



Device Configurator

A tool for ATEsystem current
source management

User manual



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1 GENERAL INFORMATION

Device Configurator is used to manage ATEsystem current sources. Managing includes detection of all devices on LAN, IP address setting, firmware update, setting of electrical parameters and reading of measured values. For the proper functionality of the application, LabVIEW runtime and .NET Framework are required; their respective versions are listed in the *readme* file distributed along with the application file (*.exe). When using the installer, both runtime and .NET are included and installed automatically. The application is able to find the device even outside a valid subnet, but only if the firewall is temporarily disabled on the PC. The application also detects a device that is currently in use (it has an open TCP connection with another PC) but cannot control it and read all the parameters.

2 USER INTERFACE

The user interface of the application is divided horizontally into 4 main blocks, see the figure below:

1. **Header** – the main control panel with the three most important buttons:
 - A. *Devices/Info* – switches the content of the main window between 2.2 and 2.3
 - B. *Search* – search for the devices in the network
 - C. *Refresh NICs* – search for network cards in a block 2.1
2. **Main** – main window in which 2.2 or 2.3 are displayed depending on the switch 1.A
3. **Networks** – a window that shows available network adapters, as described in chapter 2.1
4. **Status Bar** – a panel for setting auxiliary parameters and displaying information
 - D. Application version – current number of the software version in X.Y.Z format
 - E. Search method
 - i. *Full search (slow)* – slower, but searches for all devices
 - ii. *Quick search (fast)* – faster, but does not detect already connected and unavailable devices outside the subnet range
 - F. Reading information about the device
 - i. *Reading info enabled* – slower, but finds detailed information in the 2.3
 - ii. *Reading info disabled* – faster, but the block 2.3 is not available
 - G. Status – shows status during search and other actions, number of devices, and errors
 - H. Status bar – visual representation of status (Fig.1 – 4.G)

