

Inova-bg Ltd.

Radina Tau U4

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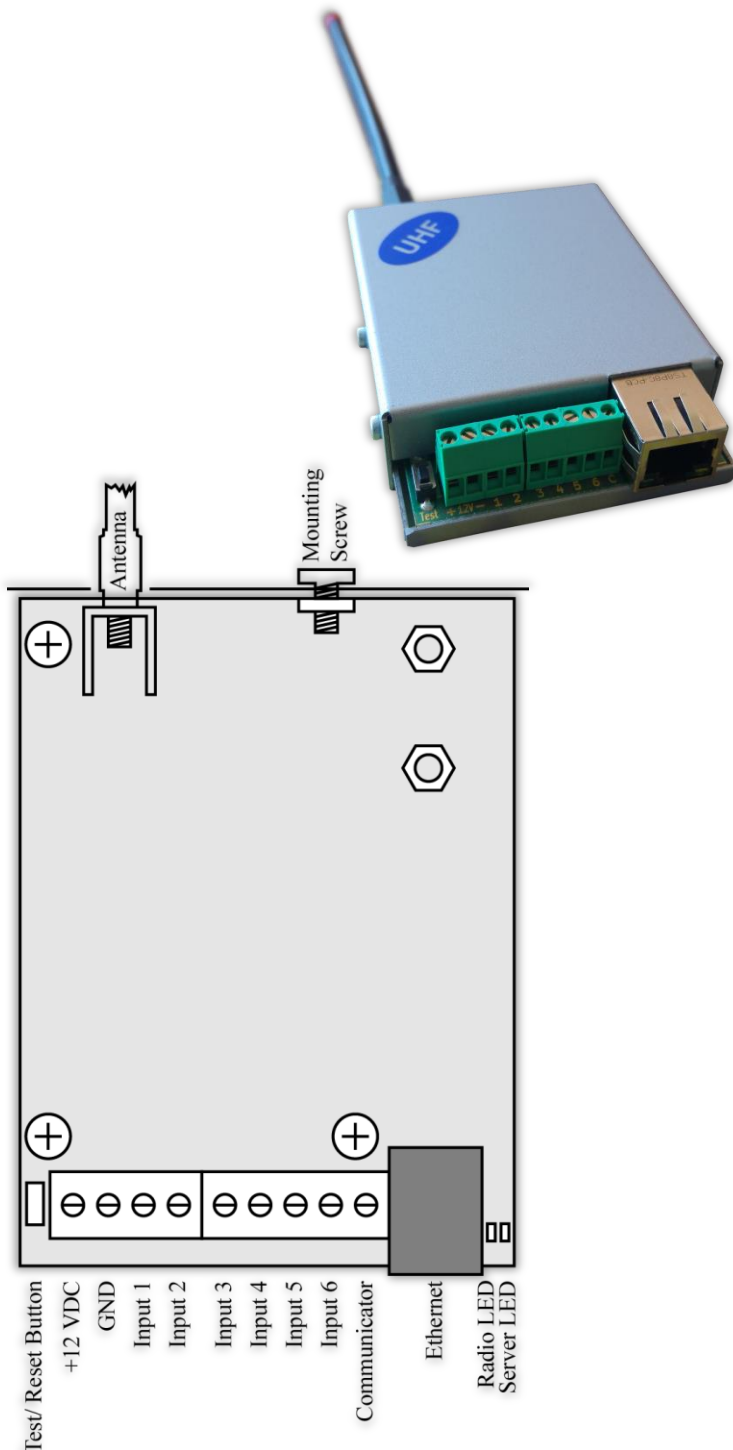
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1. Main features

Radina Tau U4 is a communication device with the main purpose to transmit data from security panels and/or sensors through UHF radio channel and/or IP based network. Combining the advantages of those two advanced communication technologies Radina Tau U4 provides the most secure connection with monitoring center using various ways of back-up – 1 main and up to 4 back-up UHF radio frequencies and up to 4 IP servers.

Features:

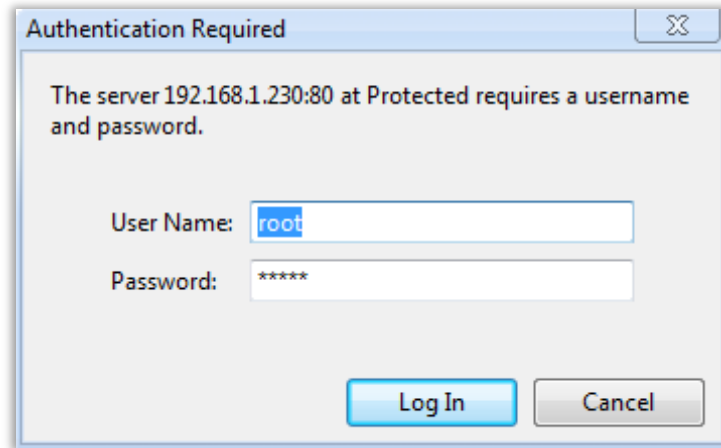
- Power supply 12VDC (8,5V to 16V)
- Low power consumption
- Frequency range – from 400MHz to 468MHz
- RF Output power – 37,5dBm ($\pm 1,5$ dB) in the whole RF range
- Bandwidth – 12,5KHz
- Constant RF output power regardless of the power supply voltage - from 8,5V to 16V
- Protocols - LARS, LARS II
- One main and up to four back-up frequencies
- Configurable parity check, RF messages repeat count, RF test repeat count, test period and “repeat until restore” period, usage of a Smart Test to reduce radio transmitting
- Capability every digital input separately to be set to transmit on backup RF frequency
- Capability every digital input separately to be set to re-transmit RF message over a period of time until it is in alarm state
- Network interface - IEEE 802.3 Ethernet, Fully Compatible with 10/100/1000Base-T Networks
- Static or dynamic IP address compatible with DHCP server
- Capability to use one or two fully independent IP servers



