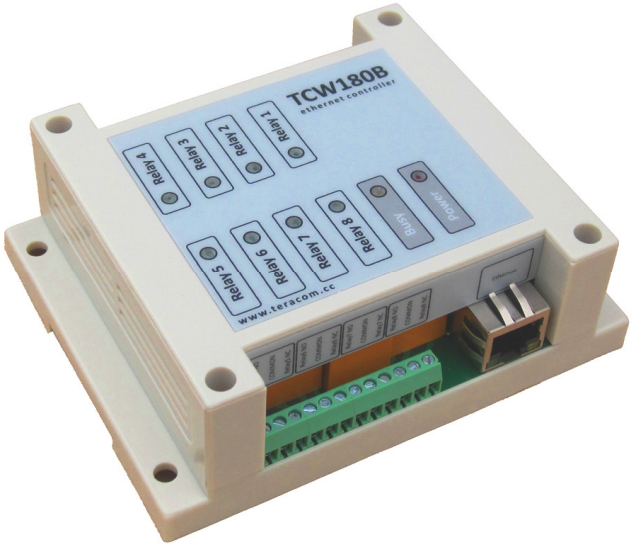
Ethernet Controller TCW180B
Users manual



1. Short description

TCW180B is 8-Relay Ethernet controller, which is designed to work in IP-based networks and managed by WEB interface or SNMP programs. This device can be used as standalone or as a part of control and monitoring systems. Its I/O interface - 8 relay outputs and 1 digital input, is suitable for solving specific problems in various fields such as remote control, process automation, home automation and others. The device is enclosed in slim plastic box, with a DIN-rail mounting possibility

2. Features

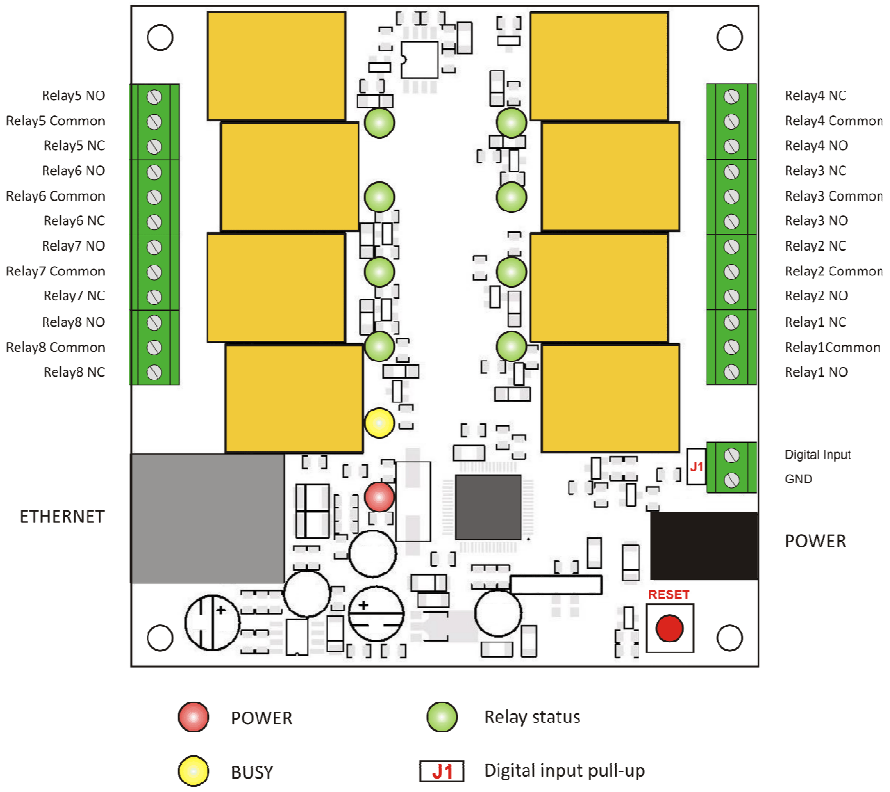
- 10 Mbit Ethernet connectivity
- Password protected web based configuration and control
- 1 digital input, 8 relay outputs
- SNMP v.1, SMTP, ICMP, VLAN support
- SNMP Trap alert if an event occurs on the digital input
- E-mail alert if an event occurs on the digital input
- **TCW180B** can be used as standalone device or as a part of monitoring and management system
- MAC Address filtering
- Remote FTP firmware update
- DIN rail enclosure

