

Release Notes for Firmware of H&H PLI Series Electronic Loads

Contact H&H to check possibility of firmware update for your specific device. Provide serial number.

Concerning Components:

AI: Analog Interface Board

DI: Data Interface Board

UI: User Interface Board

GI: GPIB Interface Board

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Firmware Release: AI4.1.0 DI4.1.0 UI4.1.2

Enhancements / Changed

- Improved buzzer signal generation to avoid blocking of the CTRL task.
- Improved displaying of the technical data if components (AI or DI) are unavailable.
- Moved "Diagnostic" screen to "H&H Service" menu.
- Improved the evaluation of the rotary encoder to avoid unwanted encoder events.
- Improved the USB data logging function in terms of sampling time accuracy and removed unused MPPT data logging.

Backwards Compatible

Hardware: Yes, only for production series B

Software: Yes, down to Release 4.0.x

Firmware Release: AI4.1.0 DI4.1.0 UI4.1.1

Bugfixes / Corrected

- Fixed bug that prevents the DHCP status from being changed (affected UI FW version: 4.1.0).
- Fixed bug in Calibration dialog which prevented from proper value input of the upper adjustment point (affected UI FW versions: 4.0.4, 4.0.5, 4.1.0).

Backwards Compatible

Hardware: Yes, only for production series B

Software: Yes, down to Release 4.0.x

Firmware Release: AI4.1.0 DI4.1.0 UI4.1.0

New Features/Added

- Added functionality for internal Zero Volt option.

Backwards Compatible

Hardware: Yes, only for production series B

Software: Yes, down to Release 4.0.x

Firmware Release: AI4.0.2 DI4.0.2 UI4.0.5

Bugfixes / Corrected

- Fixed bug which prevented the update of the setting value after a change of the function mode via the I/O port

Backwards Compatible

Hardware: Yes, only for production series B

Software: Yes, down to Release 4.0.x

Firmware Release: AI4.0.2 DI4.0.2 UI4.0.4

New Features/Added

- Added the displaying of German 'Umlaute' in the help texts

Enhancements / Changed

- Changed label text of left function key from "SAVE" to "OK"
- Changed graphical cursor appearance for checkbox and button widgets for better visibility.
- Added scaled value input for settings which are lower than 1.0F (e.g. Rmax = 0.47 Ohm), these values are now displayed with unit prefix "m" (e.g. 477 mOhm)

Bugfixes / Corrected

- Fixed bug in "Discharge stop condition" dialog which displayed an incorrect voltage value.
- Fixed bug in "USB data logging" dialog which set an incorrect Follow up time after pressing "OK".

Backwards Compatible

Hardware: Yes, only for production series B

Software: Yes, down to Release 4.0.x

Firmware Release: AI4.0.2 DI4.0.2 UI4.0.3

New Features/Added

- Added functionality of service test state for simplified testing of power protection during production.

Backwards Compatible

Hardware: Yes, only for production series B

Software: Yes, down to Release 4.0.x

Firmware Release: AI4.0.1 DI4.0.1 UI4.0.3

New Features/Added

- Added combined Discharge/List functionality on UI.

Bugfixes / Corrected

- Minor bugfixes and corrections.

Backwards Compatible

Hardware: Yes, only for production series B
Software: Yes, down to Release 4.0.x

Firmware Release: AI4.0.1 DI4.0.0 UI4.0.2

Bugfixes / Corrected

- Added line wrapping of a very long string in the Technical Data which does not fit into the corresponding column on UI.

Backwards Compatible

Hardware: Yes, only for production series B
Software: Yes, down to Release 4.0.x

Firmware Release: AI4.0.1 DI4.0.0 UI4.0.1

Bugfixes / Corrected

- Corrected error in startup interface info screen (CAN baudrate and address were swapped).

Backwards Compatible

Hardware: Yes, only for production series B
Software: Yes, down to Release 4.0.x

Firmware Release: AI4.0.1 DI4.0.0 UI4.0.0

Bugfixes / Corrected

- Corrected order of recalling setting values of the trigger system.

Backwards Compatible

Hardware: Yes, only for production series B
Software: Yes, down to Release 4.0.x

Firmware Release: AI4.0.0 DI4.0.0 UI4.0.0

New Features/Added

- Added Master-Slave functionality.
- Added screenshot function.
- Added rectangular function generator.
- Added functionality for diagnostic values.
- Added functionality for automated calibration.
- Added functionality for current trigger level.
- Added device parameters for fast and slow power regulation.
- Added command/query for configuration of CAN termination.
- Added help system for user interface in German and English.

