DAEnetIP1

User Manual
Date: 17 Jan 2014

Content

1. Features

DAEnetIP1 is multifunctional Ethernet IP controller for management and control. It could be used for industrial and home automation, access control, fire and security systems or embedding in other systems. It is suitable also for controlling relay boards and tracking different sensors via internet.

- 10/100 Full duplex Ethernet interface
- Auto MDIX
- Power supply 12VDC / 200mA
- 8 x analog inputs with 10 bit resolution (0-2.5VDC) with pull-down resistors
- 8 + 4 digital outputs (0-3.3VDC)
- 8 x configurable digital I/O port (0-3.3VDC)
- Standart protocols: ARP, IP, ICMP (ping), DHCP
- Supports snmp v1 (snmpset, snmpget, snmptrap), HTTP (web server with autorization) , TFTP (for firmware upgrade)
- Port for SNMP (161) can be changed
- It can be configured with SNMP requests or web browser
- Integrated WEB server for all functions/parameters access
- Reset of the digital outputs on incoming/outgoing ping timeout
- Function "load outputs states from EEPROM on boot"
- Each I/O line can be named by user via web browser/snmp
- It can send traps according analog ADC level
- An analog input may be referred to control a digital output according its input level
- Onboard temperature sensor
- Working temperature from 0 to +70 Celsius
- Storage temperature from -40 to +125 Celsius
- Humidity from 10% to 80% non-condensing

2. Technical Parameters

Table 1. Technical parameters

Parameter	Value
Size	85x44mm
Power supply voltage	12 VDC
Digital I/O count	8 (0-3.3V) (JP2)
Analog inputs count	8 (10bit ADC, Vref=2.5V) (JP4)
Digital output count	8(JP1)+4(JP3)
Default settings jumper	Yes
LED (Link, Voltage Control, Power On)	Yes
Save I/O states	Yes
DHCP	Yes
Network parameters	IP/Mask/Default gateway
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
TFTP client for remote firmware update	Yes
Command for TFTP update (Web,SNMP)	Yes
Enable/Disable TFTP update	Yes

3. Application examples

- Security and fire alarm systems
- Manual or automatic device restart if event occur
- Management/monitoring for industrials
- Sensor information processing
- Home Automation
- Integration in other devices and systems

4. Default Settings

4.1. Table with default settings

Table 2. Default settings

Parameter	Value
IP	192.168.0.100
Netmask	255.255.255.0
Default Gateway	192.168.0.1
DHCP	disabled
Web username / password	admin/admin
SNMP community	private
SNMP port	161
HTTP port	80 (fixed)
SNMP traps port	162 (fixed)

4.2. Steps for loading default (factory) settings

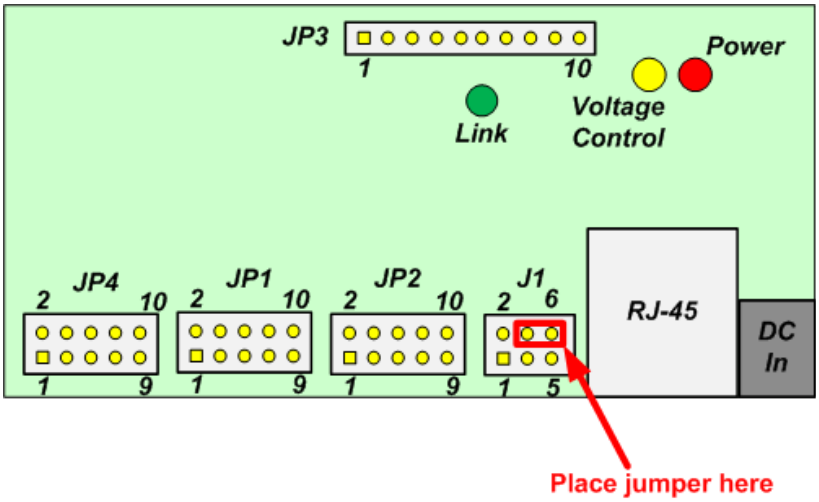

Figure 1. DAEnetIP1 jumper for default settings

- power off the device
- place jumper on J1 pin 4 and 6 (shown on figure...)
- power on the device and wait around 40 seconds
- power off the device
- remove the jumper
- power on the device

Note if DAEnetIP1 is sold with combination of relay boards then this jumper (J1) is hidden. In this case the kit must be disassembled first in order to access the jumper J1.

5. Connectors and ports (interfaces)

5.1. DAEnetIP1 ports

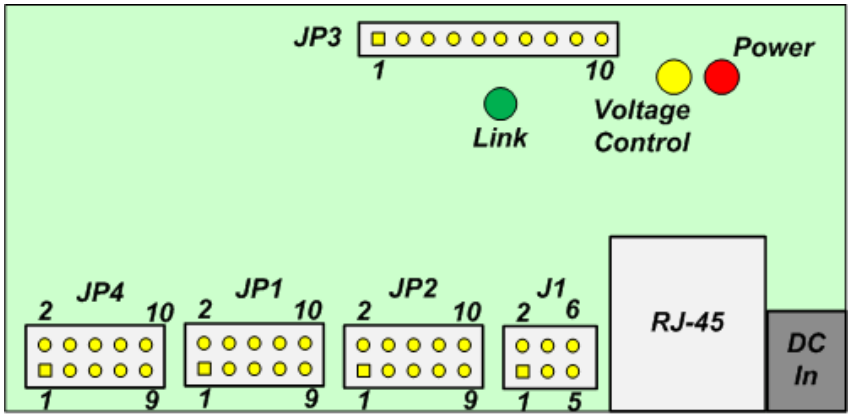

Figure 2. DAEnetIP1 ports

First pin on every pin header group is marked with square at the bottom and with triangle at the top silk screen.

5.2. DAEnetIP1 ports description

Table 3. Digital outputs port JP1

Pin N	Bit	Function	Direction	Pull-up	Buffer
1	0	GPO	OUT	3v3/4k7	100 ohm
2	1	GPO	OUT	3v3/4k7	100 ohm
3	2	GPO	OUT	3v3/4k7	100 ohm
4	3	GPO	OUT	3v3/4k7	100 ohm
5	4	GPO	OUT	3v3/4k7	100 ohm
6	5	GPO	OUT	3v3/4k7	100 ohm
7	6	GPO	OUT	3v3/4k7	100 ohm
8	7	GPO	OUT	3v3/4k7	100 ohm
9	-	GND	-	-	-
10	-	3V3	-	-	-

Table 4. Digital inputs/outputs port JP2

Pin N	Bit	Function	Direction	Pull-up	Buffer
1	0	GPIO	IN/OUT	3v3/4k7	100 ohm
2	1	GPIO	IN/OUT	3v3/4k7	100 ohm
3	2	GPIO	IN/OUT	3v3/4k7	100 ohm
4	3	GPIO	IN/OUT	3v3/4k7	100 ohm
5	4	GPIO	IN/OUT	3v3/4k7	100 ohm
6	5	GPIO	IN/OUT	3v3/4k7	100 ohm
7	6	GPIO	IN/OUT	3v3/4k7	100 ohm
8	7	GPIO	IN/OUT	3v3/4k7	100 ohm
9	-	GND	-	-	-
1	0	GPIO	IN/OUT	3v3/4k7	100 ohm

Table 5. Digital outputs port JP3

Pin N	Bit	Function	Direction	Pull-up	Buffer
1	0	GPO	OUT	3v3/2k2	-
2	1	GPO	OUT	3v3/2k2	-
3	2	GPO	OUT	3v3/2k2	-
4	3	GPO	OUT	3v3/2k2	-
5	-	PWR_EN	OUT	-	-
6	-	Vin	OUT	-	-
7	-	Vin	OUT	-	-
8	-	GND	-	-	-
9	-	GND	-	-	-
10	-	GND	-	-	-

Table 6. Analog Inputs port JP4

Pin N	Bit	Function	Direction	Pull-up	Buffer
1	0	Channel0	AIN	-	-
2	1	Channel1	AIN	-	-
3	2	Channel2	AIN	-	-
4	3	Channel3	AIN	-	-
5	4	Channel4	AIN	-	-
6	5	Channel5	AIN	-	-
7	6	Channel6	AIN	-	-
8	7	Channel7	AIN	-	-
9	-	GND	-	-	-
10	-	+2.5V (Vref)	-	-	-

Legend:

- "IN" – the pin is digital input
- "OUT" – the pin is digital output
- "IN/OUT" – the pin is digital input or output depending the settings
- "IN" – analog input

The maximum current for the outputs is 4mA.

