METRICI
Observer Radar

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1. PRESENTATION

Metrici Observer Radar is a hardware product developed by Metrici to work in cooperation with Metrici detection engines to improve safety on the road, parking lots or industrial parks.

The radar will record the speed and Metrici will associate it with a license plate in its database.

By default, the radar is set to trigger a Metrici detection for any speed over 30 km/h. This value may be modified as wished.

1.1 Technical data

Description	Doppler radar
Characteristics	Web Interface for settings; may trigger detections
Maximum speed of detection	162 km/h or 100 miles/h
Accuracy	+/- 5% deviation
Maximum distance	100 meters
Work	Both way
Network	Ethernet 10/100 Mbps
Protocol	HTTP over TCP/IP, RAW over UDP/IP
Software compatibility	From Metrici 2 v3.0
Laser	Used for direction settings only
Power	PoE
Working temperature	-20 to +50 Celsius, IP65
Dimensions	27x19x10 cm
Weight	1 kg
Case	G378 IP65

2. OPERATION

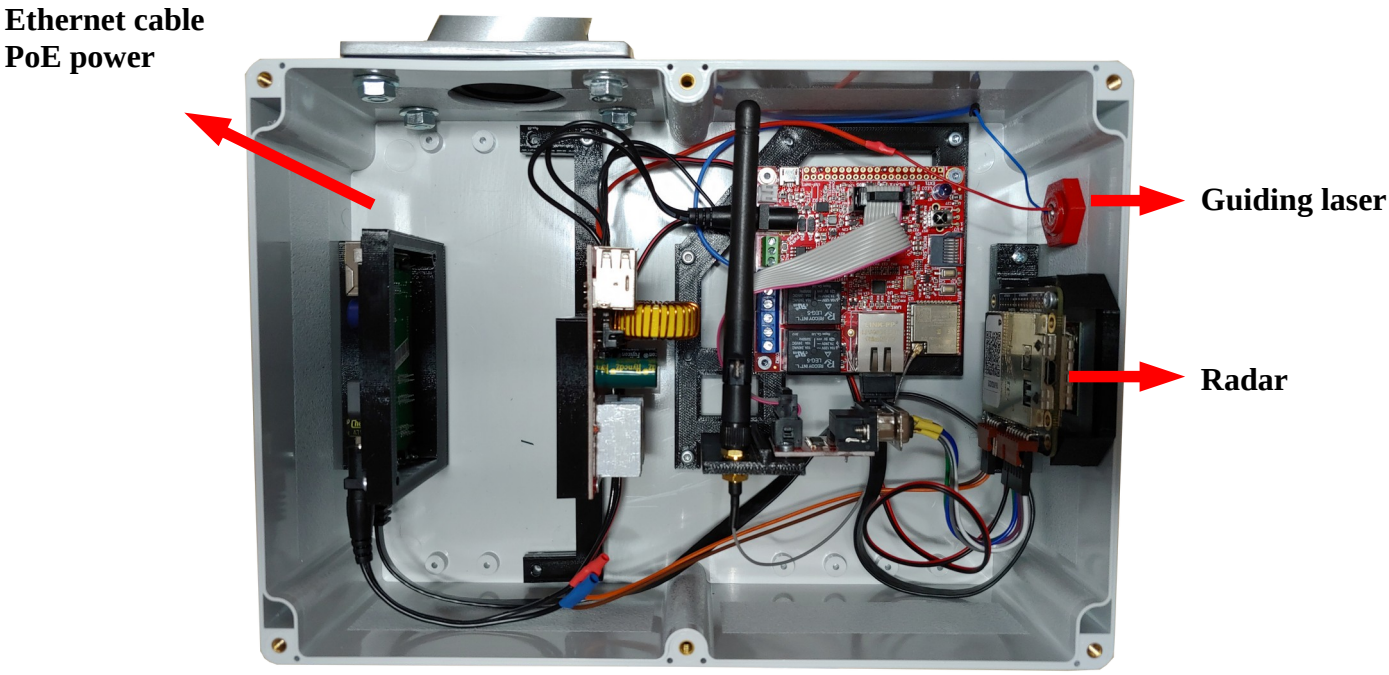
The device detects and records speed of objects that come or go. If an object/ vehicle is traveling a speed higher than one set (by default is 30 km/h), it will trigger a Metrici detection engine to start searching for number plates, that will be associated with that speed.

The data will be anytime accessible in the Interface: speed, license plate, photo, time of detection, place, direction

3. INSTALLATION

In order to use the radar, you will have to connect it to a local network. Open the case by removing the screws on the lid.

Connect an Ethernet cable to the power source, as shown in the next image.



