Telefonica

SOLUCIÓN ENERGÍA EATON – RED DORSAL

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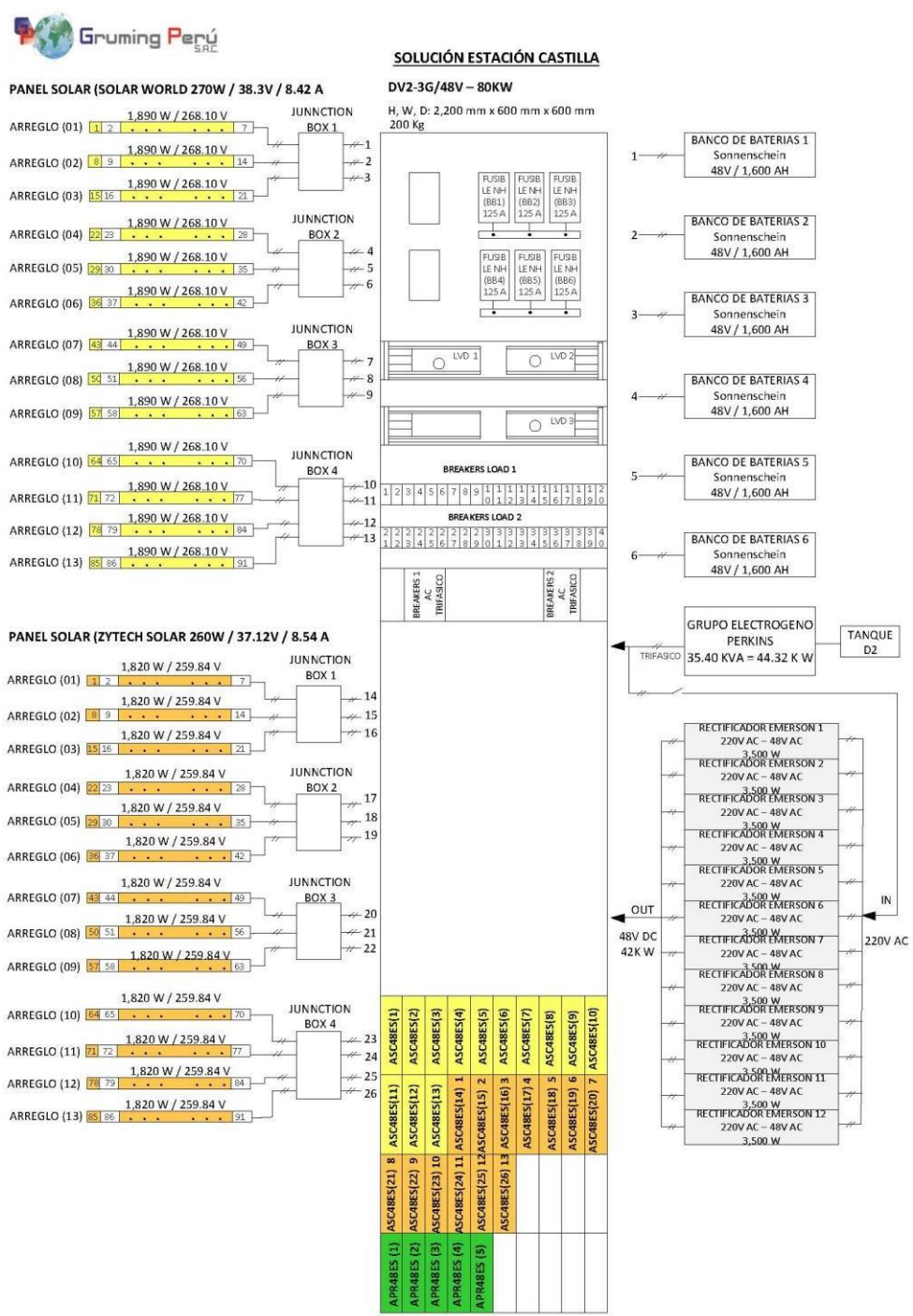
GRUPO IEC SAC

ENERGÍA AL ALCANCE DE TODOS

Item	Estación	Longitud			Latitud			Altitud	Solución Eaton
		Grados	Minutos	Segundos	Grados	Minutos	Segundos	msnm	Red Dorsal
1	EBC Yurimaguas	76	6	2.7	5	54	6.30	153	NO
2	Providencia	76	0	8.5	5	43	45.20	146	SI
3	Esperanza	75	49	31.3	5	29	28.50	131	SI
4	Lagunas	75	40	39.8	5	13	32.40	118	NO
5	Pucaruro	75	32	25.7	5	2	38.20	119	SI
6	Urarinas	75	16	57.90	4	46	49.30	117	SI
7	Saramuro	74	56	41.8	4	42	33.80	111	SI
8	San Roque	74	38	34.2	4	31	42.90	109	SI
9	Castilla	74	23	26.2	4	35	8.60	104	SI
10	Miraflores	74	4	38.3	4	27	19.10	107	SI
11	San Regis	73	54	28.20	4	29	15.50	137	SI
12	Nueva Fortuna	73	35	14.46	4	22	7.60	144	SI

SISTEMA SOLAR EXISTENTE

SOLUCIÓN ENERGÍA EATON ESTACIÓN CASTILLA



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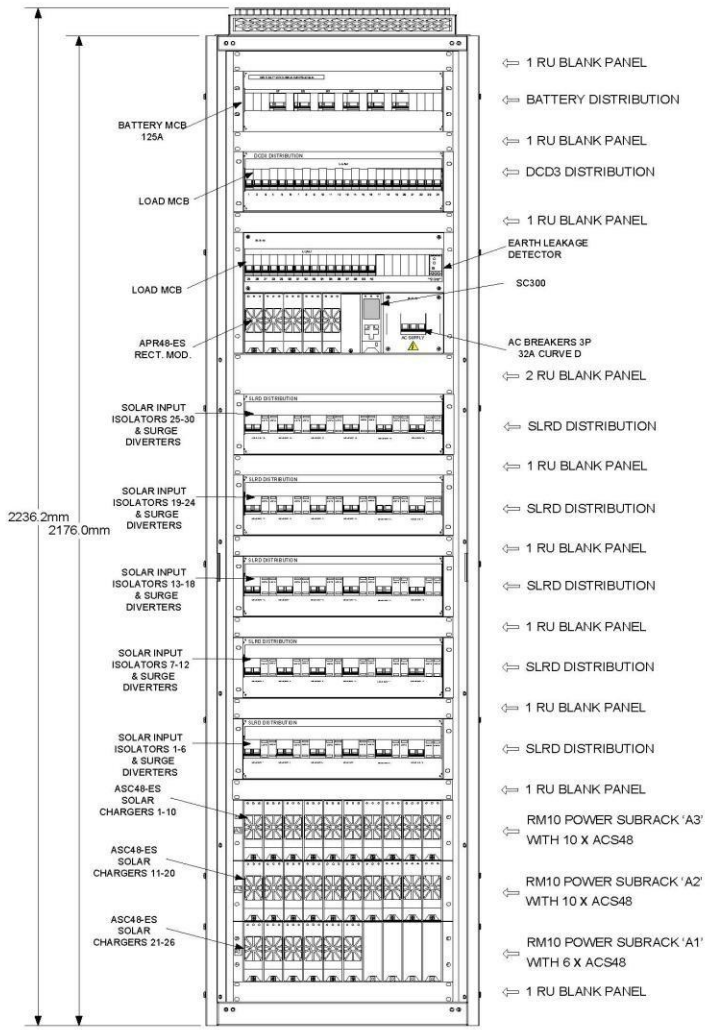
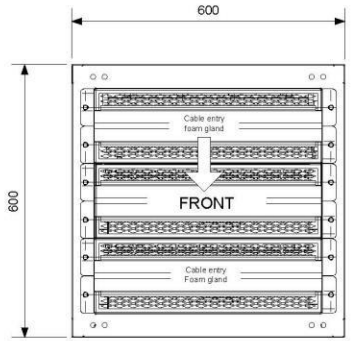
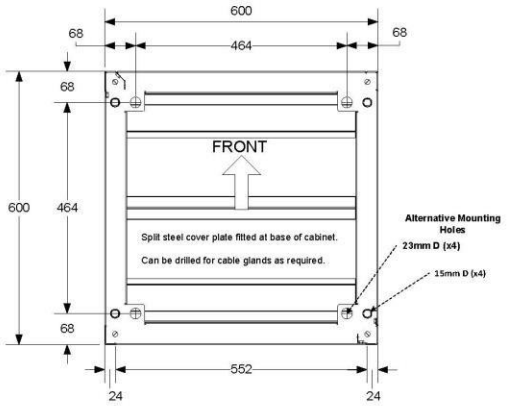
SOLUCIÓN ENERGÍA 00
ESTACIÓN CASTILLA



