NETIO-230A

FW 2.20

User's Manual

V1.01

Koukaam

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WARNING

Unauthorized modification of this device can cause its damage or can cause injury!

IMPORTANT NOTICE

1. The manufacturer is not responsible for possible damage caused by improper usage or usage in unsuitable environment.
2. Device has been designed for indoor use only.
3. Do not use the device during the strong vibrations.
4. If your device won't work properly, please contact your local reseller.

1 INTRODUCTION

NETIO-230A is a power controller device that can be controlled remotely via Internet browser, Telnet, CGI commands or serial link. Thanks to the network management technology based on the IP protocol the user can easily control or check power status of his devices (appliances) using the computer connected to local network or the Internet. Because of web-based management there is no need to install any special additional software to the client PC. Telnet interface could be used for convenient automatic control by external device.

Imagine you are travelling abroad and you can still control your electronic appliances like computers, servers, routers, electric entrance gates, security/surveillance systems or any other 230V appliance directly or based on timer.

1.1 Features

- Built-in web server
- Supports wide range of Internet browsers:
  - Microsoft Internet Explorer
  - Mozilla Firefox
  - Opera
  - Google Chrome
- Four switched power outputs
- Supported protocols: HTTP, SMTP, SNTP, DHCP, DNS and Telnet
- Watchdog feature for automatic restart of unresponsive network devices
- RS-232C serial port control
- CGI commands and Telnet control
- Secure login
- Three levels of user access
- LED indicators for actual status of each outlet
- Safe design prevents from electric current injury, fireproof materials
- Timer for scheduled output control
- Settings for power-up status of each output (on/off)
- Manual output control using buttons
- E-mail notification

1.2 Specifications

- Input power: 90 - 240 V AC
- Max switched current: 10 A
- Latency: max. 10 ms
- Operating temperature: 0 – 70 °C

1.3 Minimum System Requirements

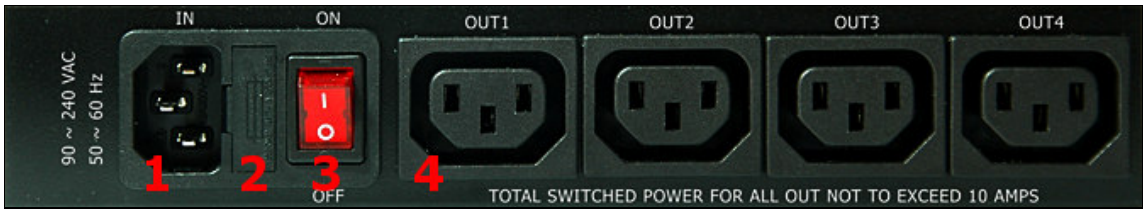
- Computer with installed Internet browser (Microsoft Internet Explorer, Opera, Mozilla Firefox, …)

2 INTERFACE DESCRIPTION

2.1 Front View

1. Four LED indicators for actual status of each outlet. If the output is ON the LED indicator shines.
2. RS-232C – Serial Port. Using the serial interface you can observe system logs or use Telnet for full device control.
3. AUX – extension device interface.
4. Two buttons for output manual control. (see chapter 5.4 for details)
5. RJ-45 connector – network interface for connection to Ethernet / Internet.

2.2 Back View



1. Power socket for connection of the device to power outlet.
2. Fuse (see chapter 5.5.2 for details)
3. Device ON/OFF switch
4. OUT1 – OUT4 – Four switched power outputs

3 INSTALLATION

Before the first use please make sure that:

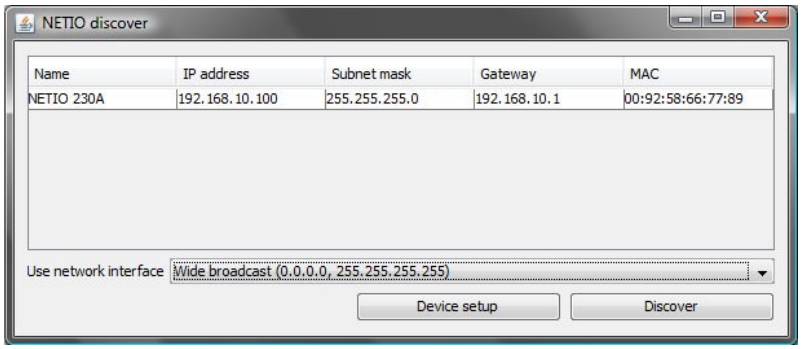
1. Mains voltage is 90 – 230 V AC.
2. Power cable is suitable for current up to 10A.

3.1 Hardware connection of the device

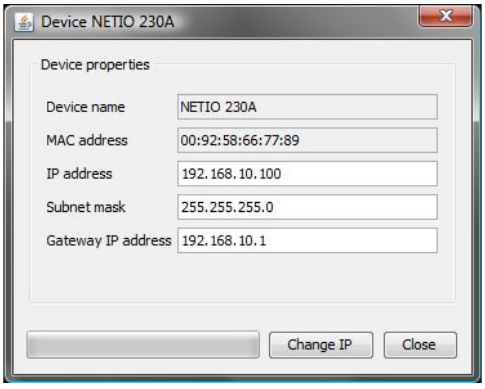
1. Connect your NETIO-230A to the computer network (switch, router) using the Ethernet cable with RJ-45 connectors. Use cross cable when the device is directly connected to the PC.
2. Connect the power cable to the device and then to power outlet.
3. Connect devices that you want to control to OUT1 – OUT4 outputs.
4. Turn on your NETIO-230A.