3. Technical parameters

Supply Voltage, VDC	12
Weight, g	205
Dimensions, mm	115 x 90 x 40
Operating temperature, °C Storage temperature , °C	0 ÷ 40 -40 ÷ 85
Minimum high level input voltage, V	2.5
Maximum low level input voltage, V	0.8
Maximum input voltage for digital input, V	5.5
Max. switchable current (at 220 VAC) , A	3
Max. switchable voltage, VAC/VDC	250/110

4. Connectors

Inputs and outputs locations are shown below:



- J1 –mode selection jumper for digital input – dry contact (close) and logic level (open);
- ETHERNET - 10/100-BaseT RJ45 connector
- POWER – ø2mm power jack

5. LED indicators

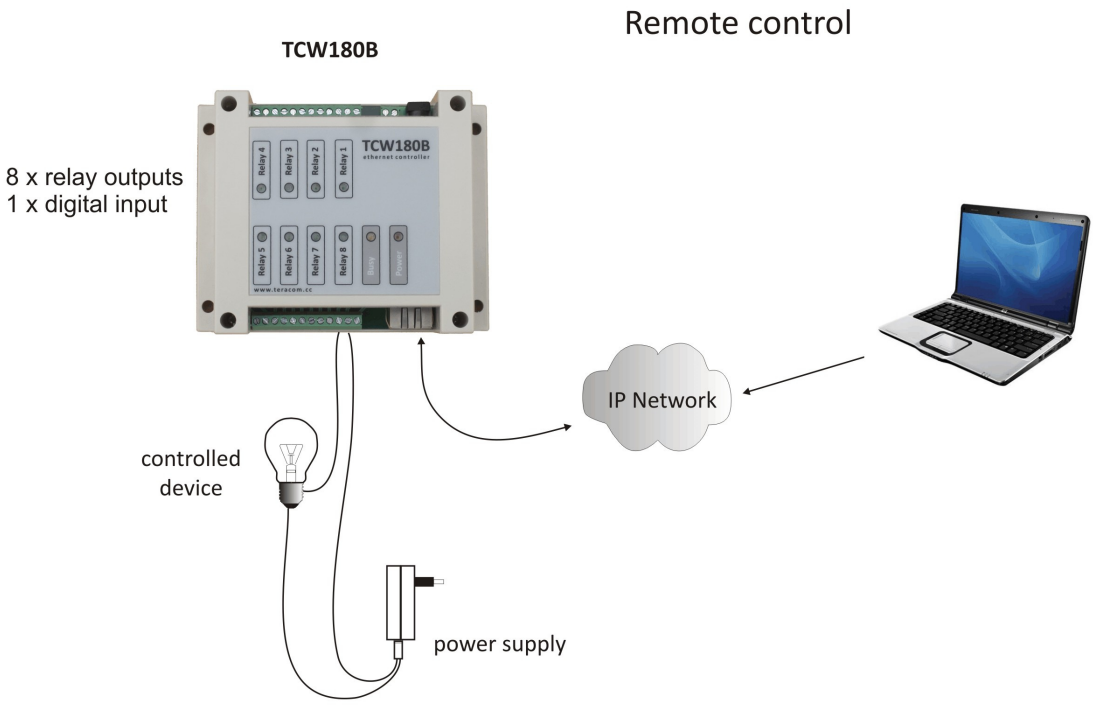
The following indicators show the status of the controller :

- **Relay status 1÷8** (green) – these LEDs are illuminated whenever the corresponding relay is activated
- **Power** (red) – this flashes when the power supply is turned on;
- **Busy** (yellow) – this LED indicates that someone is connected to the controller through web interface;
- **Link** (green) – this LED is located on the Ethernet connector. It indicates that the device is connected to the network ;
- **Act** (yellow) – this LED is located on the Ethernet connector. It flashes when activity is detected on the network.

6. Example Application

6.1 Remote control

The controlled device is connected in series with the relay contacts. Users can operate **TCW180B** using a web browser or by using custom SNMP applications. The relay outputs are managed independently of each other.



7. Installation

Please follow the steps below for proper installation :

1. Mount the controller in a dry and ventilated place.
2. Connect the Ethernet port to a 10/100 Base T Ethernet connection. For direct connection to a PC use a “crossover” cable.
3. Connect the I/O pins of the controller according to the required application.
4. Connect the power supply.

