID		Length		Unit ID	Function Code	Address Reg.		No. of read Reg.	
Hi Byte	Lo Byte	Hi Byte	Lo Byte	Hi Byte	Lo Byte			Hi Byte	Lo Byte	Hi Byte	Lo Byte
00	00	00	00	00	00	00	06	15	BC	00	32

Response Structure:

Function Code	Number of Bytes	Value of Register	
		1	
		Hi Byte	Lo Byte
03	02	00	32

Data = 0x0032 = 50°C (INT16)

Error Response

Trans. ID		Protocol ID		Length		Unit ID	Function Code	Exception Code
Hi Byte	Lo Byte	Hi Byte	Lo Byte	Hi Byte	Lo Byte	00	86	XX*
00	00	00	00	00	00			

Where the exception response's exception function code is the same as the original request function code plus 128 (0x86).

*Refer to [Section 4.2](#) for a list of possible exception codes.

4.2 EXCEPTION CODES

The following table describes supported exception codes. If one of these codes is received in a Modbus request, it means an error has occurred.

Code	Name	Description
0x01	Illegal function	The function code in the query is not supported by the Modbus server.
0x02	Illegal data address	The data address received in the query is outside the initialized memory area. If invalid or out of range, register address sends in Modbus query.
0x03	Illegal data value	The data in the request is illegal. It may be out of range of supported datatype.

4.3 HOLDING AND INPUT REGISTER PARAMETERS LIST

Holding register address list can be read using function code 03 as (4X) registers. For example, to read “SCM Temperature” parameter, the address in decimal column from below table is 42075 – 40001 = 2074 as the starting register address. Refer to [Section 4.1.1.2](#) to see example.

Similarly, Input register address list can be read using function code 04 as (3X). For example, to read “SCM Temperature” parameter, the address in decimal column from below table is 30027 – 30001 = 26 as the starting register address.

4.3.1 FIXED DATA AND REALTIME DATA POINTS LIST

The measurement and calculation data shown below can be read using function code 03 and function code 04 through the SCM-E-MBUS. The full list of SCM parameters is shown in the table below:

Modbus Address (4X-Holding)		Modbus Address (3X-Input)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex	Decimal	Hex							
SCM Parameters										
42049	A441	30001	7531	SCM Part Number	R	UINT8	16			SCM-E-MBUS
42057	A449	30009	7539	SCM Serial No.	R	UINT32	4			
42059	A44B	30011	753B	SCM Mfg. Info	R	UINT32	4			
42061	A44D	30013	753D	SCM Mfr. Name	R	UINT8	16			SolaHD
42069	A455	30021	7545	SCM Model Rev	R	UINT8	2			
42070	A456	30022	7546	SCM Pri FW Rev	R	UINT16	2			
42071	A457	30023	7547	SCM Sec FW Rev	R	UINT16	2			
42072	A458	30024	7548	SCM Status LED	R	UINT16	2			Refer to Section 4.3.4
42073	A459	30025	7549	SCM Time On Now	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42075	A45B	30027	754B	SCM Temperature	R	SINT16	2		°C / °F	Unit will apply depending on Temperature unit configuration parameter. Refer to Section 3.1.2.2
42076	A45C	30028	754C	SCM Average Temp 0	R	SINT16	2		°C / °F	
42077	A45D	30029	754D	SCM Average Temp 1	R	SINT16	2		°C / °F	
42078	A45E	30030	754E	SCM Average Temp 2	R	SINT16	2		°C / °F	
42079	A45F	30031	754F	SCM Average Temp 3	R	SINT16	2		°C / °F	
42080	A460	30032	7550	SCM Average Temp 4	R	SINT16	2		°C / °F	
42081	A461	30033	7551	SCM Average Temp 5	R	SINT16	2		°C / °F	

Modbus Address (4X-Holding)		Modbus Address (3X-Input)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex	Decimal	Hex							
42082	A462	30034	7552	SCM Average Temp 6	R	SINT16	2		°C / °F	
42083	A463	30035	7553	SCM Average Temp 7	R	SINT16	2		°C / °F	
42084	A464	30036	7554	SCM Average Temp 8	R	SINT16	2		°C / °F	
42085	A465	30037	7555	SCM Average Temp 9	R	SINT16	2		°C / °F	
42086	A466	30038	7556	SCM Average Temp 10	R	SINT16	2		°C / °F	
42087	A467	30039	7557	SCM Average Temp 11	R	SINT16	2		°C / °F	
42088	A468	30040	7558	SCM Average Temp 12	R	SINT16	2		°C / °F	
42089	A469	30041	7559	SCM Average Temp 13	R	SINT16	2		°C / °F	
42090	A46A	30042	755A	SCM Average Temp 14	R	SINT16	2		°C / °F	
42091	A46B	30043	755B	SCM Average Temp 15	R	SINT16	2		°C / °F	
42092	A46C	30044	755C	SCM Average Temp 16	R	SINT16	2		°C / °F	
42093	A46D	30045	755D	SCM Average Temp 17	R	SINT16	2		°C / °F	
42094	A46E	30046	755E	SCM Average Temp 18	R	SINT16	2		°C / °F	
42095	A46F	30047	755F	SCM Average Temp 19	R	SINT16	2		°C / °F	
42096	A470	30048	7560	SCM Average Temp 20	R	SINT16	2		°C / °F	
42097	A471	30049	7561	SCM Average Temp 21	R	SINT16	2		°C / °F	
42098	A472	30050	7562	SCM Average Temp 22	R	SINT16	2		°C / °F	
42099	A473	30051	7563	SCM Average Temp 23	R	SINT16	2		°C / °F	
42100	A474	30052	7564	SCM Average Temp 24	R	SINT16	2		°C / °F	
42101-42148	A475-A4A4	30053-30100	7565-7594	Reserved						
PS1 Parameters										
42149	A4A5	30101	7595	PS1 Device Model	R	UINT16	2			0 = No Model 8 = Reserved 9 = 10 Amp Model 10 = 20 Amp Model 11 = 40 Amp Model

Modbus Address (4X-Holding)		Modbus Address (3X-Input)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex	Decimal	Hex							
42150	A4A6	30102	7596	PS1 Part Number	R	UINT8	14			SDN10-24-100D SDN20-24-100D SDN40-24-100D
42157	A4AD	30109	759D	PS1 Serial Number	R	UINT8	14			
42164	A4B4	30116	75A4	PS1 Mfg. Info	R	UINT8	12			
42170	A4BA	30122	75AA	PS1 Mfr. Name	R	UINT8	16			SolaHD
42178	A4C2	30130	75B2	PS1 Mfg. ID	R	UINT32	4			e.g. 24180053 (YYWWXXXX)
42180	A4C4	30132	75B4	PS1 Model Rev	R	UINT8	2			
42181	A4C5	30133	75B5	PS1 Pri FW Rev	R	UINT16	2			
42182	A4C6	30134	75B6	PS1 Sec FW Rev	R	UINT16	2			
42183	A4C7	30135	75B7	PS1 Vout	R	FLOAT	4		V	
42185	A4C9	30137	75B9	PS1 Iout	R	FLOAT	4		A	
42187	A4CB	30139	75BB	PS1 Vin	R	UINT16	2		V	
42188	A4CC	30140	75BC	PS1 Temperature	R	SINT16	2		°C / °F	Unit will apply depending on Temperature unit configuration parameter. Refer to Section 3.1.2.2
	A4C5	30133	75B5	PS1 Pri FW Rev	R	UINT16	2			
42189	A4CD	30141	75BD	PS1 LED Status	R	UINT16	2			Refer to Section 4.3.5
	A4C7	30135	75B7	PS1 Vout	R	FLOAT	4		V	
42190	A4CE	30142	75BE	PS1 Time On Now	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42192	A4D0	30144	75C0	PS1 Lifetime On	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42194	A4D2	30146	75C2	PS1 Vin Type	R	UINT16	2	0 or 1		0 = DC 1 = AC
42195	A4D3	30147	75C3	PS1 Count DC On	R	UINT16	2	0 to 65535		
42196	A4D4	30148	75C4	PS1 Count SCP	R	UINT16	2	0 to 65535		
42197	A4D5	30149	75C5	PS1 Count OVP	R	UINT16	2	0 to 65535		
42198	A4D6	30150	75C6	PS1 Count Pboost	R	UINT16	2	0 to 65535		
42199	A4D7	30151	75C7	PS1 Count PowerIn	R	UINT16	2	0 to 65535		
42200	A4D8	30152	75C8	PS1 Count OTP	R	UINT16	2	0 to 65535		
42201	A4D9	30153	75C9	PS1 Max Vout	R	FLOAT	4		V	
42203	A4DB	30155	75CB	PS1 Max Iout	R	FLOAT	4		A	
42205	A4DD	30157	75CD	PS1 Max Vin	R	UINT16	2		V	

