
TECHNICAL REFERENCE MANUAL

DS-WIFI V21-1



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2. About this document

This is the users manual for DS-WIFI devices.

2.1. Legend

The following symbols and formats will be used throughout the document.



Important

It gives you important information about the subject.
Please read carefully!



Hint

It gives you a hint or provides additional information about a subject.



Example

Gives you an example of a specific subject.

2.2. Online versions

2.2.1. Device Technical Reference Manual

The most recent version of this manual can be downloaded from our homepage:

<https://download.dewesoft.com/list/manuals-brochures/hardware-manuals>

In the *Hardware Manuals* section click the download link for the *Device® technical reference manual*.

2.2.2. DEWESoft® User Manual

The DEWESoft® User Manual document provides basics and additional information and examples for working with DEWESoft® and certain parts of the program.

The latest version of the DEWESoft® tutorials can be found here:

<https://download.dewesoft.com/list/manuals-brochures/software-manuals>

In the Software Manuals section click the download link of the DEWESoft X User Manual entry.

3. Connecting the hardware

1. Install the antenna on the DS-WIFI.
2. Connect the modem over UTP cable to the adapter in PoE + Data switch, then connect the UTP output (Data) of the adapter to the computer and at the end connect the adapter to the power supply.
3. Wait until the modem beeps twice, which means it is ready for connection and configuration.
4. Open Winbox software.
 5. Search for MikroTik modem under the neighbours tab in Winbox software, click on it and connect to it with button Connect.

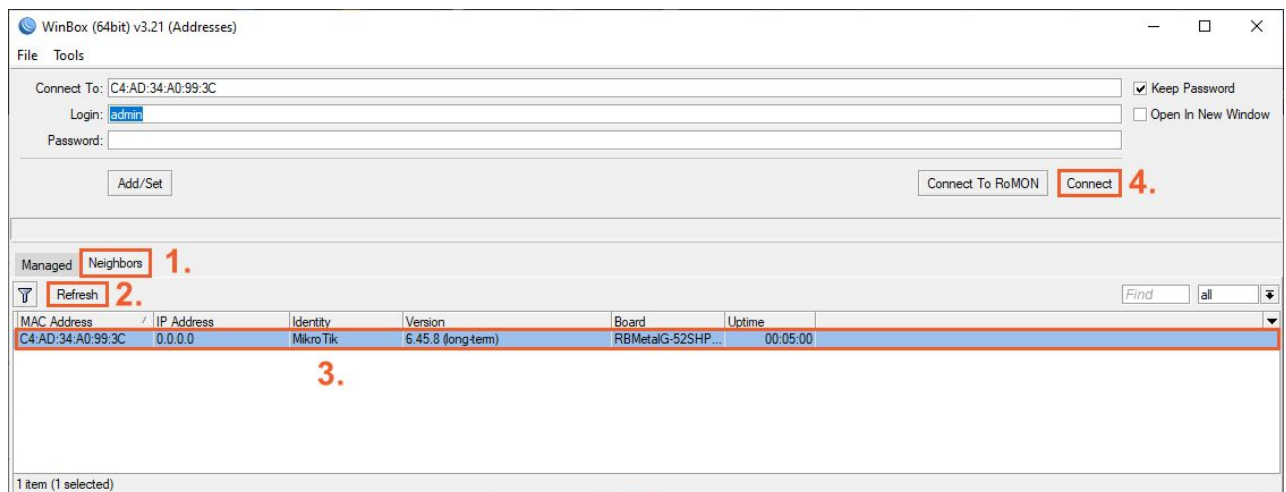


Image 1: Connect to MikroTik Wifi modem in WinBox application

6. Now upload the latest version of the DS-WIFI firmware. First check for the latest firmware version on [Mikrotik webpage](#) and download the available **Stable version** of **MIPSBE Main package**.

- In Winbox software open **Files** and replace the old firmware version with the downloaded one by setting the file location. Click on the *Upload* button -> Wait it to load -> Close the File list window with X.

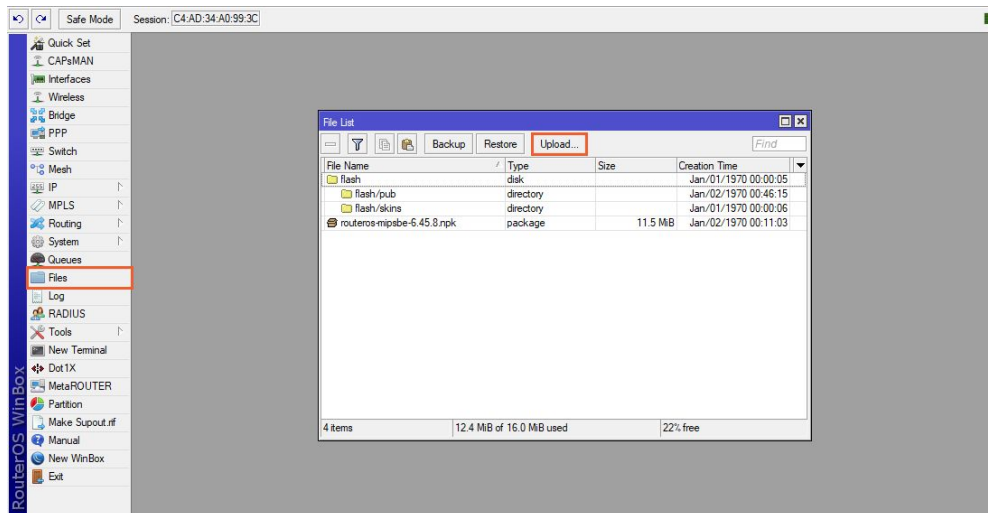


Image 2: Open Files and upload the latest firmware version

- After the firmware was updated you need to *Reboot the system* in **System -> Reboot**. You will lose the connection on Winbox and after a reboot will be done, the device will beep twice.

