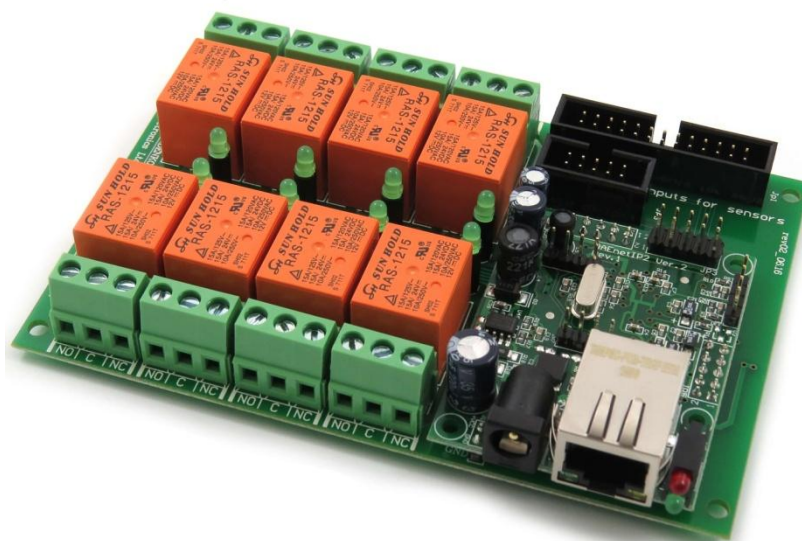


DAEnetIP2 v2 Eight Relay Module

(optimized for temperature measurement with LM35DZ)

User Manual
Document date: 21 July 2020
For firmware version: v1.24



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1. Features

This is multifunctional standalone device for management, control and sensor monitoring (especially suitable for LM35DZ temperature sensor) over the LAN and WAN. It could be used for home automation, industrial automation, access control, fire and security systems.

- 10 Mb Ethernet interface with Link/Activity Led
- Power supply 12VDC or 24VDC - selectable by user
- Maximal power consumption:
 - 300 mA / 12VDC
 - 200 mA / 24VDC
- 8 SPDT Relay channels - 10A / 250VAC, 15A / 120VAC, 10A / 28VDC
- 8 analog inputs with 10 bit resolution. Can be used for one from the both applications:
 - either LM35DZ temperature sensor monitoring (over voltage and inverse voltage protection). Temperature range: 0°C - 100°C
 - either 0-10VDC industrial voltage measurement (over voltage and inverse voltage protection)
- 8 bit configurable digital TTL I/O port
- Standart protocols: ARP, IP, ICMP (ping), DHCP
- Supports snmp v1 (snmpset, snmpget, snmptrap), HTTP
- Ports for SNMP (161) and HTTP (80) can be changed
- Two MAC addresses protection
- It can be configured with SNMP requests or web browser
- Reset of the relays on incoming/outgoing ping timeout
- Function "load outputs states from EEPROM on boot"
- The ADC web page shows Temperature (°C and °F) and Voltage (0-10V)
- It can send traps according analog ADC level
- Analog Inputs may be referred to control the relay according their levels
- PCB parameters : FR4 / 1.5mm / two layers / metallized holes / HAL / white stamp / solder mask / Extra PCB openings for better voltage isolation / Doubled PCB tracks for better voltage isolation
- Dimensions suitable for mounting into DIN enclosures - 122 x 82 x 20 (mm)

2. Technical parameters

Table 2.1. Technical parameters

Parameter	Value
Size	122mm x 825mm
Power supply voltage	12 VDC or 24 VDC
CPU power supply (output level 3.3VDC)	3.3V
Relay channels count	8
Digital I/O count (0-3.3V, when output - max current is 1mA)	8
Analog inputs count	8 (10bit ADC, Vref=1.2VDC - external source)
Digital inputs count ¹⁾	8
LM35DZ sensor inputs count ²⁾	8
Inputs (0-10VDC) count ³⁾	8
LED (Link, Activity, Power On)	Yes
Save I/O states	Yes
DHCP	Yes
Network parameters	IP/Mask/Default gateway
MAC lock (protection)	Yes
SNMPv1	Yes (snmpget,snmpset)
Read-Write Community String	Yes
Read-Only Community String	Yes
SNMP traps	Yes
SNMP I/O access commands	Yes
Web server for configuration/access	Yes

1) Digital inputs are the analog inputs, but the input voltage is software converted to 1 or 0

2) This port (JP1) is connected to the analog inputs port of DAEnetIP2

3) This port (JP3) is connected to the analog inputs port of DAEnetIP2 (note it is possible to use only one pin of analog input port of DAEnetIP2 at a time - either LM35DZ sensor pin either 0-10V pin). Otherwise the analog input port may be damaged.

3. Application examples

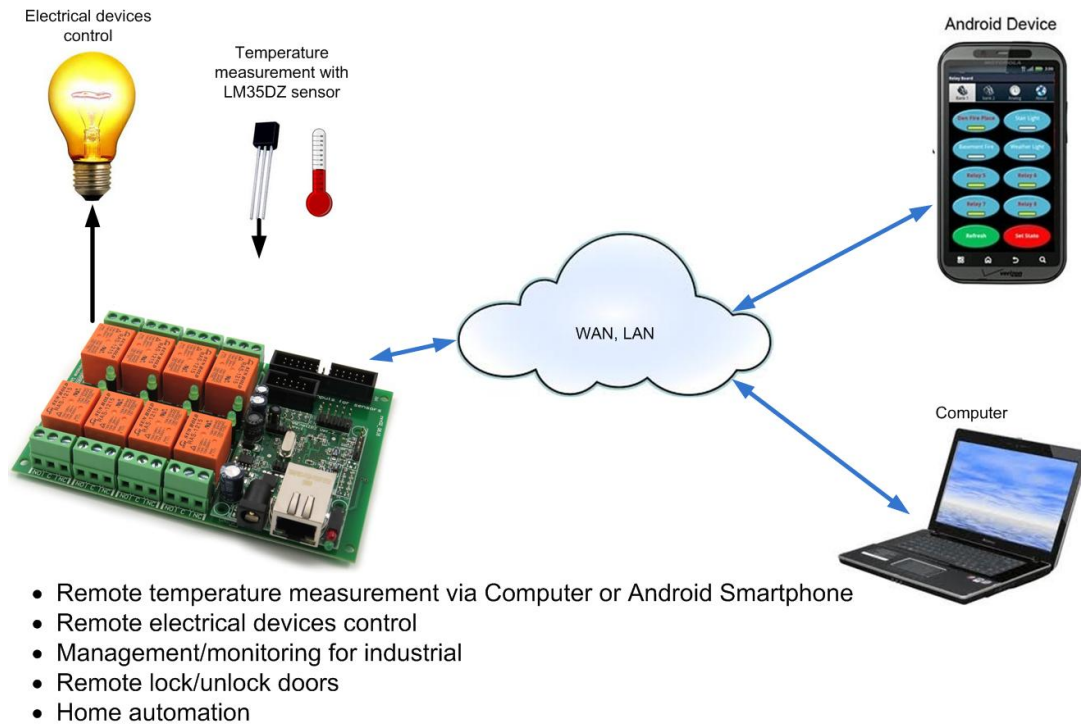
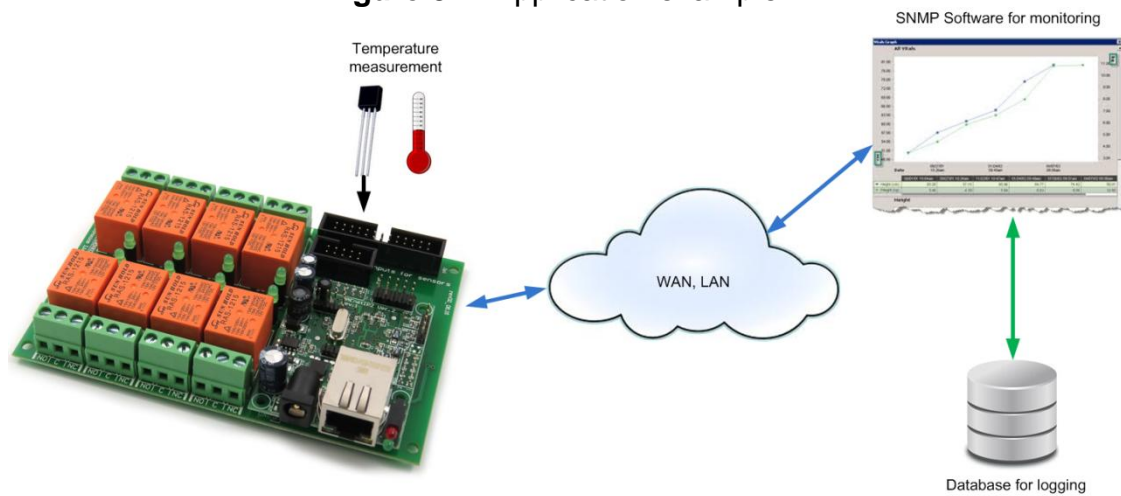


Figure 3.1. Application example 1



- Monitoring and logging temperature or humidity. As DAEnetIP2 is not data logger, the logging must be done by the snmp manager.

Figure 3.2. Application example 2

4. Product installation

4.1. Connect DAEnetIP2 Eight Relay Module to computer for first time

1. Connect the device with your computer via **UTP crossover cable**. (note that the device does not support AUTO MDIX)
2. Supply with 12VDC or 24VDC (depending on selected model) stabilized filtered power source.
3. Your initial computer IP should be in the device network. So it is recommend to be 192.168.1.1 .
4. Open web browser and type 192.168.1.100 – default username/password are “admin”/”admin”
5. Now you can access all the parameters via your web browser

4.2. Connect DAEnetIP2 Eight Relay Module to router

1. Do all the steps from 4.1
2. Adjust the network parameters from Setup page:
3. IP - must be in same network as your router. (For example if router IP is 192.168.1.1, DAEnetIP2 IP may be 192.168.1.2)
4. Mask
5. Gateway - usually this is the IP of your router
6. Click submit and wait about 5 seconds
7. Power off the device
8. Now you may disconnect the UTP crossover cable from the DAEnetIP2 and your computer
9. Connect the DAEnetIP2 module and the network router with UTP straight cable.
10. Adjust the IP of your computer to be again in the router network
11. Open the web browser and enter the new IP of the module.

5. Default Settings

5.1. Table with default settings

These are the default (factory) settings of DAEnetIP2. When you buy the module you will receive it with these settings. If not, please load the default settings (see 5.2).

