

SmartOnline SV Series 20kVA Small-Frame Modular Scalable 3-Phase On-Line Double-Conversion 208/120V 50/60 Hz UPS System, 3 Battery Modules

MODEL NUMBER: **SV20KS1P3B**



3-phase 20kVA UPS system offers network-grade power protection in a highly configurable, modular and scalable small-chassis rack-width frame. Included battery modules can support a half load up to 43 minutes.

Description

The SV20KS1P3B SmartOnline® SV Series 20kVA Small-Frame 3-Phase On-Line Double-Conversion UPS System delivers true scalability and offers the highest level of secure, uninterrupted power protection. Featuring a modular, scalable design with high-efficiency voltage and frequency independent (VFI) operation, this on-line UPS system with a high 0.9 power factor is ideal for protecting a variety of critical IT systems.

The SV20KS1P3B includes pre-installed input, bypass and output breakers, as well as a static transfer switch (STS), one 20kVA SV20PM power module and three SVBM battery modules. Space is included for up to two additional user-installable SV20PM power modules.

The Java-free HTML5-based WEBCARDLX interface enables full remote access for site power and UPS status monitoring, configuration, control and email notifications via secure web browser, SNMP, telnet or SSH. It supports 10/100 Mbps auto-sensing for optimum communication with an Ethernet network.

With up to 92% efficiency in standard mode and up to 98% efficiency in optional economy mode, this 20kVA UPS system helps you reduce operating and cooling costs. Automatic and manual bypass options keep connected equipment operational during routine maintenance or critical power module failure. Front-panel display offers full UPS condition and status reporting.

Features

20kVA 18kW 3-Phase Small-Chassis UPS System Supports 208/120V or 220/127V AC 50/60Hz Wye 4-wire plus Earth hardwire input and output wiring Dual hardwire input design enables operation from up to 2 power sources Network-grade sine-wave AC output with 1% output voltage regulation and less than 2% output total harmonic distortion Tested to UL 1778 (U.S.), CSA (Canada) and NOM (Mexico) standards High 0.9 power factor offers higher kW output than lower-rated competing legacy designs

Pre-Installed WEBCARDLX Network Interface Allows full remote access for power monitoring, configuration, control and email notifications via secure web browser, SNMP, telnet or SSH Supports 10/100 Mbps auto-sensing for communication with an Ethernet network Optional EnviroSense2 sensors (sold separately) enable site monitoring of temperature, humidity and contact-closure status No Java required

Highlights

- Scalable capacity up to 60kVA (or 40kVA with N+1 fault tolerance)
- Economy mode option helps reduce operating and cooling costs
- Pre-installed WEBCARDLX network interface for 24/7 remote access
- DSP/IGBT technology and 1% output voltage regulation
- Includes 3 internal battery modules
- For extended runtimes beyond those provided by internal battery modules, please review the suffix "0B" SV models without internal battery modules, which offer different external battery pack options.

Package Includes

- SV20KS1P3B SmartOnline SV Series 20kVA Small-Frame 3-Phase On-Line Double-Conversion UPS System
- Pre-installed WEBCARDLX network interface
- (1) SV20PM 20kVA power module (shipped separately)
- (3) SVBM battery modules (shipped separately)
- Owner's manual

Modular, Scalable Design for Maximum Flexibility Modular configuration with hot-swappable power and battery modules enables easy, fast maintenance with zero downtime Open slots for up to 2 additional 20kVA SV20PM power modules accommodate increased capacity up to 60kVA (or 40kVA with N+1 fault tolerance)

Optional Economy Mode Up to 98% efficiency in optional economy mode to lower operating and cooling costs

Wide Input/Narrow Output Voltage Operating Range Enables full continuous online operation during brownouts as low as 121V and overvoltages up to 253V Regulates output voltage within 1% of the selected nominal output voltage in on-line double-conversion mode

Advanced IGBT Inverter with Digital Signal Processor (DSP) Technology Provides for less than 3% input total harmonic distortion (THDi) to support 1:1 generator sizing and prevent the need to oversize generator systems relative to UPS capacity

