

Eaton 9390 (40–160 kVA) UPS

Production Firmware History (October 7, 2019)

Description

This document is intended for end-user informational purposes. It describes the changes between revision levels of the primary control board and CSB board firmware used in the 9390 product line. This document changes periodically and is reposted on Eaton.com to reflect new production level firmware changes. In all cases, the “Changes and Enhancements” listed under a given production release are automatically transferred into the next production release.

Version 6.14 / October 7, 2019

Changes and Enhancements

This DSP and Mini-CSB version includes a fix for an issue where a Configuration Error 60 alarm would occur due to vibration of the CSB Battery. Also, a fix was added so that the K5 contactor status would be correctly reflected through the XCP communication path for PXGX monitoring applications.

Version 6.12 / December 18, 2017

Changes and Enhancements

This DSP and Mini-CSB version includes a fix for incorrect kWh metering values being displayed through the PXGX Communication Card.

Version 6.10 / January 25, 2017

Notes

This version is released in support of Predict Pulse monitoring and its automated Battery Test function.

Changes and Enhancements

- Battery VPC calculation to prevent overflow.
- Logic cycle allowing Battery Test regardless of time since last completed test.
- Battery power logged in the battery logs is now using actual battery power.
- Time difference between tests is now more accurate and takes leap year into consideration.
- Improved detection of CAN failure in a Parallel system.
- Improvements with output current metering issues.

Version 6.08 / November 13, 2015

Not released into production; Use 6.04 as an interim and then 6.10 when available.



Powering Business Worldwide

Version 6.06 / April 10, 2014

Not released in the United States.

Version 6.04 / March 6, 2013

Notes

This version released primarily for ESS operation.

Changes and Enhancements

- Added ESS Setup screen to display for customer use.
- Improved accuracy of Output Meter values at light loads for kW, kVA, PF, and Current.
- User can now force a Go To Bypass from ESS mode using a Building Alarm and the Remote Go to Bypass function.
- Corrected operation of Mimic display to properly show when UPS on Maintenance Bypass (using Building Alarm).
- Reporting of K3 status (open/close) through connectivity screens.
- Added detection and auto-correction for any random program changes that affect operation.
- Added support for Traditional Chinese language.

Version 6.02 / August 25, 2011

Notes

The “Pre-Transfer” function is no longer active.

Changes and Enhancements

- Added Traditional Chinese language support.
- Adjusted K3 output contactor timing to prevent potential for Emergency Transfer To Bypass in ESS mode.
- Turned off “Non-Volatile RAM Failure” alarm to prevent nuisance customer alerts.

Version 6.00 / May 27, 2011

Notes

Version 6.00 was released for both the 9390 CSB and DSP in support of a new Real Time Clock (RTC) device located on the Mini-CSB board. As a result of this hardware change, the new Mini-CSB has a new part number requires firmware version 6.00 (or greater). When the new Mini-CSB is used, the DSP / Control board must also be flashed with 9390 DSP version 6.00 (or greater).

As referenced above, if the firmware between the DSP and CSB does not match, then the unit will flag a “Software Incompatibility” error.

Changes and Enhancements

None.

Version 5.06 / January 20, 2010

Notes

- 5.XX firmware requires a Mini-CSB PCB to be installed.
- This code package also requires DSP & CSB Boot loader version 1.34 and Gate Drive 1.14.
- The “Pre-Transfer” function is no longer active.
- Energy Saver System for parallel added to all models; same operation at single module units.
- New Building Alarms: ESS Request and High Alert; these operate like the front panel.
- Added Bypass Start Low Voltage limit for extended low-line startup conditions.

