Computing Platform
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SMP™ SC-2200

Contents

Powering Business Worldwide

Description

Powerful. Reliable. Scalable. The SMP™ SC-2200 computer is designed for mission-critical applications in harsh environments. Eaton has leveraged the same expertise and high industry standards used to develop our SMP™ Gateway product line to offer a fanless substation platform with hot-swappable dual-power supplies and no moving parts.

The SMP SC-2200 is based on the recent Intel® Xeon® multicore processor and supports up to 32 GB of error-correcting code (ECC) embedded memory to optimize virtual applications. Solid-state drives (SSD) with flexible RAID configurations enable fast data access and improve data integrity. The SMP SC-2200 is the only rugged platform in the industry to provide USB 3.0 interfaces for fast data transfer.

The modular architecture of the SMP SC-2200 makes it a highly scalable platform, suitable for handling various requirements. The use of a COM Express® CPU aligns with the Intel® product roadmap to support increasing technical demands. Using a PCIe expansion module, the SMP SC-2200 is field-upgradable and can be easily adapted to your specific applications.

Basic platform features

- 5th Generation Intel® Core™ processor Xeon E3-1505L v5 Quad Core (for server applications, perfect to run high-performance virtual applications)
- Up to 32 GB DDR4 RAM with ECC support
- Two (2) built-in SSD slim SATA bays supporting up to 256 GB each (SLC and iMLC)
- Dual hot-swappable AC/DC power supplies
- One (1) high-definition DVI-I display interface
- IRIG-B input and output (demodulated)
- Two (2) programmable output relays
- Two (2) 10/100/1000 BASE-T Ethernet ports
- One (1) serial port (RS-232)
- Two (2) front-facing USB 3.0 ports
- Two (2) rear-facing USB 2.0 ports

Key features

- Watchdog improves reliability of all applications operating on the SMP SC-2200 platform by rebooting automatically in case of computer malfunction
- High-accuracy real-time clock (with battery backup)
- Two (2) alarm contact relays managed by software drivers
- Substation-grade compliant for operations in harsh environments:
  - IEC 61850-3 ed2.0
  - IEEE1613:2009/AMD2011 + IEEE1613.1:2013
  - IEC 60255-1:2009
- Flexible RAID 0,1, 5, and 10 hardware and software capabilities
- Custom-length shielded cables available

Platform options

- 6th Generation Intel® Core™ processor i3-6100E Dual Core 2.7 GHz for IoT and industrial automation applications
- Flexible range of RAM and internal storage
- Up to 2.5 TB in data storage through our fully-qualified SSD drive offer (SLC, iMLC and MLC)
- Microsoft Windows® 10 or Microsoft Windows Server 2012 R2® operating systems
- Satellite-synchronized (GNSS) clock with GPS and/or GLONASS constellations (hardware-ready)
- Up to four (4) expansion modules:
  - 10/100/1000BASE-T or 100BASE-FX Ethernet module
  - Advanced Ethernet module 100/1000BASE-T with hardware-ready PRP/HSR/PTP and IEEE Std 1588™-2008 for Precision Time Protocol
  - PC module for computer inputs and outputs
  - PCIe x4 lane adaptor expansion module for user applications and to allow the use an additionnal PCIe card for two additionnal display screens, for a total of 5 independent screens on the SMP SC-2200.
  - 2.5" SSD/HDD drive bays storage module with RAID hardware and software support (for SSD or Industrial HDD)

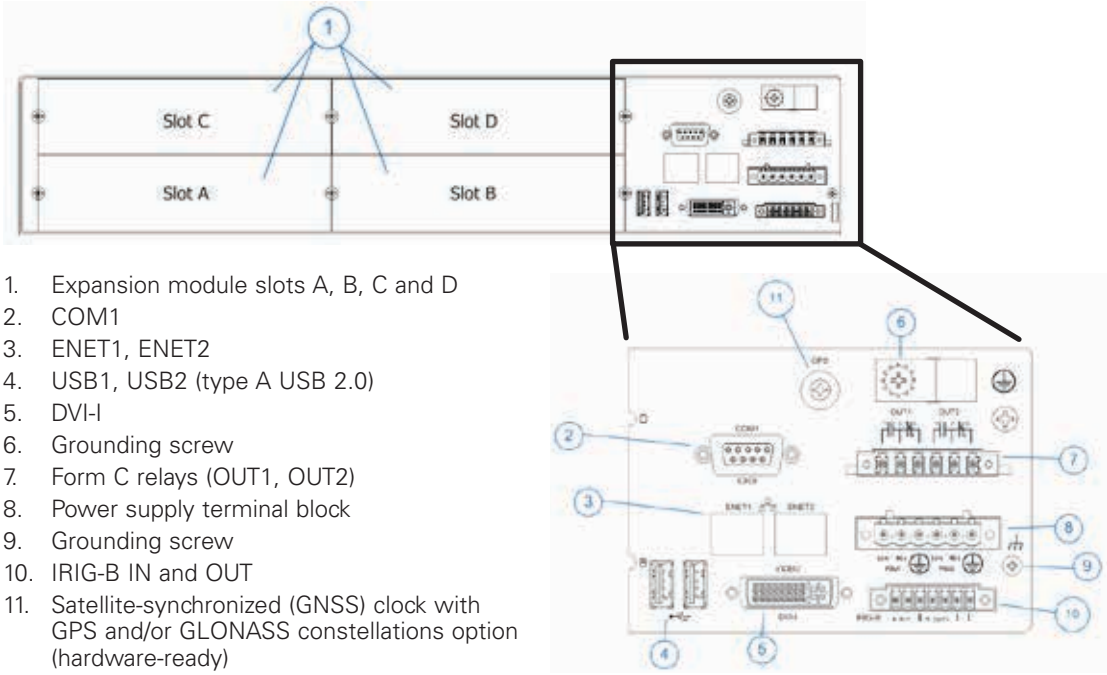
Figure 1. SMP SC-2200 platform - front panel

Figure 2. SMP SC-2200 platform - rear panel (with Ethernet, Drive Bays, PCIe adaptor, and PC modules)

Configuration overview

This section presents the expansion modules configurations that are available for the SMP SC-2200.

Refer to Figure 3 for expansion modules' slot locations. Table 1 shows expansion modules availability for each slot.



1. Expansion module slots A, B, C and D
2. COM1
3. ENET1, ENET2
4. USB1, USB2 (type A USB 2.0)
5. DVI-I
6. Grounding screw
7. Form C relays (OUT1, OUT2)
8. Power supply terminal block
9. Grounding screw
10. IRIG-B IN and OUT
11. Satellite-synchronized (GNSS) clock with GPS and/or GLONASS constellations option (hardware-ready)

Figure 3. SMP SC-2200 base unit ports

Table 1. Expansion Modules for the SMP SC-2200

Module	PC Module	Ethernet Module (CU, ST, or LC)	Advanced Ethernet Module (PRP/HSR/PTP) (CU, ST, or LC)	2.5" Drive Bays Module SSD/HDD (RAID Support) Module	PCIe x4 Adaptor Expansion Module*	GNSS
Slot A	No	No	No	Yes	No	No
Slot B	Yes	No	No	No	No	No
Slot C	No	Yes	HR	No	Yes**	No
Slot D	No	Yes	HR	No	Yes	No
Internal	No	No	No	No	No	HR

No: Not Supported

HR: Hardware Ready, call Eaton for more details

Yes: Available as an option with product

* Full length form factor is not supported.
** Yes only if a PCIe x4 lanes adaptor module is installed in slot D. Half length form factor is not supported in slot C.