If the red LED is blinking, it indicates that the power supply is OK. By default **TCW180B** comes with the following network settings:

IP:192.168.1.2 , Subnet Mask: 255.255.255.0 , Default Gateway: 192.168.1.1

Communication with **TCW180B** may be established by assigning a temporary IP address to the configuration computer that is on the same network (for example 192.168.1.3). To get access to the web interface of the controller, you should type the following URL into the browser : http://192.168.1 2 . If the network settings are correct, the “Login” page will appear.

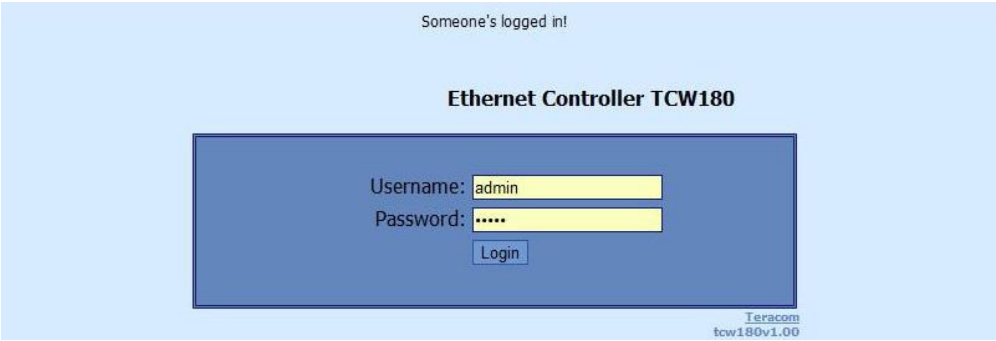
8. Web-based setup.

The web based interface allows the **TCW180B** to be configured, controlled and monitored via web browser. Recommended programs are Mozilla Firefox, Chrome and Internet Explorer 6 (or higher version) at 1024x768 resolution.

8.1 Login page

After opening the Login page, authorization data must be entered (by default username=admin , password=admin). It is recommended to change the username and password to prevent unauthorized access to the controller.

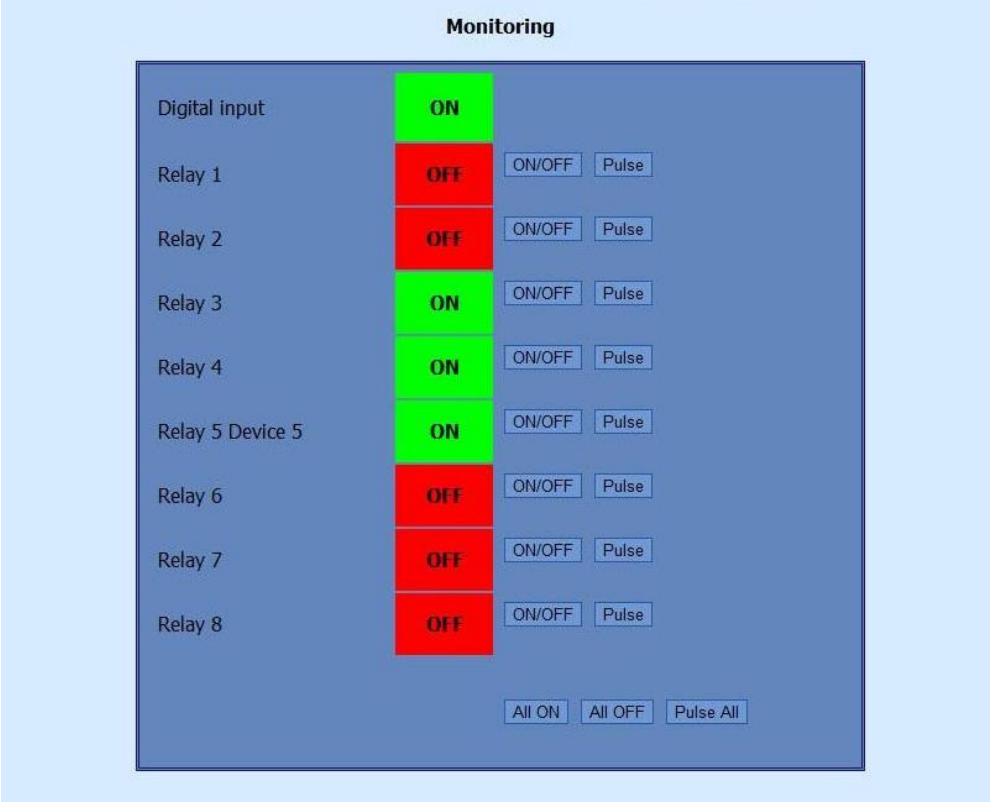
The controller supports only one active session – only one user (administrator) can operate the device. If another user tries to login, the following message appears: “Someone’s logged in”



The active session will be terminated automatically, if the current user stays inactive for 2 minutes.