Table 5.1. Default settings

Parameter (according Web pages)	Value
DHCP	Disabled
IP	192.168.1.100
Mask	255.255.255.0
Gateway	192.168.1.1
Access MAC 1,2	000000000000
SNMP access to IP	Enabled
SNMP listen UDP port	161
SNMP Read-only community string	000000000000
SNMP RW community string	private
SNMP/Web Access network IP	192.168.1.1
SNMP/Web Access network Mask	0.0.0.0 (disabled)
Ping Timeout	6
Restart on incoming ping timeout	Disabled
Restart on remote IP timeout	Disabled
Remote monitor IP	192.168.1.1
I/O ports settings	P3,P5 - Outputs
Pull-up for inputs	Enabled
Reset I/O ports on restart	Disabled
Digital filter for ADC	Enabled
Web Server	Enabled
Web Server TCP port	80
SNMP traps target host	192.168.1.1
SNMP traps community	public
Low/High Analog Trap Threshold	0/1023 (disabled)
Analog Events – Low, High, Acc	None
Web user/password	admin/admin

5.2. Steps for loading default settings

In case the access of the module is lost, factory (default settings) may be applied and the module parameters will be returned back as those in point 5.1 from the current document

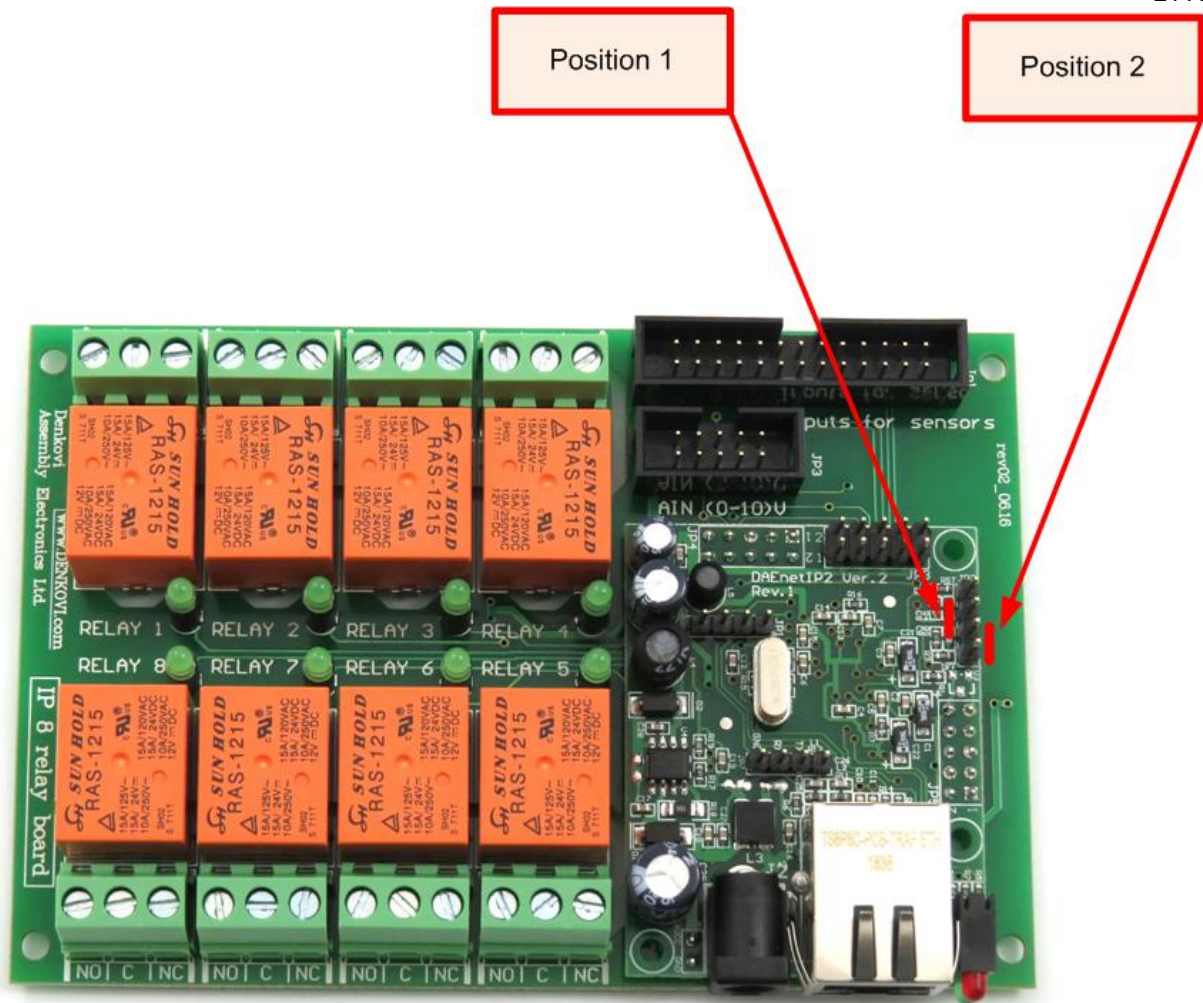


Figure 5.1. Loading default settings

1. Turn off the power supply of the device;
2. Move the jumper to the **DEFAULT** position (between pin 3 and 4 of JP2);
3. Turn on the power supply of the device;
4. Wait until the status led become ON (approximately 10 sec);
5. Remove the jumper from the **DEFAULT** position;
6. Turn off the power supply of the device;
7. Move back the jumper to the middle position (between pin 2 and 3 of JP2);
8. The module is configured with default settings.

6. Connectors and ports

6.1. DAEnetIP2 Eight Relay Module block diagram

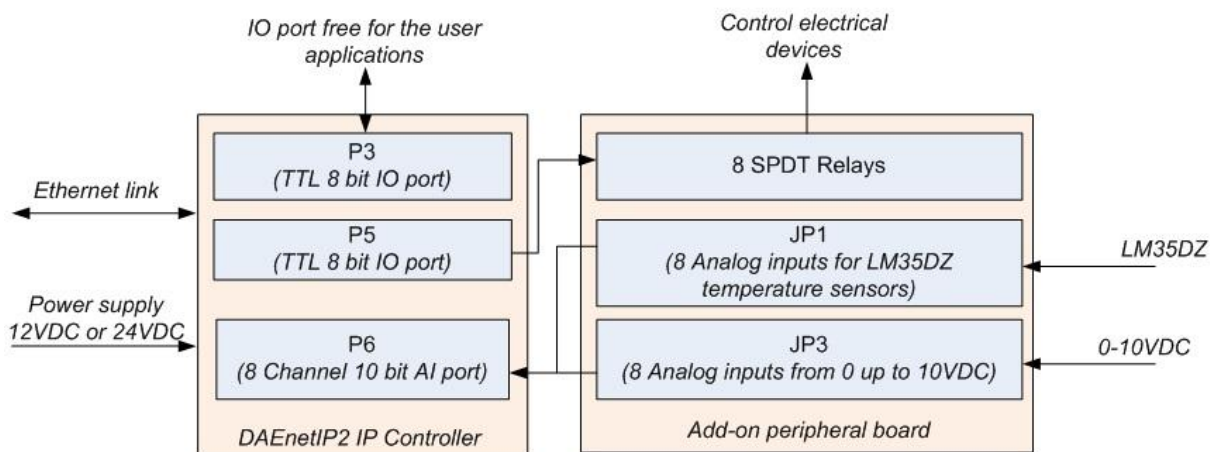


Figure 6.1. Block diagram

6.2. DAEnetIP2 Eight Relay Module Ports

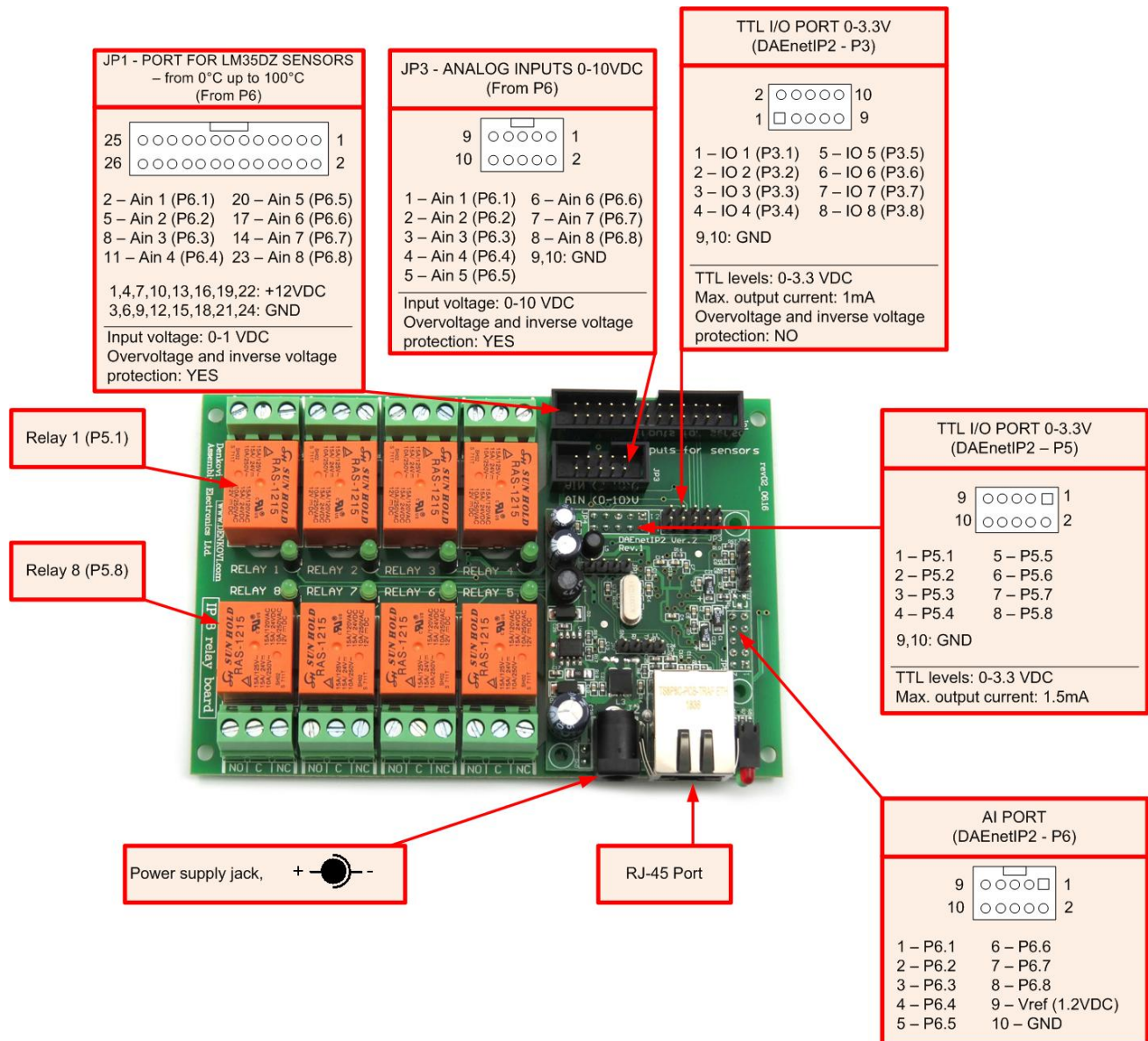


Figure 6.2. Ports

Note that it is strongly recommend to use only one port at a time - either **JP1 - Analog Inputs (0-10VDC)** either **JP3 - Port for sensors**. Otherwise the device may be permanently damaged !

