

AccuSine+ Active Harmonic Filtering

Enhance network reliability, improve system capacity, and reduce operating expenses

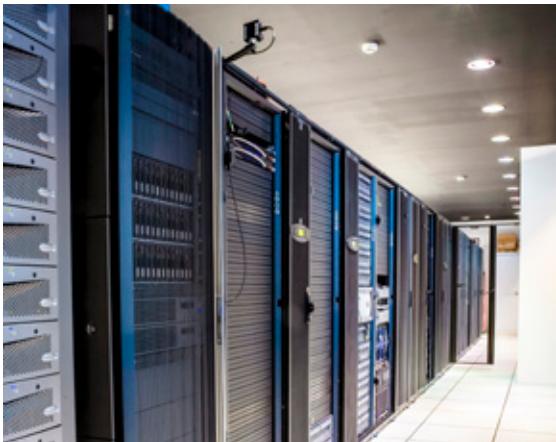
AccuSine PCS+ and AccuSine PFV+ for harmonic filtering and reactive power compensation

Power quality issues like harmonics and reactive power can cause problems including equipment damage and reduced reliability, increased operating expenses, and even expensive downtime and lost productivity. Overheating equipment, flicker issues, and utility penalty charges for poor power factor are just a few symptoms of power quality issues. AccuSine™ PCS+/PFV+ active filters provide a simple and effective way to mitigate harmonics and reduce process related voltage fluctuations. Improve electrical network reliability and system capacity while reducing operating costs with one, simple solution.



AccuSine+ Benefits:

- Most effective and flexible solution for reactive current optimization
- DPF compliance to all utility standards
- Maximize system utilization and planning
- Reduce utility power factor penalties
- Prevent resonance
- Optimize uptime
- Increase electrical network reliability and reduce operating costs
- Easy remote monitoring and operational control
- Eliminate flicker and improve processes
- Extended equipment life
- Ultra fast response (<2 cycles)
- Comply with utility standards and DPF
- Mains current balancing
- Compensates entire network or specific loads depending on installation point
- Reduce costly unplanned downtime and lost productivity
- Decrease harmonic related equipment overheating
- Parallel connection allows for easy retrofit and installation of multiple units for large networks



AccuSine+ Features:

- Real-time dynamic current injection for harmonic cancellation and VAR compensation (lead or lag power factor)
- Response to load fluctuations within 2 cycles for harmonics, 1/4 cycle PF or mains balancing
- UL Type 1, UL Type 2, UL Type 12, IP31 and IP54 Enclosures
- Seismic rated per ICC
- Power electronics IGBT; 3 level inverter
- Harmonic Operational Features: % THDi set point and % THDv set point
- Easy-to-use touch screen interface
- Corrects to the 51st harmonic, reduce harmonics level to meet IEEE 519, IEC 61000 3-4, and UK G5/4-1 standards
- Losses: At 480 Vac < 3%; at 690 Vac < 5%
- Current Transformer: Any ratio with 1 or 5 amp secondary – Type 1 accuracy – 50/60 Hz or 400 Hz
- Current Transformer loading per unit 40 mΩ
- Spectrum cancellation: 2nd to 51st, discrete
- Control basis: Closed loop
- Parallel operation: Master/Master, Master/Slave
- Communication: Modbus RTU, Modbus TCP/IP



Learn how to correct power quality issues to improve business performance,
email powersolutions@schneider-electric.com

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The Schneider Electric solution for active harmonic filtering in industrial installations.

PB502824_R09s



AccuSine PCS+ Specifications

Technical Specifications

| | |
|-------------------------------------|--|
| Standard RMS output current ratings | 60 A, 120 A, 200 A, 300 A - 380 V AC to 480 V AC 47 A, 94 A, 157 A, 235 A - 480-600 V AC 40 A, 80 A, 133 A, 200 A - 600-690 V AC |
|-------------------------------------|--|

Electrical System Characteristics

| | |
|-----------------------------------|---|
| Nominal voltage | 380-480 V AC; +10%/-15% 480-600 V AC; +10%/-15% 600-690 V AC; +10%/-15% |
| Nominal Frequency | 50/60 Hz, ±3 Hz auto sensing |
| Number of phases | 3-phase, with or without neutral |
| Operation with single phase loads | Yes; no effect on neutral current |

Technical Product Characteristics

| | |
|-------------------------------|--|
| Power electronics | IGBT; 3 level inverter |
| Topology | Digital harmonic FFT Digital reactive power |
| Losses | At 480 V AC < 3 %; at 690 V CA < 5 % |
| Current transformers (CT) | Any ratio with 1 or 5 ampere secondary Type 1 accuracy 50/60 or 400 Hz rated Grounded |
| Quantity of CT | 2 or 3 for 3-wire electrical system 3 required for 4-wire electrical system |
| CT VA loading | 15 mΩ |
| Spectrum cancellation | 2 nd to 51 st , discrete; fully selectable per harmonic order (amplitude and on/off) |
| Control basis | Closed loop for new installations ⁽¹⁾ Open loop compatible for retrofit applications |
| CT Position | Closed Loop Control: Source sense (at mains) CT or Load sense CT for single unit ⁽²⁾ Open Loop Control: Load sense CT or source sense CT for single unit ⁽³⁾ |
| Harmonic Attenuation | Closed Loop: < 3 % THD(i); max 20:1 THD(i) reduction with load harmonic current above 50 % of AccuSine PCS+ rating Open Loop: < 5 % TDD Requires 3 % or higher inductive impedance per nonlinear load |
| Harmonic Operational Features | % THDi set point % THDv set point |
| Harmonic avoidance | Output at specific harmonic order turned off if resonance or lack of impedance detected; or manually turned off |
| Parallel operation | Up to 10 units per set of CT (to 51st order), any size combination Backward compatibility with AccuSine PCS operated in parallel. Contact your SE sales office for applications of more than 10 units |
| Parallel operation options | Master/Master (masters receive mains CT) Master/Slave Multi-Master/multi-slave Same as AccuSine PCS for retrofits |
| Parallel sequence options | Lead/lag with unit rotation: one unit operates to full capacity before next unit turns on; timed rotation. Load Share: All operating units function at the same output percentage. |
| Parallel redundancy | Any unit with CT connections will automatically become master if the controlling master is taken offline. Automatic increase in output of all units to make up capacity of any offline unit. |
| Parallel HMI control | Any unit permits viewing and changing parameter settings of complete system or any other unit in parallel system |
| Parallel communications | Proprietary COM Bus between operating units |
| Power factor correction | Optimized unity PF, Leading (capacitive) or lagging (inductive) power factor ($\cos \phi$) to target |
| Mains current balancing | Negative sequence current injected to balance fundamental current on the mains due to load imbalance (inherently corrects displacement PF ($\cos \phi$))) |
| Control response time | 25 µs |
| Harmonic correction time | 2 cycles |
| Reactive correction time | 1/4 cycle |
| Display | 144 mm QVGA TFT 64k-color touchscreen |
| Languages | English |
| Operator interface | Magelis HMI STU touch panel screen |
| Display parameters | 100's: includes THDi, THDv, oscilloscope for viewing many selected parameters, phasor diagrams, load power, measured currents for I_h , I_s , I_f , $I_{\text{neg seq}}$, PF ($\cos \phi$), injected currents for I_h , I_{reactive} , $I_{\text{neg seq}}$, etc. |

(1) Default and preferred control method.

(2) Auxiliary CT required for paralleling of units with Load sense CT position.

(3) Auxiliary CT required for paralleling of units with Source (mains) sense CT position.

