

Easy SHQ/NHQ User's Manual

March 3, 2017

DISCLAIMER OF WARRANTY

THIS SOFTWARE AND THE ACCOMPANYING FILES ARE SOLD "AS IS" AND WITHOUT WARRANTIES AS TO PERFORMANCE OR MERCHANTABILITY OR ANY OTHER WARRANTIES WHETHER EXPRESSED OR IMPLIED. THIS DISCLAIMER CONCERNS ALL FILES GENERATED AND EDITED BY EASY SHQ/NHQ AS WELL.

IMPORTANT: PLEASE READ END USER LICENSE AGREEMENT CAREFULLY BEFORE USING THIS SOFTWARE.

Table of Contents

Chapter 1 Easy SHQ/NHQ.....	3
1.1 The Connection Page.....	3
1.2 The Channel List Page.....	3
1.3 The Properties Page.....	4
1.4 The Messages Page.....	4
1.5 The File Logger Page.....	4
1.6 The Configuration Page.....	4
1.7 The Graph Window.....	5
Chapter 2 Software Current Trip.....	6
Chapter 3 Troubleshooting.....	7
Chapter 4 End User License Agreement.....	8
Chapter 5 Credits.....	13
Chapter 6 Contact Information.....	14

CHAPTER 1 EASY SHQ/NHQ

Easy SHQ/NHQ allows to control iseg SHQ and NHQ high voltage power supplies using a RS232 cable connection. The software allows to control the standard and high precision series. Easy SHQ/NHQ uses the ASCII command set defined in the power supply's user manual.

■ It is highly recommended to read the power supply's manual before using this software.

Easy SHQ/NHQ is available on Windows® and Linux 32 and 64 bit operating systems.

The following user guide describes the functionality of Easy SHQ/NHQ that allows to control and monitor the connected high voltage power supplies.

1.1 The Connection Page

The first step in using Easy SHQ/NHQ is to establish a connection to the controlled power supply. The available serial ports can be searched for SHQ or NHQ power supplies. Therefore select "Search all serial ports" and click on the "Search For Device" button. All serial ports will be scanned for connected devices. If a SHQ or NHQ power supply is found it appears in the "Found Devices" list.

To control a found device, select this device in the list and click on the "Add Selected Device" button. The connection to the device is established in a permanent way. The tool automatically switches to the "Channel List" page.

The currently controlled device can be disconnected by clicking on the "Close Current Connection" button.

Easy SHQ/NHQ allows to control only one device at a time.

■ On Linux you might not have the permissions to use the serial port. In this case you must add yourself to the "dialout" group:
> sudo adduser \$USER dialout

1.2 The Channel List Page

The channel list shows the main parameters and values used to control the power supply. All channels are listed. Values that can be set such as "Vset" and "Iset" can be edited by clicking on the corresponding cell in the shown table. The fields denoted "<set>" can be used to set values for all channels in a single operation.

■ The new values aren't shown immediately but only when they have been confirmed by the connected SHQ or NHQ power supply.

The SHQ and NHQ power supplies allow to set values for "Iset" for the mA and the μ A range. Which value applies depends on the position of the mA/ μ A switch on the device front panel.

■ After having set a new value for Vset, the device doesn't start to ramp to the new value immediately. Instead the new value has to be confirmed by clicking on the "Confirm Voltage Settings" button. This behavior can be changed by setting the "Enable auto-start" flag in the "Properties" page.

The status flags shown in the lower part of the channel list page disappear quickly after having been set

by the power supply. However each status change is logged in the “Messages” page. In addition the message “event occurred” appears in the “Status” column of the table. This message can be cleared by clicking the “Clear Events” button.

The device profile, that means the voltage, current and ramp settings, can be saved and restored by clicking on the “Save And Restore Profile” button.

1.3 The Properties Page

The parameters and values of the power supply that aren't shown in the channel list are available in the “Properties” page. Only the flags “Enable auto-start” and the buttons allowing to save the current settings to the EEPROM can be set by the user.

Please read the SHQ/NHQ user manual to find out how auto-start works.

1.4 The Messages Page

Actions, messages and errors are written to the “Messages” page. The “Message Filter” button allows to select which messages are shown in the list. The list can also be cleared by clicking the “Clear Messages” button.

When selecting a particular message in the list, Easy SHQ/NHQ will attempt to add an annotation to the shown graphs. This allows for example to visualize where a current trip or similar event occurred. However due to the time required to communicate to the device these annotations might appear with a delay after the event occurred.

1.5 The File Logger Page

The “File Logger” allows to write measured values to a CSV file while operating the high voltage power supply.

Therefore a file has to be defined in the “Data Log Output File” field. The file can also be chosen by clicking the “Define Data Log Output File” button. The field “Sample Interval” allows to define the time intervals in the CSV file. Small values can lead to very large files if the file logger runs for a long time. The floating point resolution can be used to define the accuracy of the output.

