Technical Data

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SC300 System Controller

Applies to firmware version 1.14

Contents

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Specifications apply to an SC300 installed with a single IOBGP System IO Board. Refer to the IOBGP data sheet for detailed system input and output specifications.

Hardware and Software Compatibility

Rectifiers controlled:	APR24-3G APR48-3G APR48-ES EPR48-3G CR48-3G NPR48-ES
Number of rectifiers supported:	126
Other devices controlled	ASC48-ES Solar Charger (total number of rectifiers plus solar chargers up to 126) IOBGP-00/01/10/11/20/21 IOBSS-00/10 FC100 Fan Controller (1 only)
Remote Control and Management Software:	Any SNMP Network Management Software. *SNMP MIBs available on request.* PowerManagerII PowerManager3 Any SNMP Network Management Software. *SNMP MIBs available on request.* Any Building Management System (BMS) using Modbus-RTU or Modbus-TCP. *Refer to Application Note AN0149 for full details.* Third party management software using S3P protocol. *S3P interface specifications available on request.*
Set-up / installation / service tools:	Web browser (Mozilla Firefox, Google Chrome, Microsoft Edge or other compatible browser) DCTools ICE

Mechanical

Dimensions H, W, D:	133.5mm (3U), 44.5mm (1U), 70mm
Weight:	140g [5 oz]
Mounting options:	Panel mount Rectifier slot mount
Orientation:	Vertical, horizontal left, horizontal right

Environmental Requirements

Ambient Temperature Rated Operating Range: Extended Operating Range:	 -10°C to +50°C (14°F to 122°F) -25°C to +70°C (-13°F to 158°F) *May affect product lifetime, metering accuracy and display contrast.*
Altitude:	<3000m (9800 feet)
Humidity:	<95%RH (Non-condensing)
Location:	This unit must be installed in a restricted access location.

DC Input

Rated Voltage:	24V / 48V nominal *From an SELV power source, earthed or unearthed.*
Operational Range: Power input connector: Input current	18V to 60V RJ-45 (part of RXP bus) 0.18A (24V) / 0.06A (48V)
Earthing:	Class II ⧈

DC Input (continued)

Fault Protection (external):	Over-current protection of the SC200 / IOBGP power supply (RXP bus) is required to prevent excessive current flow during fault conditions.
Approved over-current devices:	Eaton Voltage Feed Module (VFN), or Tyco RXEF135 or Littelfuse 60R135 polyswitch in series with LIVE input of the DC power source.

Keypad and Display

Display type:	160 x 128 back-lit color dot matrix
Viewable area:	30.5mm x 36mm
Display settings:	Contrast Adjustable Orientation Vertical, Horizontal Left or Horizontal Right
Main Screen Values	Configurable to any analog input value, or key system values
Keypad:	6 keys, elastomer type (Up / Down / Left / Right / Soft-key 1 / Soft-key 2)
Keypad Access Security Protection: Set/cleared:	 Prevents configuration changes from the keypad. Optionally allows temporary write access using a 4-digit PIN. From DCTools or Web.
User interface functions:	View system values View and change alarms View status messages Start / stop control functions Test and characterize LVDs Test alarm relays Change operating settings Map I/O boards Restart controller
Language (standard): Language options:	English German, Other languages available to special request

Indicators

Status LEDs Power On: Critical / Major Alarm: Minor Alarm:	 Green Red Yellow
Audible Alarm Indicator:	Enabled/Disabled (default: Enabled)

Communications

Ethernet Interface: Connector: Protocols: Settings:	 100baseT RJ-45 IP V4, IPV6 TCP/IP, UDP, SNMP, S3P over IP, http (Web), https (secure Web), Modbus-TCP Supports DHCP and Auto-IP IP Address, Subnet mask, Gateway address
USB Connector Version Functions	 Micro-USB type AB High Speed Local viewing of values Configuration using DCTools Software upgrade

Communications (Continued)