Automatic and Manual Bypass Options Keep connected equipment operational during routine maintenance or critical power module failure

Specifications

| OVERVIEW | |
|------------------------------------|---|
| UPC Code | 037332236531 |
| UPS Type | On-Line |
| INPUT | |
| Input Phase | 3-Phase |
| Rated input current (Maximum Load) | SV20KS1P3B 20kVA Configuration: 60A; Maximum 60kVA Configuration: 180A; 132.5A maximum inrush current |
| Nominal Input Voltage(s) Supported | 120/208V 3-PH Wye; 127/220V 3-PH Wye |
| Nominal Input Voltage Description | Set of two hardwire input connections enables 3-Phase Wye, 4 wire (3P, N, E) inputs from two separate power sources |
| UPS Input Connection Type | Hardwire |
| Input Circuit Breakers | MAIN and ALTERNATE AC inputs are each protected by 250A 3 pole magnetic breakers |
| Input Frequency | 40 to 70Hz (online mode); 50/60Hz Auto-selectable |
| Power Factor (Input) | Greater than 0.99 (full load) |
| THDi | Less than 3% (full linear load) |
| OUTPUT | |
| Output Capacity (VA) | 20000 |
| Output Capacity (kVA) | 20 |
| Output Capacity (Watts) | 18000 |
| Output Capacity (kW) | 18 |
| Output Capacity Details | OVERLOAD CAPABILITY: Supports 105-110% load for 1 hour, 111-125% load for 10 minutes, 126-150% for 1 minute and Over 150% for 200ms before switching to Bypass; Online operation resumes when load is reduced to 100% or less |

| | |
|--|---|
| Power Factor | 0.9 |
| Crest Factor | 3:1 |
| Nominal Voltage Details | Output THD full resistive load: <1.5%; Output THD non-linear load: <4%; Max DC offset: $\pm 50\text{mV}$; Max Phase angle deviation: 2°; Max Voltage unbalance deviation: 1%; Output short-circuit protection included |
| Frequency Compatibility | 50 / 60 Hz; Supports 50 to 60 Hz and 60 to 50 Hz conversion |
| Frequency Compatibility Details | Auto-selectable, user adjustable |
| Output Receptacle Details | Output wiring (3P, N, E) |
| Output Circuit Breakers | 250A 3 pole magnetic breaker |
| Output AC Waveform (AC Mode) | Pure Sine wave |
| Output AC Waveform (Battery Mode) | Pure Sine wave |
| Nominal Output Voltage(s) Supported | 120/208V 3-PH Wye; 127/220V 3-PH Wye |
| Output Receptacles | Hardwire |
| Output Voltage Regulation | ONLINE, FREQUENCY CONVERSION, BATTERY MODE: 208/120, 220/127 $\pm 1\%$ typical (balanced load); $\pm 2\%$ typical (unbalanced load); ECONOMY MODE: 208/120, 220/127 $\pm 15\%$; BYPASS MODE: +15% (default, adjustable to +10%, +15% or +20%), -20% (default, adjustable to -10%, -20%, -30%) |
| Output Frequency Regulation | ONLINE MODE: Output frequency is $\pm 0.05\text{Hz}$ of input frequency when input is within $\pm 4\text{Hz}^*$ of the configured 50/60Hz output setting; Output frequency is $\pm 0.05\text{Hz}$ the configured 50/60Hz output setting when input is outside $\pm 4\text{Hz}^*$ of the configured 50/60Hz output setting; BATTERY MODE: Output frequency is $\pm 0.1\text{Hz}$ of the configured 50/60Hz output setting; FREQUENCY CONVERTER MODE: Output frequency is $\pm 0.1\text{Hz}$ of the configured 50/60Hz output setting; ECONOMY MODE: Output frequency equals input frequency up to $\pm 4\text{Hz}^*$ of the configured 50/60Hz output setting (UPS switches to Online mode if frequency goes outside of this range); BYPASS MODE: Output frequency equals input frequency up to $\pm 4\text{Hz}^*$ of the configured 50/60Hz output setting (switches to STANDBY mode if frequency goes outside of this range). *The TRACKING RANGE is factory set to $\pm 4\text{Hz}$ and is user adjustable to $\pm 1\text{Hz}$, $\pm 2\text{Hz}$ or $\pm 4\text{Hz}$; The selected TRACKING RANGE setting controls frequency output tolerances as described above in Online, Economy and Bypass modes |
| Output Amp Capacity | Output Amp Capacity 55.5A (208/120V); 52.5A (220/127V) |
| Individually Controllable Load Banks | No |
| Modular Upgrade Options | Includes 1 SV20PM 20kVA power module; Up to 2 additional SV20PM 20kVA power modules can be added for increased capacity or enhanced N+1 redundancy; Add 1 SV20PM for 40kVA capacity (or 20kVA with N+1); Add 2 SV20PM for 60kVA capacity (or 40kVA with N+1) |
| BATTERY | |
| Runtime Full Load (min.) | 21.5 min. (20kVA) |
| Runtime Half Load (min.) | 43.0 min. (10kVA) |
| Expandable Runtime | Yes |
| Expandable Runtime Description | For extended runtimes beyond those provided by internal battery modules, please review the suffix "0B" SV models without internal battery modules, which offer different external battery pack options. |
| DC System Voltage (VDC) | $\pm 120\text{VDC}$ |
| Battery Recharge Rate (Included Batteries) | User selectable charging current of 1A to 8A (2A factory setting); Recharge rate for internal batteries is 4.6 hours to 90% capacity (7A charging current) |
| Battery Replacement Description | Hot-swappable, replaceable batteries |
| VOLTAGE REGULATION | |
| Voltage Regulation Description | Online, double-conversion power conditioning |

