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[Docs] NetPing IO v2



[ENG] NetPing IO v2, Firmware Description

[ENG] 1. [DKSF 253.6 IU] Introduction

About What Is This Document?

This document describes a functionality of the DKSF 253.6.X firmware for the device [NetPing IO v2](#).

A [NetPing IO v2](#) device with the firmware of the DKSF 253.6.X version supports the next management interfaces:

- HTTP (web interface);
- SNMP v1;
- URL encoded HTTP commands

A description of settings and an operation order with these management interfaces are represented in the document.

A description of physical specifications of a device, its controls and indicators, a connection order of a device and external sensors are given in a user guide for [NetPing IO v2](#) devices.

A user guide can be browsed on the link: [\[IOv2\] NetPing IO v2, user guide](#).

Disclaimer and Copyright

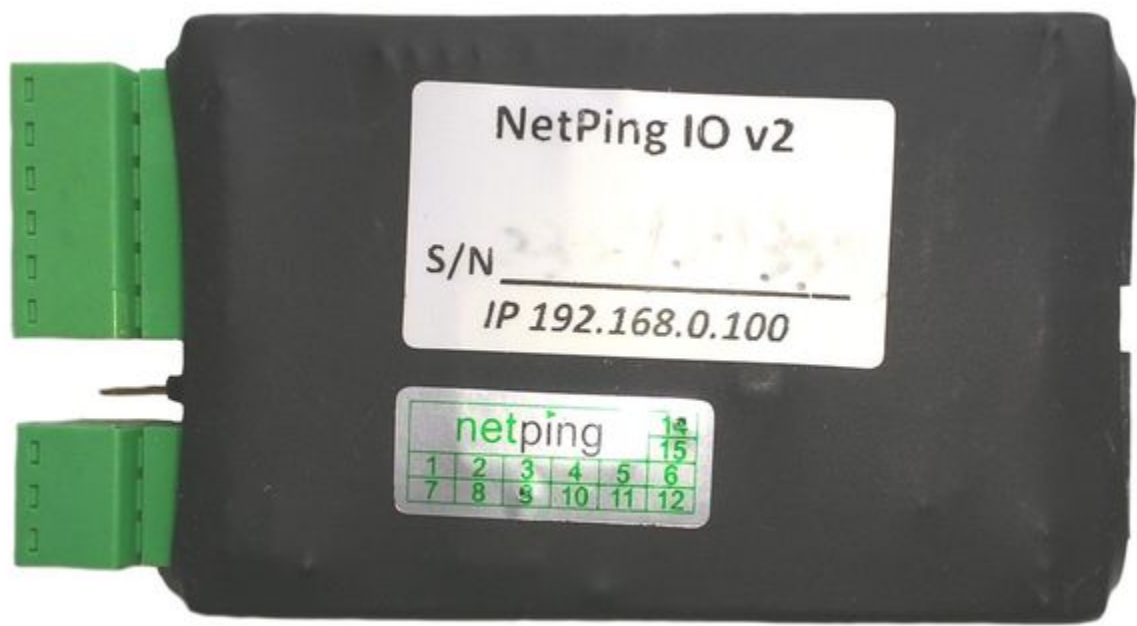
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Developer and manufacturer:
NetPing global Ltd

[ENG] 2. [DKSF 253.6 IU] Browsing the Main Information about a Device

[ENG] 2.1. [DKSF 253.6 IU] How to Know a Default IP Address and a MAC Address of a Device?

A default IP address is indicated at the back side of a [NetPing IO v2](#) device:



A default IP address of a [NetPing IO v2](#) device is 192.168.0.100

The MAC address of a device can be browsed at the home page of a device web interface:

DEVICE IDENTIFICATION

Serial Number	SN: 000 060 253
MAC Address	00:a2:5d:eb:00:00
Device Model	NetPing IO v2
Firmware Version	v253.6.2 E-1
Hardware Version	1.1

NETWORK SETTINGS

IP Address	192.168.0.27
Netmask	255.255.255.0
Gateway	192.168.0.1

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where:

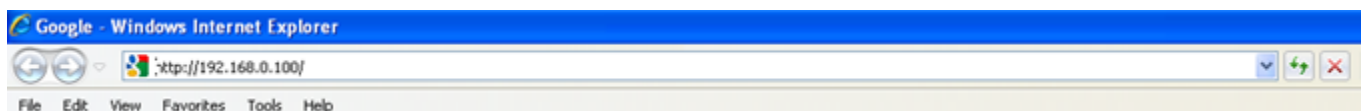
MAC Address – is a unique physical address of a device in the Ethernet network.

[ENG] 2.2. [DKSF 253.6 IU] Connecting to a Device Web Interface with a Default Authorization

Web Interface

In this version of device management software, an embedded web interface is implemented. To set up device parameters you need to go to an IP address of device with the help of an Internet browser (for example, Internet Explorer, FireFox, Google Chrome. etc.).

For instance:



When working in Internet Explorer web interface operation speed can be decreased. It is recommended to use the latest version of Google Chrome.

Use a command ping from a command line to check a connection with a device:

ping 192.168.0.100

IP address of a computer should be in the same subnetwork with IP address of a device! For example, if a device has an IP address 192.168.0.100, then a computer should have address 192.168.0.11 mask 255.255.255.0

Authentication

While connecting a device will request authentication by entering login and password.

On default:

- Address for connecting to a device: <http://192.168.0.100/>
- User: visor
- Password: ping

Authentication Required

The server http://192.168.0.24:80 requires a username and password. The server says: NetPing 2/PWR-220v3.

User Name:

Password:

Log In

Cancel

Make sure that a device responds to ping 192.168.0.100 after the first turning on a device as well as after resetting its parameters.

[ENG] 2.3. [DKSF 253.6 IU] I Need to Know a Firmware Version, Hardware Version, Serial Number and a Device Model

Information about a firmware version, hardware version and a serial number can be browsed at the home page of a device web interface:

Home

[HOME](#)
[SETUP](#)
[E-MAIL](#)
[DISCRETE I/O](#)
[LOGIC](#)
[FIRMWARE](#)
[LOG](#)

DEVICE IDENTIFICATION

Serial Number	SN: 000 060 253
MAC Address	00:a0:54:eb:00:00
Device Model	NetPing IO v2
Firmware Version	v253.6.2.E-1
Hardware Version	1.1

NETWORK SETTINGS

IP Address	192.168.0.27
Netmask	255.255.255.0
Gateway	192.168.0.1

Reboot

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where:

Serial Number – is a unique identification number of a device. It must coincide with a number at the sticker of a device. A serial number of a device cannot be changed.

Device Model – is a model name, which is indicated both on the body of a device and in a web interface.

Firmware Version – is a current firmware version, installed in a device.

A number of a firmware version looks like as follows: DKSF PPP.VV.SS.C-M (for example, DKSF 253.6.1.A-1), where:

- DKSF – is a special prefix for all firmware versions of the company NetPing global Ltd.;
- PPP – is a number of a device model, for which the firmware is designed.

Project numbers usually, but not necessarily, coincide with a project number of a hardware of a device.

- VV – is a version number. The versions are numbered, starting from 1. A version number is changed to the following one if the functionality is significantly extended or changed in the development process;
- SS – is a subversion number. A subversion is changed at any firmware update, including bug fixing, updating internal modules, optimisation;
- C – is a character, which indicates the type of this firmware version. A – is a stable Russian firmware version, B – is a version for testing or the first version of new firmware. E – is a stable version with English interface;
- M – is a numeric suffix, which marks a modification (variant) of a device model, for which a firmware is designed.

Hardware version – is a version of a printing board and/or a configuration of the device.

[ENG] 2.4. [DKSF 253.6 IU] How to Reboot a Device?

A NetPing IO v2 device can be rebooted in two ways:

1. By clicking the button «Reboot» at the home page of a device web interface.

Home

HOME | SETUP | E-MAIL | DISCRETE I/O | LOGIC | FIRMWARE | LOG

DEVICE IDENTIFICATION

Serial Number	SN: 000 060 253
MAC Address	00:a2:5d:eb:00:00
Device Model	NetPing IO v2
Firmware Version	v253.6.2.E-1
Hardware Version	1.1

NETWORK SETTINGS

IP Address	192.168.0.27
Netmask	255.255.255.0
Gateway	192.168.0.1

Reboot

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Afterwards, a system will display an informational notification with a confirmation of rebooting a device.

ATTENTION! During firmware restart state of IO and Relays may change for some short time. Also, state of IO and Relays may change because of Logic re-initialization. Do you want continue restart?

Cancel Reboot Proceed Reboot

When clicking the button «Proceed Reboot», a CPU LED near Ethernet ports will blink. A device will reboot.

2. Using an SNMP v1 protocol by setting OID values using a command Set:

OID	Name	Type	Access	Description
-----	------	------	--------	-------------

.1.3.6.1.4.1.25728.911.1.0	npSoftReboot	Integer	READ/WRITE	Software reboot of a device when writing the value «1» (an analogue to rebooting a device through a web interface).
.1.3.6.1.4.1.25728.911.3.0	npForceReboot	Integer	READ/WRITE	The immediate forced reboot of a device when writing the value «1» (resetting a processor, the same as when switching a power supply on).

[ENG] 3. [DKSF 253.6 IU] Basic Configuration

[ENG] 3.1. [DKSF 253.6 IU] How to Configure a Device Hostname, Its Location and Contact?

To configure a hostname and a location of a device as well as contact, there is a need to go to the page «SETUP» of a device web interface:

Setup

[HOME](#)
[SETUP](#)
[E-MAIL](#)
[DISCRETE I/O](#)
[LOGIC](#)
[FIRMWARE](#)
[LOG](#)

DEVICE IDENTIFICATION

Device Hostname (only Latin letters, digits, '-')	hostname
Device Location	Taiwan office
Contact	sp@netping.ru

Apply Changes

In the section «Device Identification» it is possible to configure:

Device Hostname (only Latin letters, digits, '-') – is a domain name of a device. It allows distinguishing several NetPing devices of the same type via their names. A hostname is displayed in the heading of a web interface, is sent in Syslog notifications and available via SNMP – sysName.0. On default: empty line

Device Location – is a description of an installation place of a NetPing device. It is displayed in the heading of a web interface and available via SNMP – sysLocation.0. On default: empty line

Contact – is an administrator's contact data (usually, an e-mail). This information is available via SNMP – sysContact.0. On default: empty line

After setting all necessary parameters, click the button «Apply changes».

[ENG] 3.2. [DKSF 253.6 IU] Where to Change Settings of a Network Interface?

To change network interface parameters, such as an HTTP port, a server and an SNMP agent, there is a need to go to the page «Setup» of a device web interface:

NETWORK SETTINGS

IP Address	192.168.0.29
Netmask	255.255.255.0
Gateway	192.168.0.1
DNS Server	8.8.8.8
Embedded HTTP Server Port	80
SNMP Agent Port	161

Apply Changes

In the section «Network Settings» it is possible to configure:

IP Address – is a field for setting up or changing an IP address of a device. On default: 192.168.0.100

Netmask – is a field for setting up or changing a subnet mask, where the devices are. On default: 255.255.255.0

Gateway – is a field for setting up or changing an IP address of a gateway. The value 0.0.0.0 means a gateway is not specified and packages for other subnetworks will not be sent by a device. On default: 0.0.0.0

A device will send any outgoing packages to a gateway address. Therefore, there is a need to specify an IP address of a gateway

properly if there is a need to work with a device from other subnetworks.

DNS server – is a DNS server address. The value 0.0.0.0 means a DNS server is not specified, and a device will not send DNS requests. On default: 0.0.0.0

A DNS server must use a recursive method. Cyrillic domain names are not supported. Domain names longer than 62 symbols are not supported either.

A DNS module works independently from other firmware modules. A DNS module saves responses from a DNS server into a DNS-cache of a device. Other firmware modules use this cache to determine an IP address, where a package needs to be sent. A request is not sent directly before sending a DNS package. If there is no correspondent entry in a DNS-cache in the moment of sending a package, then an outgoing package is discarded. A DNS cache size coincides with the number of hostnames (IP addresses) specified in the settings of a device.

Domain names are resolved and renewed in the next cases:

- Firmware start and restart;
- Saving settings through a web interface (if a domain name is changed);
- A life timeout of a DNS record, specified in the response from a DNS server

When a lifetime of a cache entry is expired, the entry is not removed from a cache. A device updates an expired entry from time to time. Other firmware modules use an outdated information until the entry is successfully updated.

If a DNS server does not respond, a device repeats its request three times. Afterwards, it repeats the request periodically nearly once a minute if there is still no response from a server. The requests are repeated when there is no server response and if there is an error in a server response, including the error «no such hostname».

HTTP Server Port – is a field for configuring a port number, through which an embedded web interface operates. When connecting through a web browser to a device with a port number different from 80, there is a need to indicate the URL of the following appearance: <http://x.x.x.x:nn>, where x.x.x.x – is an IP address of a device, nn – is a port number, specified in settings of a device. On default: 80

SNMP Agent Port – is a field for configuring a UDP port number, which an SNMP agent listens to. On default: 161

After setting all necessary parameters, click the button «Apply changes».