DV2-A40-9739
FRONT VIEW



Cabinet Top
showing air ventilation grills



Cabinet Base
showing mounting holes

REV	AMENDMENT	DATE	DRAWN	CHK'D	APPV'D
00	FIRST PRODUCTION ISSUE	2022-06-06	JELL	GORDON	JON

DO NOT SCALE
ALL DIMENSIONS ARE IN MILLIMETERS
GENERAL TOLERANCE

	LINEAR	HOLE CNTR
100<	±0.25	±0.15
300<	±0.50	±0.25
300>	±1.00	±0.50

UNLESS OTHERWISE STATED

EATON Powering Business Worldwide

Eaton Electrical (Australia) Pty Ltd
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MAT: N/A | FINISH: N/A | SCALE: N.T.S

GENERAL ARRANGEMENT
Telefonica del Peru Project

MPN: DV2-A30-9811 GA00 | IPN:

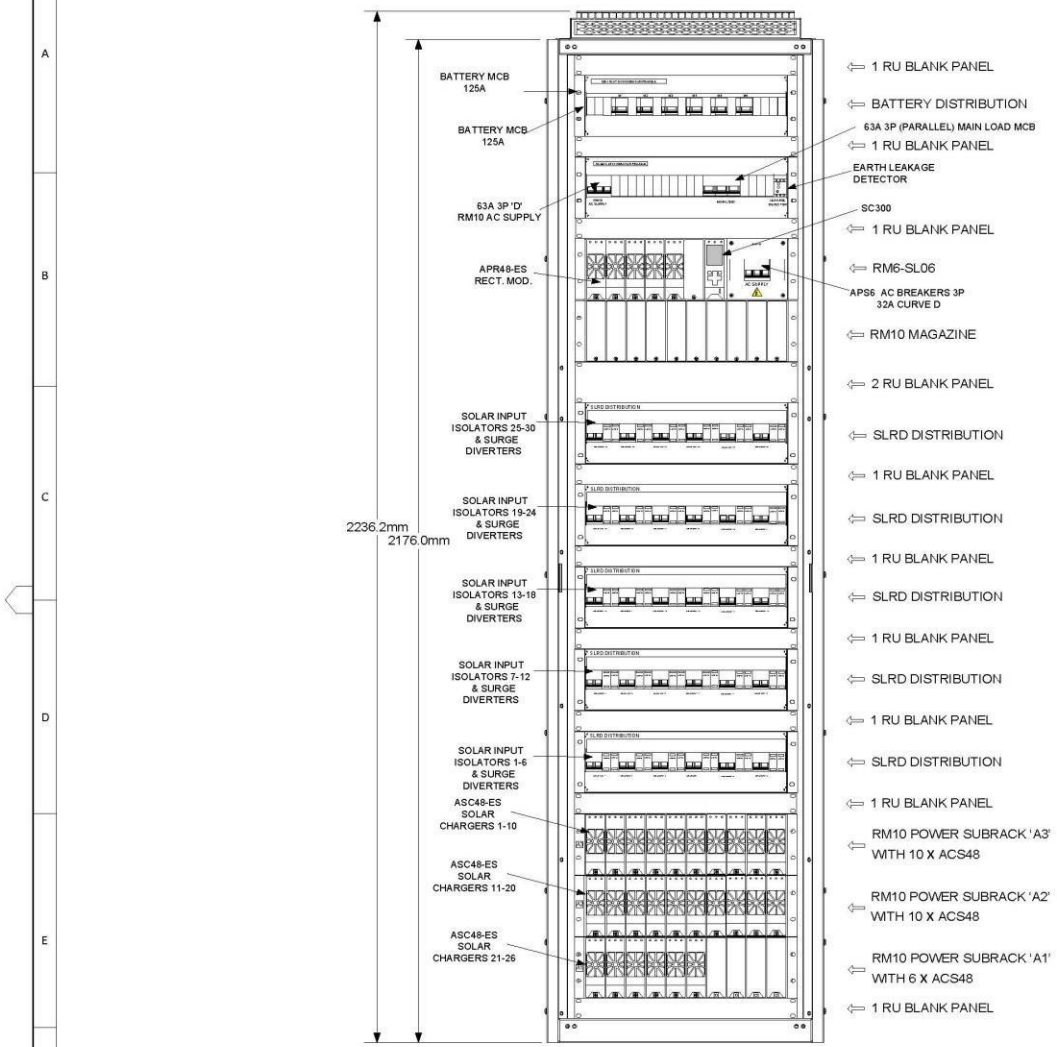
DSR(A).18708 | SHEET: 1 OF 1 | A3

Solar Hybrid DC Rack Power System – DV2-A30-9811 (option 00) – System Data Sheet

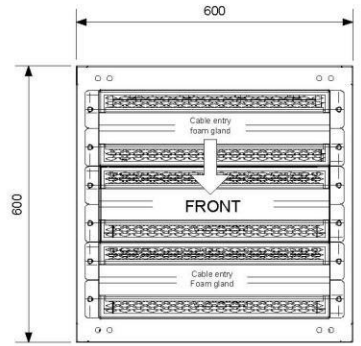
Customer PN	description
DV2-A30-9811	2.2m DV2 cabinet, 3x RM10, 5x SLRD3-002, 1x RM6 (with SC300 and IOB, 1x Earth Detector), 3x DCD3 with 200A LVD, 1x 3P AC input, 40x Load MCBs, 6x 125A Battery MCBs with Aux, Not including rectifiers.

