



Ethernet controller TCW110

Users manual



1. Short description

TCW110 is a multifunctional device for remote monitoring and control. It is an Ethernet based controller, which is designed to work in IP-based networks and managed by WEB interface or SNMP programs. Its I/O interface - relay output, analog input, digital input and 1-Wire interface is suitable for solving specific problems in various fields such as remote control, alarm systems, industrial process automation, control and management of computer networks etc.

2. Features

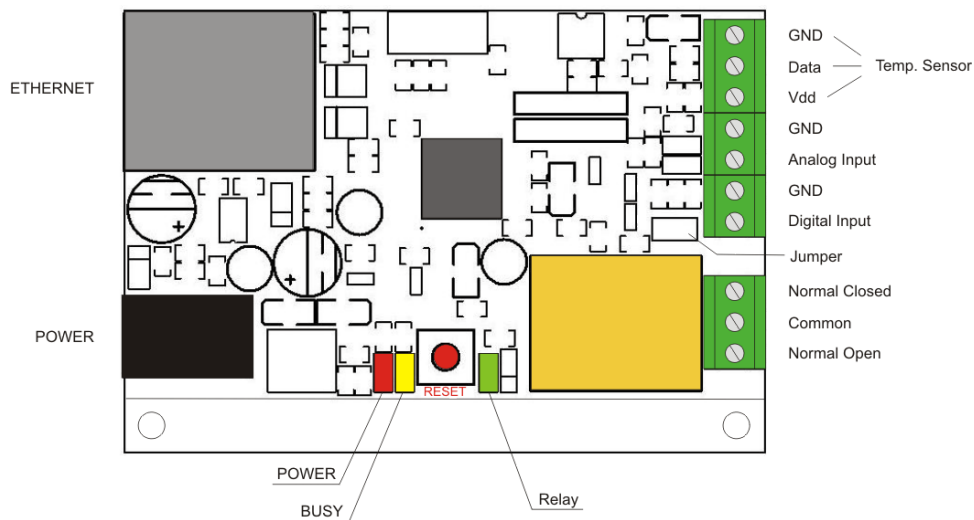
- 10 Mb Ethernet connectivity;
- Password protected, web based configuration and control;
- 1 digital input with "logic level" and "dry contact" modes;
- 1 analog input with 0 ÷ 100VDC range;
- 1 relay with NO and NC contacts;
- 1-Wire temperature sensor support;
- SNMP v.1, SMTP, ICMP, VLAN support;
- Sending SNMP Traps when an alert condition occurs;
- Sending E-mail when an alert condition occurs;
- SMTP with authorization (SSL is not supported);
- Relay activation on ping/echo timeout;
- MAC Address filtering;
- Remote FTP firmware update.

3. Technical parameters

Supply voltage, VDC	12 ± 2
Maximum current (with relay ON), mA	120
Weight, g	45
Dimensions, mm	72 x 50 x 18
Operating temperature, °C	0 ÷ 40
Minimum high level input voltage for digital input, VDC	2.5
Maximum low level input voltage for digital input, VDC	0.8
Maximum input voltage for digital input, VDC	5.5
Analog input range, VDC	0 ÷ 100
Supply voltage for 1-Wire interface, VDC	5
Maximum switchable current (at 220 VAC) , A	1
Maximum switchable voltage, VAC/VDC	250/110

4. Connectors & LED indicators

The location of the connectors is shown below:



4.1 Connectors:

- **Power** -ø 2mm power connector, central positive;
- **Ethernet** - RJ45 Ethernet connector;
- **Screw terminals:**
 - **1-Wire bus** – supports 1-Wire sensors with cable length up to 10m;
 - **Analog input** - the input range is 0-100VDC;
 - **Digital input** – operating mode is selected by jumper **J1** - dry contact (close) and logic level (open);
 - **Relay** – normal open and normal close contacts are available.