AccuSine PCS+

AccuSine PCS+ Specifications

| | |
|------------------------------|---|
| Communications Capability | Modbus RTU, Modbus TCP/IP |
| Discrete input/outputs | 4 input and 4 output dry contacts; assignable |
| Noise level (ISO3746) | <70 db at one meter from unit surface |
| Color | RAL7035 Enclosure; RAL7022 Plinth (floor standing units) |
| Earthing (Grounding) systems | Supports TT, TN, and IT grounding systems; Solidly, low, and high resistance grounded; ungrounded; corner grounded delta; high leg delta EMC filter ground switch for IT, high resistance ground or corner grounded systems |

Environmental Conditions

| | |
|--|---|
| Operating Temperature | 60 A, 120 A & 200 A: IP00, IP20, UL Type Open, & UL Type 1 configurations -0 °C to 45 °C All others 0 °C to 40 °C Derate 2 % per degree °C to 50 °C |
| Relative humidity | to 95 %, noncondensing |
| Seismic rating | complies with IBC and ASCE7 |
| Operating Altitude | 1000 m (derate 1 %/100 m above), max 4800 m |
| Automatic rollback of output | Occurs whenever heatsink temperature sensor exceeds temperature limit |
| Ambient temperature shutdown | 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 container) | Temperature: -20 °C to 60 °C Relative humidity: to 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 When stored in original shipping container No conductive particles permitted |

Reference Standards

| | |
|------------------------------------|---|
| Design | CE EMC Certification IEC/EN 60439-1, EN 61000-6-4 Class A, EN 61000-6-2 |
| Protection (enclosure) | IP00, IP20, IP31, IP54, UL Type 1, UL Type 2, UL Type 12, UL Type Open |
| Standards compliance/certification | cULus (UL508 , CSA 22.2 No. 14) CE Certified, ABS, Lloyds, other local standards |

Installation

| | |
|-----------------------|--|
| Wall mount | IP00, IP20, UL Type 1, & UL Type Open |
| Free Standing | IP31, IP54, UL Type 2, & UL Type 12 |
| Circuit protection | IP00 and IP20 - external means required Free standing enclosures - Incoming circuit breaker or fused disconnect with mechanical door interlock |
| AIC Rating | to 415 V AC - 200 kA cULus; 125 kA IEC to 480 V AC - 200 kA cULus; 75 kA IEC to 600 V AC - 100 kA cULus; 100 kA IEC to 690 V AC - no cULus rating; 100 kA IEC |
| Cable entry | UL Type 1, IP00, UL Type 2, and IP20 - bottom only Free standing - top and bottom entry through gland plates to vertical bus bars |
| PCBA protection | Conformal coating on all PCBA's Pollution Degree 2 |
| Cooling configuration | Separate air plenums for heat sink section and PCBA section. Heat sink ('high heat plenum') input from bottom and exhaust out top. All components in high heat plenum rated IP54 or better => no filtering required. PCBA air supply must be clean and dry (filtering may be required). No conductive particles permitted. |

Service provisions

| | |
|-------------------|---|
| HMI (Magelis STU) | Plain language output (no cryptic codes) USB port for upload of new software and download of operational records |
| Service port | USB port: commission, program, or diagnostics via a laptop computer when power is on or off; laptop provides power to control board when no unit power is present |
| Commissioning | On-board step-by-step process; CT automatic sizing, phase rotation, and polarity; external transformer ratio and phase shift; heat test, and more |

Typical applications



Oil and gas



Water



Cement



HVAC



Building



Wind mills

- Oil and gas platforms.
- Port cranes.
- Steel.
- Water/Wastewater.
- HVAC.
- Automotive.
- Process plants. Pulp and paper.
- Wind and solar farms.
- Lifts (ski or building).
- Marine vessels...

| Harmonic and PF Correction - 380-480 V models, 50/60 Hz | | | | | | | |
|--|----------------|------------------|-----------------------|----------------|---------------|----------------------|-----------|
| Rated current | Frequency (Hz) | Reference Number | Enclosure Information | | | Frame ⁽¹⁾ | Weight kg |
| | | | Rating | Style | Cable entry | | |
| 60 | 50/60 | PCSP060D5IP00 | IP00 (UL Type Open) | Wall Mount | Bottom | 1 | 88 |
| | | PCSP060D5N2 | UL Type 2 | Floor Standing | Top or Bottom | 2 | 277 |
| | | PCSP060D5IP31 | IP31 | | | | 280 |
| | | PCSP060D5N12 | UL Type 12 | | | | |
| | | PCSP060D5IP54 | IP54 | | | | |
| 120 | 50/60 | PCSP120D5IP00 | IP00 (UL Type Open) | Wall Mount | Bottom | 3 | 113 |
| | | PCSP120D5N2 | UL Type 2 | Floor Standing | Top or Bottom | 4 | 287 |
| | | PCSP120D5IP31 | IP31 | | | | 293 |
| | | PCSP120D5N12 | UL Type 12 | | | | |
| | | PCSP120D5IP54 | IP54 | | | | |
| 200 | 50/60 | PCSP200D5IP00 | IP00 (UL Type Open) | Wall Mount | Bottom | 5 | 171 |
| | | PCSP200D5N2 | UL Type 2 | Floor Standing | Top or Bottom | 6 | 397 |
| | | PCSP200D5IP31 | IP31 | | | | 402 |
| | | PCSP200D5N12 | UL Type 12 | | | | |
| | | PCSP200D5IP54 | IP54 | | | | |
| 300 | 50/60 | PCSP300D5IP00 | IP00 (UL Type Open) | Wall Mount | Bottom | 7 | 210 |
| | | PCSP300D5N2 | UL Type 2 | Floor Standing | Top or Bottom | 8 | 422 |
| | | PCSP300D5IP31 | IP31 | | | | 436 |
| | | PCSP300D5N12 | UL Type 12 | | | | |
| | | PCSP300D5IP54 | IP54 | | | | |

Note:

60 A IP20/UL Type 1 configuration requires ordering two items: PCSP060D5IP00 and PCSPWMKIT60A; adds 232 mm to length and 8.7 kg.

120 A IP20/UL Type 1 configuration requires ordering two items: PCSP120D5IP00 and PCSPWMKIT120A; adds 232 mm to length and 9.3 kg.

200 A IP20/UL Type 1 configuration requires ordering two items: PCSP200D5IP00 and PCSPWMKIT200A; adds 273 mm to length and 8.6 kg.

300 A IP20/UL Type 1 configuration requires ordering two items: PCSP300D5IP00 and PCSPWMKIT300A; adds 273 mm to length and 8.6 kg.

| Harmonic and PF Correction - 480-600 V models, 50/60 Hz | | | | | | | |
|--|----------------|------------------|-----------------------|----------------|---------------|----------------------|-----------|
| Rated current | Frequency (Hz) | Reference Number | Enclosure Information | | | Frame ⁽¹⁾ | Weight kg |
| | | | Rating | Style | Cable entry | | |
| 47 | 50/60 | PCSP047D6N2 | UL Type 2 | Floor Standing | Top or Bottom | 9 | 460 |
| | | PCSP047D6IP30 | IP31 | | | | 471 |
| | | PCSP047D6N12 | UL Type 12 | | | | |
| | | PCSP047D6IP54 | IP54 | | | | |
| 94 | 50/60 | PCSP094D6N2 | UL Type 2 | Floor Standing | Top or Bottom | 9 | 498 |
| | | PCSP094D6IP31 | IP31 | | | | 507 |
| | | PCSP094D6N12 | UL Type 12 | | | | |
| | | PCSP094D6IP54 | IP54 | | | | |
| 157 | 50/60 | PCSP157D6N2 | UL Type 2 | Floor Standing | Top or Bottom | 10 | 653 |
| | | PCSP157D6IP30 | IP31 | | | | 675 |
| | | PCSP157D6N12 | UL Type 12 | | | | |
| | | PCSP157D6IP54 | IP54 | | | | |
| 235 | 50/60 | PCSP235D6N2 | UL Type 2 | Floor Standing | Top or Bottom | 10 | 757 |
| | | PCSP235D6N12 | IP31 | | | | 770 |
| | | PCSP235D6IP30 | UL Type 12 | | | | |
| | | PCSP235D6IP54 | IP54 | | | | |

(1) See pages 20 to 22.

