

# Eaton 9PX 6-11kVA 3-Phase input UPS Technical Specification

| <b>CONSTRUCTION</b>                                |   |                 |                  |
|--|---|-----------------|------------------|
| <b>Model</b>                                       | <b>9PX6Ki31</b>   | <b>9PX8Ki31</b> | <b>9PX11Ki31</b> |
| Rating   | 6kVA/5.4kW  | 8kVA/7.2kW      | 11kVA/10kW       |
| Power Factor                                       | 0.9   |                 | 0.91             |
| Technology   | VFI-SS-111, on-line double conversion with power factor correction  |                 |                  |
| Dimensions: W x D x H (mm)<br>Rack Configuration:  | Power Module: 440 x 700 x 130 (3U)<br>Battery Module: 440 x 680 x 130 (3U)  |                 |                  |
| Dimensions: W x D x H (mm)<br>Tower Configuration: | 260 x 700 x 440 combined UPS Module & Battery Module (EBM)  |                 |                  |
| Weight (kg)  | Total: 88kg (Power Module: 23kg, Battery: 65kg)   |                 |                  |
| Colour   | Black, RAL 9005   |                 |                  |
| <b>ENVIRONMENTAL &amp; SAFETY</b>                  |   |                 |                  |
| Ambient storage temperature                        | 0°C to +35°C with batteries and -15°C to +60°C without batteries  |                 |                  |
| Ambient service temperature                        | Power electronics part: 0 to +40°C<br>Battery part: +5 to +25°C without reducing battery life   |                 |                  |
| Maximum service altitude                           | 1000m above sea level, 10% de-rating for every 1000m to 3000m maximum   |                 |                  |
| Relative humidity                                  | 0 to 95%, no condensation allowed   |                 |                  |
| Degree of protection                               | IP20 (EN60529)  |                 |                  |
| Acoustic Noise @ 1m                                | ≤48dB 6-8kVA, ≤50dB 11kVA Online mode at nominal conditions, battery fully charged  |                 |                  |
| Safety Conformance                                 | IEC 62040-1:2008, IEC 60950-1:2005  |                 |                  |
| Electromagnetic Compatibility                      | IEC 62040-2:2006 Categories C2, AS/NZS 22 Class A   |                 |                  |
| Agency Markings                                    | CE, C-Tick  |                 |                  |
| <b>POWER CONNECTIONS</b>                           |   |                 |                  |
| Input  | Terminals (4-16mm <sup>2</sup> )  |                 |                  |
| Output   | Standard: Terminals (4-16mm <sup>2</sup> )<br>With Maintenance Bypass Panel (MBP): Terminals (4-25mm <sup>2</sup> ) + (4) IEC16A  |                 |                  |
| <b>USER INTERFACE</b>                              |   |                 |                  |
| Display  | Graphical Blue LCD with LED backlight, 4x LEDs for notice and alarm   |                 |                  |
| Standard Communication Ports                       | (1)USB 2.0, (1)RS232;DB9, (1)Relay Port;DB9, (1)Remote Power Off Port, (1)Remote On/Off Port, (1)Minislot Port (Empty), (1)Parallel Port;DB15   |                 |                  |
| Relay Port Voltage Free Contacts                   | On Mains, On Automatic Bypass, On Battery, Battery Low, Load Protected  |                 |                  |
| Output Relay Specifications                        | 250V AC, 5A   |                 |                  |
| Optional   | Minislot cards; Web/SNMP, Relay, ModBus   |                 |                  |
| <b>ELECTRICAL CHARACTERISTICS - INPUT</b>          |   |                 |                  |
| Number of input phases                             | 3 Phase Rectifier, 1 Phase Bypass   |                 |                  |
| Rated input voltage and voltage tolerance          | <u>Rectifier:</u> 400Vac nominal (350, 360, 380, 415, 430V* Selectable)<br>Tolerance: 305-478V (-23% to +20%) at 100% load,<br><u>Bypass:</u> 187-264V at nominal 230V (-20%, +15% of nominal)<br>*De-rate 11kVA for 200/208/250V output: -10% kVA/kW, 220V: -1% kW |                 |                  |
| Operating Frequency / Tolerance                    | 50/60Hz Auto-sensing<br>Tolerance 50Hz nominal: 40-60Hz before transfer to battery<br>Tolerance 60Hz nominal : 50-70Hz before transfer to battery   |                 |                  |
| Input current distortion                           | <5% THDi (nominal input voltage, full load and battery fully charged)   |                 |                  |
| Input power factor                                 | ≥0.99pf   |                 |                  |
| Inrush Current                                     | ≤800% of rated RMS current  |                 |                  |