- Powder coated steel cabinet, 2200mm high, 600mm x 600mm footprint
  - Removable side/rear panels
  - Top cable access, through 2 off foam cable entry gland panels.
- Accommodates up to 26 off ASC48-ES, 2kW 48Vdc MPPT solar charger modules (see data sheet)
- Accommodates up to 6 off APR48-ES, 2kW 48Vdc rectifier modules (see data sheet)
- System Rating TBA Adc total (load + recharge)
- System voltage typical 54.5Vdc (nominal 48Vdc)
- System voltage range 42Vdc – 60Vdc
- 1 off 3P 32A D curve AC input breaker to APR48-ES (in RM6)
  - AC cable size typical 6mmSq
- Solar Input Protection – 26 off 2P 20Adc breaker & 2P +/- 385V 60kA surge & trip detection
  - Solar PV cable size typical 6mmSq
- Solar Earth Leakage detection module
- 40 off 1P dc load breaker with MCB trip detection
  - DC load cable size typical 16mmSq
- 6 off 1P 125Adc battery breaker with MCB trip detection
  - Battery cable size typical 50mmSq
- 3 off 200Adc battery low volts disconnect (LVD) contactors (connected B1,B2, & B3,B4, & B5,B6)
- 1 off SC300-00 system controller (see data sheet)
- 1 off IOB-GP input/output module (see data sheet)
  - Genset stop/start through IOB-GP relay
  - Genset fuel level through IOB-GP analogue input 0-10Vdc
- 1 off Battery Temperature Sensor
- 1 off Load current sensor

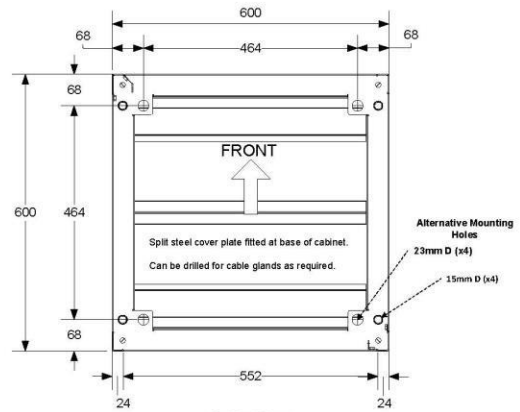
SOLUCIÓN ENERGÍA 01
ESTACIÓN CASTILLA



DV2-A30-9811
FRONT VIEW



Cabinet Top
showing air ventilation grills



Cabinet Base
showing mounting holes

REV	AMENDMENT	DATE	DRAWN	CHK'D	APPV'D
01	UPDATE DESIGN	2022-06-08	JELL	GORDON	JON
00	FIRST PRODUCTION ISSUE	2022-06-06	JELL	GORDON	JON

DO NOT SCALE
ALL DIMENSIONS ARE IN MILLIMETERS
GENERAL TOLERANCE

	LINEAR	HOLE CNTR
100<	±0.25	±0.15
300<	±0.50	±0.25
300>	±1.00	±0.50

UNLESS OTHERWISE STATED

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GENERAL ARRANGEMENT
Telefonica del Peru Project

MPN:DV2-A30-9811 GA01 | IPN:

MAT: N/A | FINISH: N/A | SCALE: N.T.S | DSR(A). | SHEET: 1 OF 1 | A3

Solar Hybrid DC Rack Power System – DV2-A30-9811 (option 01) – System Data Sheet

Item	Description
DV2-A30-9811	2.2m DV2 cabinet, 3x RM10 (FOR 26x ACS48-ES), 5x SLRD3-002, 1x RM6 (with SC300 and IOB, 1x 3P 32A AC INPUT), 1x RM10 (FOR 10x APR48-ES), 1x ASDCM (with 1x 3P 63A AC INPUT, 1x 3P 63A DC OUTPUT, 1x Earth Detector), 1x DCM FOR BATTERY, 2x 400A LVD, 6x 125A Battery MCBs with Aux, Not including rectifiers & converters.

- Powder coated steel cabinet, 2200mm high, 600mm x 600mm footprint
  - Removable side/rear panels
  - Top cable access, through 2 off foam cable entry gland panels.
- Accommodates up to 26 off ASC48-ES, 2kW 48Vdc MPPT solar charger modules (see data sheet)
  - 3 X RM10
- Accommodates up to 16 off APR48-ES, 2kW 48Vdc rectifier modules (see data sheet)
  - 1 x RM10 + 1 x RM6
- System Rating TBA Adc total (load + recharge)
- System voltage typical 54.5Vdc (nominal 48Vdc)
- System voltage range 42Vdc – 60Vdc
- 1 off 3P 32A D curve AC input breaker to APR48-ES (in RM6)
  - AC cable size typical 6 mmSq
- 1 off 3P 63A D curve AC input breaker to APR48-ES (In RM10)
  - AC cable size typical 16mmSq
- Solar Input Protection – 26 off 2P 20Adc breaker & 2P +/- 385V 60kA surge & trip detection
  - Solar PV cable size typical 6mmSq
- Solar Earth Leakage detection module
- 1 off 3P (parallel 63A) 189A dc load breaker with MCB trip detection
  - DC load cable size typical 70mmSq
- 6 off 1P 125Adc battery breaker with MCB trip detection
  - Battery cable size typical 50mmSq
- 2 off 400Adc battery low volts disconnect (LVD) contactors (connected B1,B2,B3 & B4,B5,B6)
- 1 off SC300-00 system controller (see data sheet)
- 1 off IOB-GP input/output module (see data sheet)
  - Genset stop/start through IOB-GP relay
  - Genset fuel level through IOB-GP analogue input 0-10Vdc
- 1 off Battery Temperature Sensor
- 1 off Load current sensor

DV2 - 3G Metro Power Solutions

48V integrated systems up to 80kW

The **Eaton® Data-Voice-Video Metro Power Solutions** range of DC power systems is designed for telecommunications network applications requiring compact, efficient and flexible DC power.

These DC power systems use Eaton APR-3G or, for superior operating efficiency, can be fitted with Energy Saver (ES) rectifier modules. AC and DC distribution is integral with flexible combinations of fuses and MCBs, and an SC200 system controller. Low Voltage Disconnect (LVD) options are also available.

The advanced SC200 system controller offers high-level communications capability for real time information. It also has built-in intelligence for optimizing system efficiency, and comprehensive alarm and system status notifications, which are all designed to minimize operational expenses.

A comprehensive range of other controller features ensures maximum battery life and optimum system performance under a wide range of environmental conditions.

Eaton DV2 Metro Power Solutions are pre-configured for fast installation and set-up. All system settings are fully adjustable in software and stored in transferable configuration files for repeatable one-step system set-up.

Typical applications are providing 48V standby power for end-of-row and centralized architecture such as local and central office switches and other large switch installations, wireless switching centers and long-distance transmission systems.

Typical Applications:

- Wireless MSC sites (CDMA/GSM/3G UMTS)
- Transmission terminals
- Local and central office switching
- Point of presence (POP) sites

ES ENERGY SAVER VERIFIED SOLUTION

Features

- Intelligent system management features
- Pre-configured software
- High power density
- Fast on-line expansion of rectifiers (hot-swap)
- High efficiency and unity power factor
- Range of DC distribution configurations
- Battery condition monitoring
- Wide AC input voltage range
- Seismic rated cabinet
- Remote monitoring and control
- Full length security door (optional)
- Compatible with Eaton Energy Saver (ES) Rectifiers

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Technical Specification

Input	
AC Supply†	3P+N+PE, 3P+PE, 2P+PE, 1P+N+PE 50/60Hz (nominal) Other options available depending on system capacity.
Power Factor†	>0.99 (20 – 100% Maximum System Current)
Efficiency†	>96% peak >95% (20% to 100% load, 230Vac)

Output	
DC Output Voltage Range	40 – 57.5V
Typical DC Output Power†*	APR48-3G : 72kW (1500A @ 48V) APR48-ES : 80kW (1667A @ 48V) * Ratings are stated without LVD's fitted. In some cases lower ratings may result when LVDs are used.

Environmental	
Operating Temperature Range*	-25°C to +50°C * Output current is derated above 50°C [122°F]. Refer to rectifier data sheet for more information.

Mechanical	
Dimensions H,W,D	2000mm [78.7"], 600mm [23.6"], 600mm [23.6"]
Weight	200kg [443lb] Typical configuration with 40 APR-3G rectifier modules.

