AiM User Manual

Wi-Fi Configuration

Release 1.01

1
Wi-Fi configuration

Your AiM device Wi-Fi connectivity is disabled by default and must be enabled via a USB connection or on the device menu.
Your AiM device can be configured for Wi-Fi communication in one of two ways:

As an access point
This way is ideal when you have one device and one computer.

PC

AiM DEVICE
(ACCESS POINT)

To join an existing Wireless Local Area Network (WLAN)
This is more complex and requires an external Access Point but is more flexible and powerful. In this way you can communicate with more than one device and with more than one PC, on the same network.
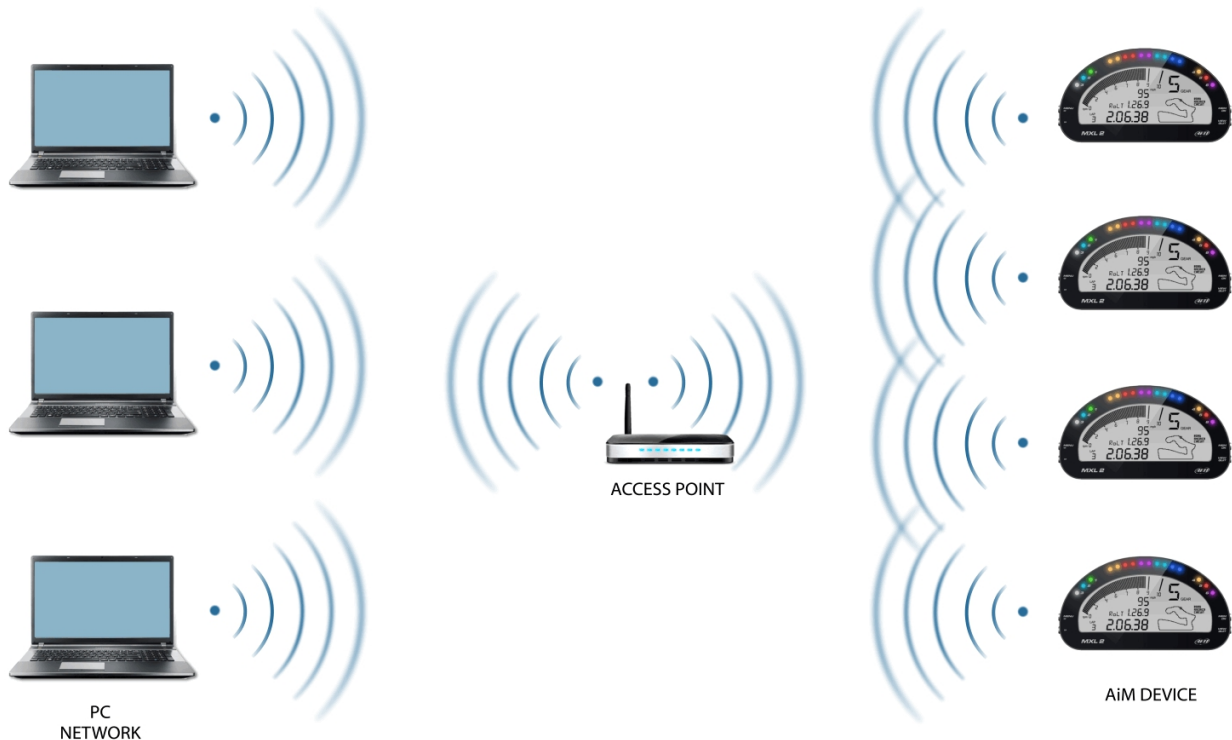
In this configuration both your AIM device and your PC have to join a pre-existing Wi-Fi network, called WLAN, in order to communicate with one another. The network is now created by a network device which is acting as an external Access Point permitting the device connectivity.