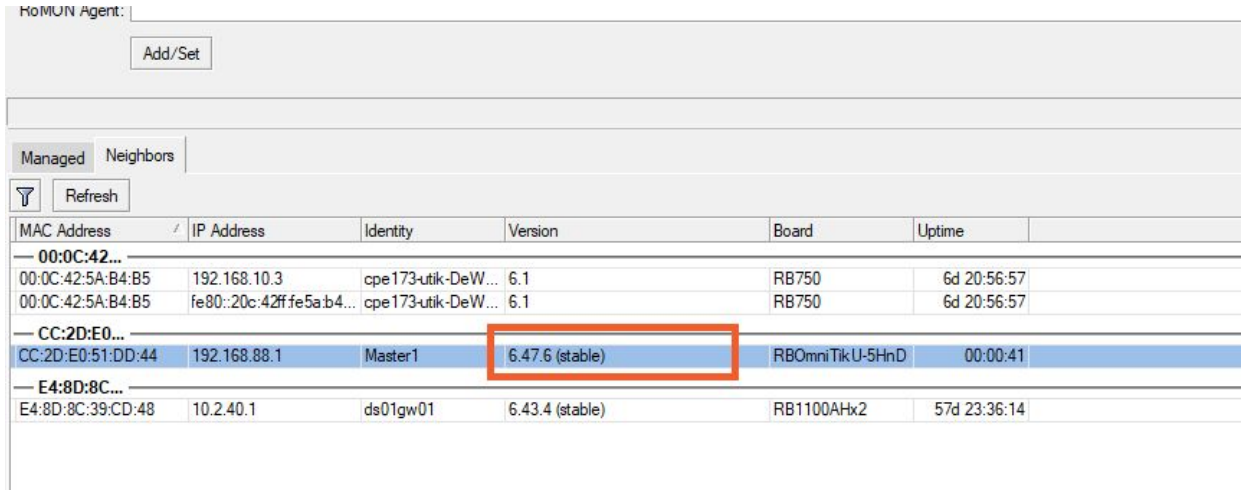


Image 3: After rebooting the device you should see the new version that you have downloaded written out in the Winbox app.

- Now again connect to the same DS-WIFI again as it was described in step 4.

10. When it is connected you have to Reset configuration in **System -> Reset configuration**. The following screen will pop up:

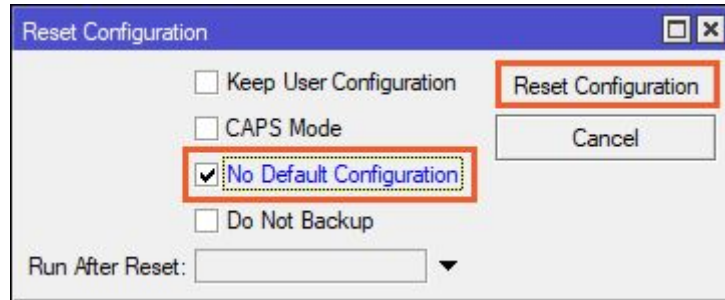


Image 3: Reset Configuration with 'No Default Configuration' option enabled

11. Wait for the modem to reboot and again beep two times and connect on it again (look step 4.), but now the device will have the *MAC Address 0.0.0.0*, so connect to that one.



Important

For both master and slave devices you need to do this. The difference will be only in naming the devices later in settings, so pay attention you always use the same names on the same device.

4. Setting up the modem

4.1. New bridge interface

1. In the tree window on the left select Bridge and make a new interface with clicking on plus button as it is shown on the image 4.