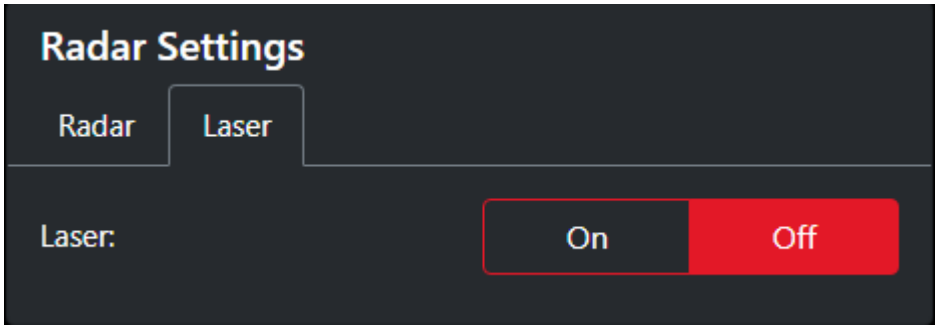
ATTENTION:

The Ethernet cable must be connected to PoE Switch, as the radar is powered this way only.

DEFAULT IP ADDRESS IS ALWAYS

192.168.100.10

For an easy settings, the case will include a guiding laser. After power supply, the laser can be switched on and off from the radar interface, accessing the mentioned IP. Go to **Settings**, **Laser tab**. Use the laser **only for settings** and never watch the laser straight in the light as it is powerful and may induce eyes injuries.



4. FIRST ACCESS

The radar will work only by connecting it to a local Ethernet.

Access the interface by using a browser and type the IP address. Remember that all values have a default value. These can be changed or left as such.

Metrici Observer Radar has a special firmware, with an easy interface, with three sections: Dashboard, Settings and User.

Dashboard shows the actual state of the device .

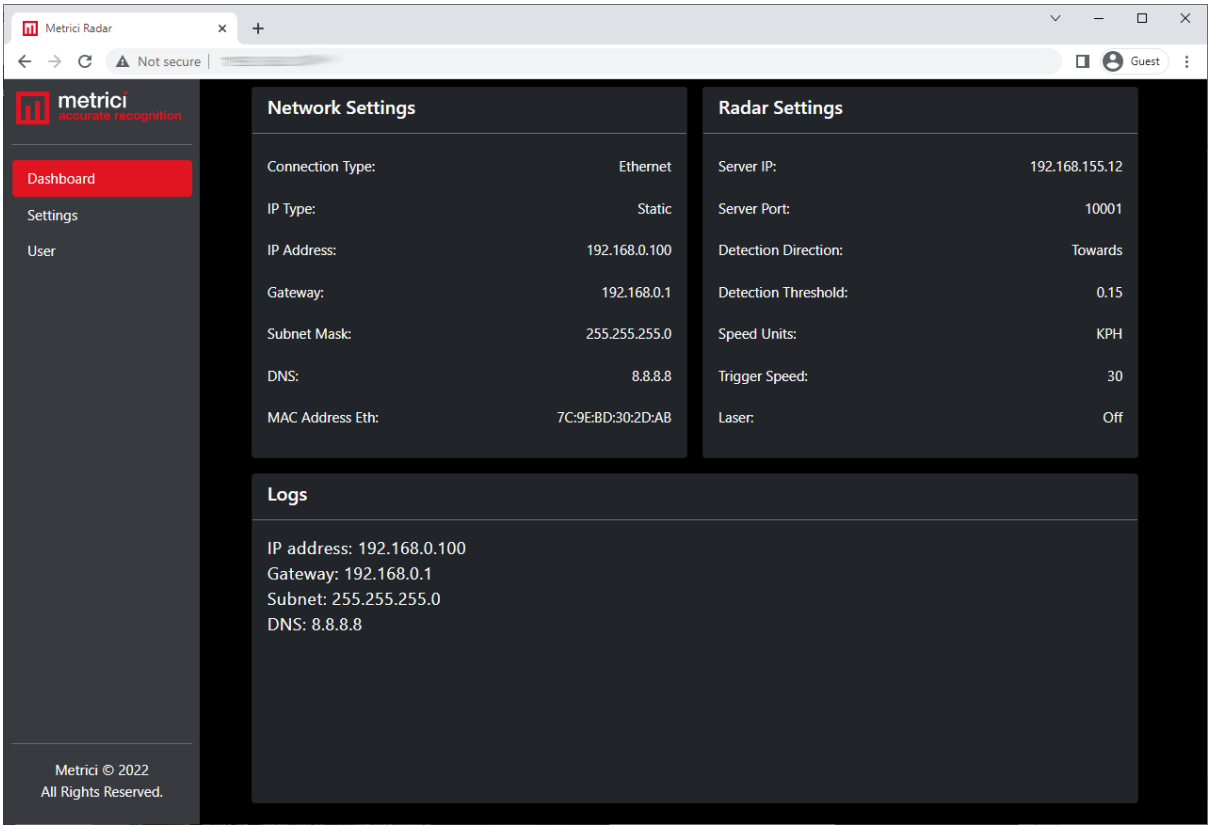
Settings lets you change the values, and **User** lets you set a user or modify one.