Modbus Address (4X-Holding)		Modbus Address (3X-Input)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex	Decimal	Hex							
42206	A4DE	30158	75CE	PS1 Max Temp	R	SINT16	2		°C / °F	Unit will apply depending on Temperature unit configuration parameter. Refer to Section 3.1.2.2
42207	A4DF	30159	75CF	PS1 Max Vout TS	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42209	A4E1	30161	75D1	PS1 Max Iout TS	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42211	A4E3	30163	75D3	PS1 Max Vin TS	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42213	A4E5	30165	75D5	PS1 Max Temp TS	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42215	A4E7	30167	75D7	PS1 Average Iout 0	R	FLOAT	4		A	
42217	A4E9	30169	75D9	PS1 Average Iout 1	R	FLOAT	4		A	
42219	A4EB	30171	75DB	PS1 Average Iout 2	R	FLOAT	4		A	
42221	A4ED	30173	75DD	PS1 Average Iout 3	R	FLOAT	4		A	
42223	A4EF	30175	75DF	PS1 Average Iout 4	R	FLOAT	4		A	
42225	A4F1	30177	75E1	PS1 Average Iout 5	R	FLOAT	4		A	
42227	A4F3	30179	75E3	PS1 Average Iout 6	R	FLOAT	4		A	
42229	A4F5	30181	75E5	PS1 Average Iout 7	R	FLOAT	4		A	
42231	A4F7	30183	75E7	PS1 Average Iout 8	R	FLOAT	4		A	
42233	A4F9	30185	75E9	PS1 Average Iout 9	R	FLOAT	4		A	
42235	A4FB	30187	75EB	PS1 Average Iout 10	R	FLOAT	4		A	
42237	A4FD	30189	75ED	PS1 Average Iout 11	R	FLOAT	4		A	
42239	A4FF	30191	75EF	PS1 Average Iout 12	R	FLOAT	4		A	
42241	A501	30193	75F1	PS1 Average Iout 13	R	FLOAT	4		A	
42243	A503	30195	75F3	PS1 Average Iout 14	R	FLOAT	4		A	
42245	A505	30197	75F5	PS1 Average Iout 15	R	FLOAT	4		A	
42247	A507	30199	75F7	PS1 Average Iout 16	R	FLOAT	4		A	

Modbus Address (4X-Holding)		Modbus Address (3X-Input)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex	Decimal	Hex							
42249	A509	30201	75F9	PS1 Average Iout 17	R	FLOAT	4		A	
42251	A50B	30203	75FB	PS1 Average Iout 18	R	FLOAT	4		A	
42253	A50D	30205	75FD	PS1 Average Iout 19	R	FLOAT	4		A	
42255	A50F	30207	75FF	PS1 Average Iout 20	R	FLOAT	4		A	
42257	A511	30209	7601	PS1 Average Iout 21	R	FLOAT	4		A	
42259	A513	30211	7603	PS1 Average Iout 22	R	FLOAT	4		A	
42261	A515	30213	7605	PS1 Average Iout 23	R	FLOAT	4		A	
42263	A517	30215	7607	PS1 Average Iout 24	R	FLOAT	4		A	
42263	A517	30215	7607	PS1 Average Iout 24	R	FLOAT	4		A	
42253	A50D	30205	75FD	PS1 Average Iout 19	R	FLOAT	4		A	
42255	A50F	30207	75FF	PS1 Average Iout 20	R	FLOAT	4		A	
42257	A511	30209	7601	PS1 Average Iout 21	R	FLOAT	4		A	
42259	A513	30211	7603	PS1 Average Iout 22	R	FLOAT	4		A	
42261	A515	30213	7605	PS1 Average Iout 23	R	FLOAT	4		A	
42263	A517	30215	7607	PS1 Average Iout 24	R	FLOAT	4		A	
42265 - 42348	A519 - A56C	30217 - 30300	7609 - 765C	Reserved						
PS2 Parameters										
42349	A56D	30301	765D	PS2 Device Model	R	UINT16	2			0 = No Model 8 = Reserved 9 = 10 Amp Model 10 = 20 Amp Model 11 = 40 Amp Model
42350	A56E	30302	765E	PS2 Part Number	R	UINT8	14			SDN10-24-100D SDN20-24-100D SDN40-24-100D
42357	A575	30309	7665	PS2 Serial Number	R	UINT8	14			
42364	A57C	30316	766C	PS2 Mfg. Info	R	UINT8	12			
42370	A582	30322	7672	PS2 Mfr. Name	R	UINT8	16			
42378	A58A	30330	767A	PS2 Mfg. ID	R	UINT32	4			e.g. 24180053 (YYWWXXXX)

Modbus Address (4X-Holding)		Modbus Address (3X-Input)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex	Decimal	Hex							
42380	A58C	30332	767C	PS2 Model Rev	R	UINT8	2			
42381	A58D	30333	767D	PS2 Pri FW Rev	R	UINT16	2			
42382	A58E	30334	767E	PS2 Sec FW Rev	R	UINT16	2			
42383	A58F	30335	767F	PS2 Vout	R	FLOAT	4		V	
42385	A591	30337	7681	PS2 Iout	R	FLOAT	4		A	
42387	A593	30339	7683	PS2 Vin	R	UINT16	2		V	
42388	A594	30340	7684	PS2 Temperature	R	SINT16	2		°C / °F	
42389	A595	30341	7685	PS2 LED Status	R	UINT16	2			Refer to Section 4.3.5
42390	A596	30342	7686	PS2 Time On Now	R	UINT32	4		Sec	
42392	A598	30344	7688	PS2 Lifetime On	R	UINT32	4		Sec	
42394	A59A	30346	768A	PS2 Vin Type	R	UINT16	2	0 or 1		0 = DC 1 = AC
42395	A59B	30347	768B	PS2 Count DC On	R	UINT16	2			
42396	A59C	30348	768C	PS2 Count SCP	R	UINT16	2			
42397	A59D	30349	768D	PS2 Count OVP	R	UINT16	2			
42398	A59E	30350	768E	PS2 Count Pboost	R	UINT16	2			
42399	A59F	30351	768F	PS2 Count PowerIn	R	UINT16	2			
42400	A5A0	30352	7690	PS2 Count OTP	R	UINT16	2			
42401	A5A1	30353	7691	PS2 Max Vout	R	FLOAT	4		V	
42403	A5A3	30355	7693	PS2 Max Iout	R	FLOAT	4		A	
42405	A5A5	30357	7695	PS2 Max Vin	R	SINT16	2		V	
42406	A5A6	30358	7696	PS2 Max Temp	R	SINT16	2		°C / °F	Unit will apply depending on Temperature unit configuration parameter. Refer to Section 3.1.2.2
42407	A5A7	30359	7697	PS2 Max Vout TS	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42409	A5A9	30361	7699	PS2 Max Iout TS	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42411	A5AB	30363	769B	PS2 Max Vin TS	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42413	A5AD	30365	769D	PS2 Max Temp TS	R	UINT32	4	0 to 4,294,967,295	Sec	Maximum up to 136 years
42415	A5AF	30367	769F	PS2 Average Iout 0	R	FLOAT	4		A	
42417	A5B1	30369	76A1	PS2 Average Iout 1	R	FLOAT	4		A	
42419	A5B3	30371	76A3	PS2 Average Iout 2	R	FLOAT	4		A	