4 INITIAL CONFIGURATION

1. Run file *NetioDiscover.exe* from the supplied CD.
2. Click on the *Discover* button. List of NETIO units present in your network will appear.
3. Choose the proper device from the list and click *Device setup*.



Window with network parameters will show up.

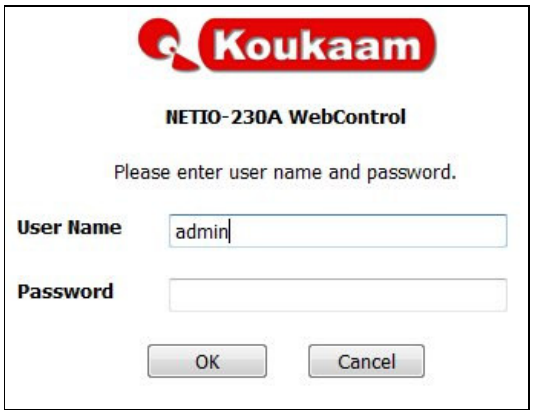


After you make requested changes based your network environment click *Change IP*. Utility will update settings of your NETIO and show device list with changed parameters. **If there is DHCP server in your network and you are not willing to setup network parameters manually, just skip to the next step.**

Default IP address is **192.168.10.100**

4. Web management could be opened both by typing the IP address of NETIO into your internet browser or by double clicking on the device name in the *NETIO discover* utility.
5. Input the *User Name* and *Password* into the login page and click *OK*.

