Release notes

HA1600 or HA1600A Firmware version 3.01, and HA-PC Link Version 3.0   6 October 2015

This version of the firmware can be applied to all HA1600 and HA1600A instruments of any age.

It is strongly recommended that the new versions of the instrument firmware and HA-PC Link should be used together. It is possible to use HA-PC link version 2.x with the new instrument firmware for harmonics measurements, but the Voltage Variations and Flicker reports will be poorly formatted. It is not possible to use the new version of HA-PC Link with old firmware – an error will be reported.

New Features – General

The format of the CSV (comma separated variable) files saved by HA-PC Link has been improved to make it much easier to incorporate the results into formatted word processor documents, using the "convert text to table" feature of the word processor. Full instructions are appended to this document.

New Features – Harmonics measurements to EN 61000-3-2:2014

All reports now show the latest dates for the issues of the standards EN 61000-3-2:2014 and the underlying measurement standard EN 61000-4-7:2002+A1:2009. It should be noted that the measurement methods have not changed from those implemented in firmware version 2.82. The changes between the issues of EN 61000-3-2 concern only the conditions of measurement of various types of equipment, mostly in the detailed provisions of Annex C. Also refrigerators and freezers having variable speed compressor drives are now transferred to Class D. None of these affect the measurements made by the HA1600, but define how the user conducting the test must operate the equipment under test.

There is one limitation: clause C.7 covering the testing of vacuum cleaners with electronic controls requires tests at three power levels, and now allows the intervals while the power is adjusted to be excluded from the measurement. The HA1600 firmware has no provision for parts of a measurement to be excluded, so users would need to take three entirely separate measurements and manually combine the results.

Harmonics Measurements under remote control

When under remote control from HA-PC Link, the instrument now automatically applies the modification of harmonic limits by the ratio 230/Vnominal for declared nominal voltages 210V or below. This provides the correct limits for measurements made for Japan with supply voltages of 100V (or 200V split phase), while maintaining the standard 230V limits for measurements at 220V, 230V or 240V.

Under local control, this option can be explicitly selected on the Test set-up screen whenever required.

Supply Voltage Qualification Report

HA-PC Link will now save a full supply qualification report whenever a set of harmonics measurements is saved. This contains a full listing of the parameters of the supply, including the levels of all the harmonics, together with a pass or fail assessment against the requirements of Annex A of EN 61000-3-2:2014.

New Features – Voltage Variations and Flicker to EN 61000-3-3:2013

The firmware now fully implements the requirements of EN 61000-3-3:2013 and EN 61000-4-15:2011. These new issues clarify the definitions of the terms used and remove many ambiguities, which have previously been interpreted in different ways by different manufacturers.

The most notable change is the naming of the term t(max); this is the total time during a change interval that the voltage change exceeds the limit of 3.3%. Because this need not be a single contiguous interval, the parameter 'the highest level of d(t) exceeded for 500ms' that was measured by earlier issues of the firmware is no longer significant and has been deleted from both the front panel presentation and the reports.

The firmware now implements the flicker meter filters for both 230V and 120V response characteristics, and operation from both 50Hz and 60Hz supplies. Note that it is important to make the correct declaration of nominal supply voltage and frequency, to match the supply actually being applied.

It also implements the correction factors for 220V and 100V detailed in table B.1 of EN 61000-4-15:2011. It may be noticed that this annex is informative, not normative, so users might wish to choose whether to apply these factors, however this issue of the firmware does not include any facility to exclude this correction.

Flicker Measurement setting time

Significant changes have been made to the initialisation of flicker measurements when configuration changes are made, to avoid a single large value being entered into the classifier. This resulted in a much larger value being displayed for the 0.1% classifier level than all the other levels.

Note however that a load with a large start-up transient will exhibit the same behaviour, although in this case there will usually be a higher value at the 0.7% classifier level as well, especially immediately after the transient.

Paragraph 5 (Limits) of EN 61000-3-3:2013 states "Pst and Plt requirements shall not be applied to voltage changes caused by manual switching". If manual switching causes a Pst failure, then two measurements must be made, one for voltage variations (including the manual switching event), and the other for flicker (not including the manual switching event).

Other Matters

A number of other minor errors have been fixed, most notably a disagreement between the firmware and HA-PC link that resulted in "Parsing Error" being displayed on the PC for some combinations of voltage and current range.

Firmware Update Procedure

This is unchanged: either USB (through the COM port drivers supplied) or RS232 can be used, but note that full hardware handshaking is used, so a fully wired 9-way RS232 cable is needed.

If the serial port of an HA1600 is connected to a PC through an RS232 to USB adapter, note that full handshaking support is still needed – not all such units properly implement this feature.

Configure the relevant COM port (whether USB or RS232) with the command:

    mode COMn: baud=115200 data=8 parity=n to=off octs=on dtr=hs
then:
    copy 1600f300.s COMn:

Note that the time out option to=off has been added to the mode command previously advised. Some terminal emulators (notably Hyperterminal) enable the time out configuration, which overrides the hardware handshake and causes the update to fail. The file upload facility of a terminal emulator program should not be used to transfer the file – use the direct copy command described above.

HA-PC Link has the capability of saving reports to a file on disc in either a plain text format, or as a CSV (comma separated variable) file.

The plain text reports are designed for traditional printers. They can be printed directly, but assume the use of a fixed pitch font such as Courier or Consolas. It is not easy to import these files into a word processor and apply any other formatting, because they use spaces to position text.

The simplest way to incorporate the reports into a formatted word processor document is to save a CSV file, and use that in conjunction with the "convert text to table" feature of the word processor software. This allows the two parts of the report (the introductory information in the header and the full data table below) to be formatted separately.

A spreadsheet program will not offer this flexibility. The standard association of CSV files is with a spreadsheet program; also using drag and drop facilities to import the file into a word processor will generally create an embedded spreadsheet object. In either case the spreadsheet program will attempt to apply a single layout to the entire file, which will not produce the desired results.

The full procedure recommended is as follows:

1) At the desired point in the word processor document, choose "insert file", or "insert text" then "text from file".

2) In the "file open" dialog select ".CSV files", or "spreadsheet files" or, if necessary, "all files". Select the file required and open it.

3) If offered conversion options, choose "convert from plain text".

4) Select the top (header) part of the data, down to the blank line above the tabulated data at the bottom.

5) Choose "insert table", then "convert text to table".

6) In the dialog box, first specify the character to be used to separate the text: choose "Commas". The dialog box should now show that two columns will be created. Choose Auto Column Width.

7) The header items will now be arranged into two columns. While the whole area is selected, adjust the vertical divider as required. Apply a table style, or format the text as desired.

8) Now repeat the procedure on the tabular data: select the bottom part of the report, and repeat steps 5 and 6. Seven columns should be offered.

9) Apply any detailed formatting required to the data table: many users will start by selecting "centred text".

The procedure is quite straightforward, once the location of the required menu options has been discovered for the particular version of word processor program being used.

Users who perform the procedure frequently may wish to define Table Styles to suit their preference, or even to write macros to automate the process.