Selection Table

Harmonic and PF Correction - 600-690 V models, 50/60 Hz

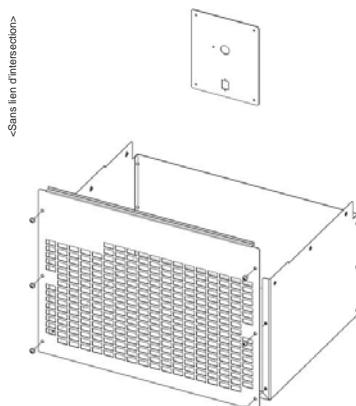
| Rated current | Frequency (Hz) | Reference Number | Enclosure Information | | | Frame ⁽¹⁾ | Weight kg |
|---------------|----------------|------------------|-----------------------|----------------|---------------|----------------------|-----------|
| | | | Rating | Style | Cable entry | | |
| 40 | 50/60 | PCSP040D7N2 | UL Type 2 | Floor Standing | Top or Bottom | 9 | 483 |
| | | PCSP040D7IP31 | IP31 | | | | 494 |
| | | PCSP040D7N12 | UL Type 12 | | | | |
| | | PCSP040D7IP54 | IP54 | | | | |
| 80 | 50/60 | PCSP080D7N2 | UL Type 2 | Floor Standing | Top or Bottom | 9 | 533 |
| | | PCSP080D7IP31 | IP31 | | | | 542 |
| | | PCSP080D7N12 | UL Type 12 | | | | |
| | | PCSP080D7IP54 | IP54 | | | | |
| 133 | 50/60 | PCSP133D7N2 | UL Type 2 | Floor Standing | Top or Bottom | 10 | 708 |
| | | PCSP133D7IP31 | IP31 | | | | 730 |
| | | PCSP133D7N12 | UL Type 12 | | | | |
| | | PCSP133D7IP54 | IP54 | | | | |
| 200 | 50/60 | PCSP200D7N2 | UL Type 2 | Floor Standing | Top or Bottom | 10 | 826 |
| | | PCSP200D7N12 | IP31 | | | | 839 |
| | | PCSP200D7IP30 | UL Type 12 | | | | |
| | | PCSP200D7IP54 | IP54 | | | | |

(1) See pages 20 to 22.

AccuSine+ Wall Mount Conversion Kit

- Converts IP00 (UL Type Open) to IP20 (UL Type 1) wall mounted enclosed assemblies.
- Includes HMI mounting plate and cable entry enclosure for mounting on the bottom of the IP00 assemblies.

| Wall mount kit reference | Assembled dimensions - IP20 | | | | IP20 assembly Weight (kg) | Cable entry enclosure Weight (kg) |
|--------------------------|-----------------------------|--------|-------|-------|---------------------------|-----------------------------------|
| | Unit rating (A) | Height | Width | Depth | | |
| PCSPWMKIT60A | 60 | 1530 | 421 | 349 | 97.3 | 8.7 |
| PCSPWMKIT120A | 120 | 1730 | 421 | 384 | 122.0 | 9.3 |
| PCSPWMKIT300A | 200 | 1642 | 575 | 435 | 180.0 | 8.6 |
| PCSPWMKIT300A | 300 | 1882 | 575 | 435 | 218.6 | 8.6 |



The Schneider Electric solution
for active reactive current
compensation for specific and high
performance solutions.

PB602825_R.eps



AccuSine PFV+ Specifications

Technical Specifications

| | |
|-------------------------------------|--|
| Standard RMS output current ratings | 60 A, 120 A, 200 A, 300 A - 380 V AC to 480 V AC 47 A, 94 A, 157 A, 235 A - 480-600 V AC 40 A, 80 A, 133 A, 200 A - 600-690 V AC |
|-------------------------------------|--|

Electrical System Characteristics

| | |
|-----------------------------------|---|
| Nominal voltage | 380-480 V AC; +10%/-15% 480-600 V AC; +10%/-15% 600-690 V AC; +10%/-15% |
| Nominal Frequency | 50/60 Hz, ±3 % auto sensing |
| Number of phases | 3-phase, with or without neutral |
| Operation with single phase loads | Yes; no effect on neutral current |

Technical Product Characteristics

| | |
|---------------------------------|---|
| Power electronics | IGBT; 3 level inverter |
| Topology | Digital 1/4 cycle response |
| Losses | At 480 V AC < 3 %; at 690 V CA < 5 % |
| Current transformers (CT) | Any ratio with 1 or 5 ampere secondary Type 1 accuracy 50/60 or 400 Hz rated Grounded |
| Quantity of CT | 2 or 3 or 3-wire electrical system 3 required for 4-wire electrical system |
| CT VA loading | 15 mΩ |
| Control basis | Closed loop for new installations ⁽¹⁾ Open loop compatible for retrofit applications |
| CT Position | Closed Loop Control: Source sense (at mains) CT or Load sense CT for single unit ⁽²⁾ Open Loop Control: Load sense CT or source sense CT for single unit ⁽³⁾ |
| Parallel operation | Up to 10 units per set of CT (to 51 st order), any size combination. Backward compatibility with AccuSine PFV operated in parallel. Contact your SE sales office for applications of more than 10 units |
| Parallel operation options | Master/Master (masters receive mains CT) Master/Slave Multi-Master/multi-slave Same as AccuSine PCS for retrofits |
| Parallel sequence options | Lead/lag with unit rotation: one unit operates to full capacity before next unit turns on; timed rotation. Load Share: All operating units function at the same output percentage. |
| Parallel redundancy | Any unit with CT connections will automatically become master if the controlling master is taken offline. Automatic increase in output of all units to make up capacity of any offline unit. |
| Parallel HMI control | Any unit permits viewing and changing parameter settings of complete system or any other unit in parallel system. |
| Power factor correction | Optimized unity PF, Leading (capacitive) or lagging (inductive) power factor ($\text{Cos } \phi$) to target. |
| Mains current balancing | Negative sequence current injected to balance fundamental current on the mains due to load imbalance (inherently corrects displacement PF ($\text{Cos } \phi$)). |
| Voltage support (Volt-VAR mode) | Mains voltage support via VAR injection: Maintain defined set point voltage by injecting leading VARs to raise voltage and lagging VARs to lower voltage; includes speed of adjustment. |
| Control response time | 25 µs |
| Reactive correction time | 1/4 cycle |
| Display | 145 mm QVGA TFT 7-color touchscreen |
| Languages | English |
| Operators | Magelis HMISTU touch panel screen |
| Display parameters | 100's: includes oscilloscope for viewing many selected parameters, phasor diagrams, load power, measured currents for I_s , I_f , $I_{\text{neg seq}}$, $\text{PF} (\text{Cos } \phi)$, injected currents for I_{reactive} , $I_{\text{neg seq}}$, etc. |
| Communications Capability | Modbus RTU, Modbus TCP/IP |
| Discrete input/outputs | 4 input and 4 output dry contacts; assignable |
| Noise level (ISO3746) | < 75 db at one meter from unit surface |
| Color | RAL7035 Enclosure; RAL7022 Plinth (floor standing units) |
| Earthing systems | Supports TT, TN, and IT grounding systems; Solidly, low, and high resistance grounded; ungrounded; corner grounded delta; high leg delta EMC filter ground switch for IT, high resistance ground or corner grounded systems |

(1) Default and preferred control method.