- Encrypted connection with IP servers
- Verification with an unique ID code
- HTML server for easy configuration and status check, protected with an username and a password
- Capability to change the username and password of the html server
- Indication (4 LEDs) for:
 - Radio LED – blinks under normal operation, ‘ON’ when transmitting radio message, ‘OFF’ while waiting after transmission
 - LAN Status - Ethernet available
 - LAN Activity – Network packets service
 - Server LED – Established connection with IP server/s – when using 1 server - ‘ON’ when connection is established. When using 2 servers - ‘ON’ when connection is established with both servers, blinks if connection is established with only one server , ‘OFF’ when connection isn’t established with both servers
- Six digital inputs working simultaneously with RF and IP transmitters
- Capability to use communicator as input - using “Ademco Contact ID” protocol
- Configurable working mode for every digital input:
 - Normal Open
 - Normal Close
 - Check for AC voltage from 5V to 20V
 - Deactivated
- Configurable parameters sent for events on each digital input to IP servers

2. Start working with Radina Tau U4

The default IP address is 192.168.1.230. Make sure that your computer is in the same IP subnet (see Chapter 12. Windows Network configuration). To access the web server for configuration use Internet Explorer (Chrome, Firefox, Opera or any other web browser) and enter the Radina Tau's address - **http://192.168.1.230/** (or the new one if you already change it). Alternatively you could write **http://radinatauu4**. If the device is accessible from that computer a connection will be established and you will be prompt to enter username and password:



The default settings (which will be recovered after hardware reset) are:

IP Address:	192.168.1.230
Username:	root
Password:	admin

If you enter the right credentials you will have access to the web page for configuration.

3. Homepage

The screenshot displays the homepage of the Radina Tau U4 web interface. At the top, the header includes the company name 'Inova-bg Ltd' and the product name 'Radina Tau U4 - Radio & Ethernet Security'. A left-hand navigation menu contains links for Home, Device Config, Login Config, Utility, About, and Reboot. The main content area features a welcome message and four data sections: Device Information, Power Supply, Last 5 Received Ademco Messages, and Digital Input Current Status. Each section is presented in a table format.

Device Information	
Device Name:	Radina Tau U4
Account number:	9999
Device MAC:	00:04:A3:4D:00:17
Firmware version:	1.5

Power Supply	
DC Voltage:	11.6V

Last 5 Received Ademco Messages	
Last Message:	none
Message 2:	none
Message 3:	none
Message 4:	none
Message 5:	none

Digital Input Current Status	
Digital Input 1:	Not Used
Digital Input 2:	Not Used
Digital Input 3:	Not Used
Digital Input 4:	Not Used
Digital Input 5:	Not Used
Digital Input 6:	Not Used

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Radina Tau U4, ver: 1.5

On the homepage you can find main information about the device, current status of the input voltage, last 5 messages received from the communicator and the current state of each digital input. Through the menu you could select one of the following actions:

Home – Homepage

Device Config – Configuration of the main parameters

Login Config – Configuration of username and password for web-server access

Utility – Test the connection to the servers

About – Contact information

Reboot – Restart the device

4. Configuration of the main parameters

4.1. General settings

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Radina Tau U4 - Radio & Ethernet Security

Radina Tau U4 Configuration

This page allows to configure Radina Tau U4 network settings.

General Settings

Device Name: Radina Tau U4

Protocol: LARS II

System: 0

Account Number: 9999

☐ Use different Account Number on the radio

Mode: Radio Transmitter and IP

☒ Send message if DC is lower than 10V

Device Name – Enter the name of the device. This value is used only for user convenience – to identify devices if you have more than one connected to one network. Maximum length – 30 symbols.

Protocol – The device can use either **LARS** or **LARS II** protocol. When using **LARS II** the device can receive data from communicator/dialer. Also there is a third option – **LARS on Radio / LARSII on IP** – in that case the device will send only the messages generated by it through the radio channel using LARS protocol and full LARS II protocol messages including the data received from the communicator input through the IP network.

System – System number –

LARS II - must range 0 to 15.

LARS - must range 0 to 3.

Account Number – If working with **LARS II** protocol – each of the four symbols must be from 0 to 9 and/or from B to F.

If working with **LARS** protocol - The first 3 symbols must be from 0 to 7. The last symbol must be from 0 to 9 or from A to J. In the monitoring software you can select how to use the last symbol – as a digit or as a letter (the digits 0 to 9 correspond to the letters A to J).