Settings you can make:

- **change the address and the port for Metrici server.** These values are necessary to make the connection between Metrici and radar, that will send the trigger for detection
- **change the settings for the radar**
- **turn on and off the guiding laser**
- **import or export configuration files**;
- update **firmware;**
- **reset the device**;

5. DASHBOARD

Accessing the defult IP address - 192.168.100.10, first window is Dashboard, where the actual state is displayed, as in the next image:


Metrici Radar
Not secure
Guest
metrici
accurate recognition
Dashboard
Settings
User
Network Settings
Connection Type: Ethernet
IP Type: Static
IP Address: 192.168.0.100
Gateway: 192.168.0.1
Subnet Mask: 255.255.255.0
DNS: 8.8.8.8
MAC Address Eth: 7C:9E:BD:30:2D:AB
Radar Settings
Server IP: 192.168.155.12
Server Port: 10001
Detection Direction: Towards
Detection Threshold: 0.15
Speed Units: KPH
Trigger Speed: 30
Laser: Off
Logs
IP address: 192.168.0.100
Gateway: 192.168.0.1
Subnet: 255.255.255.0
DNS: 8.8.8.8
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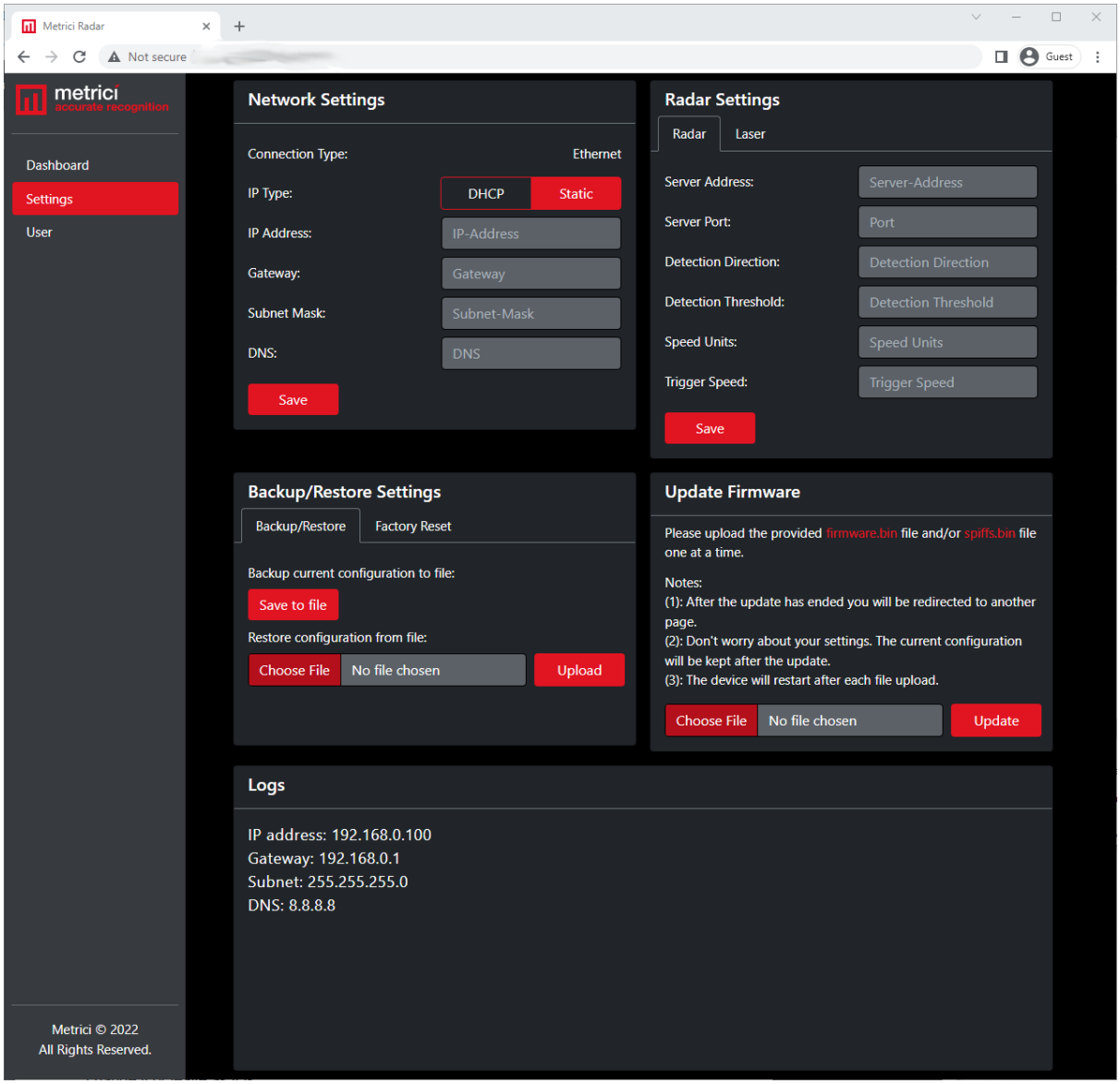
6. SETTINGS