When an AiM device is working in WLAN mode, there are two layers of security available:
- **Network Authentication**: the network password
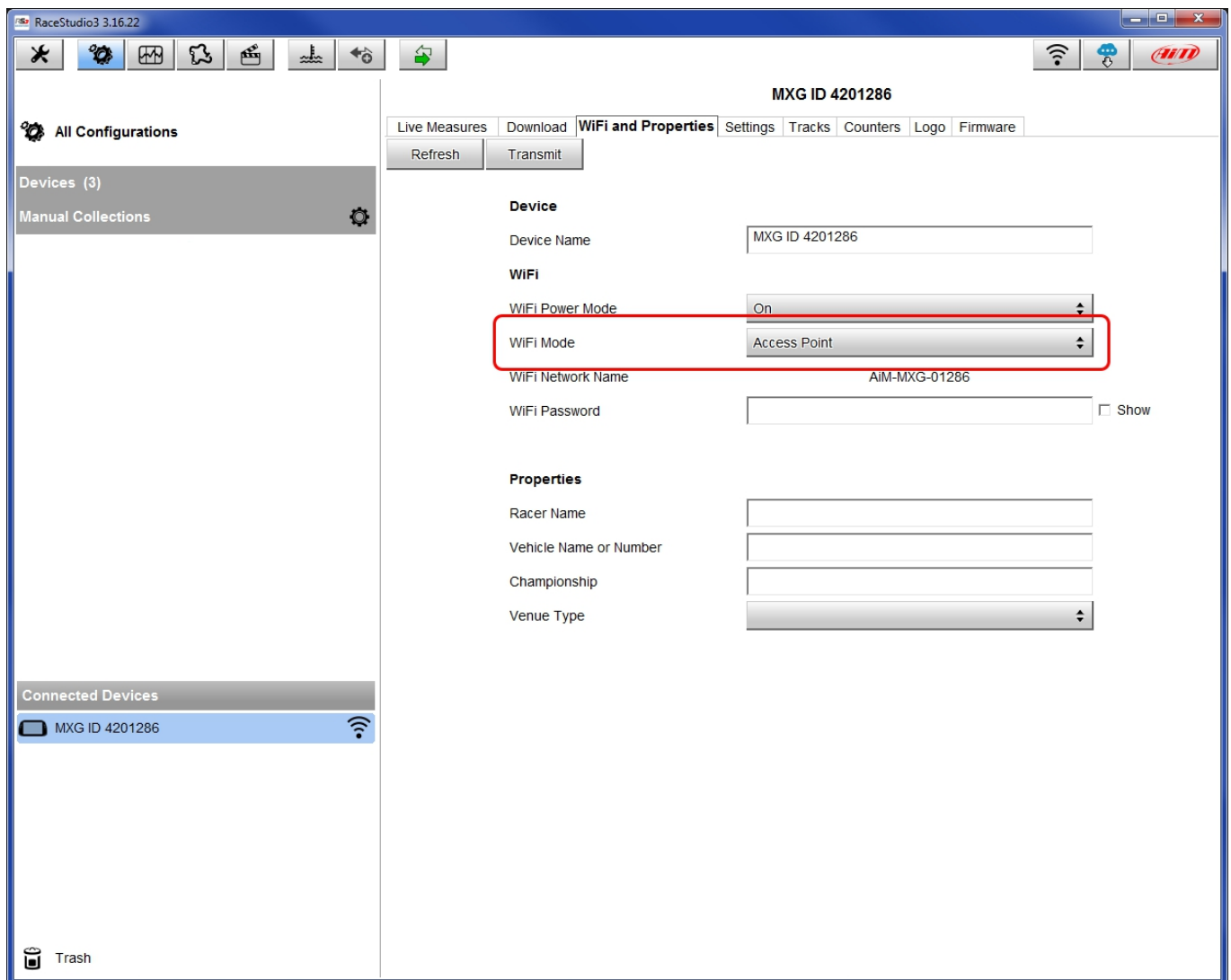- **Device Authentication**: a unique device password

The use of both network and device authentication allows various security strategies where multiple people, PC, and AiM devices are involved. When a PC joins a WLAN it may see several AiM devices but can only communicate with the AiM devices it has the password of.