(2) Auxiliary CT required for paralleling of units with Load sense CT position.

(3) Auxiliary CT required for paralleling of units with Source (mains) sense CT position.

AccuSine PFV+

AccuSine PFV+ Specifications

Environmental Conditions

| | |
|--|---|
| Operating Temperature | 60 A, 120 A & 200 A: IP00, IP20, UL Type Open, & UL Type 1 configurations -0 °C to 45 °C All others 0 °C to 40 °C Derate 2 % per degree °C to 50 °C |
| Relative humidity | 0-95 %, noncondensing |
| Seismic rating | complies with IBC and ASCE7 |
| Operating Altitude | 1000 m (derate 1%/100 m above) |
| Automatic rollback of output | Occurs whenever any internal temperature sensor exceeds temperature limits |
| Ambient temperature shutdown | Absolute shutdown if air inlet temperature reaches 55 °C |
| Preset output limits (rms) | Programmable set limit due to altitude or ambient temperature - becomes fixed output limit |
| Storage (in original shipping container) | Temperature: -20 °C to 60 °C Relative humidity: to 95 %, noncondensing Clean, dry, and protected No conductive particals permitted |
| "Contaminant Levels - operating (IEC 60721-3-3)" | Chemical Class 3C2 Mechanical Class 3S2 No conductive particals permitted |
| "Contaminant levels - transport and storage (IEC 60721-3-3)" | Chemical Class 3C3 Mechanical Class 3S3 when stored in original shipping container No conductive particals permitted |

Reference Standards

| | |
|------------------------------------|--|
| Design | CE EMC Certification IEC/EN 60439-1, EN 61000-6-4 Class A, EN 61000-6-2 |
| Protection (enclosure) | IP00, IP20, IP31, IP54, UL Type 2, UL Type 12 |
| Standards compliance/certification | cULus (UL508, CSA 22.2 No. 14) CE Certified, ABS, Lloyds, other local standards |

Installation

| | |
|-----------------------|--|
| Wall mount | IP00 (UL Type Open) and IP20 (UL Type 1) configurations |
| Free Standing | IP31, IP54, UL Type 2, & UL Type 12 |
| Circuit protection | IP00 and IP20 - external means required Free standing enclosures - Incoming circuit breaker or fused disconnect with mechanical door interlock |
| AIC Rating | to 415 V AC - 200 kA cULus; 125 kA IEC to 480 V AC - 200 kA cULus; 75 kA IEC to 600 V AC - 100 kA cULus; 100 kA IEC to 690 V AC - no cULus rating; 100 kA IEC |
| PCBA protection | Conformal coating on all PCBAs |
| Cooling configuration | Separate air plenums for heat sink section and PCBA section. Heat sink ('high heat plenum') input from bottom and exhausts out top. All components in high heat plenum rated IP54 or better => no filtering required. PCBA air supply must be clean and dry (filtering may be required). No conductive particles permitted |

Service provisions

| | |
|-------------------|---|
| HMI (Magelis STU) | Plain language output (no cryptic codes) |
| Service port | USB port to diagnose through a laptop computer when power is on or off; laptop provides power to control board when no unit power is present. |
| Commissioning | On-board step-by-step process; automatic sizing, phase rotation, and polarity for installed CT; external transformer windings and ratio, heat test, and more. |

Typical applications



Oil and gas



Water



Cement



HVAC



Building



Wind mills

- Oil and gas platforms.
- Port cranes.
- Steel.
- Water/Wastewater.
- HVAC.

- Automotive.
- Process plants. Pulp and paper.
- Wind and solar farms.
- Lifts (ski or building).
- Marine vessels...

| Harmonic and PF Correction - 380-480 V models, 50/60 Hz | | | | | | | |
|---|----------------|------------------|-----------------------|----------------|---------------|----------------------|-----------|
| Rated current | Frequency (Hz) | Reference Number | Enclosure Information | | | Frame ⁽¹⁾ | Weight kg |
| | | | Rating | Style | Cable entry | | |
| 60 | 50/60 | EVCP060D5IP00 | IP00 (UL Type Open) | Wall Mount | Bottom | 1 | 88 |
| | | EVCP060D5N2 | UL Type 2 | Floor Standing | Top or Bottom | 2 | 277 |
| | | EVCP060D5IP31 | IP31 | | | | 280 |
| | | EVCP060D5N12 | UL Type 12 | | | | |
| | | EVCP060D5IP54 | IP54 | | | | |
| 120 | 50/60 | EVCP120D5IP00 | IP00 (UL Type Open) | Wall Mount | Bottom | 3 | 113 |
| | | EVCP120D5N2 | UL Type 2 | Floor Standing | Top or Bottom | 4 | 287 |
| | | EVCP120D5IP31 | IP31 | | | | 293 |
| | | EVCP120D5N12 | UL Type 12 | | | | |
| | | EVCP120D5IP54 | IP54 | | | | |
| 200 | 50/60 | EVCP200D5IP00 | IP00 (UL Type Open) | Wall Mount | Bottom | 5 | 171 |
| | | EVCP200D5N2 | UL Type 2 | Floor Standing | Top or Bottom | 6 | 397 |
| | | EVCP200D5IP31 | IP31 | | | | 402 |
| | | EVCP200D5N12 | UL Type 12 | | | | |
| | | EVCP200D5IP54 | IP54 | | | | |
| 300 | 50/60 | EVCP300D5IP00 | IP00 (UL Type Open) | Wall Mount | Bottom | 7 | 210 |
| | | EVCP300D5N2 | UL Type 2 | Floor Standing | Top or Bottom | 8 | 422 |
| | | EVCP300D5IP31 | IP31 | | | | 436 |
| | | EVCP300D5N12 | UL Type 12 | | | | |
| | | EVCP300D5IP54 | IP54 | | | | |

Note:

60 A IP20/UL Type 1 configuration requires ordering two items: PCSP060D5IP00 and PCSPWMKIT60A; adds 232 mm to length and 8.7 kg.

120 A IP20/UL Type 1 configuration requires ordering two items: PCSP120D5IP00 and PCSPWMKIT120A; adds 232 mm to length and 9.3 kg.

200 A IP20/UL Type 1 configuration requires ordering two items: PCSP200D5IP00 and PCSPWMKIT200A; adds 273 mm to length and 8.6 kg.

300 A IP20/UL Type 1 configuration requires ordering two items: PCSP300D5IP00 and PCSPWMKIT300A; adds 273 mm to length and 8.6 kg.

| Harmonic and PF Correction - 480-600 V models, 50/60 Hz | | | | | | | |
|---|----------------|------------------|-----------------------|----------------|---------------|----------------------|-----------|
| Rated current | Frequency (Hz) | Reference Number | Enclosure Information | | | Frame ⁽¹⁾ | Weight kg |
| | | | Rating | Style | Cable entry | | |
| 47 | 50/60 | EVCP047D6N2 | UL Type 2 | Floor Standing | Top or Bottom | 9 | 1015 |
| | | EVCP047D6IP30 | IP31 | | | | 1022 |
| | | EVCP047D6N12 | UL Type 12 | | | | |
| | | EVCP047D6IP54 | IP54 | | | | |
| 94 | 50/60 | EVCP094D6N2 | UL Type 2 | Floor Standing | Top or Bottom | 9 | 1097 |
| | | EVCP094D6IP31 | IP31 | | | | 1113 |
| | | EVCP094D6N12 | UL Type 12 | | | | |
| | | EVCP094D6IP54 | IP54 | | | | |
| 157 | 50/60 | EVCP157D6N2 | UL Type 2 | Floor Standing | Top or Bottom | 10 | 1439 |
| | | EVCP157D6IP30 | IP31 | | | | 1458 |
| | | EVCP157D6N12 | UL Type 12 | | | | |
| | | EVCP157D6IP54 | IP54 | | | | |
| 235 | 50/60 | EVCP235D6N2 | UL Type 2 | Floor Standing | Top or Bottom | 10 | 1668 |
| | | EVCP235D6N12 | IP31 | | | | 1701 |
| | | EVCP235D6IP30 | UL Type 12 | | | | |
| | | EVCP235D6IP54 | IP54 | | | | |

(1) See pages 20 to 22.