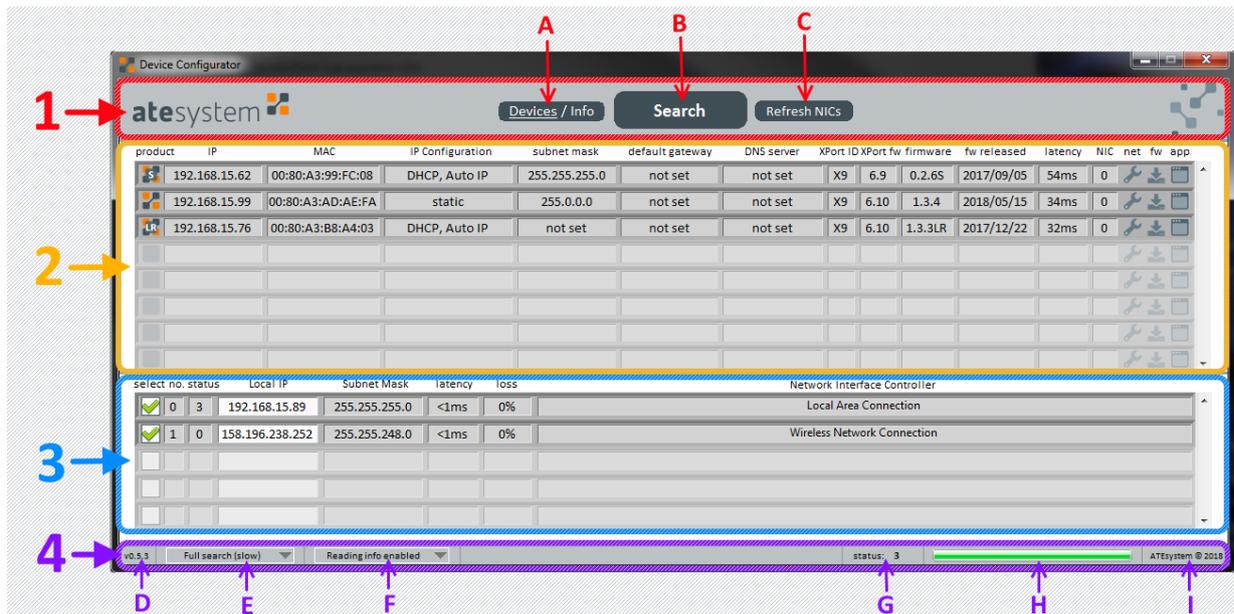


Fig. 1 – Layout and description of Device Configurator’s main window

2.1 NETWORKS

Networks window (block No. 3, Fig. 1) shows all available network adapters, local IPv4 address, subnet mask, response, and loss rate. Response and loss rate are tested by ping. The local IP address can also be entered manually if the application does not find the adapter. In addition, this window displays two numeric values, *no.* is the order of adapters 0 through n, and *status* is the number of devices found in the particular network. The first checkbox from the left then determines which networks will be searched when you press the *Search* button (1B).

select	no.	status	Local IP	Subnet Mask	latency	loss	Network Interface Controller
<input checked="" type="checkbox"/>	0	3	192.168.15.89	255.255.255.0	<1ms	0%	Local Area Connection
<input checked="" type="checkbox"/>	1	0	158.196.238.252	255.255.248.0	<1ms	0%	Wireless Network Connection
<input type="checkbox"/>							
<input type="checkbox"/>							
<input type="checkbox"/>							

Fig. 2 – *Networks* window with two network cards found

2.2 DEVICES

Devices window (block No. 2, Fig. 1) alternates with the *Info* window (chapter 2.3) depending on the position of *Devices/Info* switch (1A). Here you can find the most important information about the devices found. Product's icons are explained below; *IP*, *subnet mask*, *default gateway*, *DNS server* and *IP configuration* are regular network configuration parameters, which can be changed by clicking on the key icon with a *net* label (more details in chapter 2.4). If any setting is missing, the default is used, and system shows the following message: *not set*. *XPort ID* and *XPort fw* cannot be customized and indicate the type of internal Ethernet controller in the current source. *Firmware* and *fw released* show the version and release date of the device's firmware, *latency* indicates the approximate response, *NIC* field shows in what network the device was found (corresponds to the *no.* field in *Networks* window, chapter 2.1). Last three icons are described below.

product	IP	MAC	IP Configuration	subnet mask	default gateway	DNS server	XPort ID	XPort fw	firmware	fw released	latency	NIC	net	fw	app
	192.168.15.62	00:80:A3:99:FC:08	DHCP, Auto IP	255.255.255.0	not set	not set	X9	6.9	0.2.6S	2017/09/05	54ms	0			
	192.168.15.99	00:80:A3:AD:AE:FA	static	255.0.0.0	not set	not set	X9	6.10	1.3.4	2018/05/15	34ms	0			
	192.168.15.76	00:80:A3:B8:A4:03	DHCP, Auto IP	not set	not set	not set	X9	6.10	1.3.3LR	2017/12/22	32ms	0			

Fig. 3 – *Devices* window with three current sources found

One of the five following icons appears in the *product* field and helps with device identification:



Standard version of the linear current source (100 mA – 2000 mA range).



Low-Range version of the linear current source (20 mA – 400 mA range).



Switching current source. (in preparations)



The device is „unreachable“– it is located outside the valid subnet; IP change is required (2.4).



Device is all right but not recognized as ATEsystem product; *Full Search* (4E) is recommended.

The following three buttons, located on the right, are used to open a specific task pane:



Setting network parameters such as IP address or subnet mask (2.4).



Update/overwrite device firmware (2.5).



Control application with wider setting options and visualization of electrical parameters and measured values (2.6).

2.3 INFO

Info window (block No. 2, Fig. 1) depending on the position of *Devices/Info* switch (1A). It displays information about the device that is specified in the relevant manual if the *Reading info enabled* option is selected in drop-down list on the Status Bar (4F).