Modbus Address (4X-Holding)		Modbus Address (3X-Input)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex	Decimal	Hex							
42421	A5B5	30373	76A5	PS2 Average lout 3	R	FLOAT	4		A	
42423	A5B7	30375	76A7	PS2 Average lout 4	R	FLOAT	4		A	
42425	A5B9	30377	76A9	PS2 Average lout 5	R	FLOAT	4		A	
42427	A5BB	30379	76AB	PS2 Average lout 6	R	FLOAT	4		A	
42429	A5BD	30381	76AD	PS2 Average lout 7	R	FLOAT	4		A	
42431	A5BF	30383	76AF	PS2 Average lout 8	R	FLOAT	4		A	
42433	A5C1	30385	76B1	PS2 Average lout 9	R	FLOAT	4		A	
42435	A5C3	30387	76B3	PS2 Average lout 10	R	FLOAT	4		A	
42437	A5C5	30389	76B5	PS2 Average lout 11	R	FLOAT	4		A	
42439	A5C7	30391	76B7	PS2 Average lout 12	R	FLOAT	4		A	
42441	A5C9	30393	76B9	PS2 Average lout 13	R	FLOAT	4		A	
42443	A5CB	30395	76BB	PS2 Average lout 14	R	FLOAT	4		A	
42445	A5CD	30397	76BD	PS2 Average lout 15	R	FLOAT	4		A	
42447	A5CF	30399	76BF	PS2 Average lout 16	R	FLOAT	4		A	
42449	A5D1	30401	76C1	PS2 Average lout 17	R	FLOAT	4		A	
42451	A5D3	30403	76C3	PS2 Average lout 18	R	FLOAT	4		A	
42453	A5D5	30405	76C5	PS2 Average lout 19	R	FLOAT	4		A	
42455	A5D7	30407	76C7	PS2 Average lout 20	R	FLOAT	4		A	
42457	A5D9	30409	76C9	PS2 Average lout 21	R	FLOAT	4		A	
42459	A5DB	30411	76CB	PS2 Average lout 22	R	FLOAT	4		A	
42461	A5DD	30413	76CD	PS2 Average lout 23	R	FLOAT	4		A	
42463	A5DF	30415	76CF	PS2 Average lout 24	R	FLOAT	4		A	
42465-42548	A5E1-A634	30417-30500	76D1-7724	Reserved						
Alarms/Events Flags										

Modbus Address (4X-Holding)		Modbus Address (3X-Input)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex	Decimal	Hex							
42549	A635	30501	7725	SCM Alarm Flags	R	UINT32	4	Bit-mapped 0 = False 1 = True		b0 = High Ambient Temperature b1 = Average Ambient Temperature High b2 – b31 = Reserved
42551	A637	30503	7727	PS1 Event Flags	R	UINT16	2	Bit-mapped 0 = False 1 = True		b0 = Reserved b1 = Short Circuit Protection b2 = Reserved b3 = Over Voltage Protection b4 = Power Boost b5 = Reserved b6 = Over Temperature Protection b7 = Power Down b8 – b15 = Reserved
42552	A638	30504	7728	PS2 Event Flags	R	UINT16	2	Bit-mapped 0 = False 1 = True		b0 = Reserved b1 = Short Circuit Protection b2 = Reserved b3 = Over Voltage Protection b4 = Power Boost b5 = Reserved b6 = Over Temperature Protection b7 = Power Down b8 – b15 = Reserved
42553	A639	30505	7729	PS1 Alarm Flags	R	UINT32	4	Bit-mapped 0 = False 1 = True		b0 = Input Voltage High b1 = Input Voltage Low b2 = Output Current High b3 = Internal Temperature High b4 = Average Current High b5 – b32 = Reserved

Modbus Address (4X-Holding)		Modbus Address (3X-Input)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex	Decimal	Hex							
42555	A63B	30507	772B	PS2 Alarm Flags	R	UINT32	4	Bit-mapped 0 = False 1 = True		b0 = Input Voltage High b1 = Input Voltage Low b2 = Output Current High b3 = Internal Temperature High b4 = Average Current High b5 – b32 = Reserved
42557	A63D	30509	772D	RED Alarm Flags	R	UINT32	4	Bit-mapped 0 = False 1 = True		b0 = Load Sharing Alarm b1 = Loss of Redundancy b2 – b32 = Reserved
42559	A63F	30511	772F	PS1 DC OK	R	UINT16	2			0 = DC Ok 1 = DC Not Ok
42560	A640	30512	7730	PS2 DC OK	R	UINT16	2			0 = DC Ok 1 = DC Not Ok
42561	A641	30513	7731	PS1 Stress Level	R	UINT16	2			0 = Normal Level 1 = Medium Level 2 = High Level
42562	A642	30514	7732	PS2 Stress Level	R	UINT16	2			0 = Normal Level 1 = Medium Level 2 = High Level

4.3.2 USER CONFIGURABLE ALARMS LIMIT DATA SET PONITS LIST

The user configurable alarms limit can be set by using function code 06 and read back by using function code 03. Refer to [Section 4.1.1.5](#) to see an example.

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex							
45309	B0FD	PS1 Current High	R/W	FLOAT	4	0 to 200	A	
45313	B101	PS1 Temp High	R/W	SINT16	2	-50 to +150	°C / °F	Unit will apply depending on Temperature unit configuration parameter. Refer to Section 3.1.2.2
45317	B105	PS1 Vin High	R/W	UINT16	2	140 to 300	V	

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Range	Units	Comments
Decimal	Hex							
45321	B109	PS1 Vin Low	R/W	UINT16	2	50 to 200	V	
45325	B10D	PS1 AvgIoutLimit	R/W	FLOAT	4	0 to 100	%	
45437	B17D	PS2 Current High	R/W	FLOAT	4	0 to 200	A	
45441	B181	PS2 Temp High	R/W	SINT16	2	-50 to +150	°C /°F	Unit will apply depending on Temperature unit configuration parameter. Refer to Section 3.1.2.2
45445	B185	PS2 Vin High	R/W	UINT16	2	140 to 300	V	
45449	B189	PS2 Vin Low	R/W	UINT16	2	50 to 200	V	
45453	B18D	PS2 AvgIoutLimit	R/W	FLOAT	4	0 to 100	%	
45565	B1FD	SCM Temp High	R/W	SINT16	2	-50 to +150	°C /°F	Unit will apply depending on Temperature unit configuration parameter. Refer to Section 3.1.2.2
45569	B201	SCM AvgTempLimit	R/W	FLOAT	4	0 to 100	%	
45717	B295	PS1 Enable Alarm	R/W	UINT16	2	0 or 1		0 = Disable Alarm 1 = Enable Alarm
45721	B299	PS2 Enable Alarm	R/W	UINT16	2	0 or 1		0 = Disable Alarm 1 = Enable Alarm
45729	B2A1	SCM Enable Alarm	R/W	UINT16	2	0 or 1		0 = Disable Alarm 1 = Enable Alarm
45737	B2A9	RED Enable Alarm	R/W	UINT16	2	0 or 1		0 = Disable Alarm 1 = Enable Alarm
45757	B2BD	Temperature Unit	R/W	UINT16	2	0 or 1		0 = °C Unit 1 = °F Unit

4.3.3 EVENTS DATA POINTS LIST

For each power supply unit 64 events data available. This data can be accessed by using Modbus holding register. The full list of PS1 and PS2 events data is shown in table below:

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
PS1 Event Data							
46109	B41D	PS1 Event 1 Code	R	UINT16	2		Refer to Section 4.3.6
46110	B41E	PS1 Event 1 Start	R	UINT16	2		
46111	B41F	PS1 Event 1 Timestamp	R	UINT32	4	Sec	
46113	B421	PS1 Event 2 Code	R	UINT16	2		Refer to Section 4.3.6
46114	B422	PS1 Event 2 Start	R	UINT16	2		
46115	B423	PS1 Event 2 Timestamp	R	UINT32	4	Sec	
46117	B425	PS1 Event 3 Code	R	UINT16	2		Refer to Section 4.3.6
46118	B426	PS1 Event 3 Start	R	UINT16	2		
46119	B427	PS1 Event 3 Timestamp	R	UINT32	4	Sec	
46121	B429	PS1 Event 4 Code	R	UINT16	2		Refer to Section 4.3.6
46122	B42A	PS1 Event 4 Start	R	UINT16	2		
46123	B42B	PS1 Event 4 Timestamp	R	UINT32	4	Sec	
46125	B42D	PS1 Event 5 Code	R	UINT16	2		Refer to Section 4.3.6
46126	B42E	PS1 Event 5 Start	R	UINT16	2		
46127	B42F	PS1 Event 5 Timestamp	R	UINT32	4	Sec	
46129	B431	PS1 Event 6 Code	R	UINT16	2		Refer to Section 4.3.6
46130	B432	PS1 Event 6 Start	R	UINT16	2		
46131	B433	PS1 Event 6 Timestamp	R	UINT32	4	Sec	
46133	B435	PS1 Event 7 Code	R	UINT16	2		Refer to Section 4.3.6
46134	B436	PS1 Event 7 Start	R	UINT16	2		
46135	B437	PS1 Event 7 Timestamp	R	UINT32	4	Sec	
46137	B439	PS1 Event 8 Code	R	UINT16	2		Refer to Section 4.3.6
46138	B43A	PS1 Event 8 Start	R	UINT16	2		
46139	B43B	PS1 Event 8 Timestamp	R	UINT32	4	Sec	
46141	B43D	PS1 Event 9 Code	R	UINT16	2		Refer to Section 4.3.6
46142	B43E	PS1 Event 9 Start	R	UINT16	2		
46143	B43F	PS1 Event 9 Timestamp	R	UINT32	4	Sec	
46145	B441	PS1 Event 10 Code	R	UINT16	2		Refer to Section 4.3.6
46146	B442	PS1 Event 10 Start	R	UINT16	2		
46147	B443	PS1 Event 10 Timestamp	R	UINT32	4	Sec	
46149	B445	PS1 Event 11 Code	R	UINT16	2		

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
46150	B446	PS1 Event 11 Start	R	UINT16	2		Refer to Section 4.3.6
46151	B447	PS1 Event 11 Timestamp	R	UINT32	4	Sec	
46153	B449	PS1 Event 12 Code	R	UINT16	2		Refer to Section 4.3.6
46154	B44A	PS1 Event 12 Start	R	UINT16	2		
46155	B44B	PS1 Event 12 Timestamp	R	UINT32	4	Sec	
46157	B44D	PS1 Event 13 Code	R	UINT16	2		Refer to Section 4.3.6
46158	B44E	PS1 Event 13 Start	R	UINT16	2		
46159	B44F	PS1 Event 13 Timestamp	R	UINT32	4	Sec	
46161	B451	PS1 Event 14 Code	R	UINT16	2		Refer to Section 4.3.6
46162	B452	PS1 Event 14 Start	R	UINT16	2		
46163	B453	PS1 Event 14 Timestamp	R	UINT32	4	Sec	
46165	B455	PS1 Event 15 Code	R	UINT16	2		Refer to Section 4.3.6
46166	B456	PS1 Event 15 Start	R	UINT16	2		
46167	B457	PS1 Event 15 Timestamp	R	UINT32	4	Sec	
46169	B459	PS1 Event 16 Code	R	UINT16	2		Refer to Section 4.3.6
46170	B45A	PS1 Event 16 Start	R	UINT16	2		
46171	B45B	PS1 Event 16 Timestamp	R	UINT32	4	Sec	
46173	B45D	PS1 Event 17 Code	R	UINT16	2		Refer to Section 4.3.6
46174	B45E	PS1 Event 17 Start	R	UINT16	2		
46175	B45F	PS1 Event 17 Timestamp	R	UINT32	4	Sec	
46177	B461	PS1 Event 18 Code	R	UINT16	2		Refer to Section 4.3.6
46178	B462	PS1 Event 18 Start	R	UINT16	2		
46179	B463	PS1 Event 18 Timestamp	R	UINT32	4	Sec	
46181	B465	PS1 Event 19 Code	R	UINT16	2		Refer to Section 4.3.6
46182	B466	PS1 Event 19 Start	R	UINT16	2		
46183	B467	PS1 Event 19 Timestamp	R	UINT32	4	Sec	
46185	B469	PS1 Event 20 Code	R	UINT16	2		Refer to Section 4.3.6
46186	B46A	PS1 Event 20 Start	R	UINT16	2		
46187	B46B	PS1 Event 20 Timestamp	R	UINT32	4	Sec	
46189	B46D	PS1 Event 21 Code	R	UINT16	2		Refer to Section 4.3.6
46190	B46E	PS1 Event 21 Start	R	UINT16	2		
46191	B46F	PS1 Event 21 Timestamp	R	UINT32	4	Sec	
46193	B471	PS1 Event 22 Code	R	UINT16	2		Refer to Section 4.3.6
46194	B472	PS1 Event 22 Start	R	UINT16	2		
46195	B473	PS1 Event 22 Timestamp	R	UINT32	4	Sec	
46197	B475	PS1 Event 23 Code	R	UINT16	2		Refer to Section 4.3.6
46198	B476	PS1 Event 23 Start	R	UINT16	2		

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
46199	B477	PS1 Event 23 Timestamp	R	UINT32	4	Sec	
46201	B479	PS1 Event 24 Code	R	UINT16	2		Refer to Section 4.3.6
46202	B47A	PS1 Event 24 Start	R	UINT16	2		
46203	B47B	PS1 Event 24 Timestamp	R	UINT32	4	Sec	
46205	B47D	PS1 Event 25 Code	R	UINT16	2		Refer to Section 4.3.6
46206	B47E	PS1 Event 25 Start	R	UINT16	2		
46207	B47F	PS1 Event 25 Timestamp	R	UINT32	4	Sec	
46209	B481	PS1 Event 26 Code	R	UINT16	2		Refer to Section 4.3.6
46210	B482	PS1 Event 26 Start	R	UINT16	2		
46211	B483	PS1 Event 26 Timestamp	R	UINT32	4	Sec	
46213	B485	PS1 Event 27 Code	R	UINT16	2		Refer to Section 4.3.6
46214	B486	PS1 Event 27 Start	R	UINT16	2		
46215	B487	PS1 Event 27 Timestamp	R	UINT32	4	Sec	
46217	B489	PS1 Event 28 Code	R	UINT16	2		Refer to Section 4.3.6
46218	B48A	PS1 Event 28 Start	R	UINT16	2		
46219	B48B	PS1 Event 28 Timestamp	R	UINT32	4	Sec	
46221	B48D	PS1 Event 29 Code	R	UINT16	2		Refer to Section 4.3.6
46222	B48E	PS1 Event 29 Start	R	UINT16	2		
46223	B48F	PS1 Event 29 Timestamp	R	UINT32	4	Sec	
46225	B491	PS1 Event 30 Code	R	UINT16	2		Refer to Section 4.3.6
46226	B492	PS1 Event 30 Start	R	UINT16	2		
46227	B493	PS1 Event 30 Timestamp	R	UINT32	4	Sec	
46229	B495	PS1 Event 31 Code	R	UINT16	2		Refer to Section 4.3.6
46230	B496	PS1 Event 31 Start	R	UINT16	2		
46231	B497	PS1 Event 31 Timestamp	R	UINT32	4	Sec	
46233	B499	PS1 Event 32 Code	R	UINT16	2		Refer to Section 4.3.6
46234	B49A	PS1 Event 32 Start	R	UINT16	2		
46235	B49B	PS1 Event 32 Timestamp	R	UINT32	4	Sec	
46237	B49D	PS1 Event 33 Code	R	UINT16	2		Refer to Section 4.3.6
46238	B49E	PS1 Event 33 Start	R	UINT16	2		
46239	B49F	PS1 Event 33 Timestamp	R	UINT32	4	Sec	
46241	B4A1	PS1 Event 34 Code	R	UINT16	2		Refer to Section 4.3.6
46242	B4A2	PS1 Event 34 Start	R	UINT16	2		
46243	B4A3	PS1 Event 34 Timestamp	R	UINT32	4	Sec	
46245	B4A5	PS1 Event 35 Code	R	UINT16	2		Refer to Section 4.3.6
46246	B4A6	PS1 Event 35 Start	R	UINT16	2		
46247	B4A7	PS1 Event 35 Timestamp	R	UINT32	4	Sec	