6.3.DAEnetIP2 ports description

Table 6.1. I/O Ports

Pin N	Port P3 (digital outputs)			Port P5 (digital outputs)			Port P6 (digital/analog inputs)		
	Bit	Func	Dir	Bit	Func	Dir	Bit	Func	Dir
1	1	Free	I/O	1	Free	I/O	1	Free	Ain
2	2	Free	I/O	2	Free	I/O	2	Free	Ain
3	3	Free	I/O	3	Free	I/O	3	Free	Ain
4	4	Free	I/O	4	Free	I/O	4	Free	Ain
5	5	Free	I/O	5	Free	I/O	5	Free	Ain
6	6	Free	I/O	6	Free	I/O	6	Free	Ain
7	7	Free	I/O	7	Free	I/O	7	Free	Ain
8	8	Free	I/O	8	Free	I/O	8	Free	Ain
9	-	GND	PWR	-	+3.3V	PWR	-	+3.3V(Vref)	PWR
10	-	GND	PWR	-	GND	PWR	-	GND	PWR

Legend:

- “Free” – the pin is free to be used by user
- "I/O" – the pin is input or output depending the settings
- “Ain” – analog input

7. Web access



Figure 7.1. Web access

To access the setup pages, run a web browser (Internet Explorer, Mozilla Firefox or similar), and enter the **DAEnetIP2 v2** IP address, for example: <http://192.168.1.100>

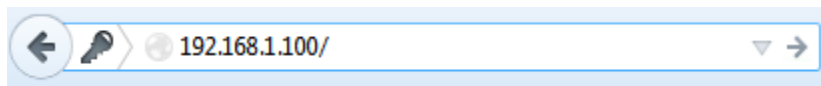
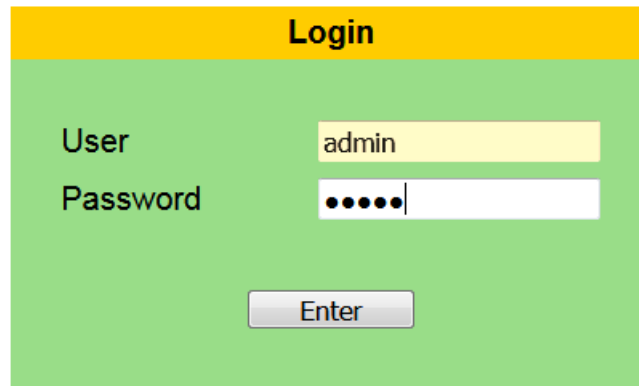


Figure 7.2. Open via browser

Note: You will need to have *JavaScript* enabled in your browser.

7.1.Login

The screenshot shows a web-based login interface. At the top, there is a yellow header bar with the word "Login" in black text. Below this, the background is light green. On the left side, the labels "User" and "Password" are displayed in black. To the right of "User" is a yellow text input field containing the text "admin". To the right of "Password" is a white text input field with black dots representing a masked password. Below these input fields is a grey button with the text "Enter" in black.

Expired session, please log in again

Figure 7.3. Login page

Enter the password and click "Login" button. This will bring you to the **DAEnetIP2 v2** main configuration page which contains details for the current firmware version and build date and provides buttons and links to obtain further details.

Note: The default username and password are *admin / admin* (passwords are case sensitive).

Note: When the password is entered, it is transmitted across the network in encrypted form, so eavesdropping on the data transmission will not reveal the username and password.

Note: In order to prevent setup/control conflicts, at any given moment, only one user can be logged in.

Note: If there is no data traffic between the Web-browser and the **DAEnetIP2 v2** for time, specified by **Session Timeout** parameter, the session "times out" and a new login is required.

7.2. Menu

The main menu consists of the following items, located in the left window frame:

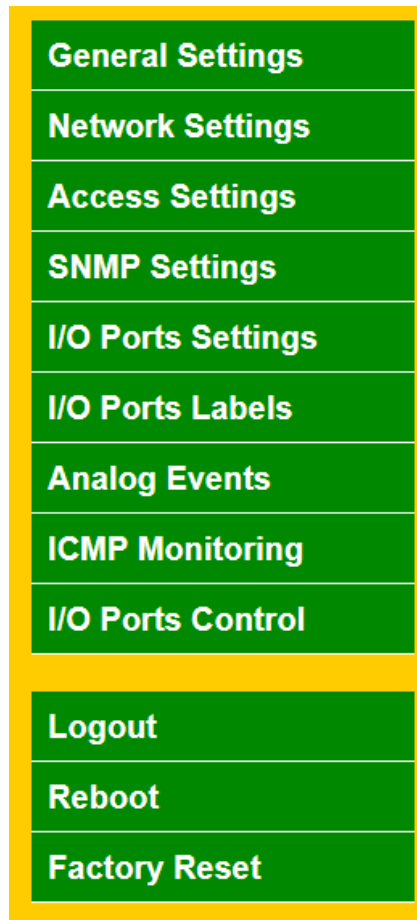


Figure 7.4. Navigation Menu

7.3. General Settings

General Settings

General Settings	
Inputs Pull-ups	<input type="checkbox"/>
Save Outputs	<input type="checkbox"/>
Digital Inputs Filter, ms	<input type="text" value="0"/>
Analog Inputs Filter, sec	<input type="text" value="0"/>

Figure 7.5. General Settings

- **Inputs Pull-ups** - enable pull-up resistors for P3/P5 ports when they are configured as digital inputs;

SNMP: cfgPortPullUps.0

- **Save Outputs** - when checked, each time the relays state is changed, it will be saved in non-volatile memory (EEPROM), so after reboot/restart it will be restored;



This option should be used with care in dynamic systems because of restriction in maximum write cycles of the EEPROM (usually 100 000 write/erase cycles).

- **Digital Inputs Filter, ms** – digital inputs filter constant. The range is from 0 up to 200 ms. The filter is disabled when its value is set to 0;



This parameter sets a low pass software filter that removes the short-term fluctuations from the input signal and reduces the effect of occasional spikes. Note that the higher filter constants give a slower response to changes.

- **Analog Inputs Filter, sec** – analog inputs filter constant. The range is from 0 up to 30 sec. The filter is disabled when its value is set to 0;



This parameter sets a low pass software filter that removes the short-term fluctuations from the input signal and reduces the effect of occasional spikes. Note that the higher filter constants give a slower response to changes.

7.4. Network Settings

Network Settings

Network Settings	
MAC Address	E8:EA:DA:00:3C:C3
Enable DHCP	<input type="checkbox"/>
IP Address	192.168.1.65
Gateway	192.168.1.1
Subnet Mask	255.255.255.0
<input type="button" value="Save"/> <input type="button" value="Reload"/>	

Figure 7.6. Network Settings

This menu lets you configure the network settings of **DAEnetIP2 v2** module:

- **MAC Address** - the MAC address of the module;
- **Enable DHCP** - This option allows DHCP to be enabled or disabled. If DHCP is set to Enabled, the Network page must be saved and **DAEnetIP2 v2** must be rebooted before obtaining an IP address;

SNMP: Change its bit in cfgNewMode.0

- **IP address** - This is the IP address of the **DAEnetIP2 v2**. It needs to be manually assigned only if DHCP is disabled. With DHCP enabled, this field displays the currently assigned address;
- **Gateway** - This specifies the IP address of the gateway router;
- **Subnet Mask** - This is the subnet mask for the network on which the **DAEnetIP2 v2** is installed.

SNMP: cfgIP.0, cfgNetMask.0, cfgDefGW.0



You have to reboot the device for these settings to apply.

7.5. Access Settings

Access Settings

Web Access	
Web Server	Enabled ▾
Web Server Port	6565
Session Timeout, min	30
User Name	admin
Password	••••••••
Confirm Password	••••••••
MAC Access Filters	
Access MAC Address 1	00:00:00:00:00:00
Access MAC Address 2	00:00:00:00:00:00
SNMP/Web Access Network	
Network IP	172.16.100.1
Network Mask	0.0.0.0
<input type="button" value="Save"/> <input type="button" value="Reload"/>	

Figure 7.7. HTTP & XML/JSON Access

These settings let you configure the Web and SNMP access parameters of **DAEnetIP2 v2**:

- **Web Server** - enable/disable the web server. If the server is disabled, then it can be enabled again either via SNMP either via factory settings loading;
- **Web Server Port** - port that the Web server listens for HTTP requests (default port is 80). The port must be 80 or in the range from 1025 up to 65535;
- **Session Timeout, min** - specifies the timeout period for HTTP sessions in minutes (1..99);
- **User Name** - the username used for web login authentication (max 12 symbols);
- **Password** - the password used for web login authentication (max 12 symbols);
- **Access MAC Address 1/2** - **DAEnetIP2 v2** has MAC protection. This means that if it is enabled it can be accessed from one/two MAC addresses. To disable the MAC protection, the MAC Address 1/2 must be 000000000000;

SNMP: cfgMACLock1.0, cfgMACLock2.0



When using MAC filtering please note that while accessing from external networks to the **DAEnetIP2 v2** module arrive packets with MAC address of the Default Gateway. In this way it must be always one of the both protected MAC addresses.

- **Network IP** - this field can be used to restrict the SNMP access by specifying the IP address of the remote client;
- **Network Mask** - this field can be used to restrict the SNMP access by specifying the Network mask of the remote client.



MAC Access protection is with higher priority than SNMP/Web access protection.



You have to reboot the device for these settings to apply.



It is highly recommended to log out from the web server after finishing the parameters setup.



If you don't want to restrict the SNMP access by IP address, set the **Access Mask** to 0.0.0.0.



If you don't want to restrict the access by MAC address, set the MAC **Address 1/2** to 00:00:00:00:00:00.



Setting the **Access Mask** to 255.255.255.255 allows the SNMP access only from the exactly specified **Access IP Address**.



You can allow the SNMP access to a range of IP addresses by setting an appropriate value for **Access Mask**. For example setting the **Access IP Address** to 192.168.1.0 and **Access Mask** to 255.255.255.0 allows the access from IP addresses in range from 192.168.1.0 to 192.168.1.255.

7.6. SNMP Settings

SNMP Settings

SNMP Agent	
Agent Port	<input type="text" value="161"/>
Read-only Community	<input type="text" value="000000000000"/>
Read-write Community	<input type="text" value="private"/>
Access to IP Configuration	<input type="text" value="Enabled"/>
SNMP Traps	
Trap Receiver IP Address	<input type="text" value="172.16.100.1"/>
Trap Receiver Port	<input type="text" value="162"/>
Trap Community	<input type="text" value="public"/>

Figure 7.8. SNMP Settings

7.6.1. SNMP Agent

These settings let you configure the SNMPv1 (Simple Network Management Protocol) (Version 1) access to the **DAEnetIP2 v2**:

- **Agent Port** - UDP port number the SNMP agent receives requests on (default port is 161). The port must be 161 or in the range from 1025 up to 65535;

SNMP: Change of cfgSNMPport.0

- **Read-only Community** - community string for client's authentication, used in read operations (max 12 symbols);

SNMP: cfgReadOnlyPassword.0

- **Read-write Community** - community string for client's authentication, used in read/write operations (max 12 symbols);

SNMP: cfgReadOnlyPassword.0


- **Access to IP Configuration** - if disabled, there is an access only to the I/O ports of the module;

SNMP: Change its bit in cfgMode.0

7.6.2. SNMP Traps

- **Trap Receiver IP Address** - the IP address of the trap server;
- **Trap Receiver Port** - determines the UDP port the trap message will be sent to;
- **Trap Community** - the trap community.