Selection Table

Harmonic and PF Correction - 600-690 V models, 50/60 Hz

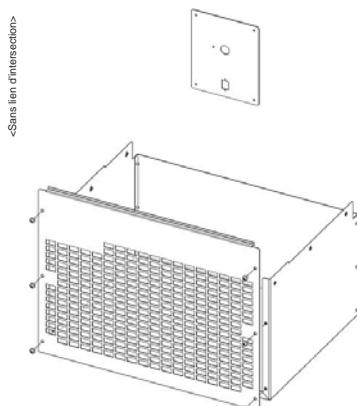
| Rated current | Frequency (Hz) | Reference Number | Enclosure Information | | | Frame ⁽¹⁾ | Weight kg |
|---------------|----------------|------------------|-----------------------|----------------|---------------|----------------------|-----------|
| | | | Rating | Style | Cable entry | | |
| 40 | 50/60 | EVCP040D7N2 | UL Type 2 | Floor Standing | Top or Bottom | 9 | 1064 |
| | | EVCP040D7IP31 | IP31 | | | | 1075 |
| | | EVCP040D7N12 | UL Type 12 | | | | |
| | | EVCP040D7IP54 | IP54 | | | | |
| 80 | 50/60 | EVCP080D7N2 | UL Type 2 | Floor Standing | Top or Bottom | 9 | 1174 |
| | | EVCP080D7IP31 | IP31 | | | | 1188 |
| | | EVCP080D7N12 | UL Type 12 | | | | |
| | | EVCP080D7IP54 | IP54 | | | | |
| 133 | 50/60 | EVCP133D7N2 | UL Type 2 | Floor Standing | Top or Bottom | 10 | 1561 |
| | | EVCP133D7IP31 | IP31 | | | | 1579 |
| | | EVCP133D7N12 | UL Type 12 | | | | |
| | | EVCP133D7IP54 | IP54 | | | | |
| 200 | 50/60 | EVCP200D7N2 | UL Type 2 | Floor Standing | Top or Bottom | 10 | 1822 |
| | | EVCP200D7N12 | IP31 | | | | 1845 |
| | | EVCP200D7IP30 | UL Type 12 | | | | |
| | | EVCP200D7IP54 | IP54 | | | | |

(1) See pages 20 to 22.

AccuSine+ Wall Mount Conversion Kit

- Converts IP00 (UL Type Open) to IP20 (UL Type 1) wall mounted enclosed assemblies.
- Includes HMI mounting plate and cable entry enclosure for mounting on the bottom of the IP00 assemblies.

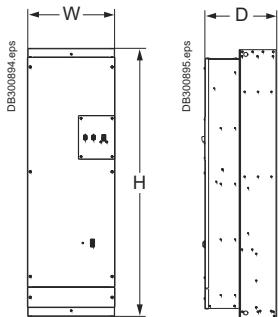
| Wall mount kit reference | Assembled dimensions - IP20 | | | | IP20 assembly Weight (kg) | Cable entry enclosure Weight (kg) |
|--------------------------|-----------------------------|--------|-------|-------|---------------------------|-----------------------------------|
| | Unit rating (A) | Height | Width | Depth | | |
| PCSPWMKIT60A | 60 | 1530 | 421 | 349 | 97.3 | 8.7 |
| PCSPWMKIT120A | 120 | 1730 | 421 | 384 | 122.0 | 9.3 |
| PCSPWMKIT300A | 200 | 1642 | 575 | 435 | 180.0 | 8.6 |
| PCSPWMKIT300A | 300 | 1882 | 575 | 435 | 218.6 | 8.6 |



Unit dimensions and installation guidelines for AccuSine PCS+ and PFV+

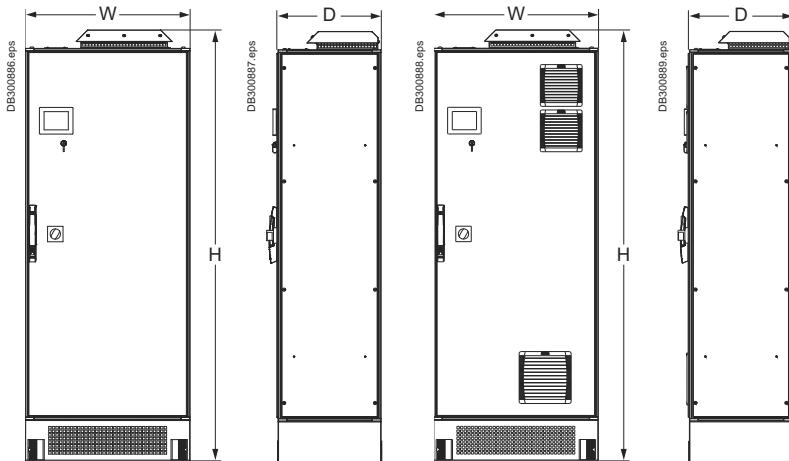
| Frame size figure | Exterior dimensions | | |
|-------------------|---------------------|-------------|-------------|
| | Height mm | Width mm | Depth mm |
| 1 | 1300 | 421 | 349 |
| 2 | 2092 | 800 | 500 |
| 3 | 1400 | 421 | 384 |
| 4 | 2089 | 800 | 5500 |
| 5 | 1323 | 582 | 438 |
| 6 | 2089 | 900 | 600 |
| 7 | 1560 | 582 | 438 |
| 8 | 2092 | 900 | 600 |
| 9 | 2100 | 1300 | 500 |
| 10 | 2100 | 1400 | 600 |