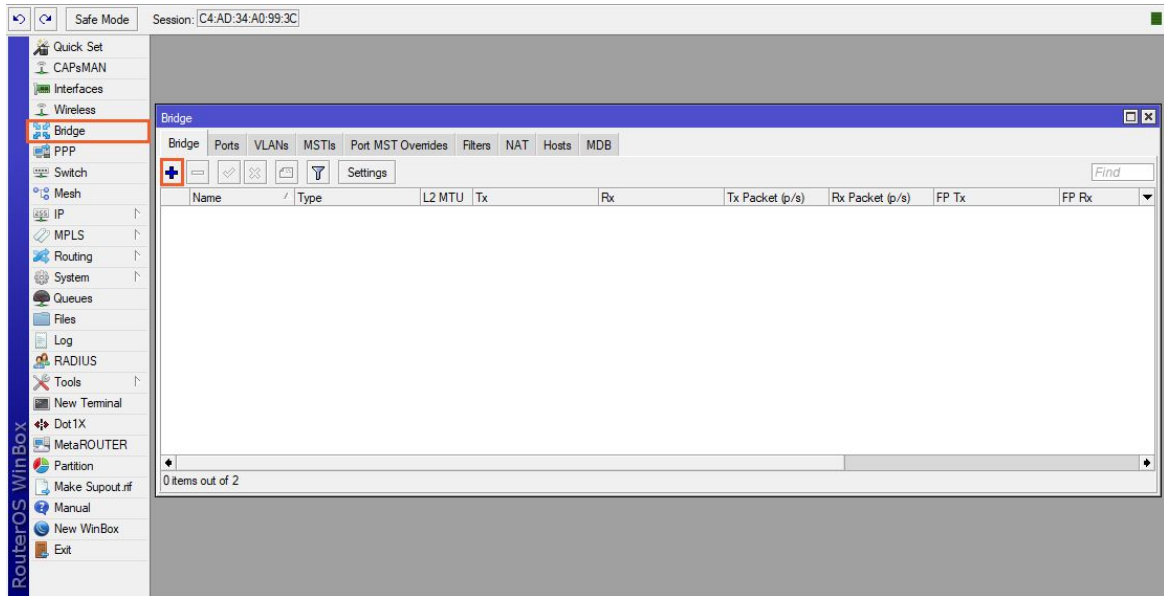


Image 4: Add a new Bridge

2. The New Interface window will be created. Rename it to:
 - **Master** or
 - **Slave** and click OK.

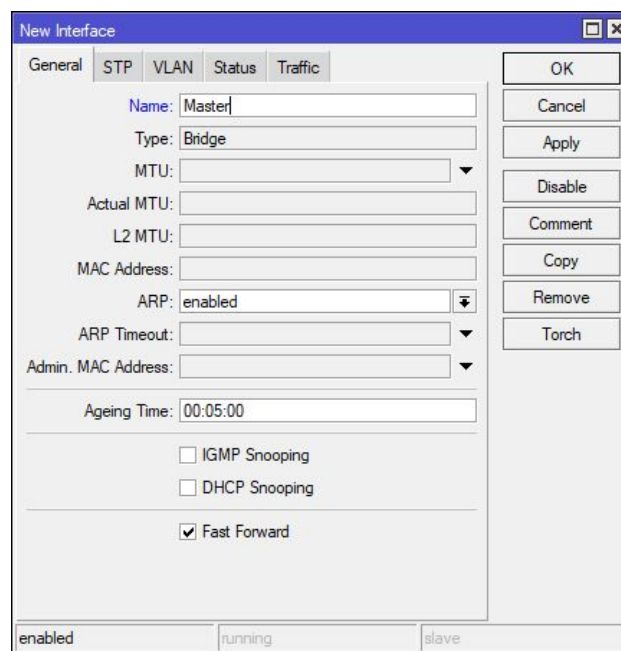


Image 5: Rename the new Interface in 'Master' or 'Slave'

3. Stay in the Bridge window and click on the **Ports** tab. In the Ports tab you will connect all the Ports of modem to this new created interface.
4. Click on plus button and add a bridge connection of interface: **ether1, ether2, ether3, ether4, ...** and **wlan1** to a bridge *Master* or *Slave*. Look at the images 6 and 7.

DS-WIFI2 and DS-WIFI3 have 5 ethernet ports, DS-WIFI4 has a single ethernet port.

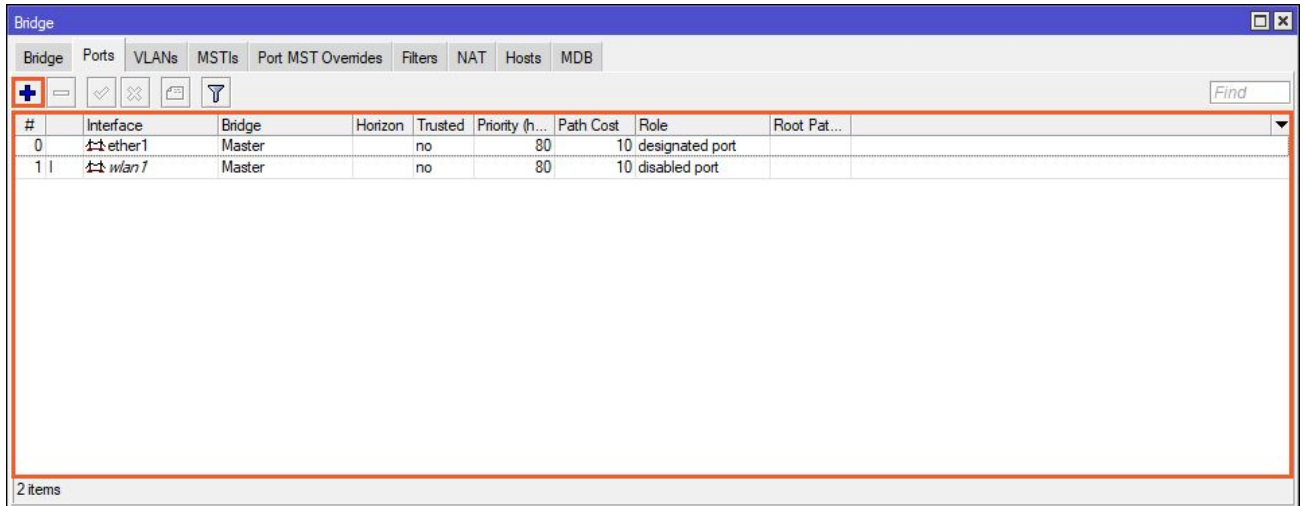


Image 6: Single ethernet port as available on DS-WIFI4. Click on plus button and add bridge connections of all available interfaces