In some cases it's useful to set different account numbers for the radio and for the IP. In that case – there is an option – **Use different Account Number on the radio.**

The screenshot shows a settings window with the following fields and options:

- Account Number: (IP)** with a text box containing '9999'.
- ☒ **Use different Account Number on the radio**
- Account Number: (Radio)** with a text box containing '1234'.
- Mode:** with a dropdown menu showing 'Radio Transmitter and IP'.
- ☒ **Send message if DC is lower than 10V**

When this feature is enabled – the device will use two different account numbers for each communication channel. It can be used with all protocols as follows:

Disabled – Use different Account Number on the radio

	LARS		LARSII		LARS on Radio / LARSII on IP	
	Radio	IP	Radio	IP	Radio	IP
Messages generated from the device	AN	AN	AN	AN	AN	AN
Messages received from the communicator	N/A	N/A	CPN	CPN	N/A	CPN
AN – Account Number set in the Radina Tau U4 settings CPN – Account number set in the Control Panel and received from the communicator N/A – Not available – this message is not send in this mode						

Enabled – Use different Account Number on the radio

	LARS		LARSII		LARS on Radio / LARSII on IP	
	Radio	IP	Radio	IP	Radio	IP
Messages generated from device	ANR	ANI	ANR	ANI	ANR	ANI
Messages received from the communicator	N/A	N/A	ANR	CPN	N/A	CPN
ANR – Radio Account Number set in the Radina Tau U4 settings ANI – IP Account Number set in the Radina Tau U4 settings CPN – Account number set in the Control Panel and received from the communicator N/A – Not available – this message is not send in this mode						

Send message if DC is lower than 10V – Option that enables/disables generating of message if the input voltage drops under 10V.

Select working mode:

Radio Transmitter & IP – Transmit data messages through radio and IP network simultaneously.

Only Radio Transmitter – Transmit data messages only through radio. Network communication is used only for configuration

Only IP – Transmit data messages only through IP Network.

IP and Radio as Backup – in this mode the messages generated by the device (digital inputs, power supply, test and etc) are transmitted through IP and Radio. The messages received by the communicator are transmitted through IP. Only when the IP connection is not available – then the device will send the data from the communicator through the radio.

If you choose **Use Radio Only**, IP settings are deactivated except the ones which are needed to access the web-server. If you choose **Use Network Only** radio settings will be deactivated.

4.2. Settings for the radio transmitter

LARS

Radio Settings	
Main Frequency:	433.0000
Backup Count:	4 ▼
Backup 1:	433.0000
Backup 2:	433.0000
Backup 3:	433.0000
Backup 4:	433.0000
Parity:	Odd ▼
Use Smart Test	<input type="checkbox"/>
Repeat Count:	6
Rep. Test Count:	1
Test Period, h:	6
TUR Period, min:	6

LARS II

Radio Settings		
Main Frequency:	433.0000	
Backup Count:	4 ▼	
Backup 1:	433.0000	
Backup 2:	433.0000	
Backup 3:	433.0000	
Backup 4:	433.0000	
Use Smart Test	<input type="checkbox"/>	
Repeat Count:	6	
Rep. Test Count:	1	
Test Period, h:	6	
TUR Period, min:	6	
Communicator ContactID Events Filter:		
Event Group	Main Frequency	Backup Frequency
Alarms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Supervisory	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Troubles	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Open/Close	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Bypasses/Disables	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Test/Misc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other/Non-Standard	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Main Frequency – Main frequency for radio transmitting. Can be from 400 to 468 MHz with maximum of four symbols after the decimal point.

Backup Count – Number of used backups

Backup 1,2,3,4 – Backup frequencies for the radio transmitting. Can be from 400 to 468 MHz with maximum of four symbols after the decimal point. For each digital input you can choose whether to transmit or not on the backup frequencies.

Parity – (Only for **LARS**) - Parity check – Odd or Even.

Use Smart Test – When activated test messages will be sent over a period of time, set by the field **Test Period**, and this time will be restarted after every transmitted message regardless if it's a test message or not. This option will reduce the number of test messages transmitted through the radio channel. **Use this option only if your monitoring software supports it.**

Repeat Count – Determines how many times the data message will be transmitted through the radio channel. Must be from 1 to 15. Default – 6.

Repeat Test Count – Determines how many times the test message will be transmitted through the radio channel. Must be from 1 to 15. Default – 1

Test Period – Determines the time period (in hours) between test messages. Must be from 1 to 255. Default – 6

TUR Period – Transmit Until Restore Period – Determines how often (time period in minutes) to repeat the alarm message until the corresponding digital input is not restored. This option can be enabled separately for each digital input.

Communicator ContactID Events Filter – (Only for **LARS II**) – When working on LARS II protocol the device can receive messages through communicator/dialer. These messages could be filtered and only a part of them can be send through main and/or backup frequencies.