The field “maximum File Size” allows to limit the file size. Data logging stops when this file size is reached.

The button “Start Data Logger” starts logging. The button “Stop Data Logger” ends the logging process.

1.6 The Configuration Page

The “Configuration” page is only visible when the “Show Configuration” button has been clicked. It is closed after having accepted or canceled the changes made in the list of configurable items.

Several aspect of the user interface can be configured. Such as the startup behavior, the columns shown in the channel list and some aspects of the graph window.

The graph window can be configured to show symbols for each data point. The graph always shows the

last part of the measured values except if the user interacts by zooming to another part of the curve. After each user action the graph window waits some time before falling back to showing the last part of the curve.

The interval shown by default can be configured by changing the “automatic zoom interval” value. The time the graph window waits after each user interaction can be configured by changing the value for “user zoom timeout”.

Easy SHQ/NHQ updates after having clicked the “Accept Changes” button. The “Set To Default Values” button re-establishes factory defaults. The “Cancel Changes” restores the previous settings and closes the configuration page.

1.7 The Graph Window

The graph window can be used to display the measured voltages and currents over time. It can show the measured voltages, the measured currents or both. Which curves are shown is defined in the drop-down menu for the “Show Curves” button in the tool bar.

The curves in the graph window can be highlighted by clicking on them. Highlighted curves can be removed from a graph by typing the “DEL” key. They can be dragged from one graph to another if 2 graph windows are shown.

By default the graph window shows the last 5 minutes of the measured values. This interval can be configured in “Configuration” page.


However the shown section of the curve can be changed by zooming in or out using the mouse wheel. The way the graph changes depends on the position of the mouse pointer. The x- and y-axes can be zoomed independently.

The right mouse button can be used to define a zoom box. While the zoom box is drawn hitting the “SPACE” key changes the zoom box in order to allow to zoom only one of the axes or to zoom out.

If no further user action occurs for 20 seconds, the graph window shows the last 5 minutes of the measured values again.

Annotations for events that have been generated from the “Message” page can be edited and moved.

The curves shown in the graph windows can be dragged to external tools such as Excel® and OpenOffice Calc.

 The graph window operates with a data buffer limited to 10000 values. After having read 10000 values, the oldest values in the curves are removed. However the “File Logger” page allows to monitor the connected power supply for longer time periods.

CHAPTER 2 SOFTWARE CURRENT TRIP

Easy SHQ/NHQ allows to define a software current trip. This means that the software will ramp down the concerned channel if the measured current exceeds a user-defined current limit.

This functionality is enabled by default for all connected NHQ modules. SHQ power supplies allow to define a current trip for their μA measurement range. As a consequence the software current trip doesn't provide any additional functionality. However for testing purposes it can be enabled in the "Configuration Page".

If the software current trip functionality is enabled, an additional column "Isoft" is shown in the "Channel List Page". By default the value for Isoft is 0. The software current trip is not active. By setting a value > 0 , the current trip is activated. As soon as the software detects that the current measured by the NHQ power supply exceeds this value, it will ramp down the concerned channel with the currently set ramp.

This functionality has been implemented to protect experiments that can be damaged by high currents and where the protection provided by the hardware is not sufficient. Of course the software protection can only work while the software is controlling the power supply.

The precision of the current measurement is given by your user's manual. In general your power supply will have a measurement resolution that exceeds its precision. That means that current changes can be measured more precisely than absolute current values. If your power supply has a 1nA resolution and you define a 1nA software current trip, the maximum current in your detector will be 1nA + the precision of the current measurement.

CHAPTER 3 TROUBLESHOOTING

Please contact your support if you experience problems using Easy SHQ/NHQ. The “Messages Page” can give you some hints on problems that might have occurred while using the software.

Hardware problems might also result in software problems. You should make sure the connected power supply works properly. Please read the corresponding user manuals.

Easy SHQ/NHQ allows to generate a communication log file. When this option is enabled, Easy SHQ/NHQ writes all communication to a text file.

This option can be activated by defining a file in the field called “Communication Log File” in the “Configuration Page”. Now close the configuration by clicking the “Accept Changes” button. From now on all communication to and from the device is written to the specified file.

When contacting your support it might be useful to provide the generated communication log file.

CHAPTER 4 END USER LICENSE AGREEMENT

IMPORTANT: PLEASE READ THIS LICENSE CAREFULLY BEFORE USING THIS SOFTWARE.

Please read this End-User License Agreement ("Agreement") carefully before clicking the "I Agree" button, downloading or using Easy SHQ/NHQ ("Application").

By clicking the "I Agree" button, downloading or using the Application, you are agreeing to be bound by the terms and conditions of this Agreement.