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
46249	B4A9	PS1 Event 36 Code	R	UINT16	2		Refer to Section 4.3.6
46250	B4AA	PS1 Event 36 Start	R	UINT16	2		
46251	B4AB	PS1 Event 36 Timestamp	R	UINT32	4	Sec	
46253	B4AD	PS1 Event 37 Code	R	UINT16	2		Refer to Section 4.3.6
46254	B4AE	PS1 Event 37 Start	R	UINT16	2		
46255	B4AF	PS1 Event 37 Timestamp	R	UINT32	4	Sec	
46257	B4B1	PS1 Event 38 Code	R	UINT16	2		Refer to Section 4.3.6
46258	B4B2	PS1 Event 38 Start	R	UINT16	2		
46259	B4B3	PS1 Event 38 Timestamp	R	UINT32	4	Sec	
46261	B4B5	PS1 Event 39 Code	R	UINT16	2		Refer to Section 4.3.6
46262	B4B6	PS1 Event 39 Start	R	UINT16	2		
46263	B4B7	PS1 Event 39 Timestamp	R	UINT32	4	Sec	
46265	B4B9	PS1 Event 40 Code	R	UINT16	2		Refer to Section 4.3.6
46266	B4BA	PS1 Event 40 Start	R	UINT16	2		
46267	B4BB	PS1 Event 40 Timestamp	R	UINT32	4	Sec	
46269	B4BD	PS1 Event 41 Code	R	UINT16	2		Refer to Section 4.3.6
46270	B4BE	PS1 Event 41 Start	R	UINT16	2		
46271	B4BF	PS1 Event 41 Timestamp	R	UINT32	4	Sec	
46273	B4C1	PS1 Event 42 Code	R	UINT16	2		Refer to Section 4.3.6
46274	B4C2	PS1 Event 42 Start	R	UINT16	2		
46275	B4C3	PS1 Event 42 Timestamp	R	UINT32	4	Sec	
46277	B4C5	PS1 Event 43 Code	R	UINT16	2		Refer to Section 4.3.6
46278	B4C6	PS1 Event 43 Start	R	UINT16	2		
46279	B4C7	PS1 Event 43 Timestamp	R	UINT32	4	Sec	
46281	B4C9	PS1 Event 44 Code	R	UINT16	2		Refer to Section 4.3.6
46282	B4CA	PS1 Event 44 Start	R	UINT16	2		
46283	B4CB	PS1 Event 44 Timestamp	R	UINT32	4	Sec	
46285	B4CD	PS1 Event 45 Code	R	UINT16	2		Refer to Section 4.3.6
46286	B4CE	PS1 Event 45 Start	R	UINT16	2		
46287	B4CF	PS1 Event 45 Timestamp	R	UINT32	4	Sec	
46289	B4D1	PS1 Event 46 Code	R	UINT16	2		Refer to Section 4.3.6
46290	B4D2	PS1 Event 46 Start	R	UINT16	2		
46291	B4D3	PS1 Event 46 Timestamp	R	UINT32	4	Sec	
46293	B4D5	PS1 Event 47 Code	R	UINT16	2		Refer to Section 4.3.6
46294	B4D6	PS1 Event 47 Start	R	UINT16	2		
46295	B4D7	PS1 Event 47 Timestamp	R	UINT32	4	Sec	

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
46297	B4D9	PS1 Event 48 Code	R	UINT16	2		Refer to Section 4.3.6
46298	B4DA	PS1 Event 48 Start	R	UINT16	2		
46299	B4DB	PS1 Event 48 Timestamp	R	UINT32	4	Sec	
46301	B4DD	PS1 Event 49 Code	R	UINT16	2		Refer to Section 4.3.6
46302	B4DE	PS1 Event 49 Start	R	UINT16	2		
46303	B4DF	PS1 Event 49 Timestamp	R	UINT32	4	Sec	
46305	B4E1	PS1 Event 50 Code	R	UINT16	2		Refer to Section 4.3.6
46306	B4E2	PS1 Event 50 Start	R	UINT16	2		
46307	B4E3	PS1 Event 50 Timestamp	R	UINT32	4	Sec	
46309	B4E5	PS1 Event 51 Code	R	UINT16	2		Refer to Section 4.3.6
46310	B4E6	PS1 Event 51 Start	R	UINT16	2		
46311	B4E7	PS1 Event 51 Timestamp	R	UINT32	4	Sec	
46313	B4E9	PS1 Event 52 Code	R	UINT16	2		Refer to Section 4.3.6
46314	B4EA	PS1 Event 52 Start	R	UINT16	2		
46315	B4EB	PS1 Event 52 Timestamp	R	UINT32	4	Sec	
46317	B4ED	PS1 Event 53 Code	R	UINT16	2		Refer to Section 4.3.6
46318	B4EE	PS1 Event 53 Start	R	UINT16	2		
46319	B4EF	PS1 Event 53 Timestamp	R	UINT32	4	Sec	
46321	B4F1	PS1 Event 54 Code	R	UINT16	2		Refer to Section 4.3.6
46322	B4F2	PS1 Event 54 Start	R	UINT16	2		
46323	B4F3	PS1 Event 54 Timestamp	R	UINT32	4	Sec	
46325	B4F5	PS1 Event 55 Code	R	UINT16	2		Refer to Section 4.3.6
46326	B4F6	PS1 Event 55 Start	R	UINT16	2		
46327	B4F7	PS1 Event 55 Timestamp	R	UINT32	4	Sec	
46329	B4F9	PS1 Event 56 Code	R	UINT16	2		Refer to Section 4.3.6
46330	B4FA	PS1 Event 56 Start	R	UINT16	2		
46331	B4FB	PS1 Event 56 Timestamp	R	UINT32	4	Sec	
46333	B4FD	PS1 Event 57 Code	R	UINT16	2		Refer to Section 4.3.6
46334	B4FE	PS1 Event 57 Start	R	UINT16	2		
46335	B4FF	PS1 Event 57 Timestamp	R	UINT32	4	Sec	
46337	B501	PS1 Event 58 Code	R	UINT16	2		Refer to Section 4.3.6
46338	B502	PS1 Event 58 Start	R	UINT16	2		
46339	B503	PS1 Event 58 Timestamp	R	UINT32	4	Sec	
46341	B505	PS1 Event 59 Code	R	UINT16	2		Refer to Section 4.3.6
46342	B506	PS1 Event 59 Start	R	UINT16	2		
46343	B507	PS1 Event 59 Timestamp	R	UINT32	4	Sec	
46345	B509	PS1 Event 60 Code	R	UINT16	2		