4.2 Indicators:

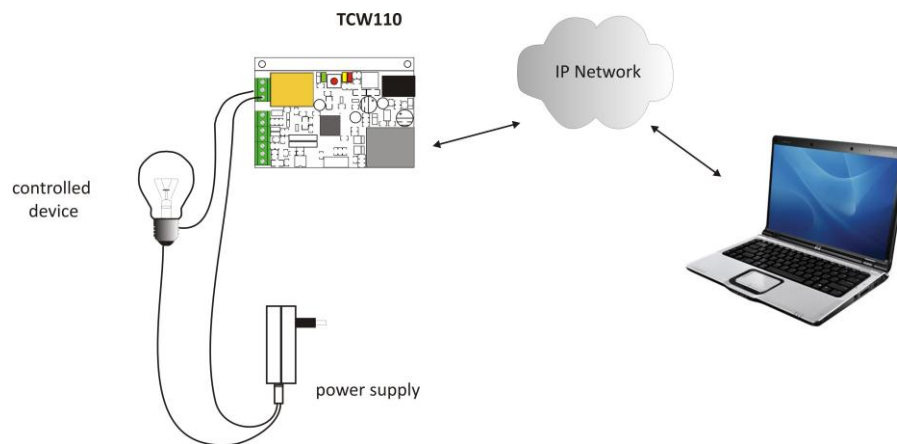
- **Relay status** (green) – illuminated whenever the relay is activated (the Normally Open contact is closed);
- **Power** (red) – flashes when the power supply is turned on;
- **Busy** (yellow) – indicates that someone is connected to the controller through web interface;

- **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.

5. Application examples

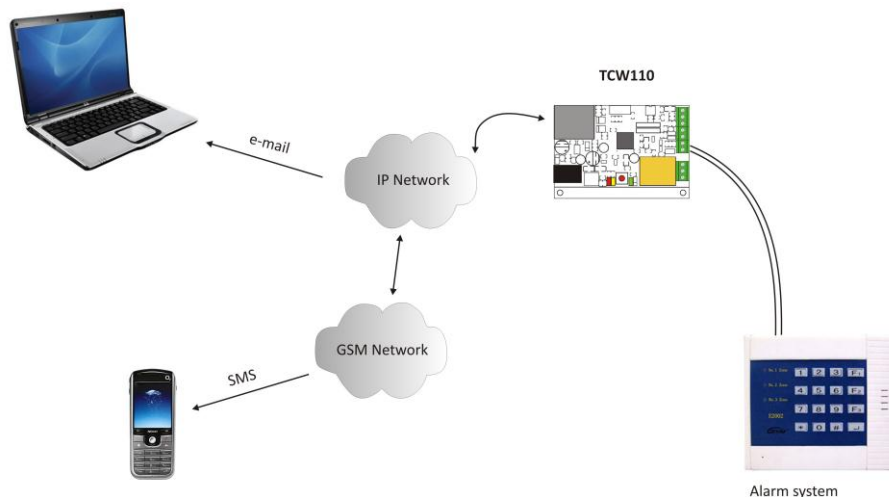
5.1 Remote control

The controlled device is connected in series with the relay contact. User can manage **TCW110** using a web browser or SNMP application.



5.2 Remote monitoring

A relay contact from the monitored device is connected to digital input of **TCW110**. When an event occurs – the controller can send an e-mail and/or SNMP trap.



6. Installation

Please follow the steps below for proper installation :

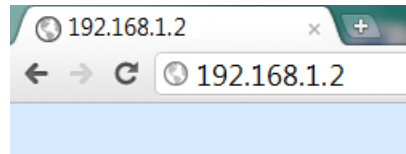
1. Mount the controller in a dry and ventilated place.

2. Connect the Ethernet port to a 10/100MB Ethernet network. 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 blinks, the power supply is OK. By default **TCW110** comes with the following network settings:

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

Communication with **TCW110** can be established by assigning a temporary IP address to the computer. This address should be in the same network (for example 192.168.1.3). To get access to the web interface, you should type <http://192.168.1.2> into the browser.



If the network settings are correct, the “Login” page will appear.

Web-based setup

The web based interface allows configuration, monitoring and control. Recommended browser is Internet Explorer at 1024x768 resolutions.

6.1 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.