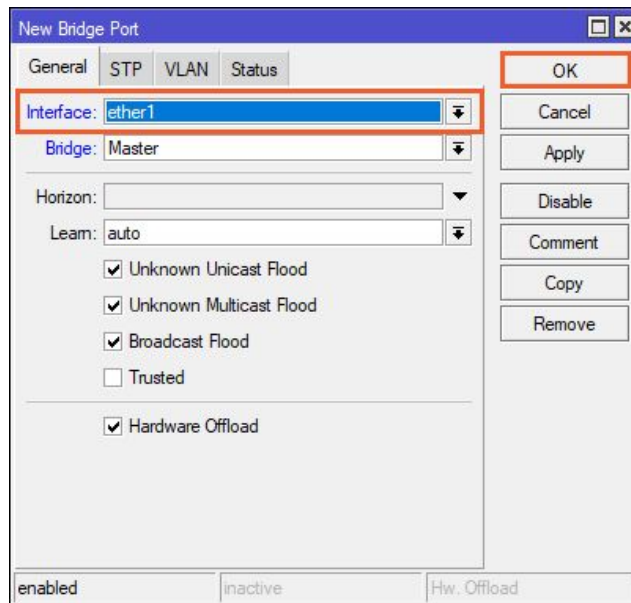
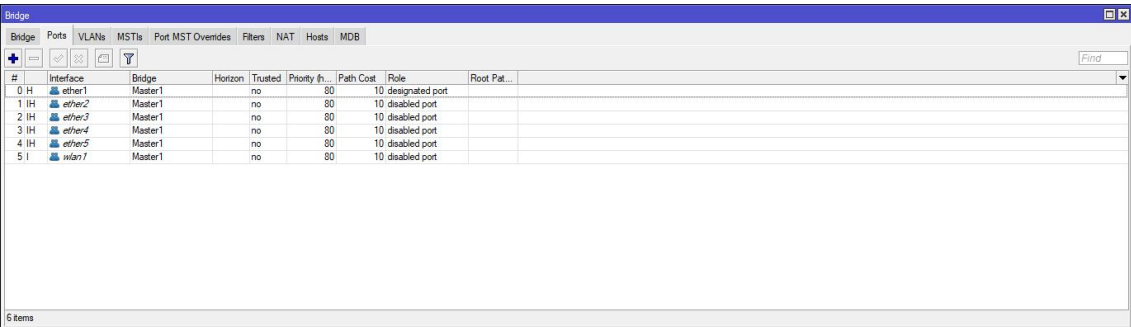


Image 7: Add all available ether interfaces and wlan1 interface

5. There should be an *equal number of bridges to the number of ports on a modem* - see the image 6 and 8.



#	Interface	Bridge	Horizon	Trusted	Priority In...	Path Cost	Role	Root Pat...
0	H ether1	Master1		no	80	10	designated port	
1	IH ether2	Master1		no	80	10	disabled port	
2	IH ether3	Master1		no	80	10	disabled port	
3	IH ether4	Master1		no	80	10	disabled port	
4	IH ether5	Master1		no	80	10	disabled port	
5	I wlan1	Master1		no	80	10	disabled port	

Image 8: Example of a WiFi router with all of its five ethernet ports (DS-WIFI2 and DS-WIFI3)



Hint

With performing this procedure, all ports on the switch are considered as one port, therefore whichever port can be used for connection.

4.2. IP address setup

Next thing to do is setting up the right IP address. You find the setup in **IP -> Addresses**.



Important

IP addresses have to be written in a form of **xxx.yyy.zzz.n/24** (look at the image 9) because it defines the subnet of 255.255.255.0. Otherwise the modem will not be recognized.

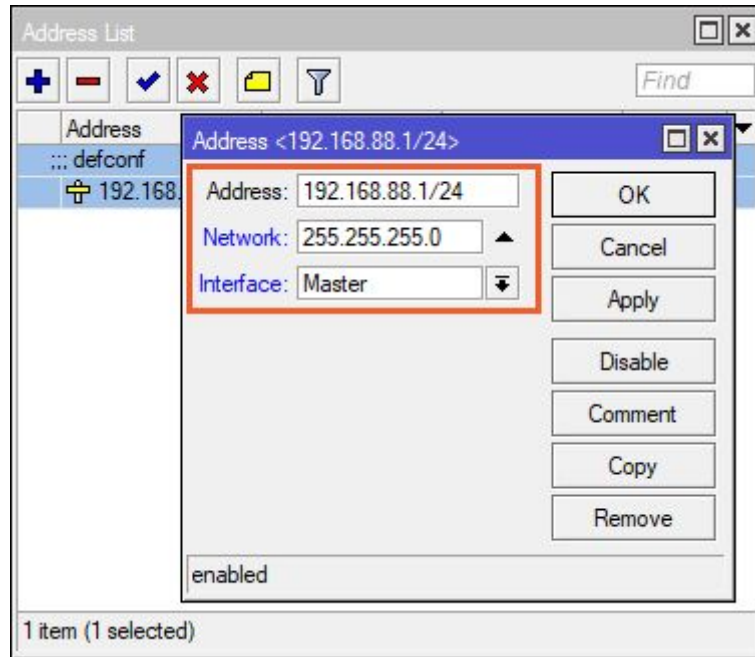


Image 9: Change the IP Address of the modem and add '/24' at the end

Usually those modems use an IP address of:

- 192.168.88.**1/24** for a **Master** device and
- 192.186.88.**2/24** for a **Slave** device.