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
46346	B50A	PS1 Event 60 Start	R	UINT16	2		Refer to Section 4.3.6
46347	B50B	PS1 Event 60 Timestamp	R	UINT32	4	Sec	
46349	B50D	PS1 Event 61 Code	R	UINT16	2		Refer to Section 4.3.6
46350	B50E	PS1 Event 61 Start	R	UINT16	2		
46351	B50F	PS1 Event 61 Timestamp	R	UINT32	4	Sec	
46353	B511	PS1 Event 62 Code	R	UINT16	2		Refer to Section 4.3.6
46354	B512	PS1 Event 62 Start	R	UINT16	2		
46355	B513	PS1 Event 62 Timestamp	R	UINT32	4	Sec	
46357	B515	PS1 Event 63 Code	R	UINT16	2		Refer to Section 4.3.6
46358	B516	PS1 Event 63 Start	R	UINT16	2		
46359	B517	PS1 Event 63 Timestamp	R	UINT32	4	Sec	
46361	B519	PS1 Event 64 Code	R	UINT16	2		Refer to Section 4.3.6
46362	B51A	PS1 Event 64 Start	R	UINT16	2		
46363	B51B	PS1 Event 64 Timestamp	R	UINT32	4	Sec	
PS2 Event Data							
46365	B51D	PS2 Event 1 Code	R	UINT16	2		Refer to Section 4.3.6
46366	B51E	PS2 Event 1 Start	R	UINT16	2		
46367	B51F	PS2 Event 1 Timestamp	R	UINT32	4	Sec	
46369	B521	PS2 Event 2 Code	R	UINT16	2		Refer to Section 4.3.6
46370	B522	PS2 Event 2 Start	R	UINT16	2		
46371	B523	PS2 Event 2 Timestamp	R	UINT32	4	Sec	
46373	B525	PS2 Event 3 Code	R	UINT16	2		Refer to Section 4.3.6
46374	B526	PS2 Event 3 Start	R	UINT16	2		
46375	B527	PS2 Event 3 Timestamp	R	UINT32	4	Sec	
46377	B529	PS2 Event 4 Code	R	UINT16	2		Refer to Section 4.3.6
46378	B52A	PS2 Event 4 Start	R	UINT16	2		
46379	B52B	PS2 Event 4 Timestamp	R	UINT32	4	Sec	
46381	B52D	PS2 Event 5 Code	R	UINT16	2		Refer to Section 4.3.6
46382	B52E	PS2 Event 5 Start	R	UINT16	2		
46383	B52F	PS2 Event 5 Timestamp	R	UINT32	4	Sec	
46385	B531	PS2 Event 6 Code	R	UINT16	2		Refer to Section 4.3.6
46386	B532	PS2 Event 6 Start	R	UINT16	2		
46387	B533	PS2 Event 6 Timestamp	R	UINT32	4	Sec	
46389	B535	PS2 Event 7 Code	R	UINT16	2		Refer to Section 4.3.6
46390	B536	PS2 Event 7 Start	R	UINT16	2		
46391	B537	PS2 Event 7 Timestamp	R	UINT32	4	Sec	

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
46393	B539	PS2 Event 8 Code	R	UINT16	2		Refer to Section 4.3.6
46394	B53A	PS2 Event 8 Start	R	UINT16	2		
46395	B53B	PS2 Event 8 Timestamp	R	UINT32	4	Sec	
46397	B53D	PS2 Event 9 Code	R	UINT16	2		Refer to Section 4.3.6
46398	B53E	PS2 Event 9 Start	R	UINT16	2		
46399	B53F	PS2 Event 9 Timestamp	R	UINT32	4	Sec	
46401	B541	PS2 Event 10 Code	R	UINT16	2		Refer to Section 4.3.6
46402	B542	PS2 Event 10 Start	R	UINT16	2		
46403	B543	PS2 Event 10 Timestamp	R	UINT32	4	Sec	
46405	B545	PS2 Event 11 Code	R	UINT16	2		Refer to Section 4.3.6
46406	B546	PS2 Event 11 Start	R	UINT16	2		
46407	B547	PS2 Event 11 Timestamp	R	UINT32	4	Sec	
46409	B549	PS2 Event 12 Code	R	UINT16	2		Refer to Section 4.3.6
46410	B54A	PS2 Event 12 Start	R	UINT16	2		
46411	B54B	PS2 Event 12 Timestamp	R	UINT32	4	Sec	
46413	B54D	PS2 Event 13 Code	R	UINT16	2		Refer to Section 4.3.6
46414	B54E	PS2 Event 13 Start	R	UINT16	2		
46415	B54F	PS2 Event 13 Timestamp	R	UINT32	4	Sec	
46417	B551	PS2 Event 14 Code	R	UINT16	2		Refer to Section 4.3.6
46418	B552	PS2 Event 14 Start	R	UINT16	2		
46419	B553	PS2 Event 14 Timestamp	R	UINT32	4	Sec	
46421	B555	PS2 Event 15 Code	R	UINT16	2		Refer to Section 4.3.6
46422	B556	PS2 Event 15 Start	R	UINT16	2		
46423	B557	PS2 Event 15 Timestamp	R	UINT32	4	Sec	
46425	B559	PS2 Event 16 Code	R	UINT16	2		Refer to Section 4.3.6
46426	B55A	PS2 Event 16 Start	R	UINT16	2		
46427	B55B	PS2 Event 16 Timestamp	R	UINT32	4	Sec	
46429	B55D	PS2 Event 17 Code	R	UINT16	2		Refer to Section 4.3.6
46430	B55E	PS2 Event 17 Start	R	UINT16	2		
46431	B55F	PS2 Event 17 Timestamp	R	UINT32	4	Sec	
46433	B561	PS2 Event 18 Code	R	UINT16	2		Refer to Section 4.3.6
46434	B562	PS2 Event 18 Start	R	UINT16	2		
46435	B563	PS2 Event 18 Timestamp	R	UINT32	4	Sec	
46437	B565	PS2 Event 19 Code	R	UINT16	2		Refer to Section 4.3.6
46438	B566	PS2 Event 19 Start	R	UINT16	2		
46439	B567	PS2 Event 19 Timestamp	R	UINT32	4	Sec	

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
46441	B569	PS2 Event 20 Code	R	UINT16	2		Refer to Section 4.3.6
46442	B56A	PS2 Event 20 Start	R	UINT16	2		
46443	B56B	PS2 Event 20 Timestamp	R	UINT32	4	Sec	
46445	B56D	PS2 Event 21 Code	R	UINT16	2		Refer to Section 4.3.6
46446	B56E	PS2 Event 21 Start	R	UINT16	2		
46447	B56F	PS2 Event 21 Timestamp	R	UINT32	4	Sec	
46449	B571	PS2 Event 22 Code	R	UINT16	2		Refer to Section 4.3.6
46450	B572	PS2 Event 22 Start	R	UINT16	2		
46451	B573	PS2 Event 22 Timestamp	R	UINT32	4	Sec	
46453	B575	PS2 Event 23 Code	R	UINT16	2		Refer to Section 4.3.6
46454	B576	PS2 Event 23 Start	R	UINT16	2		
46455	B577	PS2 Event 23 Timestamp	R	UINT32	4	Sec	
46457	B579	PS2 Event 24 Code	R	UINT16	2		Refer to Section 4.3.6
46458	B57A	PS2 Event 24 Start	R	UINT16	2		
46459	B57B	PS2 Event 24 Timestamp	R	UINT32	4	Sec	
46461	B57D	PS2 Event 25 Code	R	UINT16	2		Refer to Section 4.3.6
46462	B57E	PS2 Event 25 Start	R	UINT16	2		
46463	B57F	PS2 Event 25 Timestamp	R	UINT32	4	Sec	
46465	B581	PS2 Event 26 Code	R	UINT16	2		Refer to Section 4.3.6
46466	B582	PS2 Event 26 Start	R	UINT16	2		
46467	B583	PS2 Event 26 Timestamp	R	UINT32	4	Sec	
46469	B585	PS2 Event 27 Code	R	UINT16	2		Refer to Section 4.3.6
46470	B586	PS2 Event 27 Start	R	UINT16	2		
46471	B587	PS2 Event 27 Timestamp	R	UINT32	4	Sec	
46473	B589	PS2 Event 28 Code	R	UINT16	2		Refer to Section 4.3.6
46474	B58A	PS2 Event 28 Start	R	UINT16	2		
46475	B58B	PS2 Event 28 Timestamp	R	UINT32	4	Sec	
46477	B58D	PS2 Event 29 Code	R	UINT16	2		Refer to Section 4.3.6
46478	B58E	PS2 Event 29 Start	R	UINT16	2		
46479	B58F	PS2 Event 29 Timestamp	R	UINT32	4	Sec	
46481	B591	PS2 Event 30 Code	R	UINT16	2		Refer to Section 4.3.6
46482	B592	PS2 Event 30 Start	R	UINT16	2		
46483	B593	PS2 Event 30 Timestamp	R	UINT32	4	Sec	
46485	B595	PS2 Event 31 Code	R	UINT16	2		Refer to Section 4.3.6
46486	B596	PS2 Event 31 Start	R	UINT16	2		
46487	B597	PS2 Event 31 Timestamp	R	UINT32	4	Sec	