[ENG] 3.3. [DKSF 253.6 IU] Changing a Username and a Password

To change a username and a password, there is a need to go to the page «SETUP» of a device web interface:

ACCESS RESTRICTIONS

Username	visor27
Password	*****
SNMP Community for Read	ping27
SNMP Community for Write	ping27
IP Filter (access granted for this subnet)	0.0.0.0
IP Filter Netmask (0.0.0.0 - disable filter)	0.0.0.0

Apply changes

In the section «Access Restrictions» it is possible to configure:

Username – is a field for setting or changing a username when accessing a device through a web interface. Latin letters and numbers are used. Its maximum number – 16 characters. On default: visor

Password – is a field for setting or changing a password when accessing a device through a web interface. Latin letters and numbers are used. Its maximum size is – 16 characters. On default: ping

After setting all necessary parameters, click the button «Apply changes».

[ENG] 3.4. [DKSF 253.5 IU] How to Set community for SNMP?

To configure Community, there is a need to go to the web page «Setup» of a device web interface:

ACCESS RESTRICTIONS

Username	visor29
Password	*****
SNMP Community for Read	ping29
SNMP Community for Write	ping29
IP Filter (access granted for this subnet)	0.0.0.0
IP Filter Netmask (0.0.0.0 - disable filter)	0.0.0.0

Apply Changes

In the section «Access Restrictions» it is possible to configure:

Community for Read – is a field for setting up or changing Community for read parameters of a device when accessing a device via an SNMP protocol. Its maximum size is 16 characters. On default: SWITCH

Community for Write – is a field for setting up or changing Community for write parameters of a device when accessing a device via an SNMP protocol. Its maximum size is 16 characters. On default: SWITCH

After setting up all necessary parameters, click the button «Apply changes».

[ENG] 3.5. [DKSF 253.6 IU] How to Restrict Access to a Device?

To restrict an access to a device via HTTP and SNMP protocols, there is a need to go to the page «SETUP» of a device web interface:

ACCESS RESTRICTIONS

Username	visor20
Password	*****
SNMP Community for Read	SWITCH
SNMP Community for Write	SWITCH
IP Filter (access granted for this subnet)	0.0.0.0
IP Filter Netmask (0.0.0.0 - disable filter)	0.0.0.0

Apply Changes

In the section «Access Restrictions», it is possible to configure:

IP Filter is a field that determines an IP address or a subnetwork, from which it is allowed to configure and browse parameters of a device via HTTP, SNMP protocols. A subnet mask indicated in the field «IP Filter Netmask» is applied to the address indicated in the field «IP Filter». As a result, there is a subnetwork, from which it is allowed to manage a device. To allow access for an IP address, there is a need to indicate a mask 255.255.255.255 in the field «IP Filter Netmask». On default: 0.0.0.0

IP Filter Netmask is a field to set or change the subnet mask filter to access a device. The value 0.0.0.0 means that the access filter is disabled. On default: 0.0.0.0

When access filter parameters are set, a device will not respond to an ICMP request (ping).

After setting all necessary parameters, click the button «Apply changes».

[ENG] 3.6. [DKSF 253.6 IU] It Is Necessary to Send SNMP trap Notifications. How to Configure This?

IP addresses for sending SNMP TRAP notifications are configured at the page «Setup» of a device web interface. This group of settings allows configuring up to two addresses, where SNMP TRAP notifications will be sent via an SNMP protocol.

Events for these notifications to be sent are specified at other pages of a device web interface.

SNMP TRAP

SNMP Trap Destination #1	
SNMP Trap Destination #2	

Apply Changes

In the section «SNMP TRAP» it is possible to configure the following:

SNMP Trap Destination #1 - is a field for configuring or changing the first address, where SNMP TRAP notifications will be sent. It is possible to specify an IP address or a domain name. An empty field means SNMP TRAP notifications will not be sent. On default: address is not specified

SNMP Trap Destination #2 - is a field for configuring or changing the second address, where SNMP TRAP notifications will be sent. It is possible to indicate an IP address or a domain name. An empty field means SNMP TRAP notifications will not be sent. On default: address is not specified

After configuring all necessary settings, click the button «Apply changes».

[ENG] 3.7. [DKSF 253.6 IU] How to Set the Clock?

To configure synchronization with external NTP servers, there is a need to go to the page «SETUP» of a device web interface.

This group of settings allows setting addresses of NTP servers (servers of a precise time) to a device, according to which a device will set and adjust its internal clock. It is possible to set up to two NTP servers in total. If the first NTP server is unavailable, a device will try to synchronize time using the second NTP server. A correctness of setting can be checked by generating an event of a time synchronization and browsing this event in a log of a device at the page «LOG».

NTP SETUP

NTP Server #1	0.asia.pool.ntp.org
NTP Server #2	1.asia.pool.ntp.org
Timezone (-12..12)	3
Daylight Saving Time (DST)	<input type="checkbox"/>

Apply changes

<--

In the section «NTP SETUP» it is possible to configure:

NTP server 1 – is a field for browsing or changing an address of the first NTP server. It is acceptable to indicate an IP address or a domain name. An empty field disables the function of time synchronization. On default: ntp.netping.ru

NTP server 2 – is a field for browsing or changing an address of the second NTP server. It is acceptable to indicate an IP address or a domain name. An empty field disables the function of time synchronization. On default: address is not specified

Timezone – is a field for browsing or changing a local timezone. A whole positive or a negative number of hours shift from UTC. On default: 3

Daylight Saving Time (DST) – is a checkbox for setting a daylight saving time in a manual mode. When a checkbox is checked, the internal clock of a device is shifted one hour ahead. On default: checkbox is not checked

As NTP servers you can use NTP servers, which are freely available on the Internet, for example, from <http://www.pool.ntp.org/en/>, particularly:

- 0.europe.pool.ntp.org
- 1.europe.pool.ntp.org
- 2.europe.pool.ntp.org
- 3.europe.pool.ntp.org

To use NTP servers from the Internet, a device must have a properly configured [gateway](#), and an access to the Internet via NTP protocol.

After setting all necessary parameters, click the button «Apply changes».

[ENG] 3.8. [DKSF 253.6 IU] I Want to Configure SYSLOG. How to Do This?

Transfer of notifications to the SYSLOG server is configured at the page «Setup» of a device web interface.

Events, according to which these notifications will be sent, are set at other pages of a device web interface.

SYSLOG

Syslog Address	
Syslog Facility	16
Syslog Severity	5

Apply Changes

In the section «SYSLOG» it is possible to configure the following:

SysLog Address – is an IP address of the SYSLOG server. A log file of a device will be duplicated completely on the SYSLOG server.

Syslog Facility – is a type of programs, for which logging is maintained.

Syslog Severity – indicates the urgency of notifications (from emergency to debugging).

After setting up all necessary parameters, click the button «Apply changes».

[ENG] 3.9. [DKSF 253.6 IU] How to Receive Notifications and Reports via Email?

To configure the module for sending e-mail notifications and reports about a status, there is a need to go to the page «E-MAIL» of a web interface. The equipment sends notifications using an SMTP protocol.

Events, on which e-mail notifications will be sent, are set at other pages of a device web interface.

E-mail Notifications

[HOME](#) | [SETUP](#) | [E-MAIL](#) | [SMS](#) | [AC OUTLETS](#) | [DISCRETE IO](#) | [IR REMOTE](#) | [LOGIC](#)
[TEMPERATURE](#) | [SMOKE](#) | [HUMIDITY](#) | [1-WIRE](#) | [FIRMWARE](#) | [LOG](#)

SMTP SETTINGS FOR OUTGOING E-MAIL

Enable Sending of E-mail	<input checked="" type="checkbox"/>
SMTP Server Address	
SMTP Server TCP Port	25
Username	
Password	
From	
To	
Copy To (cc:)	
Copy To (cc:)	
Copy To (cc:)	
Time for Summary Reports (HH:MM 24h format, up to 12 time points, divided by space)	

Apply Changes

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where:

Enable Sending of E-mail – when unchecking the checkbox a device will not send e-mail notifications. This was designed, first of all, to handle maintenance in a server room, as well as the one of the equipment. On default: checkbox is not checked

SMTP Server Address – is an email address for an incoming mail. On default: empty line

SMTP Server TCP Port – is an email server port, which works via an SMTP protocol. On default: 25

Username – is a username of an SMTP server. On default: empty line

Password – is a password of an SMTP server user. On default: empty line

From – a sender's address. On default: empty line

To – a destination address for e-mail notifications. On default: empty line

Copy To (cc:) – addresses of secondary recipients for e-mail notifications, to whom a copy is sent. On default: empty line

Time for Summary Reports (HH:MM 24h format, up to 12 time points, divided by space) – is a time when reports on a status of sensors will be sent via e-mail. On default: empty line

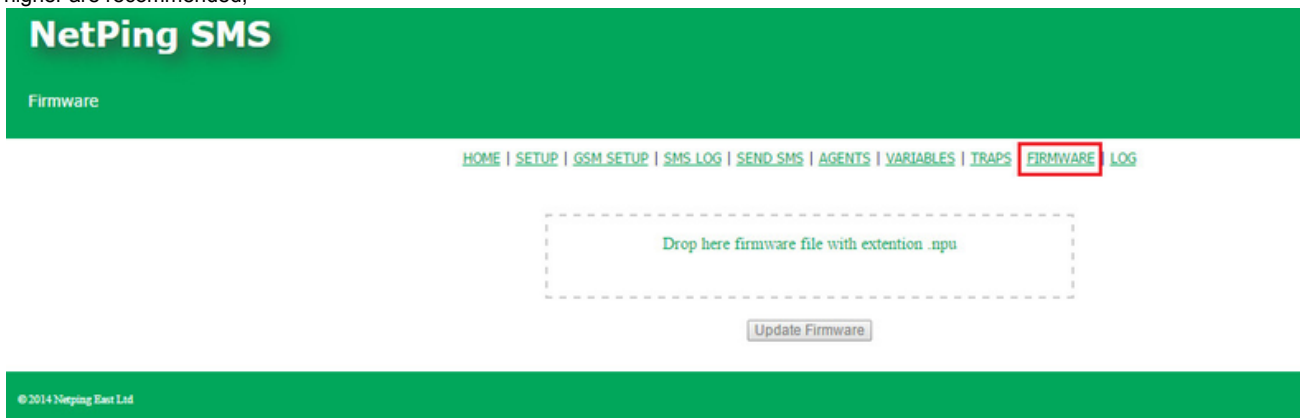
After setting the parameters, click the button «Apply changes».

A device can work only with email servers, which support an SMTP protocol and authentication methods AUTH PLAIN and AUTH LOGIN, as well as a method without authentication! At the same time, a device cannot support SSL, TLS or another encoding!

[ENG] 3.10. [DKSF 253.6 IU] How to Update Firmware of a Device?

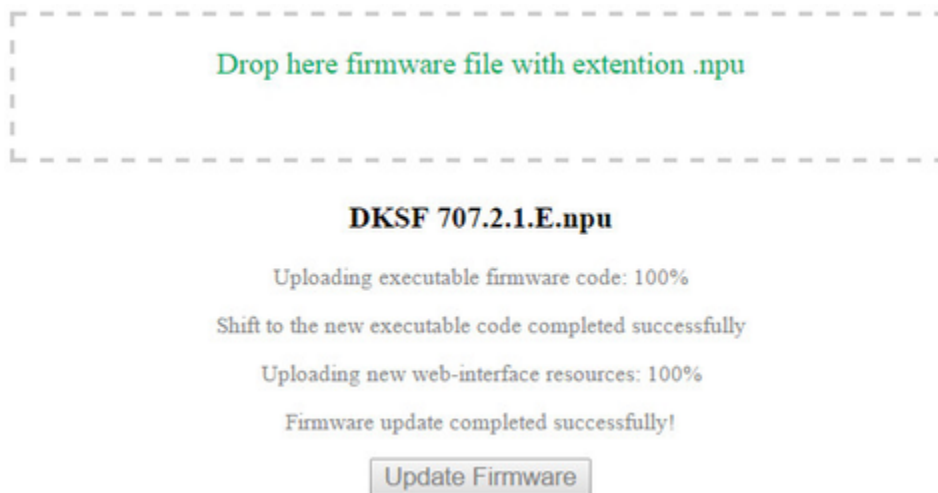
There is a need to do the following to update an embedded firmware version:

1. Download an up-to-date firmware from the official website of the company (section «Files»): <http://www.netpingdevice.com>
2. Go to the page «Firmware» of a device web interface. You can easily update the firmware of a device from this page without using any specific software. To do that, you will need a browser supporting HTML 5 API. Google Chrome or Internet Explorer of the 9th version and higher are recommended;



3. Drag a firmware file to the indicated page area;
4. Wait until a firmware file is copied to a device
5. Click the button «Update Firmware»

Wait for the message on a successful operation completion:



Retry if an updating process was interrupted. A web interface (pages «Home», «Setup», «Firmware») will be available even if the firmware was not successfully updated.

Certain system settings may be changed after updating. Do not forget to check the most important operation parameters.

[ENG] 3.11. [DKSF 253.6 IU] What Notifications Are Displayed in a System Log?

The page «Log» of a device web interface represents the operation of a device. All events of a device are registered in a log chronologically. All notifications of the log are duplicated via SYSLOG protocol if an IP address of the SYSLOG server is specified in the settings of a device.