Depending on the username and password, there are two access levels to the controller - user and administrator. Both access levels are described in table below:

	administrator	user
Account Administration	✓	
Monitoring	✓	✓
Network Setup	✓	
I/O Setup	✓	✓
SNMP Setup	✓	

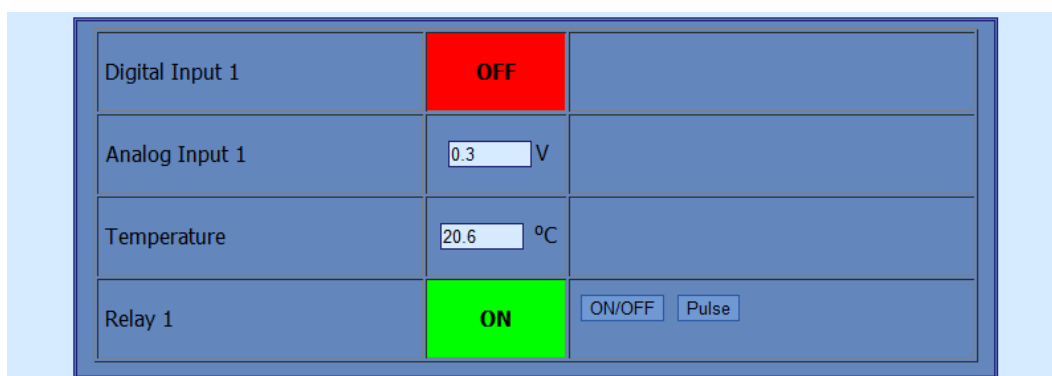
The controller supports one active session – only one user can operate the device. If another user tries to login, the message “Someone’s logged in” appears:



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

6.2 Monitoring page

After successful authorization, the “Monitoring page” appears:



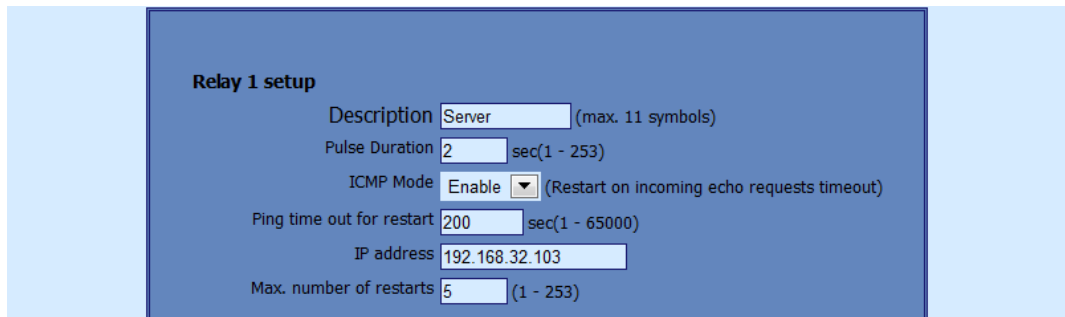
The “Monitoring” page provides information about the state of the relay and digital input, values of analog voltage (applied on analog input) and temperature (if temperature sensor is connected).

The state of the relay can be changed by appropriate “ON/OFF” button. To change the state of relay for a while “Pulse” button should be pressed. Duration of the pulse is specified in “Pulse Duration” field of “I/O Setup” page

6.3 I/O setup page

The input and output settings are made in “I/O Setup” page. The following parameters can be set:

- **Description** – brief description of the output with maximum 11 characters;
- **Pulse Duration** – time for state’s change of relays when "Pulse" button on "Monitoring" page is pressed;
- **ICMP Mode** – in this mode the controller activates its relays, depends of absence of ICMP echo-request (ping) or ICMP echo-reply (echo). The activation is after “Ping timeout for restart”. Relay 1 will be restarted if no ping is present and Relay 2 if no echo is present;
- **Ping time out for restart** – time out before activation of Relay 1;
- **IP address** - IP address of ICMP corresponding host;
- **Maximum number of restarts** – maximum number of activation of relay (restarts) after timeout has expired.