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
46489	B599	PS2 Event 32 Code	R	UINT16	2		Refer to Section 4.3.6
46490	B59A	PS2 Event 32 Start	R	UINT16	2		
46491	B59B	PS2 Event 32 Timestamp	R	UINT32	4	Sec	
46493	B59D	PS2 Event 33 Code	R	UINT16	2		Refer to Section 4.3.6
46494	B59E	PS2 Event 33 Start	R	UINT16	2		
46495	B59F	PS2 Event 33 Timestamp	R	UINT32	4	Sec	
46497	B5A1	PS2 Event 34 Code	R	UINT16	2		Refer to Section 4.3.6
46498	B5A2	PS2 Event 34 Start	R	UINT16	2		
46499	B5A3	PS2 Event 34 Timestamp	R	UINT32	4	Sec	
46501	B5A5	PS2 Event 35 Code	R	UINT16	2		Refer to Section 4.3.6
46502	B5A6	PS2 Event 35 Start	R	UINT16	2		
46503	B5A7	PS2 Event 35 Timestamp	R	UINT32	4	Sec	
46505	B5A9	PS2 Event 36 Code	R	UINT16	2		Refer to Section 4.3.6
46506	B5AA	PS2 Event 36 Start	R	UINT16	2		
46507	B5AB	PS2 Event 36 Timestamp	R	UINT32	4	Sec	
46509	B5AD	PS2 Event 37 Code	R	UINT16	2		Refer to Section 4.3.6
46510	B5AE	PS2 Event 37 Start	R	UINT16	2		
46511	B5AF	PS2 Event 37 Timestamp	R	UINT32	4	Sec	
46513	B5B1	PS2 Event 38 Code	R	UINT16	2		Refer to Section 4.3.6
46514	B5B2	PS2 Event 38 Start	R	UINT16	2		
46515	B5B3	PS2 Event 38 Timestamp	R	UINT32	4	Sec	
46517	B5B5	PS2 Event 39 Code	R	UINT16	2		Refer to Section 4.3.6
46518	B5B6	PS2 Event 39 Start	R	UINT16	2		
46519	B5B7	PS2 Event 39 Timestamp	R	UINT32	4	Sec	
46521	B5B9	PS2 Event 40 Code	R	UINT16	2		Refer to Section 4.3.6
46522	B5BA	PS2 Event 40 Start	R	UINT16	2		
46523	B5BB	PS2 Event 40 Timestamp	R	UINT32	4	Sec	
46525	B5BD	PS2 Event 41 Code	R	UINT16	2		Refer to Section 4.3.6
46526	B5BE	PS2 Event 41 Start	R	UINT16	2		
46527	B5BF	PS2 Event 41 Timestamp	R	UINT32	4	Sec	
46529	B5C1	PS2 Event 42 Code	R	UINT16	2		Refer to Section 4.3.6
46530	B5C2	PS2 Event 42 Start	R	UINT16	2		
46531	B5C3	PS2 Event 42 Timestamp	R	UINT32	4	Sec	
46533	B5C5	PS2 Event 43 Code	R	UINT16	2		Refer to Section 4.3.6
46534	B5C6	PS2 Event 43 Start	R	UINT16	2		
46535	B5C7	PS2 Event 43 Timestamp	R	UINT32	4	Sec	

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
46537	B5C9	PS2 Event 44 Code	R	UINT16	2		Refer to Section 4.3.6
46538	B5CA	PS2 Event 44 Start	R	UINT16	2		
46539	B5CB	PS2 Event 44 Timestamp	R	UINT32	4	Sec	
46541	B5CD	PS2 Event 45 Code	R	UINT16	2		Refer to Section 4.3.6
46542	B5CE	PS2 Event 45 Start	R	UINT16	2		
46543	B5CF	PS2 Event 45 Timestamp	R	UINT32	4	Sec	
46545	B5D1	PS2 Event 46 Code	R	UINT16	2		Refer to Section 4.3.6
46546	B5D2	PS2 Event 46 Start	R	UINT16	2		
46547	B5D3	PS2 Event 46 Timestamp	R	UINT32	4	Sec	
46549	B5D5	PS2 Event 47 Code	R	UINT16	2		Refer to Section 4.3.6
46550	B5D6	PS2 Event 47 Start	R	UINT16	2		
46551	B5D7	PS2 Event 47 Timestamp	R	UINT32	4	Sec	
46553	B5D9	PS2 Event 48 Code	R	UINT16	2		Refer to Section 4.3.6
46554	B5DA	PS2 Event 48 Start	R	UINT16	2		
46555	B5DB	PS2 Event 48 Timestamp	R	UINT32	4	Sec	
46557	B5DD	PS2 Event 49 Code	R	UINT16	2		Refer to Section 4.3.6
46558	B5DE	PS2 Event 49 Start	R	UINT16	2		
46559	B5DF	PS2 Event 49 Timestamp	R	UINT32	4	Sec	
46561	B5E1	PS2 Event 50 Code	R	UINT16	2		Refer to Section 4.3.6
46562	B5E2	PS2 Event 50 Start	R	UINT16	2		
46563	B5E3	PS2 Event 50 Timestamp	R	UINT32	4	Sec	
46565	B5E5	PS2 Event 51 Code	R	UINT16	2		Refer to Section 4.3.6
46566	B5E6	PS2 Event 51 Start	R	UINT16	2		
46567	B5E7	PS2 Event 51 Timestamp	R	UINT32	4	Sec	
46569	B5E9	PS2 Event 52 Code	R	UINT16	2		Refer to Section 4.3.6
46570	B5EA	PS2 Event 52 Start	R	UINT16	2		
46571	B5EB	PS2 Event 52 Timestamp	R	UINT32	4	Sec	
46573	B5ED	PS2 Event 53 Code	R	UINT16	2		Refer to Section 4.3.6
46574	B5EE	PS2 Event 53 Start	R	UINT16	2		
46575	B5EF	PS2 Event 53 Timestamp	R	UINT32	4	Sec	
46577	B5F1	PS2 Event 54 Code	R	UINT16	2		Refer to Section 4.3.6
46578	B5F2	PS2 Event 54 Start	R	UINT16	2		
46579	B5F3	PS2 Event 54 Timestamp	R	UINT32	4	Sec	
46581	B5F5	PS2 Event 55 Code	R	UINT16	2		Refer to Section 4.3.6
46582	B5F6	PS2 Event 55 Start	R	UINT16	2		
46583	B5F7	PS2 Event 55 Timestamp	R	UINT32	4	Sec	