A system log is located in a nonvolatile memory. All notifications are registered in a circle, which means that the oldest notification in a log is rewritten by a new one.

The first time tag in a log is 01.01.70 Mon 00:00: 00.UTC. If an IP address of an NTP server is specified in the settings of a device, a device will try to get a precise time and if successful it will synchronize its internal clock with a precise time. After synchronizing time, two records that represent a time jump when resetting the clock to a precise time will appear in a log. If the time received while synchronizing with an NTP server is different from the time of the internal clock for less than 5 minutes, the clock will not be reset. Instead, a pace of internal clock will be changed in the way to fit a precise time, received from an NTP server in a certain period of time. Thanks to this, there is no time jumps in the list of events in the log, which simplifies its analysis.



```
01.01.70 4t 03:00:00.000 I02=1
01.01.70 4t 03:00:00.505 I03=1
01.01.70 4t 03:00:00.000 Rebooting NetPing IO v2 v253.6.1.A-1
01.01.70 4t 03:00:00.000 I02=1
01.01.70 4t 03:00:00.502 I03=1
01.01.70 4t 03:00:00.000 Rebooting NetPing IO v2 v253.6.1.A-1
01.01.70 4t 03:00:00.000 I02=1
01.01.70 4t 03:00:00.505 I03=1
01.01.70 4t 03:00:00.000 Rebooting NetPing IO v2 v253.6.1.A-1
01.01.70 4t 03:00:00.000 I02=1
01.01.70 4t 03:00:00.505 I03=1
01.01.70 4t 03:00:29.899 sendmail: message has dropped, SMTP server IP unknown
01.01.70 4t 03:00:29.907 sendmail: message has dropped, SMTP server IP unknown
01.01.70 4t 03:01:09.158 Resetting ...
15.01.16 0t 08:55:38.740 .. clock
01.01.70 Th 03:00:00.000 Firmware start, NetPing IO v2 v253.6.2.E-1
01.01.70 Th 03:00:00.000 I02=1
01.01.70 Th 03:00:00.505 I03=1
01.01.70 Th 03:00:10.106 local clock...
27.01.16 We 19:05:18.431 ...is adjusted to NTP clock
27.01.16 We 19:05:40.273 sendmail: request RCPT TO replied error 501 <>: missing or malformed local part

27.01.16 We 19:05:40.281 sendmail: message has dropped
27.01.16 We 19:05:42.613 sendmail: request RCPT TO replied error 501 <>: missing or malformed local part

27.01.16 We 19:05:42.621 sendmail: message has dropped
```

General Events

Starting the operation (Rebooting) XXXX YYYY – is recorded in the log when rebooting or switching on a device. XXXX – is a model name of a device. YYYY – is a firmware version, which is installed in a device.

Resetting.....clock – is recorded in the log if the time, received via an NTP protocol is different for more than 5 minutes from the time, set at the internal clock of a device. A notification is displayed in 2 lines. The first line represents a time tag before resetting the internal clock, the second line represents a time tag right after resetting the internal clock.

Device parameters are reset (starting with a clicked Reset button) – is recorded into a log when resetting parameters of a device into default settings by the «Reset» button.

Events from IO Lines

ION=Y XXXX ZZZZ – is recorded in the log when an IO line changes its current logic level (switches from the status «0» into the status «1» and vice versa) and notifications in a log from the IO line are enabled. N – is a number of an IO line. Y – is a current logic level of an IO line. XXXX – is a description of an IO line, which is set by a user at the page «INPUT-OUTPUT» of a device web-interface, ZZZZ – is a description of a logic level of an IO line, which is set by a user in the window of configuring notifications for an IO line.

Events from the Module of Sending E-mail Notifications

sendmail: in a response to XXXX YYYY is received – it is recorded in a log if a server returns an «incorrect» response code. XXXX – is a service

information: authentication method or a notification addressee. YYYY – is a notification about an error.

sendmail: a message is dismissed – is recorded in the log if it is impossible to send an e-mail to an SMTP server.

No room for new mail message XXXX – is recorded in the log if a notification queue is overfilled. XXXX – is a client request and a server response.

SYSLOG Support

All notifications in the log are duplicated by sending notifications via the SYSLOG protocol if an address of the SYSLOG server is set at the page «SETUP» of a device web interface.

SYSLOG server is convenient to use for a centralized collection of notifications about events that take place at numerous devices and computers, which operate at the network, including NetPing devices.

[ENG] 4. [DKSF 253.6 IU] Working with Channels of a Discrete Input-Output

[ENG] 4.1. [DKSF 253.6 IU] Is It Possible to Set a Description for an Input-Output Line?

To set a description for an input-output line, there is a need to go to the page «DISCRETE I/O» of a device web interface:

Discrete I/O Lines

HOME | SETUP | E-MAIL | DISCRETE I/O | LOGIC | FIRMWARE | LOG

Parameter	IO 1	IO 2	IO 3	IO 4
Memo				
Mode	Input	Output	Input	Input
Filter of Short Pulses (20-10 000ms)	500	500	500	500
Logic Level	1	1	1	1
Logic Level Legend	-	-	-	-
Notification	Setup	Setup	Setup	Setup
Output Level				
Logic 1				
Logic 0				
Output Single Pulse				
Single Pulse Duration (100-25 500ms, step 100ms)	1000	1000	1000	1000
Output Single Pulse	Pulse	Pulse	Pulse	Pulse

Apply Changes

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Descriptions of IO lines are set in the field «Memo».

Memo – is a field for setting a brief description of an IO line. A memo is used in SYSLOG and log notifications, and is included in SNMP TRAP notifications, E-mail notifications, E-mail reports about a status of sensors. A maximum size is 30 characters. On default: empty line

[ENG] 4.2. [DKSF 253.6 IU] Configuring an Operation Mode of an Input-Output Line

To configure an operation mode of an IO line, there is a need to go to the page «DISCRETE I/O» of a device web interface

Discrete I/O Lines

[HOME](#) | [SETUP](#) | [E-MAIL](#) | **DISCRETE I/O** | [LOGIC](#) | [FIRMWARE](#) | [LOG](#)

Parameter	IO 1	IO 2	IO 3	IO 4
Memo				
Mode	Input	Output	Input	Input
Filter of Short Pulses (20-10 000ms)	500	500	500	500
Logic Level	1	1	1	1
Logic Level Legend	-	-	-	-
Notification	Setup	Setup	Setup	Setup
Output Level				
Logic 1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logic 0	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Output Single Pulse				
Single Pulse Duration (100-25 500ms, step 100ms)	1000	1000	1000	1000
Output Single Pulse	Pulse	Pulse	Pulse	Pulse

[Apply Changes](#)

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where:

Mode – is a parameter, which allows setting an IO line in the mode «input», «output» and «logic output». On default: input

At the page «DISCRETE I/O» current settings of discrete input-output channels are displayed. In the mode «input», «output» and «logic output», it is possible to configure automatic sending of SNMP TRAP, SYSLOG, E-mail, notifications into a system log as well as periodic status reports. In the mode «output» it is possible to set a logic level of a line through the web, SNMP and HTTP API interfaces. In the mode «logic output» a logic level at a line is configured by a logic module.

[ENG] 4.3. [DKSF 253.6 IU] How to Determine a Current Logic Level at an Input-Output Line?

To define a current logic level of an IO line, there is a need to go to the page «DISCRETE IO» of a device web interface:

Discrete Input-Output

[HOME](#) | [SETUP](#) | [E-MAIL](#) | [SMS](#) | [AC OUTLETS](#) | **DISCRETE IO** | [IR REMOTE](#) | [LOGIC](#)
[TEMPERATURE](#) | [SMOKE](#) | [HUMIDITY](#) | [I-WIRE](#) | [FIRMWARE](#) | [LOG](#)

Parameter	IO 1	IO 2	IO 3	IO 4
Memo				
IO Mode	Input	Input	Input	Input
Filter out short noise pulses (20-10 000ms)	500	500	500	500
Input Logic Level	1	1	1	1
Level Explained	-	-	-	-
Notification on Logic Level change	Setup	Setup	Setup	Setup
Output Logic Level				
Logic 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logic 0	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Single Pulse Generation				
Pulse Duration (100-25 500ms, step 100ms)	1000	1000	1000	1000
Start Single Pulse	Pulse	Pulse	Pulse	Pulse

[Apply Changes](#)

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where:

Input Logic Level – is a field displaying a current logic level at an IO line. It is updated automatically when a logic level of a line is changed with no need to reload an entire page.

[ENG] 4.4. [DKSF 253.6 IU] How to Control an Input-Output Line in the Mode «Output»?

To manage an IO line, there is a need to go to the page «DISCRETE IO» of a device web interface:

Discrete Input-Output

HOME | SETUP | E-MAIL | SMS | AC OUTLETS | DISCRETE IO | IR REMOTE | LOGIC
TEMPERATURE | SMOKE | HUMIDITY | I-WIRE | FIRMWARE | LOG

Parameter	IO 1	IO 2	IO 3	IO 4
Memo				
IO Mode	Input	Input	Input	Input
Filter out short noise pulses (20-10 000ms)	500	500	500	500
Input Logic Level	1	1	1	1
Level Explained	-	-	-	-
Notification on Logic Level change	Setup	Setup	Setup	Setup
Output Logic Level				
Logic 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logic 0	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Single Pulse Generation				
Pulse Duration (100-25 500ms, step 100ms)	1000	1000	1000	1000
Start Single Pulse	Pulse	Pulse	Pulse	Pulse

Apply Changes

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- 1. Set an IO line to the «output» operation mode;
- 2. Check a checkbox «Output Logic Level» at «Logic 1» or «Logic 0»;
- 3. Save parameters by clicking the button «Apply Changes»

Input Logic Level – is a field displaying a current logic level of an IO line. It is updated automatically when changing a logic level of a line with no need to reload an entire page;

Output Logic Level – is a parameter of a logic level of a line, which works as an «output». A logic status «1» means having voltage at an output line (a scheme with an open collector). A logic status «0» means having 0V at an IO line. On default: logic «0»;

Single Pulse Generation – when clicking the button «pulse», an IO line, which works as an output, will be inverted for a specified period of time. A pulse duration is set in the field «Pulse Duration (100-25500ms, step 100ms)». If a line is set to «output», then the button for issuing a pulse will not be active.

[ENG] 4.5. [DKSF 253.6 IU] I Want to Configure Sending Notifications When a Logic Level of an Input-Output Line Is Changed. How to Do This?

Notifications about changing a logic level of an IO line are configured at the page «DISCRETE I/O» of a device web interface:

Discrete I/O Lines

[HOME](#) | [SETUP](#) | [E-MAIL](#) | **[DISCRETE I/O](#)** | [LOGIC](#) | [FIRMWARE](#) | [LOG](#)

Parameter	IO 1	IO 2	IO 3	IO 4
Memo	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mode	Input ▾	Output ▾	Input ▾	Input ▾
Filter of Short Pulses (20-10 000ms)	500	500	500	500
Logic Level	1 <input checked="" type="checkbox"/>	1 <input checked="" type="checkbox"/>	1 <input checked="" type="checkbox"/>	1 <input checked="" type="checkbox"/>
Logic Level Legend	-	-	-	-
Notification	<input type="button" value="Setup"/>	<input type="button" value="Setup"/>	<input type="button" value="Setup"/>	<input type="button" value="Setup"/>
Output Level				
Logic 1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logic 0	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Output Single Pulse				
Single Pulse Duration (100-25 500ms, step 100ms)	1000	1000	1000	1000
Output Single Pulse	<input type="button" value="Pulse"/>	<input type="button" value="Pulse"/>	<input type="button" value="Pulse"/>	<input type="button" value="Pulse"/>

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When clicking the button «Setup» a menu of settings for sending notifications of the next types appears: Log, Syslog, E-mail and SNMP Trap, as well as a description of digital values of a current level of an IO line:

NOTIFICATIONS FOR I/O LINE 2

Event	Log	Syslog	E-mail	SMS	SNMP Trap
Logic 0 to 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Logic 1 to 0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Include in Summary Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Logic Level
 Logic 1
 Logic 0

Textual Legend

where:

Logic 0 to 1 – is a checkbox, when checked a device will send notifications if a status of an IO line is changed from «0» to «1». On default: checkbox is not checked

Logic 1 to 0) – is a checkbox, when checked a device will send notifications if a status of an IO line is changed from «1» to «0». On default: checkbox is not checked

Include in Summary Report – is a checkbox, when checked reports about a status of an IO line will be sent via e-mail. A time for sending reports is adjusted at the page «E-MAIL». On default: checkbox is not checked

Logic 1 – is a clear description of a numeric value of the logic level «1» of an IO line is set. This description will be displayed in the field «Textual Legend» at the page «DISCRETE I/O» of a device web interface, represented in a system log, included into SNMP TRAP notifications, E-mail notifications and periodic reports.

Logic 0 – is a clear description of a numeric value of the logic level «0» of an IO line is set. This description will be displayed in the field «Textual Legend» at the page «DISCRETE I/O» of a device web interface, represented in a system log, included into SNMP TRAP notifications, E-mail notifications and periodic reports.