Changes and Enhancements

- Reduce distortion on Inverter Output due to voltage surges on Rectifier input.
- Improved operation of Neutral Regulator to limit amount of voltage shift in DC Link.
- Changed ESS Overload; Now the unit will go to Double Conversion, not Bypass mode.
- Support of new CAN Bridge PCB and firmware needed for Remote Monitor Panel.
- Added Fast Voltage imbalance in ESS mode, improving detection of single phase outage.
- Clear all commands if issued while EPO is active, such as Go to Bypass.
- In parallel units, Normal command from another UPM now logged as Normal Command 2.
- Common Mode filter now supported by inhibiting DC Link shifting during link bleed-down.
- Updated Display images: added Copyright symbol, changed all ESM text to ESS; stopped blinking Maintenance Bypass graphic symbol on Mimic screen.
- Resolved issue of Asian languages resetting to English at power up.
- Resolved lock-out of Service port communications after Display timeout.

Version 5.04 / August 25, 2009

Notes

- 5.XX firmware requires a Mini-CSB PCB to be installed.
- This code package also requires DSP & CSB Boot loader version 1.34 and Gate Drive 1.14.
- Energy System Saver (ESS) and Easy Capacity Test (ECT) now available.

Changes and Enhancements

- Version number changed.
- Control Board DSP does not drive the LCD any more. The display stays blank, if DSP is not present or communicating.
- Improved exit of ECT mode; no longer trips or alarms with nuisance current limits.
- Mini-CSB clock data and history log timestamps fixed at logic power up.
- XCP compliance issues fixed.
- European AS400 relay card in X-Slot 4 now fully supported.
- All language packs checked for their basic functionality.
- Battery filter support.
- Two new control screen soft buttons: ESS and High Alert mode.
- Two new building input functions available: ESS and High Alert mode.

Version 5.02 / June 10, 2009

Not released.

Version 5.00 / January 15, 2009

Notes

- 5.XX firmware requires a Mini-CSB PCB to be installed.
- This code package also requires DSP & CSB Boot loader version 1.34 and Gate Drive 1.14.

Changes and Enhancements

- Added gate drive power meters for troubleshooting from the XCP Tool meters tab.
- Now switching all gates for faster DC Link bleed down.

Version 2.12 / May 21, 2012

Notes

- The “Pre-Transfer” function is no longer active.
- Version 5.xx, is a purchased upgrade and includes hardware costs; 2.12 should remain in the unit as the minimum firmware version for customers who do not wish to purchase the upgrade.

Changes and Enhancements

- Version 2.12 contain the standard functionality of the unit switching to battery mode when a single input phase is lost; All firmware versions previous to 2.12 will attempt to operate in normal mode when a single input phase is lost; this may cause input feeder breakers with ground fault detection to trip open due to the current imbalance.
- An intermittent random program change may occur when there is a CSB installed causing a Bypass Not Available condition; This was resolved in the 2.12 firmware.
- Added High Inrush Load option; this allows a brief voltage sag on the inverter without a transfer to bypass for specific load applications.
- New Rectifier algorithms to reduce neutral current and allow operation using the Neutral.
- Reference Transformer kit; This change also improves performance of the product when installed on the same source as other UPS models which have active input filtering that is creating “ring-down” during an outage.
- Corrected Battery Charger operation; When ABM is disabled, the Charger will now start a cycle after the power on sequence. Previously it did not start a cycle until a discharge or float period timeout.
- Load Sync Control option for Parallel Redundant systems.
- Added new feature to disable blanking (zeroing) of input and output current display at low values.

Version 2.10 / February 28, 2008

Notes

2.10 was removed from distribution in June of 2008, however the changes and enhancements listed below were carried over into 2.12 and future releases.