Enhancements / Changed

- Changed firmware versioning concept with major, minor, revision counter
- New menu structure and user interface design.
- Extended UI functions with yt diagram, IV/PV diagram.
- Extended sample time for USB data logging to 0.5 ... 30 s.
- Extended measurement data buffer from 8000 to 40000.
- Extended number of setting memory positions from 2 to 10.
- Extended discharge functionality.
- Extended MPPT functionality.
- Extended error and added warning detection.
- Changed device parameter list structure.
- Changed resolution of slow ADC from 18 to 23 bits.
- Changed resolution of fast ADC from 12 to 16 bits.
- Changed maximum value for list count from 4.0E+09 to 9999999.
- Changed maximum value for dwell and ramp time from 800,000 s to 1,000 s.
- Changed maximum value for sampling time from 800,000 s to 1,000 s.
- Changed reset value for regulation state of voltage protection from ON to OFF.
- Changed the directory name pattern for USB exports (new PLI_Snxxxxx)

Backwards Compatible

Hardware: No - firmware only for PLI production series B

Software: No - see changes

Firmware Release: AI3.07 DI3.03 UI3.08

New Features/Added

- Added versioning pattern check of the file names for the firmware update. Now the application can evaluate if the firmware update file is suitable for PLI production series A.

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI3.07 DI3.03 UI3.07

Bugfixes / Corrected

- Fixed bug in Main screen if the setting value is changed with Shift + 0.
- Fixed bug in RS-232 screen which caused that the RS-232 changes were not saved.

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI3.07 DI3.03 UI3.06

Bugfixes / Corrected

- Fixed bug in "Power-On Settings" function if the quick boot option was disabled.

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI3.07 DI3.03 UI3.05

New Features/Added

- Added a verification of loaded EEPROM values in user interface.

Bugfixes / Corrected

- Fixed bug which occurred if a *.lst file with infinite list count $9.9E+37$ was imported.

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI3.07 DI3.03 UI3.04

New Features/Added

- Added input watchdog functionality to protect DUT when communication with the controlling computer fails

Enhancements / Changed

- Restructured the LAN menu and its submenus
- Remover trigger source "Hold" via HMI
- Enhanced creation of new LIST settings via HMI
- Enhanced firmware update procedure

Bugfixes / Corrected

- Fixed bug which caused a reboot if the UI Error screen was displayed
- Fixed bug which randomly disturbed USB write sequences
- Fixed bug when calculating float values near end of range (epsilon)
- Some smaller bugfixes

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI3.06 DI3.02 UI3.03

Enhancements / Changed

- Changed level of reverse current for reverse voltage detection

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI3.05 DI3.02 UI3.03

Enhancements / Changed

- Enhanced reverse voltage detection depending on level of reverse current

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI3.04 DI3.02 UI3.03

New Features/Added

- Yellow warning screen and acoustic alarm signal when overvoltage or reverse voltage is present

Enhancements / Changed

- Changed behavior at overvoltage or reverse voltage detection: input is switched off
- Overvoltage and reverse voltage detection now are independent of the beeper settings but always generate an alarm beep if pending
- Changed measurement function in static operation so that infinite value 9.9E37 is returned at overrange

Bugfixes / Corrected

- Corrected LIST function. Ramps were faulty when long ramp times or low setting deltas were set

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI3.03 DI3.02 UI3.02

New Features/Added

- Added LIST in power mode
- Added variable trigger voltage
- Added internal resistance measurement function
- Added load settings import/export from/to a USB flash drive

Enhancements / Changed

- Enhanced ID reading so that *IDN? can also be queried while a LIST or ACQ is running
- Changed initialization of Zero Volt enabling
- Enhanced display of measurement values when fast ADC is active
- Enhanced current and voltage measurement in CP mode
- Enhanced adjustment in CR mode
- Changed directory structure on the USB flash drive for exported measurement files
- Changed the enumeration process of an attached USB MSD to recognize and display the text "Unsupported file system" if an NTFS formatted USB flash drive is attached

Bugfixes / Corrected

- Fixed "Parameter error" bug when trying to edit a SCPI programmed list function without STIM:DWEL and STIM:RTIM lists specified
- Fixed some bugs in list editing

