

## SC300 System Controller V1.18

Last Updated	23 January 2023
Applicable products	SC300 System Controller
Audience	Eaton DC Channel Partners and Integrators
Related documents	SC300 System Controller Operation Handbook
For more information	Contact the SC300 Product Manager

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## Availability

SC300 System Controller V1.18 is currently available as a limited release for specific customers requiring access lithium battery and modbus master functionality. Contact the product manager or local sales channel for firmware and interface files. The new modbus master functionality requires SC300 hardware V4 or -SV with the additional RS485 modbus ports. If this V1.18 is used on older SC300 hardware, then this modbus master functionality will not be available.

## Supporting Software Versions

The SC300 System Controller V1.18 requires the following versions of supporting software:

- **ICE version 2.10.9**  
ICE is restricted to authorized users. Contact the product manager.  
*Note: ICE requires supporting files to be added. See Software Interface Files on page 10.*
- **DCTools Version 1.12.28**  
Available from the DC Sales Web at [https://dcsalesweb.eaton.com/Product\\_Support/DC\\_software\\_products.asp](https://dcsalesweb.eaton.com/Product_Support/DC_software_products.asp), or the Eaton Web at <http://dcpower.eaton.com/dc-products.asp>
- **PowerManagerII Version 5.12.1**  
Contact the Product Manager for supporting interface files to allow PM2 to work with the SC300.  
*Note: PowerManagerII does not show some new SC300 features, such as metering and lithium batteries. Use the web server or DCTools to get information relating to these.*

## Key Enhancements from SC300 Version 1.17

- **Cybersecurity improvements.** These provide better protection against unauthorized access.
- **Improved robustness.** This means the SC300 is more robust in an adverse network environment.
- **Improved A-B System Support.** Better handling of alarms in dual A-B systems.
- **Modbus Master Capability.** Allows for connection to external modbus slaves.
- **Lithium Battery Support via Modbus.** Allows Lib to communicate with SC300.
- **AC Meter Support via Modbus.** Allows external AC meters to provide data to SC300.
- **Inverter Support via Modbus.** Allows external DC-AC Inverters to provide data to SC300.
- **Named Items Database Access.** Allows SC300 internal data base item mapping to Smart Actions.
- **Improved Data and Event Logging.** Better management of very large logs being truncated.
- **Fixed Email Alarm Notifications.** Improved email alarm notification sending
- **Added SNMP Object ID SC200 Compatibility.** Allows SNMP object ID to be same as SC200 or SC300

## Software Change Details

The SC300 System Controller V1.18 includes the following changes:

### From SC300 V1.17

Change	Explanation
<b>Modbus Master</b>	
Modbus Master to poll values and data from modbus slaves via RS485 or TCP.	<p>The SC300 can:</p> <ul style="list-style-type: none"> <li>• Poll external modbus devices.</li> <li>• Configure one of several RS485 ports.</li> <li>• Configure modbus TCP.</li> <li>• Select different modbus device types and quantities.</li> <li>• Download/Upload configurable Master poll file in XML format.</li> </ul>
<b>Lithium Battery</b>	
Communicate with Lithium batteries using modbus RS485.	<p>The SC300 can:</p> <ul style="list-style-type: none"> <li>• Communicate with external lithium battery blocks.</li> <li>• Retrieve charge and discharge values from lithium batteries</li> <li>• Summarize total lithium battery data.</li> <li>• Receive lithium battery status, warnings and alarm and initiate DC system alarms and actions.</li> <li>• Get highest and lowest individual cell voltages within lithium battery blocks.</li> </ul>
<b>AC Meter</b>	
Communicate with AC meters using modbus RS485.	<p>The SC300 can:</p> <ul style="list-style-type: none"> <li>• Communicate with external AC meters.</li> <li>• Retrieve energy and power values from AC meters.</li> <li>• Summarize total energy usage from AC meters.</li> <li>• Use AC meter values to initiate system alarms and actions.</li> </ul>
<b>Other Items</b>	
Time zone	Provides a drop-down list of time zone locations for easier configuration.
Named Items	Provides access to internal SC300 database items for use in smart actions. Database items are shown via a drop-down list for easier configuration.
Language Support	Improvements in Language support for German, French, Spanish and Chinese.
Lithium Battery Log	Log for recording lithium battery summary values.
LBRS	Fixed redundancy settings for rectifiers in LBRS mode.
SNMPv3 Trap User	The trap user for SNMPv3 is moved to the SNMP settings and not in User Table.