## Eaton 9PX 6-11kVA 3-Phase input UPS Technical Specification

| <b>ELECTRICAL CHARACTERISTICS – INPUT (continued)</b>                         |  |                 |                  |
|---|--|-----------------|------------------|
| <b>Model</b>  | <b>9PX6Ki31</b>  | <b>9PX8Ki31</b> | <b>9PX11Ki31</b> |
| UPS (Rectifier) Nominal Input Current @ 400V with batteries fully charged     | 8.4A   | 11A             | 15.3A            |
| Recommended protection circuit rating (D Curve): Rectifier Input <sup>1</sup> | 16A  | 20A             | 30A              |
| Recommended protection circuit rating (D Curve): Bypass Input                 | 32A  | 50A             | 63A              |
| <b>ELECTRICAL OUTPUT CHARACTERISTICS – NORMAL MODE</b>                        |  |                 |                  |
| Rated apparent/active power   | 6kVA/5.4kW   | 8kVA/7.2kW      | 11kVA/10kW       |
| Number of output phases   | 1 Phase  |                 |                  |
| Load power factor range   | 0.5 lagging to 0.5 leading   |                 |                  |
| Rated output voltage  | 230Vac nominal (200, 208, 220, 240, 250V Selectable**)<br>**De-rate for 11kVA: 200/208/250V -10% kVA/kW, 220V -1% kW   |                 |                  |
| Steady state voltage variation  | ±1%  |                 |                  |
| Dynamic voltage regulation & recovery time                                    | ±6% for 20%→100%→20% Resistive Load<br>±9% for 0%→100%→0% Resistive Load<br>Recovery time 100ms to 90% Vnom after 0%→100%→0% non-linear load (IEC62040-3 reference) step   |                 |                  |
| Crest factor  | 3:1  |                 |                  |
| Rated output frequency  | 50Hz (default) or 60Hz   |                 |                  |
| Output frequency regulation   | When synchronised: ±5% default, selectable ±1% to ±10%<br>Unsynchronised (or on battery mode or frequency converter mode) ±0.5%  |                 |                  |
| Frequency Slew Rate   | 1Hz/s (0.5 Hz/s in Hot Standby configuration)  |                 |                  |
| Total output voltage distortion   | <2% linear load; <5% non-linear load (IEC62040-3 reference)  |                 |                  |
| Overload capability   | 100-102%: No alarm<br>102-110%: Load transfers to bypass after 2 minutes<br>110-125%: Load transfers to bypass after 1 minute<br>125-150%: Load transfers to bypass after 10 seconds<br>>150%: Load transfers to bypass after 900ms<br>Maximum current: 90A for 6kVA models, 120A for 8kVA, 150A for 11kVA |                 |                  |
| Overload capability (bypass mode)   | 100-125%: No alarm<br>125-150%: UPS shuts down after 1 minute<br>>150%: UPS shuts down after 1 second  |                 |                  |
| <b>ELECTRICAL OUTPUT CHARACTERISTICS – STORED ENERGY</b>                      |  |                 |                  |
| Rated apparent/active power   | 6kVA/5.4kW   | 8kVA/7.2kW      | 11kVA/10kW       |
| Waveform  | Sine Wave  |                 |                  |
| Transfer–normal to stored energy  | No break   |                 |                  |
| Load power factor range   | 0.5 lagging to 0.5 leading   |                 |                  |
| Rated output voltage  | 230Vac nominal (200, 208, 220, 240, 250V* Selectable)<br>*De-rate for 11kVA: 200/208/250V -10%, 220V -1% kW  |                 |                  |
| Steady state voltage variation  | ±1%  |                 |                  |
| Dynamic voltage regulation & recovery time                                    | ±6% for 20%→100%→20% Resistive Load<br>±9% for 0%→100%→0% Resistive Load<br>Recovery time 100ms to 90% Vnom after 0%→100%→0% non-linear load (IEC62040-3 reference) step   |                 |                  |
| Crest factor  | 3:1  |                 |                  |
| Rated output frequency  | 50Hz (default) or 60Hz   |                 |                  |
| Output frequency regulation   | ±0.5%  |                 |                  |
| Total output voltage distortion   | <2% linear load; <5% non-linear load (IEC62040-3 reference)  |                 |                  |
| Efficiency  | >91%   |                 |                  |