Default user name is: **admin** , password: **admin**



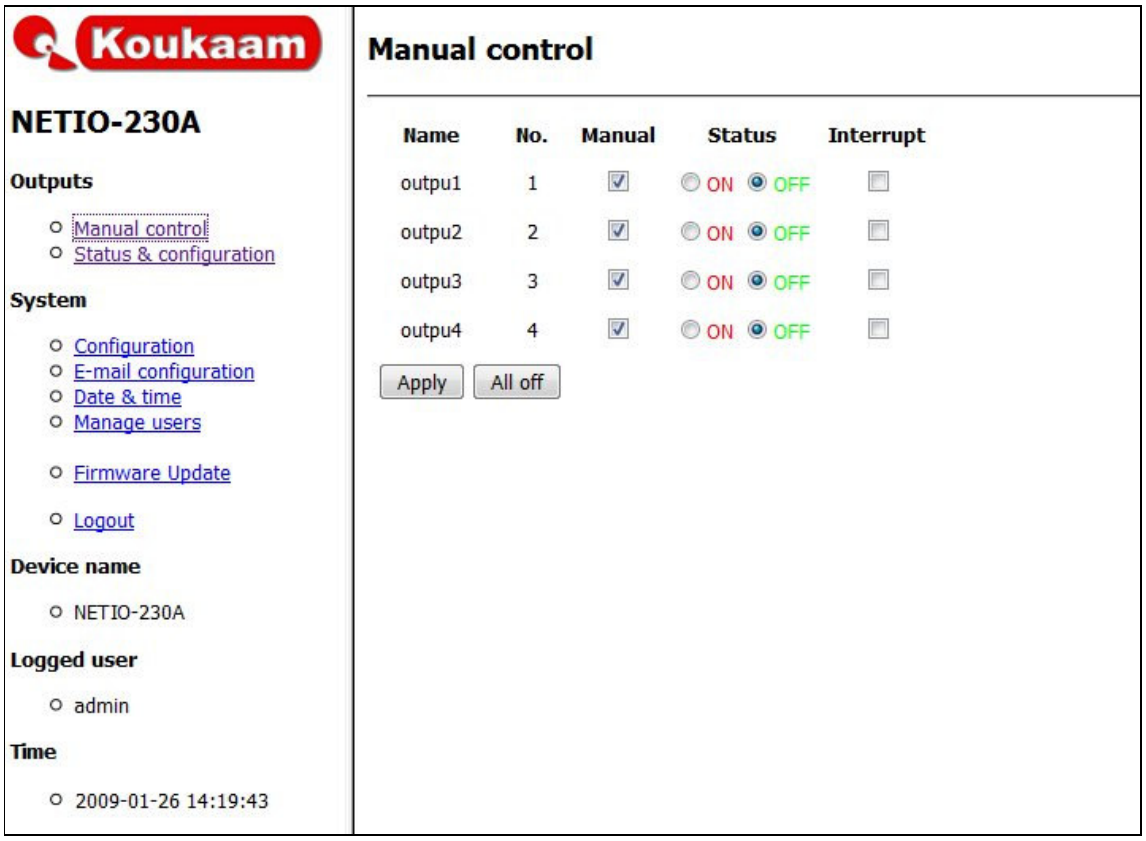
Login page

5 OPERATION AND SETTINGS

5.1 Output control and settings

5.1.1 Output control

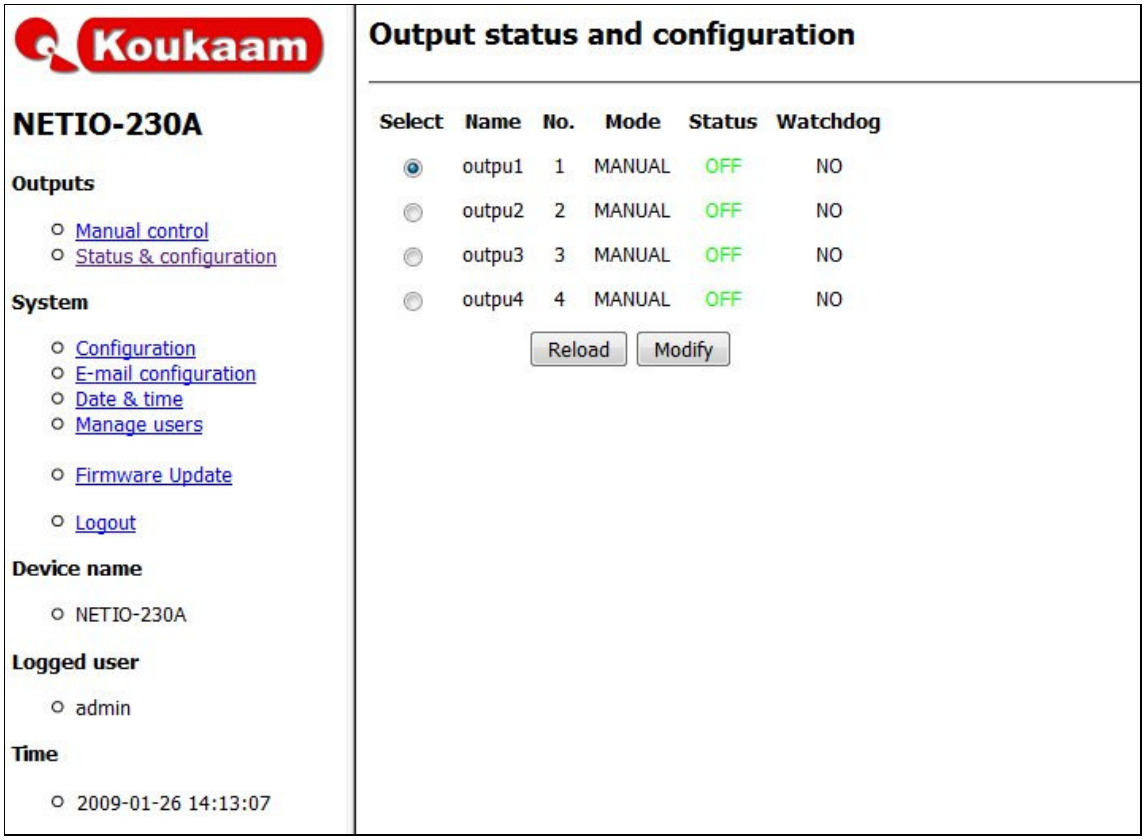
Click on *Manual Control* in the Menu on the left side. Output Manual control page will show up.



NETIO-230A can control even all four outputs at the same time. Choose which ports should be turned ON/OFF and click *Apply*. If you would like only to restart the devices connected to the specific outputs, check *Interrupt* and then click *Apply*. Selected outputs will interrupt for the time specified in the *Output configuration* page. Please note that you can interrupt only outputs which are turned ON. If you would like to control the specific output manually, make sure that the corresponding *Manual* checkbox is checked. If not, the device does not accept manual output control requests and only scheduled switching and the Watchdog feature are in operation. Pressing *All Off* button will turn all outputs OFF.

