

Keysight B150x Semiconductor Device Analyzer Mainframe Firmware

Version A.06.02.2023.0401

Release Date:	1 June, 2023
Requirements Category: other:	B1500A Mainframe with its own software installed
File Name:	EasyEXPERT_for_B1500.6.4.2312.1715.exe
License:	B150xA-SWS or B150xAU-SWS License Required

New Features and Enhancements

- None.

Bug Fixes

- Fixed: [30] Unexpected HVSMU self-test error 4511.
- Fixed: [35] Unexpected HVSMU self-test error 4522.

Version A.06.02.2022.0415

Release Date:	15 Sep, 2022
File Name:	EasyEXPERT_for_B1500.6.3.2222.6640.zip

Bug Fixes

- Fixed: [33] Cannot use ERCMAPFGD in the program memory.

Version A.06.02.2022.0401

Released Date:	25 April, 2022
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File Name:	EasyEXPERT_for_B1500.6.3.2209.5850.zip
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Bug Fixes

- Fixed: [31] Unexpected error 690 on repetitive HV-UHC test sequence.

Version A.06.02.2021.0812

Released Date:	25 Oct. 2021
File Name:	-

Bug Fixes

- Fixed: [585854] Current range change speed became slower by #569241 changes.

Version A.06.01.2020.1015

Released Date:	31 Oct. 2020
File Name:	-

Bug Fixes

- Fixed: [584246] Socially Responsible Technical Nomenclature
- Fixed: [584290] *LRN? Command Returns invalid response.

Version A.06.01.2019.0423

Released Date:	15 Aug. 2019
File Name:	EasyEXPERT_for_B1500.6.2.1927.7790.zip

Bug Fixes

- Fixed: [569241] Spike of HRSMU on I range change from 100uA to 1mA.

Version A.06.01.2016.0401

Released Date:	25 Nov. 2017
File Name:	EE_for_B1500_6.1.1742.9630.rev2.zip

New Features and Enhancements

- ERUHVMAX? query is added for N1268A.

Bug Fixes

- Fixed: [451372] [Dual HCSMU] Error 5410 may occur for IN/DZ command after 40AR current pulse measurement.
- Fixed: [452848] [N1268A] In MM16, sweep with negative start and positive stop does not output positive side.
- Fixed: [454467] [N1268A] OCP changes may not be reflected due to N1268A DIO slow response.
- Fixed: [458413] [N1268A] Pulse sweep with negative start and positive stop does not output positive side

Version A.06.01.2015.1112

Released Date:	9 Feb. 2016
File Name:	Updater_6.1.1550.2150.zip

Bug Fixes

- Fixed: [414722] [B1506A-Hx0 Support] ERCMAA is to be changed to accept SMU assignments without CMU assignment.
- Fixed: [399685] ERPFDIAG? causes power-off in case of absence of corresponding SMU.
- Fixed: [400783] Comparison of real numbers at command interface may malfunction in case of large digit difference.
- Fixed: [414838] [B1506A] ERPFDIAG? 5 fails in case of ERCMAIO 0,0,331.
- Fixed: [430241] [MM4, MM28] High Voltage lamp may be turned on for current pulse sweep with power compliance even in case of not high voltage compliance setting.
- Fixed: [441048] [N1272A/B1506A] Some paths in ERCMAIO are to be invalidated.

- Fixed: [444895] AIT and AV settings are reset after issuing one of HVSMUOP, PCH, ERPFUHCA, ERPFGA, ERHVCA and ERUHVA.

Version A.06.00.2015.0520

Released Date:	8 Sep. 2015
File Name:	EasyEXPERT_B1500_6.0.1520.5030.zip

New Features and Enhancements

- N1274A support
- Multi HVSMU support

Bug Fixes

- Fixed: [9601] [Device Capacitance Selector Support] Diag. may fail depending on correction data.
- Fixed: [9602] [N1265A Support] ERPFDP 4 routes SMU sense unexpectedly.
- Fixed: [9605] [MM28] Unexpected error 130 may occur for log sweep.
- Fixed: [9567] Self-test of HCSMU/HVSMU/MCSMU causes failure of succeeding CPU board self-test with error 709.
- Fixed: [9615] [MFCMU] Invalid measurement data may be read after aborting measurement.
- Fixed: [9619] GNDU sink current limit is not set 4.2A but is set 2.4A.