6. Web access

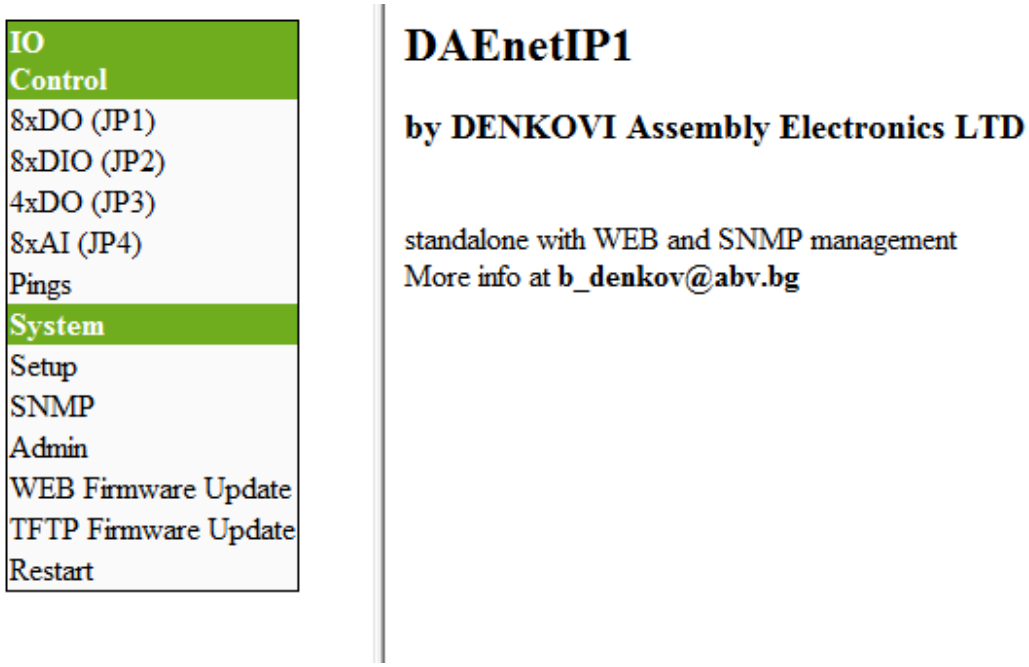

Figure 3. Web access

It is possible to configure DAEnetIP1 via IE, Chrome, Mozilla or other browser.
The browser must support JavaScript and cookies must be enabled. There is username and password preventing unauthorized login. The http server's port is fixed - always 80.

6.1. Digital outputs port JP1

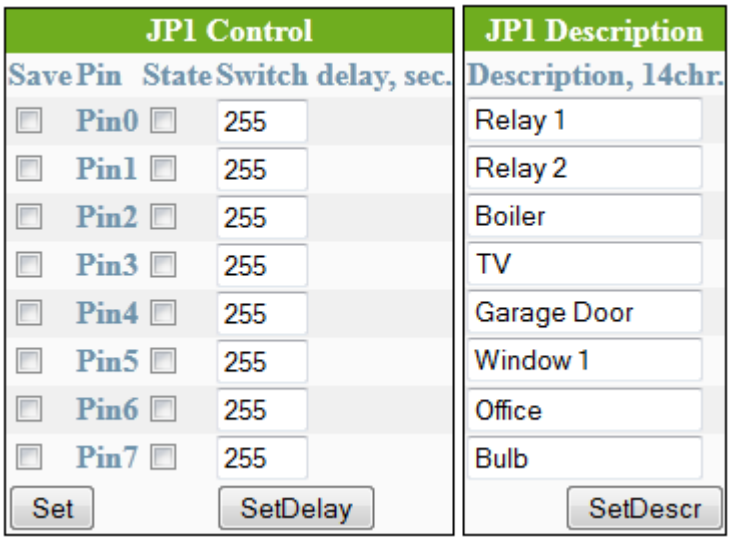

Figure 4. JP1 settings

JP1 is 8 bit digital output port.

- **Save** – Save current pin settings in the EEPROM. When this parameter is checked (enabled), this means the states will be saved each time when they are changed, however because the EEPROM has limit erase/write cycle count (1 000 000), this is not recommend to be used for fast changing states applications. See also **Switch Delay**.
- **Pin** – JP1 pin number (from 0 up to 7)
- **State** – Current pin state. Checked - 1 (High Level, 3.3V), not checked - 0 (Low Level, 0V).
- **Switch Delay** – Delay in seconds for reverts pin state (sec). This is the delay used for so called hardware pulse function. **Must be zero, before saving pin state!**
- **Description** – Up to 14 symbols description.

After some values are changed, press corresponding button:

- If **Initial Delay** is with value between **1 and 254** and if the pin state was changed then the pin will revert in the original state after the defined delay in seconds.
- If **Initial Delay** is set, after DAEnetIP1 boot-up the pin will change his state after the defined delay in seconds.
- Pin with **Initial Delay** 0, will **immediately** change its state without revert to original.

6.2. Digital inputs/outputs port JP2

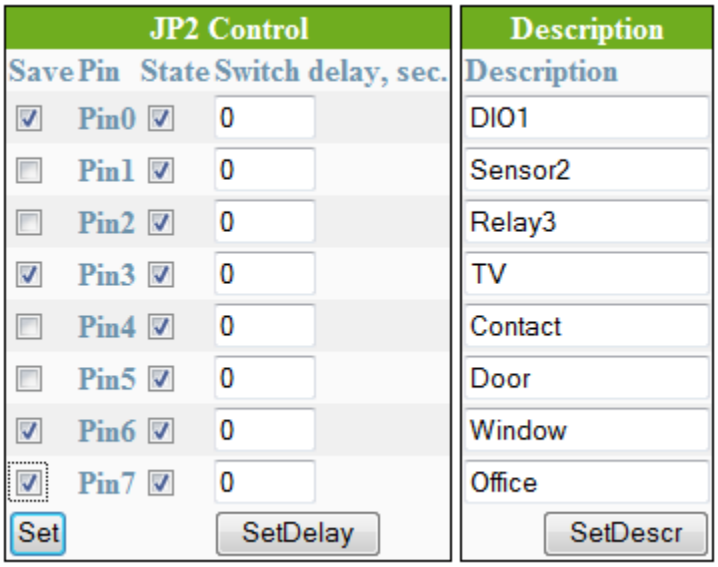

Figure 5. JP2 settings

JP2 is 8 bit digital inputs/outputs port. However via web it is possible to use only the digital outputs. The digital inputs are accessible only via snmp.

- **Save** – Save current pin settings in the EEPROM. When this parameter is checked (enabled), this means the states will be saved each time when they are changed, however because the EEPROM has limit erase/write cycle count (1 000 000), this is not recommend to be used for fast changing states applications. See also **Switch Delay**.
- **Pin** – JP1 pin number (from 0 up to 7)
- **State** – Current pin state. Checked - 1 (High Level, 3.3V), not checked - 0 (Low Level, 0V).
- **Switch Delay** – Delay in seconds for reverts pin state (sec). This is the delay used for so called hardware pulse function. **Must be zero, before saving pin state!**
- **Description** – Up to 14 symbols description.

After some values are changed, press corresponding button:

- If **Initial Delay** is with value between **1 and 254** and if the pin state was changed then the pin will revert in the original state after the defined delay in seconds.
- If **Initial Delay** is set, after DAEnetIP1 boot-up the pin will change his state after the defined delay in seconds.
- Pin with **Initial Delay** 0, will **immediately** change its state without revert to original.

6.3. Digital outputs port JP3

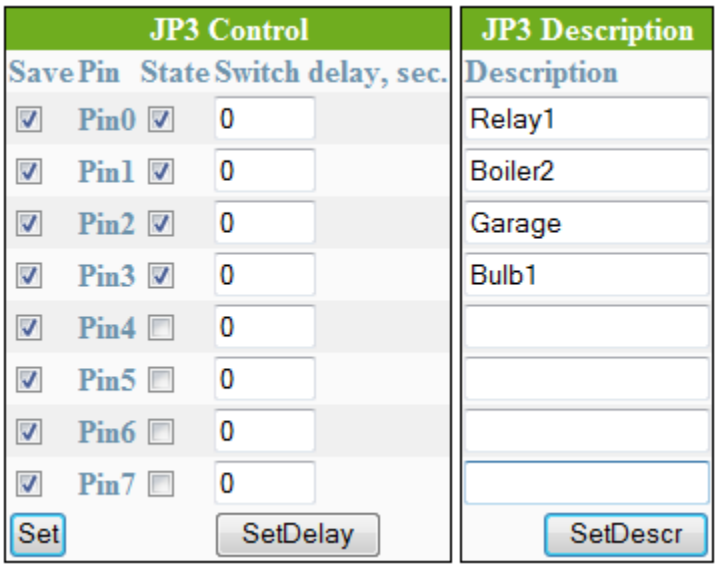

Figure 6. JP3 settings

JP3 is 4 bit digital output port each with 2.2K pull-up resistor connected to 3.3V. From the web interface, the corresponding pins are **Pin0 - Pin3**. The other pins are not used. The management rules are same as JP1 and JP2 management.

