Production Firmware History (Since Version 1.18)

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Eaton 93PM 480V UPS Production Firmware History (Since Version 1.18)

Description

This document is intended for end-user informational purposes. It describes the changes between revision levels of the primary control board firmware used in the 93PM (480V) product line. This document will be changing periodically and reposted on www.Eaton.com to reflect new production level firmware changes. In all cases, the changes, enhancements, fixes, and new features listed under a given production release are automatically transferred into the next production release.

Version 1.60 / December 1, 2023

Notes

- Compatible with all existing 93PM UPS Hardware

New Features

- None

Fixes

- Corrected an issue in which battery setup information could be changed without the UPS being in shutdown state.
- Corrected UPS Power Summary Remaining Capacity Limit Setting always displaying 0
- Corrected the issue with selector screen buttons overlapping and unreadable.
- Corrected the "CB2" MODBUS issue. This was inverted in previous versions.

  The status is now (Closed = 1; Open = 0).

Version 1.58 / December 8, 2022

Notes

- Supports newest version of HMI, which is V2

New Features

- None

Fixes

- Corrected issue of Ignoring Charger Off Signal Input.
- Corrected charger erroneously shown as charging when it was not.
- Corrected issue of the Battery HMI status not updating until unit goes Online for the first time after logic power up.

Version 1.56 / February 7, 2022

Notes

- Updated Support for Industrial Gateway Mini-Slot COPI
- Released notes on Easy Capacity Test to include v 1.56

New Features

- NFPA 101 Life Safety Code Self-Testing (UL924)

Fixes

- Change Rectifier State machine operation to allow return to utility if other UPMs are still on battery.

- Corrected the issue of the UPS switching to ABM mode once logic power is cycled when it was running in float mode beforehand.

Version 1.54 / April 2, 2021

Notes

- This is a global release for worldwide use.

- Product specifications corrected. +/- 3.6 HZ is the frequency deviation for Energy Saver System mode.

New Features

- External Common Battery with Advanced Battery Management.

- Load-dependent shutdown limit for Super Caps.

- 600 volt option for Super Cap installations.

- De-rated Variable Module Management System.

- Li-Ion Battery Monitoring System Gateway support.

Fixes

- UPS Off instead of Load Off screen tab pre-selected.

- Improved Modbus alarm reporting.

- Limited battery charge current when operating from generator power.

- PowerXpert minislot card retrieves the last 200 alarms from the UPS event log. This requires 2.6.25 firmware on the card.

- Fixed a condition where the UPS would continue to operate on battery power after utility was restored.

Version 1.48 / April 17, 2019

Notes

- None

New Features

- UPS when used as a reserve now includes a Battery Not Charged Protection; There is now a one-hour delay before returning on-line after a full discharge cycle

- The Battery configuration values are now matched in 400 kW unit which have two towers

- Support for Network M2 Card

- Ambient Temperature Warning: New feature to warn about batteries being in high ambient temperature

Fixes

- Checksum Failed Alarm after logic cycle preventing system restart

- 93PM Battery Shunt Trip Update; Prevents possible load loss when transitioning to battery mode

- Easy Capacity Test power command from HMI is now based upon kW and not kVA

- KVA configuration mismatch after programming reset

- New error code message when the Battery Test stops due to low load condition

- Change UK phone number on Contact Eaton screen on HMI

- Gigabit Network Card was showing incorrect alarms, meter values, and power flow on its Web User Interface while the UPS was in Bypass Mode

- Changed "Go On-Line" command to "System Level" command

- Raised the Site Wiring Fault Alarm threshold from 15V to 20V to prevent nuisance alarms

- Nuisance MCU Alarms during a CAN failure

- "Suspend Not Available" message was not clearing when one or several UPM's are shut down

- External Parallel would not "Load Off" from the HMI UPS level controls

- External Parallel would not go to Auto-Standby Mode

- Improved the displayed battery run-minute runtime value

- Improved the accuracy of the displayed KW and PF values

- Fan speed increase to 100% does not happen during battery test

- Service and Support contact phone number updates on the HMI

- Raised the fan failure alarms to be service / user alarms

Version 1.46 (Not Released)

Version 1.44 / November 9, 2018

Notes

This version supports all 93PM products globally: 400V 4-wire, 480V 3-wire, and 480V 4-wire. It includes both single-tower and multi-tower, and all external parallel configurations.

This release primarily provides a fix for a single UPS module which fails to go online in an external parallel configuration, when other UPS modules are already online.

Under specific situations where the bypass sources were rapidly slewing (0.5 Hz/s or more) within a very small frequency range was examined and the behavior of the system when supplied with this source was changed so that it would qualify as a valid source. The frequency window in which this would occur is on the order of 0.1 Hz or less.