After setting all necessary parameters, click the button «Apply changes»

[ENG] 4.6. [DKSF 253.6 IU] For What a Filter of Short Noise Pulses Is Necessary in the Settings of an Input-Output Line?

Filter out short noise pulses (20-10 000 ms) - is a field for setting a period of time, during which an IO line configured as an «input», must stay stable to register its status. Hence, this parameter allows to filter out short noise signals or bouncing of mechanical contacts. On default: 500ms

A filter for short noise pulses is configured at the page «DISCRETE IO» of a device web interface:

Discrete Input-Output

[HOME](#) | [SETUP](#) | [E-MAIL](#) | [SMS](#) | [AC OUTLETS](#) | **DISCRETE IO** | [IR REMOTE](#) | [LOGIC](#)
[TEMPERATURE](#) | [SMOKE](#) | [HUMIDITY](#) | [1-WIRE](#) | [FIRMWARE](#) | [LOG](#)

Parameter	IO 1	IO 2	IO 3	IO 4
Memo				
IO Mode	Input	Input	Input	Input
Filter out short noise pulses (20-10 000ms)	500	500	500	500
Input Logic Level	1	1	1	1
Level Explained	-	-	-	-
Notification on Logic Level change	Setup	Setup	Setup	Setup
Output Logic Level				
Logic 1				
Logic 0				
Single Pulse Generation				
Pulse Duration (100-25 500ms, step 100ms)	1000	1000	1000	1000
Start Single Pulse	Pulse	Pulse	Pulse	Pulse

Apply Changes

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[ENG] 5. [DKSF 253.6 IU] Working with the Module «Logic»

[ENG] 5.1. [DKSF 253.6 IU] What Is «Logic»?

A logic module of a firmware is designed for a simple automation and can perform such tasks as maintaining a microclimate, controlling automatic turning on - turning off a backup equipment, etc. The logic operates on the basis of rules programmed by a user through a web interface. The page «LOGIC» of a device web interface describes an operating algorithm of a module and its configuration capabilities.

It is prohibited to use a NetPing device to manage electrical circuits when a violation of the control may cause a significant damage.

[ENG] 5.2. [DKSF 253.6 IU] How to Use the Module «Logic»?

Rules allow setting a flexible logic scheme of controlling IO lines and relays of a device depending on changing external conditions.

LOGIC

10 Logic control is stopped (not active)

1	<input checked="" type="checkbox"/>	While	TSTAT 1	Above Threshold	Keep switched on	RELAY 1	Move up	Move down
2	<input checked="" type="checkbox"/>	While	TSTAT 1	Below Threshold	Keep switched off	IO 4	Move up	Move down
3	<input checked="" type="checkbox"/>	On	IO 1	= Logic 1	Switch on	IO 2	Move up	Move down
4	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
5	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
6	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
7	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
8	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down

9

Reset

11

StartStopApply changes

1. Rule Number

The less a line number is, the higher a rule priority is. If two rules form a controversial outgoing command (switch on and switch off an output simultaneously), a rule with a higher priority will work. If rules do not conflict because they control different outputs or form conflict-free commands, then a correlation of their priorities does not influence their work.

Rules of «While» type always have a higher priority in relation to the rules of «If» type, regardless their mutual location in the list.

A rule priority (position in the list) can be changed using buttons 8 («Move up» and «Move down») at the end of a line.

2. Checkbox for Activating a Rule

Rules can be activated by checking corresponding checkboxes. Inactive rules are displayed in gray.

3. Rule Type (Operation Mode of a Rule)

Possible values are: «While», «If». «While» rules respond to changing an input and work constantly. «If» rules respond to the change in an input status.

A «While» rule is designed to program conditions, within which an output is constantly kept in a specified condition when a rule is performed. When a condition is not satisfied, an input status can be changed by other rules.

An «If» rule is designed to program a momentary reaction to a specified event, such as changing a logic level at an IO line or losing a response when Pinger works. Until an input of a rule remains unchanged, an «If» rule does not influence a status of its output, even is a condition of a rule is not satisfied.

«While» rules always have a higher priority, then «If» rules. For example, when one of «While» rules keeps an output switched off, rules of «If» type that switch on an output on the specified event, will not work.

4. Input

Input is an information source for a rule operation. Its possible values are represented in a table:

Value	Description
RESET	Signal, which is active 5 seconds after starting the module «Logic» or rebooting the module «Logic» by the button «Reset» at the web page. It is used for a primary hardware initiation. For example, it is possible to program a 5-second pulse for a relay at a logic start or issue and IR command to switch a device off.
IO 1	IO line 1. Before using it must be switched to the mode «input» at the page «DISCRETE I/O»
IO 2	IO line 2. Before using it must be switched to the mode «input» at the page «DISCRETE I/O»
IO 3	IO line 3. Before using it must be switched to the mode «input» at the page «DISCRETE I/O»
IO 4	IO line 4. Before using it must be switched to the mode «input» at the page «DISCRETE I/O»
TSTAT 1	Thermostat 1. A thermostat must be configured at the page «LOGIC» before using
TSTAT 2	Thermostat 2. A thermostat must be configured at the page «LOGIC» before using
PINGER 1	Pinger 1. A pinger must be configured at the page «LOGIC» before using
PINGER 2	Pinger 2. A pinger must be configured at the page «LOGIC» before using
C.S. ALARM	An alert signal of a smoke sensor (current sensor). The signal «C.S.ALARM» works when parameters of a sensor leave configured conditions «Alert» at the page «SMOKE» of a device web interface
C.S. FAIL	A signal of smoke sensor (current sensor) failure. The signal «C.S. FAIL» works when parameters of a sensor leave configured conditions «Loop Breakage» and «Loop Short Circuit» at the page «SMOKE» if a device web interface
C.S. NORM	A signal of a normal operation of a smoke sensor (current sensor). The signal «C.S. NORM» works when parameters of a sensor satisfy configured conditions «Alert», «Loop Breakage», «Loop Short Circuit» at the page «SMOKE» of a device web interface

AC PWR	Availability of 220 V power at an input of a device
-----------	---

5. Condition

A condition within which a rule is applied and a command is issued, which changes a status of an output. An available set of conditions is changed depending on a chosen type of a task. Conditions represent a sense of an input status. Possible values for a pinger are «Silent», «Reponds». For an IO line, possible values are «logic 1», «logic 0». For a thermostat, possible values are «Below Specified T», «Above Specified T».

A rule of «If» type works only in the moment of satisfying a condition.

A rule of «While» type works all the time while a condition is satisfied.

6. Command

A command, which is executed when a rule works (a condition is satisfied).

For a rule «If» possible values are – «Switch on», «Switch off», «Switch to». These commands work in the moment when a condition appears.

For a rule «While» possible values are – «Keep switched on», «Keep switched off». These commands work all the time when a condition is satisfied.

7. Output

It is an output, which is controlled by a rule. Its possible values are represented in the table:

Name	Description
IO 1	IO line 1. It must be switched to the mode «logic output» at the page «INPUT-OUTPUT» before using
IO 2	IO line 2. It must be switched to the mode «logic output» at the page «INPUT-OUTPUT» before using
IO 3	IO line 3. It must be switched to the mode «logic output» at the page «INPUT-OUTPUT» before using
IO 4	IO line 4. It must be switched to the mode «logic output» at the page «INPUT-OUTPUT» before using
RELAY 1	Relay, built into the body of a device. It must be switched to the mode «Logic» at the page «220 V MANAGEMENT» before using
RELAY 2	Relay, built into the body of a device. It must be switched to the mode «Logic» at the page «220 V MANAGEMENT» before using
SNMP 1	SNMP Setter 1. It must be configured at the page «LOGIC» before using
SNMP 2	SNMP Setter 2. It must be configured at the page «LOGIC» before using
SNMP 3	SNMP Setter 3. It must be configured at the page «LOGIC» before using
SNMP 4	SNMP Setter 4. It must be configured at the page «LOGIC» before using
IR 1	IR command 1. A command must be recorded and saved into the cell 1 at the page «IR COMMANDS» before using
IR 2	IR command 2. A command must be recorded and saved into the cell 2 at the page «IR COMMANDS» before using
IR 3	IR command 3. A command must be recorded and saved into the cell 3 at the page «IR COMMANDS» before using
IR 4	IR command 4. A command must be recorded and saved into the cell 4 at the page «IR COMMANDS» before using
C.S. PWR	Before using the C.S. PWR output, there is a need to switch a loop power supply into the mode «Controlled by Logic» at the page «SMOKE»

8. Buttons Move Up/Move Down

The buttons are designed to change the position of a rule in the list and thus to change a priority of the rule. If rules form conflicting commands for an output, a rule that is higher in the list will work. However, «While» rules always have a higher priority relative to «If» rules, regardless their mutual location in the list.

9. Controls

Controls work immediately after clicking. There is no need to click the button «Apply changes» additionally.

Buttons «Start» and «Stop» control starting and stopping of rules operation. This state is kept when a device is switched off. If rules are stopped, a warning line of a logic status «10» appears.

A button «Reset» switches the outputs, which are controlled by a logic module, into a specified initial status and initiates a reset signal. Rules, which have a reset signal RESET as an input, can switch the outputs into a necessary required initial status. There is a need to note that if rules are not stopped before clicking the button «Reset», a status of outputs can be immediately changed and a reset command will not have any external effect.

10. Status Line

If a rule operation is stopped, a warning line appears.

11. Button for Saving Changes

After configuring all necessary settings, click the button «Apply changes».

Restrictions

A logic module of a [NetPing IO v2](#) device does not support the next «inputs» of a rule:

- TSTAT1;
- TSTAT2;
- C.S. ALARM;
- C.S. FAIL;
- C.S. NORM;
- AC PWR

A logic module of a [NetPing IO v2](#) device does not support the next «outputs» of a rule:

- RELAY1;
- RELAY2;
- IR1;
- IR2;
- IR3;
- IR4;
- C.S. PWR

[ENG] 5.3. [DKSF 253.6 IU] How to Configure Pinger in the Module «Logic»?

To configure a pinger, there is a need to go to the page «LOGIC» of a device web interface:



In the section «Pinger» it is possible to configure testing of availability of the network for a specified address. A result of testing (a status of a pinger) can be chosen as an «input» for a logic rule. It is possible to know how to configure a rule in the module «Logic» from the section «[\[ENG\] 5.2. \[DKSF 253.6 IU\] How to Use the Module «Logic»?»](#). It is possible to configure no more than two pingers «PINGER 1», «PINGER 2». A typical using of pinger is automatic switching on a power supply of a backup equipment when a connection line fails.

PINGER

	PINGER 1	PINGER 2
Address	8.8.8.8	
Polling period, s (5-900)	5	15
Ping timeout, ms (100-10000)	1000	1000
Status	Responding	-

Apply Changes

where:

Address – is an IP address of a device, which is tested for availability. An empty line disables polling. On default: empty line

Polling Period, s (5-900) – a value is chosen taking into account how quickly a fault must be found. At the same time, there is a need to note that too frequent power supply switching can decrease an equipment lifetime. If there is no response from ICMP echo (ping), polling is repeated after a timeout is over, and not when the next polling period starts. On default: 15

Ping timeout, ms (100-10000) – is a time of waiting for a response to ping. A timeout is chosen regarding an operation speed of a local network taking into account the frequency for repeating unresponded pings. If there is no response to ping when a specified timeout is over, sending ping is immediately repeated. If after 5 repeated sending there is no response, a status of a pinger is changed to «silent», and repeats are finished until the next polling period starts. On default: 1000

Status – its possible values are: «responds», «silent», «-». If polling is not finished, a status can be undefined. In this case, the rules that depend on the status of a pinger, do not form any commands, and their outputs are controlled by other rules or keep a previous status. A status of a pinger is updated automatically nearly 4 times a minute.

If using domain names, there is a need to take into account that when a DNS server is unavailable or there is no IP address in DNS settings, the module «Logic» will not be able to determine an availability of a requested address. «Pinger» is switched into the status «Silent».

After setting the values of pinger, there is a need to click the button «Apply changes».

After configuring pinger, there is a need to set the rule in the module «Logic». It is possible to know how to do this from the section «[ENG] 5.2. [DKSF 253.6 IU] How to Use the Module «Logic»?».

[ENG] 5.4. [DKSF 253.6 IU] What Is SNMP SETTER?

SNMP SETTER is used as an output of a logic module «Logic» and is designed to set an SNMP OID variable at a remote device via an SNMP v1 protocol. In particular, it is possible to control IO lines and relays of another NetPing device via a network.

To configure SNMP SETTER, there is a need to go to the page «LOGIC» of a device web interface:

Logic

[HOME](#) | [SETUP](#) | [E-MAIL](#) | [DISCRETE I/O](#) | [LOGIC](#) | [FIRMWARE](#) | [LOG](#)

In the section «SNMP SETTER» the next parameters are configured:

SNMP SETTER

	SNMP 1		SNMP 2		SNMP 3		SNMP 4	
Memo	Netping 8/PWR							
Address	192.168.0.20		example.net					
UDP Port	161		161		161		161	
OID (.1.3.6...)	.1.3.6.1.4.1.25728.5500.5		.1.3.6.1.4.1.25728.5800.3		.1.3.6.1.4.1.25728.5800.3		.1.3.6.1.4.1.25728.5800.3	
Community	*****							
'On' value (type Integer32)	1		1		1		1	
'Off' value (type Integer32)	0		0		0		0	
Test it	<input type="button" value="On"/>	<input type="button" value="Off"/>	<input type="button" value="On"/>	<input type="button" value="Off"/>	<input type="button" value="On"/>	<input type="button" value="Off"/>	<input type="button" value="On"/>	<input type="button" value="Off"/>
Status	-		-		-		-	

Channel Number («SNMP 1», «SNMP 2», «SNMP 3», «SNMP 4») – this number is specified as a rule output.