Relay 1 setup

Description: (max. 11 symbols)

Pulse Duration: sec(1 - 253)

ICMP Mode: (Restart on incoming echo requests timeout)

Ping time out for restart: sec(1 - 65000)

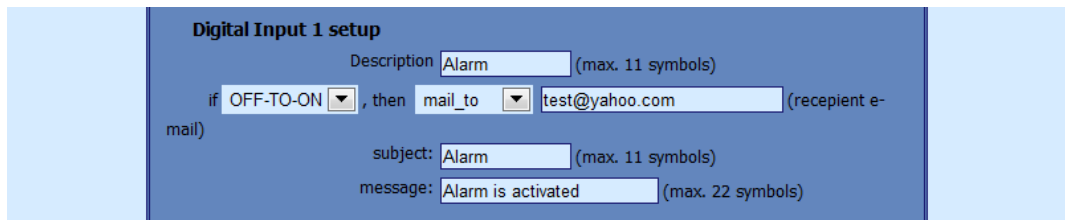
IP address:

Max. number of restarts: (1 - 253)

In the configuration example above, the controller expects ping from host with IP Address 192.168.32.103. If, within 5 seconds the controller receives no ping, Relay 1 will be activated for 2 seconds. If still no echo there will be 5 consecutive activation (restarts).

Every change of state for Digital Input 1 can manage e-mail sending. Following parameters must be set:

- **Description** – brief description of the input, maximum 11 characters;
- **Subject** – message subject, maximum 11 characters;
- **Message** – message body, maximum 22 characters.



Digital Input 1 setup

Description: (max. 11 symbols)

if , then (recepient e-mail)

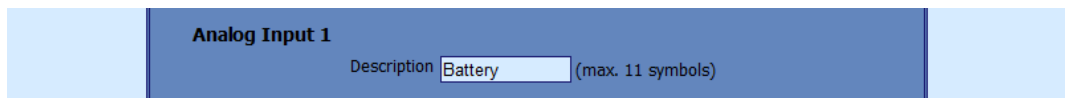
subject: (max. 11 symbols)

message: (max. 22 symbols)

In the example above, if an event occurs (closing contact) the controller will send e-mail message to test@yahoo.com with subject: "Alarm" and the text: "Alarm is activated".

Important! It is necessary to set SMTP server settings on "Network Setup" page, to successfully send e-mail messages.

Analog Input 1 can be described shortly with maximum of 11 characters.



Analog Input 1

Description: (max. 11 symbols)

Time of automatic refresh for "Monitoring" page can be set from 0 (no refresh) to 253 seconds.



Monitoring page automatic refresh

Interval: sec(0 - 253)

6.4 Network Setup page

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

- **IP configuration** – IP Address can be static or dynamic (DHCP server should be present in the network);
- **IP address, Subnet mask, Default gateway** – these fields are active if IP address is static;
- **Time Server and Time Zone** – these fields are not mandatory, they are used when e-mail is sent;
- **Host Name** – up to 16 symbols, it appears as a "Subject" in sent e-mails;

- **MAC** – device MAC address.

IP configuration

IP configuration: Static ▾

IP address: 192.168.1.2

Subnet mask: 255.255.255.0

Default gateway: 192.168.1.1

DNS: 192.168.1.1

Time Server: clock.via.net

Time Zone: +0000

Host Name: TCW110

MAC Address:

MAC: 00-04-A3-AA-03-9C xx-xx-xx-xx-xx-xx

The good practice is to change the default IP address of controller immediately after first power-on. This will avoid collisions if many devices are used in the same network. It may be necessary to clear the arp cache, each time you connect a new device to the network. This is done by typing *arp -d* in the command prompt window of computer.

VLAN and MAC address filtering are supported. Up to 3 MAC addresses (including Default Gateway) can be active in MAC filtering.

Attention! If you are not familiar with VLAN and MAC filtering leave these sections by default.

VLAN configuration

VLAN Status: Disabled ▾

VLAN ID: 1

MAC Filter

MAC Address 1: 00-0C-42-53-F8-5B (Default Gateway)

MAC Address 2: 00-00-00-00-00-00 xx-xx-xx-xx-xx-xx

MAC Address 3: 00-00-00-00-00-00 xx-xx-xx-xx-xx-xx

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

- **Mail server [IP:port]** – domain or IP address + port of SMTP mail server. To use domain name, IP address in field DNS must be correct;
- **E-mail** – sender e-mail;
- **Username** and **Password** – authentication details for mail server.