SMP SC-2200 specifications

Table 2. General Specifications

Dimensions	Rack unit: 2U 3.3 in. H x 19 in. W x 12.875 in. L 84 mm H x 482 mm W x 327 mm L (14 to 18 lbs max)	
Degrees of Protection Provided by Enclosure	IEC 60529: IP30	
Warranty	10-year limited	
Operating Temperature	With i3-6100E CPU: -40° C to 85° C (-40° F to 185° F) With E3-1505L CPU: -40° C to 85° C (-40° F to 185° F)	Safety marking and normal operating temperature are based on temperature derating (see Table 16. Temperature Derating per Power Consumption Range).
Storage Temperature	-40° C to 85° C (-40° F to 185° F)	
Humidity	5 to 95%, non-condensing	
MTBF	> 100 years	The MTBF value is obtained from the ratio of the number of devices in operation over the actual number of failures observed on devices of the same SMP family.
Maximum Altitude	2000 m	
Internal Temperature Sensor	High-temperature alarm	
Internal Battery	Lifetime: > 20 years	

Table 3. CPU

Processor	Intel® Xeon® Processor E3 v5: E3-1505L Quad Core 2.0 GHz base, 2.8 GHz Turbo # of Threads: 8 Cache: 8 MB L2 SmartCache or 6th Generation Intel® Core i3 Processors: i3-6100E Dual Core 2.7 GHz # of Threads: 4 Cache: 3 MB L2 SmartCache	Intel® Hyper-Threading Technology (Intel® HT Technology) delivers two processing threads per physical core. Highly-threaded applications can get more work done in parallel, completing tasks sooner.
Operating System	Orderable as a factory-installed option: Microsoft® Windows® 10 64-bit Microsoft Windows Server® 2012 R2 64-bit Drivers are supported for the following OS: Microsoft® Windows® 7	Other OS options can be supported; call Eaton for information: VMware® ESXi™ 6.x Microsoft Windows 8/8.1 Microsoft Windows Server® 2008 R2 Linux
Trusted Platform Module	Integrated TPM 1.2	

Table 4. Memory

RAM	8 GB (2x 4 GB) DDR4 ECC SODIMM 2400 MHz for the Intel i3 CPU 16 GB (2x 8 GB) DDR4 ECC SODIMM 2400 MHz for the Intel Xeon CPU 32 GB (2x 16 GB) DDR4 ECC SODIMM 2400 MHz for the Intel Xeon CPU

Basic Internal Storage (1x Slim SATA) and Expansion Internal Storage (1x Slim SATA)	32 GB Solid-State Drive SLC Slim SATA, industrial grade 64 GB Solid-State Drive SLC Slim SATA, industrial grade 128 GB Solid-State Drive SLC Slim SATA, industrial grade 256 GB Solid-State Drive SLC Slim SATA, industrial grade 60 GB Solid-State Drive iMLC Slim SATA, industrial grade 120 GB Solid-State Drive iMLC Slim SATA, industrial grade 240 GB Solid-State Drive iMLC Slim SATA, industrial grade	For OS, application, and user data
Additional External Storage Disks (4 X 2.5" Drive Bays Expansion Module)	64 GB Solid-State Drive SLC 2.5", industrial grade 128 GB Solid-State Drive SLC 2.5", industrial grade 256 GB Solid-State Drive SLC 2.5", industrial grade 120 GB Solid-State Drive iMLC 2.5", industrial grade 240 GB Solid-State Drive iMLC 2.5", industrial grade 480 GB Solid-State Drive iMLC 2.5", industrial grade 120 GB Solid-State Drive MLC 2.5", industrial grade 240 GB Solid-State Drive MLC 2.5", industrial grade 480 GB Solid-State Drive MLC 2.5", industrial grade	For user data or others Hot-swap support

Table 5 shows the minimum basic internal storage requirement recommended for the operating system.

Table 5. Minimum Basic Internal Storage Requirements

Operating System	Minimum Storage
Microsoft® Windows® 7 64-bit	32 GB
Microsoft Windows® 10	64 GB
Microsoft Windows Server® 2012 R2	128 GB
Linux	16 GB
VMware® ESXi™ 6.x	16 GB

Table 6. Dual Power Supplies

High Voltage		
AC nominal supply voltage DC nominal supply voltage Input voltage range Frequency range Inrush current Power consumption	100, 110, 115, 120, 230, 240 VAC 110, 125, 220, 250 VDC 88-264 VAC / 85-300 VDC 50/60 Hz 80 A at 120 VAC (t=1.5 ms) 160 A at 240 VAC (t=1.5 ms) 60 A at 125 VDC (t=1.5 ms) 35 W to 105 W	Independent Power Supplies (No load balancing) Two operating mode settings: 1) Main – Backup (default mode) Backup health verified every 24 hours, two minutes operation. 2) Alternate (switchover every 10 days)

Table 7. Base Unit Communication Ports

2 Ethernet Ports	10/100/1000BASE-T	RJ-45 connectors
1 Serial Port	For touchscreen connectivity or RS-232 communications Common mode TVS protection	DB9 connector Data rate up to 115200 bps 91 A 8/20 µs
2 USB 2.0 Ports	2 host ports for touchscreen / mouse / keyboard, external memory disk	Type A connector (2 rear panel)
2 USB 3.0 Ports	2 host ports for touchscreen / mouse / keyboard, external memory disk	Type A connector (2 front panel)

Table 8. Base Unit Time Synchronization

Demodulated IRIG-B Input/Output	Via terminal block (back panel)	Isolated
	2 V high-level detection,	Current sink at 5 V IRIG-B; 5 mA
	V_{in} max up to 12 VDC, Opto-isolated	Current sink at 10 V IRIG-B; 14 mA
	IEEE 1344,	Input impedance = 850-1000 Ω
	Differential mode TVS protection	91 A 8/20 µs

Table 9. Base Unit Video (display)

DVI / VGA Port	DVI-I connector (digital + VGA)	VGA requires DVI-I to VGA adapter
	Resolution 1920 x 1200 @ 60 Hz	Functional maximum cable length: 10 m
	Intel® Gen9 HD Graphics Engine	Note : Additional DVI-D port with PC module and the addition of a PCIe card in the adaptor module can bring the total number of independent screens to five.

Table 10. Base Unit Output Relays

2 Form C Relays	Normally open and normally closed contacts Two relays are available for system applications	Resistive load : 12 VDC 6 A maximum 24 VDC 5 A maximum 48 VDC 1 A maximum* 125 VDC 400 mA maximum* 250 VDC 300 mA maximum* 100/110/115/120/230/240 VAC 3 A maximum Inductive load (PF = 0.4) : 3 A 250 VAC inductive Operate time 10msec maximum Release time 5msec maximum Mechanical durability 20 M no load operations 2500 VAC Dielectric, Dry contacts protected by MOV 125J

* Safety marking not applicable if more than 30 VDC.