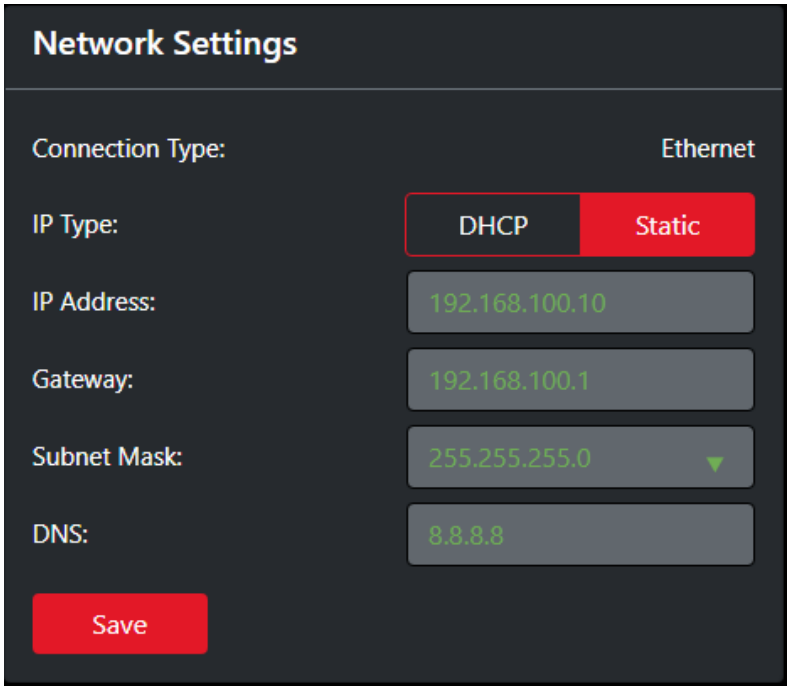


For radar settings, you will access **Settings** page in the menu on the left of the page.
Each field has three possible status:

- blank, where nothing is written so the actual status is kept;
- write reset to reset the setting;
- write a valid new status.

7. NETWORK SETTINGS

Network Settings lets you change the network settings. This can work on Ethernet with static IP Static or DHCP.



The device comes preset as **Connection Type: Ethernet** and **IP Type: Static.** This is the reason you can access the radar at the address 192.168.100.10.

IP Type

By choosing **IP Type DHCP** means that the radar will receive any IP as the switch wants. By choosing this setting, all the other fields will automatically be filled in by the system

NOTE!
If you choose DHCP, you will have to set some rules in the network for the radar to work. Left as such, every time the radar restarts it will take another IP and will not communicate with the server. You should set the router to be linked to the MAC address. So that every time it starts it will have the same IP address even if it is on DHCP.

Choose **IP Type: Static** by filling an IP address, followed by Gateway, Subnet Mask, DNS.

Attention !

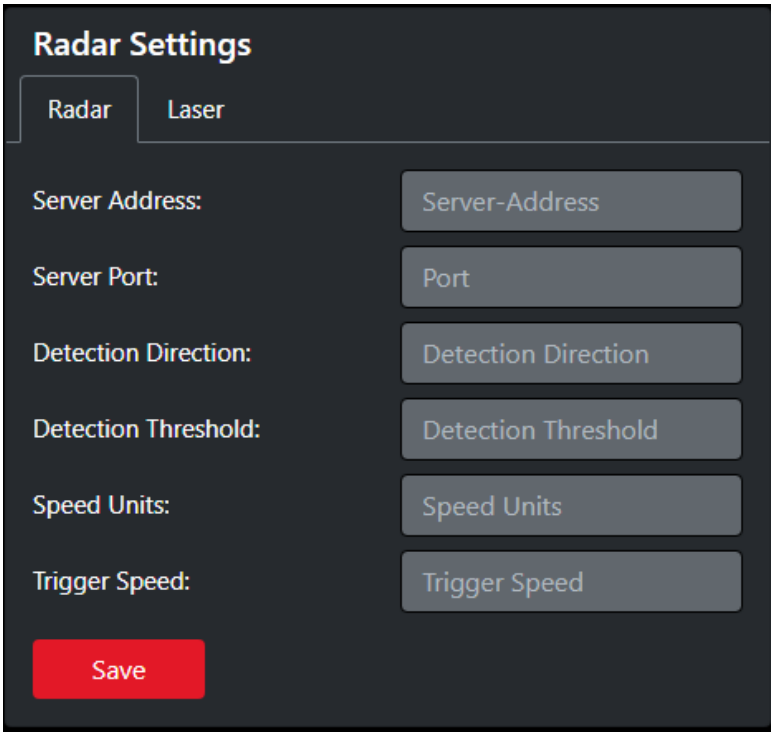
The moment you save the settings, no matter what, the device will restart and you will be notified that you are no longer connected and you will have to write the new address to access the interface. If the option you chose was DHCP, you will not know the new address. In this case connect first to the local router to identify the radar in the addresses list .