RS-232 Serial	
Interface:	RS-232 (DTE)
Connectors:	DB9M
Protocols:	S3P, Modbus RTU
System Communications	
Interface:	RS-485
Connector:	RJ-45 (Rear panel)
Protocols	RXP
External modem options	
GSM Modem:	SMS (TXT) system status and alarm messages (see following).
GPRS/HSUPA Router:	Ethernet over mobile network. Communications to Web, PowerManagerII, DCTools or SNMP-based Network Management System (NMS).
SMS Messaging	Requires suitable external GSM modem
System Status Message:	Trigger: Text message to modem, starting with lower case or capital "P" Destination: number of mobile phone that sent trigger message Contents: Site name, number of alarms active, bus voltage, load current, AC voltage, battery current, temperature, battery time remaining
Alarm Message:	Trigger: Any alarm activation or de-activation, Critical, Major or Minor, as configured Destination: up to 8 mobile phone numbers Contents: Site name, triggering alarm name and status (active or inactive), bus voltage, load current, AC voltage, battery current, temperature, battery time remaining
Email alarm messages	
Communications	Requires access to external SMTP server
Number of destinations	Up to 6
When sent	An email is sent a configurable delay after a new alarm with a sufficiently high severity is activated
Email Delay	Configurable per destination
Email subject	Triggering alarm name and severity
Subject prefix	System Identity details
Alarm message contents	Active alarms System Values System Status Recent events (all events occurring in the previous hour)
SNMP Interface	
Functions:	Get/Set/Trap
SNMP Versions:	2c, 3
MIBs supported:	SC300 MIB (Eaton proprietary), MIB II
Trap format options:	Eaton (multiple trap numbers) or X.733 (single trap number)
SNMPv3 security settings:	User, Authentication password, privacy password
SNMPv3 protocols:	Authentication: SHA Privacy: AES128 Context: Not used
Web Interface	
Functions:	Full configuration and control supported
Security:	Secure web (https), username/password access control
Supported browsers:	Firefox, Chrome, Safari, Edge
Software upgrades:	Via Ethernet port or USB port *Allows remote software upgrade over network.*

Communications (Continued)

Remote Access Password Security	
Protection:	Prevents configuration changes and control function operations by DCTools or PowerManagerII through the serial or Ethernet port.
Set:	From web or DCTools
Cleared:	From web, DCTools or keypad
Serial Server	
Operation	Allows remote access to a device connected to the SC300s RS232 port via Ethernet.
Protocol:	Any serial protocol over IP
Port number:	15000

Alarms

Alarm severity settings:	Critical, Major, Minor, Warning, Control (does not cause remote alarm; not shown on front panel)
Standard alarm relay settings	Summary Minor, Low / High Load, Rectifier Fail, AC Fail, Load/Batt Disconnect, Monitor OK
System Alarms	Low Float, Low Load, High Float, High Load, Rectifier Fail, Multiple Rectifier Fail, Rectifier Comms Lost, Multiple Rectifier Comms Lost, Partial AC Fail, AC Fail, System Overload#, Load Fuse Fail, Battery Fuse Fail, MOV Fail, ACD Fan Fail, LVD1 Disconnected, LVD1 Fail, LVD1 Manual, LVD1 Characterization Error, LVD2 Disconnected, LVD2 Fail, LVD2 Manual, LVD2 Characterization Error, Batt Temp High, Batt Temp Low, Sensor Fail, Battery Test Fail, Equalize, Fast Charge, Battery Test, Aux Sensor Fail, In Discharge, Configuration Error, Monitor OK, Battery Current Limit, Rectifier No Load, Rectifier Current Limit, Rectifier Over Temperature, Generator Fail, Cabinet Fan Fail, IOB Comms Lost, Unmapped IOB Found, Unknown Hardware, Missing Hardware, String Fail, Standby Mode, LVD Disconnected, LVD Fail, LVD Manual, LVD Characterization Error, Wrong Battery Polarity, Characterizing Battery, DO Manual, Normal Charge, AC Phase 1 Voltage, AC Phase 1 Fail, AC Phase 2 Voltage, AC Phase 2 Fail, AC Phase 3 Voltage, AC Phase 3 Fail, Peak Load Reduction, Site Backup Time Remaining, DC Input Fail, Solar Fail, System Overload B[#] , Battery End of Life, RTC Low Battery, Solar Comms Lost, Multiple Solar Comms Lost, Unstable Rectifier AC, RIP comms lost *# System Overload alarm can be configured in System overload, N+1 or N+2 Redundancy modes.* *Not all alarms are enabled by default; refer to the configuration file for alarm settings.*
Voltage Alarm settings	
Low float:	0 to 60V (default: 52.8V)
Low load:	0 to 60V (default: 47.0V)
High float:	0 to 60V (default: 55.6V)
High load:	0 to 60V (default: 57.6V)
System Overload and System Overload B Alarm settings	
% capacity:	0 to 100% (default: 85%)
Overload time:	0 to 10,000 min (default: 4 hours)
Overload type:	Total capacity / N+1 Redundancy, N+2 Redundancy (default: Total capacity)
Optional Note	Size: 60 text characters per alarm Viewing: from DCTools, Web, in SNMP trap, in email alarm message, on LCD display