This Agreement is a legal agreement between you (either an individual or a single entity) and iseg Spezialelektronik GmbH and it governs your use of the Application made available to you by iseg Spezialelektronik GmbH.

If you do not agree to the terms of this Agreement, do not click on the "I Agree" button and do not download or use the Application. If possible, remove Easy SHQ/NHQ from your computer now and, if applicable, promptly return to iseg Spezialelektronik GmbH by mail any copies of Easy SHQ/NHQ and related documentation and packaging in your possession.

The Application is licensed, not sold, to you by iseg Spezialelektronik GmbH for use strictly in accordance with the terms of this Agreement.

Distribution

Easy SHQ/NHQ and the license herein granted shall not be copied, shared, distributed, re-sold, offered for re-sale, transferred or sub-licensed in whole or in part except that you may make one copy for archive purposes only. For information about redistribution of Easy SHQ/NHQ contact iseg Spezialelektronik GmbH.

License

iseg Spezialelektronik GmbH grants you a revocable, non-exclusive, non-transferable, limited license to download, install and use the Application solely for your personal, non-commercial purposes strictly in accordance with the terms of this Agreement. Your license to use Easy SHQ/NHQ is limited to the number of licenses purchased by you. You shall not allow others to use, copy or evaluate copies of Easy SHQ/NHQ.

Use Restrictions

You shall use Easy SHQ/NHQ in compliance with all applicable laws and not for any unlawful purpose. Without limiting the foregoing, use, display or distribution of Easy SHQ/NHQ together with

material that is pornographic, racist, vulgar, obscene, defamatory, libelous, abusive, promoting hatred, discriminating or displaying prejudice based on religion, ethnic heritage, race, sexual orientation or age is strictly prohibited.

Each licensed copy of Easy SHQ/NHQ may be used on one single computer location by one user. Use of Easy SHQ/NHQ means that you have loaded, installed, or run Easy SHQ/NHQ on a computer or similar device. If you install Easy SHQ/NHQ onto a multi-user platform, server or network, each and every individual user of Easy SHQ/NHQ must be licensed separately.

You may make one copy of Easy SHQ/NHQ for backup purposes, providing you only have one copy installed on one computer being used by one person. Other users may not use your copy of Easy SHQ/NHQ. The assignment, sublicense, networking, sale, or distribution of copies of Easy SHQ/NHQ are strictly forbidden without the prior written consent of iseg Spezialelektronik GmbH. It is a violation of this agreement to assign, sell, share, loan, rent, lease, borrow, network or transfer the use of Easy SHQ/NHQ. If any person other than yourself uses Easy SHQ/NHQ registered in your name, regardless of whether it is at the same time or different times, then this agreement is being violated and you are responsible for that violation!

Copyright Restriction

This Software contains copyrighted material, trade secrets and other proprietary material. You shall not, and shall not attempt to, modify, reverse engineer, disassemble or decompile Easy SHQ/NHQ. Nor can you create any derivative works or other works that are based upon or derived from Easy SHQ/NHQ in whole or in part.

iseg Spezialelektronik GmbH's name, logo and graphics file that represents Easy SHQ/NHQ shall not be used in any way to promote products developed with Easy SHQ/NHQ. iseg Spezialelektronik GmbH retains sole and exclusive ownership of all right, title and interest in and to Easy SHQ/NHQ and all Intellectual Property rights relating thereto.

Copyright law and international copyright treaty provisions protect all parts of Easy SHQ/NHQ, products and services. No program, code, part, image, audio sample, or text may be copied or used in any way by the user except as intended within the bounds of the single userprogram. All rights not expressly granted hereunder are reserved for iseg Spezialelektronik GmbH.

Limitation of Responsibility

You will indemnify, hold harmless, and defend iseg Spezialelektronik GmbH, its employees, agents and distributors against any and all claims, proceedings, demand and costs resulting from or in any way connected with your use of iseg Spezialelektronik GmbH's Software.

In no event (including, without limitation, in the event of negligence) will iseg Spezialelektronik

GmbH, its employees, agents or distributors be liable for any consequential, incidental, indirect, special or punitive damages whatsoever (including, without limitation, damages for loss of profits, loss of use, business interruption, loss of information or data, or pecuniary loss), in connection with or arising out of or related to this Agreement, Easy SHQ/NHQ or the use or inability to use Easy SHQ/NHQ or the furnishing, performance or use of any other matters hereunder whether based upon contract, tort or any other theory including negligence.

iseg Spezialelektronik GmbH's entire liability, without exception, is limited to the customers' reimbursement of the purchase price of the Software (maximum being the lesser of the amount paid by you and the suggested retail price as listed by iseg Spezialelektronik GmbH) in exchange for the return of the product, all copies, registration papers and manuals, and all materials that constitute a transfer of license from the customer back to iseg Spezialelektronik GmbH.