Memo – is a random text up to 30 characters. On default: empty line

Address – is an IP address, where an SNMP SET command will be sent. On default: empty line

UDP Port – is a port, which listens to an SNMP agent at a remote device. On default: 161

OID (.1.3.6...) – is an identifier of a variable, which will be set on a remote device. There is a need to indicate a full OID in a numeric notation, starting from .1.3... A list of variables is in the MIB file of a device in a specific format or in a documentation of a device. To browse the MIB file conveniently in the form of a tree and check functions of variables, it is possible to use the freeware [iReasoning MIB Browser](#) or any other similar software. On default: .1.3.6.1.4.1.25728.5800.3.1.3.1

Community – is an SNMP Community for write, which is configured on a remote device. On default: empty line

"On" Value (type Integer32) – is a value, which will be recorded in the OID on a remote device when invoking an action «Switch On», by clicking the button «On» or through the output of a logic rule. A value type is 32-bit integer number with a sign. On default: 1

"Off" Values (type Integer32) – is a value, which will be recorded in the OID on a remote device when invoking an action «Switch Off», by clicking the button «Off», or through the output of a logic rule. A value type is 32-bit integer number with a sign. On default: 0

Test It – when clicking the buttons «On» and «Off», a device immediately sends corresponding requests with the values «On» or «Off».

Status – several seconds after sending a request for setting a variable, a result «OK» is displayed in the field «Status». This means that a confirmation is received, and a variable is successfully set. «Timeout» means that a confirmation is not received. This can happen because of unavailability of a controlled device, its failure, incorrect IP address, port or community. Other variants mean that a response with an error code has been received, and its textual description is displayed in the status line.

After changing settings, click the button «Apply changes».

After configuring SNMP SETTER, there is a need to configure a rule in the module «Logic». How to do this, it is possible to learn from the section [«\[ENG\] 5.2. \[DKSF 253.6 IU\] How to Use the Module «Logic»?»](#).

[ENG] 5.5. [DKSF 253.6 IU] Reset Signal and Initial Statuses of Outputs

At the start of the firmware operation or when clicking the button «Reset» at the page «LOGIC» of a device web interface, outputs, which are controlled by the logic, are set to a specified initial status. On default, this status is «off», or «logic 0». Another status can be set using a rule at the page «LOGIC», which uses a reset signal «RESET» as an input.

5 seconds after reset, a signal has the value «logic 1». A rule with a condition «= 1» works in the moment of reset. A rule with a condition «= 0» works 5 seconds after the moment of reset. Therefore, it is possible to form a 5-second external reset pulse at one or several outputs or provide a correct sequence of power supply to external devices.

If an operation of logic is stopped, rules «If/while RESET = 0», that correspond to completing of a signal «RESET», will operate after clicking a control button «Start» at the page «LOGIC» of a device web interface.

[ENG] 5.6. [DKSF 253.6 IU] Connecting IO Lines

Besides indicating IO line as an «output» of a logic rule at the page «LOGIC», there is a need to specify that this IO line will be used together with a logic module. I.e. there is a need to set an operation mode of an IO line as a «logic output» at the page «DISCRETE I/O» of a device web interface.

Discrete I/O Lines

[HOME](#) | [SETUP](#) | [E-MAIL](#) | [DISCRETE I/O](#) | [LOGIC](#) | [FIRMWARE](#) | [LOG](#)

Parameter	IO 1	IO 2	IO 3	IO 4
Memo				
Mode	Input ▼	Output ▼	Input ▼	Input ▼
Filter of Short Pulses (20-10 000ms)	Input	500	500	500
Logic Level	Output of Logic	1	1	1
Logic Level Legend	-	-	-	-
Notification	Setup	Setup	Setup	Setup
Output Level				
Logic 1				
Logic 0				
Output Single Pulse				
Single Pulse Duration (100-25 500ms, step 100ms)	1000	1000	1000	1000
Output Single Pulse	Pulse	Pulse	Pulse	Pulse

[Apply Changes](#)

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[ENG] 5.7. [DKSF 253.6 IU] Examples of Setting the Module «Logic»

At this page, several simplest examples of configuring the module «Logic» are represented.

It goes without saying, necessary sensors, as well as external management modules, are already connected to NetPing devices and NetPing devices are previously configured for performing their specific tasks.

Configuring a Thermostat

A NetPing device with a connected external temperature sensor allows to implement functions of a thermostat, supporting a specified range of temperatures by turning on/off a device for heating and/or cooling in the automatic mode.

Task: It is necessary to maintain a temperature of 20°C indoors.

Solution: Let us suppose that an electric heater, which warms a certain room, is connected to a controllable socket №1 of a NetPing device. There is an air conditioner in the room, which is managed by an external IR management module [IRC-TR v2](#). For automation of controlling a heater and an air conditioner to maintain a necessary temperature, there is a need to go to the page «LOGIC» of a device web interface:

Logic

[HOME](#) | [SETUP](#) | [RELAYS](#) | [WATCHDOG](#) | [SCHEDULE 1](#) | [SCHEDULE 2](#) | [SMS TEMPERATURE](#) | [DISCRETE IO](#) | [IR COMMANDS](#) | [LOGIC](#) | [FIRMWARE](#) | [LOG](#)

LOGIC

Logic control is stopped (not active)

1	<input checked="" type="checkbox"/>	On	▼	IO 1	▼	= Logic 1	▼	Switch on	▼	IO 2	▼	Move up	Move down
2	<input checked="" type="checkbox"/>	On	▼	IO 1	▼	= Logic 0	▼	Switch off	▼	IO 2	▼	Move up	Move down
3	<input type="checkbox"/>	While	▼	IO 1	▼	= Logic 1	▼	Keep switched off	▼	IO 1	▼	Move up	Move down
4	<input type="checkbox"/>	While	▼	IO 1	▼	= Logic 1	▼	Keep switched off	▼	IO 1	▼	Move up	Move down
5	<input type="checkbox"/>	While	▼	IO 1	▼	= Logic 1	▼	Keep switched off	▼	IO 1	▼	Move up	Move down
6	<input type="checkbox"/>	While	▼	IO 1	▼	= Logic 1	▼	Keep switched off	▼	IO 1	▼	Move up	Move down
7	<input type="checkbox"/>	While	▼	IO 1	▼	= Logic 1	▼	Keep switched off	▼	IO 1	▼	Move up	Move down
8	<input type="checkbox"/>	While	▼	IO 1	▼	= Logic 1	▼	Keep switched off	▼	IO 1	▼	Move up	Move down

[Reset](#) [Start](#) [Stop](#) [Apply changes](#)

There is a need to check checkboxes for first four rules and configure the next settings:

1	<input checked="" type="checkbox"/>	On	TSTAT 1	Above Threshold	Switch off	RELAY 1	Move up	Move down
2	<input checked="" type="checkbox"/>	On	TSTAT 1	Below Threshold	Switch on	RELAY 1	Move up	Move down
3	<input checked="" type="checkbox"/>	On	TSTAT 1	Above Threshold	Switch on	IR 1	Move up	Move down
4	<input checked="" type="checkbox"/>	On	TSTAT 1	Below Threshold	Switch on	IR 2	Move up	Move down

These rules mean that if a temperature in a thermostat 1 (TSTAT1) will exceed a specified one (i.e. above 20°C), an electric heater will be turned off automatically (RELAY 1) and an air conditioner will be turned on the same automatically (IR 1) (rules №1 and №3). To avoid frequent turning on/turning off a heater and an air conditioner, there is a switching hysteresis in a thermostat, which will be described below. If a temperature will fall below a specified value, an air conditioner will be turned off (IR 2) and a heater will be turned on (RELAY 1) (rules №2 and №4).

After setting up the rules, there is a need to click the button «Apply changes».

The next step is a configuration of the module «THERMO(HYDRO)STAT», on the basis of which previously configured rules will work:

THERMO(HYDRO)STAT

	TSTAT 1	TSTAT 2
Sensor	Thermo 1	Thermo 1
Current value, deg.C or % rel.hum.	-	-
Threshold, deg.C or % rel.hum.	20	20
Hysteresis, 1..8 deg.C or % rel.hum.	2	2
Status	Sensor is failed	Sensor is failed

Apply changes

A temperature sensor №3 is used to measure a temperature indoors. In the module «THERMO(HYDRO)STAT» there is a need to configure TSTAT1 by choosing a sensor №3 from a drop-down list. Then specify a threshold of 20°C and a switching hysteresis of 2°C.

A hysteresis sets a «corridor» around a specified temperature, within which a thermostat does not respond to temperature fluctuations. This function allows to avoid frequent random switching of a heater (a cooler) caused by natural spontaneous fluctuations of a temperature measured by a temperature sensor.

If a current status of a thermostat is «above», then a threshold for switching a status is a specified temperature minus a hysteresis value. And vice versa, if a current status is «below», then a threshold for switching is a specified temperature plus a hysteresis value. As soon as a temperature falls or rises and reaches a threshold value including hysteresis thus leaving the limits of «corridor», a status of a thermostat is changed to the opposite one.

After configuring a thermostat, there is a need to click the button «Apply changes».

Recording, saving and replaying IR commands to control an air conditioner is indicated in the corresponding section of a user guide (works for devices supporting an IR control module [IRC-TR v2](#)).

Except indicating a relay as an «output» of a rule, there is a need to indicate that this relay will be used together with a logic module. To do this, there is a need to go to the page «220V MANAGEMENT» of a device web interface and choose a management mode «Logic»:

Control of Relays

HOME | SETUP | **RELAYS** | WATCHDOG | SCHEDULE 1 | SCHEDULE 2 | SMS
TEMPERATURE | DISCRETE IO | IR COMMANDS | LOGIC | FIRMWARE | LOG

	Relay 1	Relay 2
Memo (up to 30 chars)		
Source of control	Manual On	Manual On
Switch On for short time (5s)	Manual Off	On
Switch Off for short time (5s)	Manual On	Off
Relay state	Watchdog	On
	Schedule	
	Sched+Wdog	
	Logic	
	Apply changes	

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After changing a management mode, there is a need to click the button «Apply changes».

The last step of configuration is starting logic on a corresponding page of a web interface by clicking the button «Start»:

LOGIC

Logic control is stopped (not active)

1	<input checked="" type="checkbox"/>	On	TSTAT 1	Above Threshold	Switch off	RELAY 1	Move up	Move down
2	<input checked="" type="checkbox"/>	On	TSTAT 1	Below Threshold	Switch on	RELAY 1	Move up	Move down
3	<input checked="" type="checkbox"/>	On	TSTAT 1	Above Threshold	Switch on	IR 1	Move up	Move down
4	<input checked="" type="checkbox"/>	On	TSTAT 1	Below Threshold	Switch on	IR 2	Move up	Move down
5	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
6	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
7	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
8	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down

Reset **Start** Stop Apply changes

Example of Warning Alarm When a Shock Sensor Triggered

A NetPing device, to which [shock sensor PI-90D](#) and [siren alarm AC-10](#) are connected, can perform security functions for remote objects and closets with equipment.

Task: Organising a warning alarm for a remote control of a security guard when breaking a wiring closet with equipment.

Solution: Let us suppose that [shock sensor PI-90D](#), which is installed into a closet with equipment, is connected to the IO line №2 of a NetPing device, while [siren alarm AC-10](#), which is displayed at a remote control of a security guard, is connected to the Relay 1. To configure NetPing for security measures, there is a need to set the next rules in the module «Logic»:

1	<input checked="" type="checkbox"/>	While	IO 2	= Logic 0	Keep switched on	RELAY 1	Move up	Move down
2	<input checked="" type="checkbox"/>	While	IO 2	= Logic 1	Keep switched off	RELAY 1	Move up	Move down

These rules mean when the [shock sensor PI-90D](#) (IO 2) triggers, then a [warning alarm AC-10](#) (RELAY 1) will be activated (rule №1) until a level of an IO line №2 has got a value «logic 1» (rule №2).

After setting up rules, there is a need to click the button «Apply changes».