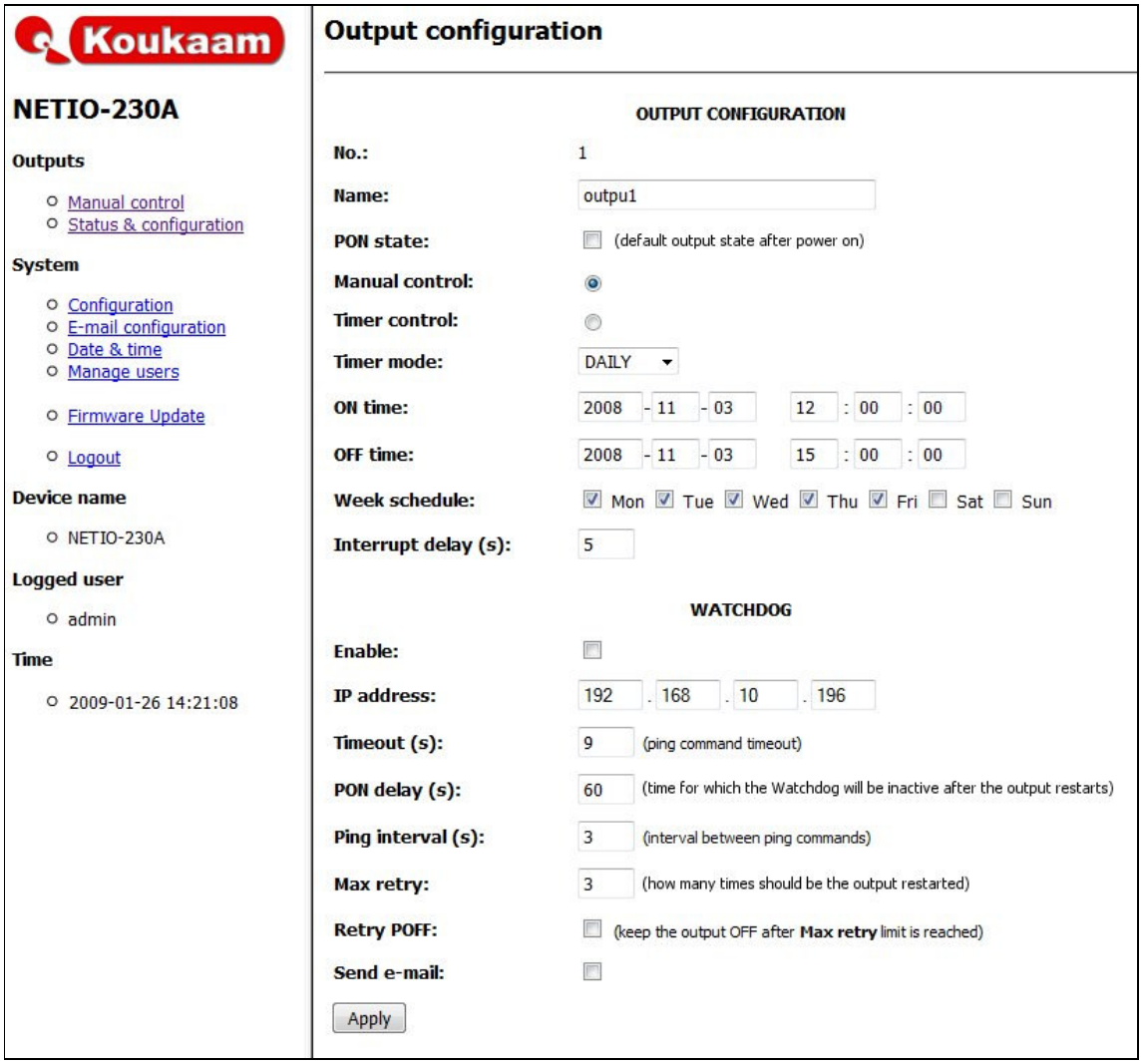
5.1.2 Output status and configuration

Click on *Status & configuration* in the Menu on the left side. Output status and configuration page will show up.



To setup specific output select it and press *Modify*. On the new page that will appear you can change detailed parameters of this specific output.

5.1.2.1 Specific output configuration



No.: Output number (1 – 4)

Name: Output name

PON state: Default output status after NETIO-230A power up – if you tick the checkbox, connected device will be turned ON after the NETIO starts or restarts.

Manual control: If you select this option it will be possible to control the output manually.

Timer control: If you select this option the output will be controlled automatically based on specified schedule.

Timer mode: Specifies how often the scheduled ON/OFF switching will be performed. Options:

- *ONCE* – event will occur only once on specified date and time
- *DAILY* – event will be triggered every day
- *WEEKLY* – event will be triggered every day based on selected week days

ON time: Date and time to switch the output ON. If you select the DAILY mode it is the date and time of the first execution.

OFF time:	Date and time to switch the output OFF. If you select the DAILY mode it is the date and time of the first execution.
Week schedule:	Select in which week days the Timer control should be in operation.
Interrupt delay (s):	Time in seconds for which the output should be turned OFF when the *Interrupt* function is used either in the manual mode or when the Watchdog feature is in operation.

5.1.2.2 Watchdog

Watchdog feature allows to monitor if your network devices are in proper operation. If the monitored device does not respond to a Ping command in specified time, the power outlet with enabled watchdog will be turned OFF for specified time and then switched back ON. To avoid cycle power OFF/ON of defective monitored device, it is possible to setup maximum allowed number of output restarts (default value 3).

Enable:	Check to turn on the *Watchdog* feature.
IP address:	IP address of the network device that will be monitored.
Timeout (s):	Maximum Ping response time.
PON delay (s):	Time in seconds in which the Watchdog feature will not be active after the output restart. During this interval the monitored device is supposed to recover its normal operation after being restarted.
Ping interval (s):	Interval in seconds in which the Ping requests to the monitored device will be sent.
Max retry:	Maximum allowed number of output restarts for the case that monitored device does not respond to a Ping command. After the maximum number of retries is reached the output will stay OFF.
Retry POFF:	Enables or disables *Max retry* option.
Send e-mail:	Sends out an informative e-mail that the monitored device didn't respond and has been restarted. Also if the Max retry threshold is reached the informative e-mail is sent out.

Save your new settings by pressing the *Apply* button.

5.2 System configuration

In this section the user can change network and e-mail parameters, system time, administrate user accounts or perform the firmware upgrade.

5.2.1 Network parameters

Click *Configuration* link in the menu to change the system configuration.

Insert network *IP Address, Subnet Mask, Default Gateway* (router address) and *DNS Server* regarding your network parameters. If you do not like to setup the network parameters manually, you can Enable *DHCP* to automatically obtain requested parameters from the DHCP server in your network.

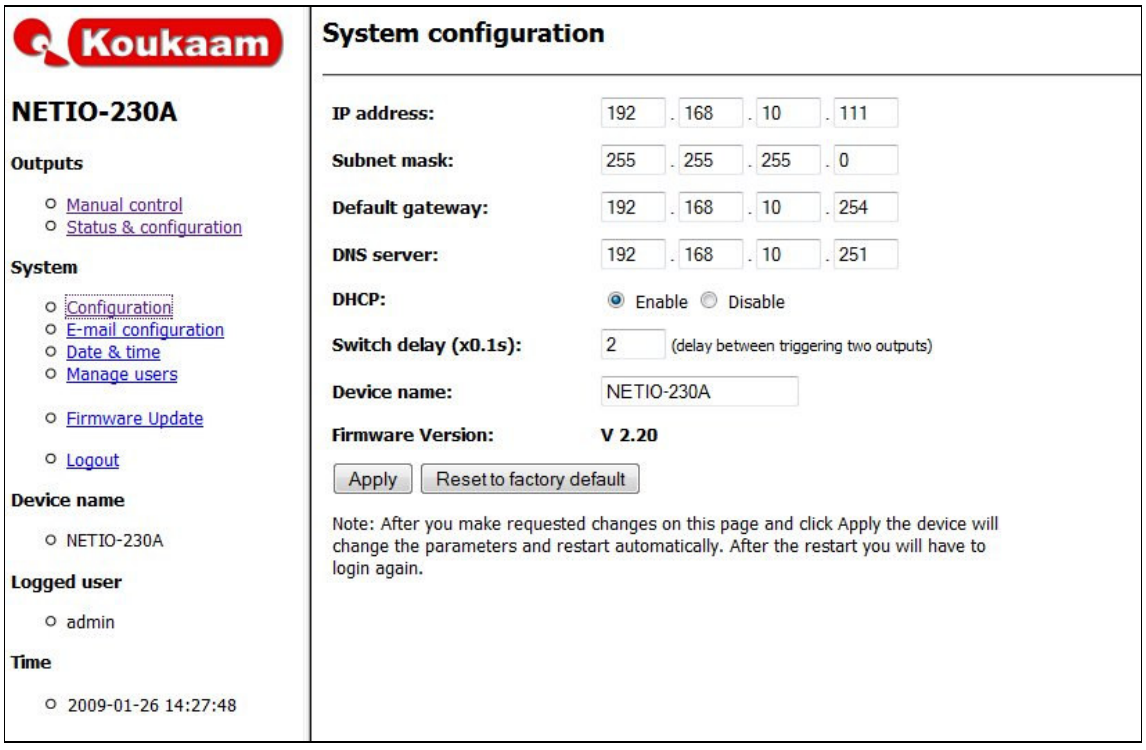
Switch delay [x0.1s] specifies delay between triggering two outputs. It avoids overloading of the mains supply by turning the outputs ON one by one.