6.4. Analog inputs port JP4

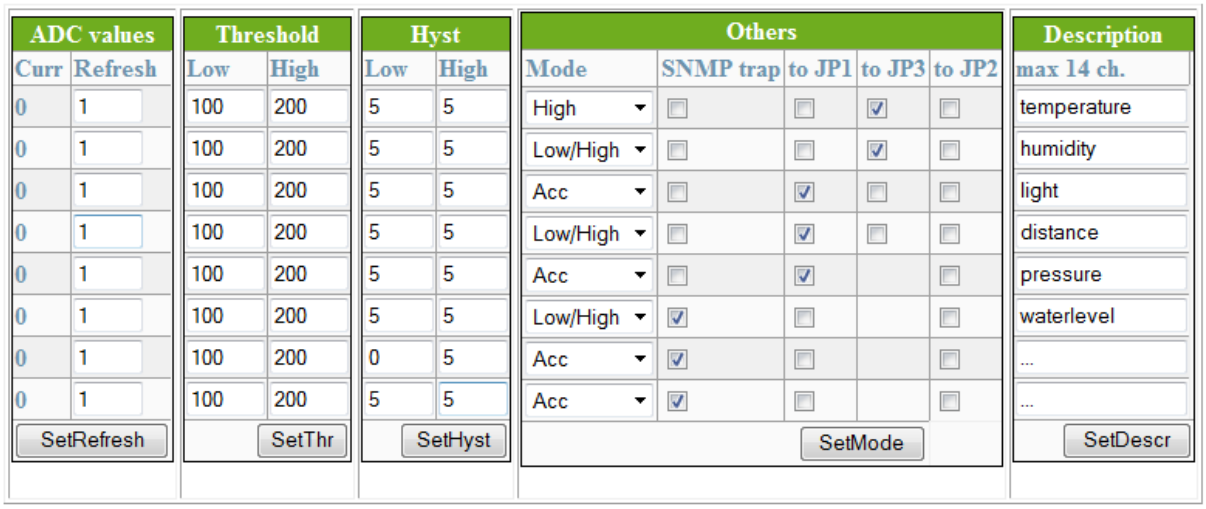

Figure 7. JP4 settings

DAEnetIP1 have 8 channel ADC port (JP4) with 2.5VDC refferent voltage. Each ADC channel has 1 MOhm pull-down resistor connected to GND:

- **Curr** - current value measured from the channel (0 to 1023)
- **Refresh** - read frequency (1=**100ms**)
- **Threshold (low/high)** - low/high voltage limits
- **Hysteresis (low/high)** - voltage hysteresis
- **Mode**
  - **Low** - the measured value under LT (low threshold) digital output becomes 0. Over it - 1.
  - **High** - the measured value under HT (high threshold) digital output becomes 1. Over it - 0.
  - **Low/High** - the measured value under LT digital output becomes 0. Between LT and HT - 1. Over HT - 0.
  - **Acc** - the measured value falls under LT, digital output becomes 0. Digital output becomes 1 above HT.
- **SNMP trap** - Sends SNMP trap when state changes with current value.
- **To JP1** - Depends from the mode, changes reflects over JP1.
- **To JP2** - Depends from the mode, changes reflects over JP2.
- **To JP3** - Depends from the mode, changes reflects over JP3.
- Description - channel description.

Valid values:

- Refresh - from 0 to 255.
  - 0 - don't read from the channel
  - 10 - read every second
  - 255 - don't read from the channel
- Threshold (Low/High) - from 0 to 1023
- Hysteresis (Low/High) - from 0 to 255

Required conditions for proper work:

1. (HT-HH)>(LT+LH)
2. (HT+HH)<1023
3. (LT-LH)>0

When the required conditions are not performed, the refresh value will be automatically set to 0. The refresh value must be set greater than zero, when the proper conditions are filled.

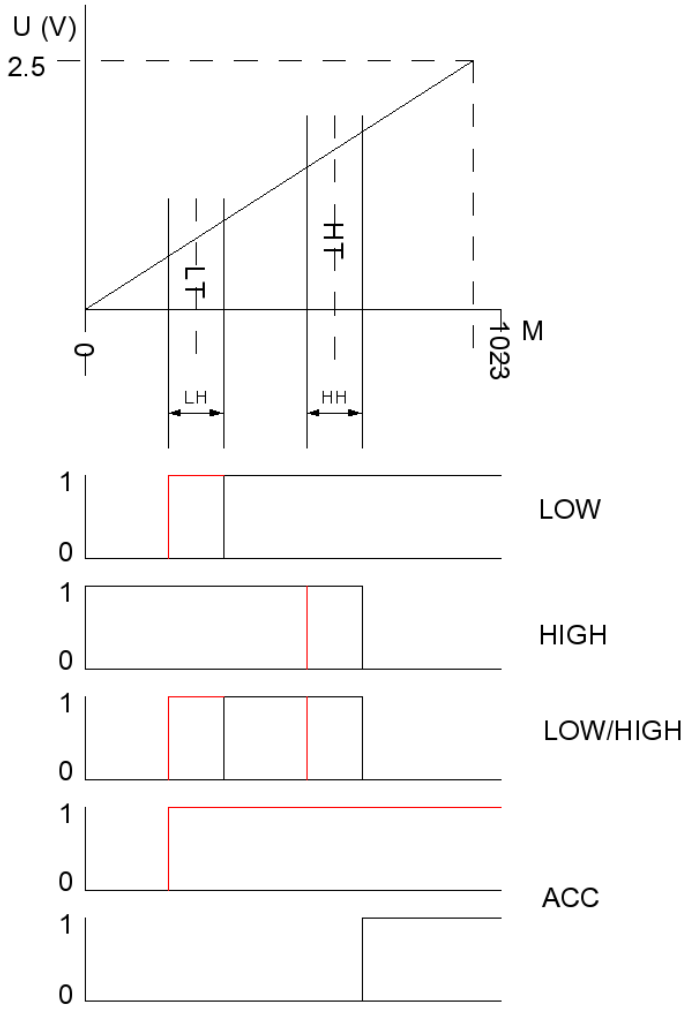

Figure 8. ADC modes

The schematic shows digital outputs change depends from the mode and direction:

- red – high to low
- black – low to high

6.5. Pings

DAEnetIP1 has the feature to send or receive pings and take actions depending on ping timeout. This is suitable for monitoring other network devices and eventually restart them.

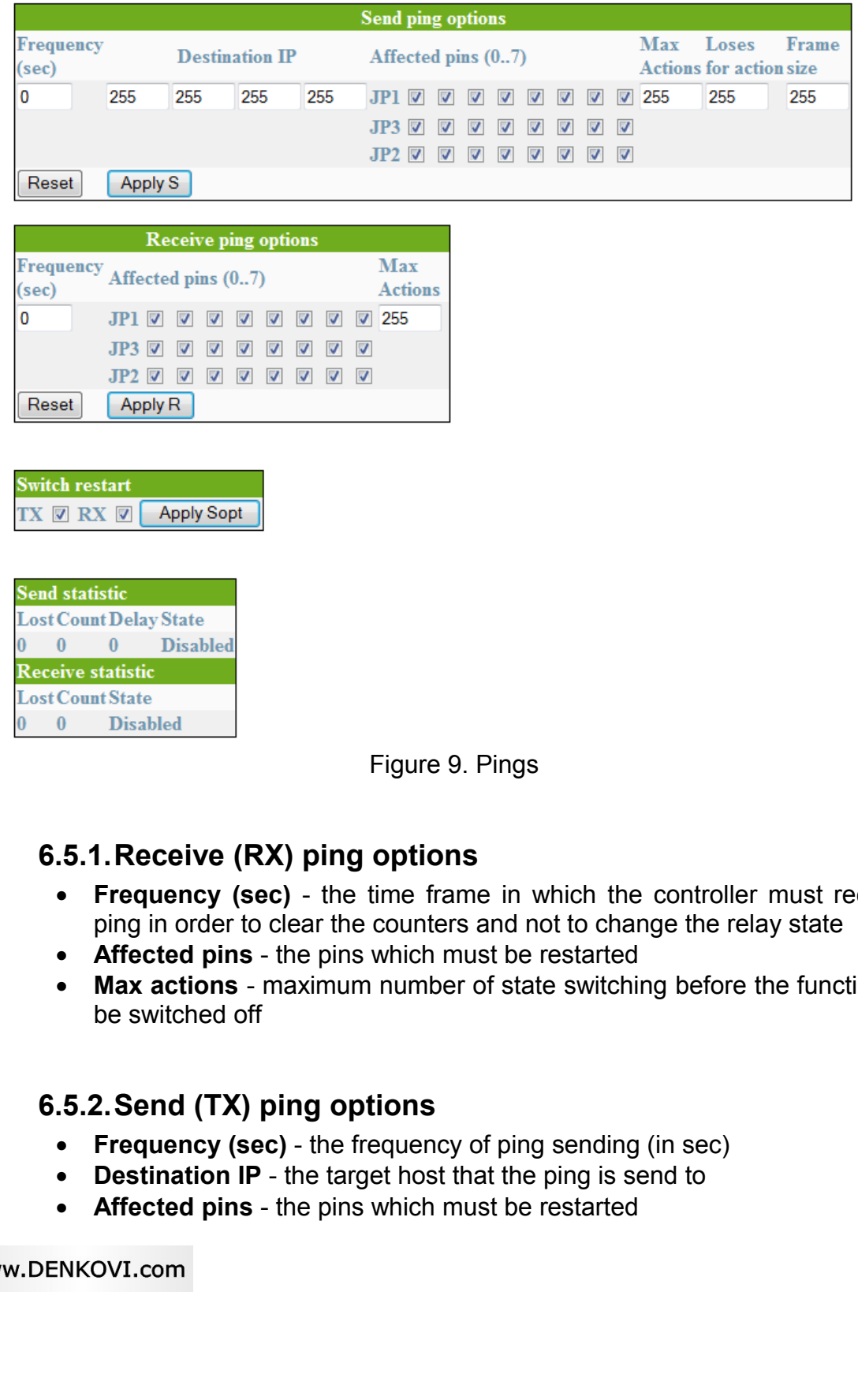

Figure 9. Pings

6.5.1. Receive (RX) ping options

- **Frequency (sec)** - the time frame in which the controller must receive ping in order to clear the counters and not to change the relay state
- **Affected pins** - the pins which must be restarted
- **Max actions** - maximum number of state switching before the function to be switched off