Table 11. Expansion Modules

Metallic Ethernet	4 ports 10/100/1000BASE-T	RJ45 connectors
Fiber Optic Ethernet (ST)	4 ports 100BASE-FX Multimode 1300 nm	ST connectors Class 1 laser product
Fiber Optic Ethernet (LC)	4 ports 100BASE-FX Multimode 1300 nm	LC connectors Class 1 laser product
Metallic Advanced Ethernet * **(PRP/HSR/PTP)**	Hardware Ready 4 ports 100/1000BASE-T IEEE Std 1588™-2008 standard	RJ45 connectors
Fiber Optic Advanced Ethernet*, ST (PRP/HSR/PTP)	Hardware Ready 4 ports 100BASE-FX Multimode 1300 nm IEEE Std 1588™-2008 standard	ST connectors Class 1 laser product
Fiber Optic Advanced Ethernet*, LC (PRP/HSR/PTP) * Hardware Ready.	Hardware Ready 4 ports 100BASE-FX Multimode 1300 nm IEEE Std 1588™-2008 standard	LC connectors Class 1 laser product

PC	2 USB 2.0 ports 1 DVI-D connector 1 Ethernet port 10/100/1000BASE-T with OOB support (supported on Xeon CPU only) 1 line input 1 line/headphone output 1 microphone input Common mode TVS protection	Type A connector Digital only, resolution 1920 x 1200 @ 60 Hz RJ45 connector Out-of-band management with Intel AMT 3 analog 3.5-mm jacks Maximum cable length: 10m
Storage (2.5" Drive Bays)	4 X 2.5" drive bays for Solid-State Drives (SSD) or Hard-Disk Drives (HDD) RAID software level 0, 1, 5, & 10 RAID hardware level 0, 1, & 10 Hot-swap support SATA II 3.0 Gb/s	
PCIe	PCIe x4 lanes adaptor	

Table 12. Certification and Standard Compliancy

CB Scheme Test Report	IEC 61010-1 (2010)	
cTUVus Marking	CAN/CSA-C22.2 No 61010-1: 2012/U2: 2016-04 UL 61010-1:2012/R:2016-04	
RoHS	2002/95/EC	
REACH	Regulation (EC) No 1907/2006	
ISO: Equipment is designed and manufactured using ISO 9001 certified quality program		ISO 9001:2008 certificate of conformance was awarded by an independent certification authority. The corresponding certificate, quality manual, and quality policy are available on demand.
CE Marking	2006/95/EC Low Voltage Directive 2004/108/CE EMC Directive 2006/1907(EC) (REACH) 2011/65/EU (ROHS)	
Substation Grade	IEC 61850-3 ed2.0(2013)	EMC: Class 2 Location: G, H, P Signal connections: I, f, p, h Mechanical: Class 2 Class 2 on all ports (error free), Profil 2
	IEEE Std 1613™-2009 IEEE Std 1613a™-2011 IEEE Std 1613.1™-2013	Class 2 on all ports (error free) Profil 2 Zone A & B
	IEC 60255-1 ed1.0(2009)	Zone A & B

Substation grade compliancy notes

Table 13. Compliancy Notes

Compliancy Element	Notes
IEC 61850-3 ed2.0 2013	The SMP SC-2200 is a communication device designed to achieve high-immunity requirements in power stations to provide local, field, and high-voltage signal port connections. It can be installed in low-, medium-, and high-voltage substations, in any weather-protected unconditioned environment. It meets or surpasses IEC 61850-3 following classes: Climatic: Class C3 (3K7), Mechanical: Class Cm (3M6), Seismic: Class S3. The SMP SC-2200 compliance with the IEC 61850-3 standard Class 1 was validated by an independent certified testing laboratory. The compliance test reports are available on demand.
IEEE Std 1613™-2009 IEEE Std 1613a™-2011 IEEE Std 1613.1™-2013	The SMP SC-2200 meets or surpasses IEEE Std 1613 requirements as a Class 1 networking device. The SMP SC-2200 compliance with the IEEE 1613 standard was validated by an independent certified testing laboratory. The compliance test reports are available on demand.
IEC 60255-1 2009	The SMP SC-2200 meets or surpasses the IEC 60255-1 requirements. The SMP SC-2200 can operate in both electrical environmental levels: Zone A & Zone B per IEC 60255-26:2013. The compliance test reports are available on demand.
CB Scheme	The CB Scheme is an international program created by the IECEE for the acceptance of product safety test results among participating laboratories and certification organizations around the world. The SMP SC-2200 CB Scheme compliance was validated by an independent certified testing laboratory. The certification reports will be available on demand.
cTUVus	The SMP SC-2200 is cTUVus marked. It ensures the end user that the SMP SC-2200 is safe. The SMP SC-2200 cTUVus certification was validated by an independent certified testing laboratory. The marking reports are available on demand.

Type test details

Table 14 presents all tests that were conducted on the SMP SC-2200 platform.

Table 14. Type Tests

Communication Profile	Profile 2 (IEC), Profile 3 (IEEE)	Heavy load on all communication ports .
IEC 61850-3 ed2.0 (2013)		
Electromagnetic Compatibility (EMC)		
Conducted Emissions	CISPR32(2015) FCC part 15 (2016) subpart B ICES-003 (2016)	Class A 150kHz-30MHz
Radiated Emissions	CISPR32(2015) FCC part 15 (2016) subpart B ICES-003 (2016)	Class A 30 MHz-6 GHz 30 Mhz-6 GHz
Harmonic Current Emission Limits	EN61000-3-2 (2014)	Class A
Voltage Fluctuations and Flicker Limitations	EN61000-3-3 (2013)	Observation period for Pst: 10 min Observation period for Plt: 120 min
Electrostatic Discharge Immunity	IEC 61000-4-2 (2008)	Contact: ±6 kV: Air: ±8 kV
Radiated Electromagnetic Field Immunity	IEC 61000-4-3 (2006) A1 (2008) A2 (2010)	Frequency sweep 80 MHz-1 GHz : 20 V/m + 1kHz 80% AM 1 GHz-3 GHz : 10 V/m + 1kHz 80% AM
Electrical Fast Transient Immunity	IEC 61000-4-4 (2012)	Power: ±4kV / 5kHz I/O Ports: ±4kV / 5kHz Communication Ports: ±4kV / 5kHz
Surge Immunity	IEC 61000-4-5 (2014)	Power: ±4kV L-PE / ±2kV L-L I/O Ports: ±4kV Communication Ports: ±4kV
Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields	IEC 61000-4-6 (2013)	Power: 10 Vrms I/O Ports: 10 Vrms Communication Ports: 10 Vrms
Power Frequency Magnetic Field Immunity	IEC 61000-4-8 (2009)	Continuous field: 100 A/m / 50 Hz & 60 Hz Short duration field: 1000 A/m / 50 Hz & 60 Hz
Damped Oscillatory Magnetic Field Immunity	IEC 61000-4-10 (1993) A1 (2000)	Field strenght: 100 A/m Oscillation frequency: 100 kHz & 1 MHz
Voltage Dips, Short Interruptions, and Voltage Variation Immunity on AC Input	IEC 61000-4-11 (2004)	Voltage dips: 0%Un: 0.5 to 25 cycles 0%Un / 5 cycle 40%Un / 10 cycles (at 50Hz) 40%Un / 12 cycles (at 60Hz) 70%Un / 1 cycles 70%Un / 25 cycles (at 50Hz) 70%Un / 30 cycles (at 60Hz) Short interruptions: 0%Un during 250 cycles (at 50Hz) 0%Un during 300 cycles (at 60Hz)
Conducted Common Mode Disturbances in the Frequency Range 0 Hz - 150 kHz	IEC 61000-4-16 (2015)	Continuous: 30Vrms / 60Hz / 50Hz Short duration: 300Vrms / 60Hz / 50Hz Variation 15Hz-150kHz: level 4