IP address	firmware	self - out	check regul	auto drop	trig	status	current actual	current setpoint	current limit	voltage internal	voltage output	voltage out. min	voltage out. max	voltage drop	power / dimming	resistor Bin	resistor NTC	time limit	uptime
192.168.15.99	1.3.4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000000	0.106	0.1	2	42.062	38.906	0	50	4	P:0.335	24.01	86.755	0	00:09:59
192.168.15.76	1.3.3LR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000000	0	0	0.4	50.472	0	0	50	4	P: 0	23.765	86.092	0	00:05:10
192.168.15.62	0.2.6S	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0000000	0	0	1.2	-	0.17	0	50	-	D: 0	24.229	87.644	0	00:05:09
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														00:00:00
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														00:00:00
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														00:00:00
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														00:00:00

Fig. 4 – Info window with three current sources found

2.4 NET – ASSIGN IP ADDRESS BUTTON

The *Assign IP Address* window is used to set basic network parameters. First, the IP configuration type is selected: *Static* or *Dynamic*. The *Static* mode means a static IP address that needs to be entered in the *IP address* field; optionally, you can specify a *Subnet mask*, *Default gateway* and *DNS server*. The *Dynamic* mode gives you a choice of three configuration options – *DHCP*, *Auto IP* and *BOOTP*. For less experienced users, it is strongly recommended to use the default option: **DHCP + Auto IP!** Using the *Done* button submits the setting.

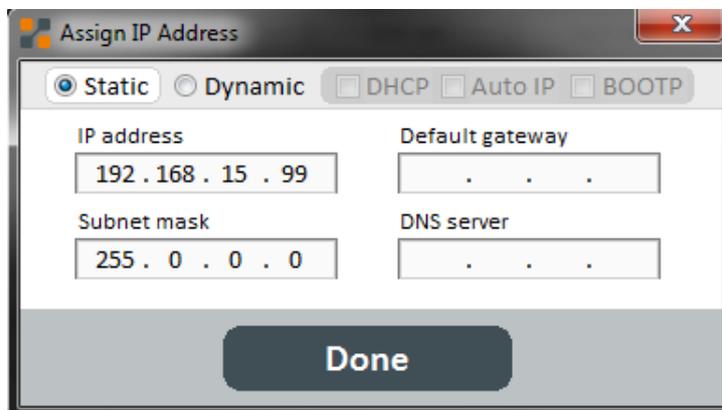


Fig. 5 – Assign IP Address window with static IP address selected

2.5 FW – UPDATE FIRMWARE BUTTON

The *Update Firmware* window is used to overwrite the device firmware. This functionality is not available for older versions of the current source. A path to the firmware with .ate extension needs to be entered in *Firmware [IPv4]* field, and after the verification, the process is finished with *Done* button. The process can take a few seconds up to tens of seconds, and the XML record is stored in the Log folder, which is located where the Device Configurator is running. During the process, **DO NOT DISCONNECT DATA OR POWER CABLE** for the device, otherwise it may be damaged; it is also strongly recommended to turn DHCP off and use a static IP address.

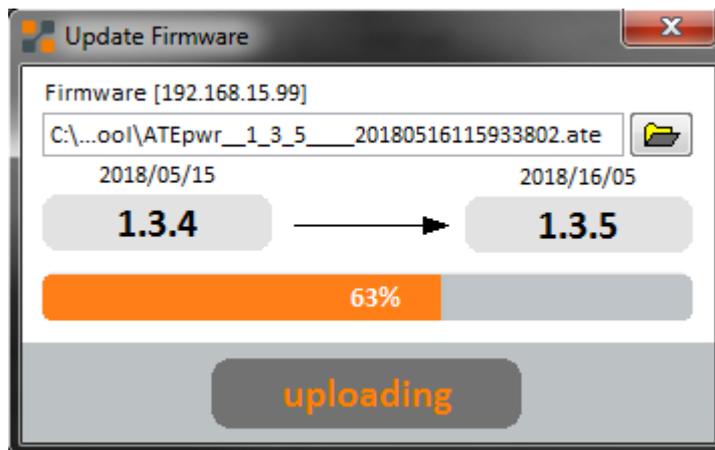


Fig. 6 – *Update Firmware* widow during firmware upload to the device

2.6 APP – CONTROL APP BUTTON

The *DC current source* window is a control application that allows you to set all electrical parameters of the current source, displays the measured values (such as voltage or current) and its status (such as overheating or undervoltage). A more detailed description is in chapter 3.