Warranties

Except as expressly stated in writing, iseg Spezialelektronik GmbH makes no representation or warranties in respect of this Software and expressly excludes all other warranties, expressed or implied, oral or written, including, without limitation, any implied warranties of merchantable quality or fitness for a particular purpose.

DISCLAIMER OF WARRANTY

THIS SOFTWARE AND THE ACCOMPANYING FILES ARE SOLD "AS IS" AND WITHOUT WARRANTIES AS TO PERFORMANCE OR MERCHANTABILITY OR ANY OTHER WARRANTIES WHETHER EXPRESSED OR IMPLIED. THIS DISCLAIMER CONCERNS ALL FILES GENERATED AND EDITED BY EASY SHQ/NHQ AS WELL.

Third-Party Services

The Application may display, include or make available third-party content (including data, information, software extensions, applications and other products services) or provide links to third-party websites or services ("Third-Party Services").

You acknowledge and agree that Easy SHQ/NHQ shall not be responsible for any Third-Party Services, including their accuracy, completeness, timeliness, validity, copyright compliance, legality, decency, quality or any other aspect thereof. Easy SHQ/NHQ does not assume and shall not have any liability or responsibility to you or any other person or entity for any Third-Party Services.

Third-Party Services and links thereto are provided solely as a convenience to you and you access and use them entirely at your own risk and subject to such third parties' terms and conditions.

Term and Termination

This Agreement shall remain in effect until terminated by you or iseg Spezialelektronik GmbH. iseg Spezialelektronik GmbH may, in its sole discretion, at any time and for any or no reason, suspend or terminate this Agreement with or without prior notice.

This Agreement will terminate immediately, without prior notice from iseg Spezialelektronik GmbH, in the event that you fail to comply with any provision of this Agreement. You may also terminate this Agreement by deleting the Application and all copies thereof from your mobile device or from your computer.

Upon termination of this Agreement, you shall cease all use of the Application and delete all copies of the Application from your mobile device or from your computer.

Termination of this Agreement will not limit any of iseg Spezialelektronik GmbH's rights or remedies at law or in equity in case of breach by you (during the term of this Agreement) of any of your obligations under the present Agreement.

Amendments to this Agreement

iseg Spezialelektronik GmbH reserves the right, at its sole discretion, to modify or replace this Agreement at any time. If a revision is material we will provide at least 30 days' notice prior to any new terms taking effect. What constitutes a material change will be determined at our sole discretion.

By continuing to access or use our Application after any revisions become effective, you agree to be bound by the revised terms. If you do not agree to the new terms, you are no longer authorized to use the Application.

Governing Law

The laws of Germany, excluding its conflicts of law rules, shall govern this Agreement and your use of the Application. Your use of the Application may also be subject to other local, state, national, or international laws. You hereby irrevocably attorn and submit to the non-exclusive jurisdiction of the courts of Germany therefrom. If any provision shall be considered unlawful, void or otherwise unenforceable, then that provision shall be deemed severable from this License and not affect the validity and enforceability of any other provisions.

Contact Information

If you have any questions about this Agreement, please contact us.

Entire Agreement

The Agreement constitutes the entire agreement between you and iseg Spezialelektronik GmbH regarding your use of the Application and supersedes all prior and contemporaneous written or oral agreements between you and iseg Spezialelektronik GmbH. You may be subject to additional terms and

conditions that apply when you use or purchase other services of iseg Spezialelektronik GmbH, which iseg Spezialelektronik GmbH will provide to you at the time of such use or purchase.

CHAPTER 5 CREDITS

Your Easy SHQ/NHQ software distribution is based on several software libraries and tools:

- We use icons from the Font Awesome icon set by Dave Gandy. See <http://fontawesome.io> for more information.
- We also use icons from Glyph Icons by Jan Kovarik. See <http://www.glyphicons.com> for more details.
- The Linux version is based on GTK+ or the GIMP Toolkit. See <http://www.gtk.org> for more information.
- The OsX version is based on Qt. The QT cross platform UI framework is available under the GNU Lesser General Public License (LGPL). A copy of the LGPL license is included in your software package. For more details see <http://qt-project.org>. Please contact our support to receive the sources that were used to compile the Qt version used for your software package.
- Easy SHQ/NHQ uses Analog Flavor's BeSpice Wave for visualizing graphs. See <http://www.analogflavor.com> for details.
- Easy SHQ/NHQ has been implemented and is maintained by Analog Flavor EURL.

CHAPTER 6 CONTACT INFORMATION

iseg Spezialelektronik GmbH

Bautzner Landstr 23

D - 01454 Radeberg / Rossendorf

Email: sales@iseg-hv.de

<http://www.iseg-hv.com>

Phone: ++ 49 (0)351 / 26 996 – 0

Fax: ++ 49 (0)351 / 26 996 – 21