Mail server is considered server for sending mails. Secure Socket Layer is not supported.

SMTP

Mailserver [IP:port]: smtp.mail.yahoo.co.jp : 25

E-mail: teracom@yahoo.co.jp (sender e-mail)

Username: teracom

Password:

6.5 SNMP Setup page

TCW110 supports SNMP v.1 that enables trap delivery to an SNMP management application. This enables the device to be part of large monitoring and control networks. The possible settings for “SNMP” section are:

- **SNMP Configuration** – enable/disable SNMP;
- **Read-Write community** – performs client authentication;
- **Read-Only community** – performs client authentication;
- **SNMP Traps** – enable/disable SNMP trap messages;
- **IP address** – IP address of the receiving host;
- **Community string** – performs client authentication;
- **Trap Interval** - time interval in seconds for SNMP trap messages;
- **Max. Traps number** – maximum number of SNMP trap messages sent, if trap condition is present.

The screenshot shows a configuration page with two main sections: **SNMP** and **SNMP Traps**. In the **SNMP** section, 'SNMP Configuration' is set to 'Disable', 'Write community' is 'private', and 'Read community' is 'public'. In the **SNMP Traps** section, 'SNMP Traps' is set to 'Disable', 'IP address' is '0.0.0.0', 'Community string' is 'public', 'Trap Interval' is '10', and 'Max. Trap number' is '255'.

SNMP traps are sent if:

- event occurs (status change) on Digital Input 1 or Digital Input 2;
- measured voltage on Analog Input 1 or Analog Input 2 goes outside the range;
- measured temperature goes outside the range;
- measured humidity goes outside the range;
- restart condition.

6.6 Accounts Setup page

Authentication details for WEB access to **TCW110** can be set here.

The screenshot shows two account configuration sections. The **Administrator** section has 'User Name' set to 'admin' and 'Password' set to '.....'. Below it is a 'Save' button. The **User** section has 'User Name' set to 'user' and 'Password' set to '....'. Below it is another 'Save' button.

7. Control and monitoring using SNMP

TCW110 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 “**.1.3.6.1.4.1.38783**”. To save the changes you should set a value “1” of the **configurationSaved** (OID **x.8.0**).

7.1 product

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

7.2 SNMP Setup

OID	Name	Access	Description	Syntax
x.2.1.1.0	trapEnabled	read-write	TRAP messages enable/disable	INTEGER { Yes(1), No(0) }
x.2.1.2.0	trapReceiverIPAddress	read-write	TRAP messages receiver address	IpAddress
x.2.1.3.0	trapCommunity	read-write	TRAP community	String (SIZE (0..13))
x.2.1.4.0	trapInterval	read-write	TRAP messages interval	INTEGER (0..255)
x.2.1.5.0	maxNumberOfTraps	read-write	maximum number SNMP TRAP messages	INTEGER (0..255)
x.2.1.6.1.0	voltage1minimum	read-write	Voltage1 lower range	String (SIZE (0..13))
x.2.1.6.2.0	voltage1maximum	read-write	Voltage1 higher range	String (SIZE (0..13))
x.2.1.7.1.0	temperatureMinimum	read-write	Temperature lower range	String (SIZE (0..6))
x.2.1.7.2.0	temperatureMaximum	read-write	Temperature higher range	String (SIZE (0..6))
x.2.2.0	SNMPConfiguration	read-write	SNMP Configuration	INTEGER { ENABLED(1), DISABLED(0) }

7.3 monitor

OID	Name	Access	Description	Syntax
x.3.1.1.0	relay_1	read-write	relay 1 status	INTEGER { ON(1), OFF(0) }
x.3.1.2.0	pulse_1	read-write	relay 1 pulse status	INTEGER { ON(1), OFF(0) }
x.3.2.1.0	voltage1	read-only	Analog Input 1 voltage	String (SIZE (0..4))
x.3.2.2.0	vol1int	read-only	Analog Input 1 voltage (integer x100mV)	INTEGER (0..65000)
x.3.3.1.0	digitalInput1	read-only	Digital Input 1 status	INTEGER { ON(1), OFF(0) }
x.3.4.0	temperature	read-only	temperature	String (SIZE (0..4))
x.3.5.0	tempx10Int	read-only	Temperature (integer x 10)	INTEGER (-550..1250)