 You have to reboot the device for these settings to apply.

 The controller generates traps each 2-3 seconds when it is in alarm zone. This is because the SNMP trap is UDP based message and the receiving is not guaranteed.

7.7. I/O Ports Settings

DAEnetIP2 v2 has 8+8 digital I/O (P3/P5) and 8 analog inputs (P6). The analog inputs may be used also for digital inputs (software conversion).

I/O Ports Settings

Port	Input Pins							
	8	7	6	5	4	3	2	1
P3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 7.9. I/O Settings

When Input is selected, that means this pin is an input, otherwise it is configured as output.

SNMP: Change its bit in cfgP3Dir.0, cfgP5Dir.0 (1=Out, 0=In)

7.8. I/O Ports Labels

I/O Ports Labels

Port 3 (I/O)		Port 5 (I/O)		Port 6 (ADC)	
1	<input type="text" value="P3.1"/>	1	<input type="text" value="P5.1"/>	1	<input type="text" value="ADC.1"/>
2	<input type="text" value="P3.2"/>	2	<input type="text" value="P5.2"/>	2	<input type="text" value="ADC.2"/>
3	<input type="text" value="P3.3"/>	3	<input type="text" value="P5.3"/>	3	<input type="text" value="ADC.3"/>
4	<input type="text" value="P3.4"/>	4	<input type="text" value="P5.4"/>	4	<input type="text" value="ADC.4"/>
5	<input type="text" value="P3.5"/>	5	<input type="text" value="P5.5"/>	5	<input type="text" value="ADC.5"/>
6	<input type="text" value="P3.6"/>	6	<input type="text" value="P5.6"/>	6	<input type="text" value="ADC.6"/>
7	<input type="text" value="P3.7"/>	7	<input type="text" value="P5.7"/>	7	<input type="text" value="ADC.7"/>
8	<input type="text" value="P3.8"/>	8	<input type="text" value="P5.8"/>	8	<input type="text" value="ADC.8"/>

Figure 7.10. I/O Ports Labels

Identification string (max 7 chars) for all the I/O ports.

7.9. Analog Events

Analog Events

Analog Input	Low Threshold	High Threshold	P5 Set at			
			LOW	HIGH	REG	INV
Input 1	< 0	> 1023	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 2	< 0	> 1023	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 3	< 0	> 1023	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 4	< 0	> 1023	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 5	< 0	> 1023	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 6	< 0	> 1023	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 7	< 0	> 1023	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input 8	< 0	> 1023	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 7.11. Analog Events

SNMP traps can be generated from Analog inputs if its level crosses the given limits. If the limits are 0 and 1023 then there will not be any traps from this input. The message gives information from which input is this trap and what is the input level value. If several events are generated, **DAEnetIP2 v2** sends their traps in order they have been generated. The controller generates traps each 2-3 seconds when it is in alarm zone. This is because the SNMP trap is UDP based message and the receiving is not guaranteed.

- **Mode "LOW"** - the output will become "1" if the input level is less than Low Threshold and sets the previous state when the input level is over Low Threshold;
- **Mode "HIGH"** - the output will be set if the input level is higher than High Threshold;
- **Mode "LOW/HIGH"** - the output will be set if the input level is out of the range with High and Low Threshold;
- **Mode "REG"** - the output will be set if the input level is less than Low Threshold and will be in old state after input level is over High Threshold. This function does not affect to SNMP traps but the same threshold values are used for sending SNMP traps.
- **Mode "INV"** - it reverse the signal level which is generated to P5 (if the regular was to set in "1" during INV it will be "0". For example if temperature sensor is used - this option allows to be done automatic switch ON of load when the temperature is higher than the threshold HIGH (and switch OFF when the temperature is lower than the threshold LOW). And it is possible the opposite (without "INV") it is possible heating during low temperatures (for instance antennas) - the output is ON when level is lower than LOW and OFF when the level is higher than HIGH.

SNMP: Changing the value in respective bit of aevPinX.0. The possible values are: None, Low, High, LowHigh, Acc

7.10. ICMP Monitoring

DAEnetIP2 v2 supports two-way (incoming/outgoing) mode for monitoring via receiving/sending ICMP echo request and ICMP echo reply packets. With this function, the **DAEnetIP2 v2** module can be used as a device for active monitoring of networks and networks devices. The **DAEnetIP2 v2** module performs also restart pulse if there is not answer.

ICMP Monitoring

ICMP Monitoring Settings																		
Incoming ICMP Monitoring	Enabled ▾																	
Outgoing ICMP Monitoring	Disabled ▾																	
Timeout, min	6																	
Remote IP to Ping	172.16.100.1	Test																
Max. Consecutive Restarts	255	0 restart(s) so far																
Restart Settings																		
Restart External Device	Disabled ▾																	
Restart Pulse Width, sec	15																	
Port P5 Restart Pins	<table border="1"> <thead> <tr> <th>8</th> <th>7</th> <th>6</th> <th>5</th> <th>4</th> <th>3</th> <th>2</th> <th>1</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table>		8	7	6	5	4	3	2	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	7	6	5	4	3	2	1											
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
Reset I/O Ports on Restart	Enabled ▾																	

Figure 7.12. ICMP Monitoring

7.10.1. ICMP Monitoring Settings

- Incoming ICMP Monitoring** - when the incoming ICMP monitoring mode is enabled, the **DAEnetIP2 v2** module expects ping in the given timeout;

SNMP: Changing its bit in cfgMode.0



If there is very big traffic in the network, it is possible the incoming ping to be not received. That is why it must be sent 5-10 ping requests.

- Outgoing ICMP Monitoring** - during outgoing monitoring the **DAEnetIP2 v2** module generates ping to the given IP address and expects answer within the given timeframe;

SNMP: cfgMonitorIP.0

- **Remote IP to Ping** - remote IP address to monitor via ICMP echo requests;

SNMP: Changing its bit in cfgNewMode.0

- **Max. Consecutive Restarts** - number of consecutive resets to perform when ping timeout is active. Value 255 disables counting (unlimited);

SNMP: cfgResetCount.0

7.10.2. ICMP Monitoring Settings

- **Timeout, min** - the time (in minutes) since last ping request to reboot system and target. The both ICMP modes use this shared parameter however they have separate timers;

SNMP: cfgPingTime.0 (in minutes)

- **Restart External Device** - global flag for enable/disable the two ICMP modes. Does not affect to the manual restart;

SNMP: Changing its bit in cfgMode.0

- **Restart Pulse Width, sec** - defines the time of the RST pulse in seconds

SNMP: cfgResetPulse.0

- **Port P5 Restart Pins** - bit mask to select some of P5 pins as external device restart pins. Pins must be outputs in cfgP5Dir;

SNMP: cfgP5DupRST.0

- **Reset I/O Ports on Restart** - if this option is enabled **DAEnetIP2 v2** will set in logical "0" all the outputs P3 and P5;

SNMP: Change its bit in cfgNewMode.0

7.11. I/O Ports Control

I/O Ports Control

Port 3 (I/O)			Port 5 (I/O)			Port 6 (ADC)			
1	P3.1	<input type="checkbox"/>	1	P5.1	<input type="checkbox"/>	1	ADC.1	0 / 0.00V L	0.00°C / 32.00°F
2	P3.2	<input type="checkbox"/>	2	P5.2	<input checked="" type="checkbox"/>	2	ADC.2	103 / 1.05V L	20.65°C / 69.17°F
3	P3.3	<input checked="" type="checkbox"/>	3	P5.3	<input checked="" type="checkbox"/>	3	ADC.3	0 / 0.00V L	0.00°C / 32.00°F
4	P3.4	<input type="checkbox"/>	4	P5.4	<input checked="" type="checkbox"/>	4	ADC.4	0 / 0.00V L	0.00°C / 32.00°F
5	P3.5	<input type="checkbox"/>	5	P5.5	<input type="checkbox"/>	5	ADC.5	0 / 0.00V L	0.00°C / 32.00°F
6	P3.6	<input type="checkbox"/>	6	P5.6	<input type="checkbox"/>	6	ADC.6	102 / 1.04V L	20.45°C / 68.81°F
7	P3.7	<input type="checkbox"/>	7	P5.7	<input type="checkbox"/>	7	ADC.7	0 / 0.00V L	0.00°C / 32.00°F
8	P3.8	<input type="checkbox"/>	8	P5.8	<input type="checkbox"/>	8	ADC.8	102 / 1.04V L	20.45°C / 68.81°F

Force External Device Restart

Figure 7.13. I/O Ports Control

P3 and P5 are configurable digital I/O port (0-3.3VDC). It is possible to be configured by the user for its own purposes - digital inputs or outputs.

P6 is an 8-channel 10-bit analog input port. The web page is optimized to show:

- The returned ADC value - from 0 to 1023
- The temperature in C and F (valid only if LM35DZ sensor is connected to JP1)

$$T_c = V_{ref} * \frac{ADCvalue}{1024} * \frac{13.8}{8.2} * 100 [^{\circ}C]$$

- The temperature in F (valid only if LM35DZ sensor is connected to JP1)

$$T_f = \left(V_{ref} * \frac{ADCvalue}{1024} * \frac{13.8}{8.2} * \frac{9}{5} * 100 \right) + 32 [^{\circ}F]$$

- The value from the 0-10V AI port - JP3 (valid when there are not any connected LM35DZ sensors and voltage from 0 to 10.44VDC is supplied to JP3). To convert in voltage, you may use the following formula:

$$U_{jp3} = V_{ref} * \frac{ADCvalue}{1024} * \frac{70.2}{8.2} [V]$$

8. Digital outputs setting priorities

DAEnetIP2 v2 digital outputs can be controlled in the following ways:

- Manual (via SNMP, web browser)
- Using two ICMP monitoring modes
- Analog events

The ICMP monitoring modes have the highest priority. If there is a manual setting request, it will be ignored. If there is analog events setting request, it will be ignored.

The next priority level are the analog events. If there is a manual setting request, it will be ignored as well (but the output will toggle for very small period of time - milliseconds).

The smaller priority has the manual setting control.

9. HTTP API

DAEnetIP2 v2 i/o lines can be controlled/accessed via HTTP API commands and basic access authentication is required to do that.