## Eaton 9PX 6-11kVA 3-Phase input UPS Technical Specification

### ELECTRICAL OUTPUT CHARACTERISTICS – STORED ENERGY (continued)

| Model               | 9PX6Ki                    | 9PX8Ki | 9PX11Ki |
|---------------------|---------------------------|--------|---------|
| Overload capability | 102-130% 10s, >130% 100ms |        |         |

### EFFICIENCY (Input/Output)

|   |            |               |              |
|---|------------|---------------|--------------|
| Efficiency at 100% load (On Line Mode/High Efficiency Mode) | >93% / 98% | >94.5% / >98% | >94.5% / 98% |
|---|------------|---------------|--------------|

### BATTERY and CHARGER

|  |   |               |                |                |                |                |
|--|---|---------------|----------------|----------------|----------------|----------------|
| Battery Management                       | Advanced Battery Management (ABM <sup>®</sup> ) = 90% resting, 10% floating/charging. Automatic battery testing, deep discharge protection, automatic recognition of battery modules, float temperature compensation - 3mV per °C (25°C nominal) if ABM disabled. |               |                |                |                |                |
| Battery Nominal Voltage                  | 240V (120 cells)  |               |                |                |                |                |
| Charging Current                         | 1.7A ±20% (Additional 10A available with SC240RT Supercharger option)   |               |                |                |                |                |
| UPS Standard Battery Configuration (EBM) | 1 string of 20 x 12V 9Ah batteries, VRLA, AGM   |               |                |                |                |                |
| EBM Model                                | 9PXEBM240   |               |                |                |                |                |
| Battery Replacement                      | Hot-swappable batteries   |               |                |                |                |                |
| <b>Battery Run Times 9PX6Ki31*</b>       | <b>Std EBM</b>  | <b>+1 EBM</b> | <b>+2 EBMs</b> | <b>+3 EBMs</b> | <b>+4 EBMs</b> | <b>+5 EBMs</b> |
| Minutes @ 100% load, 0.9pf               | 8   | 22            | 38             | 54             | 70             | 87             |
| Recharge time to 90% capacity            | 1.52h   | 4.6h          | 7.7h           | 9.8h           | 13.6h          | 17.9h          |
| <b>Battery Run Times 9PX8Ki31*</b>       | <b>Std EBM</b>  | <b>+1 EBM</b> | <b>+2 EBMs</b> | <b>+3 EBMs</b> | <b>+4 EBMs</b> | <b>+5 EBMs</b> |
| Minutes @ 100% load, 0.9pf               | 5   | 16            | 27             | 36             | 50             | 65             |
| Recharge time to 90% capacity            | 1.52h   | 4.6h          | 7.7h           | 9.8h           | 13.6h          | 17.9h          |
| <b>Battery Run Times 9PX11Ki31*</b>      | <b>Std EBM</b>  | <b>+1 EBM</b> | <b>+2 EBMs</b> | <b>+3 EBMs</b> | <b>+4 EBMs</b> | <b>+5 EBMs</b> |
| Minutes @ 100% load, 0.9pf               | 3   | 10            | 18             | 25             | 34             | 42             |
| Recharge time to 90% capacity            | 1.43h   | 2.72h         | 6.8h           | 9.2h           | 12.4h          | 15h            |

Note: 6 EBMs recommended, maximum 12 EBMs (or 400Ah) possible with additional charger (SC240RT Supercharger option)  
 Contact Eaton for run times with 7-12 EBMs or large external batteries. \*Battery times are approximate and vary depending on age, temperature, load configuration and battery charge.

### BYPASS CHARACTERISTICS

|                    |  |
|--------------------|--|
| Type of bypass     | Automatic Static Bypass<br>Separate Mains & Bypass inputs  |
| Transfer time      | 0ms (10ms or 20ms unsynchronised transfer to bypass can be selected)<br><10ms transfer time when exiting from High Efficiency mode   |
| Maintenance Bypass | Optional Maintenance Bypass Panel (MBP) fitted to rear, side or top of UPS, or mounted separately. Provides make before break transfer, enabling isolation, removal & replacement of UPS/Power module without disruption |

### PARALLELING CHARACTERISTICS

|                           |  |
|---------------------------|--|
| Maximum number of modules | 2 modules in parallel for 1 + 1 redundancy or capacity |
| Load sharing error        | <5%  |

<sup>1</sup>For single/common input source, use bypass input recommended ratings