Changes and Enhancements

- **Rectifier Control:** Rectifier does not start gating until after K1 closes; At loads under 40% on HV units the DC Link runs about 40-50V higher than before; Rectifier now works better with slewing input frequencies; Added K1 time delay for battery mode to on-line transition; Added function to balance input currents at light loads.
- **ABB vs CH Contactor:** Added function to allow units with C-H contactors to parallel with existing.
- **ABB contactor units.**
- **Output Metering:** Add capability to calibrate inverter output voltage and display values of output voltage separately.
- **Auto-restart:** Improved auto-restart to allow start upon power restoration after rapid battery voltage loss shutdown, such as Power Conditioner operation.
- **Internal Comm Failure:** Added changes to eliminate erratic Internal Comm. Failure alarms when units operate under light loads of 40% or less.
- **Added Czech, Hungarian, Romanian and Swedish language packages for DSP and CSB.**

Version 2.08 / August 24, 2007

Changes and Enhancements

Charger "cold start" function was added for HV models.

Version 2.06 / April 3, 2007

Changes and Enhancements

Added functionality for Mandarin and Korean display languages.

Version 2.04 / February 3, 2007

Changes and Enhancements

- Parallel redundant operation; Parallel redundant operation was changed to allow the system to transfer to bypass if a UPM trips and the output bus was below 50% of nominal for 5ms; The “good” module(s) should automatically re-transfer on-line after sync with utility is achieved.
- Lagging Power Factor; A lagging Power factor was causing incorrect displays on remote monitoring software via MODBUS.
- Languages; Added Polish and Finnish languages.
- Company Logo option added.
- New alarm message; A “Waiting for Communication” message has been added and displays only while LCD is initializing.
- Meter values; The following meters on the display LCD were corrected; Output / Load bar graph and input Voltage.
- Overload alarms; Lower level alarms were changed to not indicate OK if a higher overload level was still active.
- Remote Monitor Panel Operation; Improved Remote Monitor Panel operation with CSB.

Version 2.02 / June 14, 2006

Notes

Mini-CSB version 1.10 and Gate Drive version 1.12 is required for use with version DSP 2.02.

Changes and Enhancements

- ATS transfer improvements; Improved ATS detection method to fix problem with sensitivity issue.
- ATS transfer detection: Changed rate at which Rectifier Tripped 4 is detected.
- Fixed Bypass backfeed test scheduling problem in parallel systems.
- Fixed input current regulation code; Code balances the input current on all 3 phases when input power is greater than 5%.
- Improved gate drive board temperature alarm reporting.
- Mimic screen for foreign languages.
- LCD version number is now displayed if a button is pressed during startup.
- Improved Power factor and output metering with unbalanced non-linear loads.

Version 2.00 / February 16, 2006

Notes

Mini-CSB version 1.08 is required for use with version DSP 2.00.

Changes and Enhancements

- Improved MODEM operations: Clearing the failure message, failure message is displayed only when a true failure occurs; terminate call after a documented period of inactivity.
- Battery Converter Improvements: Ensure failure message is displayed only when a true failure occurs; Go to charge mode only if rectifier is On Normal mode.
- ATS transfer improvements: Detect ATS transfer by checking derivative of the input voltage against reference point.
- Improvements in Bypass Overload Protection: Before transferring to bypass the system will now check to see if bypass is available based on system Load vs. bypass overload level.
- Improvements to parallel operation (some RT changes included): Previous version always went to bypass prior to shutting down, now the design is to complete a bypass transfer, prior to shut down.
- Added check for missing battery and rectifier goes off line; This was added to prevent current limits if one unit doesn't have a battery and the system loses utility input.
- Changes to accommodate Cutler Hammer Contactor timing.
- Allow startup to Normal mode without active CAN.
- Disable to bypass command when CAN is inactive.
- Improvements made to parallel sync matrix which includes slowly walking to base frequency when going to battery or when CAN is inactive.
- Prevent bypass from turning on at startup.
- Building Alarm (B.A.) improvements: Fixed issue with settings enabling more than one option from the user screen; Changed Open Input Filter to ATS Pre-Transfer; Added action to turn Charger Off; Improved No Sync to Bypass and Sync to Bypass Single Phase functions.
- Rectifier improvements: Removed frequency filter condition when in power conditioner mode fixing problems with slewing generators.
- Added AS400 relay configuration operation.