Modbus Address (4X-Holding)		Parameters	Access	Datatype	Size	Units	Comments
Decimal	Hex						
46585	B5F9	PS2 Event 56 Code	R	UINT16	2		Refer to Section 4.3.6
46586	B5FA	PS2 Event 56 Start	R	UINT16	2		
46587	B5FB	PS2 Event 56 Timestamp	R	UINT32	4	Sec	
46589	B5FD	PS2 Event 57 Code	R	UINT16	2		Refer to Section 4.3.6
46590	B5FE	PS2 Event 57 Start	R	UINT16	2		
46591	B5FF	PS2 Event 57 Timestamp	R	UINT32	4	Sec	
46593	B601	PS2 Event 58 Code	R	UINT16	2		Refer to Section 4.3.6
46594	B602	PS2 Event 58 Start	R	UINT16	2		
46595	B603	PS2 Event 58 Timestamp	R	UINT32	4	Sec	
46597	B605	PS2 Event 59 Code	R	UINT16	2		Refer to Section 4.3.6
46598	B606	PS2 Event 59 Start	R	UINT16	2		
46599	B607	PS2 Event 59 Timestamp	R	UINT32	4	Sec	
46601	B609	PS2 Event 60 Code	R	UINT16	2		Refer to Section 4.3.6
46602	B60A	PS2 Event 60 Start	R	UINT16	2		
46603	B60B	PS2 Event 60 Timestamp	R	UINT32	4	Sec	
46605	B60D	PS2 Event 61 Code	R	UINT16	2		Refer to Section 4.3.6
46606	B60E	PS2 Event 61 Start	R	UINT16	2		
46607	B60F	PS2 Event 61 Timestamp	R	UINT32	4	Sec	
46609	B611	PS2 Event 62 Code	R	UINT16	2		Refer to Section 4.3.6
46610	B612	PS2 Event 62 Start	R	UINT16	2		
46611	B613	PS2 Event 62 Timestamp	R	UINT32	4	Sec	
46613	B615	PS2 Event 63 Code	R	UINT16	2		Refer to Section 4.3.6
46614	B616	PS2 Event 63 Start	R	UINT16	2		
46615	B617	PS2 Event 63 Timestamp	R	UINT32	4	Sec	
46617	B619	PS2 Event 64 Code	R	UINT16	2		Refer to Section 4.3.6
46618	B61A	PS2 Event 64 Start	R	UINT16	2		
46619	B61B	PS2 Event 64 Timestamp	R	UINT32	4	Sec	

4.3.4 SCM LED STATUS DETAIL

Module LED State	Network LED State	Decimal Value	Hex Value
No Power	No IP Address	00	00
Device Operational	No IP Address	32	20
Device Operational	No Connection	33	21
Device Operational	Connected	34	22
Device Operational	Connection Timeout	36	24
Device Operational	Duplicate IP	40	28
Major Recoverable Fault	No IP Address	64	40
Major Recoverable Fault	No Connection	65	41
Major Recoverable Fault	Connected	66	42
Major Recoverable Fault	Connection Timeout	68	44
Major Recoverable Fault	Duplicate IP	72	48
Major Unrecoverable Fault	No IP Address	128	80
Major Unrecoverable Fault	No Connection	129	81
Major Unrecoverable Fault	Connected	130	82
Major Unrecoverable Fault	Connection Timeout	132	84
Major Unrecoverable Fault	Duplicate IP	136	88

4.3.5 POWER SUPPLY LED STATUS DETAIL

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

4.3.6 EVENT DATA VALUE DEFINITION

4.3.6.1 EVENT CODE DEFINITION

Register Value	Event Code
0x0008	Short Circuit Protection
0x0009	Reserved
0x000A	Over Voltage Protection
0x000B	Power Boost
0x000F	Over Temperature Protection
0x00FF	No Event

4.3.6.2 EVENT START DEFINITION

Register Value	Event Start
0	End
1	Start
1	No Event (Refer to Event Code)

4.3.6.3 EVENT TIMESTAMP DEFINITION

Register Values				Conversion	
Register 1		Register 0		Hex	Dec (seconds)
High Byte	Low Byte	High Byte	Low Byte		
0xC8	0x89	0x00	0x00	0x000089C8	35,272

4.4 INPUT STATUS (DISCRETE INPUTS) REGISTER PARAMETERS LIST

Supported Alarms, also mapped to Input status register parameters list, can be read using function code 02 as (1X) registers. For example, to read “SCM | High Ambient Temperature” parameter, the address in decimal column from table below is 18001 – 10001 = 8000 as the starting register address.

The input status registers data value is single bit response (1 or 0 only). 1 = Alarm ON and 0 = Alarm OFF. Refer to table below for parameters list.

Modbus Address		Parameters	Access
Decimal	Hex		
18001	4651	SCM High Ambient Temperature	R
18002	4652	SCM Average Ambient Temperature	R
18003 -18033	4653 -4671	Reserved	R

Modbus Address		Parameters	Access
Decimal	Hex		
18034	4672	PS1 Short Circuit Protection	R
18035	4673	Reserved	R
18036	4674	PS1 Over Voltage Protection	R
18037	4675	PS1 Power Boost	R
18038	4676	Reserved	R
18039	4677	PS1 Over Temperature Protection	R
18040	4678	PS1 Power Down	R
18041 -18049	4679 -4681	Reserved	R
18050	4682	PS2 Short Circuit Protection	R
18051	4683	Reserved	R
18052	4684	PS2 Over Voltage Protection	R
18053	4685	PS1 Power Boost	R
18054	4686	Reserved	R
18055	4687	PS2 Over Temperature Protection	R
18056	4688	PS2 Power Down	R
18057 -18064	4689 -4690	Reserved	R
18065	4691	PS1 Input Voltage High	R
18066	4692	PS1 Input Voltage Low	R
18067	4693	PS1 Output Current High	R
18068	4694	PS1 Internal Temperature High	R
18069 -18096	4695 -46B0	Reserved	R
18097	46B1	PS2 Input Voltage High	R
18098	46B2	PS2 Input Voltage Low	R
18099	46B3	PS2 Output Current High	R
18100	46B4	PS2 Internal Temperature High	R
18101 -18128	46B5 -46D0	Reserved	R
18129	46D1	RED Load Sharing Alarm	R
18130	46D2	RED Loss of Redundancy	R
18131 -18160	46D3 -46F0	Reserved	R
18161	46F1	PS1 DC NOT OK	R
18162 -18176	46F2 -4700	Reserved	R
18177	4701	PS2 DC NOT OK	R
18178 -18192	4702 -4710	Reserved	R
18193	4711	PS1 Medium Stress Level	R
18194	4712	PS1 High Stress Level	R
18195 -18208	4713 -4720	Reserved	R
18209	4721	PS2 Medium Stress Level	R

Modbus Address		Parameters	Access
Decimal	Hex		
18210	4722	PS2 High Stress Level	R
18211 -18224	4723 -4730	Reserved	R

5. TROUBLESHOOTING

5.1 TROUBLESHOOTING

Problem	Possible Cause	Solution
Module and Network LED indicators are off.	Loose connection. The I2C cable connecting SCM-E-MBUS to the power supply isn't connected properly.	Check connection between SCM-E-MBUS and power supply. Make sure the cables are inserted into 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 steady green, but Network LED is OFF.	The SCM-E-MBUS is in DHCP Configuration but there is no DHCP server present in the network.	Disable the SCM-E-MBUS. Enable DHCP. Enable Configuration, if applicable.
	The SCM-E-MBUS 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-MBUS's MAC address shows in the DHCP application and check if the SCM-E-MBUS 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-MBUS 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-MBUS 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 Modbus TCP Messaging Connection between SCM and PLC has timed out.	Check the configuration on the PLC to ensure the IP address is correct, and the network connection with the SCM is good. Verify there are not multiple Modbus TCP connections.
Network error; Network LED indicator is steady red.	The SCM-E-MBUS has a duplicate IP Address within the network.	Disconnect the SCM-E-MBUS 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-MBUS might have entered a hang up state or the internal filesystem has been damaged or corrupted.	Restart the SCM-E-MBUS. If problem persists, contact technical support.
The GUI logo and format is not Emerson.	The SCM-E-MBUS 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-MBUS might be in a fault state.	Restart the affected SDN-D Power supply.
		If problem persists, restart the SCM-E-MBUS. 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

Please see the “Terms & Conditions of Sale” document within the UPS packaging.

While every precaution has been taken to ensure accuracy and completeness in this manual, Appleton Grp LLC d/b/a Appleton Group assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

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

A272-389 Rev. 1.0_06/2024

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