Reboot of network equipment when connection lost (PING Monitor)

Application Note

rev. 1.0

10.05.2024

CONTENTS

Document versions

Version	Date	Brief description of the changes introduced
1.0	10.05.2024 r.	Initial version of the document

Legend:

The text contains additional and useful information that explains specific situations and features.

The text contains information of essential importance which you must get to know well!

1. Introduction

The mass penetration of the Internet in the last decade has led to the use of all kinds of network routers, switches, modems, etc. Every office or home has at least one such device on which network service delivery depends.

Practice shows that these devices often "hang" ("stuck"), and although they appear to be visually functioning normally, they do not pass network traffic in whole or in part. This naturally leads to disruption of the Internet supply and problems in all accompanying services - Internet, television, video surveillance, security, etc.

The easiest and safest solution in such a situation is to restart the equipment - by turning off and then turning on its power supply. Some devices may also have a "Restart" button, which achieves a similar effect.

The controllers of the ***NetControl*** series can be successfully used for automatic restart of network equipment. All have a "Ping Monitoring" software module that can initiate action when a logical link loss is detected.

2. Monitoring and restart with NetControl

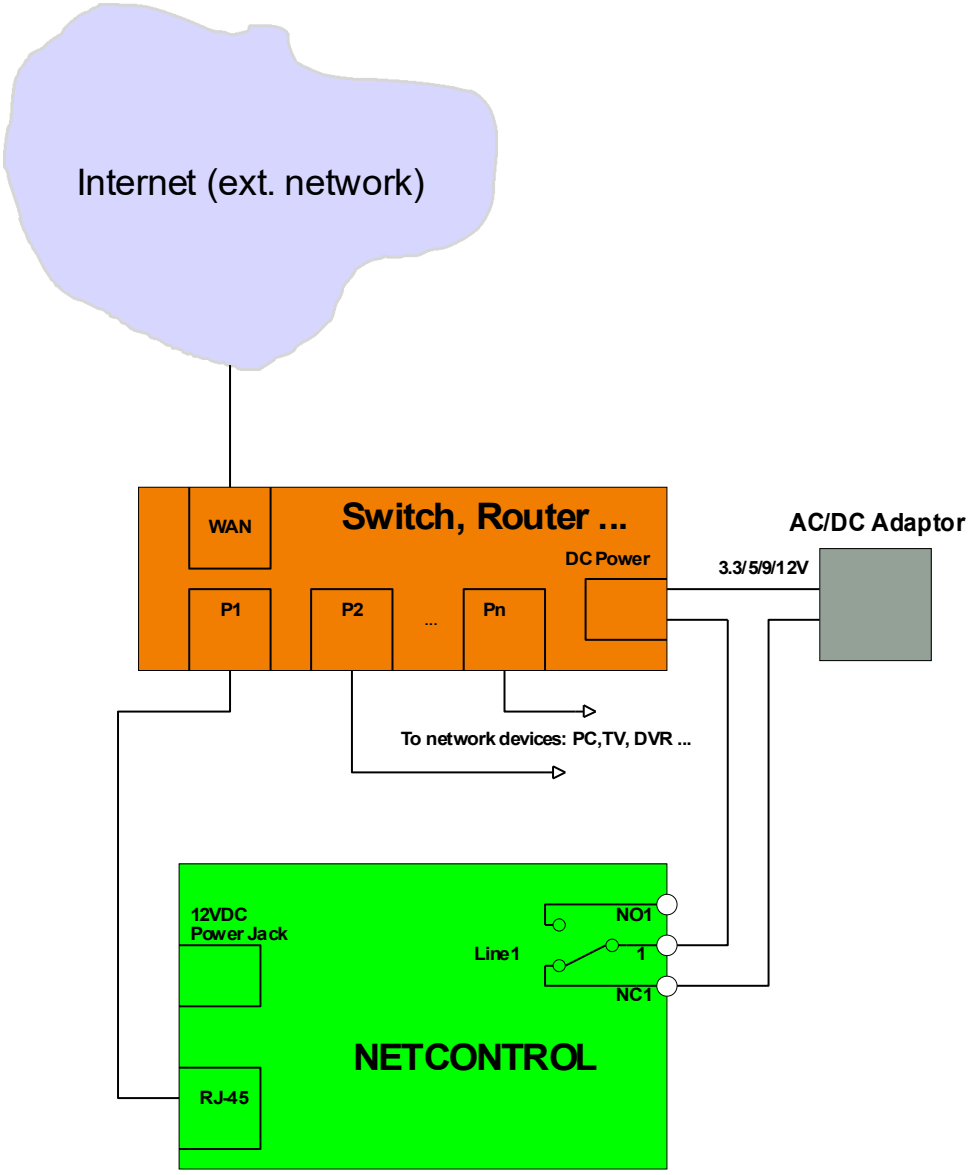
2.1. Connection diagram

The following picture shows a general scheme of a system with a router (switch, modem) for distributing the Internet to several users.

