



ES601pc
Safety Limits Editor
For the ES601pc Companion Software Package

Operating Manual

ES601pc Safety Limits Editor
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SAFETY LIMITS EDITOR OPERATING MANUAL

SAFETY LIMITS EDITOR

Standard and User-Defined Safety Limits

The Safety Limits Editor is an optional accessory for *ES601pc* which allows you to program **ES601Plus** with one set of alternate limits, which can be edited or revised at any time, for each of the safety standards provided by the analyzer.

Electrical safety standards specify a limit for each measurement performed on a device under test. During a safety test, a measured value which exceeds its corresponding limit is assigned a "fail" mark by **ES601Plus**.

Reference tables of safety limits are incorporated into the firmware of **ES601Plus**. There is one reference table assigned to each regulatory standard supported by the safety analyzer. These reference or *standard* tables conform to the latest revisions of the regulatory standards. For example, the standard table for AAMI-ES1 dates from 1996.

If the equipment being tested was manufactured prior to release of the safety standard being used, limits applied during safety tests may be inappropriate and could produce invalid failing results. To allow testing of equipment that predates a given regulatory standard, **ES601Plus** provides one alternate or *user-defined* limit table for each of the standards. With the Safety Limits Editor, you can tailor the pass/fail limits of a user-defined table to suit the device being tested.

Prior to starting a safety test, you can choose to apply limits according to the regulatory standard (the "standard limits"), or you can optionally choose to apply user-defined limits to suit the equipment under test. User-defined limits can be selected via the MANUAL MODE screen for manual measurements. Safety AutoSequences can also be programmed to apply user-defined limits during a test sequence, via the Safety AutoSequence Editor of *ES601pc*. When a safety test is performed, as part of the test result **ES601Plus** automatically saves either the standard limit or the user-defined limit for each measurement taken.

Editing Safety Limits

Each safety standard provided by **ES601Plus** has its own tab in the Safety Limits Editor. To view the default and user-defined limits for a particular standard, click on the corresponding tab at the top of the editor window (**Figure 1**).

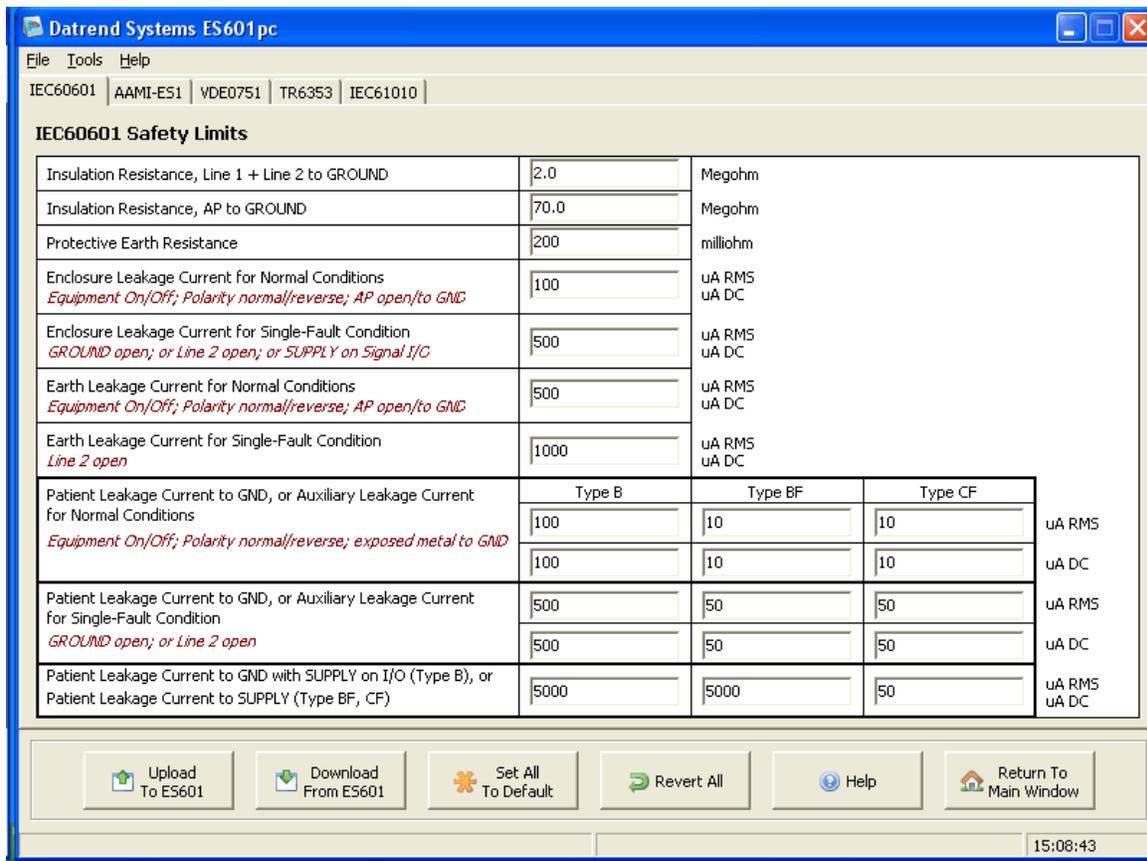
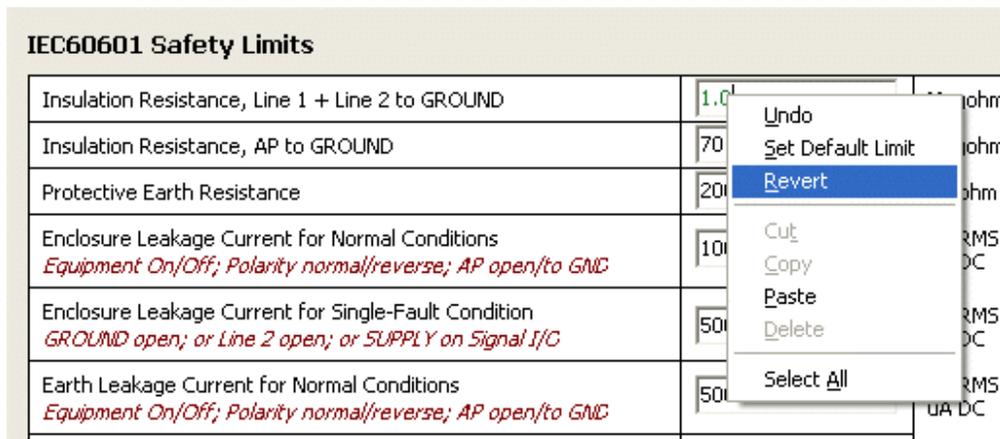