System	
Rectifiers	APR48-3G APR48-ES
System Controller	SC100/SC200
Communications Features	USB direct* 10BaseT Ethernet*, TCP/IP*, SNMP*, Modbus-TCP*, Modbus-RTU* and on board web server* RS232 to external PSTN or GSM modem (modem not included) *SC200 only

† *Power factor, efficiency, AC voltage range and output power is dependant on rectifier module fitted. Refer to the rectifier data sheet for more information.*

Options	
AC Distribution	Coordinated transient protection up to 40kA, 8/20µs Incoming isolator Individual rectifier MCBs
DC Distribution	A wide range of DC distribution elements are available including: 24 x 18mm MCBs (1-63A) 16 x 27mm MCBs (10-125A) 10 x DIN00 type HRC fuses (20-160A) 6 x DIN1 type HRC fuses (63-250A) 6 x DIN2 type HRC fuses (100-400A) 4 x DIN3 type HRC fuses (400-630A) 4 x DIN4 type HRC fuses (800-1200A)
Low Voltage Disconnect (LVD)	Single or dual LVD can be configured as battery or load disconnect including non-priority load disconnect.
Rectifier Blank Panels	For unused rectifier positions
SiteSure	Input/output modules to monitor and control external equipment
CellSure	Comprehensive battery monitoring and fault diagnosis system with patented state-of-health algorithms.

Software	
PowerManagerII	Remote control and monitoring software
DCTools	Configuration Software. Free download from www.powerware.com/downloads

Certifications	
All products comply with International Standards. Contact your local Eaton DC representative for details on the specific product versions available with these safety and EMC approvals:	
Europe	CE
Australia / New Zealand	C-tick, Seismic rating to NZS4203

In the interests of continual product improvement all specifications are subject to change without notice.

RoHS COMPLIANT

ASC48-ES Solar Charger

The **Eaton® ASC48-ES Solar Charger** is designed for communications network operators who are striving to cut energy costs across the network, and/or to meet aggressive carbon footprint reduction targets.

It includes a high-performance Maximum Power Point Tracking (MPPT) function to extract the maximum available power from the solar panels.

Combined with efficiency of above 96%, it ensures that the maximum power is available to charge batteries and run load under all conditions.

An ASC48-ES may be connected to one or more strings of parallel solar panels.

Several ASC48-ES chargers, each with its own solar panels, may be operated in parallel.

This solar charger features intelligent digital signal processing for enhanced control, producing peak efficiency in excess of 96% for typical operating loads, while also maintaining a very high minimum operating efficiency of 95 to 96%, over a very wide range of loads (from 30% to 100% of the 2kW capacity).

The ASC48-ES combines with the Eaton SC200 controller to provide a fully managed solution.

Full monitoring includes energy metering and logging on input and output.

The ASC48-ES is fully compatible with existing Eaton 3G systems, such as the APS3 and APS6 systems. The output may be paralleled with one or more APR48-ES rectifiers to produce a versatile power solution for both AC or generator power and solar power.

This makes it an ideal solution for a fully integrated solar / diesel hybrid solution, or an AC powered system with solar added to reduce energy consumption.

Intelligent control in the SC200 allows optimal balance of solar energy and backup fuel.

The solar charger is protected against input over-voltage, surges and over-temperature. It is rated for operation in temperatures at up to 70°C (158°F).

Features

- 2000W output power
- MPPT extracts maximum available energy
- Energy saving efficiency greater than 96%
- Wide efficiency curve
- Industry leading power density
- Fast on-line expansion of rectifiers (hot-swap)
- Simple 'plug and go' insert
- Digital signal processing for enhanced control
- Wide input voltage range
- Wide output voltage range
- Compliant with international standards

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Technical Specifications

Input	
Input voltage range	100 V DC to 300V DC nominal Maximum open circuit voltage 350 V DC Absolute maximum input voltage 350V DC
Optimisation	Maximum power point tracking
Efficiency	>96% peak >95% (30 – 100% output power)

Output	
DC Output Voltage Range	43 – 57.5V
DC Output (maximum)	2000W @ 48V / 185V to 300V input 1150W at 120V input

Parallel operation	
Output	Multiple chargers may be connected in parallel to the DC bus
Input	Not supported (each ASC48-ES must be connected to separate string(s) of solar panels)

Environmental	
Operating Temperature Range	-40°C – +70°C [-40°F – +158°F] Output power derates above 50°C [122°F]
Cooling	Temperature controlled, variable speed, high reliability fan

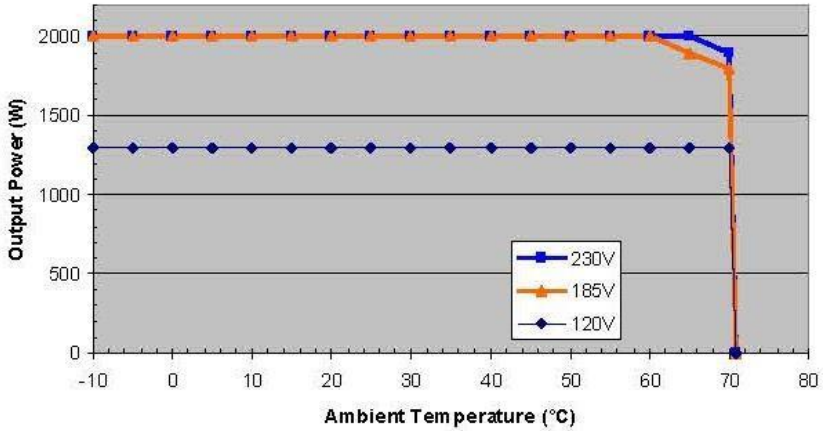
Mechanical	
Dimensions H,W,D	3U: 133mm [5.25"], 42mm [1.65"], 266mm [10.45"] overall
Weight	1.7kg [3.7 lb]

Certifications	
Europe	CE
Australia / New Zealand	RCM

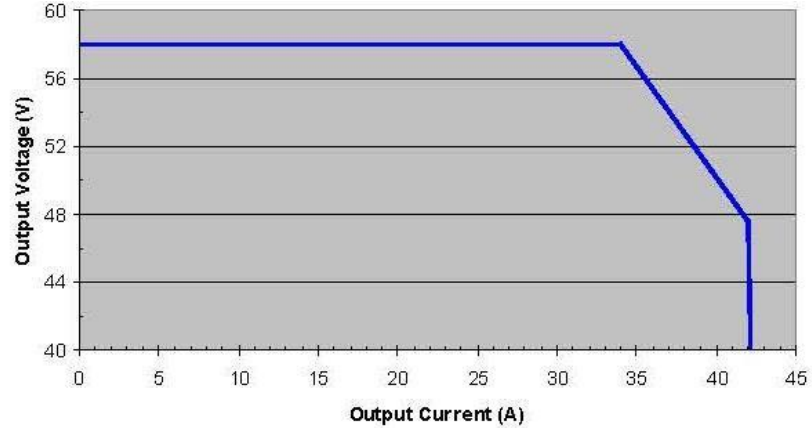
In the interests of continual product improvement all specifications are subject to change without notice. Performance ratings are valid with all other variables at Nominal.