8.2 Monitoring page

After successful authorization, the Monitoring page appears:



The Monitoring page provides information about the state of the digital input and relay output of the controller. To change the state of the relays , the “ON/OFF” buttons should be pressed. If the *Pulse* button is pressed the relay will change its state for the time specified in the “Pulse Duration” field in the “I/O Setup ” page. Three buttons are located on the bottom of the page:

- All ON – clicking this button will turn all relays ON
- All OFF – clicking this button will turn all relays OFF
- Pulse All – clicking this button will change the states of all relay outputs fir the time specified in the “Pulse Duration” field in the “I/O Setup ” page.

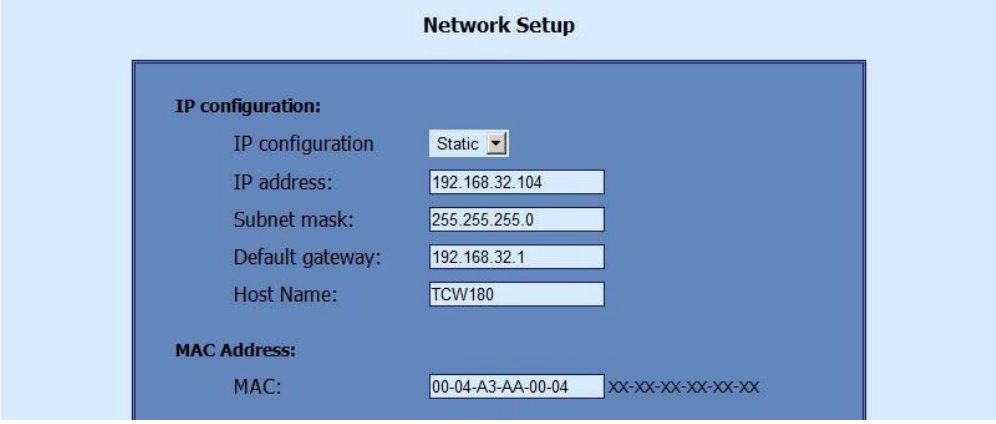
8.3 Account page

This page allows to change the user name and password for the web interface. After entering the desired information, click the “Save” button.

8.4 Network Setup page

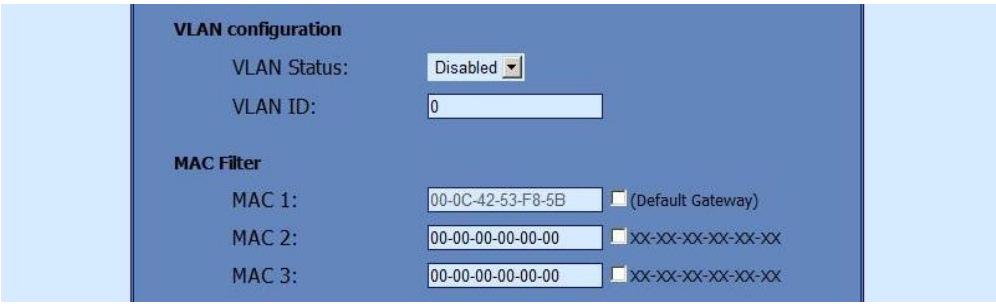
The Network parameters are set on this page. The following parameters can be changed:

- **IP configuration** – IP Address configuration can be static or dynamic (DHCP)
- **IP address, Subnet mask , Default gateway –** these fields are active if IP address is static
- **Host Name**
- **MAC –** device MAC address