8. RADAR SETTINGS

You have two fields: **Radar** and **Laser**.

8.1 Radar

When a certain speed is detected as set in the interface (Trigger Speed), the radar will send a trigger to the Metrici detection engines.



Server Address is the address of the Metrici server that will receive the trigger for detecting the number plates.

Server Port is the port of the Metrici server that receives the trigger. For this see the Metrici Control Panel and the detection engine for the camera that will do the LPR reading

Detection Direction is the direction of objects that will be recorded:

- objects that come toward the radar: **Towards**
- go away from the radar: **Away**
- detection for both ways: **Bidirectional**

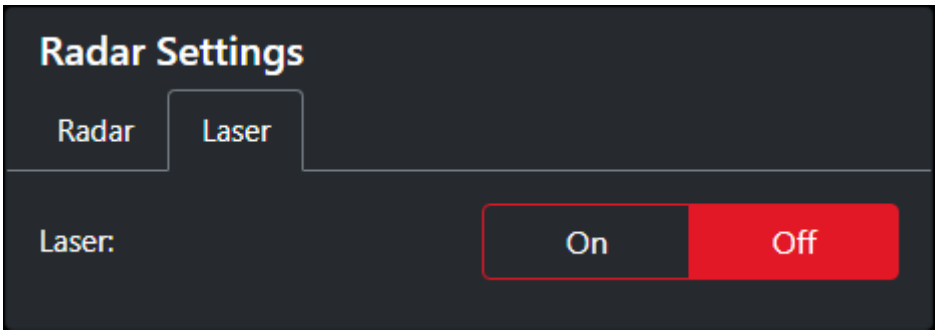
Detection Threshold: this is the radar sensitivity, a value between 0 and 1. The more the value is bigger, the less sensitive is the radar, so the distance is smaller, but the device will be less affected by heavy snow or rain.

Speed Units is how the speed is displayed: KM/h or M/h (miles per hour);

Trigger Speed is the speed for which the trigger is sent

8.2 Laser

For an easy installation, the case has a guiding laser. This can be switched on from laser tab menu.

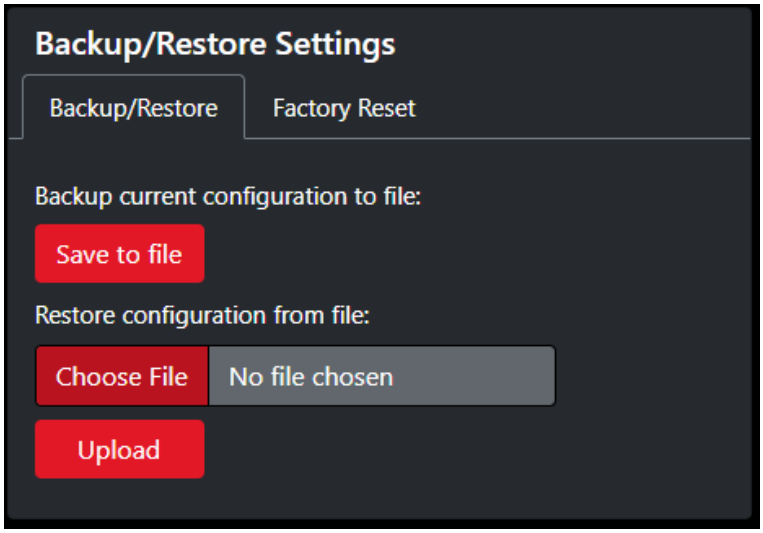


Attention !

DO NOT POINT THE LASER TOWARDS ANYONE EYES OR YOURSELF!!! Laser can cause eye burns. Each time the radar is powered the laser is off and you can only manual switch the laser on. Do the settings and then CLOSE IT from the same menu. With its help you can approximate where the radar looks and where the speed is recorded and where a LPR reading should be made.