Device name allows you to insert your own name or description of your NETIO-230A so you can indentify your devices easily.

Firmware version shows current firmware version.

After you make requested changes on this page and click *Apply* the device will change the parameters and restart automatically. After the restart you will have to login again.

Reset to factory defaults button restores factory default settings.

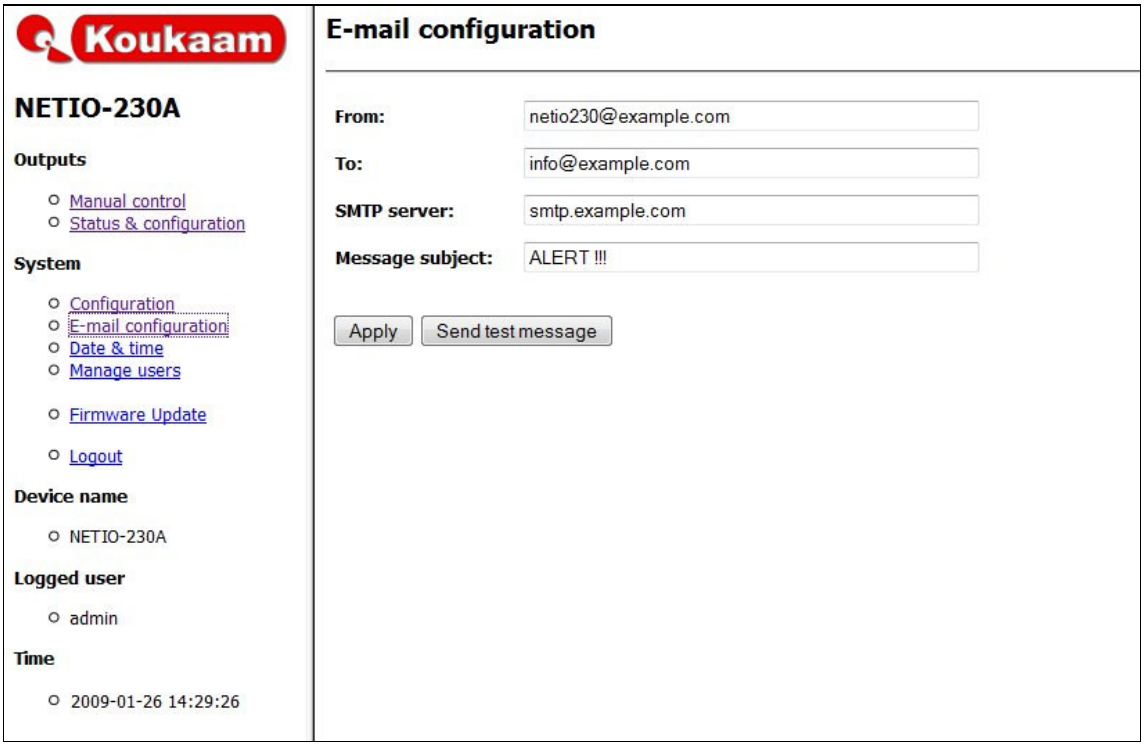


5.2.2 E-mail configuration

Click *E-mail configuration* in the menu to adjust e-mail settings. Please input sender (*From)*, receiver (*To)* and a *Message subject* of the warning e-mail message. Also insert *SMTP server* address that will be used to send out the e-mail.

You can check if e-mail setup is correct by pressing the *Send test message* button.