3 CONTROL APPLICATION

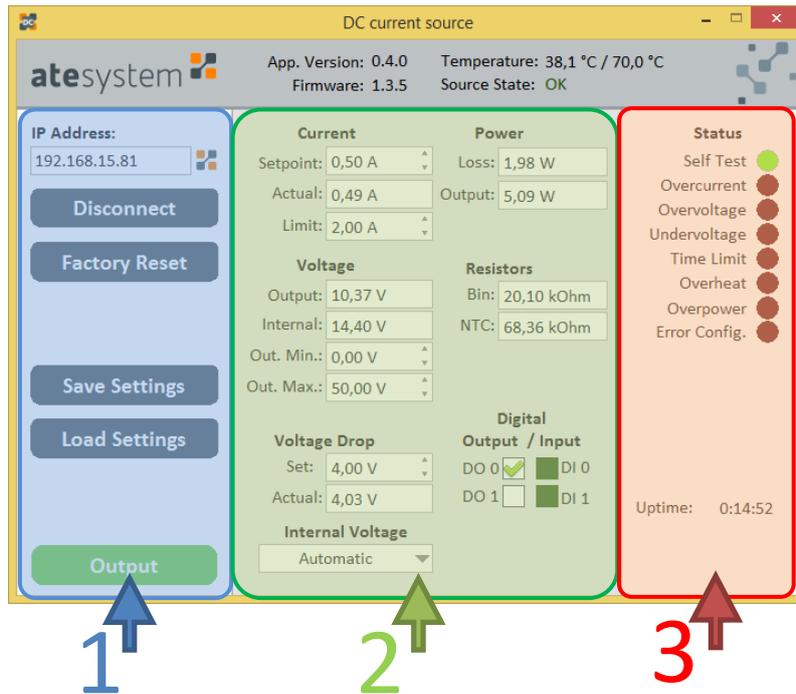


Fig. 7 – A general view of the control application

User interface of the control application for the current source is divided into three vertical blocks:

- 1) Controls panel
- 2) Block of electrical quantities
- 3) Device status panel

3.1 CONTROLS PANEL

3.1.1 COMMUNICATION

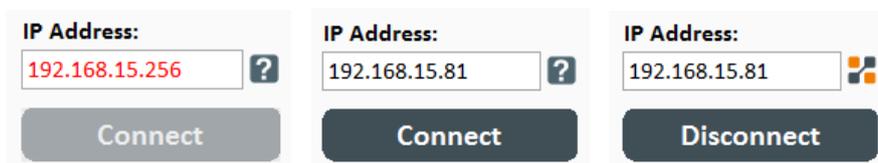


Fig. 8 – Possible states of communication controls. Invalid IP address (left); Valid IP address, device is not connected (centre); Connected device

Use this field to enter the IP address of the device to which the application should connect. If invalid address is entered (the field contains a letter or a digit outside the range), the text will turn red and you cannot click the *Connect* button as it is inactive. The pictogram next to the field indicates the type of connected device (see 2.2). Once the correct IP address is entered, the connection button is reactivated. If the communication with device is correctly established, the button changes to *Disconnect*, the pictogram changes to the particular device type, and other application controls are activated.