Alarms (Continued)

User Alarms	
Digital (any DI including system inputs):	Configurable name, active state, severity, relays (up to two)
Analog (any AI including system inputs):	Configurable name, high alarm threshold, high alarm severity, high alarm relays (up to two), low alarm threshold, low alarm severity, low alarm relays (up to two), hysteresis (shared by low and high alarms)

Smart Alarms

Operation	Boolean combinations of alarm sources
Maximum Number	32
Logic Functions	AND, OR, XOR
Recognition Period	0 seconds to 20 hours
De-Recognition Period	0 seconds to 20 hours
Trigger logic (applies to all source types)	Level Edge Set Edge Reset Edge Latch Counter (divide by 2 or more)
Trigger sense	Normal or Invert
Alarm Sources	
Maximum Number:	64
Type:	System Alarm, Analog Input High Alarm, Analog Input Low Alarm, Digital Input Alarm, Smart Alarm
Scheduled Sources	
Maximum Number:	20
Functions:	First Date/Time Duration (default: 60 minutes) Interval (default: 1440 minutes = 1 day) Number of Activations (default: 0)
System Value Sources	
Maximum Number:	20
System Values	Bus Voltage, Rectifier Current, Load Current, Battery Current, AC input current, DC input current, Battery Temperature, Load Power, System Power, Ah Discharged, Number Of Rectifiers Failed, Number of Solar Failed, Number Of Rectifiers Comms Lost, Number of Solar Comms Lost, AC Voltage, DC Input Voltage , DC Input Voltage Max, DC Input Voltage Min, Rectifier Input Voltage, Solar Input Voltage, Battery Time Remaining, Battery Health, Alternative Source Current, Solar Current, Solar Power, Generator power, Highest Rectifier Heatsink Temperature, Fuel Level, Generator Backup Time, Fuel Remaining Time, Smart Analog, Energy Meter, Power Meter, Current Meter, Voltage Meter, Operating voltage, Fan Temperature, Fan Power, DCDC voltage, DCDC Current, DCDC Power, DCDC Heatsink Temperature
Threshold Type:	High/Low

Smart Analogs

Inputs	**System values** (Rectifier current, load current, battery current, smart analog, alternative source current, solar current, AC input current, DC input current, AC voltage, DC input voltage, power meter, load power, solar power, generator power, Ah discharged, BTR time remaining, operating voltage, First Quarter point Voltage, Third Quarter Point Voltage, Mid Point Voltage, Imbalance Percent, Fan Temperature, Fan Power, DCDC voltage, DCDC Current, DCDC Power, DCDC Heatsink Temperature) **Any analog input**
Functions	On selected analog inputs: Add, multiply, multiply x 1000, average, max., min.
Gate value	If required, limit the Smart Analog value according to these rules: Positive only, negative only, absolute value, change.
Value to use	Normal, average, minimum, maximum.
Outputs	Apply the Smart Analog output to any of these system values: User defined, bus voltage, battery temperature, battery current, load current, rectifier current, battery first quarter point, battery mid point, battery third quarter point, reverse battery detect, alternative energy source current, fuel level, smart analog, fan temperature, generator current
Units of result	Automatically determined

Standard Input / Output (with single IOBGP)

	IOBGP-00/01	IOBGP-10/11	IOBGP-20/21
Digital Inputs			
System:	4	4	4
User:	6	9	9
Digital Outputs:	6 (one also used as Monitor OK relay)	10 (one also used as Monitor OK relay)	8 (one also used as Monitor OK relay)
Analog Inputs			
Bus Voltage:	1 (assigned to system bus voltage)		
Temperature:	2 (one assigned to battery temperature, one user)		
Current:	3 (assignment depends on system)		
Battery Symmetry Monitoring - Mid-Point (MPM) / Quarter point (QPM)			
Inputs (number of strings):	Standard: 4 mid-point, one quarter-point (single IOBGP) Maximum: 24 (requires extra IOBGP modules)		
Input range	0 to 36V (IOBGP-00/01, 0 to 60V (IOBGP-10/11/20/21)		

Optional Input / Output with extra IOBGP or IOBSS Modules

	IOBGP00/01	IOGP-10/11B	IOBGP-20/21	IOBSS-00	IOBSS-10
Digital Inputs:	6	9	9	10	13
Digital Outputs:	6	10	8	6	10
Analog Inputs:	-	-	-	4	4
Temperature sense inputs:	2	2	2	2	2
Current sense inputs: 3	3	3	3	3	3
Bus voltage sense input:	1	1	1	1	1
Maximum number of inputs and outputs					
Analog Inputs:	60				
Digital Inputs:	108				
Digital Outputs:	108				

Control Processes [require IOBGP]

Note: Default voltage settings are shown for 48V systems.