Solar Panel Input

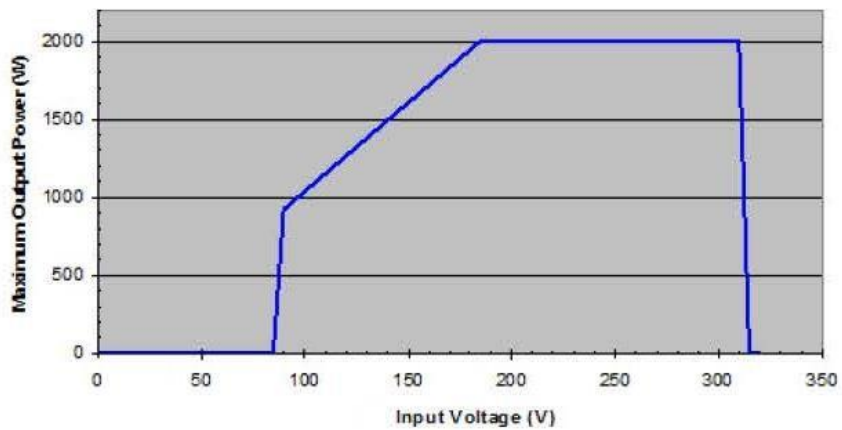
Nominal operating range	100 V DC to 300V DC
Start-up voltage[1]	100V DC
Minimum operating voltage[2]	< 50V DC
Maximum open-circuit voltage	350V DC
Absolute maximum input voltage	350V DC
Maximum Input Current:	11.4A (185V DC, 20°C)
Efficiency:	96.4% peak >95% (20 to 100% load, Vin=230V, Vout=54.5Vdc)
Maximum Power Point Tracking (MPPT)	Matches current draw to panel output for best power transfer
Input protection Swell Tolerance: Surge:	 Controller shuts down above 400V, returns to normal operation when input is within operating range. 6kV surge (varistors, gas arrestor)
Input Over-current Protection:	HRC fuses in positive and negative inputs
Input Fuse Ratings:	16A / 250V
Isolation Input to output Input to ground Output to ground	 4242V DC 2220 V DC (Input varistors disconnected) 1000 V DC



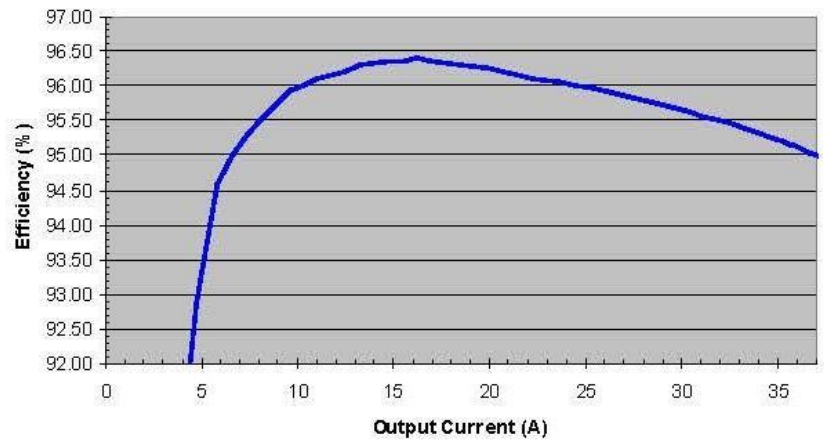
Output Power derating with Temperature and Input Voltage (Vout = 54.5V)



Output Voltage with Output Current (Input >185V, Vout = 48.0V)



Maximum Output Power with Input Voltage (Ambient Temperature ≤ 60°C)



Rectifier Efficiency with Output Current (Ambient Temperature 25°C, Vin = 230V, Vout = 54.5V)

DC Output

Nominal Voltage:	48V
Adjustable Voltage Range:	43 to 57.5V *Constant power output characteristic 48 – 57.5V.* *Load required below 45V.*
Rated Output Power:	2000W @ 185 – 275V (230V nominal) 1150W @ 110 – 120V (120V nominal)
Preset Accuracy	±0.1V
Regulation:	±0.1V *Constant voltage mode, AVC enabled from system controller.*
Default (Fail-safe) voltages Loss of System Communication: Preset voltage:	 Output voltage resets to system preset voltage 54.5 ±0.1V (manufacturer preset)
Hold-up Time:	12ms *At 80% output power and 230V input, the DC output voltage change is 54.5V to 43V.*
Start-up (soft start) Start up delay: Output ramp slope: (rectifier rated output, % Amps per second)	 Adjustable 0 to 600 seconds (factory preset: 2 seconds) Adjustable 1 to 100% per second (factory present 20% per second)
Protection Current Limit: Over Temperature Turndown: Over Voltage Shutdown: Short-circuit:	 41.7A Automatic power turndown. See temperature derating graphs. <3ms delay Full short-circuit protection. Output current limited to less than 130% of rated output current. *Rectifier will continue normal operation after short-circuit is removed.* *Non-urgent (Current Limit) alarm generated.*

Noise	
Ripple (<100Hz)	<20mV rms (unweighted)
Audio Frequency (300 Hz – 3.4 kHz):	<2mV (psophometric)
Wide band (5Hz – 1MHz):	<20mV rms (unweighted)
Peak to peak (0 – 20 MHz):	<200mV p-p (unweighted)
Discrete frequency (3.4kHz – 150kHz):	<5mV rms (1kHz wide selective frequency) *At 25°C, 54.5V output*
Parallel operation (ASC48-ES output only)	
Number of units in parallel	Up to 12 units
Current sharing mode	
With SC200/SC300 controller	Active current sharing managed by controller
Without SC200/SC300	Passive, set buy solar panel and ASC48-ES output characteristics

Environmental Requirements

Ambient Temperature	
Rated Operating Range:	-10°C to +50°C [14°F to 122°F]
Extended Operating Range:	-40°C to +70°C [-40°F to 158°F] *Output characteristics de-rate above 50°C and below -10°C [14°F]. Refer to de-rating graphs.*
Humidity	
Nominal:	50% RH
Range:	< 95% RH (non condensing)
Altitude:	< 3000m [9800 feet]

Mechanical

Dimensions H, W, D:	3U (130mm, 5.1"), 42mm (1.6"), 266mm (10.5") overall
Weight:	1.7kg [3.7 lb]
Connector:	PCB Edge
Rack compatibility	Mounts in modified APS-3G racks[3]
Cooling:	Temperature controlled, variable speed high reliability fan
Front panel LEDs:	
Power on:	Green
Minor alarm:	Amber
Major alarm:	Red

Compliances

Safety:	AS/NZS 60950.1, UL 60950-1, IEC 60950-1
EMC – immunity	
Electrostatic discharge:	EN 61000-4-2
Radiated radio frequency:	EN 61000-4-3
Electrical fast transients:	EN 61000-4-4
Surge:	EN 61000-4-5
Conducted radio frequency:	EN 61000-4-6
Dips, interruptions & variations:	EN 61000-4-11
EMC – emissions	
Conducted emissions (AC):	EN 55022 / CISPR 22 (Class B)
Conducted emissions (DC):	EN 300 386 (Class A)
Radiated emissions:	EN 55022 / CISPR 22 (Class B)
Harmonics:	EN 61000-3-2
Fluctuations and flicker:	EN 61000-3-3

Certifications

Europe	CE-mark
	RCM

APR48-ES Energy Saver Rectifier

The **Eaton® APR48-ES Energy Saver Rectifier** is designed for communications network operators who are striving to cut energy costs across the network, and/or to meet aggressive carbon footprint reduction targets.

Operating with well over 96% efficiency, it produces at least 50% less waste energy than most other modern rectifiers, and with potentially greater savings over older infrastructure.

The 2kW Energy Saver Rectifier is the ideal module size for powering access applications within a telecom network such as cellular base stations, ADSL equipment, and fibre nodes.