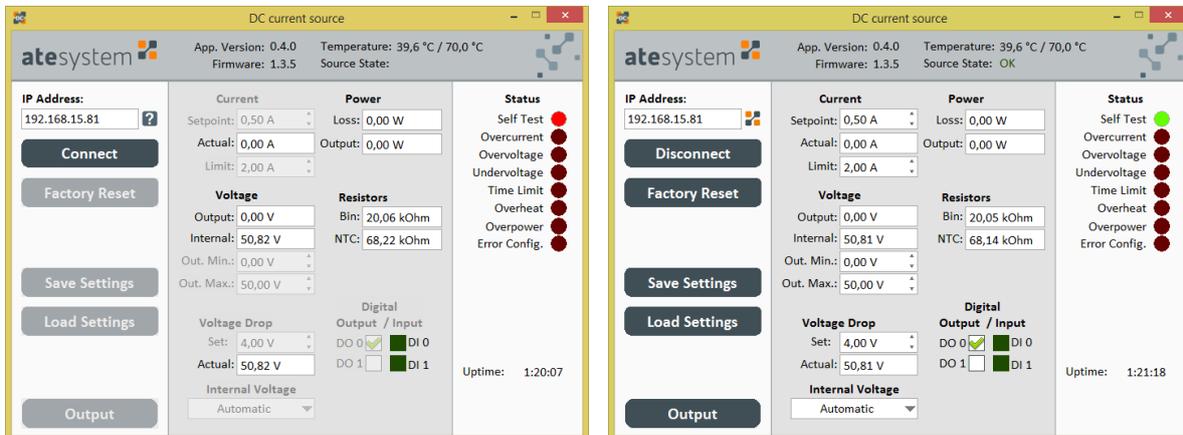


Fig. 9 – Application status for unconnected (left) and connected (right) device

3.1.2 FACTORY RESET

Pressing the button will pop up a dialog box to confirm whether you really want to restore the factory setting.

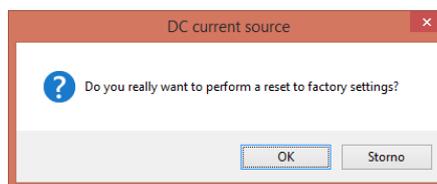


Fig. 10 – *Factory Reset* dialog window

3.1.3 SETTINGS

After pressing the *Save Settings* button, the currently set control values are stored in the device's internal memory. Using the *Load Settings* button loads this configuration. If the device has been set to the factory default (see 3.1.2), **the saved configuration will be deleted from the memory.**

3.1.4 ENABLING OUTPUT



Fig. 11 – Inactive output (left); Enabled output (right)

After pressing the *Output* button, the output is enabled if conditions are met (the set values are in specified range, the load is connected). If the output was successfully activated, the button will be highlighted in green.

3.2 BLOCK OF ELECTRICAL QUANTITIES

3.2.1 CURRENT CONTROLS

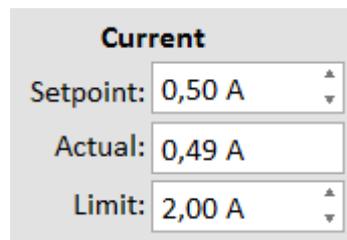


Fig. 12 – Current controls

- *Setpoint* – required value of output current
- *Actual* – measured value of output current
- *Limit* – maximum value of output current

3.2.2 POWER INDICATORS

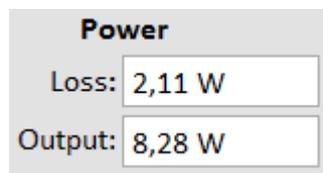
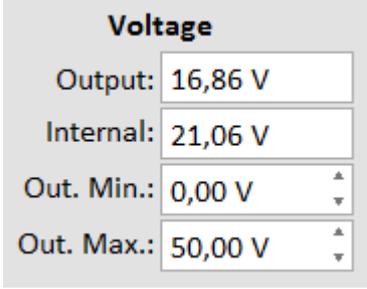


Fig. 13 – Power indicators

- *Loss* – value of power loss that is converted into heat
- *Output* – value of the output power supplied to the load

3.2.3 VOLTAGE CONTROLS

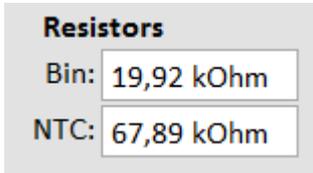


The screenshot shows a control panel titled "Voltage" with four input fields: "Output" (16,86 V), "Internal" (21,06 V), "Out. Min." (0,00 V with up/down arrows), and "Out. Max." (50,00 V with up/down arrows).