6.5.2. Send (TX) ping options

- **Frequency (sec)** - the frequency of ping sending (in sec)
- **Destination IP** - the target host that the ping is send to
- **Affected pins** - the pins which must be restarted

- **Max Actions** - maximum number of state changing before the function to be turned off
- **Loses for action** - it determines on how many lost packets there will be state changing
- **Frame size** - size of the sent packet

Rules:

- Each pressing of the button "Apply" resets the counters.
- To disable the functions a 0 must be filled into the "Frequency" filed
- If the value is > 0 and <255 then the functions are activated
- The "Switch delay" parameter in JP1, JP2 or JP3 sections must be >0 in order to be affected by the functions
- If the "Switch delay" parameter of JP1, JP2 or JP3 is 0, then this (these) pins are not affected
- Function with status "Blocked" can be reactivated only if the button "Apply" is pressed or it is appeared the condition (received ECHO REPLY or ECHO depending the section).

6.6. System settings

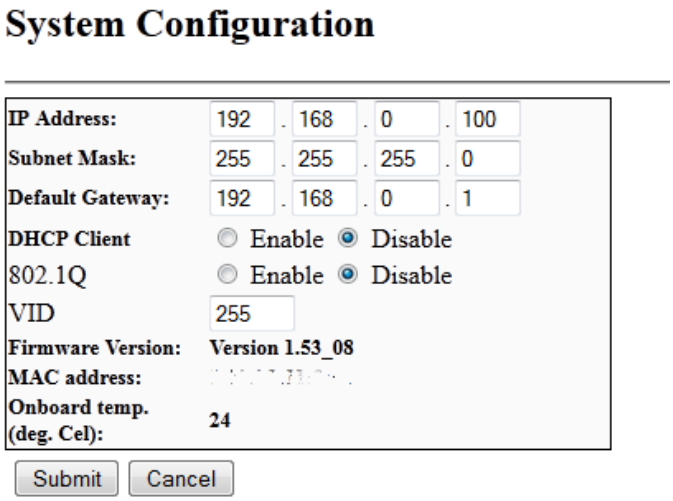

Figure 10. System settings

- **IP Address** – DAEnetIP1 IP address
- **Subnet Mask** – DAEnetIP1 network mask
- **Default Gateway** – DAEnetIP1 default gateway address
- **802.1Q** – 802.1Q mode on or off
- **DHCP Client** – DHCP client enable/disable
- **VID** – 802.1Q VLAN tag

When only DHCP client mode is disabled, full restart procedure (around 10 seconds) will occure.

6.7. SNMP access

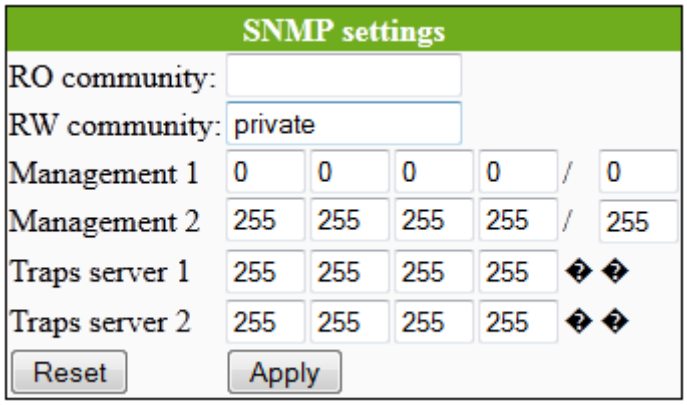

Figure 11. SNMP settings

- **RO community** – read-only community (max. 14 symbols)
- **RW community** – read-write settings (max. 14 symbols)
- **Trap server 1** – First trap server address.
- **Trap server 2** – Second trap server address
- If you don't want to use trap server make it 255.255.255.255 or 0.0.0.0

6.8. Admin

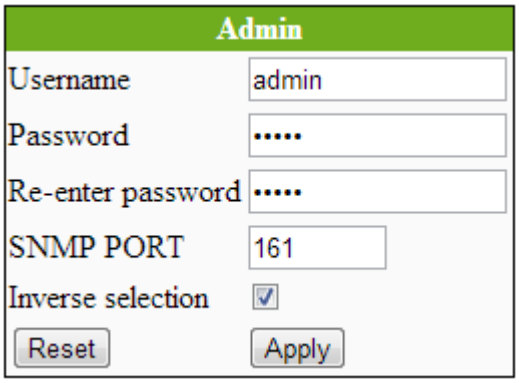

Figure 12. Admin settings

- **Username** – Admin username (8 symbols max)
- **Password** – Admin password (16 symbols max)
- **Re-enter password** – Admin password check
- **Snmp port** - the port for the snmp server (by default it is 161)
- **Inverse selection** - inverse the states of the digital outputs (it is because some of our relay boards are with reverse TTL logic)

7. SNMP access

DAEnetIP1 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 "**.1.3.6.1.4.1.32111**". Also all the snmp commands are described in the MIB file**.** All the functions can be accessed via SNMP and WEB

IMPORTANT! 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.

7.1. OID-s for digital output port JP1

Table 7. OID-s for JP1

Start OID	End OID	Name	Access	Description	Syntax
x.1.1.1.1	x.1.1.1.8	JP1Save	read-write	Save states for JP1	INTEGER { High(1), Low(0) }
x.1.1.2.1	x.1.1.2.8	JP1State	read-write	Control JP1 State	INTEGER { High(1), Low(0) }
x.1.1.3.1	x.1.1.3.8	JP1Delay	read-write	Switch delay for JP1	INTEGER (0..255)
x.1.1.4.1	x.1.1.4.8	JP1Description	read-write	JP1 description	STRING (0..14)

7.2. OID-s for digital input/output port JP2

Table 8. OID-s for JP2

Start OID	End OID	Name	Access	Description	Syntax
x.1.6.1.1	x.1.6.1.8	JP2Save	read-write	Save states for JP2	INTEGER { High(1), Low(0) }
x.1.6.2.1	x.1.6.2.8	JP2State	read-write	Control JP2 State	INTEGER { High(1), Low(0) }
x.1.6.3.1	x.1.6.3.8	JP2Delay	read-write	Switch delay for JP2	INTEGER (0..255)
x.1.6.4.1	x.1.6.4.8	JP2Description	read-write	JP2 description	STRING (0..14)
x.1.6.5.1	x.1.6.4.8	JP2Value	read-only	The value for the digital input JP2	INTEGER { High(1), Low(0) }

7.3. OID-s for digital input/output port JP3

Table 9. OID-s for JP3

Start OID	End OID	Name	Access	Description	Syntax
x.1.4.1.1	x.1.4.1.4	JP3Save	read-write	Save states for JP3	INTEGER { High(1), Low(0) }
x.1.4.2.1	x.1.4.2.4	JP3State	read-write	Control JP3 State	INTEGER { High(1), Low(0) }
x.1.4.3.1	x.1.4.3.4	JP3Delay	read-write	Switch delay for JP3	INTEGER (0..255)
x.1.4.4.1	x.1.4.4.4	JP3Description	read-write	JP3 description	STRING (0..14)

7.4. OID-s for analog input port JP4

Table 10. OID-s for JP4

Start OID	End OID	Name	Access	Description	Syntax
x.1.5.1.1	x.1.5.1.8	JP4Value	read-only	JP4 Value of the ADC channel	INTEGER (0..1023)
x.1.5.2.1	x.1.5.2.8	JP4Refresh	read-write	Refresh time, one unit is equal to 100ms	INTEGER (0..255)
x.1.5.3.1	x.1.5.3.8	JP4LowThreshold	read-write	Low threshold Value	INTEGER (0..1023)
x.1.5.4.1	x.1.5.4.8	JP4HighThreshold	read-write	High threshold Value	INTEGER (0..1023)
x.1.5.5.1	x.1.5.5.8	JP4LowHysteresis	read-write	Low hysteresis Value	INTEGER (0..1023)
x.1.5.6.1	x.1.5.6.8	JP4HighHysteresis	read-write	High hysteresis Value	INTEGER (0..1023)
x.1.5.7.1	x.1.5.7.8	JP4Description	read-write	JP4 Description	STRING (0..14)
x.1.5.8.1	x.1.5.8.8	JP4Mode	read-write	Operating JP4 Mode	INTEGER {Low(0), High(1), LowHigh(2), Acc(3)}
x.1.5.9.1	x.1.5.9.8	JP4SNMPTrap	read-write	Send SNMP trap on event	INTEGER {no(0), yes(1)}
x.1.5.10.1	x.1.5.10.8	JP4MapToJP1	read-write	Activate JP1 on event	INTEGER {no(0), yes(1)}
x.1.5.11.1	x.1.5.11.8	JP4MapToJP3	read-write	Activate JP3 on event	INTEGER {no(0), yes(1)}
x.1.5.12.1	x.1.5.12.8	JP4MapToJP2	read-write	Activate JP2 on event if it is digital output	INTEGER {no(0), yes(1)}