9. BACKUP /RESTORE /RESET

9.1 Backup current configuration



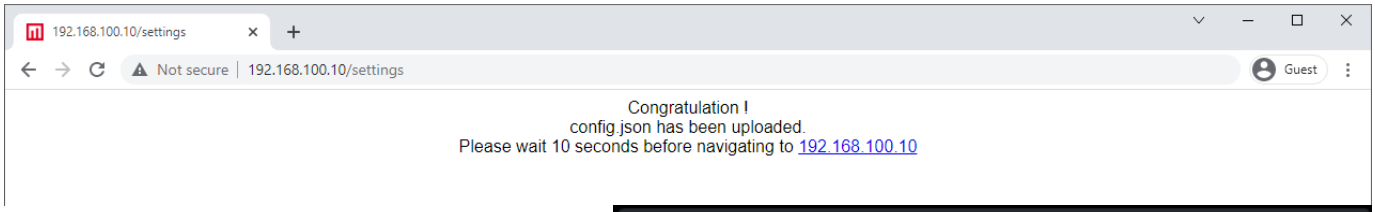
will download a file with all the settings of the radar, by click on a **Save to file** button.

The file will be JSON type. More info on **Restore Settings chapter**

9.2 Restore configuration

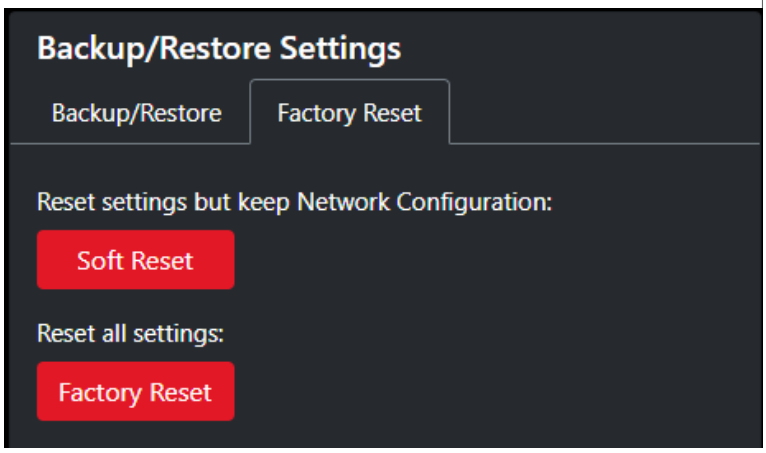
will let you import a configuration file. By importing one, all the current settings will be changed. The file you upload can be a **backup one or a new one.**

Press **Upload and the device will restart. A new page will display the success of the settings as in the next image**.



9.3 Factory Reset

In this tab, you will find two buttons: **Soft Reset** and **Factory Reset**.



Soft Reset keeps all the network settings, but resets the rest. By pressing it, you will be notified if the reset was a success. Wait a few seconds, till the Interface restarts also.

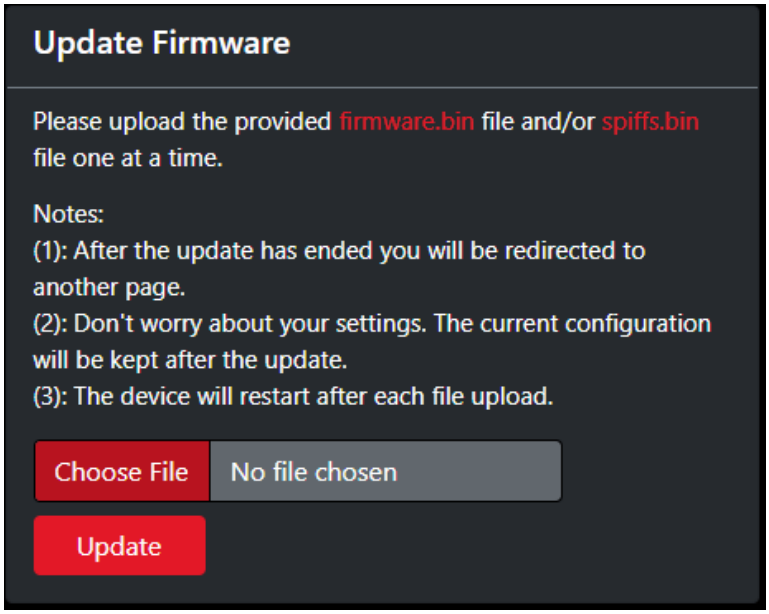
This Soft Reset keeps only the network settings (SSID, Password, IP, Gateway, Subnet, DNS), but deletes the others (Radar and Laser) which are set at the default value.