Table 14. Type Tests (continued)

Ripple on DC Input Power Port Immunity	IEC 61000-4-17 (1999) A1 (2002) A2 (2009)	% of nominal DC voltage: 15% Test duration: 10 min
Damped Oscillatory Wave Immunity	IEC 61000-4-18 (2006) A1 (2010)	2.5kV common mode 1kV differential mode Oscillation Frequency: 1MHz
Voltage Dips, Short Interruptions, and Voltage Variation on DC Power Port Immunity	IEC 61000-4-29 (2000)	Voltage dips: 40% Un during 100 ms* 70% Un during 100 ms* Short interruptions: 0% during 50 ms* * Exception for 24-60 VDC Power Supply operating at 24 VDC
Climatic Environment Conditions		
Dry Heat **Operational & Storage**	IEC 60068-2-2 (2007) Test Be, Bd, Bb	Be 85 °C, 16 h Operational Bd 55 °C, 16 h Operational Bb 85 °C, 16 h Storage 5 warm boots
Cold **Operational & Storage**	IEC 60068-2-1 (2007) Test Ad, Ab	Ae -40 °C, 16 h Operational Ab -40 °C, 16 h Storage 5 cold boots
Damp Heat, Steady State	IEC 60068-2-78 (2012) Test Cab	40 °C, 93%, 10 days
Damp Heat, Cyclic	IEC 60068-2-30 (2012) Test Db	40 °C, 6 cycles (12 Hr + 12 Hr) Lower temp 25 °C, 97% RH Upper temp 55 °C, 93% RH
Change of Temperature	IEC 60068-2-14 (2009) Test Nb	-40 °C +55 °C, 5 cycles, 1 °C/min, t^1=3 h
Mechanical Environmental Conditions		
Sinusoidal Vibration - Endurance & Response	IEC 60255-21-1 (1988)	20 cycles, 2 g, 10-150 Hz, 3 axes
Shock–Bump	IEC 60255-21-2 (1988)	Semi-sinusoidal 300 m/s2 , 6 ms, Shocks by direction: 3, 3 axes
Sinusoidal Vibration - Seismic	IEC 60255-21-3 (1993)	Class 2, method A X = 7.5 mm (2g) Y = 3.5 mm (1g)
Safety		
Product Safety Requirements	IEC 61850-3 (2013): IEC 60255-27 (2013) IEC 69529 (2013) IEC 61180-1 (1992) IEC 60664-1 (2007) IEC 60695-11-10 (2013)	The product SMP SC-2200 is certified cTUVus on IEC 61010-1 for the safety requirement
IEEE 1613 (2009) + AMD (2011) + IEEE 1613.1 (2013)		
Electromagnetic Compatibility (EMC)		
Electrostatic Discharge Immunity	C37.90.3 (2001)	Contact: ±8 kV Air: ±15 kV

Table 14. Type Tests (continued)

Radiated Electromagnetic Field Immunity	C37.90.2 (2004)	Frequency sweep 80MHz-1GHz: 20V/m 1GHz-3GHz: 10V/m Spot frequencies : 80MHz, 160MHz, 450MHz, 900MHz 20V/m (AM) Spot frequencies : 900MHz 20V/m (PM) Spot frequencies : 900MHz, 1.6GHz & 3.8GHz 10V/m (AM) Spot frequencies: 1.732GHz, 1.8GHz, 2.31GHz, 2.45GHz, 5.8GHz 8.5V/m (PM)
SWC: Fast Transient waveform	C37.90.1 (2002)	Power: ±4kV / 5kHz I/O Ports: ±4kV / 5kHz Communication Ports: ±4kV / 5kHz
SWC: Oscillatory Waveform	C37.90.1 (2002)	2.5 kV CM /2.5 kV DM Oscillation frequency: 1 MHz
Surge Immunity	IEC 61000-4-5 (2014)	Power: ±4kV L-PE / ±2kV L-L I/O Ports: ±4kV Communication Ports: ±4kV
Conducted Immunity	IEC 61000-4-6 (2013)	Power: 10 V I/O Ports: 10 V Communication Ports: 10 V_{rms}
Power Frequency Magnetic Field Immunity	IEC 61000-4-8 (2009)	Continuous field: 100 A/m / 50 Hz & 60 Hz Short duration field: 1000 A/m / 50 Hz & 60 Hz
Damped Oscillatory Magnetic Field Immunity Test	IEC 61000-4-10 (1993) A1 (2000)	Field Strength: 100 A/m Oscillation Frequency: 100 kHz & 1 MHz
Conducted Common Mode Disturbances in the Frequency Range 0Hz-150kHz	IEC 61000-4-16 (2015)	Continuous: 30 Vrms / 60Hz / 50Hz Short duration: 300 Vrms / 60Hz / 50Hz Variation 15 Hz-150 kHz: level 4
Impulse Voltage Withstand Test	C37.90 (2007)	all ports: ±5 kV Ethernet: ±2.5 kV
Dielectric Test	C37.90 (2007)	24-60 VDC Supply @1000 VDC 100-240 VAC/110-250 VDC Supply @2000 VAC Output relays @2500VAC Demodulated IRIG-B IN@2000VAC RJ45 Ethernet @1500 VAC Modulated IRIG-B IN @2000 VAC
Climatic Environment Conditions		
Dry Heat **Operational & Storage**	IEC 60068-2-2 (2007) Test Be, Bd, Bb	Be 85 °C, 16 h Operational Bd 55 °C, 16 h Operational Bb 85 °C, 16 h Storage 5 warm boots
Cold **Operational & Storage**	IEC 60068-2-1 (2007) Test Ad, Ab	Ad -40 °C, 16 h Operational Ab -40 °C, 16 h Storage 5 cold boots
Damp Heat, Steady State	IEC 60068-2-78 (2012) Test Cab	40° C, 93%, 10 days
Damp Heat, Cyclic	IEC 60068-2-30 (2005) Test Db	40° C, 6 cycles (12 Hr + 12 Hr) Lower temp 25° C, 97% RH Upper temp 55° C, 93% RH

Table 14. Type Tests (continued)