7.5. OID-s for TX (sending) pings

Table 11. OID-s for TX pings

Start OID	End OID	Name	Access	Description	Syntax
x.1.2.1.1	x.1.2.1.1	txFreq	read-write	TX ping frequency	INTEGER (0..255)
x.1.2.1.2	x.1.2.1.2	txIP	read-write	TX IP address	IpAddress
x.1.2.1.3	x.1.2.1.3	txToJP1	read-write	Affected JP1 pins in decimal for TX pings	INTEGER (0..255)
x.1.2.1.4	x.1.2.1.4	txMax	read-write	Maximum reply lost before action to be taken	INTEGER (0..255)
x.1.2.1.5	x.1.2.1.5	txAction	read-write	Maximum MAX counts before the service become in BLOCKED state	INTEGER (0..255)
x.1.2.1.6	x.1.2.1.6	txMaxLen	read-write	IP packet len	INTEGER (64..1400)
x.1.2.1.7	x.1.2.1.7	txStatus	read-only	An actual status of the txPing functionality	INTEGER {Blocked(0), InService(1), Disabled(2)}
x.1.2.1.8	x.1.2.1.8	txLost	read-only	Number of seconds non-received ICMP ECHO REPLY packets	INTEGER (0..255)
x.1.2.1.9	x.1.2.1.9	txCount	read-only	Number of actions	INTEGER (0..255)

				taken after txFreq is reached	
x.1.2.1.10	x.1.2.1.10	txDelay	read-only	ICMP ping Delay	INTEGER (0..255)
x.1.2.1.11	x.1.2.1.11	txToJP3	read-write	Affected JP3 pins in decimal for TX pings	INTEGER (0..255)
x.1.2.1.13	x.1.2.1.13	txToJP2	read-write	Affected JP2 pins in decimal for TX pings	INTEGER (0..255)

7.6. OID-s for TX (sending) pings

Table 12. OID-s for RX pings

Start OID	End OID	Name	Access	Description	Syntax
x.1.2.2.1	x.1.2.2.1	rxFreq	read-write	RX ping frequency	INTEGER (0..255)
x.1.2.2.2	x.1.2.2.2	rxToJP1	read-write	Affected JP1 pins in decimal for RX pings	INTEGER (0..255)
x.1.2.2.3	x.1.2.2.3	rxMax	read-write	Maximum request lost before action to be taken	INTEGER (0..255)
x.1.2.2.4	x.1.2.2.4	rxStatus	read-only	An actual status of the rxPing functionality	INTEGER {Blocked(0), InService(1), Disabled(2)}
x.1.2.2.5	x.1.2.2.5	rxLost	read-only	Number of seconds non-received ICMP ECHO packets	INTEGER (0..255)
x.1.2.2.6	x.1.2.2.6	rxCount	read-only	Number of actions taken after rxFreq is reached	INTEGER (0..255)
x.1.2.2.7	x.1.2.2.7	rxToJP3	read-write	Affected JP3 pins in decimal for RX pings	INTEGER (0..255)
x.1.2.2.8	x.1.2.2.8	rxToJP2	read-write	Affected JP2 pins in decimal for RX pings	INTEGER (0..255)

7.7. OID-s for TFTP

Table 13. OID-s for TFTP

Start OID	End OID	Name	Access	Description	Syntax
x.1.3.1.1	x.1.3.1.1	tftpIP	read-write	TFTP server IP address	read-write
x.1.3.1.2	x.1.3.1.2	tftpFile	read-write	Requested file	read-write
x.1.3.1.3	x.1.3.1.3	tftpVer	read-only	Current loaded firmware version	read-only
x.1.3.1.4	x.1.3.1.4	tftpConfirm	read-write	start TFTP session	read-write

7.8. OID-s for SNMP

Table 14. OID-s for SNMP

Start OID	End OID	Name	Access	Description	Syntax
x.1.3.2.3.0	x.1.3.2.3.0	SNMPaccessIP1	read-write	SNMP Access IP 1	IpAddress
x.1.3.2.4.0	x.1.3.2.4.0	SNMPaccessNET1	read-write	SNMP Access net 1	INTEGER (0..32)
x.1.3.2.5.0	x.1.3.2.5.0	SNMPaccessIP2	read-write	SNMP Access IP 2	IpAddress
x.1.3.2.6.0	x.1.3.2.6.0	SNMPaccessNET2	read-write	SNMP Access net 2	INTEGER (0..32)
x.1.3.2.7.0	x.1.3.2.7.0	SNMPTrapServerIP1	read-write	SNMP TRAP SERVER IP 1	IpAddress
x.1.3.2.8.0	x.1.3.2.8.0	SNMPTrapServerIP2	read-write	SNMP TRAP SERVER IP 2	IpAddress

7.9. Setup OID-s

Table 15. Setup OID-s

Start OID	End OID	Name	Access	Description	Syntax
x.1.3.4.1	x.1.3.4.1	setupIP	read-write	DAEnetIP1 IPv4 Address	IpAddress
x.1.3.4.2	x.1.3.4.2	setupMask	read-write	DAEnetIP1 IPv4 NET MASK dotted decimal	IpAddress
x.1.3.4.3	x.1.3.4.3	setupGW	read-write	DAEnetIP1 IPv4 Default gateway	IpAddress
x.1.3.4.4	x.1.3.4.4	setupDHCPclient	read-write	DAEnetIP1 DHCP client state	INTEGER {disabled(0), enabled(1)}
x.1.3.4.5	x.1.3.4.5	setup8021QJP4Mode	read-write	DAEnetIP1 802.1Q Mode	INTEGER {disabled(0), enabled(1)}
x.1.3.4.6	x.1.3.4.6	setup8021Qtag	read-write	DAEnetIP1 802.1Q tag	INTEGER
x.1.3.4.7	x.1.3.4.7	setupFirmwareName	read-only	DAEnetIP1 firmware version	STRING (0..14)
x.1.3.4.8	x.1.3.4.8	setupRestart	write-only	DAEnetIP1 restart	INTEGER
x.1.3.4.9	x.1.3.4.9	setupMAC	read-only	DAEnetIP1 MAC address	STRING
x.1.3.4.10	x.1.3.4.10	setupPCBTemp	read-only	DAEnetIP1 on board temperature (C)	STRING

8. Appendix 1. Power supply

- Power supply: **DC 12 V ⎓ 200 mA** (stabilized and filtered)
- Controller consumption: 117mA/12V DC

Figure 13. Power jack

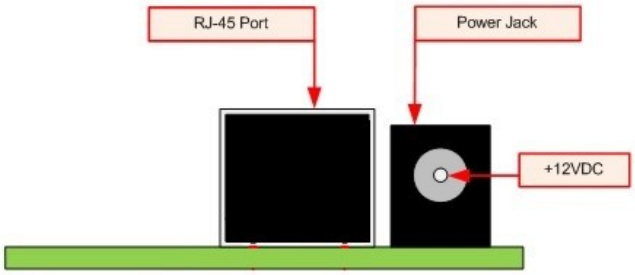

Figure 14. Location of the power jack

- Polarity: Center positive, the **inner pin** of the power supply adaptor jack must be **+12VDC**.

Figure 15 Polarity

- Before using the power supply, measure the output voltage with voltmeter. The output voltage must be **12V DC +/- 5%**

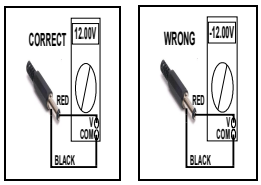

Figure 16. Correct polarity

Note that DAEnetIP1 does not have reverse polarity protection. Power supply with different polarity shown in this document will damage the device.

DAEnetIP1 connection to the Ethernet network is done with UTP Cat.5 cable with RJ45 connector. 10 seconds after power on, the device is ready for work.