NetControl must be connected to a port on the device we want to monitor for blocking. It could also be connected to another switch in the network, but that way we won't be able to determine exactly which device is blocking and the whole group of devices will have to be restarted.

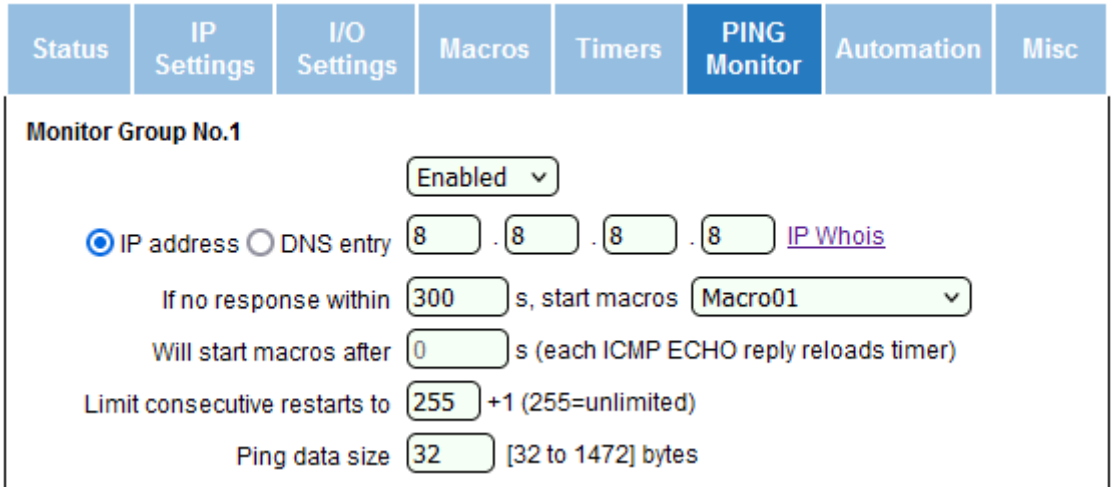
The goal is, by sending PING requests to an address that is located on the Internet (or the external network), we can determine whether the router is working normally. If we do not receive a response from the external server - we consider that it has blocked and take action to restart it.

We will cover the detailed settings of ***NetControl*** in the next section.



2.2. „PING monitor" settings

This software module is part of every ***NetControl*** controller, regardless of model. However, depending on the model, it can have a different number of monitoring channels; standard are 8 pcs.



We select one of the free "Monitoring Group" and switch it to "Enabled" mode to make the settings in it. In this case, we use the first group.

"IP address/DNS entry" is the address of the server that we will use as a reference that there is a network connection. You must choose an address that is "behind" the router - on the Internet or the external network. The address must be on a server that is stable and reliable - in the example we are using the IP address of a Google DNS server. If you have set DNS names in "IP Settings->Manage DNS names cache" you can also choose one of them.

We recommend using an IP address rather than a DNS record. In this way, you isolate an additional service, such as DNS, that may affect the processes.

The **"If no response within"** parameter defines for what period of time (in seconds, default is 300s) there must be no response from the opposite server permanently to consider that the connection is lost. At this moment, the selected macro will be launched, in our example - "Macro 01". Values below 40s are not allowed to ensure that there will be at least a few requests in this period.

"Will start macros after" tells you how long it will take to decide that the connection is not available. Represents a decrementing counter with an initial value of the front parameter. When 0 is reached – the set macro is started. Since "PING Request" requests are submitted every 10-15 seconds, if there are responses from the server, the counter will return to the maximum value during such a period.