Frame size 1



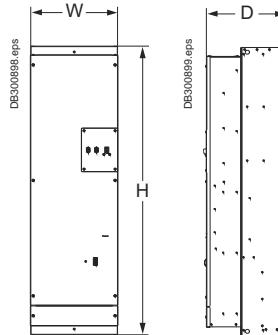
Frame size 2

IP31



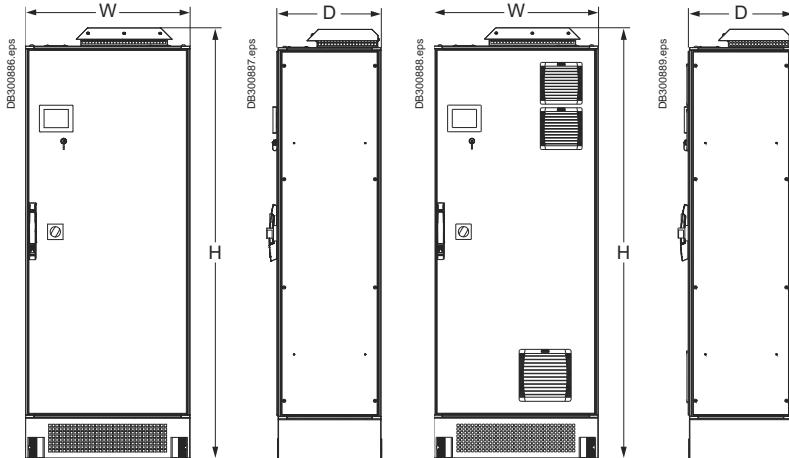
IP54

Frame size 3



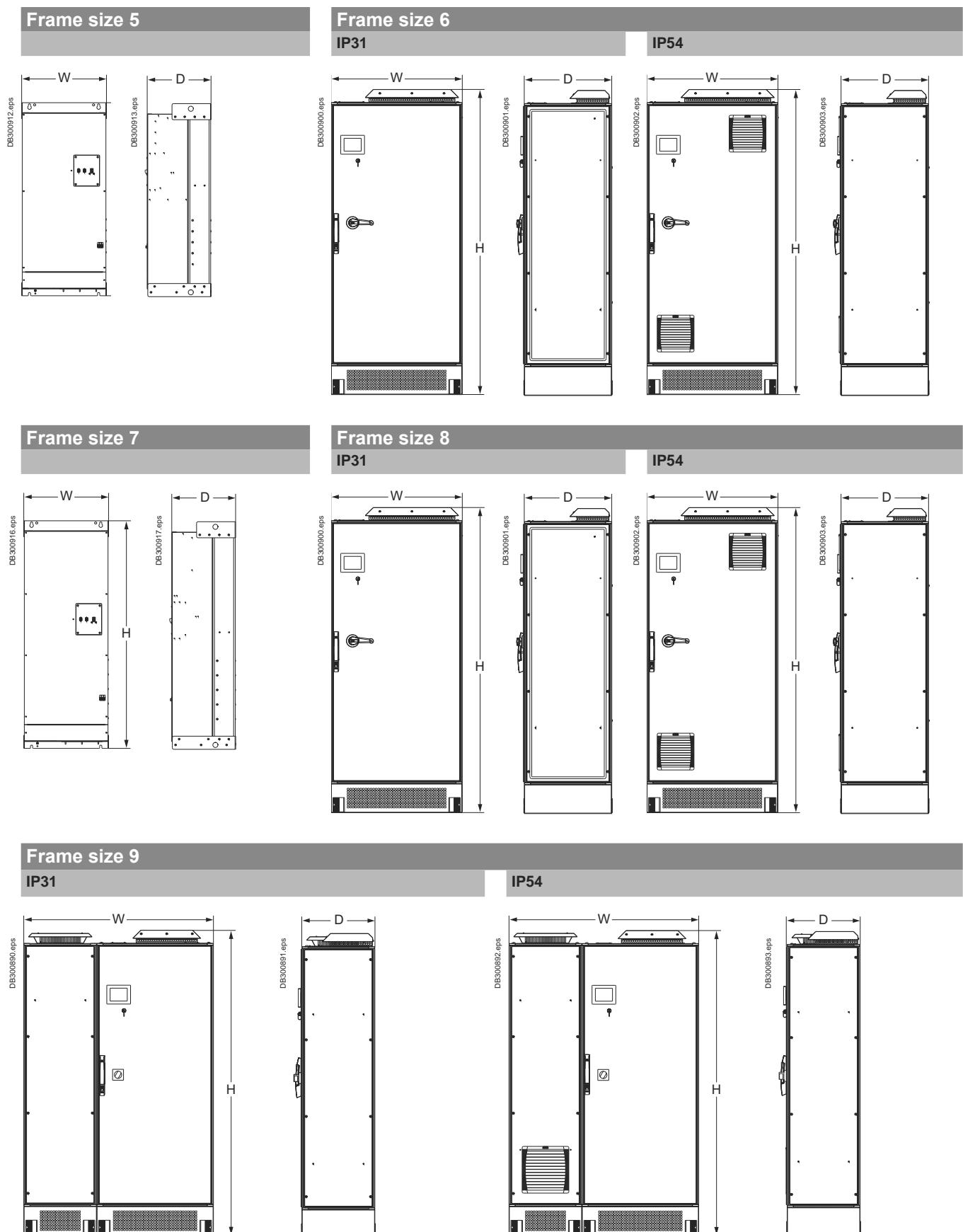
Frame size 4

IP31



IP54

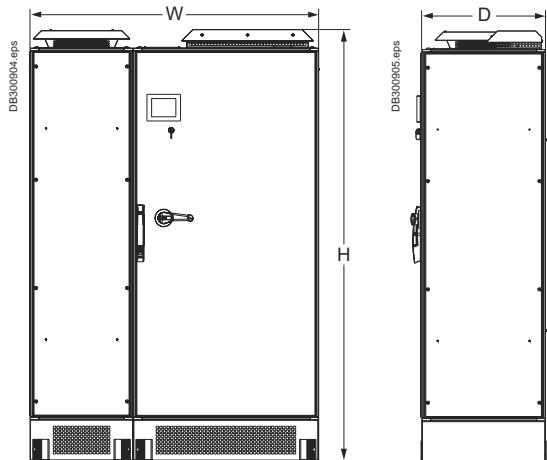
Unit dimensions and installation guidelines for AccuSine PCS+ and PFV+



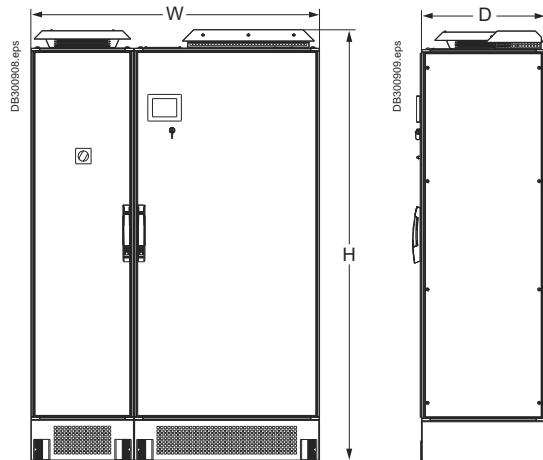
Unit dimensions and installation guidelines for AccuSine PCS+ and PFV+

Frame size 10

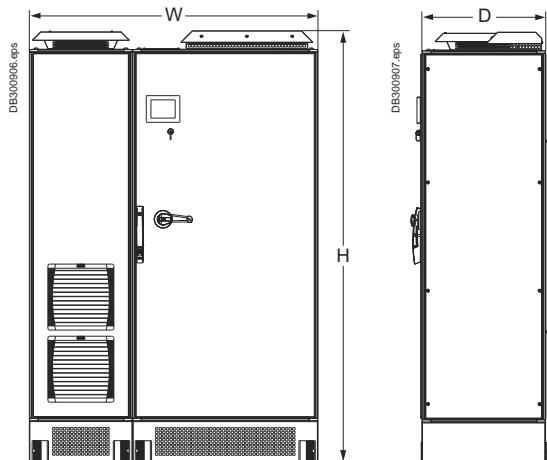
IP31 600 V AC



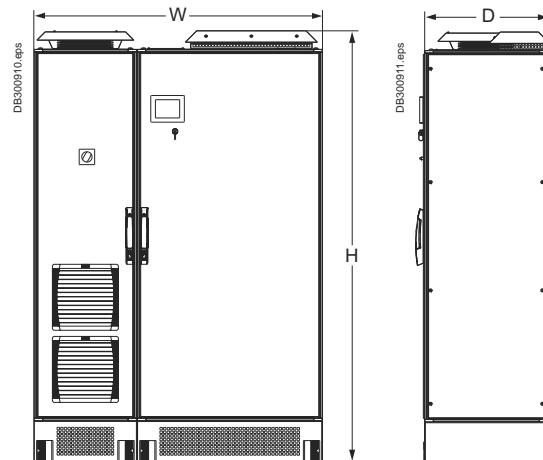
IP31 690 V AC



IP54 600 V AC



IP54 690 V AC





File No. E186575



Meets IEC 60044-1
Standards



Specifications

Construction:

Directional silicon steel is used for the flexible core. Secondary windings are of copper. Unit is encapsulated in silicone rubber which protects against moisture, dirt, oil and corona.

| | |
|---------------------------------------|--|
| Insulation Level | 0.72 KV. BIL 10 KV Full Wave |
| Frequency | 50-400 Hz |
| Thermal Factor | 1.25 at 30 °C.. 1.0 at 55 °C |
| Operating Temp Range | -45 °C to +55 °C |
| Altitude . | Up to 4000 Meters |
| Accuracy | 200:5 thru 300:5 4 % 400:5 thru 500:5 3 % 600:5 thru 800:5 2 % 1000:5 thru 6000:5 1 % |
| Secondary Leads | 3.65 m with spade connectors |
| Color | Transformer (red) - Leads (yellow) |
| Remains flexible from -45° to +200 °C | |



Round Split Core Design

| Reference Number by secondary current 5 Amps | Maximum load (Amps) 1 Amp | Inside diameter (ID) mm - A | Burden Capacity (Ω) 5 Amp | Burden Capacity (Ω) 1 Amp | Weight (kg) |
|---|---------------------------------|--------------------------------|------------------------------|------------------------------|----------------|
| PCSCTFCL50054 | PCSCTFCL50014 | 500 | 101.6 | 0.120 | 2.0 |
| PCSCTFCL100054 | PCSCTFCL100014 | 1000 | 101.6 | 0.200 | 10.0 |
| PCSCTFCL150054 | PCSCTFCL150014 | 1500 | 101.6 | 0.375 | 15.0 |
| PCSCTFCL160054 | PCSCTFCL160014 | 1600 | 101.6 | 0.375 | 15.0 |
| PCSCTFCL50056 | PCSCTFCL50016 | 500 | 152.4 | 0.120 | 2.0 |
| PCSCTFCL100056 | PCSCTFCL100016 | 1000 | 152.4 | 0.200 | 10.0 |
| PCSCTFCL120056 | PCSCTFCL120016 | 1200 | 152.4 | 0.200 | 15.0 |
| PCSCTFCL150056 | PCSCTFCL150016 | 1500 | 152.4 | 0.375 | 15.0 |
| PCSCTFCL200056 | PCSCTFCL200016 | 2000 | 152.4 | 1.000 | 18.0 |
| PCSCTFCL250056 | PCSCTFCL250016 | 2500 | 152.4 | 1.400 | 20.0 |
| PCSCTFCL300056 | PCSCTFCL300016 | 3000 | 152.4 | 1.800 | 20.0 |
| PCSCTFCL200058 | PCSCTFCL200018 | 2000 | 203.2 | 1.000 | 18.0 |
| PCSCTFCL250058 | PCSCTFCL250018 | 2500 | 203.2 | 1.400 | 20.0 |
| PCSCTFCL400058 | PCSCTFCL400018 | 4000 | 203.2 | 1.800 | 20.0 |
| PCSCTFCL500058 | PCSCTFCL500018 | 5000 | 203.2 | 1.800 | 20.0 |
| PCSCTFCL2500511 | PCSCTFCL2500111 | 2500 | 279.4 | 1.400 | 20.0 |

Note: Open split-core with a twisting motion only.

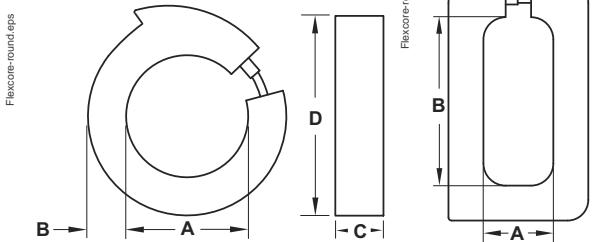
Rectangular Split Core Design

| Reference Number by secondary current 5 Amps | Maximum load (Amps) 1 Amp | Inside diameter (ID) mm A | Inside diameter (ID) mm B | Burden Capacity (Ω) 5 Amp | Burden Capacity (Ω) 1 Amp | Weight (kg) |
|---|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|----------------|
| PCSCTFCL5005R | PCSCTFCL5001R | 500 | 69.8 | 168.2 | 0.12 | 2.0 |
| PCSCTFCL10005R | PCSCTFCL10001R | 1000 | 69.8 | 168.2 | 0.2 | 10.0 |
| PCSCTFCL12005R | PCSCTFCL12001R | 1200 | 69.8 | 168.2 | 0.2 | 15.0 |
| PCSCTFCL15005R | PCSCTFCL15001R | 1500 | 69.8 | 168.2 | 0.375 | 15.0 |
| PCSCTFCL16005R | PCSCTFCL16001R | 1600 | 69.8 | 168.2 | 0.375 | 15.0 |
| PCSCTFCL20005R | PCSCTFCL20001R | 2000 | 69.8 | 168.2 | 1 | 18.0 |
| PCSCTFCL25005R | PCSCTFCL25001R | 2500 | 69.8 | 168.2 | 1.4 | 20.0 |
| PCSCTFCL30005R | PCSCTFCL30001R | 3000 | 69.8 | 168.2 | 1.8 | 20.0 |
| PCSCTFCL25005R411 | PCSCTFCL25001R411 | 2500 | 168.3 | 279.4 | 1.4 | 20.0 |
| PCSCTFCL30005R411 | PCSCTFCL30001R411 | 3000 | 168.3 | 279.4 | 1.8 | 20.0 |
| PCSCTFCL40005R411 | PCSCTFCL40001R411 | 4000 | 168.3 | 279.4 | 1.8 | 20.0 |
| PCSCTFCL50005R411 | PCSCTFCL50001R411 | 5000 | 168.3 | 279.4 | 1.8 | 20.0 |

Dimensions

| ID A | Dimensions in mm | | | D |
|---------|------------------|------|--|-------|
| B | C | | | |
| 101.6 | 31.75 | 38.1 | | 165.1 |
| 152.4 | 31.75 | 38.1 | | 215.9 |
| 203.2 | 31.75 | 38.1 | | 266.7 |
| 279.4 | 31.75 | 38.1 | | 342.9 |

| ID A | B | Dimensions in mm | | | E |
|---------|-------|------------------|-----|--|------|
| C | D | | | | |
| 69.8 | 168.2 | 139.7 | 238 | | 38.1 |
| 168.3 | 279.4 | 165.1 | 340 | | 38.1 |





File No. E93779



LR89403

PCSCT7RL.eps



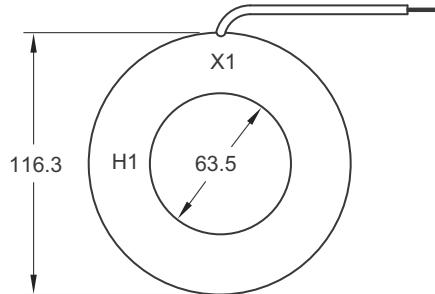
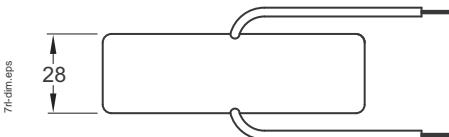
Specifications

| | |
|----------------|--|
| Frequency | 50-400 Hz |
| Class | 0.6 kV, 10 kV BIL Full Wave |
| Flexible Leads | UL1015, 105 °C; CSA approved; 16 AWG (1.31 mm ²), 609.6 mm |
| Weight | Approximately 0.68 kg |
| Accuracy | 1 % |