9. Appendix 2. DAEnetIP1 installation

9.1. Connect DAEnetIP1 to computer for first time

1. Connect your DAEnetIP1 controller (or kit) with UTP cable.
2. Connect the PC with the other end of this cable
3. Check out carefully that there is not danger of short cuts or metal surface around the controller
4. If there are additional wires from the DAEnetIP1 controller connect them (to the relay board or any other device) first
5. Check out the power supply you will use for DAEnetIP1 if it is correct according this document
6. Plug in the DC jack from the power adaptor to the device DC plug
7. TURN ON the power supply source
8. The power led (red one) must be on
9. The DAEnetIP1 needs about 10 seconds to boot
10. Adjust your PC IP to be 192.168.0.1
11. Access the device via Web browser - type its IP in the url address line (192.168.0.100) in the address bar and use **admin / admin** for username / password

9.2. Connect DAEnetIP1 to router

1. We assume you have PC IP - 192.168.1.2, Router IP - 192.168.1.1 and DAEnetIP1 factory IP - 192.168.0.100
2. Connect your DAEnetIP1 controller (or kit) with UTP cable.
3. Connect the PC with the other end of this cable.
4. Plug the DC jack from the power adaptor to the device DC plug.
5. TURN ON the power supply source.
6. The power led (red one) must be on
7. The DAEnetIP1 needs about 10 seconds to boot
8. Adjust your PC IP to be 192.168.0.1
9. Access the device via Web browser - type its IP (192.168.0.100) in the address bar and use **admin / admin** for username / password.
10. Change the DAEnetIP1 IP to be 192.168.1.3 (to mach your network).
11. Change back the old IP of your PC - 192.168.1.2
12. Turn off the DAEnetIP1 controller
13. Unplug the UTP cable from PC and conect it to router.
14. Power on the DAEnetIP1 controller
15. Type in browser 192.168.1.3 (the new IP) and access the controller.

10. Appendix 3. Port forwarding - for advanced users

This appendix describes how to access the *DAEnetIP1* 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 DAEnetIP1 network ports (the INTERNAL PORTS). These ports are:

- SNMP port - by default 161.
- HTTP port 80 (can not be changed)

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

- Port 10161 for SNMP

This may easily be done from the DAEnetIP1 web server -> Admin page

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

Figure 17. Port forwarding

The IP address 192.168.1.11 is actually the internal address of the ***DAEnetIP1.***

3. Now it is possible to access the ***DAEnetIP1*** 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 .1.3.6.1.4.1.32111.1.3.4.1 - 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/

11. Appendix 4. Software

11.1. DAEnetIP1 Manager

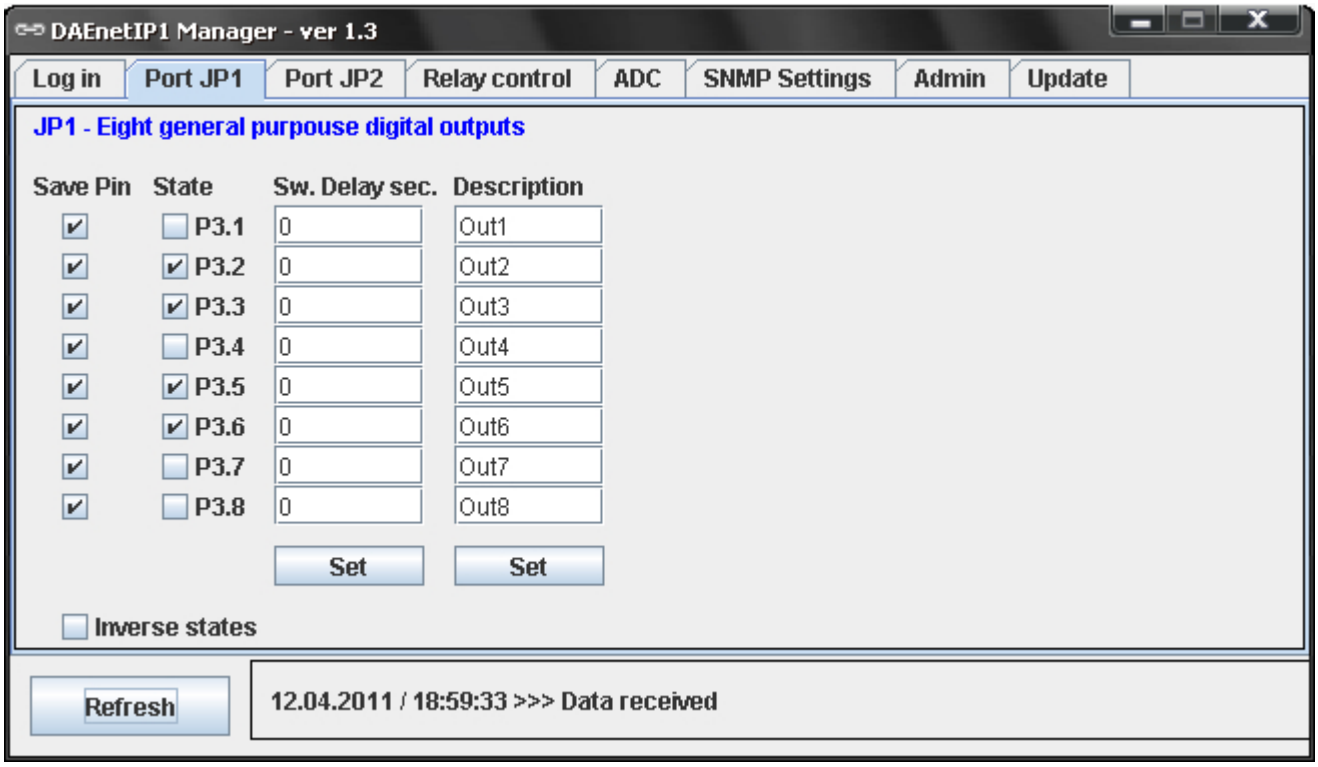

Figure 18. DAEnetIP1 Manager

DAEnetIP1 Manager is simple SNMP utility designed especially for DAEnetIP1. It is java based software and it is suitable for Windows, Linux and MAC. The software has it's own web page and it is described here:
http://denkovi.com/page/18/daenetip1-manager.html

11.2. DRM Software

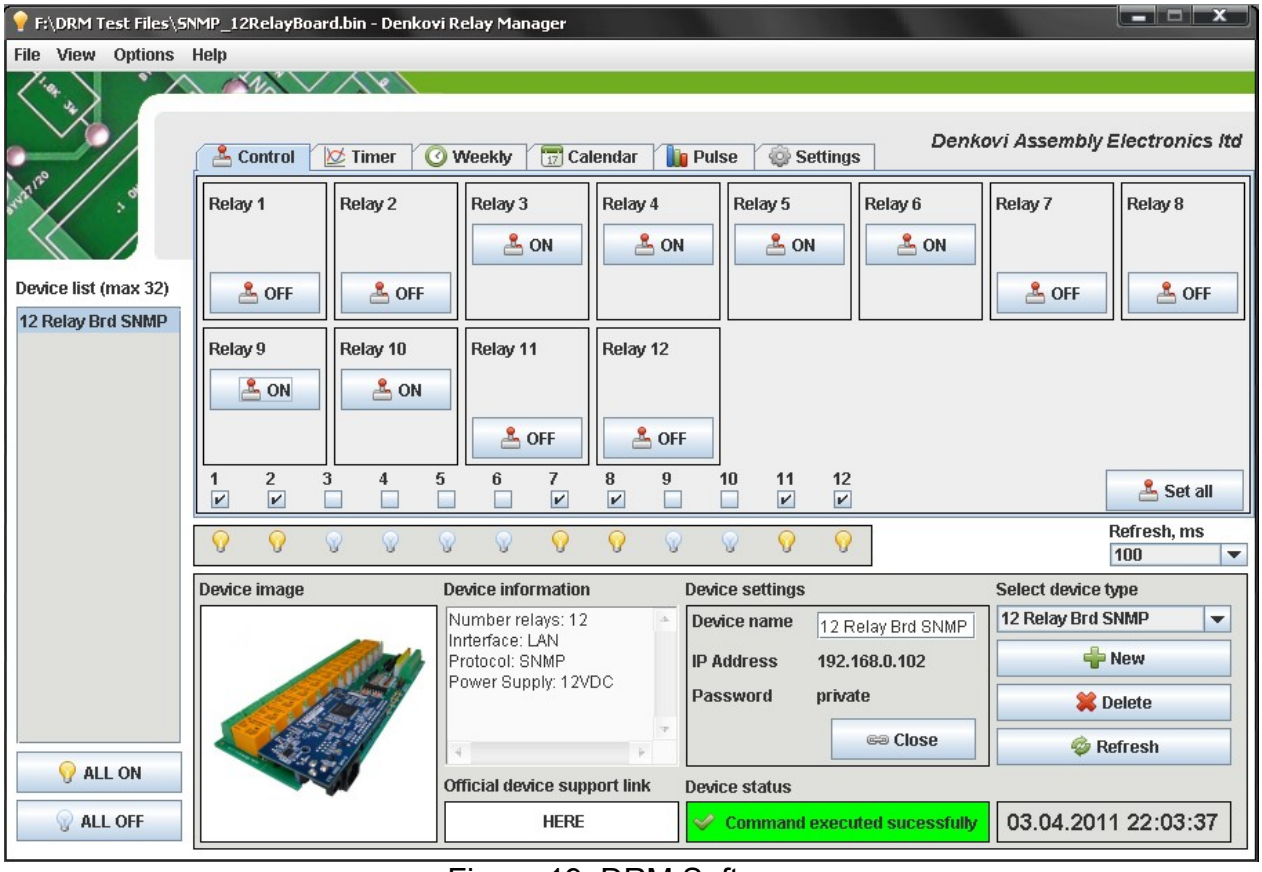

Figure 19. DRM Software

DRM software is universal software for all Denkovi relay boards. It can be used to control only the relays (digital outputs) of the DAEnetIP1 as well. The inputs can not be monitored.
The software is described here:
http://denkovi.com/page/13/drm-software.html

11.3. Android Software by iSwitch, LLC

The featured Android application is offered to extend control of the DAEnetIP1 controller and relay board to your Android phone. This application is designed to work on an Android Smartphone or Tablet, however screens are optimized for Smartphones. Please note this is third parity software.