The next step is a necessity to configure an operation mode of an IO line at the page «INPUT-OUTPUT» of a device web interface. An IO line must work in the mode «input»:

Discrete Input-Output

[HOME](#) | [SETUP](#) | [RELAYS](#) | [WATCHDOG](#) | [SCHEDULE 1](#) | [SCHEDULE 2](#) | [SMS](#) | [TEMPERATURE](#) | [DISCRETE IO](#) | [IR COMMANDS](#) | [LOGIC](#) | [FIRMWARE](#) | [LOG](#)

Parameter	IO 1	IO 2	IO 3	IO 4
Memo				
IO Mode	Input	Input	Input	Input
Filter out short noise pulses (20-10 000ms)	500	500	500	500
Input Logic Level	1 <input checked="" type="checkbox"/>	1 <input checked="" type="checkbox"/>	1 <input checked="" type="checkbox"/>	1 <input checked="" type="checkbox"/>
Actions on Logic Level Change				
Write to Log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SNMP Trap on 0 » 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SNMP Trap on 1 » 0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Output Logic Level				
Logic 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logic 0	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Single Pulse generation				
Pulse Duration (100-25 500ms, step 100ms)	1000	1000	1000	1000
Start Single Pulse	Pulse	Pulse	Pulse	Pulse

[Apply changes](#)

Besides indicating a relay as an «output» for a rule, there is a need to specify that this relay will be used together with a logic module. To do this, there is a need to go to the page «220V MANAGEMENT» of a device web interface and choose a relay management mode «Logic»:

Control of Relays

[HOME](#) | [SETUP](#) | [RELAYS](#) | [WATCHDOG](#) | [SCHEDULE 1](#) | [SCHEDULE 2](#) | [SMS](#) | [TEMPERATURE](#) | [DISCRETE IO](#) | [IR COMMANDS](#) | [LOGIC](#) | [FIRMWARE](#) | [LOG](#)

	Relay 1	Relay 2
Memo (up to 30 chars)		
Source of control	Manual On	Manual On
Switch On for short time (5s)		On
Switch Off for short time (5s)		Off
Relay state		On <input checked="" type="checkbox"/>

[Apply changes](#)

After choosing a source of control for a relay, there is a need to click the button «Apply changes».

The last step of configuration is starting logic at the corresponding page of a web interface by clicking the button «Start»:

LOGIC

Logic control is stopped (not active)

1	<input checked="" type="checkbox"/>	On	IO 2	= Logic 0	Switch on	RELAY 1	Move up	Move down
2	<input checked="" type="checkbox"/>	On	IO 2	= Logic 1	Switch off	RELAY 1	Move up	Move down
3	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
4	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
5	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
6	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
7	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down
8	<input type="checkbox"/>	While	IO 1	= Logic 1	Keep switched off	IO 1	Move up	Move down

Reset Start Stop Apply changes

[ENG] 6. [DKSF 253.6 IU] Support of an SNMP Protocol

[ENG] 6.1. [DKSF 253.6 IU] Can I Control a Device Using SNMP?

A NetPing IO v2 device supports configuring parameters and management via an SNMP v1 protocol.

It is possible to read more detailed information about an SNMP protocol on the links:

- https://en.wikipedia.org/wiki/Simple_Network_Management_Protocol
- <http://www.snmp.com/>

OID supported by a device can be found in the MIB file DKSF_253.6.x_MB.mib at the page with a description of a device at the page «Documentation and files».

A device supports:

- Reading OID using commands Get, Get-Next via an SNMP v1 protocol;
- Setting OID values using a command Set via an SNMP v1 protocol;
- Sending TRAP notifications on the events

[ENG] 6.2. [DKSF 253.6 IU] Configuring Sending SNMP TRAP Notifications

To access a device via an SNMP v1 protocol, there is a need to configure the next parameters using a device web interface:

- SNMP Community for Read – is a password, which needs to be indicated at any request for reading parameters via an SNMP protocol. It is specified in the section «Access Restrictions» at the page «SETUP» of a device web interface;
- SNMP Community for Write – is a password, which needs to be indicated at any request for recording parameters via an SNMP protocol. It is specified in the section «Access Restrictions» at the page «SETUP» of a device web interface

ACCESS RESTRICTIONS

Username	visor27
Password	*****
SNMP Community for Read	ping27
SNMP Community for Write	ping27
IP Filter (access granted for this subnet)	0.0.0.0
IP Filter Netmask (0.0.0.0 - disable filter)	0.0.0.0

Apply changes

There is a need to configure the next parameters through a device web interface for a device to send TRAP notifications via SNMP v1 protocol:

- SNMP Trap Destination #1 – is an IP address, where TRAP notifications will be sent. It is specified at the page «SETUP» of a device web interface;
- SNMP Trap Destination #2 – is the second (auxiliary) IP address, where TRAP notifications will be sent. It is specified at the page «SETUP» of a device web interface;

SNMP TRAP

SNMP Trap Destination #1	192.168.0.29
SNMP Trap Destination #2	

Apply Changes

- Logic 0 to 1 – is a checkbox that allows sending SNMP TRAP notifications when a logic level at an IO line in the mode «input», «output», «logic output» is changed from low to high (signal front). It is configured by the button «Setup» at the page «DISCRETE I/O» of a device web interface;
- Logic 1 to 0 – is a checkbox that allows sending SNMP TRAP notifications when a logic level at an IO line in the mode «input», «output», «logic output» is changed from high to low (signal drop). It is configured by the button «Setup» at the page «DISCRETE I/O» of a device web interface;

NOTIFICATIONS FOR I/O LINE 2

Event	Log	Syslog	E-mail	SMS	SNMP Trap
Logic 0 to 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Logic 1 to 0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Include in Summary Report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Logic Level	Textual Legend
Logic 1	
Logic 0	

Cancel Save

[ENG] 6.3. [DKSF 253.6 IU] What OID Are Supported by a Device?

A description of OID, supported by a device, is represented at the table:

OID	Name	Type	Access	Description
RFC1213				
.1.3.6.1.2.1.1.1.0	sysDescr	OctetString	READ	Textual description of a device.
.1.3.6.1.2.1.1.2.0	sysObjectID	OID	READ	OID with parameters of a device.
.1.3.6.1.2.1.1.3.0	sysUpTime	TimeTicks	READ	Time from the moment of the last switching on a device.
.1.3.6.1.2.1.1.4.0	sysContact	OctetString	READ/WRITE	Contact data, usually an administrator's e-mail.
.1.3.6.1.2.1.1.5.0	sysName	OctetString	READ/WRITE	Domain name of a device.
.1.3.6.1.2.1.1.6.0	sysLocation	OctetString	READ/WRITE	Location of a device.
.1.3.6.1.2.1.1.7.0	sysServices	Integer	READ	Binary representation of this OID is a set of supported services. Always «72», a device plays a role of a final host.
.1.3.6.1.2.1.2.1.0	ifNumber	Integer	READ	The amount of network interfaces of a device.
.1.3.6.1.2.1.2.2.1.1.1	ifIndex	Integer	READ	Interface index is a unique identification number, connected to physical or logical interface. For the major part of software, ifIndex is an interface name.
.1.3.6.1.2.1.2.2.1.2	ifDescr	OctetString	READ	A line that contains the information about an interface. A line contains a manufacturer's name, a device model, and a hardware interface model.
.1.3.6.1.2.1.2.2.1.3.1	ifType	Integer	READ	A type of a device network interface.
.1.3.6.1.2.1.2.2.1.4.1	ifMtu	Integer	READ	A package size via a network interface. Always «1514».
.1.3.6.1.2.1.2.2.1.5.1	ifSpeed	Gauge	READ	A network interface speed. Always «100000000».
.1.3.6.1.2.1.2.2.1.6.1	ifPhysAddress	PhysAddress	READ	MAC address of a device.
NetPing MIB				

.1.3.6.1.4.1.25728.911.1.0	npSoftReboot	Integer	READ/WRITE	Software reset of a device when writing the value «1».
.1.3.6.1.4.1.25728.911.2.0	npResetStack	Integer	READ/WRITE	Software reset of a network interface when writing the value «1».
.1.3.6.1.4.1.25728.911.3.0	npForceReboot	Integer	READ/WRITE	Immediate forced reboot of a device when writing the value «1» (processor is reset the same as when switching on a power supply).
.1.3.6.1.4.1.25728.8900.1.1.1.n	npIoLineN.n	Integer	READ	An IO line number, where n – is a number of a line, a number from 1 to 4 inclusive.
.1.3.6.1.4.1.25728.8900.1.1.2.n	npIoLevelIn.n	Integer	READ	Current status of a line where n – is a line number, a number from 1 to 4 inclusive.
.1.3.6.1.4.1.25728.8900.1.1.3.n	npIoLevelOut.n	Integer	READ/WRITE	Controlling an IO line in the mode «output», where n is a number of a line, a number from 1 to 4 inclusive: 0 – logical zero 1 – logical one In addition, the same OID allows switching a status of an IO line to the opposite one. To change a status of an IO line, write «-1».
.1.3.6.1.4.1.25728.8900.1.1.6.n	npIoMemo.n	OctetString	READ	Memo (a brief description of an IO line), encoding win1251 where n – is a number of a line, a number from 1 to 4 inclusive.
.1.3.6.1.4.1.25728.8900.1.1.9.n	npIoPulseCounter.n	Counter32	READ/WRITE	A reset counter at an IO line, where n – is a number of a line, a number from 1 to 4 inclusive. It is counted via the positive pulse front after filtering out short pulses. To clear it forcibly, write «0». It is also zeroed when a power supply is switched off.
.1.3.6.1.4.1.25728.8900.1.1.12.n	npIoSinglePulseDuration.n	Integer	READ/WRITE	A duration of one pulse at an output of an IO line (acceptable values from 100 ms to 25500 ms, with a 100-ms step) where n – is a number of a line, a number from 1 to 4 inclusive.
.1.3.6.1.4.1.25728.8900.1.1.13.n	npIoSinglePulseStart.n	Integer	READ/WRITE	To issue a single pulse to an output of an IO line, write «1». A duration of a pulse is taken out of the variable npIoSinglePulseDuration.n where n – is a number of a line, a number from 1 to 4 inclusive.
.1.3.6.1.4.1.25728.9700.1.1.1.n	npElecIndex.n	Integer	READ	A number of an electricity meter, which is the same to the number if an IO line, where n – is a number of a line, a number from 1 to 4 inclusive.
.1.3.6.1.4.1.25728.9700.1.1.2.n	npElecPulsesPerKwh.n	Integer	READ/WRITE	Coefficient of recalculating pulses into kWh, when a device is used together with electricity counters, for an IO line, where n – is a number of a line, a number from 1 to 4 inclusive. A coefficient sets a number of pulses for 1 kWh, on default 3600. It is not cleared when a power supply of a device is switched off. When changing a coefficient of recalculating pulses into kWh «npElecPulsesPerKWh», there is a need to record a correct current value of accumulated energy «npElecEnergy».
.1.3.6.1.4.1.25728.9700.1.1.3.n	npElecPower.n	Gauge32	READ	An average value of power (W), which is registered by an electricity meter, connected to an IO line, where n – is a number of a line, a number from 1 to 4 inclusive. An averaging period is 5 minutes, sliding. A value is calculated according to a frequency of pulses from an electricity meter. It is not cleared when a power supply of a device is switched off.
.1.3.6.1.4.1.25728.9700.1.1.4.n	npElecEnergy.n	Counter32	READ/WRITE	An electricity meter for an IO line, where n is a number of a line, a number from 1 to 4 inclusive. It is calculated by dividing an accumulated number of pulses by a coefficient of recalculating «pulses for 1 kWh». It is not cleared when a power supply of a device is switched off. There is a possibility to record initial values. When changing a coefficient of recalculating pulses into kWh «npElecPulsesPerKWh», there is a need to correct «npElecEnergy», because the value of the OID will be changed.

.1.3.6.1.4.1.25728.9700.1.1.5.n	npElecEnergy100.n	Counter32	READ/WRITE	<p>Readings of an electricity meter for an IO line, multiplied by 100, where n – is a number of a line, a number from 1 to 4 inclusive. Divide this value by 100, to get current values of electricity for an IO line. It is not cleared when a power supply of a device is switched off.</p> <p>There is a possibility to record initial values. When changing a coefficient of recalculating pulses into kWh «npElecPulsesPerKWh», there is a need to correct «npElecEnergy100», because a value of the OID will be changed.</p>
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[ENG] 6.4. [DKSF 253.6 IU] Support of SNMP Trap

A formal description of SNMP TRAP notifications can be found in the MIB file DKSF_253.6.x_ MB.mib, which is added to the firmware of a [NetPing IO v2](#) device. A file can be downloaded from the page of the website with a description of a device in the section «[Documentation and files](#)». An SNMP TRAP notification is sent in the format SNMP v1, at the same time, a description in the MIB files has a format SNMP v2c.

An unambiguous correspondence of an identification of SNMP TRAP notifications for v1 and v2c is described in RFC3584 «Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework».

Software for processing SNMP notifications usually convert between two formats easily.