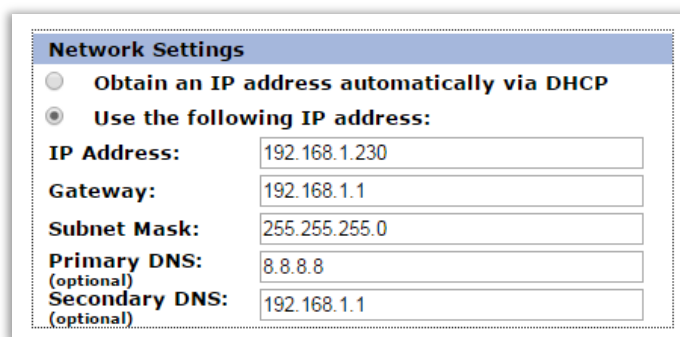
Radio Settings	
Main Frequency:	433.0000
Backup Count:	1 ▼
Backup 1:	433.0000
Use Smart Test	<input type="checkbox"/>
Repeat Count:	6
Rep. Test Count:	1
Test Period, h:	6
Test Period, h: if IP is disconnected	1
TUR Period, min:	6

If the device is working in - **IP and Radio as Backup** – mode, then the radio settings has some changes:

- The device cannot use the “Communicator ContactID Events Filter” – it will send all the events from the communicator through the radio if IP connection is not available

- There is an additional **Test Period,h (if IP is disconnected)** – this way the test period could be minimized only when there is a problem with the IP connectivity.

4.3. General IP settings



Network Settings	
<input type="radio"/>	Obtain an IP address automatically via DHCP
<input checked="" type="radio"/>	Use the following IP address:
IP Address:	192.168.1.230
Gateway:	192.168.1.1
Subnet Mask:	255.255.255.0
Primary DNS: (optional)	8.8.8.8
Secondary DNS: (optional)	192.168.1.1

This settings are active even when working in Use Radio Only mode because they are important for web-server access.

IP settings:

Obtain an IP address automatically via DHCP – IP address is received automatically from a DHCP server in the current network. In this case easy way to access the web-server is by entering the following address: <http://radinatauu4> . If you select this mode but after reboot the device cannot find a dhcp server for more than 10 seconds – Radina Tau U4 will load the last saved static address.

Use the following IP address – IP address and network parameters are set to static

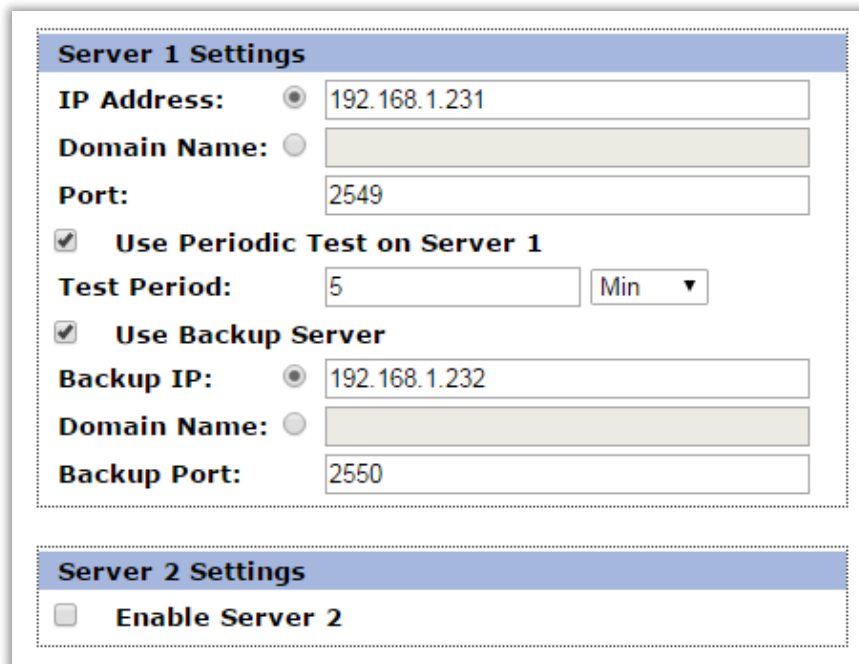
IP Address – IP address

Gateway –Gateway address.

Subnet Mask – Subnet mask of the IP network.

Primary/Secondary DNS – DNS address - optional parameter only needed if use Domain Name instead of IP address for at least one of the servers.

4.4. Settings for the IP transmitter



The screenshot displays a configuration window for an IP transmitter. It is divided into two main sections: 'Server 1 Settings' and 'Server 2 Settings'. The 'Server 1 Settings' section includes fields for 'IP Address' (set to 192.168.1.231), 'Domain Name' (empty), and 'Port' (set to 2549). It also features a checked checkbox for 'Use Periodic Test on Server 1' with a 'Test Period' of 5 minutes. Additionally, there is a checked checkbox for 'Use Backup Server' with corresponding fields for 'Backup IP' (192.168.1.232), 'Domain Name' (empty), and 'Backup Port' (2550). The 'Server 2 Settings' section is currently disabled, indicated by an unchecked checkbox labeled 'Enable Server 2'.