7.4 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 IP address	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-write	MAC Filter 1	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	smtpServerIPAddress	read-write	SMTP server IP address	IpAddress
x.4.7.2.0	smtpPort	read-write	SMTP port (1-65535)	INTEGER (1..65535)
x.4.7.3.0	senderEmailAddress	read-write	Sender e-mail address	String (SIZE (0..38))
x.4.8.1.0	VLANStatus	read-write	VLAN status	INTEGER { ENABLED(1), DISABLED(0) }
x.4.8.2.0	VlanId	read-write	VLAN ID	INTEGER (0..4095)

7.5 inputs

OID	Name	Access	Description	Syntax
x.5.1.1.0	input1description	read-write	Digital Input 1 description	String (SIZE (0..10))
x.5.1.2.0	input1ActionEdge	read-write	Send e-mail condition	INTEGER { RISING(1), FALLING(0) }
x.5.1.3.0	input1action	read-write	Send e-mail enable/disable	INTEGER { SEND(1), DONTSEND(0) }
x.5.1.4.0	input1emailAddress	read-write	Recipient e-mail	String (SIZE (0..38))
x.5.1.5.0	input1subject	read-write	Subject	String (SIZE (0..10))
x.5.1.6.0	input1body	read-write	Message	String (SIZE (0..21))
x.5.3.0	voltage1description	read-write	Analog Input 1 description	String (SIZE (0..10))

7.6 outputs

OID	Name	Access	Description	Syntax
x.6.1.1.0	relay1description	read-write	relay 1 description	String (SIZE (0..10))
x.6.1.2.0	relay1pulseWidth	read-write	relay 1 pulse width	INTEGER (0..253)
x.6.1.3.0	relay1IcmpMode	read-write	relay 1 - ICMP ON/OFF	INTEGER { ON(1), OFF(0) }
x.6.1.4.0	relay1IcmpTimeout	read-write	relay 1 - ICMP timeout	INTEGER (0..65000)
x.6.1.5.0	relay1IpAddress	read-write	relay 1 - ICMP IP address	IpAddress
x.6.1.6.0	relay1NumOfRestarts	read-write	relay 1 – maximum number of restarts	INTEGER (0..253)

7.7 Save changes

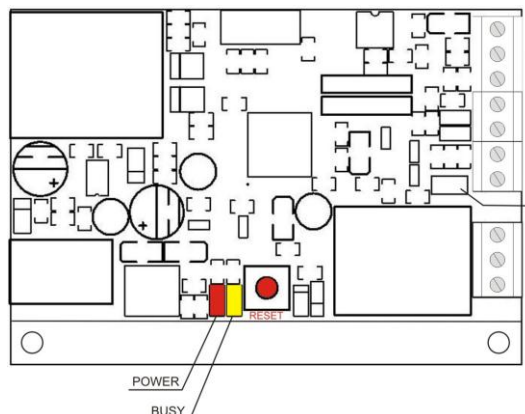
OID	Name	Access	Description	Syntax
x.7.0	configurationSaved	read-write	Save configuration changes	INTEGER { SAVED(1), UNSAVED(0) }
x.8.0	restartDevice	read-write	Restart device	INTEGER { RESTART(1), CANCEL(0) }

8. Restoring factory default settings

If the IP address or password is forgotten, **TCW110** can be restored to its original factory default settings. To do this, please follow the steps below:

- Turn off the power supply from the unit;
- Press and hold the RESET button then turn on the power supply;

The LED's **Power** and **Busy** will flash 14 times, after that they will turn on. In this moment the RESET button should be released.



The factory default settings are:

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

9. Firmware update

TCW110 supports remote firmware update. To update the device follow the steps below:

- Download the **TCW1XX_Update_Tool** program from www.teracom.cc;
- Download the latest firmware version file (*.cod) from www.teracom.cc;
- Start the program and update the device.

Attention! Don't turn off the power supply during the update. Turning off the power supply will damage the device.