9.1. Control the digital outputs P3/P5

`http://admin:admin@device.ip.address/iochange.cgi?ref=re-io&01=00&02=FF`

- **admin:admin** - the username:password
- **device.ip.address** - the DAEnetIP2 v2 IP address (by default it is 192.168.1.100)
- **01=00** - the state of P3 DO
- **02=FF** - the state of P5 DO

For example:

`http://admin:admin@192.168.1.100/iochange.cgi?ref=re-io&01=00&02=FF`

9.2. Retrieve the P3/P5/P6 i/o status

`http://admin:admin@device.ip.address/ioreg.js`

it will be received javascript file with several variables and one of them is:

```
var IO=new Array (0xFF, 0xFF, 0x80, 0x00AB, 0x0049, 0x0118, 0x014A, 0x012F, 0x003E,  
0x0029, 0x01DD)
```

Bytes 0 and 1 are the digital I/O states (in hex format)


Bytes 3...10 are the analog inputs values (in hex format)


For example:

`http://admin:admin@192.168.1.100/ioreg.js`

10. SNMP access

DAEnetIP2 v2 supports SNMPv1 protocol – snmpget and snmpset. It may be configured/read all the parameters via these commands. Read-only community string is used for reading and Read-Write Community String is used for changing the parameters. Note that it is not possible using of snmpwalk. Parameters that can be changed are grouped according to their functions in the tables below. To obtain a valid OID number it is necessary to replace the “x” symbol with the prefix “.1.3.6.1.4.1.42505”. Also all the snmp commands are described in the [MIB](#) file. All the functions can be accessed via SNMP and WEB

 During SNMP access, it must be used snmpget and snmpset only to one OID and not to group of OIDs. Other commands (snmpwalk for instance) are not supported.

 Because of the specific of the SNMP protocol supported by **DAEnetIP2 v2** (it is not possible to access several OIDs), the initial setting of IP/MASK/Gateway must be done via Web. Otherwise, the **DAEnetIP2 v2** module may become not reachable, because of the limitation of only one OID accessing per a time via snmp.

10.1. Configuration settings

Table 10.1. Configuration settings

OID	Name	Access	Description	Syntax
x.9.1.1.0	cfgIP	read-write	IP Address of DAEnetIP2 v2 module	IpAddress
x.9.1.2.0	cfgMAC	read-only	MAC address of DAEnetIP2 v2 module	PhysAddress
x.9.1.4.0	cfgPassword	read-write	Read-Write community string (password)	OCTET STRING (SIZE (4..12))
x.9.1.5.0	cfgMACLock1	read-write	MAC address of first remote machine allowed to access DAEnetIP2 v2 module	PhysAddress
x.9.1.6.0	cfgMACLock2	read-write	MAC address of second remote machine allowed to access DAEnetIP2 v2 module	PhysAddress
x.9.1.7.0	cfgPingTime	read-write	The time (in minutes) since last ping request to reboot system and target	INTEGER(0..255)
x.9.1.8.0	cfgVersion	read-only	Firmware version, LSB=VER_MINOR, MSB=VER_MAJOR	INTEGER(0..65535)
x.9.1.9.0	cfgMode	read-write	Contains different bit flags for DAEnetIP2 v2 operating modes: SNMP_access_to_IP_configuration_BIT0	INTEGER(0..255)

			Restart_on_incoming_ping_timeout_BIT4 Restart_TargetRST_BIT6 Disable_Digital_filter_for_ADC_BIT7	
x.9.1.10.0	cfgReset	read-only	Read of this OID causes rest of DAenetIP2 v2 module	INTEGER
x.9.1.11.0	cfgNewMode	read-write	Contains additional bit flags for DAenetIP2 v2 operating modes Save_outputs_at_reboot_BIT0 Reset_IO_ports_on_ping_restart_BIT2 DHCP_client_BIT4 Restart_on_remote_IP_timeout_BIT5 Web_server_enable_BIT6	INTEGER(0..255)
x.9.1.12.0	cfgResetPulse	read-write	Defines the time of the RST pulse, seconds	INTEGER(0..32767)
x.9.1.13.0	cfgResetCount	read-write	Number of consecutive resets to perform when ping timeout is active. Value 255 disables counting.	INTEGER(0..255)
x.9.1.14.0	cfgDefGW	read-write	IP Address of Default Gateway	IpAddress
x.9.1.15.0	cfgNetMask	read-write	IP Network Subnet Mask	IpAddress
x.9.1.16.0	cfgMonitorIP	read-write	Remote IP address to monitor via ICMP echo requests	IpAddress
x.9.1.17.0	cfgReadOnlyPassword	read-write	Read-only community string (password)	OCTET STRING (SIZE (4..12))
x.9.1.18.0	cfgTrapServerIP	read-write	Remote IP address of TRAP manager	IpAddress
x.9.1.19.0	cfgTrapPassword	read-write	Community string for trap messages	OCTET STRING (SIZE (4..12))
x.9.1.20.0	cfgAccessIP	read-write	IP address of network class allowed to access DAenetIP2 v2	IpAddress
x.9.1.21.0	cfgAccessMask	read-write	Mask of network class allowed to access DAenetIP2 v2	IpAddress
x.9.1.22.0	cfgHTTPport	read-write	(fw>=4.094) Defines	

			listen port for Web server. Allowed values 80 and >1024	INTEGER(0..65535)
x.9.1.23.0	cfgSNMPport	read-write	(fw>=4.094) Defines listen port for SNMP server. Allowed values 161 and >1024	INTEGER(0..65535)
x.9.1.25.0	cfgP3Dir	read-write	Bit mask with direction of P3 pins. 1-Output, 0-Input	INTEGER(0..255)
x.9.1.26.0	cfgP5Dir	read-write	Bit mask with direction of P5 pins. 1-Output, 0-Input	INTEGER(0..255)
x.9.1.27.0	cfgPortPullUps	read-write	Disable/Enable pull-ups for P3 and P5 I/O pins. 0-Disable, 1-Enable	INTEGER(0..1)
x.9.1.29.0	cfgP5DupRST	read-write	Bit mask showing on which P5 pins to duplicate TargetRST signal. Pins must be outputs in cfgP5Dir. Available from v.4.097	INTEGER(0..255)
x.9.1.30.0	cfgDefault	read-only	Reading this OID will load factory default settings of DAEnetIP2 v2 and restart DAEnetIP2 v2 .	INTEGER
x.9.1.31.0	cfgDigitalInput sFilter	read-write	Digital Inputs Filter (0..200), ms. Value 0 disables the filter.	INTEGER (0..200)
x.9.1.32.0	cfgAnalogInput sFilter	read-write	Analog Inputs Filter (0..30), sec. Value 0 disables the filter.	INTEGER (0..30)

10.2. Analog traps

Table 10.2. Analog traps

OID	Name	Access	Description	Syntax
x.9.1.122.1.0	atrPin1Low	read-write	Pin low threshold	INTEGER(0..1023)
x.9.1.122.2.0	atrPin1High	read-write	Pin high threshold	INTEGER(0..1023)
x.9.1.122.3.0	atrPin2Low	read-write	Pin low threshold	INTEGER(0..1023)
x.9.1.122.4.0	atrPin2High	read-write	Pin high threshold	INTEGER(0..1023)
x.9.1.122.5.0	atrPin3Low	read-write	Pin low threshold	INTEGER(0..1023)
x.9.1.122.6.0	atrPin3High	read-write	Pin high threshold	INTEGER(0..1023)
x.9.1.122.7.0	atrPin4Low	read-write	Pin low threshold	INTEGER(0..1023)
x.9.1.122.8.0	atrPin4High	read-write	Pin high threshold	INTEGER(0..1023)
x.9.1.122.9.0	atrPin5Low	read-write	Pin low threshold	INTEGER(0..1023)

x.9.1.122.10.0	atrPin5High	read-write	Pin high threshold	INTEGER(0..1023)
x.9.1.122.11.0	atrPin6Low	read-write	Pin low threshold	INTEGER(0..1023)
x.9.1.122.12.0	atrPin6High	read-write	Pin high threshold	INTEGER(0..1023)
x.9.1.122.13.0	atrPin7Low	read-write	Pin low threshold	INTEGER(0..1023)
x.9.1.122.14.0	atrPin7High	read-write	Pin high threshold	INTEGER(0..1023)
x.9.1.122.15.0	atrPin8Low	read-write	Pin low threshold	INTEGER(0..1023)
x.9.1.122.16.0	atrPin8High	read-write	Pin high threshold	INTEGER(0..1023)

10.3. Analog-to-P5 Events

Table 10.3. Analog-to-P5 Events

OID	Name	Access	Description	Syntax
x.9.1.121.1.0	aevPin1	read-write	Defines reaction on respective P5 output pin when voltage is compared to thresholds	INTEGER { None(0), Low(1), High(2), LowHigh(3), Acc(4) }
x.9.1.121.2.0	aevPin2	read-write	Defines reaction on respective P5 output pin when voltage is compared to thresholds	INTEGER { None(0), Low(1), High(2), LowHigh(3), Acc(4) }
x.9.1.121.3.0	aevPin3	read-write	Defines reaction on respective P5 output pin when voltage is compared to thresholds	INTEGER { None(0), Low(1), High(2), LowHigh(3), Acc(4) }
x.9.1.121.4.0	aevPin4	read-write	Defines reaction on respective P5 output pin when voltage is compared to thresholds	INTEGER { None(0), Low(1), High(2), LowHigh(3), Acc(4) }
x.9.1.121.5.0	aevPin5	read-write	Defines reaction on respective P5 output pin when voltage is compared to thresholds	INTEGER { None(0), Low(1), High(2), LowHigh(3), Acc(4) }
x.9.1.121.6.0	aevPin6	read-write	Defines reaction on respective P5 output pin when voltage is compared to thresholds	INTEGER { None(0), Low(1), High(2), LowHigh(3), Acc(4) }
x.9.1.121.7.0	aevPin7	read-write	Defines reaction on respective P5 output pin when voltage is compared to thresholds	INTEGER { None(0), Low(1), High(2), LowHigh(3), Acc(4) }
x.9.1.121.8.0	aevPin8	read-write	Defines reaction on respective P5 output	INTEGER { None(0), Low(1), High(2), LowHigh(3), Acc(4) }

			pin when voltage is compared to thresholds	
x.9.1.121.9.0	aevPin1Inv	read-write	Invert respective pin for P5 on analog event	INTEGER { None(0), Inverted(1) }
x.9.1.121.10.0	aevPin2Inv	read-write	Invert respective pin for P5 on analog event	INTEGER { None(0), Inverted(1) }
x.9.1.121.11.0	aevPin3Inv	read-write	Invert respective pin for P5 on analog event	INTEGER { None(0), Inverted(1) }
x.9.1.121.12.0	aevPin4Inv	read-write	Invert respective pin for P5 on analog event	INTEGER { None(0), Inverted(1) }
x.9.1.121.13.0	aevPin5Inv	read-write	Invert respective pin for P5 on analog event	INTEGER { None(0), Inverted(1) }
x.9.1.121.14.0	aevPin6Inv	read-write	Invert respective pin for P5 on analog event	INTEGER { None(0), Inverted(1) }
x.9.1.121.15.0	aevPin7Inv	read-write	Invert respective pin for P5 on analog event	INTEGER { None(0), Inverted(1) }
x.9.1.121.16.0	aevPin8Inv	read-write	Invert respective pin for P5 on analog event	INTEGER { None(0), Inverted(1) }