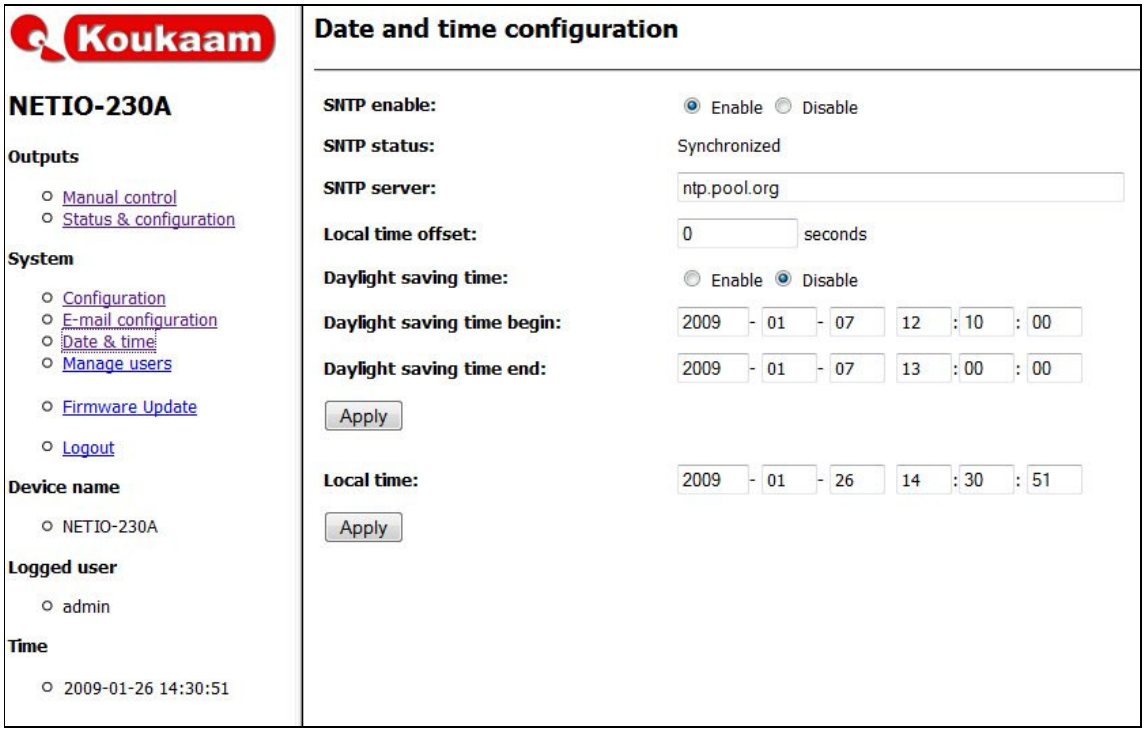
Note: Current firmware version does not support SMTP authorization.



5.2.3 Date and time settings

Click *Date & time* in the menu to change the system date and time settings.

NETIO-230A supports two methods of getting the right date and time values. It can be entered manually or obtained automatically from the SNTP server (this option is recommended if SNTP is available).



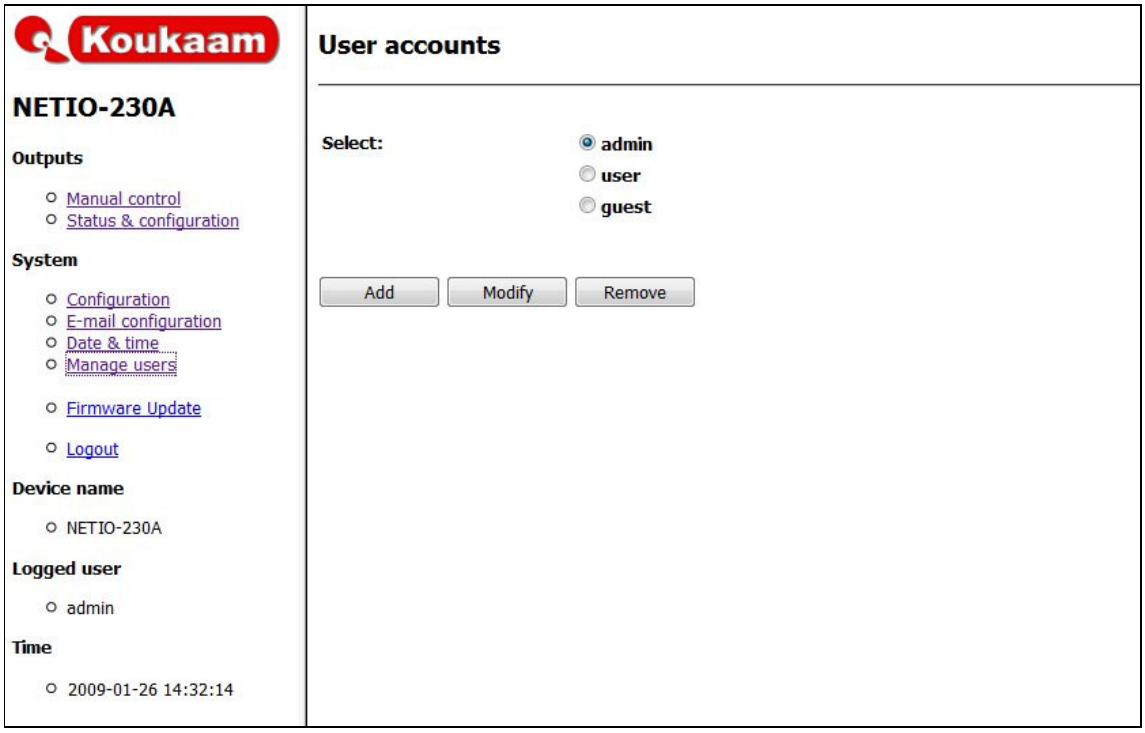
SNTP enable: Enables time synchronization with SNTP server.
SNTP status: SNTP server synchronization status:
Synchronized – time successfully synchronized
Not Synchronized – not yet synchronized or synchronization failure
SNTP server: Address of the SNTP (Simple Network Time Protocol) server that provides date and time synchronization. Default value is *pool.ntp.org*.
Local time offset: Manual setup of your time zone – time shift against GMT time in minutes.
Daylight saving time: Enabled daylight saving time.
Daylight saving time begin: Daylight saving time start.
Daylight saving time end: Daylight saving time end.
Local time: Manual local time setup.