Change of temperature	IEC 60068-2-14 (2009) Test Nb	-40 °C +85 °C, 5 cycles, 1 °C/min, t^1=3 h
Mechanical Environmental Conditions		
Sinusoidal Vibration - Endurance & Response	IEC 60255-21-1 (1988)	20 cycles, 2 g, 10-150 Hz, 3 axes
Shock–Bump	IEC 60255-21-2 (1988)	Semi-sinusoidal 300 m/s^2 , 6 ms, Shocks by direction: 3, 3 axes
Free Fall	IEC 60068-2-31 (2008) ISO 4180:2009	1 m with packaging 25 cm without packaging 25 cm without packaging
IEC 60255-1 ed1.0 (2009)		
Electromagnetic Compatibility (EMC) (IEC 60255-26 (2013))		
RF Conducted Emission	CISPR32(2015) FCC part 15 (2016) subpart B ICES-003 (2016)	Class A 150 kHz - 30 MHz
RF Radiated Emission	CISPR32(2015) FCC part 15 (2016) subpart B ICES-003 (2016)	Class A 30 Mhz - 6 GHz
Electrostatic Discharge Immunity	IEC 61000-4-2 (2008)	Contact: ±6 kV Air: ±8 kV
RF Electromagnetic Field Immunity	IEC 61000-4-3 (2010)	Frequency sweep 80 MHz-1 GHz: 20 V/m 1GHz-3GHz: 10V/m Spot frequencies 80, 160, 380, 450, 900, 1850 and 2150 MHz : 10 V/m
Electrical Fast Transient Immunity	IEC 61000-4-4 (2012)	Power: ±4kV / 5kHz I/O Ports: ±4kV / 5kHz Communication Ports: ±4kV / 5kHz
Surge Immunity	IEC 61000-4-5 (2014)	Power: ±4kV L-PE / ±2kV L-L I/O Ports: ±4kV Communication Ports: ±4kV
Conducted Immunity	IEC 61000-4-6 (2013)	Power: 10 V_{rms} I/O Ports: 10 V_{rms} Communication Ports: 10 V_{rms}
Power Frequency Magnetic Field Immunity	IEC 61000-4-8 (2009)	Continuous field: 100 A/m / 50 Hz & 60 Hz Short duration field: 1000 A/m / 50 Hz & 60 Hz
Voltage Dips, Short Interruptions and Voltage Variation Immunity	IEC 61000-4-11 (2004)	Dips: 0% 25 cycles 40% 10/12 cycles 70% 25/30 cycles Interuptions: 0% 250/300 cycles
Conducted Common Mode Disturbances in the Frequency Range 0Hz-150kHz	IEC 61000-4-16 (2015)	Continuous: 30 Vrms / 60Hz / 50Hz Short duration: 300 Vrms / 60Hz / 50Hz Variation 15Hz-150 kHz: level 4
Ripple on DC Input Power Port Immunity	IEC 61000-4-17 (1999) A1 (2002) A2 (2009)	% of nominal DC voltage : 15 % Test duration : 10 min
Damped Oscillatory Wave Immunity	IEC 61000-4-18 (2006) A1 (2010)	2.5kV common mode 1kV differential mode Oscillation Frequency: 1MHz

Table 14. Type Tests (continued)

Voltage Dips, Short Interruptions and Voltage Variation on DC Power Port Immunity	IEC 61000-4-29 (2000)	Voltage dips: 40% Un during 200 ms 70% Un during 500 ms Voltage short interruptions: 0% during 10 ms to 1000 ms 0% during 5s
Gradual Shut-down/Start-up For DC Power Supply	IEC 60255-26 Section 6.2 / Table 4 / item 4.8	≥0.8Un to 0V to ≥0.8Un
Impulse Voltage Withstand Test	IEC 60255-5 (2000)	All ports: ±5kV Ethernet: ±2.5kV
Dielectric Test	IEC 60255-5 (2000)	24-60 VDC Supply @1000 VDC 100-240 VAC/110-250 VDC Supply @2000 VAC Output relays @2500VAC Demodulated IRIG-B IN@2000VAC RJ45 Ethernet @1500 VAC Modulated IRIG-B IN @2000 VAC
Climatic Environment Conditions		
Dry Heat **Operational & Storage**	IEC 60068-2-2 (2007) Test Be, Bd, Bb	Be 85 °C, 16 h Operational Bd 55 °C, 16 h Operational Bb 85 °C, 16 h Stortage 5 warm boots
Cold **Operational & Storage**	IEC 60068-2-1 (2007) Test Ad, Ab	Ad -40 °C, 16 h Operational Ab -40 °C, 16 h Storage 5 cold boots
Change of Temperature	IEC 60068-2-14 (2009) Test Nb	-40 °C +55 °C 5 cycles, 1 °C/min
Damp Heat, Steady State	IEC 60068-2-78 (2012) Test Cab	40 °C, 93%, 10 days
Damp Heat, Cyclic	IEC 60068-2-30 (2012) Test Db	40 °C, 6 cycles (12 Hr + 12 Hr) Lower temperature 25 °C, 97% RH Upper temperatire 55 °C, 93% RH
Mechanical Environmental Conditions		
Sinusoidal Vibration - Endurance & Response	IEC 60255-21-1 (1988)	20 cycles, 2 g, 10-150 Hz, 3 axes
Shock–Bump	IEC 60255-21-2 (1988)	30 g, 11 ms, 3 impulsions, 3 axes 20 g, 16 ms, 1000 impulsions, 3 axes
Sinusoidal Vibration - Seismic	IEC 60255-21-3 (1993)	Class 2, method A X = 7.5 mm (2g) Y = 3.5 mm (1g)
Safety		
Product Safety Requirements	IEC 60255-27 (2013)	The product SMP SC-2200 is certified cTUVus on IEC 61010-1 for the safety requirement

The SMP SC-2200 platform is rugged, reliable, and tailored to varying requirements; plus, it is easy to set up and use. Eaton has decades of experience in substation gateway design, making our SMPs products that utilities can rely on.

Temperature derating

The SMP SC-2200 can support operating temperatures between -40° C and +85° C as per the IEC 60068-2-2 ed5.0 and IEC 60068-2-1 ed6.0 standards.

To be compliant with the IEC 60950-1 ed2.0 (2005) standard, the SMP SC-2200 can be used between the temperature ranges that is a function of the total power consumption of the unit, as described by Table 15 and Table 16. If the SMP SC-2200 is equipped with an Advanced Ethernet Module, the maximum operating temperature is the smallest value between the one provided in Table 16 or 55° C.