Version A.05.61.2014.1114

Released Date:	5 Feb. 2015
File Name:	B1500_A.05.61.2014.1210.updater.zip

Bug Fixes

- Fixed: [9475] [DCS Support] Abnormal contact or conduction resistance of relays are to be detected.

Version A.05.60.2014.0910

Released Date:	28 Jan. 2015
File Name:	B1500_A.05.60.2014.0926.Desktop1.zip

New Features and Enhancements

- B1513C support
- B1506A support
- B1507A support

Bug Fixes

- Fixed: [9005] [FLEX Service] error handling for each category
- Fixed: [9183] [CPU Support FPGA] Enhancement of monitoring interlock and high voltage status
- Fixed: [8638] [N1265A Thermometer Support] Board temperature may not be read.
- Fixed: [9007] [FLEX Service] Cannot save GPIB log file in specified folder.
- Fixed: [9027] Sending MCPNT command with wrong channel number causes main frame shutdown.
- Fixed: [9062] [B1520A] Freq sweep measurement value has large dips after OSL cal.
- Fixed: [9071] [B1511B Support] ASU serial number reading is to be supported.
- Fixed: [9168] [N1265A Support] ICMR test limit for 1500AR is to be 3.5A.
- Fixed: [9189] [Dual HCSMU Support] Unexpected error 204 occurs for CL command in case of INTLKVTH 0.
- Fixed: [9237] [B1513x] Temp. limit in self-test is wrong.
- Fixed: [9271] [DR14I-010] B1500A shutdown may occur for HRSMU@10pA measurement noise.
- Fixed: [9281] SMU may apply high voltage after interlock open during application measurement.
- Fixed: [9287] [N1265A] Calibration data of ERPFUHCCAL? is not stored in EEPROM.
- Fixed: [9312] I/V Sweep measurement speed may differ depending on ranging and polarity.
- Fixed: [9338] [CMU] OSL correction data measurement may return incorrect result.

Version A.05.50.2013.0417

Released Date:	27 Apr. 2013
File Name:	-

New Features and Enhancements

- B1511B support for B1500A
- B1511B/E5288A support for B1500A
- B1514A support for B1500A
- B1511B support for B1505A
- Maximum number of sweep point is enhanced to 10,001 for I/V sweep measurements of MM2, MM4, MM5, MM16 and MM28. None.

Bug Fixes

- Fixed: [6958] [DR13I-004] B1500A FlexPrg Initialization Failed
- Fixed: [9000] Compliance range for DV command is not checked for SMU type.

Version A.05.04.2013.0328

Released Date:	5 Apr. 2013
File Name:	-

Bug Fixes

- Fixed: [8982] Fault tolerance for hardware failure is to be enhanced for interlock and emergency handlings.

Version A.05.03.2013.0128

Released Date:	25 Mar. 2013
File Name:	-

Bug Fixes

- Fixed: [8925] [N1268A Support] Unexpected error 1004 may occur depending on pulse base and peak settings.
- Fixed: [8937] Pulse fall timing below 20us of MCSMU causes unexpected error 233 in case of measuring with HPSMU/MPSMU.
- Fixed: [8943] [SPGU] ALWG output delay is not compensated correctly.
- Fixed: [8946] Sending DSMPLSETUP, DSMPLARM, DSMPLFLUSH or SOVC to non-SMU channel causes firmware crash.
- Fixed: [8952] [HCSMU/HVSMU/MCSMU Support] 0A force offset correction may not work for negative current sweep.

Version A.05.02.2012.1101

Released Date:	25 Mar. 2022
File Name:	-

Bug Fixes

- Fixed: [8851] [N1265A + N1266A Support] Diagnosis using HVSMU is to be performed only in case of direct connection of HVSMU.
- Fixed: [8869] [N1268A Support] Wrong error 694 is reported for missing N1268A instead of appropriate error 940.
- Fixed: [8872] [N1266A Support] PV mode set by ERHVPV is to be reset at ERHVCA and ERHVCTST? to avoid unexpected failure.
- Fixed: [8893] [B1512A/B1514A] Voltage pulse falling may be slow for 20A/1A range in case of different polarities for pulse base and peak.
- Fixed: [8915] [UHCU Support] Power Compliance does not work for I Pulse Sweep.

Version A.05.01.2012.0901

Released Date:	Sep. 2012
File Name:	-

New Features and Enhancements

- Signal Monitor related command support

Bug Fixes

- Fixed: [8785] The measurement is not performed at the specified timing, if over 2.097152s is set for Measurement Delay Time.
- Fixed: [8820] [MM10] Negative base voltage is not output for base hold time in case of 0V source setting.
- Fixed: [8847] Firmware may stall for racing condition of SRQ and byte-in/out.