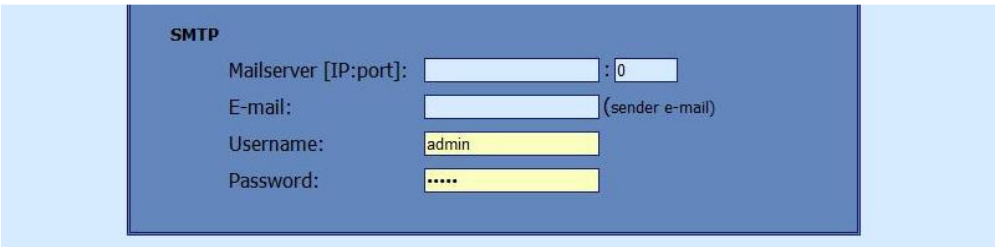
If multiply **TCW180B** controllers are used on the same network, please change the IP address after connecting the device to the network. This will avoid devices installed on the network with the same factory default IP address at the same time. It may be necessary to clear the arp cache each time you connect new device to the network. This is done by typing *arp -d* in the command prompt of a Windows computer.

In order to reduce network traffic and to limit the access, the controller supports VLAN and MAC address filtering. In addition to the MAC address of the Default Gateway, another 2 MAC addresses can be added to the filter. The filter is enabled by marking the appropriate check box after the MAC address.



To set up the SMTP server the following fields should be completed:

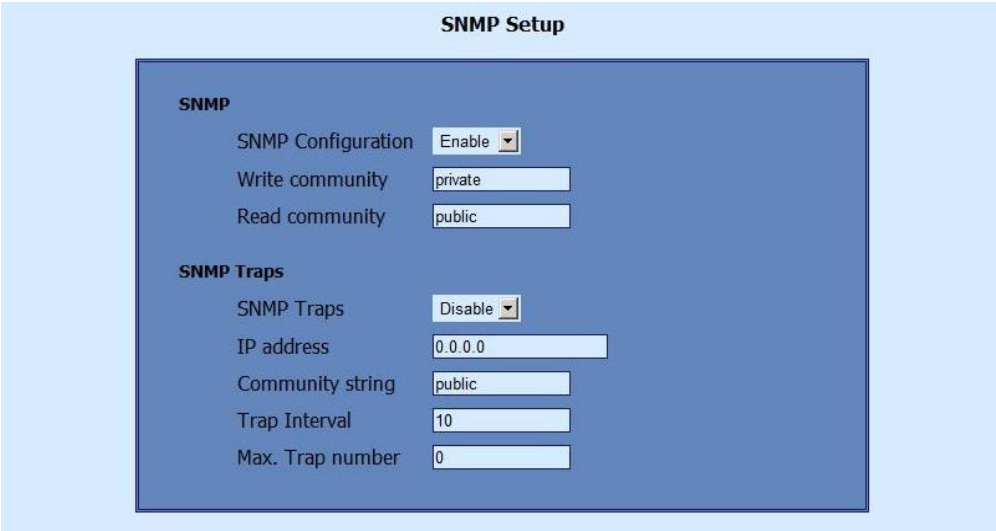
- **Mailserver [IP:port] –** IP address and port number of SMTP mail server
- **E-mail –** sender mail
- **Username&Password –** these fields are required if using SMTP server with authentication



8.5 SNMP Setup page

TCW180B supports SNMP v.1 that enables the device to be part of large monitoring and control networks. The possible settings are:

- **SNMP Configuration –** enable SNMP v.1
- **Read-Write community –** performs client authentication
- **Read-Only community –** performs client authentication



SNMP trap messages are sent for the following conditions:

- if event occurs on **Digital Input** (the signal changes its state)
- device restart

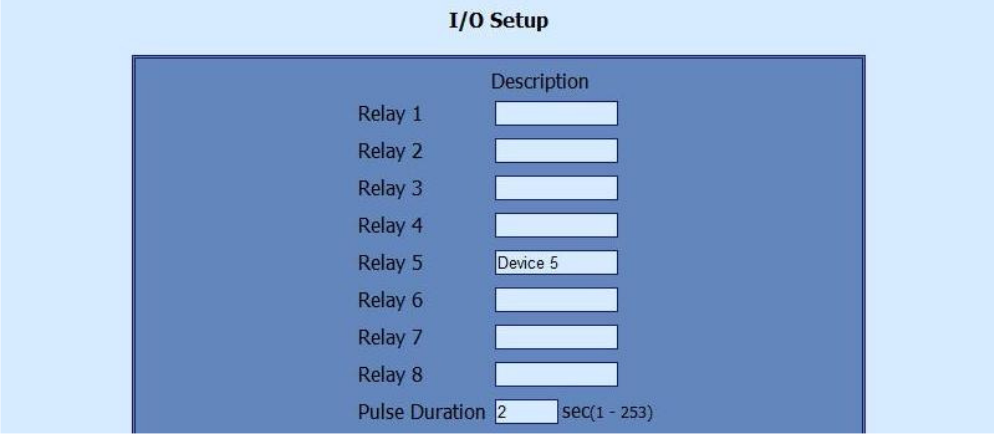
The following parameters can be changed:

- **SNMP Traps –** enable SNMP trap messages
- **IP address –** IP address of the receiving host
- **Community string –** performs client authentication
- **Trap Interval -** time interval for SNMP trap messages
- **Max. number of Traps –** maximum number of SNMP trap messages sent, if trap condition is present

8.6 I/O Setup page

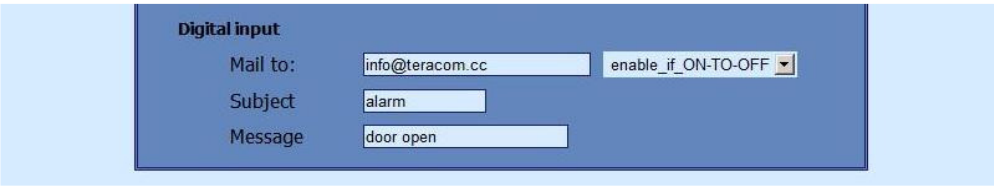
The following parameters can be set for the relays:

- **Description** – brief description of the output, maximum 10 characters should be used.
- **Pulse Duration** – time for which the relay changes its state, by pushing the "Pulse" button on "Monitoring" page. This setting applies to all 8 relays



TCW180B can be set to send e-mail alerts if an event occurs on the digital input. The following fields should be filled:

- **Mail to** – recipient e-mail address
- **Subject –** e-mail subject
- **Message –** e-mail body



In the example above, if an event occurs (closing contact) the controller will send e-mail message to *info@teracom.cc* with subject "alarm" and e-mail body "door open".

9. SNMP setup

TCW180B can be configured and monitored through SNMP (Simple Network Management Protocol). This could be done using every SNMP v.1 compatible program. 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 **".1.3.6.1.4.1.17095"**. To save the changes you should set a value "1" of the **configurationSaved** (OID x.8.0).

9.1 **Product**

OID	Name	Access	Description	Syntax
x.1.1.0	name	read-only	Device name	String
x.1.2.0	version	read-only	Software version	String
x.1.3.0	date	read-only	Release date	String

9.2 **SNMPSetup**

OID	Name	Access	Description	Syntax
x.2.1.0	trapEnabled	read-write	TRAP messages enable/disable	INTEGER { Yes(1), No(0) }
x.2.2.0	trapReceiverIPAddress	read-write	TRAP messages receiver address	IpAddress
x.2.3.0	trapCommunity	read-write	TRAP community	String (SIZE (0..13))
x.2.4.0	trapInterval	read-write	TRAP messages interval	INTEGER (0..255)
x.2.5.0	maxNumberOfTraps	read-write	Maximum number SNMP messages	INTEGER (0..255)

9.3 **Monitor and control**

OID	Name	Access	Description	Syntax
x.3.1	digitalInput	read-only	**Digital input** state	INTEGER { High(1), Low(0) }
x.3.2	Relay1	read-write	**Relay 1** state	INTEGER { ON(1), OFF(0) }
x.3.3	Relay2	read-write	**Relay 2** state	INTEGER { ON(1), OFF(0) }
x.3.4	Relay3	read-write	**Relay 3** state	INTEGER { ON(1), OFF(0) }
x.3.5	Relay4	read-write	**Relay 4** state	INTEGER { ON(1), OFF(0) }
x.3.6	Relay5	read-write	**Relay 5** state	INTEGER { ON(1), OFF(0) }
x.3.7	Relay6	read-write	**Relay 6** state	INTEGER { ON(1), OFF(0) }
x.3.8	Relay7	read-write	**Relay 7** state	INTEGER { ON(1), OFF(0) }
x.3.9	Relay8	read-write	**Relay 8** state	INTEGER { ON(1), OFF(0) }
x.3.10	Pulse1	read-write	**Relay 1** pulse state	SYNTAX INTEGER (0..255)
x.3.11	Pulse2	read-write	**Relay 2** pulse state	SYNTAX INTEGER (0..255)
x.3.12	Pulse3	read-write	**Relay 3** pulse state	SYNTAX INTEGER (0..255)
x.3.13	Pulse4	read-write	**Relay 4** pulse state	SYNTAX INTEGER (0..255)
x.3.14	Pulse5	read-write	**Relay 5** pulse state	SYNTAX INTEGER (0..255)
x.3.15	Pulse6	read-write	**Relay 6** pulse state	SYNTAX INTEGER (0..255)
x.3.16	Pulse7	read-write	**Relay 7** pulse state	SYNTAX INTEGER (0..255)
x.3.17	Pulse8	read-write	**Relay 8** pulse state	SYNTAX INTEGER (0..255)
x.3.18	allOn	read-write	Set all relays On	SYNTAX INTEGER (0..255)
x.3.19	allOff	read-write	Set all relays Off	SYNTAX INTEGER (0..255)
x.3.20	allPulse	read-write	Pulse all relays	SYNTAX INTEGER (0..255)