Active Voltage Control	
Default status	Enabled
Controls:	Overall bus voltage, including rectifiers and solar chargers
Normal operation	Set by Float Voltage setting and modified by active voltage control, battery current limit, and other control processes as below.
Alternative Float Voltage	
Condition	Operates when a Smart Alarm with action = Alternative Float Smart Alarm is active.
Operation	System operates at Alternative Float Voltage, modified by normal processes as below.
Batteries	
No. of cells per string	0 to 26 (default: 24)
Total capacity	1 to 100,000Ah (default: 300Ah)
Battery Current Limit	
Default status:	Disabled
Battery current limit setting	0 to 100% of Battery Ah (default: 10%)
Engine run limit setting	0 to 100% of Battery Ah (default: 1%)
Engine Run operation	The current limit setting changes from *Battery Current Limit* to *Engine Run Limit*.
Activation:	The generator control process has started the generator, or a digital input with Function set to *Engine Run* is active
Battery Test	
Default status:	Disabled
Lockout period:	48 hours after an AC fail (set Interval to zero to override lockout)
Termination voltage:	18 to 60V (default: 47.5V)
Activation options:	Periodic
	Manual using web, DCTools or front panel
	Using a digital input with the function set to Start Battery Test
Duration:	1 to 1000 minutes (default: 30 minutes)
Periodic activation settings	
Start date/time:	User selectable
Interval:	0 to 366 days (default: 183 days)
Current Share	
Default status:	Enabled
Balance:	± 2% of rated rectifier current
Equalize	
Default status:	Disabled
Equalize voltage:	0 to 60.0V (default: 56V)
Activation options	Periodic Manual using web, DCTools or front panel Using a digital input with the function set to Start Equalize Smart Alarm
Duration:	1 to 10,000 min (default: 600 minutes)
Periodic activation settings	
Start date/time:	User selectable
Periodic Equalize interval:	0 to 365 days (default: 0 days – no periodic equalize)

Control Processes (continued)

Fast Charge	
Default status:	Disabled
Charge voltage:	0 to 60.0V (default: 56.0V)
Start thresholds	
Ampere hour threshold:	1 to 100% (default: 25%)
Voltage threshold:	0 to 60.0 V (default: 48.0V)
Stop Thresholds	
Maximum duration	0 to 10,000min (default: 1440 minutes)
Recharge percentage	1 to 200% (default: 110%)
Ampere-hour threshold	0 to 100% (default: 0%)
Generator Control	
Control Relay	Any Digital Output (Default: None; generator control is disabled)
Start on Mains Failure	Yes, No (Default: No)
Start/Stop options:	Fast Charge, Equalize, Peak Load Reduction
Controls	Start / Stop Manual Generator Run
Control input	Engine Run; a digital input active when the generator is running
Fuel Metering	
Fuel Tank Volume	0 to unlimited (Default: 0 l)
Manual Generator Run Time	0 to unlimited (Default: 0 min)
Calculated values	
Generator Refuel Date	When the generator was last refuelled
Generator Refuel Volume	How much fuel was added at the last refuel
Generator Backup Time	How long the generator can continuously run until empty
Tank Empty Date	When the tank will be empty, based on the average usage
Rectifier Shut Down	Disabled, Manual, Automatic (Default: Disabled)
Load Based Rectifier Shutdown (LBRS)[1]	
Operates	When Shutdown is set to Automatic
High Threshold	20 to 90% (Default: 60%)
Low Threshold	10 to 80% (Default: 40%)
Interval	5 min to 30 days (Default: 7 days)
Redundancy	N, N plus 1, N plus 2
System Voltages	
Float voltage:	5.0 to 60.0V (default: 54.5V)
Maximum voltage:	5.0 to 60.0V (default: 57.6V)
Minimum voltage:	5.0 to 60.0V (default: 42.6V)
Temperature Compensation	
Default status:	Enabled
Slope:	-10.00 to -0.01mV/°C/cell (default: -4.00mV/°C/cell)
Low cut-off:	-40°C to +20°C (default: 0°C)
High cut-off:	+21°C to +60°C (default: +50°C)
Reference Temperature:	0.0°C to 50.0°C (default: 20°C)
LVDs	
Number of logical LVDs supported:	16
Number of contactors supported:	16 (up to two per IOBGP)
Logical LVD settings (each of 16 LVDs)	
Voltage Based Disconnect:	Disabled/Enabled (default: Enabled)
Disconnect Voltage:	0 to 60.0V (default: 43.2V)
Reconnect Voltage:	0 to 60.0V (default: 48.0V)
Recognition Time:	10 to 600s (default: 10s)
AC Timer Based Disconnect:	Disabled/Enabled (default: Disabled)
AC Timer Delay:	0 to 6,000 minutes (default: 240 minutes)
Smart Alarm Based Disconnects:	Disabled/Enabled (default: Disabled)
Smart Alarm Index:	1 to 32 (default: 1)
Chained to Previous:	Disabled/Enabled (default: Disabled)