The improvements result in a more thorough qualification of the bypass sources leading to a reduction of bypass not available alarms.

New Features

- Simplified Synchronization and Load Share algorithms

- Predict Pulse support (enhancement added in November release of 1.44)

- New ECT controls (EMEA)

- Added ATS pre transfer (EMEA)

Fixes

- External Parallel: DC-link over voltage on battery start

- Power Conditioner and Frequency Converter: DCOV when load was removed

- DC link over voltage, level 4 overload when disconnecting the external CAN cable and pull chain in while in VMMS mode

- Parallel 93PM 200 4-wire was subjected to IEC 1000-4-28 L3 Frequency Fluctuations; This caused the System to have Multiple DCOVs and result in an Emergency Transfer to Bypass

- A UPM intermittently tripped after Internal CAN short was removed
- Output ACUV after load step
- External Parallel: ETB occurred due to Overload in UPM 7 when only UPS1 Internal Can was shorted
- ECT mode causing inverter relays to stick
- Bypass to online transfers fail intermittently on external parallel systems
- External Parallel Emergency Transfer to Bypass during slewing process
- Failure of a single rectifier fuse causes the history log to scroll off
- Parallel 3 and 4-wire with resistive load was unable to slew at 5Hz/sec without Output Not In Sync With Bypass and Bypass Not Available Notices
- Parallel 3 and 4-wire with in Bypass Mode with a Shorted Internal Can Buss on UPS 3 will not transfer to Online Mode using the HMI Systems Controls
- Input consumption meters on the HMI are un-resettable
- Improved Load Sharing when frequency of input voltage is slewing
- Auto-balance did not work on parallel systems
- MCU logs flood during CAN failure
- Stuck on battery when transferring from VMMS to battery
- Simplified Synchronization and Load Share Algorithms
- UPM uses Screen Meters for UV and OV detection
- Load threshold for full STSW fan speed is now configurable
- UPS does not follow user commands through HMI (i.e., Load Off, Go On-Line, Go To Bypass, etc.) if System Controls window is exited with "home" function after 5 second countdown timer has elapsed
- Low output voltage when a UPS was commanded to online while MOB was open
- External common battery does not trip battery breaker when shutting down system
- Button "graphic" missing in the input meters page
- Battery ECT failed at less than 60% ECT Power
- Add configuration error alarm for external parallel with unequal system ratings
- Add delay time for rectifier walk-in
- Electronic load: Unexpected shutdown when there is overload and ETB in the UPS under test
- UPS can't start when trip alarm of internal CAN bus failed
- ECT power is lower than the commanded level and the UPS makes a noise that increases with the power level
- ECT load percent range is incorrect for battery ECT
- Implement ATS pre-transfer
- Site wiring fault in MCU uses a screen meter for detection
- More phone numbers for the "Contact Eaton" screen
- Load Sync Control for 400 kW systems
- Meter history graph not working correctly with lagging power factor
- Translations for service reminder

- Reset meter history graphs at first startup

Version 1.40 & 1.42 (Not Released)

Version 1.38 / August 24, 2017

Notes

Supports all 93PM products: 400V and 480V, 3-Wire and 4-Wire, including external parallel configurations..

New Features

- Service pop-ups (U.S. based project)

- Ambient temperature logging

- Low voltage battery operation (220 Vdc nominal)

- Alarm added in case external parallel units have unequal power ratings

- Implemented new DC Feed Forward in all 93PM products for better performance when transitioning to Battery mode

Fixes

Note: Most all are related to the newer product models and not original 93PM 50–200 kW platform).

- Improved output voltage regulation performance during utility to battery transfer on 220 Vdc battery model and during load steps

- Removed nuisance overload alarms when input voltage decreased to around 190V

- False "Service Battery 1" alarm was occurring during an ABM battery test

- HMI Information screen text "Model:" now shows the name of the unit

- Changing the UPS output frequency from the display was resulting in UPM(s) tripping and Output Frequency variations

- The "Internal CAN Abnormal or Configuration Mismatch" alarms were toggling needlessly

- "Service Battery" was activating needlessly when forward transferring from VMMS mode

- Improved synchronized ABM (common ABM) functions

- Overloads due to a single UPM trip could result in immediate Emergency Transfer to Bypass

- Nuisance High Line alarm conditions may result after failure of single UPM

- Battery backup time was displayed incorrectly in ESS mode

- HMI intermittent 0 kVA readings

- Implemented optional Site Wiring Fault detection

- Incorrect bypass metering in ECT mode

- Added "Configuration Error Alarm" for external parallel with unequal system ratings

- Added ambient temperature logging

- Added delay time for Rectifier walk-in

- 93Px series UPS would not startup when trip alarm of internal CAN bus failed is active

- Corrected misleading "Rectifier Startup OK" message in alarm log text

- Added EEPs for minimum percent load setting (kW and kVA) for display values

- Battery Test can be started when ABM state is Reset state

- CSB parameters were not reset when CSB setup was reset

- Network-MS and Modbus-MS cards were showing "93PM 500 kVA" as "93PM 450kW"

- Added translations / languages for Hungarian and Bulgarian

Version 1.36 / June 15, 2017

Notes

This version is the first release which supports External Parallel 3-wire and 4-wire configurations and operations. This version also contains significant improvements related to hardware control and DC Voltage regulation during cycles out of and back into ESS mode.