9.4 **network**

OID	Name	Access	Description	Syntax
x.4.1.0	deviceIPAddress	read-write	Device IP address	IpAddress
x.4.2.0	subnetMask	read-write	Subnet Mask	IpAddress
x.4.3.0	gateway	read-write	Gateway	IpAddress
x.4.4.0	deviceMACAddress	read-write	Device MAC Address	OCTET STRING (SIZE(6))
x.4.5.0	dhcpConfig	read-write	DHCP ON/OFF	INTEGER { ON(1), OFF(0) }
x.4.6.1.1.0	filterMACAddress1	read-only	MAC Filter 1 (Gateway)	OCTET STRING (SIZE(6))
x.4.6.1.2.0	filterMACEnable1	read-write	MAC Filter 1 ON/OFF	INTEGER { ENABLED(1), DISABLED(0) }
x.4.6.2.1.0	filterMACAddress2	read-write	MAC Filter 2	OCTET STRING (SIZE(6))
x.4.6.2.2.0	filterMACEnable2	read-write	MAC Filter 2 ON/OFF	INTEGER { ENABLED(1), DISABLED(0) }
x.4.6.3.1.0	filterMACAddress3	read-write	MAC Filter 3	OCTET STRING (SIZE(6))
x.4.6.3.2.0	filterMACEnable3	read-write	MAC Filter 3 ON/OFF	INTEGER { ENABLED(1), DISABLED(0) }
x.4.7.1.0	VLANStatus	read-write	VLAN status	INTEGER { ENABLED(1), DISABLED(0) }
x.4.7.2.0	VlanId	read-write	VLAN ID	INTEGER (0..4095)
x.4.8.1.0	smtpServer	read-write	SMTP Server IP address	IpAddress
x.4.8.2.0	smtpPort	read-write	SMTP Server Port	INTEGER (0..65535)
x.4.8.3.0	smtpSenderEmail	read-write	SMTP Sender e-mail address	String (SIZE (0..39))