Daylight saving time and local time offset works both for manual and automatic (SNTP) setup. If you do not specify *Local Time Offset*, Greenwich Mean Time will be used.

5.2.4 Manage users

Device supports three levels of user access:

Admin: Full administration.
User: User which can control outputs, but cannot change any settings.
Guest: Guest can only observe output status.

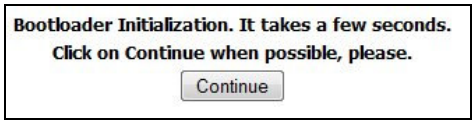


You can also *Add, Modify* (password or user role) or *Remove* the user accounts.

5.2.5 Firmware update

Page *Firmware Update* is used to upload the new firmware into your NETIO-230A. After you click *Firmware update* link in the menu warning message will appear.

Continue by clicking on the *Update* button. The device will then switch to a special firmware update mode. After approximately three seconds the *Continue* button will become active – click on it.



Now insert the firmware file (xnetio.bin) and click the *Update* button. Approximately two minutes procedure of firmware upload will follow. After the firmware upgrade finishes the device will restart automatically. After the new login you will be working with the new firmware version.

5.3 Serial port, Telnet and CGI command control

5.3.1 Secure login

NETIO-230A supports two login modes – open login and login with encrypted password. Encrypted password can be used for Telnet, http and serial link control. Login via web interface is encrypted automatically.

For secure login you first need to obtain the *hash* code from the device. You can obtain this code in a return code after the connection via the RS-232 interface, via Telnet or CGI command *hash*.

To calculate the proper encrypted login password MD5 hash function is used: <User Name> <Password> <*hash*>. It is 128-bit number transmitted as 32 digit hexadecimal number.

5.3.2 Serial port communication

NETIO-230A is equipped with RS-232C serial interface. Serial port control uses the same set of commands as Telnet. You can find the list in chapter 5.3.4.

Communication parameters:

Baud rate: 19200 baud
Data bits: 8
Stop bits: 1
Parity: none
Flow control: none

5.3.3 Telnet communication

To connect to your NETIO-230A via Telnet please follow these steps:

1) Open command prompt (Start – Run – cmd)
2) Enter command *telnet 192.168.10.100* (please change the address to yours accordingly)
3) The device should give you the reply like:
   100 HELLO EB5D61F6
   Last 8 characters is the *hash* code needed for secured login with encrypted password.
4) Now you can login by entering command *login name password*, where *name* is the user name and *password* is your password. If you entered corrected credentials the device should reply *250 OK*. Now you are logged in and you can use commands to control your NETIO-230A.

Note: Windows Vista does not include the Telnet client by default and it may be needed to install it separately.

5.3.4 List of commands for Telnet / serial link

login <name> <password>

User login with open password.

Example: Using *login admin admin* you will login with username *admin* and password *admin.*

clogin <name> <encrypted_password>

User login with encrypted password.

version

Shows current firmware version.

alias

Shows current device alias (your name for this device).

quit

Logout.

reboot

Logouts the current session and restarts the device.

port <output> [0 | 1 | manual | int]

Shows current status and allows to change the status:

- If you enter only output number, output status shows (0 - OFF / 1 - ON)
- Output number and *0/1* parameter – disables / enables output
- Output number and '*manual*' parameter – enables manual output control
- Output number and '*int*' parameter – interrupts output

Example: Command *port 2 1* will turn ON output 2.

port list [xxxx]

- Without any parameters it lists current status of all outputs
- *xxxx* command can control all outputs simultanously
- instead of *x* enter commands:
  - 0 – to turn the output OFF
  - 1 – to turn the output ON
  - i – to interrupt the output
  - u – to leave the output without any change of its status

Example: Command *port list 01ui* will turn output 1 OFF, turn output 2 ON, output 3 will remain unchanged and output 4 will be interrupted for a short while.

port setup <output> [<output_name> <mod: manual|timer> <interrupt_delay> <PON_status>]

Command for change of output parameters.

<output_name> - please enter the phrase quoted, eg: "My NETIO-230A".

<power_ON_state> - 0 – turned OFF / 1 – turned ON

Example: Command *port setup 1 „output 1" manual 2* will set output 1 name *output 1*, enable manual control, interruption interval to 2 seconds and power on state to *ON*.

port timer <output> <time_format> [<mode: once | daily | weekly> <on-time> <off-time>] <week_schedule>

Timer control:

< output_number> - number of output to change

<time_format> - time format

t - HH:MM:SS

dt - YYYY/MM/DD,HH:MM:SS

ux - xxxxxxxx (unsigned long with 0x<hex>, 0<octal> prefix or decadical)

<week_schedule> - Number consisting of seven digits (0 or 1). First digit stands for Monday and last one for Sunday.

Example: Command *port timer 3 t weekly 08:00:00 17:30:00 1111100* will enable Time control on output 3. Each day from Monday till Friday at 8:00 AM output 3 will turn ON and turn OFF at 5:30 PM.

port wd <output>

Shows Watchdog settings for requested output in format:

<wd enable | disable> <wd_ip_address> <wd_timeout> <wd_POn_delay> <ping_refresh> <max_ retry> <max_retry_poff enable|disable> <send email enable|disable>

port wd <output> <wd: enable|disable>

Enables / disables the Watchdog feature.

Example: Command *port wd 4 enable* will enable the Watchdog feature on output 4.

port wd <output> <wd: enable | disable> <wd_ip_addr> <wd_timeout> <wd_PON_delay> <ping_interval> <max_retry> <max_retry_poff: enable|disable> <send_email: enable|disable>

Sets all parameters of the Watchdog feature for requested output.