Changes and Enhancements

- Reduction of unnecessary nuisance alarms

- VMMS mode false overload

- Improved data for Modbus-MS application

- Improved operation with Super Capacitor application

- Mimic screen corrections

- HMI battery meter screen updated after battery test

- Corrected Spanish text

- Improved auto-restart functions under dual-source configurations

- Reactive power compensation in ESS mode

- Improved Battery Time Remaining accuracy

- Improved data capture in alarm history log

- Improved THD meter values on the PXGMS card

Version 1.32 / June 27, 2016

Notes

The firmware is compatible with all shipped versions of hardware, however it is only required for the 400 kW frame size of product, and does not apply to the 200 kW size. It addresses an intermittent problem with internal communications which may lead to microprocessor instability.

Version 1.30 / March 31, 2016

Notes

The firmware is compatible with all shipped versions of hardware. This version adds Battery Temperature Compensation, Separate Battery Configurations, Ambient Over-Temperature Alarm, Programmable settings for a "Charger Off" alarm and the addition of a new Auto-Balance function, which eliminates the need for a load bank to balance the load share between UPMs.

Changes and Enhancements

- Easy Capacity Testing

- Support of 480V 4 Wire single UPM Configurations

- Delay between MBS main contacts and auxiliary contacts

- Internal and external temperature compensation

- Abnormal Battery Voltage detection

- Improved support of electronic loads while using ESS mode

- Battery configuration and metering additions and improvements

- External Parallel Configuration improvements for Double Conversion, VMMS and ESS modes

- Load Share Auto-Balance improvements

- Transformer Over Temperature and Fan Fail Alarms added

Version 1.28 / November 11, 2015

Notes

The firmware is compatible for all 93PM products globally, including the support of up to eight (8) UPSs in external parallel configurations.

Changes and Enhancements

- Battery Test function in ESS mode of operation
- HMI "Percent of Remaining Battery" under 2 X UPM Configurations

Version 1.26 / September 16, 2015

Notes

The firmware is compatible for all 93PM products globally, including the support of up to eight (8) UPSs in external parallel configurations.

Changes and Enhancements

- Internal Communications
- 480V 4 Wire: Output Voltage THD
- Remote Monitoring Panel Indicators
- Building Alarm and PXGX Interface Functionality
- Added Medical Imaging Application
- Load steps in ESS mode
- Italian and Romanian Languages
- Load Sync Control
- High Resistance Ground
- Separate Battery Capability
- External Parallel HMI Shut Down Control

Version 1.24 / (Not Released)

Version 1.22 / January 22, 2015

Notes

Released VMMS Function for 400 Volt, DC Flywheel with ESS, and adjustable Charger parameters. Also supports Load Sync Control for External Parallel configurations and Wet Cell Battery applications.

Changes and Enhancements

Improved Battery Testing while in the ESS mode

Version 1.20 / July 2, 2014

Notes

This release provides a common firmware for 400V and 480V products. Also, added High Resistance Ground functionality on single source applications, asynchronous transfer to bypass, and Auto-Reset of the Building Alarm Inputs. Display can now show system level input and output voltages when an IAC-D cabinet is attached with transformers.

Changes and Enhancements

- HMI Charger current limit support
- Load Sync Control
- Adjustable Battery Test Time
- HMI Input Current Meters and accuracy under reactive loads
- ESS mode
- External Parallel protections
- High Resistance Ground fault reaction
- High Rate Battery support
- Converted applicable notices to alarms

Version 1.18 / April 14, 2014

Notes

This version is compatible with all versions of hardware and applies to both 400V and 480V products. External Parallel and External Parallel ESS capability was released. Also adds Frequency Converter, Power Conditioner and Ultra Capacitor support for 400V products.

Changes and Enhancements

- Enhanced Charging
- History log clearing
- External Parallel CAN and Module Output Breaker operation
- Load Share Auto-Calibration
- Output Voltage Protections
- Output Power Factor accuracy
- Building Alarm Input Functions
- Filtering of Alarms
- Real Time Clock Leap Year
- Connectivity redundancy level