Table 15. Power Consumption According to Installed Options

System Configuration		Power Consumption (W)	Power Consumption Evaluation (W)	Power Consumption Evaluation with 3 or 4 SSD in Expansion Module A (W)
Basic System (includes the basic internal storage Slim SATA drive)				
SMP SC-2200 platform with Intel®I3 CPU (Basic Consumption)		25		
SMP SC-2200 platform with Intel® Xeon CPU (Basic Consumption)		26		
Optional Selection				
Optional Internal Storage	SLC Slim SATA, industrial grade	2		
Optional Satellite-synchronized (GNSS) clock	Built-in GNSS (GPS & GLONASS) receiver	1		
Built-in Ethernet	2x Ethernet 10BASE-T/100BASE-TX/1000BASE-T Ports	4		
Slot A	4x 2.5" Drive Bays Storage Expansion module / RAID 1 SSD	3		
	4x 2.5" Drive Bays Storage Expansion module / RAID 2 SSD	4		
	4x 2.5" Drive Bays Storage Expansion module / RAID 3 SSD	5		
	4x 2.5" Drive Bays Storage Expansion module / RAID 4 SSD	6		
Slot B	PC module: USB 2.0, DVI-D, Audio, Eth OOB	3		
Slot C	PCIe Expansion card, 1x4 Lane	*		
	Module with 4x Ethernet 10/100/1000BASE-T ports	8		
	Module with 4x Ethernet 100BASE-FX, Fiber Optic ST ports	11.5		
	Module with 4x Ethernet 100BASE-FX, Fiber Optic LC ports	11.5		
	****Advanced Ethernet module 100/1000BASE-T (PHP/HSR/PTP)	10		
	****Advanced Ethernet module Optical ST (PHP/HSR/PTP)	13.5		
	****Advanced Ethernet module Optical LC (PHP/HSR/PTP)	13.5		
Slot D	PCIe Expansion card, 1x4 Lane	*		
	Module with 4x Ethernet 10/100/1000BASE-T ports	8		
	Module with 4x Ethernet 100BASE-FX, Fiber Optic ST ports	11.5		
	Module with 4x Ethernet 100BASE-FX, Fiber Optic LC ports	11.5		
	****Advanced Ethernet module 100/1000BASE-T (PHP/HSR/PTP)	10		
	****Advanced Ethernet module Optical ST (PHP/HSR/PTP)	13.5		
	****Advanced Ethernet module Optical LC (PHP/HSR/PTP)	13.5		
Operating System	Windows running Apps with 25% CPU usage**	8		
	Windows running Apps with 50% CPU usage**	11		
		Total Power Consumption (W):		

* Consumption depends on the cards added in the slot.
** Consumption measured with Burin Test Pro for a typical operation.
*** System could not exceed 75 Watts.
**** Maximum operating system temperature with PRP/HSR/PRP is 55° C. The Advanced Ethernet module is Hardware Ready.

Table 16. Temperature Derating per Power Consumption Range

Total Power Consumption of Unit (W)	Normal Operating Temperature with 1 or 2 SSD in the Expansion Module Slot A (°C)
< 50 W	60 °C
> 50 W to 65 W	55 °C
> 65 W to 75 W***	50 °C

*** System should not exceed 75 Watts.

Dimension drawings

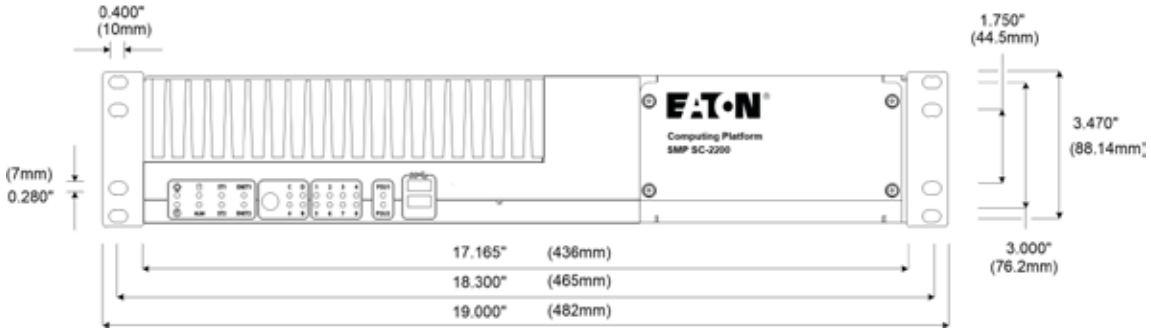


Figure 4. Front panel view

Figure 5. Side view

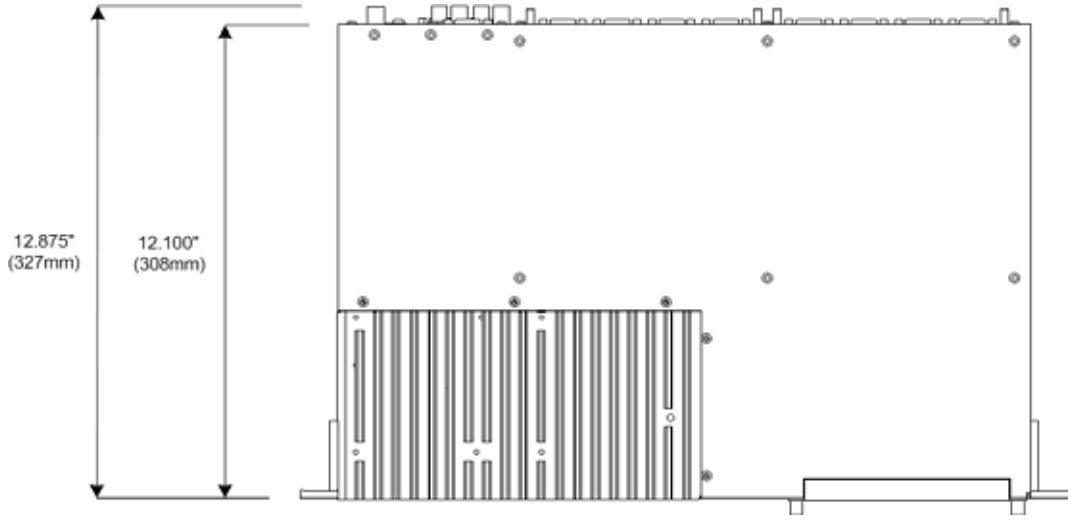


Figure 6. Top view

Ordering Information

Table 17. System Configuration Chart

Description	SMP	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Family																	
[SC2] Substation Computer / Server		SC2															
Format																	
Rackmount 2U Base Unit			2														
Model																	
Intel i3-6100E Dual Core 2.7 GHz / 2x 4 GB DDR4				C													
Intel Xeon E3-1505L Quad Core 2.0 GHz / 2x 8 GB DDR4				D													
Intel Xeon E3-1505L Quad Core 2.0 GHz / 2x 16 GB DDR4				E													
Custom Hardware Configuration																	
NONE					0												
Custom Service Configuration																	
NONE						0											
Custom (text for custom user notes)						Z											
Basic Ethernet Option																	
2 Ethernet 10/100/1000 BASE-TX							A										
Basic Internal Storage (See minimum requirements table)																	
NONE								0									
BASIC 32 GB SSD SLC Slim Sata, industrial grade								J									
BASIC 64 GB SSD SLC Slim Sata, industrial grade								K									
BASIC 128 GB SSD SLC Slim Sata, industrial grade								L									
BASIC 256 GB SSD SLC Slim Sata, industrial grade								M									
BASIC 60 GB SSD iMLC Slim Sata, industrial grade								Q									
BASIC 120 GB SSD iMLC Slim Sata, industrial grade								R									
BASIC 240 GB SSD iMLC Slim Sata, industrial grade								S									
Power Supply																	
100-240 Vac, 110-250 Vdc Dual (HV1, NONE)									H								
100-240 Vac, 110-250 Vdc Dual (HV1, HV2)									K								
Expansion Slot A																	
NONE										0							
4x 2.5" Drive Bays - 1 SSD Installed										1							
4x 2.5" Drive Bays - 2 SSD Installed										2							
4x 2.5" Drive Bays - 3 SSD Installed										3							
4x 2.5" Drive Bays - 4 SSD Installed										4							
4x 2.5" Drive Bays - 0 SSD Installed										5							
Expansion Slot B																	
NONE											0						
PC module for computer IO: USB 2.0, DVI-D, Audio, Ethernet OOB											H						
Expansion Slot C																	
NONE												0					
Module with 4x Ethernet 10/100/1000BASE-T ports												C					
Module with 4x Ethernet Optical 100 ST ports												D					
Module with 4x Ethernet Optical 100 LC ports												E					
1x PCIe Expansion module, 1x4 Lane (option possible only if a PCIe expansion module is installed in slot D)												G					

