

Miure Duo Quick Start

1. Before you turn the power on - 5 absolute basics of using Miure Duo

1. MINIMUM DISTANCE BETWEEN DEVICES IS 50 METERS.

In particular, devices **MUST NOT** be tested by directing one antenna against the other in close proximity - it can lead to **PERMANENT RADIO DAMAGE**.

Miure Duo has been designed for outdoor operation - all performance tests conducted indoors **WILL NOT** give any authoritative results due to different radio wave propagation.

2. Device requires clear line of sight.

The 5GHz band is highly attenuated by objects like buildings, trees, etc. For undisturbed transmission special care should be taken about ensuring clearness of the so-called Fresnel zone - the longer the link distance, the greater should be the free area around transmitted radio waves. "Aiming" through "bottlenecks" should be avoided.

Antennas must be aligned during device installation - otherwise devices may not operate at their full potential and/or the link may be unstable.

3. Device does not operate without connected Ethernet signal.

The "Ethernet" port of the power supply should be connected to a network device, like hub, switch, router, laptop, etc.

4. Device needs 60 seconds for radio transmission stabilization.

After establishing the radio connection, Miure Duo will start to probe the transmission medium and will become fully operable after max. 60 seconds.

5. Antenna operating frequency range is 5.4-5.9GHz.

On other frequencies the device may operate suboptimally (see p. 1.2.). Additionally, minimal separation between the main and secondary frequencies should be greater than twice the selected channel width.

2. Installing Miure Duo

1. On both link sides unpack the device, check its condition and completeness. Mount the device to the antenna handle. Screw the device mounting handle according to attached instruction (with care).
2. First link side (**side A**):
 - a. Power on the power supply. Connect the "Device" port with Miure Duo, and "Ethernet" with a laptop.
 - b. Configure the IP address of your laptop as "192.168.1.10/24" (mask 255.255.255.0). Open your browser (Mozilla Firefox recommended) and type "192.168.1.1" in the address bar. Login using "admin" as both the username and password.
 - c. On the "Basic" tab type "192.168.1.2/24" in the "IP address" option and click outside of the text field - the value should be accepted and both the green and blue LEDs should become turned on.
 - d. Click "Apply" in the upper left corner and without waiting for confirmation point your browser at "192.168.1.2". Use the same login and password as in p. 2.2.b.
 - e. Click the "Radio parameters" tab and ensure that "A" is selected in "Link side". Enter any unique text in "Unique link name" and check configuration under "Radio transmission".
 - f. In the upper left corner click "Apply" and wait until "Status: ready" appears in the bottom status bar. Click "Save".
3. First link side (**side B**):
 - a. Power on the power supply. Connect the "Device" port with Miure Duo, and "Ethernet" with a laptop.
 - b. Configure the IP address of your laptop as "192.168.1.11/24". Open your browser and type "192.168.1.1" in the address bar. Login using "admin" as both the username and password.
 - c. Click the "Radio parameters" tab and select "B" in "Link side". In all remaining fields enter the same values as in p 2.2.e. (especially in "Unique link name").
 - d. In the upper left corner click "Apply" and then "Save" (as in p. 2.2.f). The devices should connect.
 - e. In case of very long distance links it may be necessary to decrease the channel width to 10MHz or even 5MHz. In order to do that, use the "Radio parameters" tab.
4. On both link sides select "Link quality" from menu on left and enable the antenna alignment mode by clicking the checkbox below the graph.

WARNING: the antenna alignment mode does not turn off automatically

5. Loosen up the mounting handle a bit and try to select such antenna direction, so the remote signal strength (blue color) is the greatest. Adjust only one antenna at the same time.
6. After aligning the antennas, finally tighten up the mounting handle, turn off antenna alignment mode and wait for about 60 seconds, to let devices enter the normal operation mode for the first time.

7. Devices are ready for configuration, what may be done remotely. Enter desired IP addresses on both sides (remembering about applying and saving the changes) and connect them to the network.

3. Configuring Miure Duo

Further configuration should be based on analysis of the 5GHz radio band usage at device installation points and at the whole link distance.

Using the "Radio parameters" tab configuration should be chosen in such a way, that while the "Continuous transmission" option is on, the real radio throughput (yellow color) on the "MRTP statistics" graph attains highest values.

During remote configuration phase we RECOMMEND using the "Ping watchdog" option of the "Advanced" tab - devices should ping each other and the administrator should use only the "Apply" button. Should the configuration under test fail, device will automatically recover to the last (working) saved option set after some time (usually about 2 minutes). After finishing the configuration phase one should remember to click "Save".

A few hints:

- in some cases, exchanging link sides (A<->B) and frequencies (main<->secondary) can increase the link performance
- the real throughput for bigger channel widths is not always greater than for smaller widths - specifically, e.g. unstable operation with 20MHz channel width may practically mean the overall performance to be lower than while using stable 10MHz-wide connection
- for ETSI conformance the option "Maximum transmit power" should be set in such a way that after summing the value with antenna gain for selected frequency it should not exceed 30dBm (devices have automatic transmit power control which is limited from above by this option)
- for maximum performance we recommend using "Continuous transmission" and "Short inter-frame spaces"
- we do NOT recommend turning off automatic control of modulation, transmit power and frame size