Server 1 Settings	
IP Address:	<input type="radio"/> 192.168.1.231
Domain Name:	<input type="radio"/>
Port:	<input type="text" value="2549"/>
<input checked="" type="checkbox"/> Use Periodic Test on Server 1	
Test Period:	<input type="text" value="5"/> Min
<input checked="" type="checkbox"/> Use Backup Server	
Backup IP:	<input type="radio"/> 192.168.1.232
Domain Name:	<input type="radio"/>
Backup Port:	<input type="text" value="2550"/>

Server 2 Settings	
<input type="checkbox"/> Enable Server 2	

If Radina Tau U4 works in mode **Radio Transmitter & IP** or **IP Only** the IP network server parameters will be visualized. The first group is corresponding to the first monitoring server. You must set the **IP address** or **Domain Name** and the communication **UDP port**. You can activate the periodic test - **Use Periodic Test on Server 1** and set the period. If **Use Backup Server** option is enabled – a secondary **IP Address/Domain Name** could be set. If the server on the primary address is not available – the device will try to send the data to the backup address. This option is usefull if the server has two addresses from different ISPs.

If you want to use the second server you must enable it - **Enable Server 2** – and to set the parameters in the same way as for Server1.

4.5. Settings for the digital inputs

The screenshot displays the settings for four digital inputs. Each input has a section for 'Active State' (radio buttons for 'N.C.' or 'N.O.'), a 'radio' button, and checkboxes for 'Transmit on backup' and 'Repeat Alarm Transmit Until Restore (TUR)'. Below these are 'LARS II' settings: 'Type' (dropdown), 'Partition' (text field), and 'Zone' (text field).

Digital Input 1 Settings
 Active State: N.C.
 radio
☐ Transmit on backup
☐ Repeat Alarm Transmit Until Restore (TUR)
 LARS II
 Type: 140 - General Alarm
 Partition: 15
 Zone: 201

Digital Input 2 Settings
 Active State: N.C.
 radio
☐ Transmit on backup
☐ Repeat Alarm Transmit Until Restore (TUR)
 LARS II
 Type: 401 - Open/Close by User
 Partition:
 Zone:
 (Dropdown menu open for Type):
 110 - Fire Alarm
 120 - Panic Alarm
 130 - Burglary Alarm
 133 - 24 Hour Alarm
 137 - Tamper
 140 - General Alarm
 301 - AC Loss
 302 - Low System Battery
 309 - Battery Test Failure
 400 - Open/Close
 401 - Open/Close by User
 xxx - Custom Event Code

Digital Input 3 Settings
 Active State:
 radio
 LARS II

Digital Input 4 Settings
 Active State: Not Used
 radio
 LARS II

According to which working mode is selected, in digital inputs settings different fields will become active/deactive.

Digital inputs can be connected to PGM outputs of security panles or to any different kind of sensors – panic-buttons, tampers and etc. In the **Active State** field you can set the working mode of each input – normal close (N.O.) or normal open (N.C.) contact, check for AC on this input (Hardware AC) or you can disable the input (Not Used). When digital input is

connected to PGM or dry contact, for '0' state is accepted value of the resistance to ground less than 300Ω and for active '1' – value more than 1,4KΩ (or open circuit), the hysteresis is between 300Ω and 1,4KΩ. If digital inputs are controlled by voltage for '0' state is accepted value of the voltage to ground less than 0,7V, and for active '1' – value more than 2,6V, the hysteresis is between 0,7V and 2,6V.

In the **radio settings** for each input you can set the following parameters:

Transmit on backup – Determines whether to send messages for this input on back-up channel or not.

Repeat Alarm Transmit Until Restore (TUR) – Determines whether to repeat messages for this input until it is in alarm state - using the **TUR Period** field to make pauses between repeats.

If using **LARS** protocol - radio messages are transmitted through radio channel for each input – **A1 to A6** for alarms on this input and **B1 to B6** for restore.

If using **LARS II** protocol - In the **LARS II** settings for each input you can set the following parameters:

Type – Choose a message which will correspond to the change of state of this input

Partition (from 0 to 15) and **Zone** (0 to 255) determines the corresponding parameters for the messages generated from each digital input.

4.6. Saving the new configuration

When you click the Save Config button a validation check is performed. If there is invalid data in one or more fields – they will be colored in red. Additionally under the button **Save Config** a field will be generated – **Error List** – which describes in details the errors and how to fix them. If all the input data are correct Radina Tau U4 will save the parameters and will reboot with the new configuration.

5. Username and password configuration

The screenshot shows a web interface for 'Inova-bg Ltd.' with a title bar 'Radina Tau U4 - Radio & Ethernet Security'. On the left is a navigation menu with links: Home, Device Config, Login Config (highlighted), Utility, About, and Reboot. The main content area is titled 'Login Configuration' and includes a description: 'This page allows to configure Login Username and Password.' There are two caution boxes: the first states that the information is needed for access and provides default credentials (root/admin) after a hard reset; the second warns that clicking 'Save Config' will reboot the device. Below this, a form titled 'Login Settings' contains input fields for 'User Name' (with 'root' entered) and 'Password' (with 'admin' entered). A 'Save Config' button is positioned below the form. At the bottom, a copyright notice reads: 'Copyright © 2013 Inova-bg, Ltd. Radina Tau U4, ver: 1.5'.

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Radina Tau U4 - Radio & Ethernet Security

Home
Device Config
Login Config
Utility
About
Reboot

Login Configuration

This page allows to configure Login Username and Password.