Figure 20. Android application from iSwitch, LLC

Download link - here

11.4. Control from command line

11.4.1. 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. ***DAEnetIP1*** 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.

- 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
- Install the downloaded file. Leave the default options. The packet will be install in c:\usr by default.
- Download the DAEnetIP1 MIB file from here file**.**
- Copy the mib file here c:\usr\share\snmp\mibs
- Add new line in the file c:\usr\etc\snmp\snmp.conf with the "mibs all" directive.
- Now you can test different commands for OID access, supported by this module. Their names you may see in the DAEnetIP1 .mib file.

A simple test may be done to be sure if the tool is installed successfully:
run->cmd->
snmpget -v1 -c 000000000000 192.168.0.100 . 1.3.6.1.4.1.32111.1.3.4.1

For creating batch files, you may use the following steps for example which turns on the JP1 digital output 1 for 5 seconds and then turn it off:

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

snmpset -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.1.1.1 i 0
PING 1.1.1.1 -n 1 -w 5000
snmpset -v1 -c private *192.168.0.100 .1.3.6.1.4.1.32111.1.1.1.1 i 1*

- Save the file
- Run it.

11.4.2. 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 192.168.0.100 .1.3.6.1.4.1.32111.1.3.4.1
(Ofcourse 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 192.168.0.100 .1.3.6.1.4.1.32111.1.1.1.1 i 0
sleep 5s
snmpset -v1 -c private *192.168.0.100 .1.3.6.1.4.1.32111.1.1.1.1 i 1*

3. Save the file
4. Run it.

11.4.3. SNMPGET example commands

Get JP1 pin1 State - This will read digital output JP1.1 state
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.1.1.1

Get JP1 pin8 State - This will read digital output JP1.8 state
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.1.1.8

Get JP2 pin1 State - This will read digital output JP2.1 state
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.6.2.1

Get JP2 pin8 State - This will read digital output JP2.8 state
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.6.2.8

Get JP2 pin1 Value - This will read digital input JP2.1 value
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.6.5.1

Get JP2 pin8 Value - This will read digital input JP2.8 value
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.6.5.8

Get JP3 pin1 State - This will read digital output JP3.1 state
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.4.2.1

Get JP3 pin4 State - This will read digital output JP3.4 state
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.4.2.4

Get JP4 pin1 Value - This will read analog input JP4.1 value
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.5.1.1
Get JP4 pin8 Value - This will read analog input JP4.8 value
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.5.1.8

Get the MAC Address
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.3.4.9

Get the IP Address
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.3.4.1

Get the internal temperature sensor value
snmpget -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.3.4.10

11.4.4. SNMPSET example commands

Set JP1 pin1 State - This will set digital output JP1.1 state in high level
snmpset -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.1.1.1 i 1

Set JP1 pin8 State - This will set digital output JP1.8 state in low level
snmpset -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.1.1.8 i 0

Set JP2 pin1 State - This will set digital output JP2.1 state in high level
snmpset -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.6.2.1 i 1

Set JP2 pin8 State - This will set digital output JP2.8 state in low level
snmpset -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.6.2.8 i 0

Set JP3 pin1 State - This will set digital output JP3.1 state in high level
snmpset -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.4.2.1 i 1

Set JP3 pin4 State - This will set digital output JP3.4 state in low level
snmpset -v1 -c private 192.168.0.100 .1.3.6.1.4.1.32111.1.4.2.4 i 0

12. Appendix 5. Software examples

Software examples can be found on this link

13. Appendix 6. Firmware upgrade

13.1. Via DAEnetIP Burner

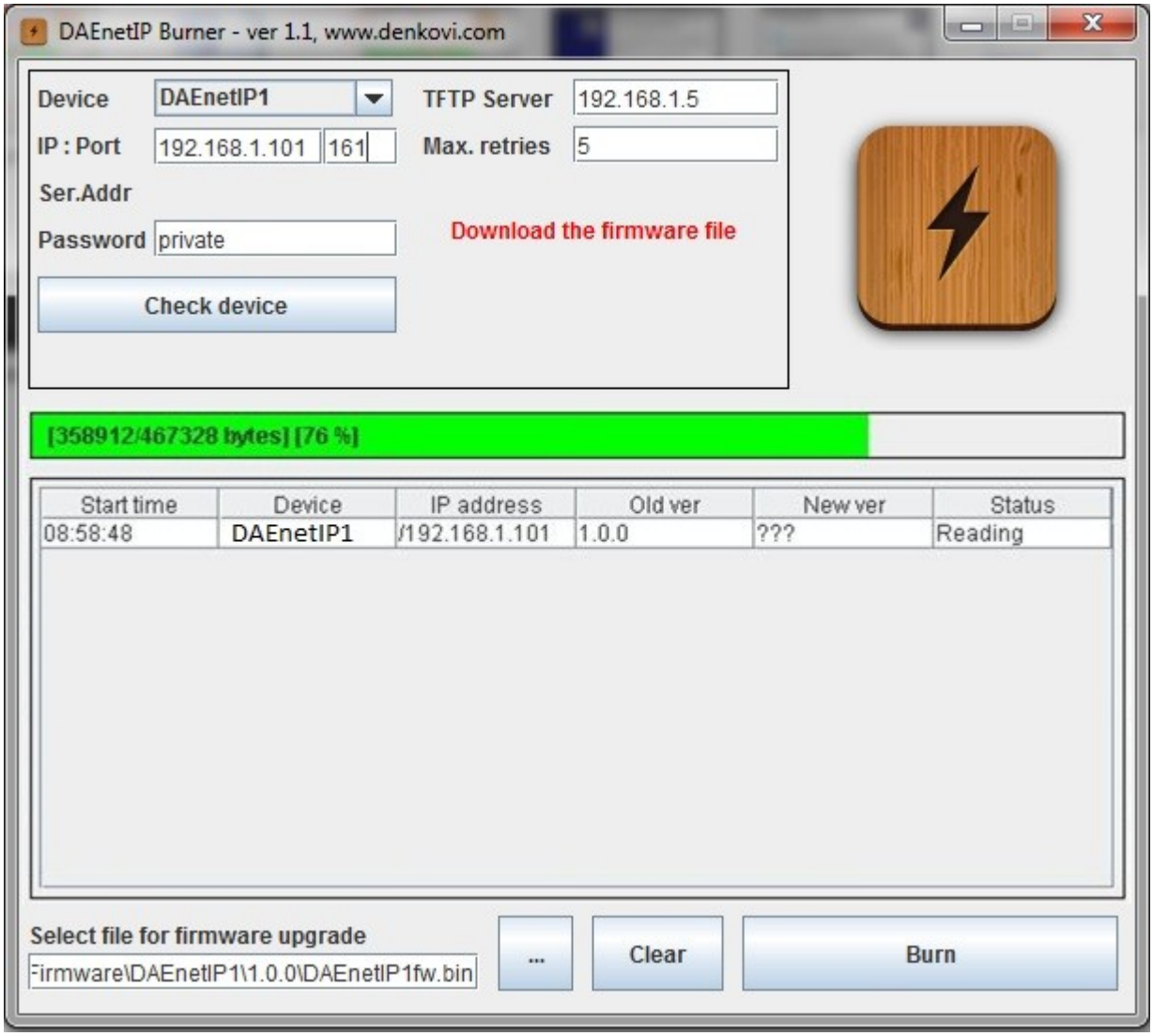

Figure 21. DAEnetIP Burner

It is recommend to use DAEnetIP Burner for TFTP firmware upgrade of DAEnetIP1! It is the easiest and safer way!

- Download and install DAEnetIP Burner. Software for firmware upgrade of DAEnetIP1 - http://denkovi.com/page/31/daenetip-burner.html
- Download and save the version you need for upgrading the DAEnetIP1 controller. The binary (.bin) file must be downloaded from www.denkovi.com. It may be downloaded from the link in the application or directly from this link. Support for firmware file also may be received by e-mail b_denkov@abv.bg.
- Navigate the application to this file by clicking button with label "…".
- From the Device list select DAEnetIP1.

