GE Consumer & Industrial

EPM9650 Power Quality Meter

Firmware Revision 636 Release Notes

GE Publication Number: GER-4104

Overview

Summary

This release note covers the 636 revision of the EPM9650 Power Quality Meter. This release includes accuracy improvements to harmonics and THD computations, increasing flicker threshold ranges, and enhancements to time and date stamping including precision improvements to IRIG-B synchronization.   Enhancements were also made to Phase Angle and Phase Sequence for Delta and Wye connections.

- Affected products: EPM 9650 Power Quality Meter
- Date of release: April 27, 2007
- Firmware revision: 636

Description

The version 636 release is compatible with the GE Communicator Setup software versions 3.0.01 to the latest release, version 3.0.80.

Release details

In the following change descriptions, a revision category letter is placed to the left of the description. Refer to the Appendix at the end of this document for additional details.

Existing features modified

M

Phase Reporting: Increase precision of Vpp and Delta Power computations

To maintain the precision of unsigned phase-to-phase data when Vb phase angles are smaller than 114 degrees and Vc phase angles are greater than 246 degrees, a more accurate computation method has been implemented to eliminate occurrence of negative values in the code.

E

Phase Reporting: Improve Phase Angle and Phase Sequence reporting for grounded B phase Delta systems

On grounded B phase delta systems, Vbn reporting has been improved. Vbn Phase Angle computation has been modified to compute relative to Vcn.

Tests for low Vbn are performed initiating Phase Sequence tests using Vcn if Vbn is determined to be too low.

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Power Quality Measurements: improvements to harmonics computation accuracy

The accuracy of harmonics reading has been increased by improving the FFT butterfly data width from 16 bit to 32 bit.

E

Power Quality Measurements: improvements to THD readings

The THD accumulations buffer size was increased to increase the THD accuracy to error less than 0.05% of nominal voltage when $U_{measured} > 1\%$ $U_{nominal}$.

E

Power Quality Measurements: faster harmonic sampling

The sample timing precision of the FFT was improved to capture more samples. This results in greater overall accuracy of the harmonic readings.

E

Power Quality Measurements: Flicker detection range increased

The threshold for flicker computation has been decreased from 80V to 50V, resulting in an increased range at while the flicker detection will operate.

E

MIN/MAX: Clearing of pulse accumulation maximums

The maximum pulse accumulation Average and Timestamp values are cleared, along with all other system maximums, when the maximum value reset command is initiated.

E

MIN/MAX: Faster block window time adjustments with resets

The results of a MIN/MAX and/or Demand reset on average block window readings previously occurred only after the current scheduled block was completed. Modifications have been made to make this change immediate upon reset.

E

Time Synchronization: Daylight Savings Time (DST) modifications to match 2007 changes

The new daylight savings time changes have been incorporated in the firmware with the new 2007 start and end dates.

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Time Synchronization: DNP Time Synchronization modification

When the memory is in an interrupt during DNP time synchronization, the used registers are now pushed earlier to prevent erroneous readings.

E

Time Synchronization: Increase IRIG-B Time Synchronization Precision

A second buffer was added to the meter, so that "current time" in Standard Time and DST are in separate buffers. This separation eliminates the potential for timing errors from the IRIG-B time synchronization that is at Greenwich Mean Standard.

Upgrade paths

It is our recommendation that all customers upgrade to the latest version of EPM9650 firmware to take advantage of the latest developments and feature enhancements. Firmware upgrades can be easily preformed using the latest GE Communicator software. This software can also convert settings files from an older version to the latest version. It is recommended to also upgrade to the latest version of GE Communicator software (version 3.0.80).

Upgrade path

Visit http://www.geindustrial.com/multilin/software/epm9650.htm to download the latest 636 firmware for the EPM 9650. Instructions on how to perform firmware upgrades to your meter are documented in the EPM9450/9650 instruction manual.

The latest version of the GE Communicator setup software (version 3.0.80) is also available for download at http://www.geindustrial.com/multilin/software/epm9650.htm.

Appendix

Change categories

This document uses the following categories to classify the changes.

Table 1: Revision categories

Code	Category	Comments
N	New feature	A separate feature added to the meter. Changes to existing features, even if they significantly expand the functionality, are not in this category
G	Change	A neutral change that does not bring any new value and is not correcting any known problem
E	Enhancement	Modification of an existing feature bringing extra value to the application
D	Changed, incomplete or false faceplate indications	Changes to, or problems with, text messages, LEDs and user pushbuttons
R	Changed, incomplete or false records	Changes to, or problems with, records (oscillography, demand, fault reports, etc.)
C	Protocols and communications	Changes to, or problems with protocols or communication features
M	Metering	Metering out of specification or other metering problems

The revision category letter is placed to the left of the change description.

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