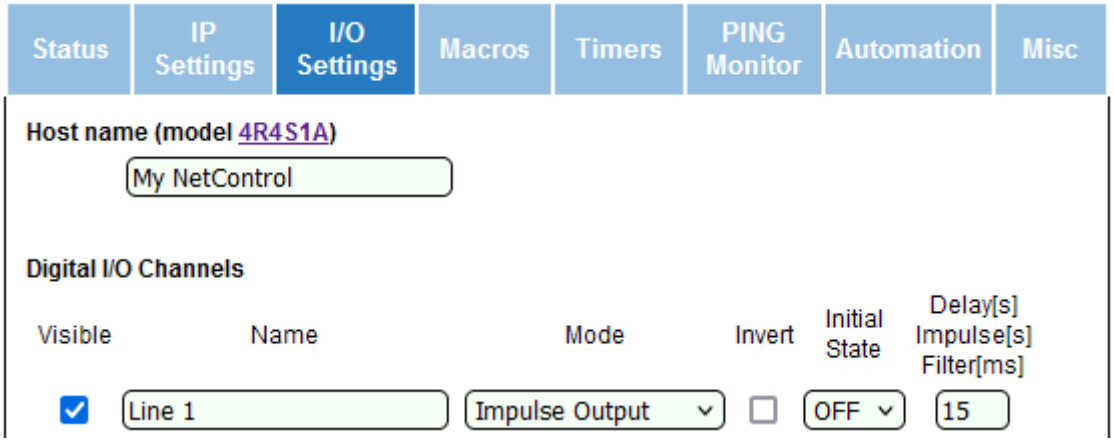
In the event that the connection to the server is permanently interrupted for other reasons, it is pointless to constantly restart the router. The following parameter **"Limit consecutive restarts to"** is provided for this. The value you set will determine how many consecutive runs of the macro to execute. When the set value is reached + 1 number of consecutive launches without a response from the server - the macro launch stops (until at least one response is received from the server, which resets the limiting process). The default value is set to 255, which means unlimited restarts.

The last parameter **"Ping data size"** determines the size of the data in the "Ping Request" packet.

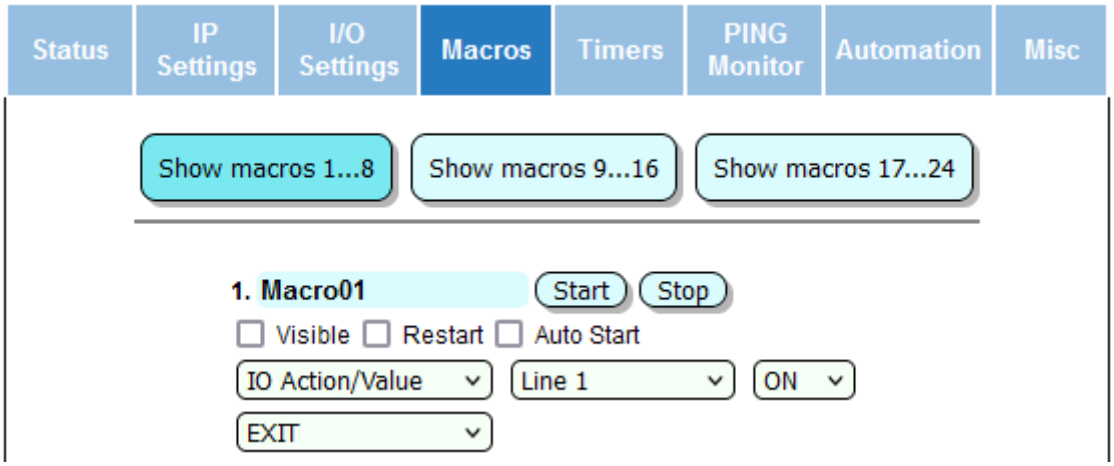
2.3. Output and macros settings

The most suitable mode of operation for the output that will be responsible for the router's power failure is "Impulse Output" - an output that is activated for a certain time and then restores itself to the initial state. This is set in the "IO Settings" menu - in our example "Line 1" is the active output.

The time of the pulse output is also set here - 15 seconds is a typical time for the router's power circuits to discharge and assume an initial state.



It remains only to set up "Macros 01" - to add only one step to it, which gives an ON command to "Line 1" (pulse outputs are started with ON)



In case you want to manually restart the router - you can directly do it from the WEB interface by giving "Switch ON" to "Line 1".

You can also use the output in Manual mode, and the macro should contain the steps ON, wait 15s, OFF. But in this way, you won't be able to do a manual restart with a direct command to Line 1, because giving ON will break the connection and you won't be able to give an OFF command. In this case, you should use the macro launch rather than direct Line 1 control.

2.4. Router's power supply interruption

As shown in the wiring diagram, we use the normally open contact of Line 1 to interrupt the power supply.

It is safest to do this on the low-voltage part - at the output of the adapter. It is necessary to break one of the wires of the adapter and pass it through the contact of Line 1.

Of course, the interruption can also occur in the 220V circuit - then it is correct to pass the phase L through the relay, and the neutral N remains permanently connected.

2.4.1 „Reset" button available

If the router has a button for "Reset" or we simply have a classic motherboard with Reset on a button or on a rail, then with the same settings we can make an automatic restart in case of loss of connection.

We only need to use the normally open contact of Line 1 and connect it in parallel to the button.