Factory Reset will delete all the settings. By pressing this button, the device will restart and you can access it to the default IP address: 192.168.100.10.

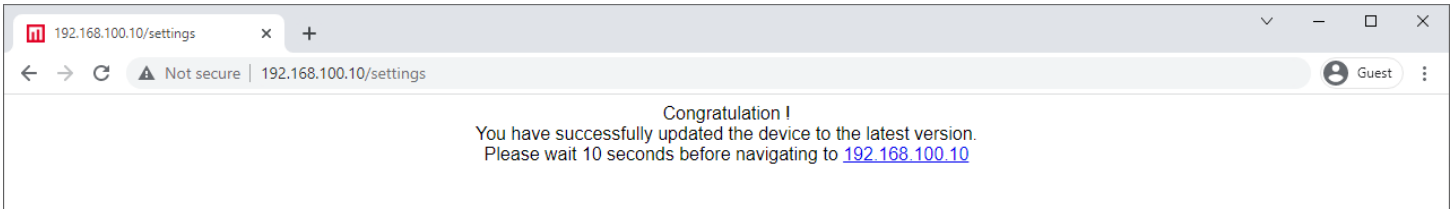
Any button you press, a pop-up will ask for your permission to take the next step.

10. FIRMWARE UPDATE

Here you can update the firmware for the Observer Radar. Fisierele **firmware.bin** and **spiffs.bin** will be provided by Metrici when accessing page **support.metrici.ro**.

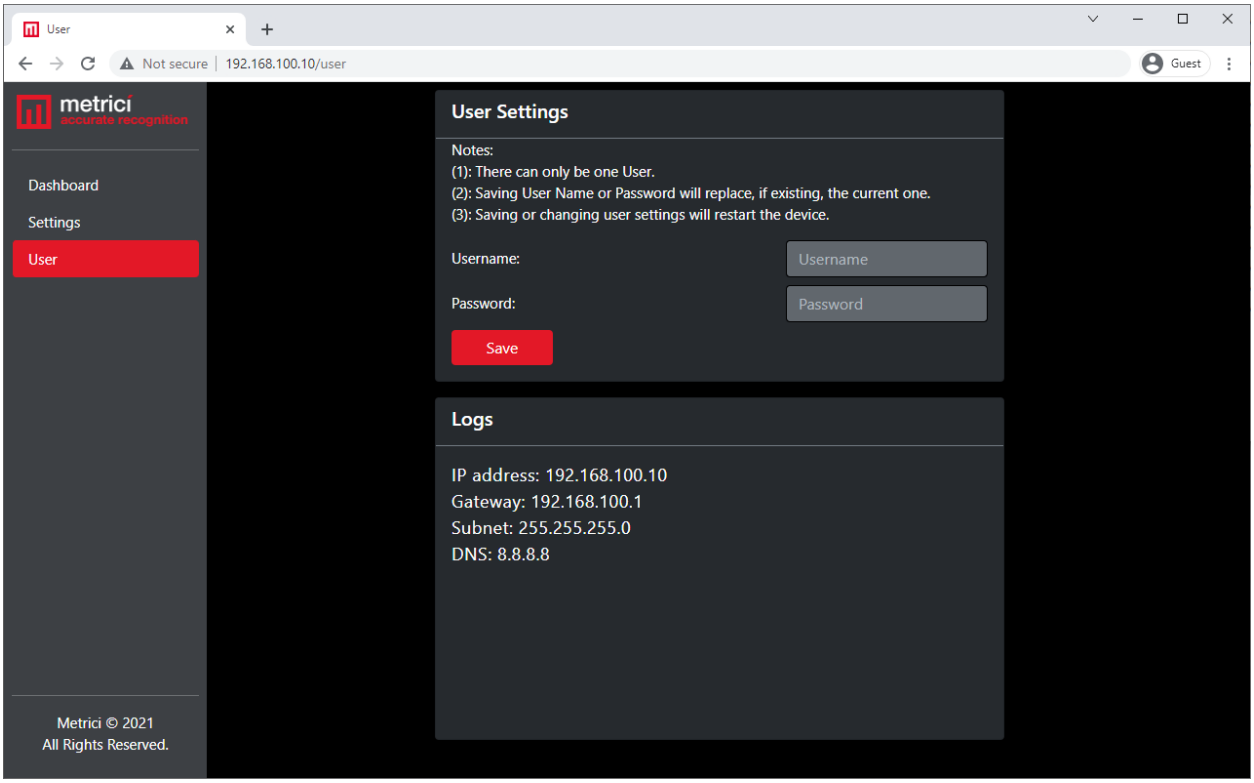


For an update, download the files, press **Choose file**, and click **Update** after browsing to it. **Configuration will be kept but the device will restart.**