Example: Command *port wd 2 enable 192.168.10.101 10 30 1 3 enable enable* will enable the Watchdog feature on output 4. Device on address 192.168.10.101 will be monitored, max Ping response time 10 seconds. Ping commands will be sent in 1 second intervals. If the monitored device won't respond in 10 seconds, output 2 will be turned OFF for 30 seconds. If the device will fail to respond to Ping commands after the third restart the output will stay OFF. You will be notified by warning e-mail after each reset of the output.

system eth

Shows current network interface setup in format: *<dhcp | manual> <ip_address> <mask> <gateway>*

system eth <dhcp | manual> [<ip_address> <mask> <gateway>]

Setup of the network interface parameters – IP address, subnet mask and gate way parameters are needed to pass only if *manual* mode is entered. To allow changed values to take effect you must restart the device by typing the *reboot* command or turning it off and on again.

Example: Command *system eth manual 192.168.10.150 255.255.255.0 192.168.10.1* will set IP address 192.168.10.150, subnet mask 255.255.255.0 and default gateway 192.168.10.1.

email server < ip | domain_server_address>

Sets IP address or domain name of the SMTP server.

system discover <enable|disable>

Enables / Disable visibility of the device for the network Discover utility.

system discover

Shows if the system discover is enabled or disabled.

system swdelay <delay in 0.1s>

Sets delay between triggering two outputs.

system swdelay

Shows current delay between triggering two outputs setting.

system dns <ip>

Sets IP address of the DNS server.

To allow changed values to take effect you must restart the device by typing the *reboot* command or turning it off and on again.

system dns

Shows current IP address of the DNS server.

system sntp

Shows current SNTP client settings.

system sntp <enable|disable> <sntp ip|domain>

SNTP client settings, enables or disables time synchronization with SNTP server. Server address can be entered both as IP address or domain name.

system time <YYYY/MM/DD,HH:MM:SS>

Sets local system time.

system time

Shows current local system time.

system timezone <+|-offset>

Sets local time zone.

system timezone

Shows current local time zone offset. Presented value is in seconds.

system update

Switches the system to firmware upgrade mode.

system reset to default

Reverts all settings to factory default values. After issuing the command the device restarts automatically.

5.3.5 URL control using the CGI commands

For some customers who already have their own web site or web control application, NETIO-230A can be easily integrated through convenient URLs. This section specifies the external HTTP based application programming interface.

CGI command device control uses following command format:

http://<IP address>/tgi/control.tgi?<command>

Change *<IP address>* to the real IP address of your device. String *<command>* is the actual command.

List of CGI commands

***h**ash=**h**ash*

Hash string request, *hash* is needed to generate encrypted password. Command returns *<html> hash </html>*.

***l**ogin=<**p** | **c**>:<user name>:<password>*

Login to the device. By typing *login=p* you choose to login with unencrypted password. For encrypted password login use *login=c*. Next parameters are login user name and password.

Command return values are:
<html>555 FORBIDDEN</html> - You are not logged in or bad command.
<html>100 HELLO</html> - Successful login.
<html>553 INVALID LOGIN</html> - Bad user name / password.
<html>554 ALREADY LOGGED IN</html> - You are trying to log in although you are already logged in.

***q**uit=**q**uit*

Logout. Return value is *<html>110 BYE</html>*.

port=<**l**ist | **xxxx**>

Parameter ***l**ist* will show current port status in format: *<html> port1 port2 port3 port4 </html>*, where *port1* to *port4* represent values *0* for OFF and *1* for ON status of the output.
Parameter *xxxx* is a string for changing status of outputs. Instead the *x* character insert *0,1,u* or *i* like in case of setting the outputs via Telnet interface.

All commands can be shortened to its first character. Possible short hands are stated in bold.
Example: command ***p**ort=**l**ist* can be shortened to *p=l*.

5.4 Manual control

Outputs could be also controlled manually using two buttons on the front panel. Keep the *Select* button pressed for three seconds. LED indicator in the right button will become lit – you have switched the device to manual control mode. Immediately after the device enters this mode you will hear a beep sound, which signalizes that the first output is now active. Press the *ON*/*OFF* button to switch its status. If you press the *Select* button again the second output will become active. Outputs are cycling from the first to the fourth. After each press of the button you will hear a beep sounds. By counting the beeps you can find out which output is currently selected. After ten seconds of inactivity the LED indicator will switch off and the manual control mode will be turned off.

5.5 Troubleshooting

5.5.1 Reset to factory defaults

If you forget administrator's password you must reset the device to factory default values in order to regain the access to it. You can perform factory defaults reset by pressing both front panel buttons (*Select* and *ON*/*OFF)* at the same time for four seconds. After four seconds there will be two short beeps, signalizing that the device has reverted to its factory defaults.

5.5.2 Fuse replacement

If your NETIO-230A won't work and the main switch is not lit it is possible that the fuse has burned. Before you proceed to the fuse replacement make sure that the device is **TURNED OFF** and **DISCONNECTED FROM THE NETWORK**. Also disconnect all devices connected to NETIO outputs.

To replace the fuse pull out the plastic fuse holder in the back of the device. Always make sure you are replacing the fuse by the fuse of the same type! After replacing the fuse, push the fuse holder back in. Connect the power cable and try to turn the device on. If the problem was eliminated by the fuse change the switch button will lit. Before you connect all devices back to the NETIO outputs make sure that the fuse was not destroyed by connected device that is defective.

6 LIABILITY

The manufacturer cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice. The manufacturer makes no warranty of any kind with regard to the material contained within this document, including, but not limited to, the implied warranties of merchantability and fitness for any particular purpose.

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