Make sure you set the last numbers of the IP addresses for Master and Slave modem differently.

4.3. Renaming the device

If you click on **System -> Identity** you are possible to change the modem device name. In our case it is either a **Master** or a **Slave**.

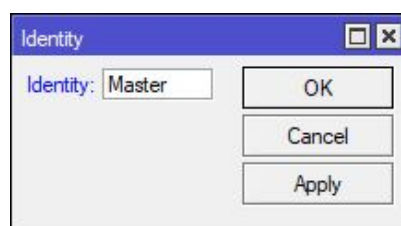


Image 10: Set the name for the modem

4.4. Setting up the Wireless network

Click on the button **Wireless** in the left menu and the wireless window will open.

1. Click on wlan1 row and make it *active by clicking on the thick mark above*.

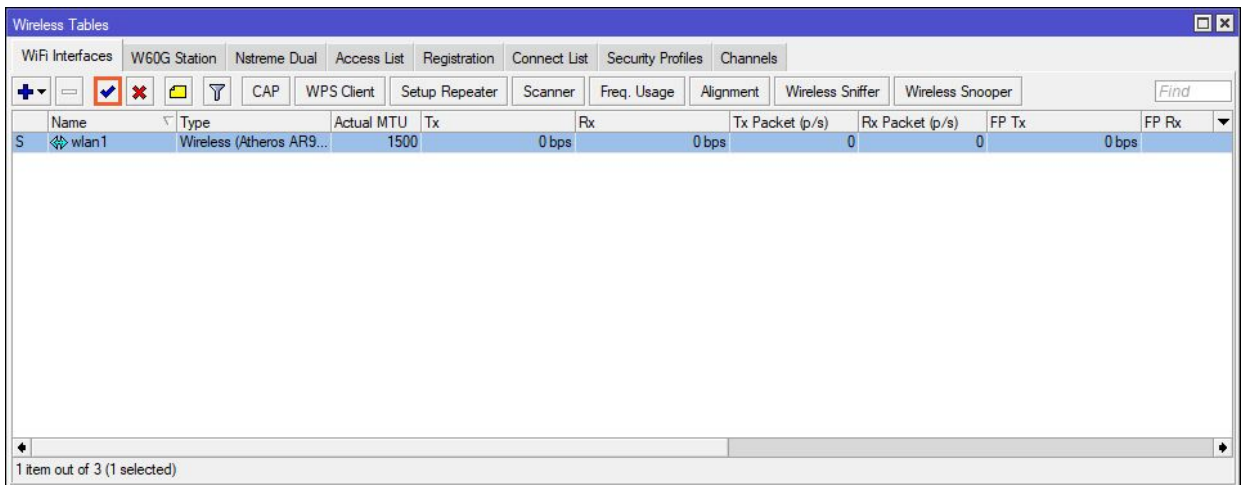


Image 11: Activate wlan1 row

2. Now *double click* active wlan1 row and options for wlan1 wireless network will pop up.
3. Click on **Advanced mode** in the right column.

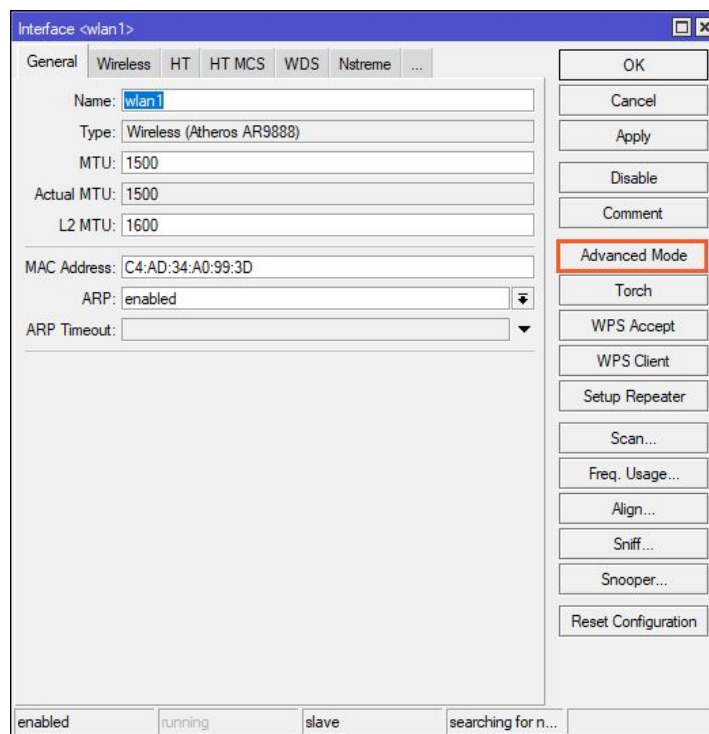


Image 12: Activate Advanced mode option

4. In settings go in **Wireless** tab and change following settings:
 - For a **Master** modem in network:
Mode: AP_Bridge
 - For a **Slave** modem in network:
Mode: Station_Bridge
5. The rest of the settings are the same for Master and Slave devices. See Table 1 to set it properly.