CAUTION: You will need this information to access this page. Use the "Hard Reset" button if you can't remember your Login information. After Reset default Username and Password will be recovered.
Default Username: **root** Password: **admin**

CAUTION: Enter desired configuration and click **Save Config**. This will cause the device to reboot with the new settings.

Enter the new Login settings below (**maximum 11 symbols**):

Login Settings	
User Name:	<input type="text" value="root"/>
Password:	<input type="text" value="admin"/>

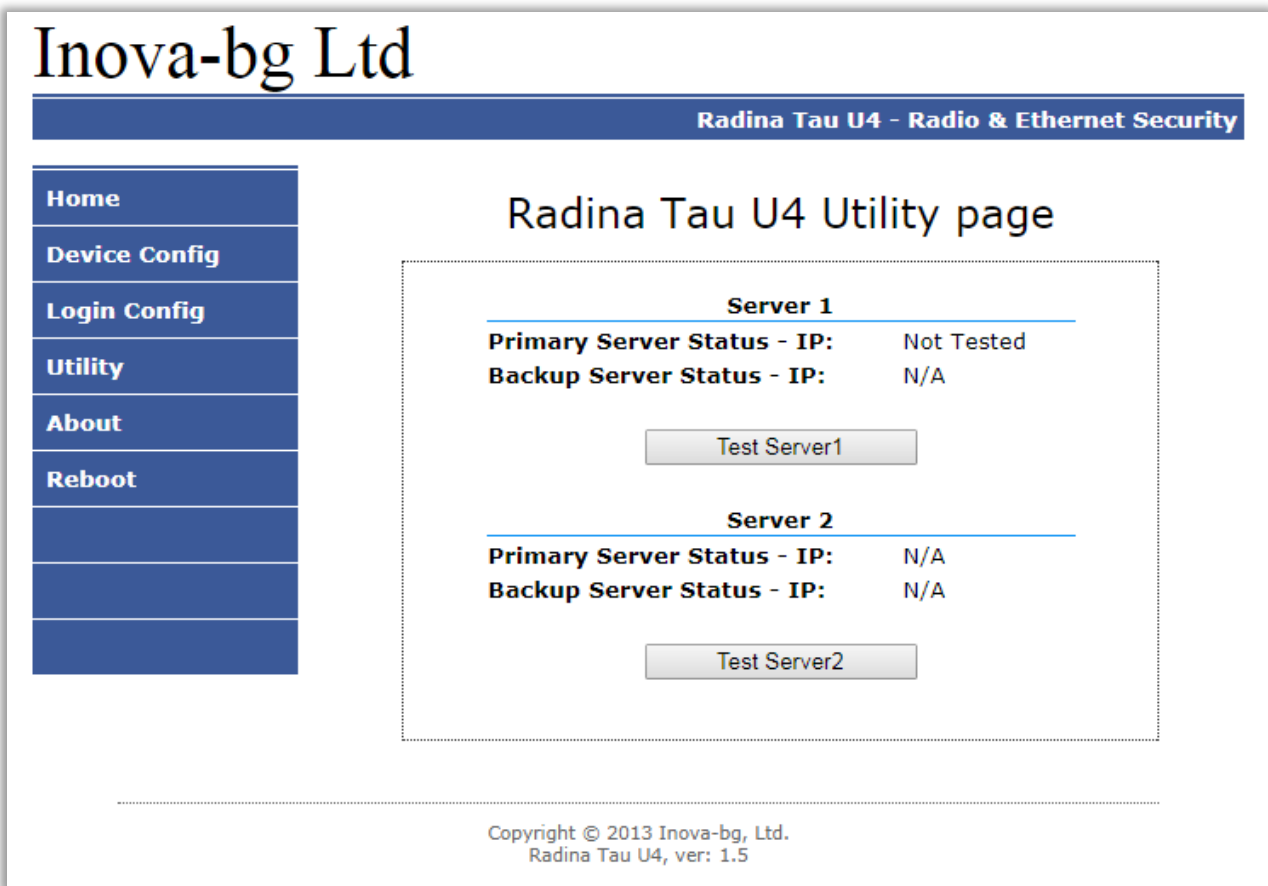
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In **Login Config** menu you can change the username and password used to access the web-server. Maximum length for both fields is 11 symbols. If you forget your credentials you can perform a hardware reset to recover default settings:

Username: root Password: admin

When you click the Save Config button a validation check is performed. If there is invalid data in one or more fields – they will be colored in red. If all the input data are correct Radina Tau U4 will save the parameters and will reboot with the new configuration.

6. Utility



In **Utility** menu, connections to the servers can be tested. When the test button is clicked the device will send test messages by IP to the server. If a backup server is enabled – the device will test this connection also.

7. Reboot



If you choose the **Reboot** menu this will cause the device to restart.