Table 17. System Configuration Chart (continued)

Description	SMP	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Expansion Slot D																	
NONE													0				
Module with 4x Ethernet 10/100/1000BASE-T ports													C				
Module with 4x Ethernet Optical 100 ST ports													D				
Module with 4x Ethernet Optical 100 LC ports													E				
1x PCIe adaptor Expansion module, 1x4 Lane													G				
Internal Options																	
NONE														0			
Operating Systems (OS) (Pre-Installed on Basic Internal Storage)																	
No OS															A		
Microsoft Windows 10 for I3 processor (Min Basic Internal Storage 64 GB)															B		
Microsoft Windows 10 for XEON processor (Min Basic Internal Storage 64 GB)															C		
Microsoft Windows Server® 2012 R2 for XEON processor (Min Basic Internal Storage 128 GB)															D		
Microsoft Windows Server® 2012 R2 5 Clt for XEON processor (Min Basic Internal Storage 128 GB)															E		
Microsoft Windows Server® 2012 R2 10 Clt for XEON processor (Min Basic Internal Storage 128 GB)															F		
Microsoft Windows Server® 2012 R2 for I3 processor (Min Basic Internal Storage 128 GB)															G		
Microsoft Windows Server® 2012 R2 5 Clt for I3 processor (Min Basic Internal Storage 128 GB)															H		
Microsoft Windows Server® 2012 R2 10 Clt for I3 processor (Min Basic Internal Storage 128 GB)															J		
Expansion Internal Storage Options																	
NONE																0	
Exp Int 32 GB SSD SLC Slim Sata industrial grade																B	
Exp Int 64 GB SSD SLC Slim Sata industrial grade																C	
Exp Int 128 GB SSD SLC Slim Sata industrial grade																D	
Exp Int 256 GB SSD SLC Slim Sata industrial grade																E	
Exp Int 60 GB SSD iMLC Slim Sata industrial grade																H	
Exp Int 120 GB SSD iMLC Slim Sata industrial grade																J	
Exp Int 240 GB SSD iMLC Slim Sata industrial grade																K	
External Storage Disk (for 2.5" Drive Bays Expansion Module)																	
NONE																	0
External 64 GB SSD SLC 2.5", industrial grade																	C
External 128 GB SSD SLC 2.5", industrial grade																	D
External 256 GB SSD SLC 2.5”, industrial grade																	E
External 120 GB SSD iMLC 2.5”, industrial grade																	H
External 240 GB SSD iMLC 2.5”, industrial grade																	J
External 480 GB SSD iMLC 2.5”, industrial grade																	K
External 120 GB SSD MLC 2.5”, industrial grade																	M
External 240 GB SSD MLC 2.5”, industrial grade																	N
External 480 GB SSD MLC 2.5”, industrial grade																	P

Software

Table 18. Visual T&D HMI and Historian

Part Number	Description
P-PSC2-2150-00	None (default)
P-PSC2-2151-00	Visual T&D 1500 points, Up to 64 devices. 5 client protocols, 2 server protocols. 1 Remote Visual T&D Client
P-PSC2-2152-00	Visual T&D 3000 points, Up to 64 devices. 5 client protocols, 2 server protocols. 1 Remote Visual T&D Client
P-PSC2-2153-00	Visual T&D 5000 points, Up to 64 devices. 5 client protocols, 2 server protocols. 1 Remote Visual T&D Client
P-PSC2-2154-00	Visual T&D 10000 points, Up to 64 devices. 5 client protocols, 2 server protocols. 1 Remote Visual T&D Client

Accessories

Table 19. Individual Expansion Modules

Part Number	Description
SMP-SG-4000-1003	Module with 4x Ethernet 10/100/1000BASE-T ports
SMP-SG-4000-1004	Module with 4x Ethernet Fiber-Optic 100BASE-FX ST ports
SMP-SG-4000-1005	Module with 4x Ethernet Fiber-Optic 100BASE-FX LC ports
SMP-SG-4000-1010	4x 2.5" Drive Bays Storage Expansion module / RAID 0, 1, 10
SMP-SG-4000-1011	PC module Computer IO: USB 2.0, DVI-D, Audio, Ethernet OOB (For Xeon Processor)
SMP-SG-4000-1012	1x PCIe adaptor Expansion module, 1x4 Lane

Table 20. Power Supply Replacement

Part Number	Description
SMP-SG-4000-2001	100-240 VAC / 110-250 VDC Replacement Power Supply

Table 21. Individual Drives

Category	Part Number	Description	Warranty (year)
Slim SATA	SMP-SSD-1000	Slim-SATA Shield kit (used for internal expansion flash memory)	5
	SMP-SSD-1002	32 GB SSD SLC SLIM-SATA (Use for Internal Expansion Flash Memory)	5
	SMP-SSD-1003	64 GB SSD SLC SLIM-SATA (Use for Internal Expansion Flash Memory)	5
	SMP-SSD-1004	128 GB SSD SLC SLIM-SATA (Use for Internal Expansion Flash Memory)	5
	SMP-SSD-1005	256 GB SSD SLC SLIM-SATA (Use for Internal Expansion Flash Memory)	5
	SMP-SSD-1008	60 GB SSD iMLC SLIM-SATA (Use for Internal Expansion Flash Memory)	5
	SMP-SSD-1009	120 GB SSD iMLC SLIM-SATA (Use for Internal Expansion Flash Memory)	5
	SMP-SSD-1010	240 GB SSD iMLC SLIM-SATA (Use for Internal Expansion Flash Memory)	5
2.5" SSD	SMP-SSD-2003	64 GB SSD SLC 2.5" (Use for 2.5" Drive Bays Storage Expansion module)	5
	SMP-SSD-2004	128 GB SSD SLC 2.5" (Use for 2.5" Drive Bays Storage Expansion module)	5
	SMP-SSD-2005	256 GB SSD SLC 2.5" (Use for 2.5" Drive Bays Storage Expansion module)	5
	SMP-SSD-2008	120 GB SSD iMLC 2.5" (Use for 2.5" Drive Bays Storage Expansion module)	5
	SMP-SSD-2009	240 GB SSD iMLC 2.5" (Use for 2.5" Drive Bays Storage Expansion module)	5
	SMP-SSD-2010	480 GB SSD iMLC 2.5" (Use for 2.5" Drive Bays Storage Expansion module)	5
	SMP-SSD-2012	120 GB SSD MLC 2.5" (Use for 2.5" Drive Bays Storage Expansion module)	3
	SMP-SSD-2013	240 GB SSD MLC 2.5" (Use for 2.5" Drive Bays Storage Expansion module)	3
	SMP-SSD-2014	480 GB SSD MLC 2.5" (Use for 2.5" Drive Bays Storage Expansion module)	3