Round Solid Core Design

| Reference Number by secondary current | Maximum load (Amps) | | Burden Capacity (Ω) | |
|---------------------------------------|---------------------|-------|---------------------|-------|
| | 5 Amps | 1 Amp | 5 Amp | 1 Amp |
| PCSCT7RL2011 | 200 | 0.5 | 5.0 | 5.0 |
| PCSCT7RL3015 | 300 | 0.5 | 5.0 | 5.0 |
| PCSCT7RL4015 | 400 | 0.6 | 7.5 | 7.5 |
| PCSCT7RL5015 | 500 | 1.0 | 10.0 | 10.0 |
| PCSCT7RL6015 | 600 | 1.2 | 12.5 | 12.5 |
| PCSCT7RL7515 | 750 | 1.2 | 12.5 | 12.5 |
| PCSCT7RL8015 | 800 | 1.4 | 20.0 | 20.0 |
| PCSCT7RL1025 | 1000 | 1.4 | 25.0 | 25.0 |
| PCSCT7RL1225 | 1200 | 1.4 | 15.0 | 15.0 |
| PCSCT7RL1525 | 1500 | 1.6 | 20.0 | 20.0 |
| PCSCT7RL1621 | 1600 | 2.0 | 25.0 | 25.0 |

Dimensions





File No. E93779



LR89403

Description

- The Reference 'PCSCT190X...' is an auxiliary transformer for use in the secondary of main current transformers to change the ratio.
- The Reference 'PCSCT190XSUM...' is a summing transformer for use when three or five current transformers need to be totaled.

Specifications

| | |
|---------------------|-----------------------------|
| Frequency | 50-400 Hz |
| Thermal Factor | 1.33 at 30 °C, 1.0 at 55 °C |
| Secondary Terminals | Brass Studs No. 8-32 |
| Weight | Approximately 1.8 kg |
| Insulation Class | 0.6 kV, 10 kV BIL Full Wave |

Note: Since these units are used in the secondary of another current transformer, they do not have a voltage rating. They are given a 2500 Volt - 60 Hz Hi Pot test. They are designed to be used on circuits not to exceed 600 volts-to-ground or between windings.



Auxiliary Transformers

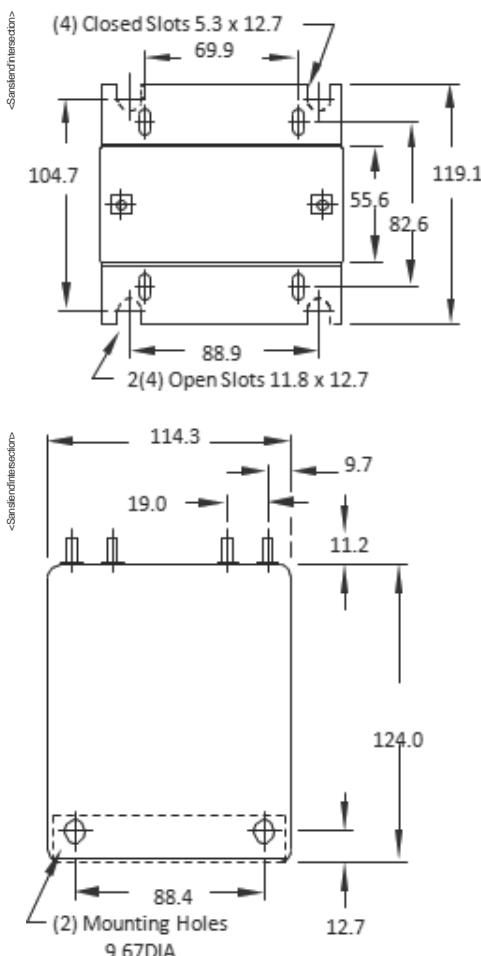
| Reference number | Current ratio | Burden capacity (Ω) |
|------------------|---------------|------------------------------|
| PCSCT190X1000 | 5:1 | 0.5 |
| PCSCT190X10005 | 1:5 | 0.5 |
| PCSCT190X5000 | 5:5 | 0.5 |

Summing Transformers ⁽¹⁾

| Reference Number | Current ratio | Burden capacity (Ω) |
|------------------|---------------|------------------------------|
| PCSCT190XSUM3 | 5+5+5:5 | 0.3 |
| PCSCT190XSUM5 | 5+5+5+5+5:5 | 0.3 |

⁽¹⁾ All current transformers to be totaled must have same ratio.

Dimensions (mm)





PCS1708SC



PCS1706SC



PCS1704SC



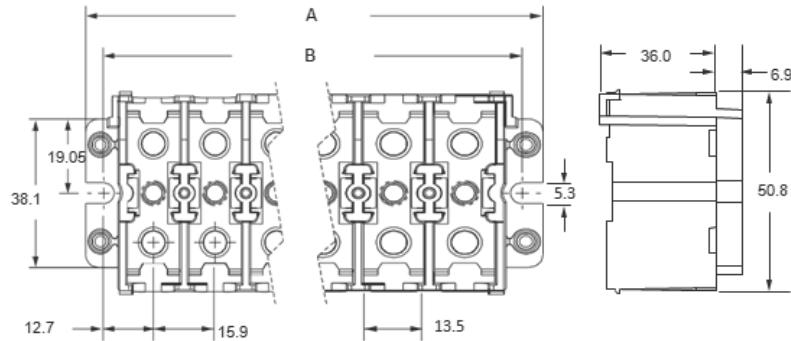
Specifications

| | |
|-------------------------------|--|
| Rating | 600 V AC, 75 A |
| Material | Thermoplastic body, rated 125°C |
| Terminal screws | #10-32 nickel plated |
| Terminals | Brass, allows lugs up to 12.7 mm |
| 4, 6 and 8 pole configuration | Shorting type with covers, shorting screws |
| Surface mounting | Flat base for one piece terminal block replacement |

Shorting Terminal Block

| Reference number | Terminals | Dimensions (mm) | |
|------------------|-----------|-----------------|-------|
| | | A | B |
| PCS1708SC | 8 | 146.1 | 136.9 |
| PCS1706SC | 6 | 114.3 | 105.2 |
| PCS1704SC | 4 | 82.6 | 73.4 |

Dimensions



- Torque wire terminals to 0.565 nm.
- Torque mounting screws to 2.26 nm.

Accessories

- Parallel connection cables - CAT5 type.
- Required to interconnect all units operating in parallel - need one per AccuSine+ unit.

| Reference | Description | Length (m) |
|--------------|-------------------------------|------------|
| PCSPNHA38244 | Paralleling cable CAT5E 3 m | 3 |
| PCSPNHA38245 | Paralleling cable CAT5E 4.5 m | 4.5 |
| PCSPNHA38246 | Paralleling cable CAT5E 6 m | 6 |
| PCSPNHA38247 | Paralleling cable CAT5E 7.5 m | 7.5 |
| PCSPNHA38248 | Paralleling cable CAT5E 9 m | 9 |
| PCSPNHA38249 | Paralleling cable CAT5E 12 m | 12 |
| PCSPNHA38250 | Paralleling cable CAT5E 15 m | 15 |
| PCSPNHA38251 | Paralleling cable CAT5E 18 m | 18 |
| PCSPNHA38252 | Paralleling cable CAT5E 22 m | 22 |
| PCSPNHA38253 | Paralleling cable CAT5E 30 m | 30 |