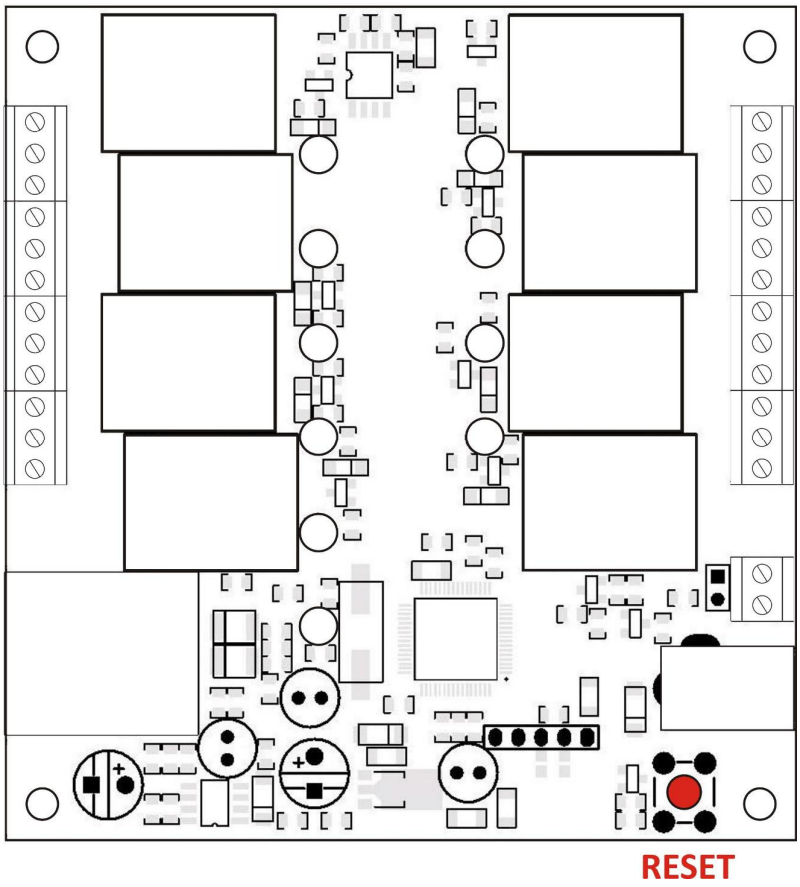
9.5 **I/O Setup**

OID	Name	Access	Description	Syntax
x.5.1.0	relayPulseDuration	read-write	Global Pulse duration	INTEGER (0..255)
x.5.2.0	Relay1description	read-write	Relay 1 description	String (SIZE (0..10))
x.5.3.0	Relay2description	read-write	Relay 2 description	String (SIZE (0..10))
x.5.4.0	Relay3description	read-write	Relay 3 description	String (SIZE (0..10))
x.5.5.0	Relay4description	read-write	Relay 4 description	String (SIZE (0..10))
x.5.6.0	Relay5description	read-write	Relay 5 description	String (SIZE (0..10))
x.5.7.0	Relay6description	read-write	Relay 6 description	String (SIZE (0..10))
x.5.8.0	Relay7description	read-write	Relay 7 description	String (SIZE (0..10))
x.5.9.0	Relay8description	read-write	Relay 8 description	String (SIZE (0..10))
x.5.10.0	digitalInputAction	read-write	Digital Input Action condition	INTEGER { FALLING(2),RISING(1), DISABLED(0) }
x.5.11.0	digitalInputTo	read-write	Digital Input event receiver's e-mail address	String (SIZE (0..38))
x.5.12.0	digitalInputSubject	read-write	Digital Input event e-mail's subject	String (SIZE (0..11))
x.5.13.0	digitalInputBody	read-write	Digital Input event e-mail's body	String (SIZE (0..22))
x.6.0	configurationSaved	read-write	Configuration save status SAVED/UNSAVED	INTEGER { SAVED(1), UNSAVED(0) }
x.7.0	restartDevice	read-write	Restart Device	INTEGER { RESTART(1), CANCEL(0) }

10.Restoring Factory Default Settings

If the IP address or password are forgotten, **TCW180B** can be restored to its original factory default settings. To do this, please follow the steps below:

- remove the power supply from the unit and open the plastic enclosure
- press and hold the RESET button then turn on the power supply



- wait about 5 seconds and release the RESET button. The factory default settings are shown in the table below:

User Name (Admin)	admin
Password (Admin)	admin
IP Address	192.168.1.2
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
SNMPConfiguration	disabled
readCommunity	public
writeCommunity	private

11.Firmware update

TCW180B supports remote firmware update. To do this please follow the steps below:

- Download the latest firmware version from www.teracom.cc . The extension of the update file is .cod .
- Open Command Prompt window. In the example below in **blue** are the commands that must be entered, and in **red** are the descriptions of these commands :

C:\> -- *go to the directory where the update file is located (.cod extension)*

C:\>ftp 212.73.154.53 -- *FTP connection to the controller is made*

Connected to 212.73.154.53.

220 Ready

User (212.73.154.53:(none)): admin -- *enter username*

331 Password required

Password: ***** -- *enter password*

230 Logged in

ftp> put TCW180v1.00.cod -- *the update file is sent for update*

200 Ok

150 Transferring data...

150 DON'T UNPLUG POWER CABLE FOR NEXT 2 MINUTES!!! – *2 minutes after this message appears, the device will be successfully updated*

DO NOT TURN OFF THE POWER SUPPLY DURING THESE 2 MINUTES!
TURNING OFF THE POWER SUPPLY WILL DAMAGE THE DEVICE!

ftp: 157822 bytes sent in 60.89Seconds 2.59Kbytes/sec

ftp>