To send SNMP TRAP notifications, there is a need to:

- indicate IP address for sending SNMP TRAP at the page «SETUP» of a device web interface;
- allow sending SNMP TRAP notifications by checking corresponding checkboxes, more detailed information is in the section «[\[ENG\] 6.2. \[DKSF 253.6 IU\] Configuring Sending SNMP TRAP Notifications](#)»

SNMP TRAP When a Level of an IO Line Is Changed in the Mode «Input»/«Output»

npIoTrap Identification

SNMP v1 enterprise	.1.3.6.1.4.1.25728.8900.2
SNMP v1 generic-trap	enterpriseSpecific(6)
SNMP v1 specific-trap	1
SNMP v2 snmpTrapOID	.1.3.6.1.4.1.25728.8900.2.0.1

Variables contained in npIoTrap (varbind list)

OID	Data Type	Description
.1.3.6.1.4.1.25728.8900.2.1.0	Integer	A number of an IO line (starting from «1»), changing which caused sending a TRAP notification.
.1.3.6.1.4.1.25728.8900.2.2.0	Integer	A value of a logic level at an IO line («0» or «1»).
.1.3.6.1.4.1.25728.8900.2.6.0	OctetString	Memo (textual description of a line, encoding win1251).
.1.3.6.1.4.1.25728.8900.2.7.0	OctetString	Description of a logic level. A clear and understandable description of a numeric value of a logic level of an IO line.
.1.3.6.1.4.1.25728.8900.2.21.0	Integer	A current value of a logic level at an IO line 1.
.1.3.6.1.4.1.25728.8900.2.22.0	Integer	A current value of a logic level at an IO line 2.
.1.3.6.1.4.1.25728.8900.2.23.0	Integer	A current value of a logic level at an IO line 3.
.1.3.6.1.4.1.25728.8900.2.24.0	Integer	A current value of a logic level at an IO line 4.

When determining a status of IO lines, there is a need to take into account the impact of a delay, added by a filter of short noise filter, and possible effects, related to the fact that a status of IO lines 1..4 is processed by firmware in a cycle one by one, not simultaneously and in parallel.

[ENG] 7. [DKSF 253.6 IU] Support of URL-Encoded Commands

[ENG] 7.1. [DKSF 253.6 IU] Managing IO Lines

An interface of URL-encoded commands in a device can be used for the integration with web applications without using an SNMP protocol.

Controlling IO lines is available through the interface of URL-encoded commands.

Requesting a Status of an IO Line

```
http://192.168.0.100/io.cgi?ioN
```

where:

N – is a number of a line, specified after ?io.

Returned Values

Error (incorrect format of a request or an incorrect number of an IO line):

```
io_result('error')
```

Successful execution of a command:

```
io_result('ok', -1, 1, 339)
```

The first argument is always 'ok' ('error' if there is an error in a request).

The second argument is always «-1», for expanding API in future.

The third argument is a current momentary status of an IO line, including a reset status.

The fourth argument is a pulse counter for this IO line.

A name of JSON-P callback is fixed, io_result(), and cannot be changed in a request.

Switching a Line (In an Output Mode)

Switching to the status «0» or «1»:

```
http://192.168.0.100/io.cgi?ioN=0
```

```
http://192.168.0.100/io.cgi?ioN=1
```

where:

N – is a number of a line, which is specified after ?io.

Switching to an alternate (inverse) status.

```
http://192.168.0.100/io.cgi?ioN=f
```

where:

N – is a number of a line, which is specified after ?io.

Short term switching into inverse status, i.e. issuing a pulse.

```
http://192.168.0.100/io.cgi?ioN=f,5
```


where:

N – is a number of a line, which is specified after ?io.

A duration in seconds is set after a comma.

Choosing an Operation Mode of an IO Line

Configuring an operation mode of a line: «0» is an input, «1» is an output, «2» is a logic output:

```
http://192.168.0.100/io.cgi?ioN&mode=0  
http://192.168.0.100/io.cgi?ioN&mode=1  
http://192.168.0.100/io.cgi?ioN&mode=2
```

where:

N – is a number of a line, which is specified after ?io.

Returned Values

Error (incorrect request format or incorrect IO line number):

```
io_result('error')
```

A command is executed:

```
io_result('ok')
```

[ENG] NetPing IO v2, User guide

[ENG] [IOv2] Additional Documents and Links

A device webpage on a manufacturer's website is located at <http://www.netpingdevice.com/products/netping-io-v2>

Manufacturer's website: <http://www.netpingdevice.com>

Technical support contacts: <http://www.netpingdevice.com/support>

Phone: +886-2-23121582

E-mail: support@netpingdevice.com

[ENG] [IOv2] Connectors and Indicators

A front panel of a NetPing IO v2 device is represented on the picture below:



On a front panel of a device, there are 2 Ethernet 10/100-BASE-TX sockets. A device can be connected to the Ethernet network using any of these connectors. The second connector may be used for plugging any network devices, including other NetPing devices.

Operation modes of a power indicator

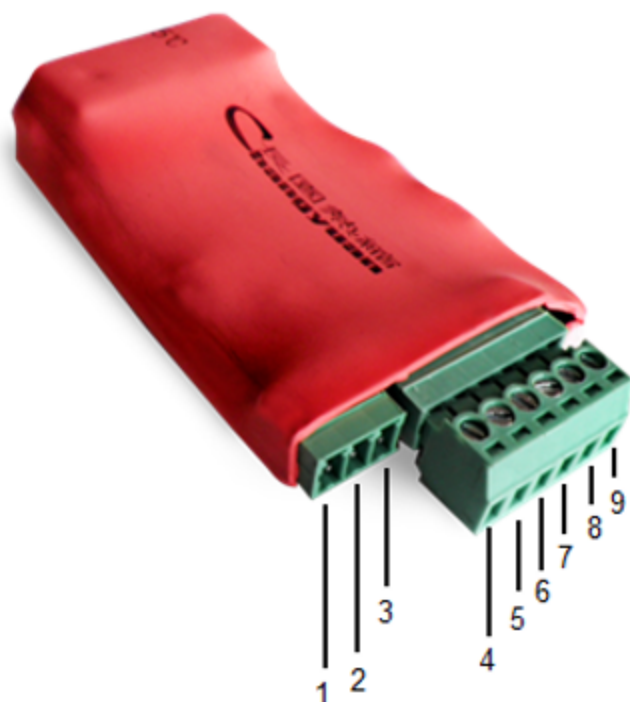
Event	Indication
Turning a device on.	LED blinks several times. A number of blinks depend on a length of a starting procedure and may be different for different firmware versions. Blinking does not continue more than 2 seconds and is continued until a device is internally initialized. If blinking continues for more than 2 seconds, this means that parameters of a device are reset to default values at the start (see below in this table).
A device is turned on, there is no activity.	LED lights continuously.
A device transmitted a package	LED blinks once for very transmitted package.
Firmware of a device is updated.	Firmware of a device is updated in two stages: <ol style="list-style-type: none"> 1. During the first stage, firmware is uploaded to a device. LED blinks in a standard indication mode for receiving packages. 2. During the second stage, firmware is updated in a device. LED blinks rapidly during this process. After firmware updating, a device is rebooted. LED operates in the mode that corresponds to turning a device on.
Parameters of a device are reset to default values.	LED blinks during the entire process of resetting values of parameters (5-10 seconds).

LEDs 1 and 2 correspond to Ethernet-ports 1 and 2 respectively. If the Ethernet connection is established on the Ethernet-port 1, LED 1 is active, if it is established on the port 2, then LED 2 is active.

Operation modes of LED 1 and LED 2

Event	Indication
Turning on a device.	LED lights only when a connection is established on a corresponding Ethernet port.
A device is turned on, there is no activity on a device.	LED lights continuously while a connection is established on a corresponding Ethernet port.
A device received a package.	LED blinks once for each received package.

Back panel of a NetPing IO v2 device is shown on the picture below:



1 – +U (power), 2 – +U (power), 3 – GND (ground), 4 – IO 1 (input/output1), 5 – IO 2 (input/output2), 6 – IO 3 (input/output3), 7 – IO 4 (input/output4), 8 – +3V3, 9 – GND (ground)

Between terminals, there is a jumper for resetting parameters of a device to default values. More detailed information can be found in the section "Resetting parameters of a device to default values"

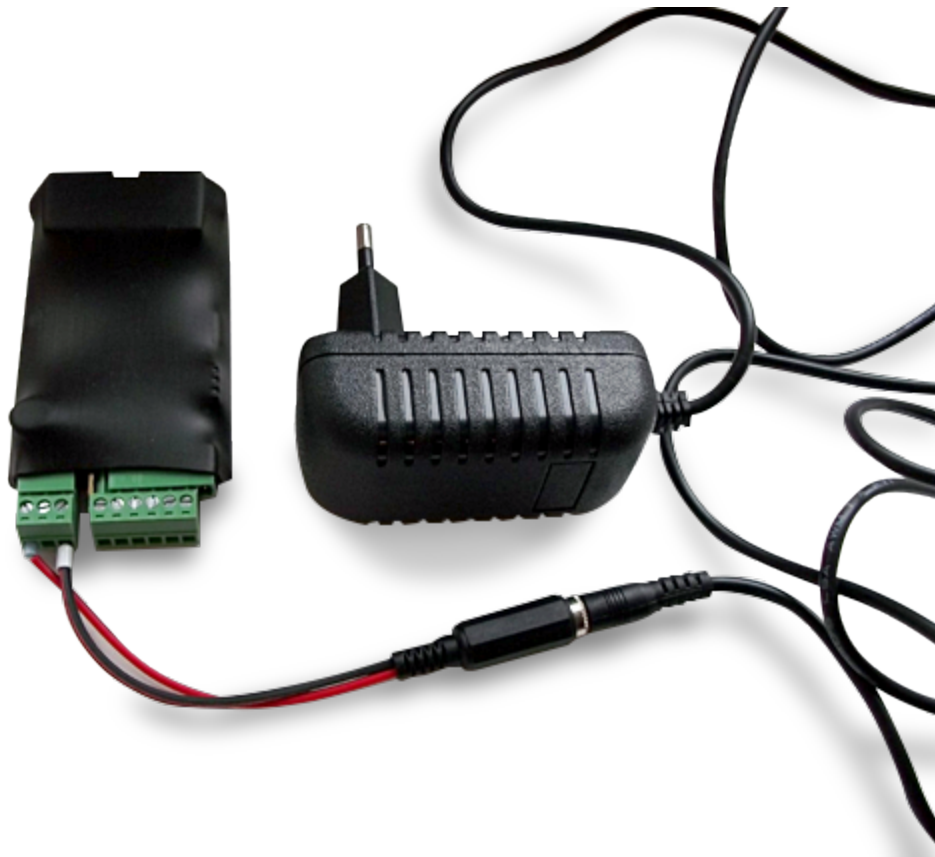
+U – power voltage of a device +12V. The second contact +U is used to power connected sensors.

IO1 ... IO4 – are input/output lines for connecting external sensors and executive mechanisms. Each line may be configured individually as an input or an output.

[ENG] [IOv2] Installation and Connection

To connect a device:

1. Unpack a device;
2. Connect necessary sensors (see the section "[Plugging sensors](#)");
3. Insert wires in necessary connectors and tie them up with a screw;
4. Plug a standard power supply unit of a device to power connectors, by using an adapter for NetPing IO v2. Plug a red wire of an adapter into an output 1, and a black wire into an output 3;



5. Insert a power supply unit to an electric outlet. A power indicator will light up;



6. Insert an Ethernet cable into any Ethernet port of a device, plug it to a switch or directly to a network card of a computer;
7. LED will light up that is located near the Ethernet port that is connected. When transmitting packages LED will blink from time to time;



8. A default IP-address of a device is 192.168.0.100. To perform the initial configuration of a device make sure that the address of your computer is in the same IP sub network with a device address. For example, the address of a computer may be: 192.168.0.11 mask: 255.255.255.0.;
9. To perform an initial configuration of parameters of a device using a web interface, make sure that a device responds to a command ping its IP address;