[1] Only with rectifiers that support LBRS

Control Processes (Continued)

Physical Contactor Settings (each of 16 Contactors)	
LVD Number:	1 to 16 (default: 1 / 2)
Enable:	Disabled/Enabled (default: Disabled)
IOB Number:	1 to 16 (default: 1)
IOB LVD Number:	1 to 16 (default: 1 / 2)
Type:	Normally Open or latched [2]/ Normally Closed (default: Normally Open or latched)
Peak Load Reduction	
Operation	Runs from battery during AC supply peak periods
Maximum Duration	1 minute to 7 days (default: 2 hours)
Scheduled Start Time	Set by user or external application
Scheduled Duration	Set by user or external application
Activating Smart Alarm	Optionally trigger from any Smart Alarm

Battery Management Functions

End of Charge Action	Set ampere-hour discharged to zero after Fast Charge Only, set to zero after Fast Charge and Equalize.
Site Backup Time Remaining	Activates the Site Backup Time alarm a present time after AC fails.
Battery Time Remaining	
Typical accuracy at C_{10} rate:	+/-20% of time remaining (subject to battery characterization discharge completed prior)
Settings:	
End Voltage:	1.65 to 2.00V per cell (default 1.80V per cell)
Automatic Characterization:	Disabled/Enabled (default Disabled)
Automatic Characterization Delay:	0 to 7 days (default 48hours)
Battery Symmetry[3] Monitoring	
Number of Battery Strings Supported:	Up to 24 Mid-point: 4 per IOBGP Quarter-point: 1.25 per IOBGP[4]
Settings	
MPM Enabled:	Disabled/Enabled (default: Disabled)
MPM lockout Period:	0 to 24 hours (default: 12 hours)
MPM Convergence Period:	0 to 24 hours (default: 24 hours)
String Fail Recognition Period:	0 to 12 hours (default: 1 hour)
MPM Start Threshold:	0.5 to 10% (default: 8.0%)
MPM Stable Threshold:	0.5 to 10% (default: 4.0%)
Reverse Battery Protection	
Operation:	Prevents LVD connection on reverse battery wiring
Wiring Requirements:	Uses one mid-point input on IOBGP per string (inputs are not available for mid-point measurement)

Solar Charger Control

Solar chargers controlled	ASC48-ES
Maximum number of solar chargers and rectifiers per system	126 total, no other limit on number of solar chargers
Power Share Offset	-1V to +1V (default 0.5V)
Solar charger measurements	DC Input Voltage (average over all solar chargers) Input voltage (per charger) DC input current *Plus all values as per rectifier.*

DC/DC Converter Control

DC/DC Converters controlled	Eaton MCU series
Maximum number of DC/DC converters per system	32 total
Settings	Voltage, current limit, Power Share enable.
Values measured	Output voltage, output current, power, temperature, alarm status.

[2] Latched contactors are managed by the IOB. The SC300 has no specific settings for latched contactors.
[3] Quarter-point is only supported with IOBGP-10/11/20/21
[4] Each IOBGP-10/11/20/21 supports 4 quarter-point inputs; 3 are required per battery string.