| | |
|---|--|
| Overvoltage Correction | Maintains continuous output in online mode, without using battery power, during overvoltages to 253V (Ph-Ph), reducing output to within 1% of selected 208/120V, 220/127V nominal output voltage |
| Undervoltage Correction | Maintains continuous output in online mode, without using battery power, during brownout/undervoltage conditions to 156V (Ph-Ph) at full load and to 121V (Ph-Ph) at 70% output load or less, increasing output to within 1% of selected 208/120V or 220/127V nominal output voltage |
| USER INTERFACE, ALERTS & CONTROLS | |
| Front Panel LCD Display | 145mm front panel LCD display with directional scroll and select buttons offers complete operating status display, plus setting and selection options for all UPS functions |
| Switches | Front panel buttons include ESC (menu escape), UP/LEFT (menu up / left), DOWN/RIGHT (menu down / right), ENTER (confirm selection), HOME (return to home screen) and POWER (on/off power control); Also includes Manual Bypass switch |
| Alarm Cancel Operation | Audible alarms can be muted using on-screen prompts |
| Audible Alarm | Unique audible alarms for POWER ON / POWER OFF (alarm sounds for 2 seconds), BATTERY MODE (alarm sounds every 2 seconds), LOW BATTERY (alarm sounds every 0.5 seconds), UPS ALARM (alarm sounds every 1 second), UPS FAULT (continuous alarm) |
| LED Indicators | Front panel LED indicators represent INPUT (green), BYPASS (amber), INVERTER (green), BATTERY (red) and ALARM (red) |
| SURGE / NOISE SUPPRESSION | |
| EMI / RFI AC Noise Suppression | Yes |
| AC Suppression Joule Rating | 2496 |
| AC Suppression Joule Rating Details | 2496 joules (Ph-Ph), 2496 joules (Ph-N), 1872 joules (N-E) |
| AC Suppression Response Time | Instantaneous |
| PHYSICAL | |
| Primary Form Factor | Tower |
| Cooling Method | Fans |
| Installation Form Factors Supported with Included Accessories | Tower |
| Primary UPS Depth (mm) | 1,100 |
| Primary UPS Height (mm) | 1,475 |
| Primary UPS Width (mm) | 600 |
| Shipping Dimensions (hwd / in.) | 54.50 x 28.50 x 42.50 |
| Shipping Dimensions (hwd / cm) | 138.43 x 72.39 x 107.95 |
| Shipping Weight (lbs.) | 1058.00 |
| Shipping Weight (kg) | 479.90 |
| UPS Housing Material | Steel |
| UPS Power Module Dimensions (hwd, cm) | 147.50 x 59.99 x 109.98 |
| UPS Power Module Dimensions (hwd, in.) | 58.07 x 23.62 x 43.3 |