Users Table SNMPv3 Item	The selection options for SNMPv3 in user table only now includes “no SNMP”, “Get” and “Get Set”. SNMPv3 traps user is moved to an item in SNMP settings.
Inverters	Access to key DC/AC inverter values via RS485 modbus.
Audit Log	Log for recording user access and configuration changes.
RXP	Improved IOB registration database and rectifier registration time
On Boot	Config write delayed until end of RXP registration Mapping held off until all RXP devices registered Modbus master held off until end of registration Alarms held off until end of registration Unstable AC held off 60 seconds or until end of registration
User Interface	Added inverter values to UI LCD
Config File – No RXP	Fixed issue where config file updates would not apply if no RXP devices were connected to SC300
SNMP-System-Object-ID	Fixed SNMP system object ID # for SC300
Blacklist in SNMP Mib	Added blacklist items to SNMP mib
Email Notifications	Fixed and improved notification and sending of emails for alarm conditions
Configuration Version Number	Fixed count of configuration updates number
SNMP Sys Object ID	Added ability to select SNMP Sys Object ID to be SC200 or SC300 format for NMS backward compatibility.

## From SC300 V1.14

Change	Explanation
<b>DC-DC control</b>	
Works with MCU series DC-DC converters	The SC300 can: <ul style="list-style-type: none"> <li>• Show DC-DC operating values (input / output)</li> <li>• Show and use DC-DC alarms</li> <li>• Change DC-DC settings</li> </ul>
<b>SNMP</b>	
V3 traps encrypted	Provides a more secure SNMP alarm message.
SNMP trap fix	Previously, some SNMP traps were lost when there were several alarms occurring at the same time.
Privacy Password	Was missing from S3P MIB
<b>Web and general Security</b>	
Login password rules changed	The setting <i>Web access</i> defaults to <i>https-Default-User</i> . With this setting, login as: <ul style="list-style-type: none"> <li>• User = SC300</li> <li>• Password = Factory1234, where “1234” stands for the last four digits of the serial number.</li> </ul>

	<i>Note: it is highly recommended that users set their own password when configuring / commissioning a system with SC300. Otherwise it is necessary to record the serial number for each installed SC300, and login to each SC300 with its specific password.</i>
Password complexity	The complexity of the login password is configurable.  The default is: Upper-Or-Lower-Or-Symbol-And-Digit, 3-Of-Digit-Symbol-Upper-Lower, Must-Have-Digit-Upper-Lower-And-Symbol
IP address whitelist added	If one or more IP addresses are entered in this table, only the IP addresses in the table are allowed to communicate with the SC300. All other IP addresses are blocked.
S3P access defaults to USB-only	Required for cybersecurity.
Certificate can be installed	Users can now install a certificate. This can be done to enhance security and eliminate the warning message at login.
Improved Ethernet robustness	Some external scans could eventually cause an SC300 crash. Now these have no effect.
<b>Logs</b>	
Log enable	Save memory by disabling logs that are not required.
Log time stamps correct	After a log has been downloaded by web, it now shows the correct local and UTC times.
<b>Smart Alarms</b>	
Loop detection improved	Loop detection sometimes indicated a Smart Alarm configuration had a loop, even though it was a valid flip-flop.
Pulse fixed	Smart Alarms has a pulsed alarm option that was not working.
Named item sources	Any analogue database item can be used as a source for a Smart Alarm.  <i>Note: reserved for Eaton / Integrator / Trained users only.</i>
Reset Smart-Alarm Counts	After reboot count is reset
<b>Smart Analogues</b>	
Named item	Any analogue database item can be used as a source for a Smart Analogue.  <i>Note: reserved for Eaton / Integrator / Trained users only.</i>
<b>Table sizes</b>	
Smart analog table increased to 32 lines	Was 21 lines.
<b>Configuration</b>	
Configuration file corruption recovery	If the configuration file is corrupted the SC300 will revert to the previous configuration.
Password retained when SC200 configuration loaded	Previously, loading SC200 configurations by web would cause the web password to become invalid. Now web passwords are retained. If there are no passwords on the configuration file, the default password will be used.
<b>Other bug fixes</b>	
Fixed AC system current limit	Was not working in V1.14.
Fixed email alarms	Was not working in V1.14.