On image 13 and 14, two examples of the setting of a master and slave device can be previewed.



Important

First choose the Wireless protocol and appropriate Country in order to get the right options in other settings. **All settings except mode setting need to be the same on nMaster and Slave units.**

Setting ID	Chosen option
Wireless protocol	nv2
Country	Europe: etsi 5.5-5.7 outdoor or select country of your choice
Band	5 Ghz-A/N (DS-WIFI2, DS-WIFI3) or 5 Ghz-A/N/AC (DS-WIFI4)
Channel width	20 MHz
Frequency	Auto or choose the lowest available frequency
SSID	DEWESoft
Radio Name	Master1 / Slave1
Scan list	Default (for 'Auto' Frequency option) or the same number as you have chosen in Frequency

Table 1: Settings that need to be changed in the Wireless tab

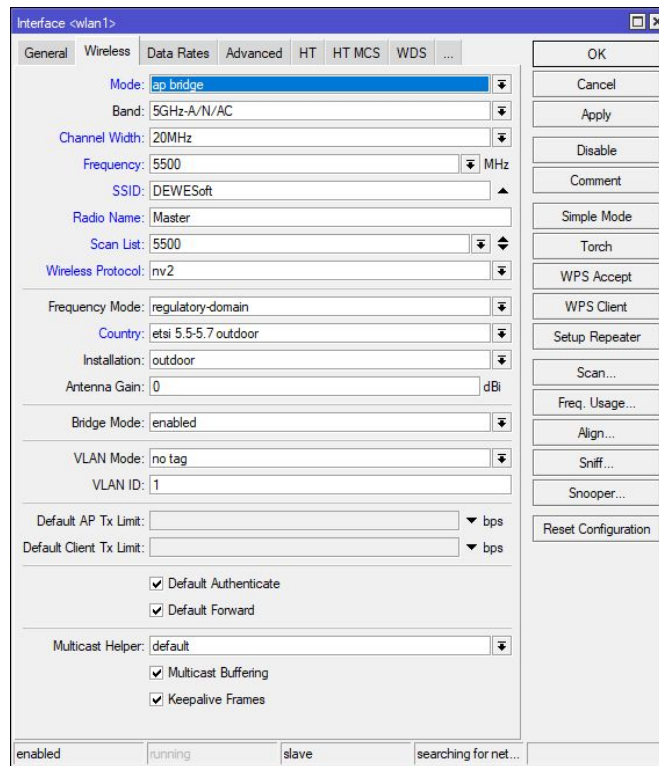


Image 13: Wlan1 Interface settings for Master

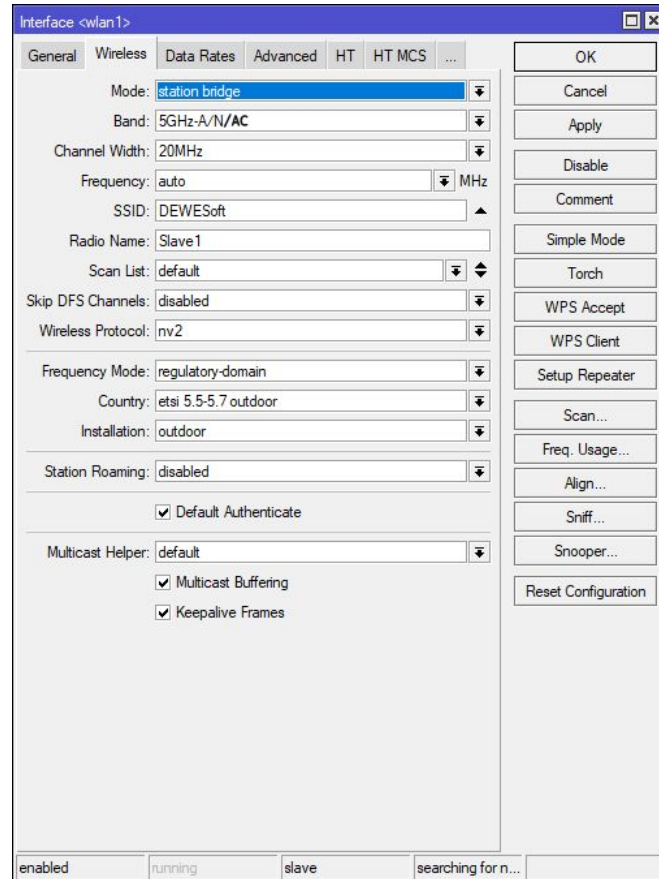


Image 14: Wlan interface settings for Slave

4.5. Additional security

If additional security is needed, open **wlan1 settings** again and click on the tab **NV2**. There it is possible to set an additional security password for wireless networks.