| | |
|---|--|
| UPS Power Module Weight (kg) | 617.34 |
| UPS Power Module Weight (lbs.) | 1361 |
| ENVIRONMENTAL | |
| Operating Temperature Range | 0° to +40°C (+32° to +104°F); De-rates to 90% capacity at 35°C / 95°F and 80% capacity at 40°C / 104°F |
| Storage Temperature Range | -15° to +60°C (+5° to +140°F) |
| Relative Humidity | 0 to 95%, non-condensing |
| AC Mode BTU / Hr. (Full Load) | 6074 |
| AC Economy Mode BTU / Hr. (Full Load) | 822 |
| AC Economy Mode Efficiency Rating (100% Load) | 98% |
| Audible Noise | Less than 69 DBA front-side, 1m |
| Operating Elevation (m) | Up to 1000m (At elevations over 1000m, output de-rates by 1% per 100m) |
| COMMUNICATIONS | |
| Network Management Cards | WEBCARDLX MODBUSCARDSV RELAYCARDSV |
| Network Monitoring Port Description | Includes pre-installed Tripp Lite WEBCARDLX network interface |
| PowerAlert Software | For local monitoring via the UPS's built-in communication ports, download PowerAlert software at https://tripplite.eaton.com/products/power-alert |
| Communications Cable | DB9 cabling included |
| SNMP Compatibility | Includes pre-installed WEBCARDLX network interface card |
| Communications Interface | DB9 Serial; EPO (emergency power off); Pre-installed network card; Slot for SNMP/Web interface |
| LINE / BATTERY TRANSFER | |
| Transfer Time | No transfer time (0 ms.) in online, double-conversion mode; Less than 20 ms. transfer time in economy mode |
| Low Voltage Transfer to Battery Power (Setpoint) | Maintains continuous operation without using battery power during brownout/undervoltage conditions to to 156V (Ph-Ph) Full load or 121V (Ph-Ph) 70% load or less; Below the low transfer voltage point, output is maintained utilizing reserve battery power |
| High Voltage Transfer to Battery Power (Setpoint) | Maintains continuous operation without using battery power during overvoltages to 253V (Ph-Ph), reducing output within 1% of nominal; Above this point, output is maintained utilizing reserve battery power |
| FEATURES & SPECIFICATIONS | |
| Cold Start (Startup in Battery Mode During a Power Failure) | Cold-start operation supported |
| High Availability UPS Features | Automatic inverter bypass; Hot swappable batteries; Auto Probe Monitoring (included); Zero transfer time; On-Line/Double-Conversion |
| Green Energy-Saving Features | High efficiency economy mode operation; Schedulable daily hours of economy mode operation |
| IP68 Rated | No |

| | |
|---|---|
| IP20 Rated | No |
| STANDARDS & COMPLIANCE | |
| Product Certifications | CSA (Canada); NOM (Mexico); UL 1778 |
| Product Compliance | RoHS; FCC Part 15 Class A (USA); Trade Agreements Act (TAA) |
| WARRANTY & SUPPORT | |
| Product Warranty Period (U.S. & Canada) | 1-year limited warranty |
| Product Warranty Period (International) | 2-year limited warranty |
| Product Warranty Period (Mexico) | 2-year limited warranty |
| Product Warranty Period (Puerto Rico) | 2-year limited warranty |
| 3-Phase Warranty Statement | Tripp Lite 3-Phase UPS Factory Warranty |