Version A.05.00.2012.0710

Released Date:	Jul. 2012
File Name:	-

New Features and Enhancements

- B1511A support for B1505A
- B1513B support for B1505A
- B1514A support for B1505A
- N1265A support for B1505A
- N1266A support for B1505A
- N1268A support for B1505A

Bug Fixes

- Fixed: [8242]: [Trigger IO] Support of MM27 and MM28
- Fixed: [8734]: [Self calibration] Self calibration should abort on abnormal measurement value.

Version A.04.21.2012.0328

Released Date:	Apr. 2012
File Name:	-

Bug Fixes

- Fixed: [8439]: Step voltage of linear search is different from setup value on HVSMU.
- Fixed: [8454]: [MM16] Unexpected error 224 may occur for issuing XE due to uncleared WNX setting.
- Fixed: [8468]: Dual HCSMU force 2.3 A constant current causes overflow status.
- Fixed: [8490]: [MM16] The first step after a polarity change may be output in wrong polarity in case of reaching current compliance.
- Fixed: [8493]: [*LRN?] Sub-channel number of wrong offset is returned for B1525A.
- Fixed: [8528]: Output from HPSMU kept at pulse peak value in multi-channel pulsed spot measurement.
- Fixed: [8595]: [MM10] HVSMU may not output negative current for voltage compliance setting above 1500V.

Version A.04.21.2012.0309

Released Date:	Mar. 2011
File Name:	-

Bug Fixes

- Fixed: FLEX GUI may return a wrong response for ERR? after receiving multiple DCL.

Version F.A.04.20.2011.1018

Released Date:	Oct. 2011
File Name:	-

Bug Fixes

- Fixed: [8403] [Enh. Req.] weighted factor mode for HRSMU High-resolution ADC integration time

Version P.A.04.20.2011.1012

Released Date:	Oct. 2011
File Name:	-

Bug Fixes

- Fixed: [8400] [FLEX] Does not generate SRQ after emergency.

Version A.04.20.2011.0906

Released Date:	Sep. 2011
File Name:	-

Bug Fixes

- Fixed: [8247] B1505A + N1259A: Interlock error occurs intermittently even the lid of N1259A is closed.
- Fixed: [8278] [HVSMU] The limit of voltage range gain adjustment is too small.
- Fixed: [8309] [MM9] Unexpected error 307 occurs for omitting measurement channel for quasi-pulse measurement mode.
- Fixed: [8324] Transitional current may be observed due to insufficient wait time for negative current setting of SMU.

Version A.04.11.2010.1201

Released Date:	Dec. 2011
File Name:	-

Bug Fixes

- Fixed: [8133] [Module Selector] Output relay of SMU once assigned with ERHPA is on after execution of *TST? although in case of ERMOD 0.
- Fixed: [8134] [DHC] Inconsistency may occur for self-test/calibration results of Dual HCSMU.
- Fixed: [8140] [HCSMU] Cannot write SPI EEPROM.

- Fixed: [8146] [Module Selector] ERHPA/ERHPP must be rejected in case of High Voltage Status.
- Fixed: [8147] [Module Selector] Response of *LRN? may be inconsistent for slots controlled with ERHPP.
- Fixed: [8160] [DFSMU] Current pulse may have error of less than a few percents due to inconsistent current bias polarity.
- Fixed: [8165] [SPGU] Improve the algorithm of power amp idle current calibration.
- Fixed: [8166] [SPGU] Don't report error message in *CAL? when module failed.
- Fixed: [8168] Firmware hangs up in case of detecting high voltage status while power-on selftest.

Version A.04.10.2010.0531

Released Date:	Jun. 2010
File Name:	-

New Features and Enhancements

- Dual HCSMU Combination support

Bug Fixes

- Fixed: [MFCMU] Auto ranging may end up in not optimal range due to improper time window for status latching. [Bug 8020]
- Fixed: [HVSMU] *TST? does not report failure in Osc. Detector Test. [Bug 8091]
- Fixed: [Multi Channel Pulse] Wrong value and X status may occur when pulse width is set longer than 500ms. [Bug 8094]

Version A.04.03.2010.0130

Released Date:	Feb. 2010
File Name:	-

Bug Fixes

- Fixed: [CMU] Rel Z Adjust occasionally fails. [Bug 8055]