10.4. Control port P3 (Digital outputs)

Table 10.4. Control port P3

OID	Name	Access	Description	Syntax
x.9.2.1.1.0	pctrlP3pin1	read-write	Port3 pin1 data	INTEGER { High(1), Low(0) }
x.9.2.1.2.0	pctrlP3pin2	read-write	Port3 pin2 data	INTEGER { High(1), Low(0) }
x.9.2.1.3.0	pctrlP3pin3	read-write	Port3 pin3 data	INTEGER { High(1), Low(0) }
x.9.2.1.4.0	pctrlP3pin4	read-write	Port3 pin4 data	INTEGER { High(1), Low(0) }
x.9.2.1.5.0	pctrlP3pin5	read-write	Port3 pin5 data	INTEGER { High(1), Low(0) }
x.9.2.1.6.0	pctrlP3pin6	read-write	Port3 pin6 data	INTEGER { High(1), Low(0) }
x.9.2.1.7.0	pctrlP3pin7	read-write	Port3 pin7 data	INTEGER { High(1), Low(0) }
x.9.2.1.8.0	pctrlP3pin8	read-write	Port3 pin8 data	INTEGER { High(1), Low(0) }
x.9.2.1.33.0	pctrlP3byte	read-write	I/O port data as single	INTEGER(0..255)

			byte	
--	--	--	------	--

10.5. Control port P5 (Digital outputs)

Table 10.5. Control port P5

OID	Name	Access	Description	Syntax
x.9.2.2.1.0	pctrlP5pin1	read-write	Port5 pin1 data	INTEGER { High(1), Low(0) }
x.9.2.2.2.0	pctrlP5pin2	read-write	Port5 pin2 data	INTEGER { High(1), Low(0) }
x.9.2.2.3.0	pctrlP5pin3	read-write	Port5 pin3 data	INTEGER { High(1), Low(0) }
x.9.2.2.4.0	pctrlP5pin4	read-write	Port5 pin4 data	INTEGER { High(1), Low(0) }
x.9.2.2.5.0	pctrlP5pin5	read-write	Port5 pin5 data	INTEGER { High(1), Low(0) }
x.9.2.2.6.0	pctrlP5pin6	read-write	Port5 pin6 data	INTEGER { High(1), Low(0) }
x.9.2.2.7.0	pctrlP5pin7	read-write	Port5 pin7 data	INTEGER { High(1), Low(0) }
x.9.2.2.8.0	pctrlP5pin8	read-write	Port5 pin8 data	INTEGER { High(1), Low(0) }
x.9.2.2.33.0	pctrlP5byte	read-write	I/O port data as single byte	INTEGER(0..255)

10.6. Returned values are from 10bit Analog to Digital Converter

Table 10.6. Returned values from ADC

OID	Name	Access	Description	Syntax
x.9.2.3.1.0	pctrlP6pin1	read-only	ADC Channel 1	INTEGER(0..1023)
x.9.2.3.2.0	pctrlP6pin2	read-only	ADC Channel 2	INTEGER(0..1023)
x.9.2.3.3.0	pctrlP6pin3	read-only	ADC Channel 3	INTEGER(0..1023)
x.9.2.3.4.0	pctrlP6pin4	read-only	ADC Channel 4	INTEGER(0..1023)
x.9.2.3.5.0	pctrlP6pin5	read-only	ADC Channel 5	INTEGER(0..1023)
x.9.2.3.6.0	pctrlP6pin6	read-only	ADC Channel 6	INTEGER(0..1023)
x.9.2.3.7.0	pctrlP6pin7	read-only	ADC Channel 7	INTEGER(0..1023)
x.9.2.3.8.0	pctrlP6pin8	read-only	ADC Channel 8	INTEGER(0..1023)

11. Appendix 1. Power supply

The power supply of the *DAEnetIP2 Eight Relay Module (LM35DZ)* may be selected during purchase - **12VDC** or **24VDC**.

Other supply voltages may damage the device!

The voltage polarity is tip "center positive"!

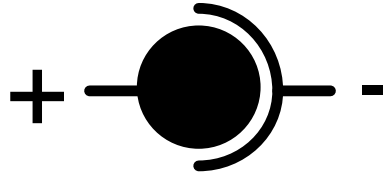


Figure 11.1. Power supply polarity

The device does not protection against reverse polarity voltage!

12. Appendix 4. Port forwarding - for advanced users

This appendix describes how to access the **DAEnetIP2 v2** over the Internet. The demonstration is done with router "TP-Link **TL-WR340G**", but it may be done with any other router supporting "Port Forwarding" function. Bellow are given the steps you have to go through to make "Port Forwarding".

1. Adjust **DAEnetIP2 v2** network ports. These ports are:
 - SNMP port, by default 161
 - HTTP port, by default 80

DAEnetIP2 v2 will accept any valid integer number for port >1025 and <65535. Port numbers from 0 to 1024 will be accepted as 161. The same is with port 80.

Let's say we would like to adjust for example:

- Port 10080 for HTTP
- Port 10161 for SNMP

This may easily be done from the **DAEnetIP2 v2** web server -> Setup page

2. These ports must be set in the forwarding rules inside the router as it is shown on the figure bellow

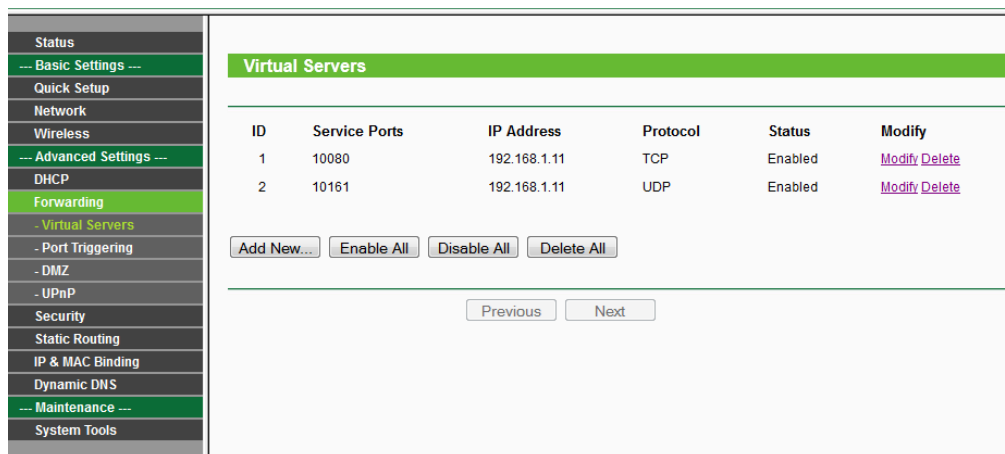


Figure 12.1. Port forwarding

The IP address 192.168.1.11 is actually the internal address of the **DAEnetIP2 v2**.

3. Now it is possible to access the **DAEnetIP2 v2** from everywhere outside the LAN (including over the Internet).

xxx.xxx.xxx.xxx:10080 - is the web server of the module

snmpget -v1 -c 000000000000 xxx.xxx.xxx.xxx:10161 .1.3.6.1.4.1.42505.9.1.1.0 - snmp command for accessing the module (get the IP)

xxx.xxx.xxx.xxx - the public IP of the router or it's DNS name.

Good online guide for port-forwarding is the bellow link:

http://portforward.com/english/routers/port_forwarding/

13. Appendix 5. Software

13.1. Denkovi Software

We provide several application that may be used for testing, demonstrations, configurations and very simple automation projects.

13.1.1. DRM Software

Denkovi Relay Manager (DRM) is universal software for easy controlling all kinds of Denkovi USB, VCP and SNMP and TCP/IP relay boards.

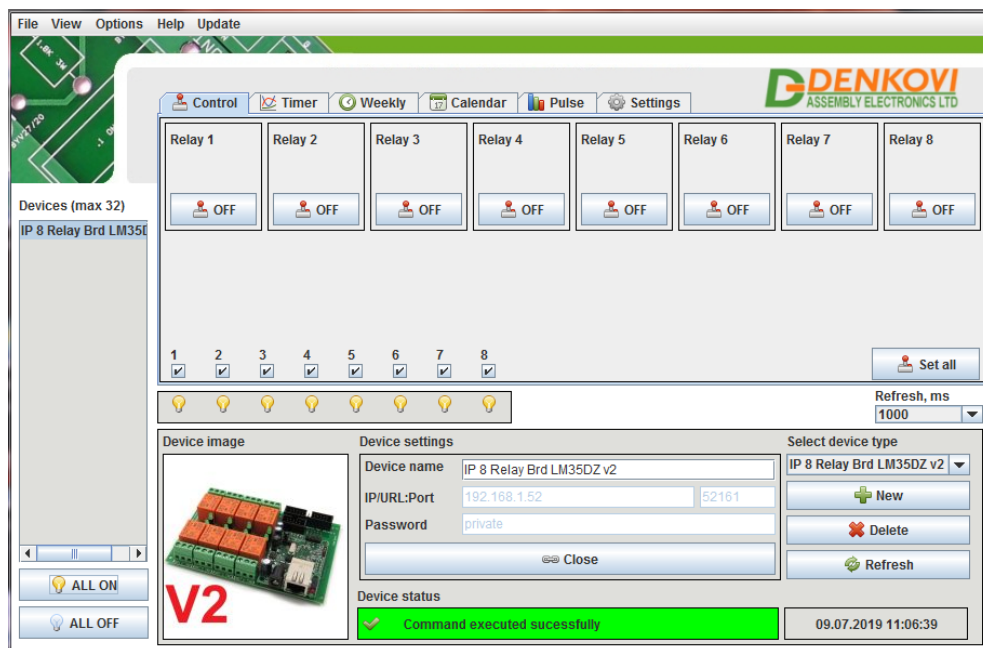


Figure 13.1. DRM software

Download link - [here](#)
Software web page - [here](#)

If the device **DAEnetIP2 Eight Relay Module (LM35DZ)** is not listed, you may use **8 Relay Brd SNMP - v2**. Note also that this software does not read the I/O states or sensors values of the device, it just control the relays.