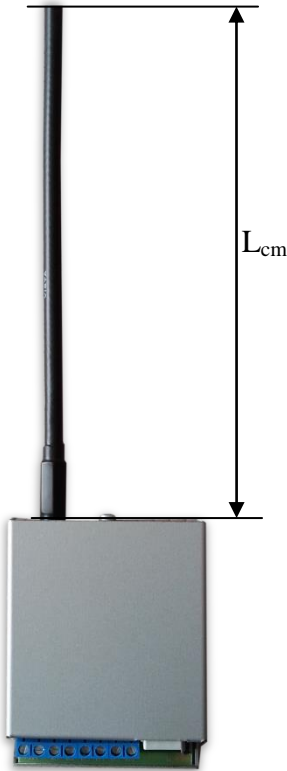
8. Hardware reset

In case you changed the settings and can't reach the device or if you forgot your username or password, Radina Tau U4 is capable to return to its factory defaults. For this purpose you must disconnect from power supply, push and hold the button for hardware reset and reconnect to the power supply. Hold the button for 5 seconds until the green LED is blinking. Once the LED goes off you can release the button and connect to the device.

9. How to determine the height of the antenna

The height of the antenna is determined by the radio frequency. If you use more than one radio frequency – make a compromise between all the frequencies. Put the antenna on its place, remove the plastic cap on the top – start measuring from the end of the box.

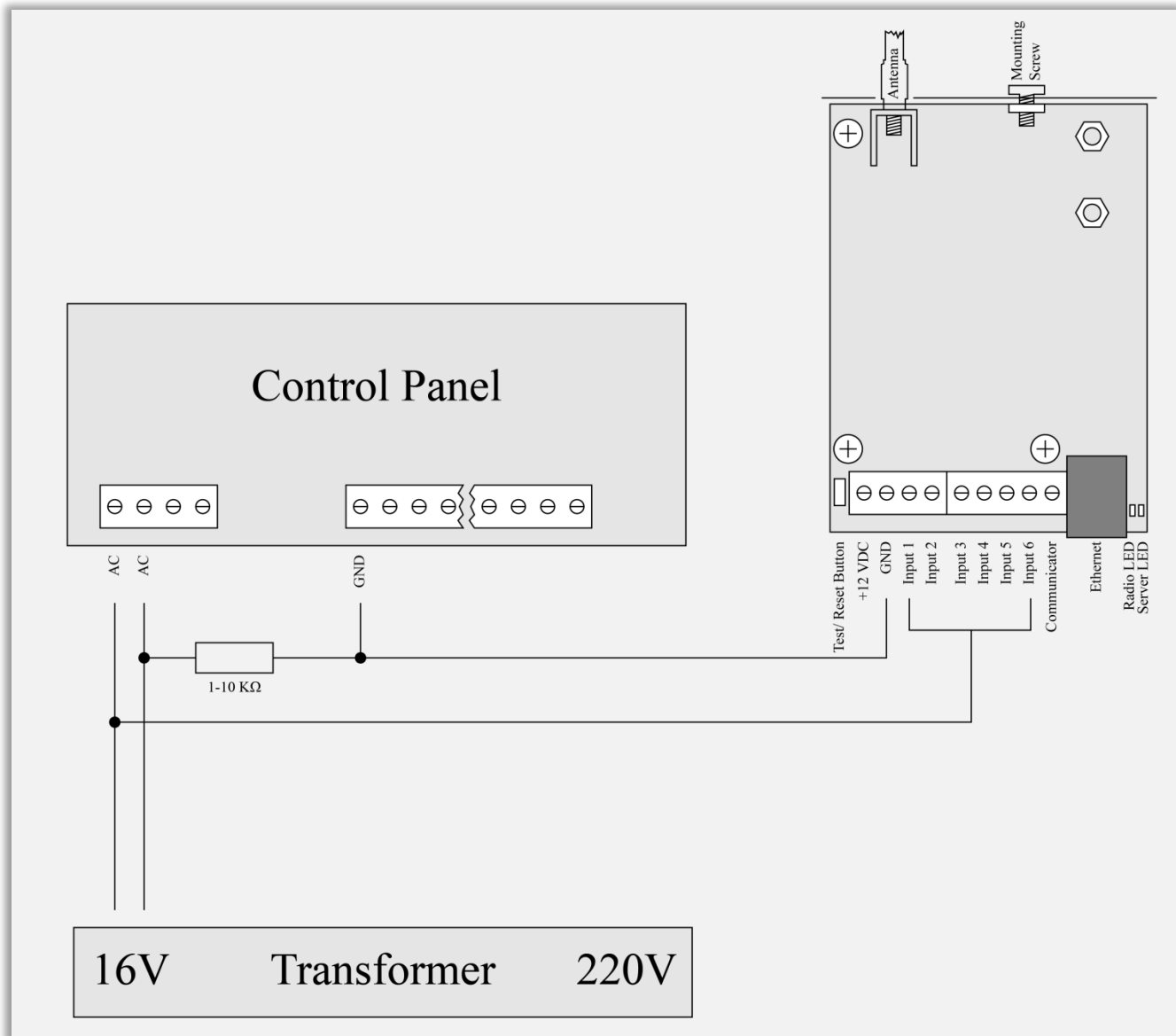
$$\text{Height, cm} = 7500 / \text{Frequency, MHz} : L_{\text{cm}} = 7500 / F_{\text{MHz}}$$



