Active Harmonic Compensation Offer

AccuSine PCSn

The Schneider Electric solution for active harmonic filtering in building and commercial installations.

AccuSine_PCSn.jpg

AccuSine PCSn wall mount - main unit (CE version)

AccuSine PCSn RM.png

AccuSine PCSn rack mount - main unit (CE version)

AccuSine PCSn Technical Specifications

Electrical Characteristics

Standard RMS output current ratings	Chassis: 20 A, 30 A, 50 A, 60 A Wall: 20 A, 30 A, 50 A, 60 A Rack: 30 A, 60 A
Nominal voltage	208 - 415 Vac, -15%/+10%
Nominal frequency	50 / 60 Hz, ±3 Hz auto sensing
Connection type	3ph/3wire or 3ph/4wire
Compensation type	3ph only or 3ph + Neutral
Earthing systems	TT, TN-C, TN-S, TN-C-S, IT, corner ground, centre-tapped delta, and HRG
Network voltage distortion	Max. 20% phase to phase (up to 30th order)
Voltage notch limits	Notch depth: 10%, Notch area (AN): 13,667 Vµs @ 400 V as per IEEE 519-2014, Annex C

Technical Product Characteristics

Power electronics	3-level IGBT
Control Topology	Digital harmonic FFT Digital instantaneous reactive power
Efficiency & Losses	208 Vac ≥ 95% — 3ph compensation: ≤ 17.7 W/A; 3ph + N compensation: ≤ 19.7 W/A 380 - 415 Vac ≥ 97% — 3ph compensation: ≤ 20.4 W/A; 3ph + N compensation: ≤ 22.6 W/A
Current transformer	Any ratio with 1 A or 5 A secondary; Class 1.0 accuracy; 50/60 or 400 Hz rated (instrument rated or better); Grounded; can be shared with other devices.
CT VA loading	1 A: 0.04 VA 5 A: 1 VA
Quantity of CT	2 or 3 CTs for 3-phase loads 3 CTs are required for 4-wire with neutral connected loads
CT position	Grid or load sense
Control basis	Closed or open loop
Spectrum cancellation & selection	2nd to 51st harmonic order; discrete, fully selectable adjustable per harmonic order (amplitude % and ON/OFF).
Modes of operation	Multi-modes simultaneously or discrete - phase harmonic correction - neutral harmonic correction with user-adjustable current limit up to 3 times unit rating - power factor correction (cos φ) - mains current load balancing
Operational features	% THDi setpoint % THDv setpoint Target PF setpoint
Harmonic attenuation & filtering performance	THDi < 3% in closed loop control; max 20:1 THDi (typical reduction with load harmonic above 50% unit rating) Requires 3% or higher inductive impedance per non-linear load
Power factor correction	Optimize PF and Target PF (cos φ) programmable leading (capacitive) or lagging (inductive).
Mains current load balancing	Negative and zero sequence; selectable individually or simultaneously.
Resonance avoidance	Output at specific harmonic order turned off if resonance or lack of impedance detected or manually turned off.

Paralleling Characteristics

Scalability & Expandability	Upto 12 units in parallel per set of CT; any size unit combination possible (max nth order subject to network characteristics).
Parallel operation options	Master/Slave, Multi-master, Multi-master/Multi-slave (masters receive CT connection). Main units (master capable): 20 A, 30 A, 50 A, 60 A Expansion units (slave only - no CT connection): 60 A
Paralleling architecture	Distributed redundancy with no independent controller required.
Parallel sequence options	Load share: all operating units function at the same ouput percentage. Cascade: lead/lag with unit rotation; one unit operates to full capacity before next unit turns on; timed rotation.
Unit ID assignment	Automatic parallel ID assignment capability or can be set manually.

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AccuSine PCSn wall mount - main unit (UL version)

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Parallel redundancy	As long as there is a main (master capable) unit online, any unit with CT connections will automatically become master if the controlling master is taken offline. Automatic increase in ouput of all units to make up capacity of any offline unit.
Parallel HMI control	The main unit permits viewing and changing parameter settings of the complete system or any other unit in the parallel system.

Control and Communications

Parallel communications	Proprietary communication bus between operating units (shielded CAT5e or higher required with RJ-45 connectors).
Control response time	40 - 60 µs typical
Harmonic correction time	≤ 2 cycles
Reactive correction time	≤ 1/2 cycle
Communications protocol	Main units: Modbus RTU and Modbus TCP/IP Expansion units: Modbus RTU
Discrete I/O	4 inputs, 4 outputs assignable

Environmental Conditions

Operating temperature	0 °C to +45 °C (full performance, continuous operation without derating). Derate 2% per °C up to +50 °C
Relative humidity	0 - 95%, noncondensing
Operating altitude	1000 m (full performance, continuous operation). Derate 1% per 100 m above. Above 3000 m requires solid ground. Absolute max altitude: 4800 m.
Ambient temperature safety	Automatic temperature roll back based upon IGBT over temperature. Absolute shutdown if air inlet temperature reaches +51 °C.
Preset output limits (rms)	Programmable set limit due to altitude or ambient temperature - becomes fixed output limit.
Storage (in original shipping packaging)	Temperature: -20 °C to +60 °C, Relative humidty: upto 95 %, noncondensing, clean, dry, and protected. No conductive particles permitted.
Contaminant Levels - operating (IEC 60721-3-3)	Chemical Class 3C2, Mechanical Class 3S2 No conductive particles permitted.
Contaminant levels - transport and storage (IEC 60721-3-3)	Chemical Class 3C3, Mechanical Class 3S3 (stored in original shipping packaging). No conductive particles permitted.