Figure 1

The first time the Safety Limits Editor is run, the values shown in the textboxes will be the limits defined in the safety standard. These are the default values for the standard. To change a safety limit, click on the desired textbox and type in a value. Any value that differs from the default limit will appear in green text, otherwise, the value will appear in black. Hovering the mouse pointer over a textbox will show the default value of the safety limit.

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All safety limit values on all tabs provided by the editor are automatically saved by *ES601pc* after uploading the data to **ES601Plus**. The safety limit data are also saved after downloading limits from **ES601Plus** into the editor, or exiting the editor to the main menu of *ES601pc*. An individual limit can be reverted to its most recently-saved value by right-clicking on its textbox and choosing "Revert" in the popup menu which will appear (**Figure 2**). Clicking the "Revert All" button at the bottom of the editor window will revert all safety limits displayed on the current tab to the most recently-saved values.



The screenshot shows a table titled "IEC60601 Safety Limits" with several rows. A context menu is open over the value field of the first row, which contains the value "1.0". The menu options are: Undo, Set Default Limit, Revert (highlighted), Cut, Copy, Paste, Delete, and Select All. The table has columns for the limit description, the value, and the unit.

IEC60601 Safety Limits		
Insulation Resistance, Line 1 + Line 2 to GROUND	1.0	ohm
Insulation Resistance, AP to GROUND	70	ohm
Protective Earth Resistance	20	ohm
Enclosure Leakage Current for Normal Conditions <i>Equipment On/Off; Polarity normal/reverse; AP open/to GND</i>	10	RMS DC
Enclosure Leakage Current for Single-Fault Condition <i>GROUND open; or Line 2 open; or SUPPLY on Signal I/C</i>	50	RMS DC
Earth Leakage Current for Normal Conditions <i>Equipment On/Off; Polarity normal/reverse; AP open/to GND</i>	50	RMS UA DC

Figure 2

An individual limit can be returned to its default value by right clicking on its textbox and choosing "Set Default Limit" in the popup menu that will appear (**Figure 2**). Clicking the "Set All to Default" button at the bottom of the editor window will return all the safety limit values on the current tab to their default values.

Uploading Safety Limits

To upload user-defined safety limits into the memory of **ES601Plus**, click the "Upload to ES601" button at the bottom of the editor window (**Figure 1**). This will cause a communications selector to appear (**Figure 3**).

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Choose to upload via USB, Ethernet, or Serial Port, and then click "Connect". If the connection is via ethernet, enter the IP address assigned to **ES601Plus** (note this IP address is displayed on the LCD of **ES601Plus** when the safety analyzer is operating in "Ethernet Mode"). If the connection is via serial port, choose the COM port the analyzer is connected to.

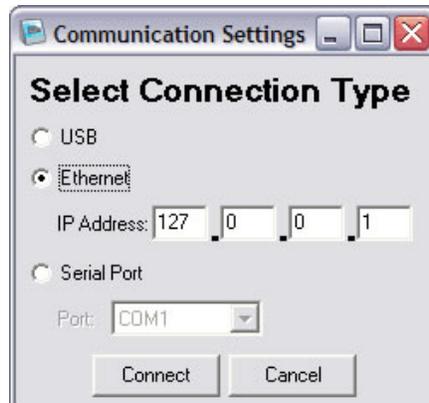


Figure 3

After clicking on "Connect", a message box with a transfer progress bar will appear. After the transfer is complete, all safety limits shown on all tabs of the editor will be saved by *ES601pc*. These saved limits will then be the values restored by "Revert" operations of the editor.

Downloading Safety Limits

To download into the editor user-defined limits currently stored in **ES601Plus**, click the "Download From ES601" button at the bottom of the editor window (*Figure 1*). This will cause a communications selector to appear (*Figure 3*).

Choose to download via USB, Ethernet, or Serial Port, and then click "Connect". If the connection is via ethernet, enter the IP address assigned to **ES601Plus** (note this IP address is displayed on the LCD of **ES601Plus** when the safety analyzer is operating in "Ethernet Mode"). If the connection is via serial port, choose the COM port to which the analyzer is connected.

After clicking "Connect", a message box with a transfer progress bar will appear. After the transfer is complete, the user-defined safety limits from **ES601Plus** will replace the values that were previously shown by the editor.