Fig. 14 – Voltage controls

- *Output* – actual value of the voltage at the output
- *Internal* – actual value of the internal voltage of the current source
- *Output Min.* – minimum value of the output voltage
- *Output Max.* – maximum value of the output voltage

3.2.4 RESISTANCE MEASUREMENT INDICATORS

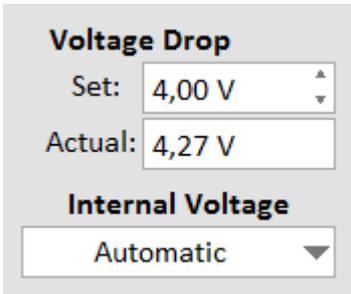


The screenshot shows a control panel titled "Resistors" with two input fields: "Bin" (19,92 kOhm) and "NTC" (67,89 kOhm).

Fig. 15 – Resistance indicators

- *Bin* – the value of the binning resistor measurement
- *NTC* – value of NTC measurement

3.2.5 CONTROLS OF VOLTAGE DROP



The screenshot shows a control panel titled "Voltage Drop" with three elements: a "Set" field (4,00 V with up/down arrows), an "Actual" field (4,27 V), and an "Internal Voltage" dropdown menu set to "Automatic".

Fig. 16 – Voltage drop controls

- *Set* - setting of voltage drop amount
- *Actual* – actual value of the voltage drop
- *Internal voltage* – setting the mode for voltage drop control

3.2.6 DI/DO CONTROLS

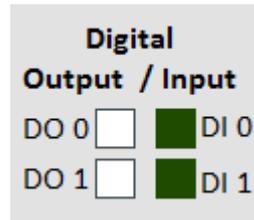


Fig. 17 – Digital input/output controls

- *DO 0/1* – checkbox for digital output setting
- *DI 0/1* – digital input status indicator

3.3 DEVICE STATUS PANEL

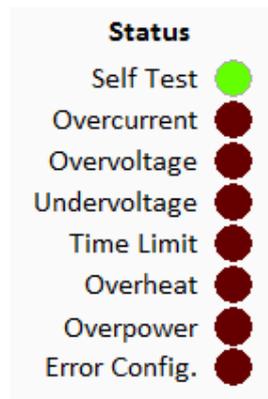


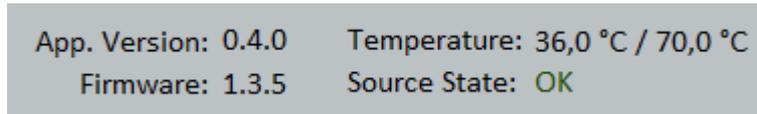
Fig. 18 – Device status indicators

- *Self Test* – system test result. The test is run only once when the device is started.
- *Overcurrent* – exceeding the upper limit of the output current
- *Overvoltage* – exceeding the upper limit of the output voltage
- *Undervoltage* – the output voltage is less than the lower limit
- *Time Limit* – exceeding the time interval during which the source is running and generating the output current. Setting the limit is currently not supported in the control application.
- *Overheat* – overheating indicator
- *Overpower* – power limit exceeded
- *Error Config.* – wrong configuration of the source
- *Uptime* – the time since the last restart/start of the device

Uptime: 5:21:38

Fig. 19 – Time indicator since device start

3.4 HEADER



App. Version: 0.4.0	Temperature: 36,0 °C / 70,0 °C
Firmware: 1.3.5	Source State: OK

Fig. 20 – Indicators in the header

- *App. Version* – version of the control application
- *Firmware* – version of firmware in the device
- *Temperature „x“ °C / „y“ °C:*
 - x – current temperature of the device
 - y – maximum allowed temperature of the device
- *Source State* – current device status (OK/Error)