Frequency F_{MHz}	Formula	Height of the antenna L_{cm}
400.0000 MHz	$7500 / 400$	18.75 cm
410.0000 MHz	$7500 / 410$	18.29 cm
420.0000 MHz	$7500 / 420$	17.86 cm
430.0000 MHz	$7500 / 430$	17.44 cm
440.0000 MHz	$7500 / 440$	17.05 cm
450.0000 MHz	$7500 / 450$	16.67 cm
460.0000 MHz	$7500 / 460$	16.30 cm
470.0000 MHz	$7500 / 470$	15.96 cm

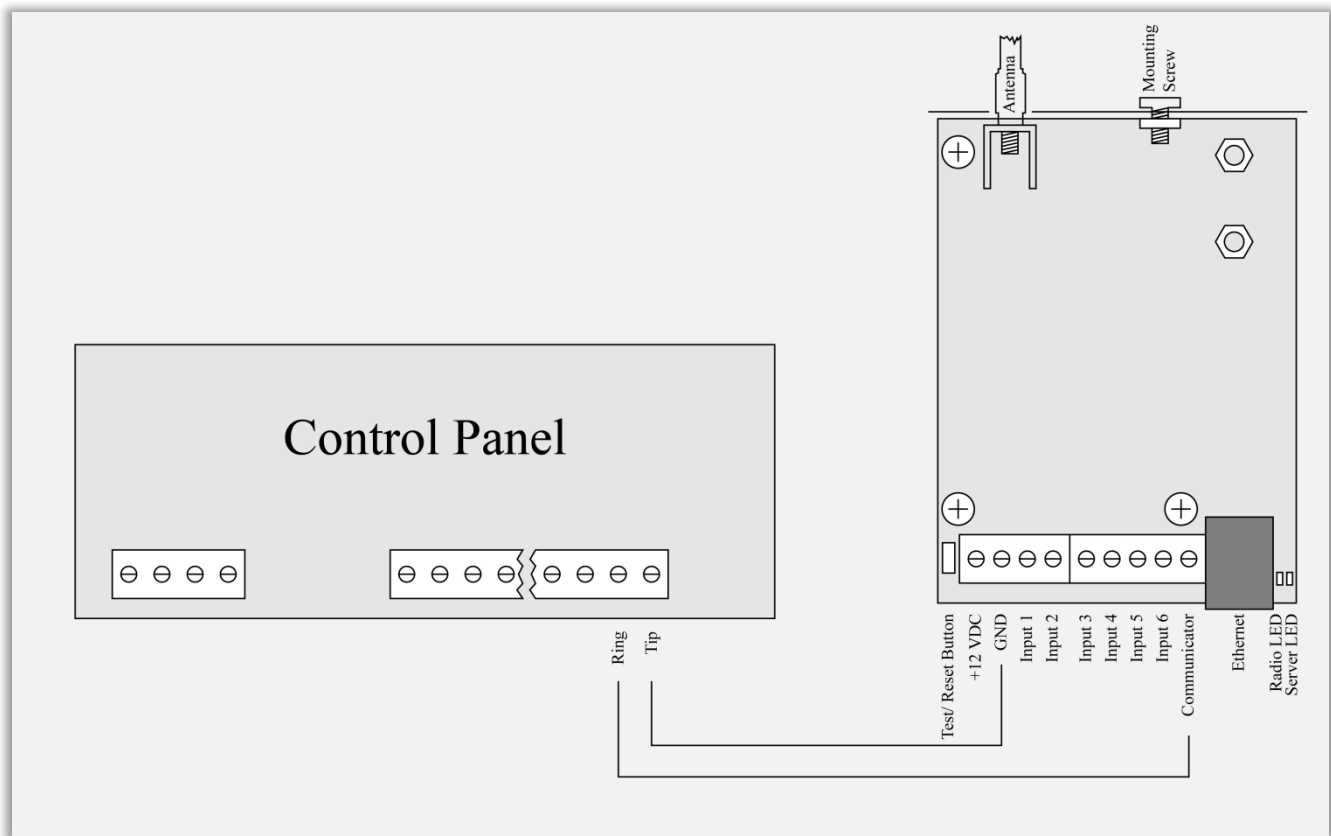
10. Hardware Connections

10.1. Hardware AC



Each of the digital inputs could be used as a “Hardware AC” input. In this mode it will monitor the AC and generate a message for “AC Loss/AC Restore”.

10.2. Communicator/Dialer connection



Radina Tau U4 has built-in communicator/dialer receiver. It can receive data from each security panel with communicator/dialer option. Settings for the security panel (in some models additional settings may also need to be made):

Phone Number: 9
Protocol: Ademco Contact ID
Wait Dialtone: Disable

11. Mounting in the security panel box

The mounting screw on the top of Radina Tau U4 should be used for proper mounting of the device in the box of the security panel. The pictures below shows how to use it:



12. Windows Network configuration

If you want to access the web-server, your computer must be in the same IP subnet. You must change the settings of your network adapter (if they are different than needed).

If your computer is in a different network than: 192.168.1.xxx with mask 255.255.255.0 you will need to change your current configuration of Windows network:

Start → Control Panel → Network and Sharing Center → Change adapter settings → Right-Click on your network adapter → Properties → Right-Click on Internet Protocol Version 4 → Properties → Use the following IP address

IP Address : 192.168.1.xxx, xxx is between 2 and 254 and must be different than 230

Subnet Mask: 255.255.255.0