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI3.01 DI3.01 UI3.01

New Features/Added

- Added discharge function for test of energy storage devices
- Added a footer comment to the USB data logging file

Enhancements / Changed

- Changed User Interface so that special Main Screens for MPPT, LIST and discharge function are displayed

Bugfixes / Corrected

- Fixed bug in "Load USB List" function

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI3.00 DI3.00 UI3.00

New Features / Added

- Added data acquisition function for static and MPPT mode
- Added save and recall device settings function in local and remote mode (*SAV/*RCL)
- Added keylock function in remote state
- Added power-down detection including saving last settings to memory 0
- Added choice for power-on settings
- Added the possibility to change LAN communication port number.
- Added beeper event after the ERR bit is set in status byte.

Enhancements / Changed

- When list trigger is enabled a list is started by a trigger and now also stopped at another trigger
- Changed all timing resolutions to 200 μ s, minimum list and acquisition times also 200 μ s
- Changed ID string processing. *IDN? query now also possible while LIST is running
- Removed settings of external zero-volt enabling, function speed and the single external control signal enabling signals from non-volatile memory
- Removed test of external SD card at power-on of Data Interface
- Enhanced the manual trigger function. Now the manual trigger key is only considered if the trigger system is initiated in the status byte (avoids yellow "settings conflict" screen).
- Enhanced the dimming function. Now the display backlight becomes and stays illuminated if an error has occurred.
- Reduced "warning beeper" sources to OV, OPP, OTP and RV conditions.
- Enhanced the display function to choose the appropriate display controller driver
- Enhanced 'Time and date' screen to avoid a yellow error screen after an invalid date input.
- Changed [FUNC_MODE] tag into [LIST_MODE] tag in USB list files.

Bugfixes / Corrected

- Corrected voltage protection setting functionality in V mode so that the programmed value is saved and set when V mode is left.
- Corrected function so that FUNC:MODE xx does not generate a settings conflict while list is running
- Corrected writing of triggered levels as described in SCPI 19.5.4.2.
- Corrected MPPT start function when power mode is active

Backwards Compatible

Hardware: Yes

Software: No (minimum list time values and acquisition time 200 μ s instead of 100 μ s; tag name changed in USB list files)

Firmware Release: AI2.08 DI2.08 UI2.08

New Features / Added

- Added trigger delay functionality
- Added trigger holdoff functionality

Enhancements / Changed

- Changed current measurement value to 0.0A if input is off

Bugfixes / Corrected

- Corrected *TRG command function
- Corrected trigger button function (generated a trigger event independent of the chosen trigger source)
- Corrected ABORt function so that INIT:CONT is set to OFF

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI2.07 DI2.07 UI2.07

New Features / Added

- Added Constant Power mode functionality
- Added hint to power-cycle the device after firmware update of the Analog Interface (AI)

Enhancements / Changed

- Reload regulation and MPPT parameters immediately when re-programmed

Bugfixes / Corrected

- Corrected functionality of prohibiting changing operating mode while MPPT is running -> Settings conflict
- Corrected functionality of checking default numbers when MPPT and power control parameters are loaded

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI2.06 DI2.06 UI2.06

New Features / Added

- Added commands for Wh reading in MPPT mode
- Added the displaying of the accumulated energy in MPPT settings menu
- Added programmable list mode (LIST:MODE <mode>)

- Added functionality to automatically keep function speed and activation states of the four external control signals in non-volatile memory
- Added the possibility to transfer measurement data from the internal storage to an attached USB flash drive

Enhancements / Changed

- Changed list function so that list pauses at input off and continues at input on (segmented memory)
- Removed test of external RAM memory at power-on of Data Interface
- Changed display: MPPT is displayed instead of the setting value in main screen
- Restructured "LIST" menus

Bugfixes / Corrected

- Corrected voltage setting overwrite error when starting MPPT

Backwards Compatible

Hardware: Yes

Software: No (list mode, saved values)

Firmware Release: AI2.05 DI2.05 UI2.05

New Features / Added

- Added MPPT functionality (without Wh reading)
- Added functionality to enable optional functions
- Added the possibility to process sample times in USB list files
- Added the possibility to process list:count and list:acquisition in USB list files
- Added the possibility to deal with sample times for the list function in manual (local) operation

Enhancements / Changed

- Changed status register structure

Bugfixes / Corrected

- Corrected functionality when op mode is changed

Backwards Compatible

Hardware: Yes

Software: No (status register)

Firmware Release: AI2.04 DI2.04 UI2.04

New Features / Added

- Added trigger source initialization (BUS)

Enhancements / Changed

- Changed response format for common query "*OPT?"