This rectifier features intelligent digital signal processing for enhanced control, producing peak efficiency in excess of 96% for typical operating loads, while also maintaining a very high minimum operating efficiency of 95 to 96%, over a very wide range of loads (from 30% to 100% of the 2kW capacity).

The high power density, short depth and flexible mounting options makes the Energy Saver Rectifier well suited to limited space applications such as ETSI and road side cabinets.

The Energy Saver Rectifier is fully compatible with existing Eaton 3G systems and it is one of the easiest rectifiers to use, with a simple plug-and-go insertion. It operates under a wide range of AC power conditions and in temperatures at up to 70°C (158°F).

Features

- 2000W output power
- Energy saving efficiency greater than 96%
- Wide efficiency curve
- Industry leading power density
- Fast on-line expansion of rectifiers (hot-swap)
- Simple 'plug and go' insert
- Unity power factor
- Digital signal processing for enhanced control
- Wide AC supply conditions
- Wide output voltage range
- Constant power output
- Compliance with international standards

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Technical Specifications

Input	
AC Supply	120V/208-240V, 50/60Hz (nominal) 185-275V full output power up to 50°C [122°F] 90-185V reduced output power
Power Factor	>0.99 (50 – 100% output current)
Efficiency	>96% peak >95% (20 – 100% output power)

Output	
DC Output Voltage Range	43 – 57.5V
DC Output (maximum)	2000W @ 48V

Environmental	
Operating Temperature Range	-40°C – +70°C [-40°F – +158°F] Output power derates above 50°C [122°F]
Cooling	Temperature controlled, variable speed, high reliability fan <50dBA ambient temperature 25°C

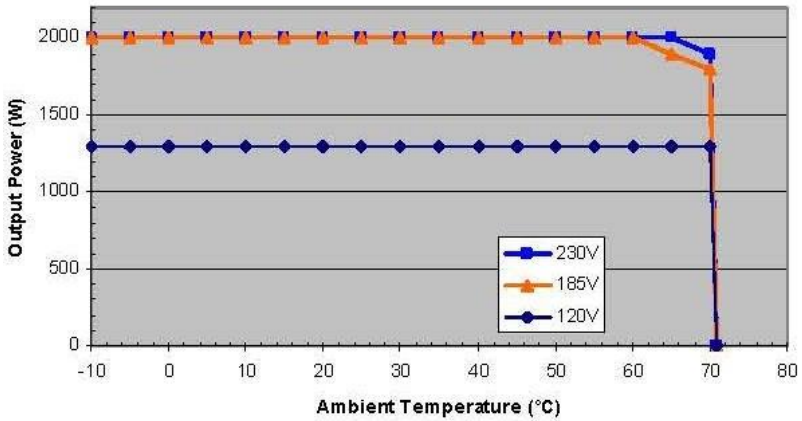
Mechanical	
Dimensions H,W,D	3U: 133mm [5.25"], 42mm [1.65"], 266mm [10.45"] overall
Weight	1.7kg [3.7 lb]

Certifications	
North America	UL, FCC Verification, CSA, IC
Europe	CE

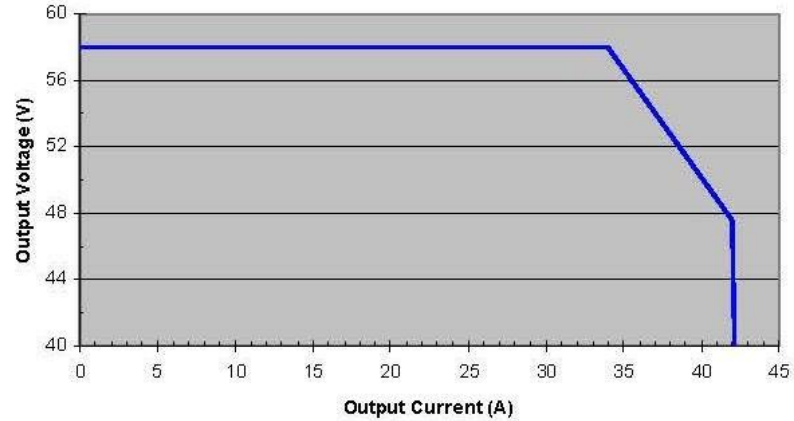
In the interests of continual product improvement all specifications are subject to change without notice. Performance ratings are valid with all other variables at Nominal.

AC Input

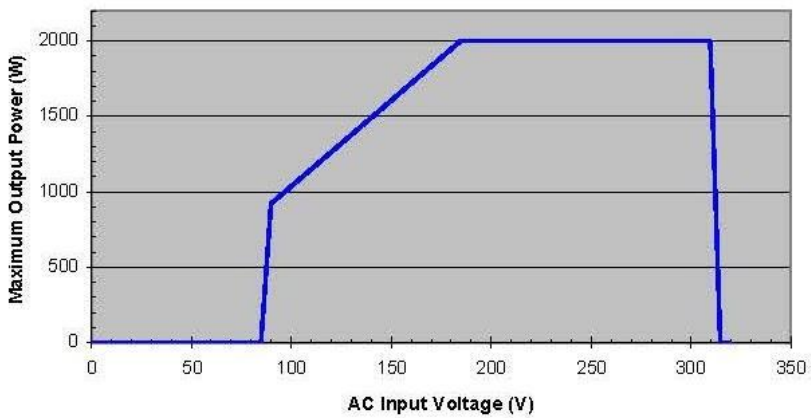
Nominal AC Input:	100V, 120V, 208 - 240V
Rated Operating Range:	100 to 275V rms (see product performance curves).
Extended Operating Range:	90 to 300V rms
Frequency Range:	45 to 66Hz
Maximum Input Current:	11.4A rms (185Vac, 20°C)
Efficiency:	96.4% peak >95% (20 to 100% load, Vin=230Vac, Vout=54.5Vdc)
Power Factor:	>0.99 (50 to 100% load)
Total Harmonic Distortion (THD):	<5% (50 to 100% load, rated 230V ac voltage)
Swell Tolerance:	Rectifier shuts down above 305V *Returns to normal operation when input is within operating range.*
Input Over-current Protection:	Fuses (phase and neutral) HRC
AC Fuse Ratings:	16A / 250V



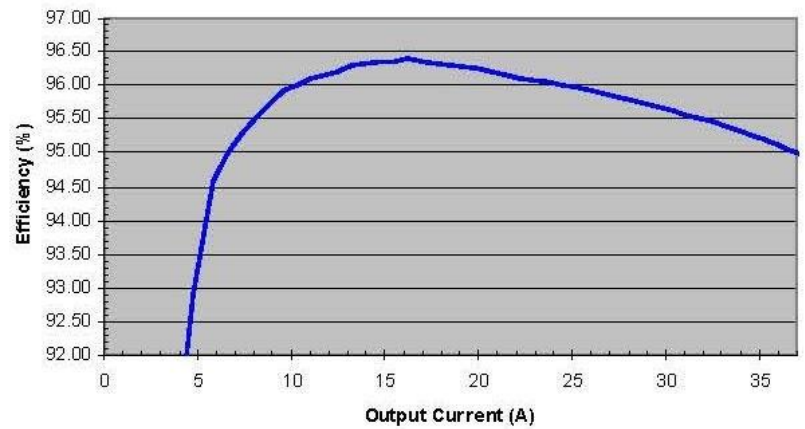
Output Power derating with Temperature and AC Input Voltage (Vout = 54.5V)



Output Voltage with Output Current (AC Input >185V, Vout = 48.0V)