11. USER

You can set only one user, with a password. If you want to change it, just write the new values and click save

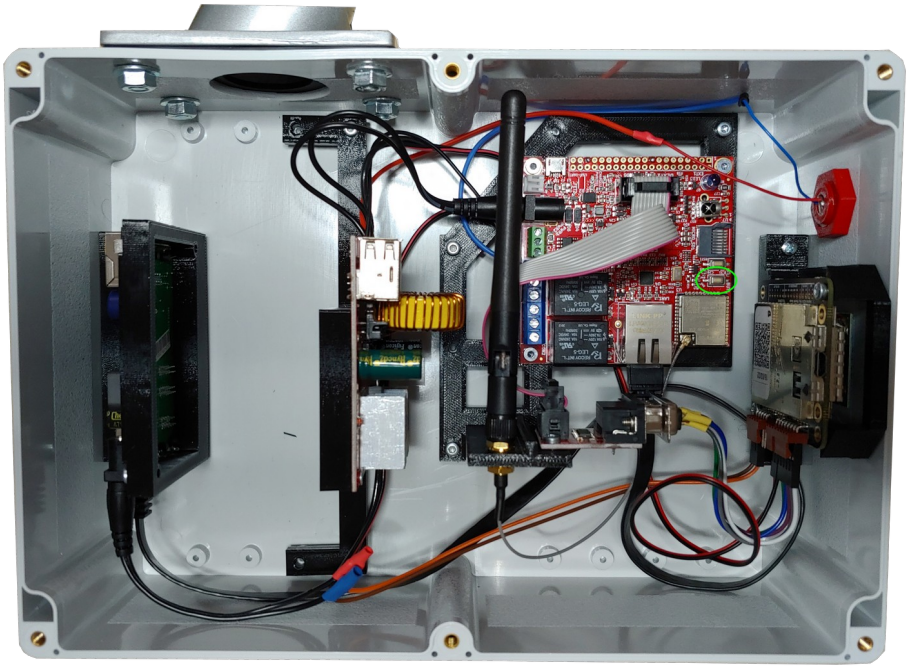


It is not mandatory to create a user, but Metrici recommends to better secure the Oberver Radar to be harder to access by anyone in the network.

12. HARD FACTORY RESET

Oberver Radar has a hardware button for Reset inside the case. By pressing it, all settings of the radar will be changed to the default ones. In fact, it does the same things as Factory Reset from the Interface.

To access it, open the case and search for BUT1 button (circled in green in the image). This is the reset button.



To start the Reset, unplug the Observer Radar from the power source. Press the button while reconnecting to the power source and keep pressing it for 5-10 seconds.

To check the success, connect an Ethernet cable and go to 192.168.100.10

13. ADVANCED BACKUP / RESTORE

You can sava or upload configuration files in the interface. This uses only one file: **config.json** .

This is the only possible name. Any other name the file will have it will be ignored by the system

An example of a configuration file can be seen in the last page of this user guide.

Remember that this type of configuration is for advanced users. If you write yourself the file and is not a backup one and you write it wrong or the values are not correct, the radar will not work

13.1 config file format

- **network_settings**

- connection: value can only be Ethernet
- ip_type: values can be Static or DHCP
- ip_address: a string line as IP format
- gateway: a string line as IP format
- subnet: a string line as IP format
- dns: a string line as IP format
- mac_address_eth

The value of the MAC address can not be modified. Anything you write in here will be overwritten by the device. This address is to be found inside the radar case.

- **radar_settings**

- server_address: a string line as IP format
- server_port: a number between 1 and 65536
- detection_direction: values can be **Towards**, **Away** or **Bidirectional**
- detection_threshold: a decimal number between 0 and 1 which represents radar sensitivity
- speed_units: values **KPH** or **MPH**
- trigger_speed: a number between 10 and 99
- laser_state

The value laser_state can not be modified. Anything written here will be ignored.

- **User**

- username: alphanumeric line
- password: alphanumeric line minimum 8 characters

All these will result in a code like next one, as seen also in the image above

```
{
        "network_settings": {
           "connection": "Ethernet",
           "ip_type": "Static",
           "ip_address": "192.168.0.100",
           "gateway": "192.168.0.1",
           "subnet": "255.255.255.0",
           "dns": "8.8.8.8",
           "mac_address_eth": ""
        },
        "radar_settings": {
           "server_address": "192.168.155.12",
           "server_port": "10001",
           "detection_direction": "Towards",
           "detection_threshold": "0.15",
           "speed_units": "KPH",
           "trigger_speed": "30",
           "laser_state": "Off"
        },
        "user": {
           "username": "",
           "password": ""
        }
                        }
```