Standards and Certification

Design reference	IEC 62477-1, IEC 61439-1, EN 61000-6-2, EN 61000-6-4 Class A, ISO 9001, IEE Std 519-2014, UL-508
EMC compliance	EN 61000-6-4 Class A (Emissions), EN 61000-6-2 (Immunity).
Seismic compliance	IBC 2015, ICC-ES AC156 (S_{DS} = 2.47 g) excluding UL Type 1 model.
Product certification	CE, $_{c}UL_{us}$ (UL508 , CSA 22.2 No.14), RCM, EAC, RoHS, IBC

Mechanical and Installation Characteristics

Mounting configuration	Indoor Vertical: chassis and wall mount. Horizontal: 19" rack mount Floor standing possible using chassis unit.
Ingress protection	Chassis mount: IP00, Wall mount: IP20, UL Type 1, Rack mount: IP20
PCBA protection	Conformal coating on all PCBAs. Pollution degree 2.
Incoming circuit protection	None - supplied by others external to AccuSine PCSn unit (refer to AccuSine PCSn installation manual for further information). Recommended earth leakage protection: 500 mA
Cable entry	Chassis and wall mount: bottom entry Rack mount: front entry
Cooling configuration	Variable speed controlled forced ventilation. High heat plenum. Air flow: 560 m^3/hr Chassis and wall mount: bottom to top Rack module: front to back No conductive particles permitted, no corrosive gases.
Noise level	63 dB(A) typical
Dimensions (H x W x D) mm	Chassis and wall mount: 960 x 440 x 265 mm; Wall mount UL Type 1: 1440 x 445 x 265 mm Rack mount: 265 x 440 x 960 mm (6 U) (1 U = 1.75" = 44.45 mm)
Colour and material	Galvanized steel enclosure Wall & rack mount front door and grill: Powder coated Lt. grey RAL7035

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HMI and Service Provisions

Display	Magelis STU HMI, high definition color touchscreen TFT QVGA 64 k
Operator interface	Chassis mount: 144 mm (5.7") supplied for mounting remotely Wall mount: 144 mm (5.7") Rack mount: 90 mm (3.5") Expansion units: no HMI required
User interface options	Plain language, no cryptic code. Multiple languages: English, French, Spanish, Portuguese, Chinese, Korean, German, Russian, and Polish.
Service port	2 x USB ports for firmware update, diagnostics file, and event log download, connection to PC. Diagnostics can be downloaded via PC even if the unit is de-energized.
Commissioning features	On-board step-by-step commissioning wizard via HMI. On-board commissioning report for download - no additional software required. Automatic CT calibration, polarity detection and correction. Phase sequence insusceptible. Automatic unit neutral connection check.

Interoperability and Integration

Floor standing enclosures	Using chassis module, ensuring air flow requirement is met.
Rack system integration	Suitable for 19" wide rack systems, ensuring rack density requirement is met.
System Integration	EcoStruxure™ Power ready; native driver to Power Monitoring Expert 8.2 and later releases Compatible for operation with AccuSine PCS+/PFV+ range; Suitable for integration in 3rd party EPMS/SCADA through modbus mapping.

Typical Applications

Building

- b Airport terminal
- b Railway terminal
- b University facilities and accommodation
- b Hospital

LED / CFL loads

Research and Life Sciences

Commercial Retail

- b Casino
- b Datacentre SMPS loads
- b Commercial space SMPS loads
- b LED and CFL loads

Hotel and Casino

Healthcare

Selection Table

AccuSine PCSn 208-415 V, 50/60 Hz

Rated current (A)	Neutral rated current (A)	Rated kVAR @ 415 V	Catalogue number	Ingress Protection	Mounting type	Unit type	Cable entry	Frame	Mass (kg)
20	60	14	PCSN020Y4CH00	IP00/Type OPEN*	Chassis	Main	Bottom	12	61
30	90	22	PCSN030Y4CH00	IP00/Type OPEN*					
50	150	36	PCSN050Y4CH00	IP00/Type OPEN*					75
60	180	43	PCSN060Y4CH00	IP00/Type OPEN*					
60	180	43	PCSN060Y4CH00E	IP00/Type OPEN*		Expansion			
20	60	14	PCSN020Y4W20	IP20	Wall mount	Main	Bottom	12	61
30	90	22	PCSN030Y4W20	IP20					
50	150	36	PCSN050Y4W20	IP20					75
60	180	43	PCSN060Y4W20	IP20					
60	180	43	PCSN060Y4W20E	IP20		Expansion			
20	60	14	PCSN020Y4N1	UL Type 1	Wall mount	Main	Bottom	13	74
30	90	22	PCSN030Y4N1	UL Type 1					
50	150	36	PCSN050Y4N1	UL Type 1					89
60	180	43	PCSN060Y4N1	UL Type 1					
60	180	43	PCSN060Y4N1E	UL Type 1		Expansion			
30	90	22	PCSN030Y4R19	IP20	19" rack mount	Main	Front	14	61
60	180	43	PCSN060Y4R19	IP20					75
60	180	43	PCSN060Y4R19E	IP20		Expansion			