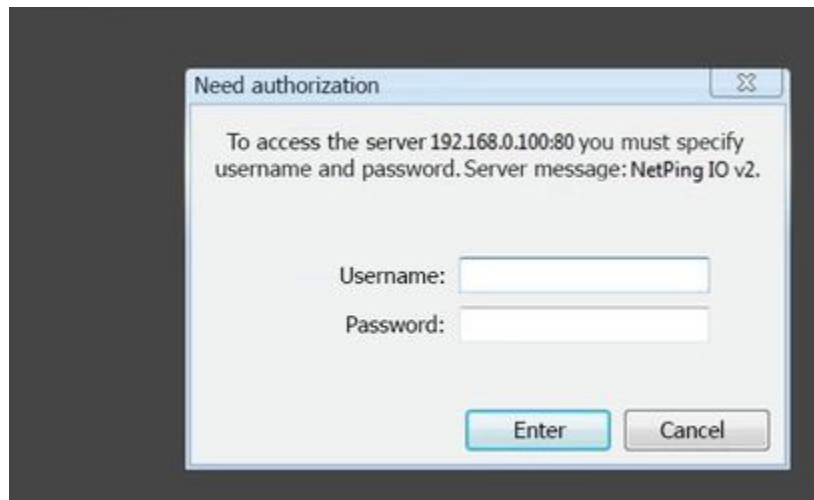
```
C:\>ping 192.168.0.100

Pinging 192.168.0.100: with 32 bytes of data:
Reply from 192.168.0.100: bytes=32 time<1ms TTL=128
Reply from 192.168.0.100: bytes=32 time<1ms TTL=128
Reply from 192.168.0.100: bytes=32 time<1ms TTL=128
Reply from 192.168.0.100: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.0.100:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

10. To configure a device, go to a web interface of a device via the address <http://192.168.0.100> using a browser (it is desirable to use a browser Google Chrome of the latest version). To get authorized, use the next credentials:

- Login: visor
- Password: ping



A further configuration of a device is performed in a web interface of a device.

Important! A description of a device web-interface can be found in a separate document DKSF 253.X IU, where X – is a firmware number of a device, to which a description is applicable.

[ENG] [IOv2] Introduction

This user guide will help to learn the operating peculiarities of the NetPing IO v2 device, get an idea about its features and technical specifications, and prepare a device for the operation.

The user guide is designed for network administrators as well as users, who are installing or servicing the device. To work with a device, a user has to have an idea about the principles of building and operating local networks, as well as acquire the next knowledge and skills:

- Basic knowledge in local and global networks;
- Basic knowledge in architecture and operation principles of TCP/IP networks;
- Basic knowledge in architecture and operation principles of Ethernet networks.

[ENG] [IOv2] Liability and Copyright

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Developer and manufacturer:

NetPing global Ltd

[ENG] [IOv2] Operating and Storage Conditions

A device is designed for continuous round the clock operation indoors. In operating conditions of use, a device is resistant to an environment with temperature in a range of 0°C - +40°C (32 – 104 degrees Fahrenheit) and relative humidity in a range of 5% - 95 % at 25°C (77 degrees Fahrenheit) without moisture condensation. A device should be protected from direct moisture and direct sun light.

A construction of a device provides a reliable uninterrupted work during a long period of time without maintenance. Highly developed functionality of remote setting and configuration of a device allows changing any parameters remotely and centrally for the most of the devices.

Devices should be stored in a temperature range between - 40°C and +70°C.

In rooms for keeping a device, a content of dust, acid and alkali gases, aggressive gases and other harmful impurities causing corrosion, should not exceed a content of corrosion-active agents for atmosphere of type 1.

Important! A device must be connected to a power supply socket with a grounding contact or a hole, where a contact, located at an outlet and connected to a ground wire, is inserted. Grounding must be performed according to the State Standard P 50571.21-2000. An infraction of this rule is a violation of a device operation conditions and may be dangerous to human lives as well as damage other devices!

[ENG] [IOv2] Plugging Sensors

It is possible to plug up to four sensors with binary outputs (on/off) to **NetPing IO v2** by using four IO lines of a device. IO lines, to which sensors are connected, need to be switched to an «input» mode.

It is prohibited to plug sensors and external modules into NetPing devices when a power supply is on!

Plugging a **Door Sensor**

A sensor is a «reed contact», therefore the order of connecting wires does not matter.

Contact Name
One of IO lines – 1 - 4
GND

A sensor will be displayed in a device interface as a status of an IO line, to which it is connected.

Important! A corresponding IO line must be switched to an "input" mode in settings of a device.

A sensor is packaged with an inseparable cable, with connectors on the ends. A cable length can be increased with the help of [flat cable extenders of RC-4](#) sensor, which are sequentially plugged one into another. Or it can be done independently with the help of any wire with a minimum cross section of 0,4 mm². Maximum allowable length of a flat cable is 100 m.

Plugging Shock Sensor PI-90d

A shock sensor is connected by a four-wire line according to the table below:

Loop Color	Contact Name
Blue (an output of a zone of light shocks and vibration)	One of IO lines – 1 - 8
Green (an output of a zone of hard shocks)	One of IO lines – 1 - 8
Red	+U
Black	GND

On a body of a sensor body, there are LED indicators, sensitivity adjustment screw and a socket for plugging wires. A corresponding zone will be displayed in a device interface as a status of an IO line, to which it is connected. To adjust a sensitivity of a sensor, a sensitivity adjustment screw is used. Turning a screw clockwise leads to increasing of a sensitivity, while turning it counterclockwise leads to decreasing of a sensitivity. When a sensor registers a shock, a status of a line of a light shock zone and a hard shock zone is switched to a low level for short time only, therefore there is a need to use a mechanism of sending SNMP TRAP notifications by a [NetPing IO v2](#) device.

Important! Corresponding IO lines must be set to an "input" mode in settings of a device.

A sensor is packaged with an inseparable cable, with connectors on the ends. A cable length can be increased with the help of [flat cable extenders of RC-4](#) sensor, which are sequentially plugged one into another. Or it can be done independently with the help of any wire with a minimum cross section of 0,4 mm². Maximum allowable length of a flat cable is 100 m.

Plugging a Glass Breaking Sensor

Surface security sound detector «Glass-3» is designed to detect breaking glass sheets. A sensor announces alarm by opening contacts of executive relay. A detector has a possibility to adjust sensitivity, to choose an operating algorithm, light LED indication of a status of a detector with a possibility to switch indication off.

To plug a sensor, there is a need to connect:

Flat Cable	Contact Name
Labelled (red) wire	+U
First wire after a labelled one	GND
Second wire after a labelled one	GND
Third wire after a labeled one	One of IO lines – 1 - 4

Each sensor will be displayed in a device interface as a status of an IO line to which it is connected.

Important! A corresponding IO line must be switched to an "input" mode in settings of a device.

A sensor is packaged with an inseparable cable, with connectors on the ends. A cable length can be increased with the help of [flat cable extenders of RC-4](#) sensor, which are sequentially plugged one into another. Or it can be done independently with the help of any wire with a minimum cross section of 0,4 mm². Maximum allowable length of a flat cable is 100 m.

Connecting Motion Sensor SWAN-QUAD

To plug a sensor, there is a need to connect:

Colored Cable	Flat Cable	Contact Name
Green	Labelled (red) wire	One of IO lines – 1 - 4
White	First wire after a labelled one	GND
Black	Second wire after a labelled one	GND
Red	Third wire after a labelled one	+U

Every sensor will be displayed in a device interface as a status of an IO line, to which it is connected.

Important! A corresponding IO line must be set to an "input" mode in settings of a device.

A sensor is packaged with an inseparable cable, with connectors on the ends. A cable length can be increased with the help of [flat cable extenders of RC-4](#) sensor, which are sequentially plugged one into another. Or it can be done independently with the help of any wire with a minimum cross section of 0,4 mm². Maximum allowable length of a flat cable is 100 m.

Connecting Leakage Sensor H2O

To plug a sensor, there is a need to connect:

Colored Cable	Contact Name
Green	One of IO lines – 1 - 4
Yellow	GND
Brown	+U
White	GND

Every sensor will be displayed in a device interface as a status of an IO line, to which it is connected.

Important! A corresponding IO line must be set to an "input" mode in settings of a device.

A sensor is packaged with an inseparable cable, with connectors on the ends. A cable length can be increased with the help of [flat cable extenders of RC-4](#) sensor, which are sequentially plugged one into another. Or it can be done independently with the help of any wire with a minimum cross section of 0,4 mm². Maximum allowable length of a flat cable is 100 m.

Plugging [Leakage Sensor, Model 2605](#)

To plug a sensor, there is a need to connect:

Colored Cable	Contact Name
Green	One of IO lines – 1 - 4
Yellow/White	GND
Red	+U
Black	GND

Every sensor will be displayed in a device interface as a status of an IO line, to which it is connected.

Important! Corresponding IO line must be set to an "input" mode in settings of a device.

A sensor is packaged with an inseparable cable, with connectors on the ends. A cable length can be increased with the help of [flat cable extenders of RC-4](#) sensor, which are sequentially plugged one into another. Or it can be done independently with the help of any wire with a minimum cross section of 0,4 mm². Maximum allowable length of a flat cable is 100 m.

Plugging 220V Occurrence Sensor

A sensor is a «dry contact», therefore an order of connecting wires does not matter.

Contact Name
One of IO Lines – 1 - 4
GND

A sensor will be displayed in a device interface as a status of an IO line to which it is connected.

Important! A corresponding IO line must be set to an "input" mode in settings of a device.

A sensor is packaged with an inseparable cable, with connectors on the ends. A cable length can be increased with the help of [flat cable extenders of RC-4](#) sensor, which are sequentially plugged one into another. Or it can be done independently with the help of any wire with a minimum cross section of 0,4 mm². Maximum allowable length of a flat cable is 100 m.

Plugging NetPing AC/DIN Sockets

A number of connected [NetPing AC/DIN](#) sockets is limited only by a number of available IO lines.

When plugging a socket to a device, all wires are used except for a brown (white) one. An IO line, to which a [NetPing AC/DIN](#) socket is connected, needs to be switched to a status «output». When a status is a «logic 0», and 220V is present on an IO line in a socket, the load will be switched on. When a status is «logic 1», and there is no voltage on an IO line in a socket, the load will be switched off.

Important! A brown (white) wire is not used and must stay unplugged!

Cable	Contact Name
Red	+U
Black	GND
Blue (green)	One of IO lines – 1 - 4

To commute a load, a relay with normally closed contacts is used in [NetPing AC/DIN](#). This means that if a control wire is not plugged, 220 V will be present in a socket and the load will be switched on.

A sensor is packaged with an inseparable cable, with connectors on the ends. A cable length can be increased with the help of [flat cable extenders of RC-4](#) sensor, which are sequentially plugged one into another. Or it can be done independently with the help of any wire with a minimum cross section of 0,4 mm². Maximum allowable length of a flat cable is 100 m.

[ENG] [IOv2] Resetting Parameters to Default Values

To reset parameters to default values, perform the next actions:

- Power off a device;
- Install a jumper;
- Switch power on;
- Remove a jumper 5-10 s after switching power on.

If a procedure is performed successfully, a LED light will blink initiating reset of parameters

[ENG] [IOv2] Using IO Lines to Control External Devices (in an «output» mode)

Input-Output (IO) lines of a device can be used for an input work as well as in an output mode for managing external devices.

A device has four IO lines, corresponding to contacts I1 –I4 of a terminal block. Lines configuration for work as an input or an output is made through a controlling web-interface of a device. All four IO lines can be customized independently.

Lines management can be done by SNMP commands, via a web-interface or by SMS-commands, sent to a device.

Such device functions as a watchdog and a scheduled load management are NOT AVAILABLE for IO in an output mode.

Examples of using:

- Remote servers reboot – an imitation of pressing “reset”;
- Remote management of an alarm, a light, a fan;
- Management of an electric lock, electric gates on a remote object;
- Management of smart home elements - watering flowers, opening-closing louvers, water pump, heating boiler, heaters, etc. Remote management of a power installation (diesel generator, gasoline).

Important! A correct electrical coordination of IO lines is required when connecting external executive devices.

Electric specifications of a line in an output mode:

- High level (logic «1») – 5 V voltage, 1,5 mA current.
- Low level (logic «0») - 0 V voltage, up to 150 mA current.

Important! IO lines do not have a galvanic isolation with a device! Remember about electrical safety when using relays that commute 220 V circuits. All work must be done by specialists with a correspondent qualification who have a permit to work with such a voltage!

It is acceptable to use intermediate relays with a power supply voltage 12 V from an external source.

A ready socket can be used for IO lines connection [NetPing AC/DIN socket](#)

In addition, we can advise ready assembly relays of other manufacturers, which can be connected to our devices:

<http://www.masterkit.ru/shop/smarthome/executive-devices/1327359> - MP701 a power module switch (4 independent channels, 2 kWt 10A each)

<http://www.masterkit.ru/shop/smarthome/executive-devices/1326291> - a load switching relay up to 6A 12V

<http://www.masterkit.ru/shop/smarthome/executive-devices/1494003> - MP220 a power module on a basis of a powerful relay with an optocoupler for managing a load up to 4 kWt (20A).

Therefore, when using IO lines in an output mode, it is possible to independently manage four external devices.

For more detailed information, please contact a technical support support@netping.ru

Electrical Parameters of IO Lines

In an "output" mode:

Voltage of logic "1" : 3V, peak current: 0.2 mA

Voltage of logic "0" : 0,1V, peak current: 0.8 A

In an "input" mode:

Voltage of logic "1" : >2V

Voltage of logic "0" : <0,3V

[ENG] [IOv2] Warranty

The manufacturer guarantees normal operating of the product within 24 months from the date specified on the warranty sticker if a buyer follows operating and storage conditions. Manufacturer warranty applies only to failure of a device, which occurred because of defects in manufacturing process of products and components used. If during a warranty period, the manufacturer receives a notice of such defects, it will repair or exchange a product (by its own discretion). If the manufacturer is unable to repair or replace a flawed item during a period of time determined by the current legislation, the manufacturer according to a customer's wish can return the amount paid for the product at the time of purchase. The manufacturer provides a limited warranty on firmware and device configuration software. In case of detecting any errors in software, which became known to the manufacturer on its own or from a customer, the manufacturer will fix these errors within a reasonable time and provide an update for the customer. Only the errors that block normal use of the device at conditions and for performing functions, described in this User Guide, are subject to mandatory fix. This warranty does not apply to cases, when defects appear because of: a misuse of a device, any modifications of a device without a written permission of the manufacturer, opening up a device, except cases, foreseen by this description, repairing by unauthorized personnel, using or storing a device out of the range of allowable temperature and humidity, pressure, a software modification, and the reasons, listed below:

- A device failed because of the problems in a public electric network, plugging a device into power supply networks with invalid parameters, absence of grounding, etc. (power fluctuations and surges, overloading, etc.);
- A device failed because of a liquid inside;
- A device failed as a result of extreme temperatures;
- A device failed because of mechanical damage;
- A device failed because of connecting a power supply unit with invalid output voltage or a defective power supply unit;
- There are foreign objects, insects, etc inside the enclosure;
- During operation, a voltage bigger than an allowable voltage range by the Ethernet standard has been supplied to the ports of a device.