- In the IP address field type the IP address of the target DAEnetIP1 controller that must be upgraded.
- In the Port field type the port on that DAEnetIP1 can be reached. This is the SNMP port. Ususally it is 161 (by default)
- In the Password field type the SNMP password used in this DAEnetIP1 controller (default is ***"private"***).
- Check if the settings are correct by clicking button “Check device”. After successful connection under this button it must appears text with the DAEnetIP1 version. If this not happens it means the connection is not successful and you must repeat again steps 3-6.
- Set the TFTP Server. This is usually the computer IP address that will be used as TFTP server.
- Set the maximum retries field. This field shows how many times the DAEnetIP Burner will try to reconnect with the DAEnetIP1 controller if the connection is lost for a moment. A value of 5-10 is reasonable.
- Start update by clicking Burn button. If everything is correct, a new line must appear in the event log and the progress bar must starts moving on.
- Wait until the file is uploaded. This will be indicated when the New version field is not ??? but some value – form example 1.50. Then the Status field must be with value “File is uploaded successfully”.
- Your DAEnetIP1 controller is upgraded successfully with the desired firmware version. Now when you click button “Check device”, the new version must appear.

13.2. Via http (web)

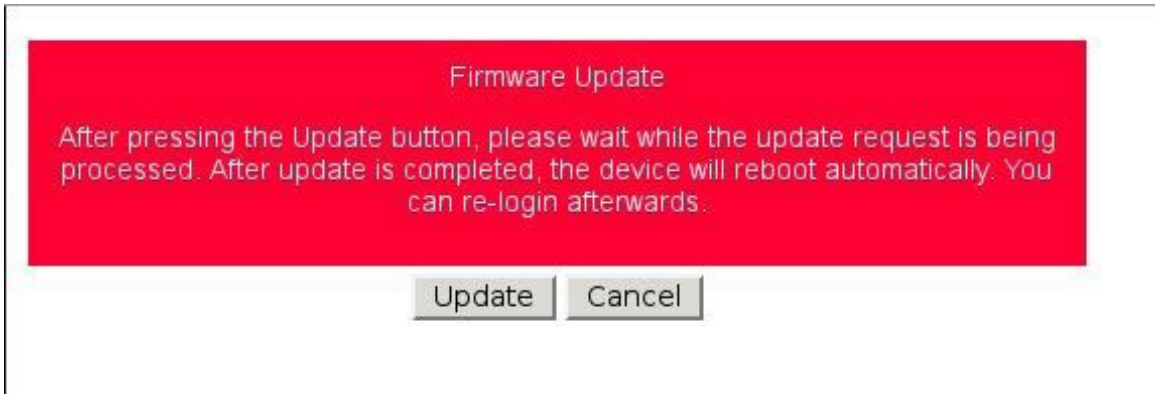

Figure 22. Firmware upgrade via HTTP

From navigation menu select "WEB firmware upgrade". Above warning will appear on the screen. For confirmation, press "Update" button.

Currently, only IE 6 or later is able use this update option.

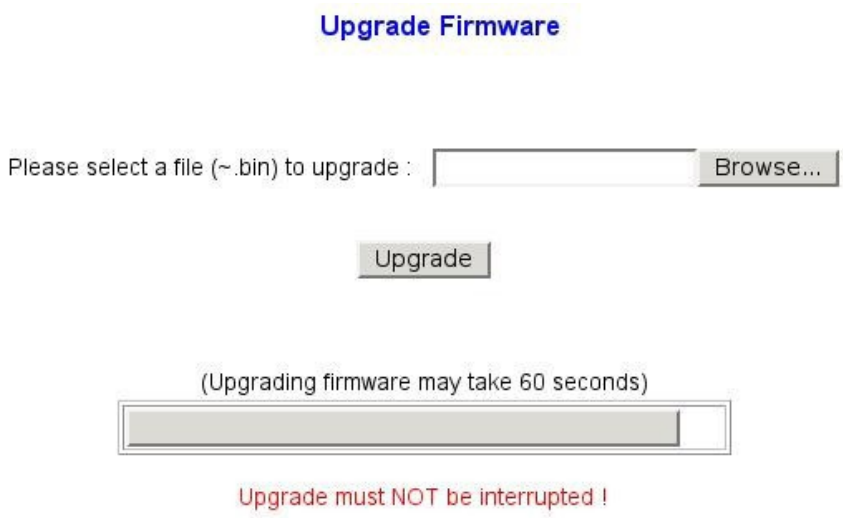

Figure 23. Firmware upgrade via HTTP - progress

Pressing "Browse" button, will give you a choice between different files. Select the proper one and press "Update" button.

Warning!!!

Do not power off the device. If the update was interrupted, you could find the device on his last known IP address.

13.3. TFTP via WEB

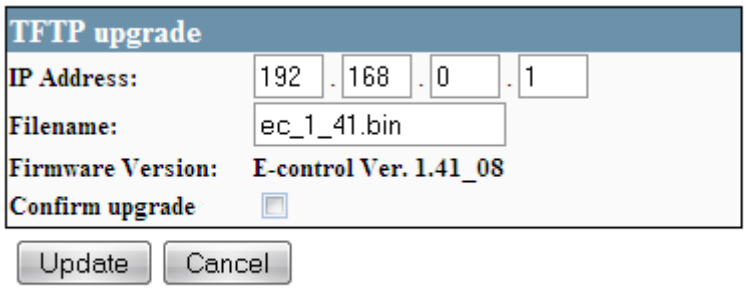

Figure 24. TFTP via web

- IP address – TFTP server address
- Filename – Firmware file name
- Firmware Version – Currently installed firmware version
- Confirm upgrade – The checkbox must be checked before press "Update"
- Button "Update" starts the firmware upgrade procedure.

14. Appendix 7. Mechanical drawing

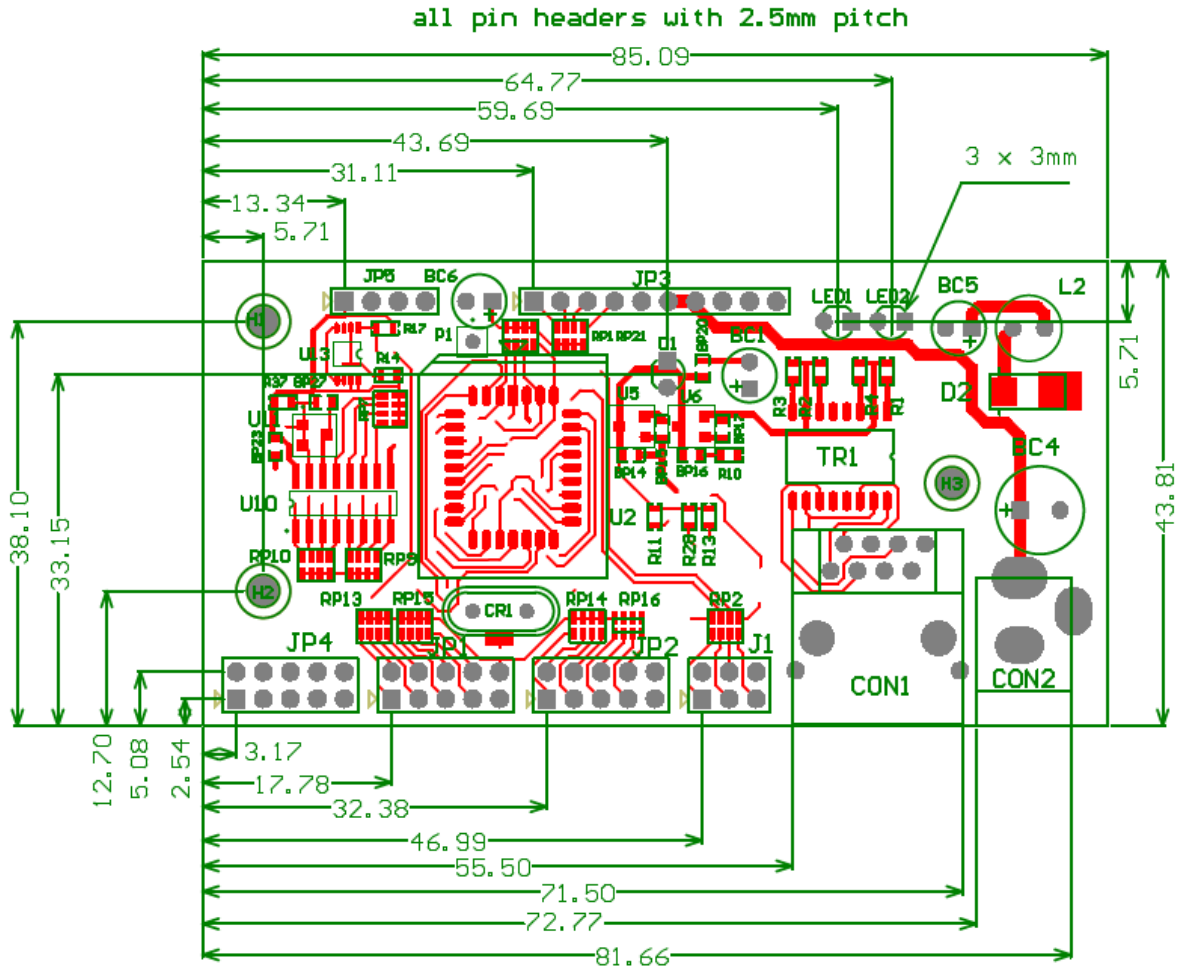

Figure 25. PCB drawing