Fixed AC fail alarms	Some errors in V1.14 around masking of AC fail/Rect fail alarms
IOB Mapping	This process had some errors making it difficult to remap IO boards on an SC300 with existing mappings.
Rectifier shutdown from Smart Alarm	It is now possible to shut down rectifiers from a Smart Alarm.
Language support	The following languages are available in the SC300, but the translations may still not be fully complete: <ul style="list-style-type: none"> <li>• English</li> <li>• German</li> <li>• French</li> <li>• Spanish</li> <li>• Simplified Chinese</li> <li>• Traditional Chinese</li> </ul>
RXP Registration	Fixed slow RXP registration and situations >60+ rectifiers connected
Web (Firefox)	Fixed Firefox browser not loading the web UI.

## From SC300 V1.11

Change	Explanation
Supports IP version 6.	The SC300 will operate in an IPV6 network. All IP addresses may be in either IPV4 or IPV6 form.
Cybersecurity improvements, including secure upgrade.	Firmware upgrade is now secure, using https with an encrypted upgrade file and secure certificates.  Other cybersecurity improvements include:  All passwords are hidden in web, DCTools and ICE.
Time Zones	Users can set a time zone. The front panel display and log records will use this time zone. <i>The web view already uses the local computer time zone.</i>
Improved web (https) operation.	Web speed using https is improved. Web errors encountered with previous versions should rarely occur.
Communications improvements.	As part of cybersecurity improvements, the SC300 is more immune to external cyber-attacks and scans.
Works with more than one Modbus master.	The SC300 may communicate simultaneously with several Modbus managers, as well as web browsers and SNMP managers.
Solar charger control improvements	<ul style="list-style-type: none"> <li>• Solar chargers are shown in a separate table on the web and DCTools.</li> <li>• The Solar Fail alarm operation has been improved.</li> </ul>
Battery test enhancements	<ul style="list-style-type: none"> <li>• AC Fail lockout can be temporarily disabled.</li> <li>• Battery Test cancelled alarm. This activates if a battery test fails to start normally or is cancelled / aborted for any reason. <i>Disabled by default.</i></li> <li>• Low rectifier capacity alarm. This activates if the total system load power is greater than a percentage setting of the installed rectifier power capacity minus a redundancy setting. <i>Disabled by default.</i></li> </ul>
Clear Standby alarm from the front panel	

Analogue input alarm precision	Analogue input alarms can now be set to 0.01V precision.
Log off normal trigger	A Smart Alarm can be used to set logs to off-normal mode.
A/B system control	<p>The SC300 can communicate with another SC300 to work as a single A/B system. Communications use an RS-485 link.</p> <p>Features include:</p> <ul style="list-style-type: none"> <li>• Monitor and control both systems from a single SC300.</li> <li>• Alarms are combined.</li> <li>• SC300s revert to independent operation if communications is lost.</li> </ul> <p>This requires updated SC300 hardware. Contact Eaton for more details.</p>
<i>CPU debug page</i>	<i>For Eaton use only.</i>

## From SC300 V1.08

Change	Explanation
Increased number of IO Boards allowed to 32	
Increased maximum number of analog inputs to 60	
Added more inputs to Smart Analogs	Includes Fan-Temperature, Fan-Power, DCDC-Voltage, DCDC-Current, DCDC-Power, DCDC-Heatsink-Temperature.
Audit log	The audit log provides a record of login / out activity for cybersecurity purposes.
German translation included	Select from web at login, or from UI Settings menu.
ModbusSC300 V1.14	<ul style="list-style-type: none"> <li>• Added AC-Phase-Voltage, AC-Phase-Current, Reset-Ah-Discharged and Clear-String-Fail</li> <li>• Allow users to get the Modbus register map from the SC300 (web &gt; Tools)</li> </ul>
Solar improvements	Removed DC-Input-Voltage-Threshold and DC-Input alarms. These are not normally appropriate and can be done with Smart Alarms if needed.
SNTP	Enabled by default, pointing to time.nist.gov
SNMP - System Object ID setting	Removed as not needed anymore. Fixed at 1.3.6.1.4.1.1918.2.14.20
Smart Analogues	Allow subtraction of system values
USB upgrade	Use USB rather than web for upgrade. Refer to the SC300 Handbook for more details.