***Note:** UL Type OPEN models shall be installed with fuse kit (PCSNFUSKIT230 or PCSNFUSKIT560) on line side to maintain $_{c}UL_{us}$ compliance

AccuSine PCSn rack modules are designed to fit the NetShelter SX rack enclosures. Ready for high-density environments right out of the box, NetShelter SX rack enclosures offer the most common features on the market today. Recommended rack solutions and accessories are provided in the following table.

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Selection Table

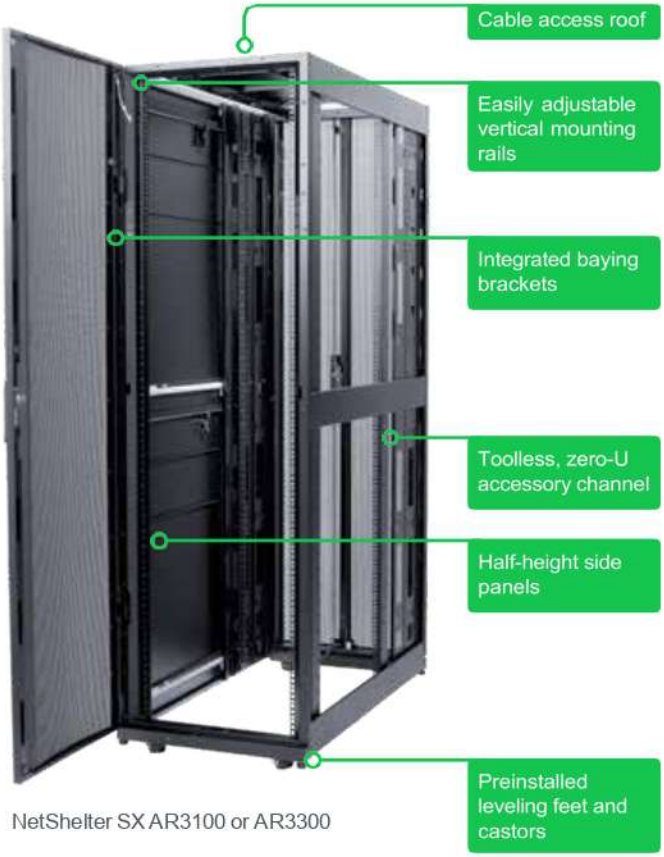
Accessories and Rack Enclosure Systems

Catalogue number	Description	Mass (kg)	Dimensions (mm)		
			Height	Width	Depth
AR3100	NetShelter SX 42U x 600 mm Wide x 1070 mm Deep with doors	125	1991	600	1070
AR3300	NetShelter SX 42U x 600 mm Wide x 1200 mm Deep with doors	134	1991	600	1200
AR8136BLK	NetShelter SX 1U toolless snap-in blanking panel, 10 pieces per pack	0.1	45	483	28
AR8108BLK	NetShelter SX 1U standard metal blanking panel, 2 pieces per pack	0.1	44	483	3
AR8101BLK	NetShelter SX 1U, 2U, 4U, 8U, blanking panel kit	3	-	483	3
AR7700	NetShelter SX stabilization plate to prevent tipping when sliding out equipment	4.5	75	351	207
AR7701	NetShelter SX bolt-down kit — meets IBC seismic requirements for moderate seismic zones	0.7	73	70	62
AR7701A-S	NetShelter SX bolt-down kit — meets IBC seismic requirements for high seismic zones	1	70	320	50
PCSNBTMKIT01	AccuSine PCSn terminal box for chassis & wall mount	7	430	550	290
PCSNFUSKIT230	AccuSine PCSn fuse kit for 20 A & 30 A chassis & wall mount	2	73	70	62
PCSNFUSKIT560	AccuSine PCSn fuse kit for 50 A & 60 A chassis & wall mount	2	70	320	50

For more information on NetShelter SX, please refer to: http://www.se.com/en/product-category/7500-it-racks-and-accessories

1U = 1.75" = 44.45 mm - Each PCSn rack module is 6U high + 1U space for cabling accessory (supplied with each unit).
Included in packaging: PCSn rack module, 1U cable plate and a pair of mounting rails for installation in NetShelter SX rack enclosures.

Note: Rack enclosure and accessories are not included in the PCSn module and must be ordered separately using the commercial references provided in the table above.



NetShelter SX AR3100 or AR3300

Air sealing: covers open space to prevent air recirculation and reduce bypass airflow to improve cooling efficiency.

AR8101BLK

AR8136BLK

Bolt-down and stabilization: prevents tip-over in stand-alone rack applications and meet specific anchoring requirements.

AR7701 and AR7701-S

AR7700