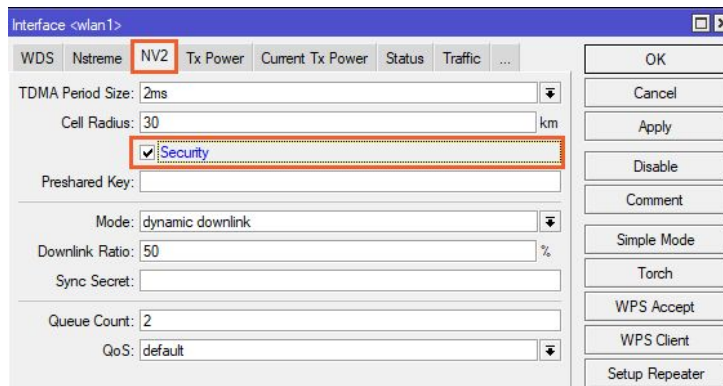


Image 13: Additional security activation

5. Bandwidth test

After configuring both Master and Slave modems you can do a Bandwidth test and check if the connection is working.

1. Click **Tools -> Bandwidth test**.
2. Leave the **Slave modem connected** and **turn on the Master modem** (connect to a power supply and wait until it is in fully operational mode).
3. **Write in the IP** from the Master and click **start**.
4. If everything is OK, you should receive the signals from a Master unit.

6. Warranty information

Notice

The information contained in this document is subject to change without notice.

Note:

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The copy of the specific warranty terms applicable to your Dewesoft product and replacement parts can be obtained from your local sales and service office. To find a local dealer for your country, please visit <https://dewesoft.com/support/distributors>.

6.1. Calibration

Every instrument needs to be calibrated at regular intervals. The standard norm across nearly every industry is annual calibration. Before your Dewesoft data acquisition system is delivered, it is calibrated. Detailed calibration reports for your Dewesoft system can be requested. We retain them for at least one year, after system delivery.

6.2. Support

Dewesoft has a team of people ready to assist you if you have any questions or any technical difficulties regarding the system. For any support please contact your local distributor first or Dewesoft directly.

Dewesoft d.o.o.
Gabrsko 11a
1420 Trbovlje Slovenia

Europe Tel.: +386 356 25 300
Web: <http://www.dewesoft.com>
Email: Support@dewesoft.com
The telephone hotline is available Monday to Friday from 07:00 to 16:00 CET (GMT +1:00)

6.3. Service/repair

The team of Dewesoft also performs any kinds of repairs to your system to assure a safe and proper operation in the future. For information regarding service and repairs please contact your local distributor first or Dewesoft directly on <https://dewesoft.com/support/rma-service>.

6.4. Restricted Rights

Use Slovenian law for duplication or disclosure. Dewesoft d.o.o. Gabrsko 11a, 1420 Trbovlje, Slovenia / Europe.

6.5. Printing History

Version 2.0.0, Revision 217 Released 2015 Last changed: 23. July 2018 at 16:54.

6.6. Copyright

Copyright © 2015-2019 Dewesoft d.o.o. This document contains information which is protected by copyright. All rights are reserved. Reproduction, adaptation, or translation without prior written permission is prohibited, except as allowed under the copyright laws. All trademarks and registered trademarks are acknowledged to be the property of their owners.

6.7. Trademarks

We take pride in our products and we take care that all key products and technologies are registered as trademarks all over the world. The Dewesoft name is a registered trademark. Product families (KRYPTON, SIRIUS, DSI, DS-NET) and technologies (DualCoreADC, SuperCounter, GrandView) are registered trademarks as well. When used as the logo or as part of any graphic material, the registered trademark sign is used as a part of the logo. When used in text representing the company, product or technology name, the ® sign is not used. The Dewesoft triangle logo is a registered trademark but the ® sign is not used in the visual representation of the triangle logo.

7. Safety instructions

Your safety is our primary concern! Please be safe!

7.1. Safety symbols in the manual



Warning

Calls attention to a procedure, practice, or condition that could cause the body injury or death



Caution

Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.

7.2. General Safety Instructions



Warning

The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Dewesoft GmbH assumes no liability for the customer's failure to comply with these requirements.

All accessories shown in this document are available as an option and will not be shipped as standard parts.

7.2.1. Environmental Considerations

Information about the environmental impact of the product.

7.2.2. Product End-of-Life Handling

Observe the following guidelines when recycling a Dewesoft system:

7.2.3. System and Components Recycling

Production of these components required the extraction and use of natural resources. The substances contained in the system could be harmful to your health and to the environment if the system is improperly handled at its end of life! Please recycle this product in an appropriate way to avoid unnecessary pollution of the environment and to keep natural resources.



This symbol indicates that this system complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Please find further information about recycling on the Dewesoft web site www.dewesoft.com

Restriction of Hazardous Substances

This product has been classified as Monitoring and Control equipment and is outside the scope of the 2002/95/EC RoHS Directive. However, we take care of our environment and the product is lead-free.

7.2.4. General safety and hazard warnings for all Dewesoft systems

Safety of the operator and the unit depend on following these rules.