Table 22. Display Accessories

Part number	Description
210VA0004R	DVI to VGA converter

Table 23. Cables

Part number	Description
Shielded Power Cable	
P-CABC-0303-00	AC Power Cable Shielded Nema 5-15-Wire **Note:** Must be used for Demo or laboratory only
P-CABC-0306-00	Power Cable Shielded Wire-Wire 1.8 m
P-CABC-0318-10	Power Cable Shielded Wire-Wire 10 m
P-CABC-0318-03	Power Cable Shielded Wire-Wire 3 m
P-CABC-0318-01	Power Cable Shielded Wire-Wire 1 m
P-CABC-0318-xx*	Power Cable Shielded Wire-Wire x m
USB Cable	
600AB0008R	Replacement USB Cable, Shielded **Note:** For USB Console Port
Ethernet MultiMode Fiber	
ST-ST	
P-CABC-0317-0050	Multimode Fiber OM1 62.5/125 µm ST-ST 50 m
P-CABC-0317-0025	Multimode Fiber OM1 62.5/125 µm ST-ST 25 m
P-CABC-0317-0010	Multimode Fiber OM1 62.5/125 µm ST-ST 10 m
P-CABC-0317-0003	Multimode Fiber OM1 62.5/125 µm ST-ST 3 m
P-CABC-0317-0001	Multimode Fiber OM1 62.5/125 µm ST-ST 1 m
P-CABC-0317-xxxx*	Multimode Fiber OM1 62.5/125 µm ST-ST x m
LC-LC	
P-CABC-0315-0050	Multimode Fiber OM1 62.5/125 µm LC-LC 50 m
P-CABC-0315-0025	Multimode Fiber OM1 62.5/125 µm LC-LC 25 m
P-CABC-0315-0010	Multimode Fiber OM1 62.5/125 µm LC-LC 10 m
P-CABC-0315-0003	Multimode Fiber OM1 62.5/125 µm LC-LC 3 m
P-CABC-0315-0001	Multimode Fiber OM1 62.5/125 µm LC-LC 1 m
P-CABC-0315-xxxx*	Multimode Fiber OM1 62.5/125 µm LC-LC x m
ST-LC	
P-CABC-0316-0050	Multimode Fiber OM1 62.5/125 µm ST-LC 50 m
P-CABC-0316-0025	Multimode Fiber OM1 62.5/125 µm ST-LC 25 m
P-CABC-0316-0010	Multimode Fiber OM1 62.5/125 µm ST-LC 10 m
P-CABC-0316-0003	Multimode Fiber OM1 62.5/125 µm ST-LC 3 m
P-CABC-0316-0001	Multimode Fiber OM1 62.5/125 µm ST-LC 1 m
P-CABC-0316-xxxx*	Multimode Fiber OM1 62.5/125 µm ST-LC x m
Ethernet RJ45 Shielded Cable	
P-CABC-0310-025	Copper Ethernet Cable RJ45 CAT6 25 m
P-CABC-0310-010	Copper Ethernet Cable RJ45 CAT6 10 m
P-CABC-0310-003	Copper Ethernet Cable RJ45 CAT6 3 m
P-CABC-0310-001	Copper Ethernet Cable RJ45 CAT6 1 m
P-CABC-0310-xxx*	Copper Ethernet Cable RJ45 CAT6 x m
DB9 Serial Shielded Cable	
RS-232 Null Modem Cable DB9M-DB9M	
P-CABC-0311-10	RS232 Null Modem Cable DB9M-DB9M 10 m
P-CABC-0311-03	RS232 Null Modem Cable DB9M-DB9M 3 m
P-CABC-0311-01	RS232 Null Modem Cable DB9M-DB9M 1 m
P-CABC-0311-xx*	RS232 Null Modem Cable DB9M-DB9M x m

Table 23. Cables (continued)

Part number	Description
RS-232 Straight Shielded Cable DB9M-DB9M	
P-CABC-0312-10	RS232 Straight Cable DB9M-DB9M 10 m
P-CABC-0312-03	RS232 Straight Cable DB9M-DB9M 3 m
P-CABC-0312-01	RS232 Straight Cable DB9M-DB9M 1 m
P-CABC-0312-xx*	RS232 Straight Cable DB9M-DB9M x m
RS-232 Straight Shielded Cable DB9M-DB9F	
P-CABC-0313-10	RS232 Straight Cable DB9M-DB9F 10 m
P-CABC-0313-03	RS232 Straight Cable DB9M-DB9F 3 m
P-CABC-0313-01	RS232 Straight Cable DB9M-DB9F 1 m
P-CABC-0313-xx*	RS232 Straight Cable DB9M-DB9F x m
SEL Relay Shielded Cable DB9M-DB9M	
P-CABC-0321-10	SG-4250/SEL relay cable DB9M-DB9M 10 m
P-CABC-0321-03	SG-4250/SEL relay cable DB9M-DB9M 3 m
P-CABC-0321-01	SG-4250/SEL relay cable DB9M-DB9M 1 m
P-CABC-0321-xx*	SG-4250/SEL relay cable DB9M-DB9M x m
Y-Cable RS232 Null Modem Shielded DB9M-DB9M	
P-CABC-0324-01-10	RS232 Y-Cable Dual DB9M-DB9M null 1 & 10 m
P-CABC-0324-01-03	RS232 Y-Cable Dual DB9M-DB9M null 1 & 3 m
P-CABC-0324-01-01	RS232 Y-Cable Dual DB9M-DB9M null 1 & 1 m
P-CABC-0324-xx-yy*	RS232 Y-Cable Dual DB9M-DB9M null x & y m
Y-Cable RS232 Straight Shielded DB9M-DB9F	
P-CABC-0307-01-10	RS232 Y-Cable Dual DB9M-DB9F 1 & 10 m
P-CABC-0307-01-03	RS232 Y-Cable Dual DB9M-DB9F 1 & 3 m
P-CABC-0307-01-01	RS232 Y-Cable Dual DB9M-DB9F 1 & 1 m
P-CABC-0307-xx-yy*	RS232 Y-Cable Dual DB9M-DB9F x & y m
Time Synchronisation Shielded Cable	
4 Twisted Pairs Shielded Cable: Irig-B ; RS-485 4-Wires/2-Wires Wire-Wire	
P-CABC-0320-25	4 Twisted Pairs Cable Wire-Wire 25 m
P-CABC-0320-10	4 Twisted Pairs Cable Wire-Wire 10 m
P-CABC-0320-03	4 Twisted Pairs Cable Wire-Wire 3 m
P-CABC-0320-01	4 Twisted Pairs Cable Wire-Wire 1 m
P-CABC-0320-xx*	4 Twisted Pairs Cable Wire-Wire x m

* Some cables can have special length according to customer request. For a special length, you must choose the length that you need and create your cable code.
Contact your Eaton representative to validate the maximum length possible for your application..
Example: A cable P-CABC-0310-xxx with 2 meters length will be P-CABC-0310-002 (always use length in meters).
Contact your Eaton representative for other cable requirements.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton
Energy Automation Solutions Division
3033 Campus Drive
Suite 350N
Minneapolis, MN 55441
United States
Eaton.com/smartgrid

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call 1-877-834-0009 or visit:
www.eaton.com/smartgrid