Maximum Output Power with AC Input Voltage (Ambient Temperature ≤ 60°C)



Rectifier Efficiency with Output Current (Ambient Temperature 25°C, Vin = 230V, Vout = 54.5V)

DC Output

Nominal Voltage:	48V
Adjustable Voltage Range:	43 to 57.5V *Constant power output characteristic 48 – 57.5V.*
Rated Output Power:	2000W @ 185 – 275V ac (230V nominal) 1150W @ 110 – 120V ac (120V nominal)
Preset Accuracy	±0.1V
Regulation:	±0.1V *Constant voltage mode, AVC enabled from system controller.*
Default (Fail-safe) voltages Loss of System Communication: Preset voltage:	 Output voltage resets to system preset voltage 54.5 ±0.1V (manufacturer preset)
Hold-up Time:	12ms *At 80% output power and 230V ac the DC output voltage change is 54.5V to 43V.*
Start-up (soft start) Start up delay: Output ramp slope: (rectifier rated output, % Amps per second)	 Adjustable 0 to 600 seconds (factory preset: 2 seconds) Adjustable 1 to 100% per second (factory present 20% per second)
Protection Current Limit: Over Temperature Turndown: Over Voltage Shutdown: Short-circuit:	 Factory set to 41.7A Automatic power turndown. See temperature derating graphs. <3ms delay Full short-circuit protection. Output current limited to less than 130% of rated output current. *Rectifier will continue normal operation after short-circuit is removed. Non-urgent (Current Limit) alarm generated.*

Noise under nominal conditions	
Ripple (<100Hz)	<10mV rms (unweighted)
Audio Frequency (300 Hz – 3.4 kHz):	<2mV (psophometric)
Wide band (5Hz – 1MHz):	<10mV rms (unweighted)
Peak to peak (0 – 20 kHz):	<200mV p-p (unweighted)
Discrete frequency (3.4kHz – 150kHz):	<5mV rms (1kHz wide selective frequency)

Environmental Requirements

Ambient Temperature	
Rated Operating Range:	-10°C to +50°C [14°F to 122°F]
Extended Operating Range:	-40°C to +70°C [-40°F to 158°F] *Output characteristics derate above 50°C and below -10°C [14°F]. Refer to derating graphs.*
Humidity	
Nominal:	50% RH
Range:	< 95% RH (non condensing)
Altitude:	< 3000m [9800']

Mechanical

Dimensions H, W, D:	3U (130mm, 5.1"), 42mm (1.6"), 266mm (10.5") overall
Weight:	1.7kg [3.7 lb]
Connector:	PCB Edge
Cooling:	Temperature controlled, variable speed high reliability fan
Front panel LEDs:	
Power on:	Green
Minor alarm:	Amber
Major alarm:	Red

Compliances

Safety:	AS/NZS 60950.1, UL 60950-1, IEC 60950-1
EMC – immunity	
Electrostatic discharge:	EN 61000-4-2
Radiated radio frequency:	EN 61000-4-3
Electrical fast transients:	EN 61000-4-4
Surge:	EN 61000-4-5
Conducted radio frequency:	EN 61000-4-6
Dips, interruptions & variations:	EN 61000-4-11
EMC – emissions	
Conducted emissions (AC):	EN 55022 / CISPR 22 (Class B)
Conducted emissions (DC):	EN 300 386 (Class A)
Radiated emissions:	EN 55022 / CISPR 22 (Class B)
Harmonics:	EN 61000-3-2
Fluctuations and flicker:	EN 61000-3-3

Certifications

Europe	CE-mark
USA	UL and FCC
Canada	cUL and IC
China	MII
Australia / New Zealand	C-tick

SC300 System Controller

The **Eaton® SC300 System Controller** is an advanced control and monitoring solution for Eaton DC Power Solutions.

The SC300 replaces the SC200 controller, providing higher performance and a range of advanced features, while being fully compatible with existing systems.

It provides a full suite of advanced communications options, including built-in Ethernet interface, Web server, and SNMP agent.

The SV version includes additional RS485 hardware and firmware v1.16 or later for external Lithium battery communications.

Alarm notifications may be by SNMP traps, email, SMS, or relay contact closures.

An intelligent "Smart Alarms" feature provides highly configurable control and alarms to automated site management and improves performance – e.g., disconnect loads during peak AC grid loading, run outdoor cabinets in low noise mode at night, manage cooling, or customise site alarms to network requirements.

The SC300 provides full generator control and fuel metering capability for off-grid, hybrid generator, battery, solar and wind applications.

The SC300 is supplied preconfigured with a default configuration file, or factory customized for a particular application, ensuring fast and problem free installation. On-site changes are easily made from the front panel or with a Windows PC.

The high-resolution colour LCD display is easy to read and has an easy-to-use menu structure.

The SC300 works with separate system I/O boards for powerful and user-friendly interfacing. Easy, low cost I/O expansion is possible by adding additional I/O boards.

Typical Applications:

- 24V & 48V power systems
- Wireless cell sites & switches
- Transmission terminals
- Local & central office switching
- Solar hybrid systems
- Data collection and control (SCADA)

Options:

- Additional I/O boards for system expansion
- SiteSure-3G modules for site management
- FC100 fan controller for outdoor cabinet / shelter cooling control

New Software Features

- 100BaseT Ethernet
- IP version 6
- Meter up to 20 channels of energy and power
- Control ASC48-ES solar charger
- Add, Average and Multiply input values with Smart Analogs
- Outdoor cabinet fan control (with FC100)
- User-configurable data / event log
- Lithium Battery Communications (RS485 Modbus)

Features

- Ethernet interface built-in
- SNMP agent V2c and V3
- Battery mid-point monitoring & discharge time remaining
- Generator control & fuel metering
- Alternative energy input metering
- Comprehensive system control functions
- Complies with international standards
- Setup via web, keypad or DCTools configuration software
- Language options
- Optional extra I/O boards or SiteSure-3G modules for expansion
- Latched or normally-open LVD options
- Smart alarms
- Modbus

Powering Business Worldwide

Technical Specification

With IOBGP

Operation	
Supply Voltage Range	18 to 60Vdc
Operating Range	Standard: -10 to +50°C [14 to 122 °F] Extended: -25 to 70°C [-13 to 158 °F]

Input / Output Standard	
Analog inputs	Current sensor (3), Bus voltage (1), Temperature (2)
Digital inputs	4 Internal (pre-defined) 6 external (user-defined) with IOBGP-00/01 9 external (user-defined) with IOBGP-10/11/20/21
LVD contactor outputs	2 with one IOBGP-00/01/20/21 module 3 with one IOBGP-10/11 module Latched or normally-open contactor options Up to 16 with additional IOBGP modules
Relay outputs	Voltage free, NO-C-NC, 0.1A @ 60VDC Screw-less terminal block, 0.5mm² - 2.0mm² conductors
Number	6 with IOBGP-00 8 with IOBGP-20/21 10 with IOBGP-10/11

Options	
Input / Output	With IOBSS module (SiteSure-3G): Analog inputs: 60 Digital inputs: 108 Digital outputs: 108
Modem communications	GSM modem for SMS alarm notification 3G Router for full wireless communication

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

In the interests of continual product improvement all specifications are subject to change without notice.