## Features not included or incomplete

The following features are not included or have issues.

Feature / issue	Explanation
RADIUS authentication	Not included in this release
Map view (Identity page)	The SC300 does not show a map view corresponding to the coordinates entered.

## ***Firmware Upgrade***

### **Upgrade from SC300 version 1.14**

#### **Notes**

- Upgrade may be done using USB or Web. USB upgrade requires 2 stages.
- Configuration settings are retained during the upgrade. However, it is strongly recommended to backup settings before any firmware upgrade.
- Data and Event Logs may be lost during upgrade so download and backup any logs that want to be retained, prior to any firmware upgrade.
- Contact Eaton for the appropriate upgrade files.

#### **Upgrade by web**

1. Connect to the SC300 by web using http or https
2. Backup the existing configuration file
3. Go to *Tools > Firmware Upgrade*.
4. Browse to the provided upgrade file **sc300-v118.RC5.9221eb.icp**
5. Select Next.
6. Wait about 20 minutes
7. Login as usual.
8. Go to *Identity > Software* to check the configuration has succeeded.
9. Verify the configuration settings.

#### **Upgrade by USB**

1. Back up the SC300 configuration using web or DCTools.
2. If it is not already installed, install Tera Term. This is a free terminal emulator, available from the [Tera Term Home Page](#).
3. Close DCTools if it is running. Ensure the Connection Manager icon in the Taskbar is closed.
4. Apply power to the SC300 while holding down any front panel key.
5. Wait until the SC300 shows a screen showing start-up options (Down... Right... Other key...).
6. Press the right arrow to select *USB ZModem Upgrade*.
7. The SC300 should now show *USB ZModem Upgrade*.
8. Connect to the SC300 via USB.
9. Start Tera Term.
10. Select *File > New Connection*.
11. Select Serial.
12. Select a Port. A new “virtual” com port number should be shown. Choose this port.
13. Select OK.
14. Select *File > Transfer > Zmodem > Send* and select the file (**Stage 1**) **sc300-Boot\_v116.RC5.1.18.9221eb.icp**
15. Select *Open*. The upgrade will proceed.
16. Wait until the SC300 has restarted.
17. Repeat steps 4 to 13



18. Select *File > Transfer > Zmodem > Send* and select the file (**Stage 2**) [sc300-v118.RC5.9221eb.icp](#)
19. From the front panel, select *Menu > I* to check the configuration has succeeded.
20. Verify the configuration settings.

## Software interface files

The following files are required for correct operation of DCTools, ICE and PM2. Please contact the product manager to obtain these files.

### ICE

- Add *sc200-MIB-96.xml* to the ICE program data folder (typically C:\ProgramData\DC Control Software\ICE Configuration Editor).

### PowerManagerII

*Note: PM2 does not have specific support for the SC300. It uses an SC200 connection for the SC300, and only supports SC200-level features.*

- Add *sc200-MIB-96\_PM2.xml* to the PowerManagerII program data folder.
- Rename *sc200-MIB-96\_PM2.xml* to *sc200-MIB-96.xml*
- In PM2, select Edit Browser, and create a new SC200 node.

## Console log

For diagnostics, users may be asked to provide Eaton with a copy of the SC300 console log. The console log provides details of the application upgrades, server requests and error messages.

To download the console log:

1. Connect the SC300 to the local network (or connect directly to a laptop Ethernet port).
2. Browse to <SC300 IP address>/consolelog.txt. For instance, <http://123.001.002.234/consolelog.txt>
3. Right click and copy page.
4. Save this page with a name identifying site and date.

## Audit log

For audit purposes, users may be asked to provide Eaton or Cyber security authorities with a copy of the SC300 audit log. The audit log provides details of the users who have accessed the application and configuration changes made.

To download the audit log:

1. Connect the SC300 to the local network (or connect directly to a laptop Ethernet port).
2. Browse to <SC300 IP address>/auditlog.txt. For instance, <http://123.001.002.234/auditlog.txt>

## Supporting Information

- Refer to the [Eaton DC Sales Web](#) for manual, data sheet and catalogue page.