Version P.A.04.02.2010.0125

Released Date:	Feb. 2010
File Name:	-

Bug Fixes

- Fixed: [WGFMU] Self-calibration fails because hardware is not initialized correctly. [Bug 8053]

Version A.04.02.2009.1023

Released Date:	Nov. 2009
File Name:	-

Bug Fixes

- Fixed: [WGFMU/SPGU] Not failed module displayed FAIL status in Configuration dialog [Bug 7213]
- Fixed: [HPSMU] overflow status is not cleared in pulse measurement. [Bug 7999,8000]
- Fixed: [WGFMU] GPIB hang up when repeating measurement. [Bug 8003]
- Fixed: [HCSMU] occasionally does not work 20A range. [Bug 8011]
- Fixed: Calculated source value is not correct in multi-channel pulse sweep. [Bug 8016]

Version A.04.01.2009.0810

Released Date:	Sep. 2009
File Name:	-

Bug Fixes

- Fixed: [DI09I-035] The voltage is not settled with in several 100us sampling measurement by the side effect of Bug7569 fixed. [Bug 7950]
- Fixed: [SMU] The calculation method of setting resolution is different from previous versions. [Bug 7967]

- Fixed: [SPGU] Unexpected error 105001 may occur in ALWG mode depending on prior errors in PG mode. [Bug 7543]
- Fixed: [SMU] The self-test has some of defects about limits and sequences. [Bug 6455,7942,7945,7949,7955,7966,7967]
- Fixed: [HVSMU/HCSMU] Fixed range measurement may not stop the specified range in oscillation condition. [Bug 7940]
- Fixed: [HVSMU/HCSMU] The measurement may take very long wait time(35s) in oscillation condition. [Bug 7941]
- Fixed: [HCSMU] Offset voltage correction may be wrong for current ranges other than 20A range. [Bug 7939]
- Fixed: [HVSMU/HCSMU] Timeout of convergence judge for pulse base is too long. [Bug 7992]

Version A.04.00.2009.0525

Released Date:	Jun. 2009
File Name:	-

Bug Fixes

- Fixed: SMU output unexpected spike at 2V range 100mA compliance. [Bug 7569]

Version P.A.03.20.2008.1118

Released Date:	Dec. 2008
File Name:	-

Bug Fixes

- Fixed: Algorithm change for a better WGF MU IM accuracy [Bug 7405]

Version A.03.20.2008.1028

Released Date:	Nov. 2008
File Name:	-

Bug Fixes

- Fixed: SPGU self-test result is incorrect when sync line is not connected. [Bug 7235]

Version P.A.03.11.2008.0812

Released Date:	Sep. 2008
File Name:	-

Bug Fixes

- Fixed: Sampling interval between 1st and 2nd measurement points is longer than expected. [Bug 7059]
- Fixed: GPIB hangs up when it receives end-of-line only string.("\r\n") [Bug 6948]

Version A.03.11.2008.0603

Released Date:	Jul. 2008
File Name:	-

Bug Fixes

- Fixed: CORRSER? command does not work. [Bug 6566, 6787]

Version P.A.03.10.2008.0414

Released Date:	May. 2008
File Name:	-

Bug Fixes

- Fixed: SPGU 2nd and following channels ignore ALWG sequence repeat count settings. [Bug 6709]
- Fixed: HR/MPSMU output momentarily drops to 0 V when the I range changes from 10 mA to 100 mA. [Bug 6710]

- Fixed: SPGU over current detector is too sensitive to tolerate parts characteristics variation. [Bug 6756]

Version P.A.03.10.2008.0221

Released Date:	Mar. 2008
File Name:	-

Bug Fixes

- Fixed: HRSMU Output spike when moving from 1nA range to 100mA range directly. [Bug 4015]
- Fixed: In appropriate SMU shutdown sequence. [Bug 5148]
- Fixed: Interlock open status is not reset. [Bug 5625]
- Fixed: Overshoot observed at 0.5V range / filter off / 100mA compliance. [Bug 6447]
- Fixed: Id-Vg measurement takes long time. [Bug 6492]
- Fixed: Data Ready bit was not asserted in high-speed sampling. [Bug 5848]
- Fixed: Data drop-in high-speed sampling. [Bug 5951]
- Fixed: Unexpected ADC Overflow status in high-speed sampling at interval above 250us and around. [Bug 5981]
- Fixed: High speed sampling measurement does not work properly when hold time is negative value. [Bug 6018]
- Fixed: V force I measurement sweep could sometimes suspend for 1.5 seconds.
- Fixed: Data Ready bit was not asserted in high-speed sampling. [Bug 5848]