Software web page - [here](#)

13.1.2. Mobile apps

It is possible to access the module from our DAE-aModules app (android) and DAE-iModules app (iOS)

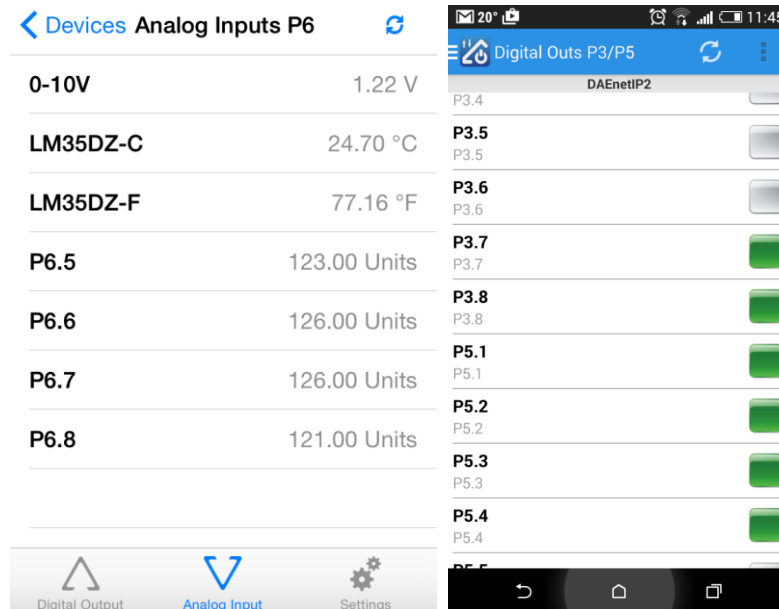


Figure 13.2. Mobile applications

13.2. Control from command line

13.2.1. Windows

Net-snmp is command line tool for accessing SNMP based network devices under windows console. By default it is not included in Windows OS. **DAEnetIP2 v2** can be easily accessed by the net-snmp tool. This is very useful when the snmp commands must be executed from batch file for example.

Bellow are the steps for installing **net-snmp** tool on windows OS.

1. Download the last version net-snmp binary for windows from <http://net-snmp.sourceforge.net/download>. The file must look like net-snmp-X.X.X.X-X.win32.exe
2. Install the downloaded file. Leave the default options. The packet will be install in c:\usr by default.
3. Download the **DAEnetIP2 v2** MIB file from [here](#)
4. Copy the mib file here c:\usr\share\snmp\mibs
5. Add new line in the file c:\usr\etc\snmp\snmp.conf with the "mibs all" directive.
6. Now you can test different commands for OID access, supported by this module. Their names you may see in the **DAEnetIP2 v2.mib** file.

A simple test may be done to be sure if the tool is installed successfully:

run->cmd->

snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.1.1.0

answer: SNMPv2-SMI::enterprises.19865.1.1.1.0 = IpAddress: 192.168.1.100

For creating batch files, you may use the following steps:

1. Open new file and save it as ON.bat
2. Enter the following code:

```
snmpset -v1 -c private 192.168.1.100 .1.3.6.1.4.1.42505.9.2.2.1.0 i 0  
PING 1.1.1.1 -n 1 -w 5000  
snmpset -v1 -c private 192.168.1.100 .1.3.6.1.4.1.42505.9.2.2.1.0 i 1
```

1. Save the file
2. Run it.

13.2.2. Linux

Usually most of Linux OS come with snmp tool installed.

1. To check out if snmp is installed, just open one terminal and type:

```
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.1.1.0  
(Of course with your network settings)
```

If you get some message like this: "snmp is not function" or "snmp not found", it seems that snmp is not installed and you have to follow the hints that the command line gives you. After that repeat step 1.

2. Create bash file for example ON.vim and enter the following commands in it:

```
#!/bin/bash  
snmpset -v1 -c private 192.168.1.100 .1.3.6.1.4.1.42505.9.2.2.1.0 i 0  
sleep 5s  
snmpset -v1 -c private 192.168.1.100 .1.3.6.1.4.1.42505.9.2.2.1.0 i 1
```

3. Save the file
4. Run it.

13.2.3. Example commands

- SNMPGET examples

Get DAEnetIP2 v2 IP address

```
snmpget -v1 -c 000000000000 192.168.1.100 Denkovi.DAEnetIP2 v2.Configuration.cfgIP.0  
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.1.1.0
```

Get the MAC Address

```
snmpget -v1 -c 000000000000 192.168.1.100 Denkovi.DAEnetIP2 v2.Configuration.cfgMAC.0  
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.1.2.0
```

Get P6.1 - This will read analog input 1 level. The result is from 0 up to 1023.

```
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.2.3.1.0
```

Get P6.8 This will read analog input 8 level. The result is from 0 up to 1023.

```
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.2.3.8.0
```

Get the whole P6 (This will return a byte number. Each bit is converted analog input value. This can be used for digital inputs reading of P6)

```
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.2.3.33.0
```

Get P3.1 - This will read digital output P3.1 level

```
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.2.1.1.0
```

Get P3.8 - This will read digital output P3.8 level

```
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.2.1.8.0
```

Get the whole P3

```
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.2.1.33.0
```

Get P5.1 - This will read digital output P5.1 level

```
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.2.2.1.0
```

Get P5.8 - This will read digital output P5.8 level

```
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.2.2.8.0
```

Get the whole P5

```
snmpget -v1 -c 000000000000 192.168.1.100 .1.3.6.1.4.1.42505.9.2.2.33.0
```

- **SNMPSET examples**

Set DAEnetIP2 v2 IP address

```
snmpset -v1 -c private 192.168.1.100 Denkov.DAEnetIP2 v2.Configuration.cfgIP.0 a 172.16.100.3
```

```
snmpset -v1 -c private 172.16.100.3 .1.3.6.1.4.1.42505.9.1.1.0 a 172.16.100.3
```

Set P3.1 - This will set pin 1 from digital output port P3 in '0' (Low level)

```
snmpset -v1 -c private 192.168.1.100 .1.3.6.1.4.1.42505.9.2.1.1.0 i 0
```

Set P3.8 - This will set pin 1 from digital output port P3 in '1' (High level)

```
snmpset -v1 -c private 192.168.1.100 .1.3.6.1.4.1.42505.9.2.1.8.0 i 1
```

Set the whole P3 - This will set all the 8 pins from digital output port P3 in '1'

```
snmpset -v1 -c private 192.168.1.100 .1.3.6.1.4.1.42505.9.2.1.33.0 i 255
```

Set P5.1 - This will set pin 1 from digital output port P5 in '0' (Low level)

```
snmpset -v1 -c private 192.168.1.100 .1.3.6.1.4.1.42505.9.2.2.1.0 i 0
```

Set P5.8 - This will set pin 1 from digital output port P5 in '1' (High level)

```
snmpset -v1 -c private 192.168.1.100 .1.3.6.1.4.1.42505.9.2.2.8.0 i 1
```

Set the whole P5 - This will set all the 8 pins from digital output port P5 in '1'

```
snmpset -v1 -c private 192.168.1.100 .1.3.6.1.4.1.42505.9.2.2.33.0 i 255
```

13.3. Appendix 6. Software examples

Software examples can be found on this [link](#)

13.4. Third Party Software

Since **DAEnetIP2 v2** supports SNMPv1 and HTTP API protocols, it is possible to be integrated in third party applications like:

13.4.1. Domoticz

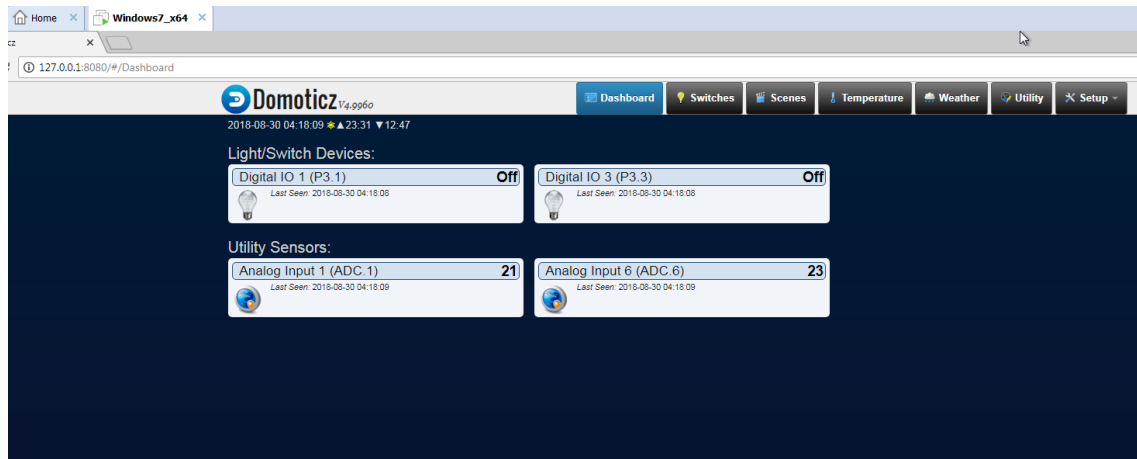


Figure 13.3. Domoticz

13.4.1. OpenHAB

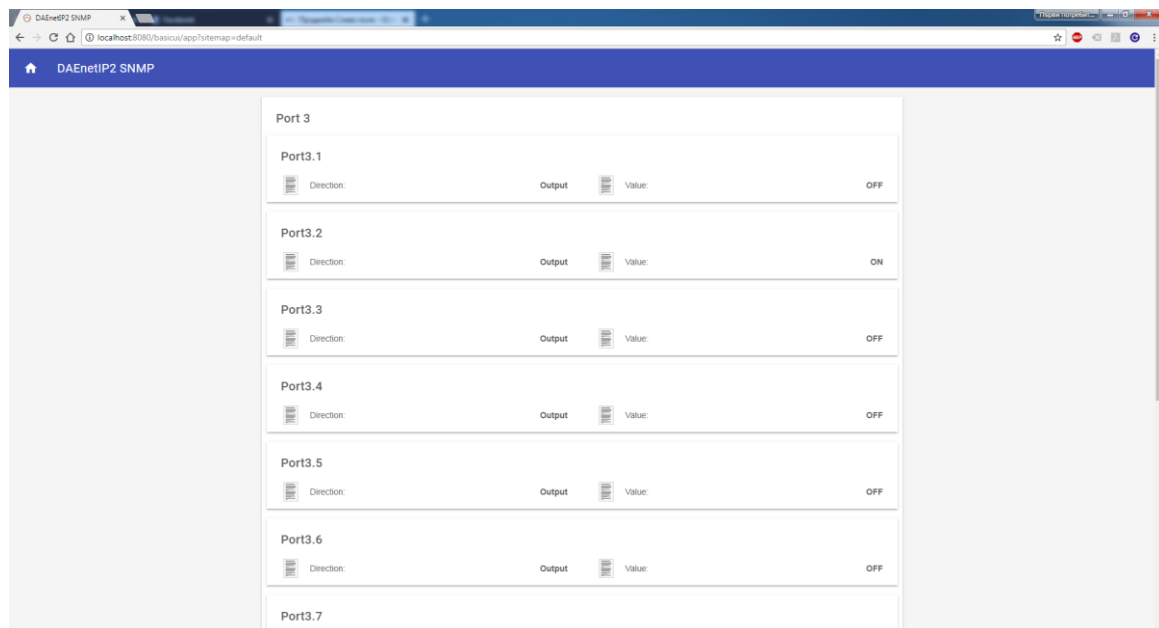


Figure 13.4. OpenHAB

13.4.2. Node-RED

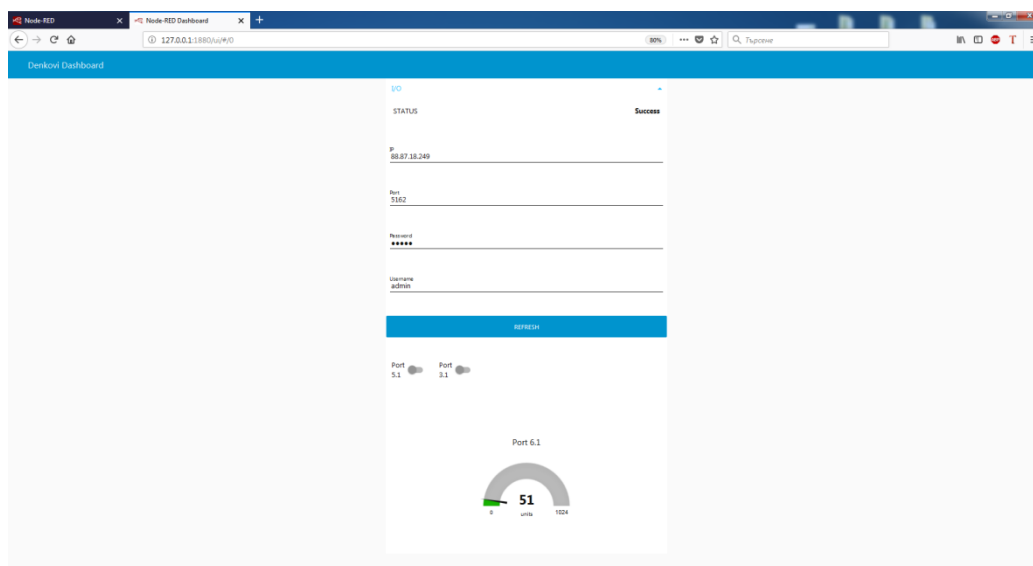


Figure 13.5. Node-RED

14. Appendix 9. Digital I/O ports (P3/P5)

This section describes how to use **DAEnetIP2 v2** P3/P5 - 8 bit TTL IO port lines. **They are not buffered and you should very carefully otherwise the MCU could be damaged.** They are digital inputs/outputs. The output level voltage is "1" (3.3VDC) or "0" (0.25VDC) with consumption < 1.5mA. All inputs/outputs have protection diodes to GND and +3.3VDC.

Below are given sample examples of I/O ports connections to external devices. The first figure shows how to connect digital output to 12V relay. The second shows example for 5V TTL signal input. R2 is recommend because sometimes the input signals are 'tri-state'.

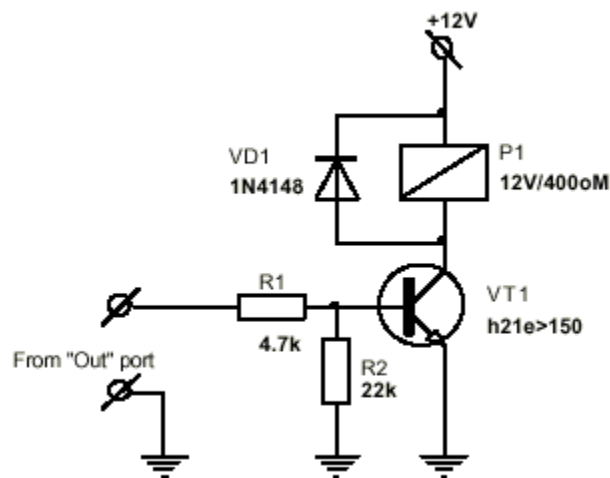


Figure 14.1. Connecting relay to digital output

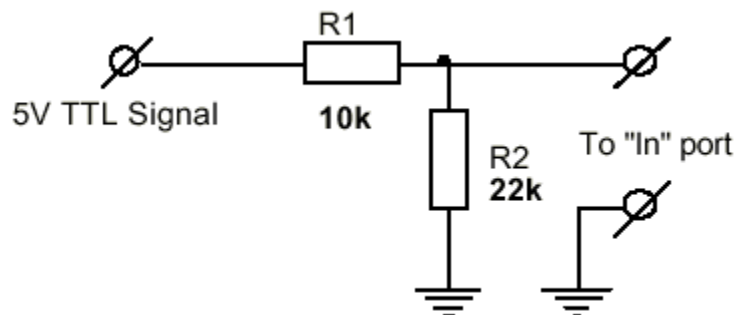


Figure 14.2. Using digital I/O pin as input

15. Appendix 4. LM35DZ sensor connection

Bellow it is shown the internal connections between the extended ports (JP1, JP3) of the module and the DAEnetIP2 P6 pins.

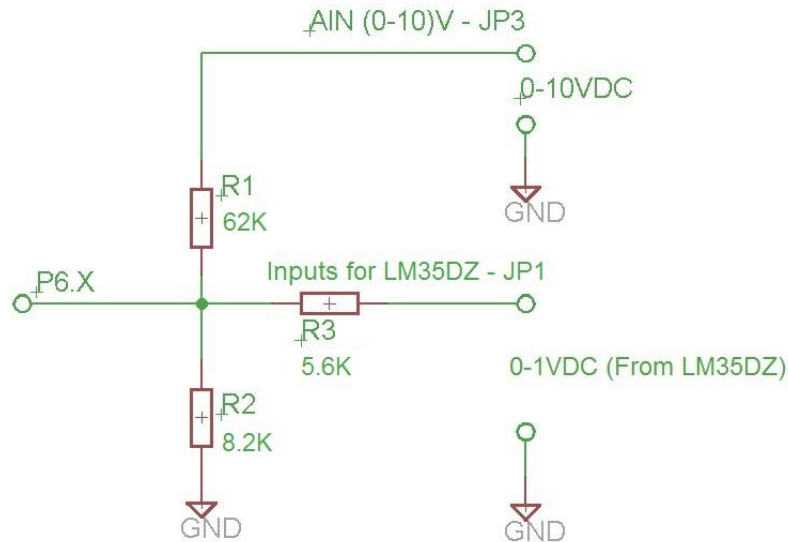


Figure 15.1. Internal connection of DAEnetIP2-P6 to JP1 and JP3 (All used resistors are with **+5% tolerance**)

The DAEnetIP2 ADC is with 10 bit resolution and $V_{ref}=1.22VDC$. This allows you temperature measurement with resolution about 5 division per degree.

To connect LM35DZ sensor to **DAEnetIP2 Eight Relay Module (LM35DZ)**, you have to use the shown bellow schematic:

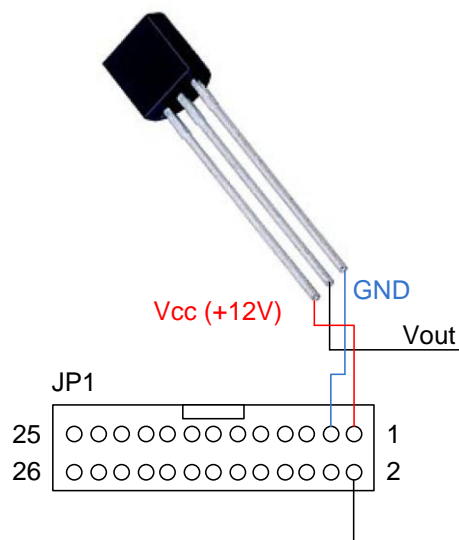


Figure 15.2. How to connect LM35DZ to JP1

Here it is shown example only for the first analog channel. Keeping in mind the JP1 pins shown on **Figure 15.2** you may connect the rest 7 LM35DZ sensors the same way.

16. Appendix 12. Mechanical drawing

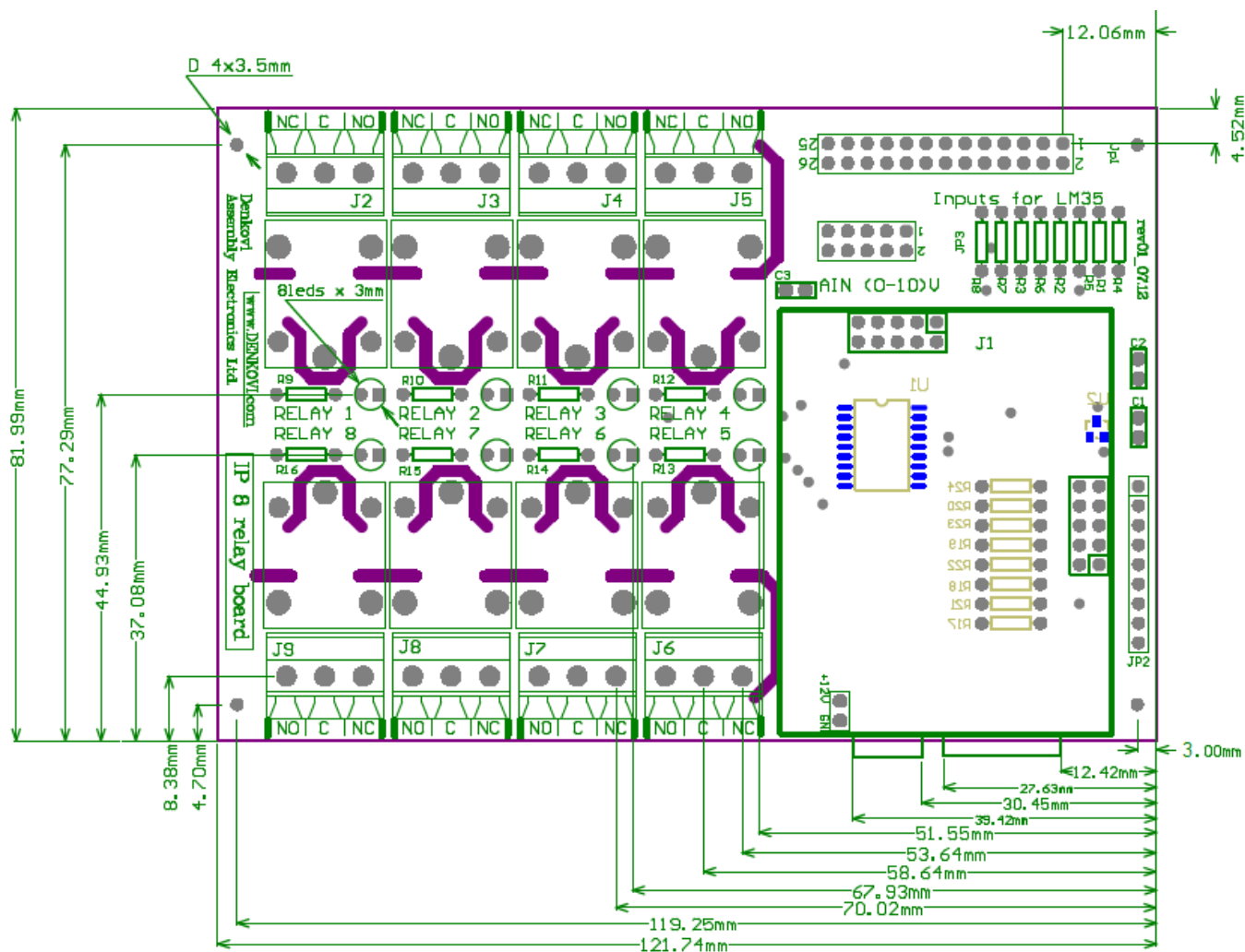


Figure 16.1. Mechanical drawing

17. Disclaimer

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