- Use this system under the terms of the specifications only to avoid any possible danger.
- Read your manual before operating the system.
- Observe local laws when using the instrument.
- DO NOT touch internal wiring!
- DO NOT use higher supply voltage than specified!
- Use only original plugs and cables for harnessing.
- You may not connect higher voltages than rated to any connectors.
- The power cable and connector serve as Power-Breaker. The cable must not exceed 3 meters, the disconnect function must be possible without tools.
- Maintenance must be executed by qualified staff only.
- During the use of the system, it might be possible to access other parts of a more comprehensive system. Please read and follow the safety instructions provided in the manuals of all other components regarding warning and security advice for using the system.
- With this product, only use the power cable delivered or defined for the host country.
- DO NOT connect or disconnect sensors, probes or test leads, as these parts are connected to a voltage supply unit.
- Ground the equipment: For Safety Class 1 equipment (equipment having a protective earth terminal), a non-interruptible safety earth ground must be provided from the mains power source to the product input wiring terminals.
- Please note the characteristics and indicators on the system to avoid fire or electric shocks. Before connecting the system, please read the corresponding specifications in the product manual carefully.

- The inputs must not, unless otherwise noted (CATx identification), be connected to the main circuit of category II, III and IV.
- The power cord separates the system from the power supply. Do not block the power cord, since it has to be accessible for the users.
- DO NOT use the system if equipment covers or shields are removed.
- If you assume the system is damaged, get it examined by authorized personnel only.
- Adverse environmental conditions are Moisture or high humidity Dust, flammable gases, fumes or dissolver Thunderstorm or thunderstorm conditions (except assembly PNA) Electrostatic fields, etc.
- The measurement category can be adjusted depending on module configuration.
- Any other use than described above may damage your system and is attended with dangers like short-circuiting, fire or electric shocks.
- The whole system must not be changed, rebuilt or opened.
- DO NOT operate damaged equipment: Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until the safe operation can be verified by service-trained personnel. If necessary, return the product to Dewesoft sales and service office for service and repair to ensure that safety features are maintained.
- If you assume a more riskless use is not provided anymore, the system has to be rendered inoperative and should be protected against inadvertent operation. It is assumed that a more riskless operation is not possible anymore if the system is damaged obviously or causes strange noises. The system does not work anymore. The system has been exposed to long storage in adverse environments. The system has been exposed to heavy shipment strain.
- Warranty void if damages caused by disregarding this manual. For consequential damages, NO liability will be assumed!
- Warranty void if damage to property or persons caused by improper use or disregarding the safety instructions.
- Unauthorized changing or rebuilding the system is prohibited due to safety and permission reasons (CE).
- Be careful with voltages >25 VAC or >35 VDC! These voltages are already high enough in order to get a perilous electric shock by touching the wiring.
- The product heats during operation. Make sure there is adequate ventilation. Ventilation slots must not be covered!
- Only fuses of the specified type and nominal current may be used. The use of patched fuses is prohibited.
- Prevent using metal bare wires! Risk of short circuit and fire hazard!
- DO NOT use the system before, during or shortly after a thunderstorm (risk of lightning and high energy over-voltage). An advanced range of application under certain conditions is allowed with therefore designed products only. For details please refer to the specifications.
- Make sure that your hands, shoes, clothes, the floor, the system or measuring leads, integrated circuits and so on, are dry.
- DO NOT use the system in rooms with flammable gases, fumes or dust or in adverse environmental conditions.
- Avoid operation in the immediate vicinity of high magnetic or electromagnetic fields, transmitting antennas or high-frequency generators, for exact values please refer to enclosed specifications.
- Use measurement leads or measurement accessories aligned with the specification of the system only. Fire hazard in case of overload!

- Do not switch on the system after transporting it from a cold into a warm room and vice versa. The thereby created condensation may damage your system. Acclimatise the system unpowered to room temperature.
- Do not disassemble the system! There is a high risk of getting a perilous electric shock. Capacitors still might be charged, even if the system has been removed from the power supply.
- The electrical installations and equipment in industrial facilities must be observed by the security regulations and insurance institutions.
- The use of the measuring system in schools and other training facilities must be observed by skilled personnel.
- The measuring systems are not designed for use in humans and animals.
- Please contact a professional if you have doubts about the method of operation, safety or the connection of the system.
- Please be careful with the product. Shocks, hits and dropping it from already- lower level may damage your system.
- Please also consider the detailed technical reference manual as well as the security advice of the connected systems.
- This product has left the factory in safety-related flawlessness and in proper condition. In order to maintain this condition and guarantee safety use, the user has to consider the security advice and warnings in this manual.

EN 61326-3-1:2008

IEC 61326-1 applies to this part of IEC 61326 but is limited to systems and equipment for industrial applications intended to perform safety functions as defined in IEC 61508 with SIL 1-3.

The electromagnetic environments encompassed by this product family standard are industrial, both indoor and outdoor, as described for industrial locations in IEC 61000-6-2 or defined in 3.7 of IEC 61326-1.

Equipment and systems intended for use in other electromagnetic environments, for example, in the process industry or in environments with potentially explosive atmospheres, are excluded from the scope of this product family standard, IEC 61326-3-1.

Devices and systems according to IEC 61508 or IEC 61511 which are considered as “operationally well-tried”, are excluded from the scope of IEC 61326-3-1.

Fire-alarm and safety-alarm systems, intended for the protection of buildings, are excluded from the scope of IEC 61326-3-1.

8. Documentation version history

Version	Date	Notes
1.0.0.	11-08-2016	Initial revision.
V20-1	01-04-2020	Updated template, corrected setup information for DS-WIFI devices.
V21-1	23-02-2021	New template and image.