A/B System Control

Function	Allows one SC300 (A system) to control another SC300 (B system) and work as an A/B system
Communication between controllers Hardware Protocol	 RS-485 Rack Interface Protocol (RIP), Eaton proprietary.
Functions	Voltage control Current sharing Alarms Battery Test
Measurements shared	Bus Voltage, Load current, Battery current, Load power, System power, AC voltage, Highest rectifier heatsink temperature, fuel level, battery temperature

Fan Controller

Number of fan controllers managed	One FC100
Number of fan control channels	2
Measurements (per control channel)	Temperature Fan control voltage
Control method	Proportional control based on temperature and fan control profile
Control profiles	Controller 1 Primary Controller 1 Secondary Controller 2 Primary Controller 2 Secondary
Modes	Single controller Dual controller Independent controllers
Other control features	Manual control of fan voltage Smart alarm-based profile change from Primary to Secondary

Energy Metering

Number of meter channels	Up to 20
Values metered (per meter channel)	Energy (kWh) Current (A) Voltage (V) Power (kW) Minimum Power (kW) Maximum Power (kW) Meter Reset Date
Setting options	Reset Power Min / Max Reset all Energy Meters Reset individual energy meters Reset all Power Min / Max
Calculation method Power Energy	 Voltage times current (expect where power is measured directly by a rectifier or solar charger) Power integrated over time
Meter configuration input options	Bus voltage, rectifier current, load current, battery current, Smart Analog current, alternative source current, Smart Analog voltage, AC voltage, AC input voltage, DC input voltage, power meter, load power, Smart Analog Power W, Smart Analog Power kW, solar power, generator power, AC input current, any analog input

Logging

Common log settings	
Off-normal interval	1s to 7 days
Off normal Smart Alarm	If configured, this Smart Alarm when active sets logs to off normal rate.
Off-normal offset voltage	When the bus voltage is this voltage above or below the Float Voltage, logging goes to off-normal rate where configured.
Event Log	
Size	More than 10,000 records
Logs	All alarms, start-up, configuration change, time change
Data Log	
Data logged	AC voltage, bus voltage, load current, battery current, battery temperature, Ah discharged
Number of records	More than 10,000
Log interval	1 minute to 7 days
Use off-normal	Use off-normal interval when in off-normal condition.
Energy Log	
Information logged	Energy in kWh for all energy meters
Number of records	Up to 10,000
Log interval	1min to 7 days
Use off-normal	Use off-normal interval when in off-normal condition.
Power Log	
Information logged	Power in kW for all power meters
Number of records	Up to 1000
Log interval	1min to 7 days
Use off-normal	Use off-normal interval when in off-normal condition.
All Meters Log	
Information logged	Power Min/Max for all Energy Meters
Number of records	Up to 1000
Log interval	1min to 7 days
Use off-normal	Use off-normal interval when in off-normal condition.
Smart Analogs Log	
Information logged	All Smart Analogs
Number of records	Up to 1000
Log interval	1min to 7 days
Use off-normal	Use off-normal interval when in off-normal condition.
Smart Analogs Min/Max Log	
Information logged	Min/Max for all Smart Analogs
Number of records	Up to 1000
Log interval	1min to 7 days
Use off-normal	Use off-normal interval when in off-normal condition.
Generator Log	
Information logged	Fuel level, generator state, AC state, refuel volume, hours remaining
Number of records	Up to 1000
Log interval	1min to 7 days
Use off-normal	Use off-normal interval when in off-normal condition.
Fan Controller Log	
Information logged	Fan controller 1 Temperature, Fan controller 1 Power, Fan controller 2 Temperature, Fan controller 2 Power,
Number of records	Up to 1000
Log interval	1min to 7 days
Use off-normal	Use off-normal interval when in off-normal condition.
Battery Symmetry Monitoring Log	
Information logged	First Quarter Point (if configured). Mid-point, third Quarter Point (if configured), Imbalance.
Number of records	Up to 1000
Log interval	1min to 7 days
Use off-normal	Use off-normal interval when in off-normal condition.

Compliances

Safety	IEC/UL/EN 62368-1, EN 60950-1, UL 60950-1, AS/NZS 60950.1
EMC Product family standard	EN 300 386 (OTTC)
EMC Generic standards Emissions: Immunity:	 EN 61000-6-3 EN 61000-6-2
Environmental	RoHS and WEEE Directives

Certifications

China	MII
Europe	CE – mark
North America	FCC Verification, IC, UL
Australia/New Zealand	RCM