Bugfixes / Corrected

- Corrected list processing at ramp times = 0 so that dwells are more accurate
- Corrected bug after setting a current value in "Edit list" menu

Backwards Compatible

Hardware: Yes

Software: No (*OPT? response)

Firmware Release: AI2.03 DI2.03 UI2.03 GI1.00

New Features / Added

- Added GPIB functionality
- Added Options register functionality

Enhancements / Changed

- Changed maximum number of measurement points from 10000 to 8000

Bugfixes / Corrected

- Corrected slope recognition of external trigger signal
- Corrected bug at end of list ramp
- Corrected epsilon compare in all set functions

Backwards Compatible

Hardware: Yes

Software: No (max. no. of measurement points)

Firmware Release: AI2.02 DI2.02 UI2.02

New Features / Added

- Added error code for "List not same length error"
- Added functionality for processing the Device/Interface Clear after detecting a break symbol on a serial interface
- Added hint in local mode to power-cycle the device after setting the system to factory default
- Added update of parameter list values in local mode if "CAL" state is left
- Added EEPROM Test in UI test procedure
- Added detection whether the bootloader is installed
- Added "Load list file from USB flash drive" functionality in local mode
- Added symbol at user interface to indicate attached USB flash drive
- Added displaying of "MEM" bit in user interface's questionable status register

Enhancements / Changed

- Changed number of list items to 300
- Changed design in Factory Settings menu

Bugfixes / Corrected

- Corrected behavior in external setting mode: the load could not be set to RES mode when SETT:EXT:ENAB ILEV was ON but SETT:EXT was OFF. Now only prohibited when both states are ON

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI2.01 DI2.01 UI2.01

New Features / Added

- Added function to determine unplugged AI/O board for service
- Added sample rates functionality in lists
- Added EEPROM access prohibition while list is running by generating memory use error
- Added bit 10 in Operation Status Register which is set when List sampling is active
- Added bit 12 in Questionable Status Register which is set when DAQ memory is overrun
- Added functionality for host name generation out of model and serial number string

Enhancements / Changed

- Changed Reverse Voltage value to -0.5V instead of -0.3V

Bugfixes / Corrected

- Corrected service string sending with nullstring if no string has been written to the internal memory
- Corrected float value comparison causing problems with low values in exponential format
- Corrected initial value of TRIGger:SEQuence:SOURce to POSitive instead of NEGative
- Corrected firmware update issues with blank devices in the system

Backwards Compatible

Hardware: Yes

Software: Yes

Firmware Release: AI2.00 DI2.00 UI2.00

New Features / Added

- Added ramp times functionality in lists
- Added functionality to generate a low pulse at TRG_OUT of Analog I/O Port when trigger state becomes active
- Added SYSTem:PRESet function to set device to factory default settings
- Added error handling for PORT:IO:IPIN and PORT:IO:OPIN command

- Added break symbol detection on serial interfaces for presetting communication
- Added new SCPI commands and queries to SYSTem:COMMunicate subsystem
- Added release state information (alpha, beta, release)
- Added UI Test
- Added bootloader firmware version in Technical Data menu

Enhancements / Changed

- Changed RSD polarity
- Changed baud rate values for external interfaces to a list of predefined values
- Changed design in Protection menu
- Changed standard storage path of USB data logging files to "root\LOGGING\"
- Removed Power-on menu during startup phase
- Changed voltage protection default value setting: EEPROM-saved value is set as default
- Changed function of active ADC recognition when calibration state is toggled
- Changed function of production parameter refreshing when production state is switched off
- Changed default state for voltage regulation/switching to regulation instead of switching
- Changed status model bits UVP and RSD
- Changed Service menu structure

Bugfixes / Corrected

Corrected some errors

Backwards Compatible

Hardware: No - AI needs Board Rev. 6!

Software: No

Firmware Release: AI1.00 DI1.00 UI1.00

New Features / Added

- Initial release
- Operating modes CURRent, RESistance, VOLTage
- LIST function with 250 values, without ramp times and without sampling