RoHS COMPLIANT

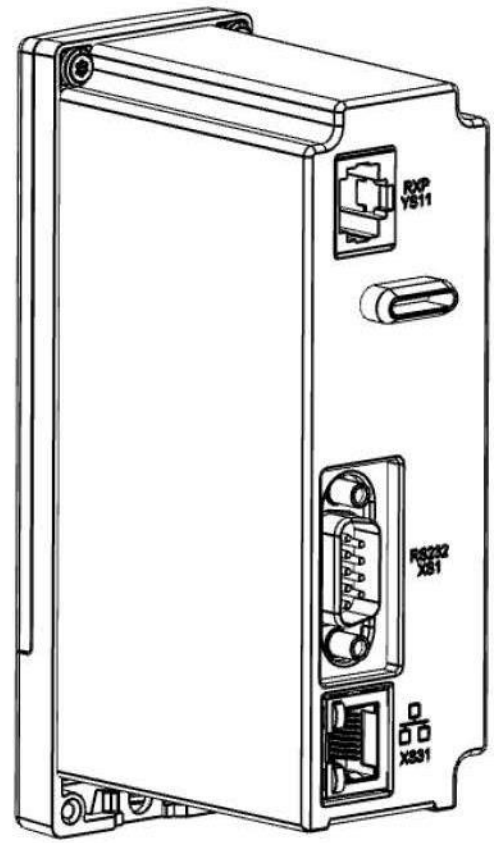
Communications

Interfaces	
Physical	Rear: XS31 RJ45 (Ethernet 100BaseT), YS11 RJ45 (RS-485 RXP Control), XS1 DB9 (RS-232, RS-485), Front: Micro USB (type AB)
Software	IPV4, IPV6, http, https (secure web), S3P, Modbus, SMTP (email), SNMP V2c, V3 DHCP and Auto IP
Management software	Web server PowerManagerII remote management software. SNMP version V2c or V3. Supports standard Network Management System software. Modbus-TCP and Modbus-RTU. Supports standard BMS software.

User Interface	
Display	Back-lit color dot matrix LCD 160 x 128 pixel Adjustable viewing angle
Keypad	6 keys
Language Option	Default: English Option: German Other language software upgrades by arrangement.
Indicators	Power on, Critical/Major alarm, Minor alarm

Mechanical	
Dimensions H,W,D	SC300: 133.5mm (3U), 44.5mm, 70mm IOBGP: 106mm, 175mm, 18mm
Mounting	SC300: rectifier slot or flush panel mount Orientation: vertical or horizontal IOBGP: panel mount

Datalogging	
Maximum size	
Event log	10,000 records
Data Log	10,000 records
Energy Log	10,000 records



Rear View

IOBGP System I/O Board

Contents

Technical Data

Issue F November 2009

IOBGP System I/O Board

These specifications apply to a single IOBGP module controlled by an SC100 or SC200 system controller, unless otherwise stated.

System Configuration

System Controller:	SC100 or SC200
Location:	Within the DC power system

Mechanical

Dimensions H, W, D:	106mm [4.17"], 175mm[6.89"], 20mm [0.79"]
Weight: Mounting:	140g [5 oz] Panel mount

Environmental Requirements

Ambient Temperature:	-10°C to +80°C [14°F to 176°F] *Reduced accuracy above +70°C [158°F]*
Storage Temperature: Humidity: Altitude:	-40°C to +85°C [-40°F to 185°F] <95% RH (non-condensing) <3000m (9800 feet)

DC Input ⎓

Rated Voltage:	24V - 48V nominal; 0.4A - 0.2A *From an earthed SELV non-polar power source.*
Operational Range: Power input connector:	19 - 60V RJ-45 (part of RXP bus)
Earthing:	Class II ⧈
Fault Protection (external):	Over-current protection of the 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.

Indicators

OK LED (green):	Indicates the IOBGP's status
LVD contactor 1 indicator (green):	Indicates LVD contactor 1 status
LVD2 contactor indicator (green):	Indicates LVD contactor 2 status

Communications

RXP bus	
Interface:	RS-485
Connector:	RJ-45
Protocol:	RXP (Rack Extended Protocol)

Inputs

Bus Voltage	
Number:	1
Range:	-60V to +60V
Resolution:	30mV
Accuracy:	±0.5% at 25°C [77°F], ±1% over rated temperature range
Current Sensor/Shunt	
Number:	3
Range:	–50 to +50mV
Resolution:	<50µV
Accuracy:	±0.5% at 25°C [77°F], ±1% over rated temperature range
Temperature	
Number:	2
Range:	2.53V to 3.23V (-20 to +70°C)
Resolution:	<0.01V (<1°C [1.8°F])
Accuracy:	±1°C [1.8°F] at 25°C [77°F], ±2°C [3.6°F] over rated temperature range
Battery mid-point monitoring	
Number of strings:	4
Range:	–35 to +35V
Resolution:	<30mV
Accuracy:	±0.5% at 25°C [77°F], ±1% over rated temperature range
User Digital Inputs	
Number:	6
Connectors:	Screwless terminal blocks
Wire size:	0.5 - 2.0mm^2 [20 - 14 AWG]
Input Types:	Voltage-free switch or relay contacts only
Input Range:	Live Bus to Live Bus + 5V
Input Common:	Same bus as used for current shunts (Live bus is standard)
Input Protection:	Protected against damage from short circuit to live or common bus
System digital inputs:	MOV Fail, Fan Fail, Load Fuse Fail, Battery Fuse Fail

Outputs

Relay Outputs	
Quantity:	6 configurable including 1 also used for Monitor OK
Type:	Voltage free, NO-C-NC, 0.3A at 60V DC/1A at 30V DC
Connections:	Screwless terminal blocks
Wire size:	0.5 - 2.0mm^2 [20 - 14 AWG]

Low Voltage Disconnect (LVD) Control Functions

Number of LVD contactors supported:	2
LVD Contactor Type	
SC200 systems:	Normally Open (NO) with auxiliary contacts only
SC100 (Version 2.0 or later) systems:	Normally Open (NO) or Normally Closed (NC), with or without auxiliary contacts
LVD Contactor Coil Ratings	
Nominal Voltage (with auxiliary contacts fitted):	24V (nom) dc power systems: 12V / 24V* 48V (nom) dc power systems: 12V / 24V / 48V*
Nominal Voltage (without auxiliary contacts):	24V (nom) dc power systems: 24V 48V (nom) dc power systems: 48V
Maximum Hold-in Current:	1.2A
	**Applies to SC200 systems, and SC100 systems with auxiliary contacts fitted. The SC100 or SC200 uses LVD Characterization to determine the optimum LVD coil drive voltages.*
LVD power feed input:	Required only if LVDs fitted
LVD power feed type:	Live bus/Common bus connections
LVD operated input:	From contactor auxiliary switch (if fitted)

Compliances

Safety:	EN 60950-1, AS/NZS 3260.1, UL 60950-1
EMC – immunity	
Electrostatic discharge:	EN 61000-4-2
Radiated radio frequency:	EN 61000-4-3
Electrical fast transients:	EN 61000-4-4
Surge:	EN 61000-4-5
Conducted radio frequency:	EN 61000-4-6
EMC – emissions	
Radiated emissions:	EN 55022, CISPR 22
Environmental:	RoHS and WEEE Directives

Certifications

Europe:	CE-mark
North America:	FCC Verification, IC, UL (pending)
Australia/New Zealand:	C-tick

OBJETIVOS

1. Control y gestión.
2. Automatización remota (Grupo electrógeno: ON/OFF).
3. Ahorro de combustible D2.
4. Seguridad del personal O&M, en atención a los problemas.

RECOMENDACIONES

1. Visita a la estación de Nueva Fortuna (Estación mas accesible).
2. Información del site layout.
3. Información del floor layout.
4. Visita con personal FLM, para levantamiento de información técnica (Consumo de los equipos de radio microondas, deshidratador, etc.)