Version A.03.10.2007.1021

Released Date:	Nov. 2007
File Name:	-

Bug Fixes

- Fixed: MV command doesn't work in program memory when V range is set to 11. [Bug 6140]

Version A.03.00.2007.0621

Released Date:	Jul. 2007
File Name:	-

Bug Fixes

- Fixed: Invalid ADC Type (g field) value at 8 bytes binary data format. [Bug 5166]
- Fixed: SMU output relay is closed at power on self-test. [Bug 5457]
- Fixed: CMU stops responding at auto ranging with measured value 0. [Bug 5542]
- Fixed: Status byte is 0x00 at first device clear after power on. [Bug 5563]
- Fixed: B1500A sampling mode does not return to base until data transfer is finished. [Bug 5603]
- Fixed: Incorrect power compliance limitation for MP/HR SMU. [Bug 5724]

Version A.03.00.2007.0420

Released Date:	May. 2007
File Name:	-

Bug Fixes

- Fixed: Need to accept EOI without CR/LF as a command terminator.

Version A.02.11.2006.0925

Released Date:	Oct. 2006
File Name:	-

Bug Fixes

- Fixed: When CMU load correction does not performed, correction coefficient is not correct. [Bug 4963]
- Fixed: When current range of HRSMU or MPSMU changed from <10mA to 100mA, spike appears.
- Fixed: The other internal changes are made.

- Fixed: The changes corresponding to firmware are made.

Version A.02.10.2006.0616

Released Date:	Jul. 2006
File Name:	-

Bug Fixes

- Fixed: CV-sweep measurement with delay time does not finish when setting of frequency is less than 4kHz. [Bug 4833]
- Fixed: There is case which CMU is controllable after self-test failing. [Bug 4894]
- Fixed: After rebooting B1500A at the half-finished of CMU adjustment, CMU relative Z adjustment fails. (This occurs in the CMU adjustment using Performance Verification Software) [Bug 4896]
- Fixed: Value of the RC command parameter which the *LRN? command returns are not correct.
- Fixed: FLEX control sometimes hangs up when a command was sent immediately after *RST command was sent.

Version A.02.00.2006.0418

Released Date:	May. 2006
File Name:	-

Bug Fixes

- Fixed: High speed sampling measurement.
- Fixed: Performance of CMU auto range measurement is down when averaging or integration mode is PLC mode.

Version A.02.00.2006.0405

Released Date:	Apr. 2006
File Name:	-

Bug Fixes

- Fixed: FLEX control sometimes hangs up when application measurement was stopped by Device Clear.

Version F.A.01.14.2006.0215

Released Date:	Mar. 2006
File Name:	-

Bug Fixes

- Fixed: Sweep measurement has been unexpectedly terminated by "other channel compliance" condition. [CR30225(Bugzilla Bug 4233)]

Version A.01.15.

Released Date:	2005
File Name:	-

Bug Fixes

- Fixed: Interlock open bit which unmasked by *SRE does not clear after status byte reading. [CR29812]
- Fixed: FLEX command which was sent following *RST does not execute. [CR29965]

Version A.01.14

Released Date:	2005
File Name:	-

Bug Fixes

- Fixed: The following command returns incorrect result for the latest self-test. TST? <slot>, 0 [CR28012]

- In the sampling measurement, the synchronous sources start or stop always output from the module that has the smallest slot number in numerical order, regardless of the order of MV/MI receipt. [CR28725]
- The CMU measurement with auto ranging takes a long time in the power line cycle mode (PLC) unreasonably. [CR29057]

Version A.01.10

Released Date:	2005
File Name:	-

New Features and Enhancements

- None.

Bug Fixes

- Fixed: When the HRSMU is used with the ASU, the ASU has improper wait time for 1 pA range. [CR27676]
- Fixed: If SMU outputs are shorted, the self-test for the mainframe may be failed below:
FAIL: (715) CPU Failed DAC set Trigger Test [CR27842]
- Fixed: If any power compliance value is set for the sweep measurement when the interlock circuit is open, an error occurs in the measurement though the force voltage is less than 42 V. [CR27180]
- Fixed: FLEX control hangs up. [CR29165]

Version A.01.02

Released Date:	2005
File Name:	-

Initial Release