2
Configuring your AiM device as an Access Point

Creating an Access Point is the most simple and direct Wi-Fi connection method and is ideal when you wish to communicate with only one AiM device using one PC. To configure your AiM device as an Access Point:

- connect it to your PC via USB
- run Race Studio 3
- click on your device in the left column
- go to Wi-Fi Config Page
- set Wi-Fi Mode as "Access Point"

When initially configured as an Access Point, your AiM device creates a network without a password that is accessible to everyone. It is therefore recommended to create a unique password to secure your device/network immediately. With the use of a password the communication is secure and encrypted using the WPA2-PSK standard.

The name of this network Access Point, or SSID, is unique to your device.

An example of network name is: "**AiM-MXG-01286**"

Whereas:

- "AiM-" is the prefix for all AiM devices
- "MXG-" is type of system identifier
- "01286" is a unique serial number for your device assigned by AiM

To make your device more recognizable, you can append a friendly name to the SSID (max allowed number of characters is 8). For example, if you add the driver's name, Tom Wolf, the resulting network name (SSID) will be:

"**AiM-MXG-054321-Tom Wolf**"

After having set all the parameters, click "Transmit" and "Refresh". Your AiM device will restart and be configured with the new parameters.

To connect to your AiM device, simply choose your device name from the dropdown list of available Wi-Fi connections.
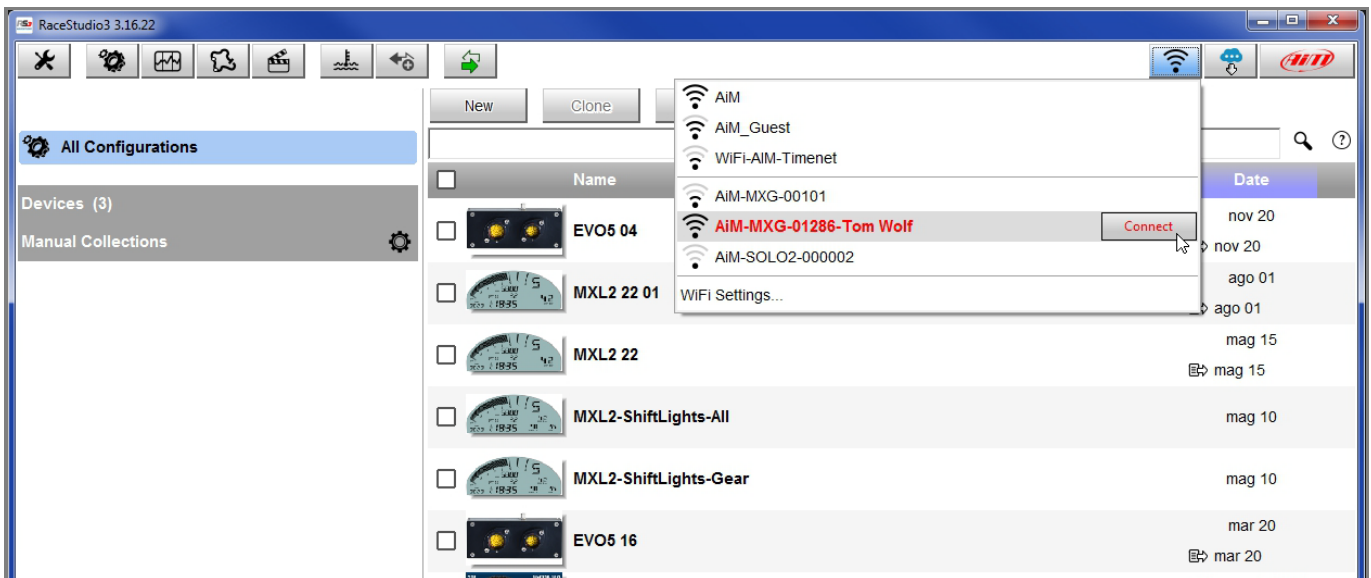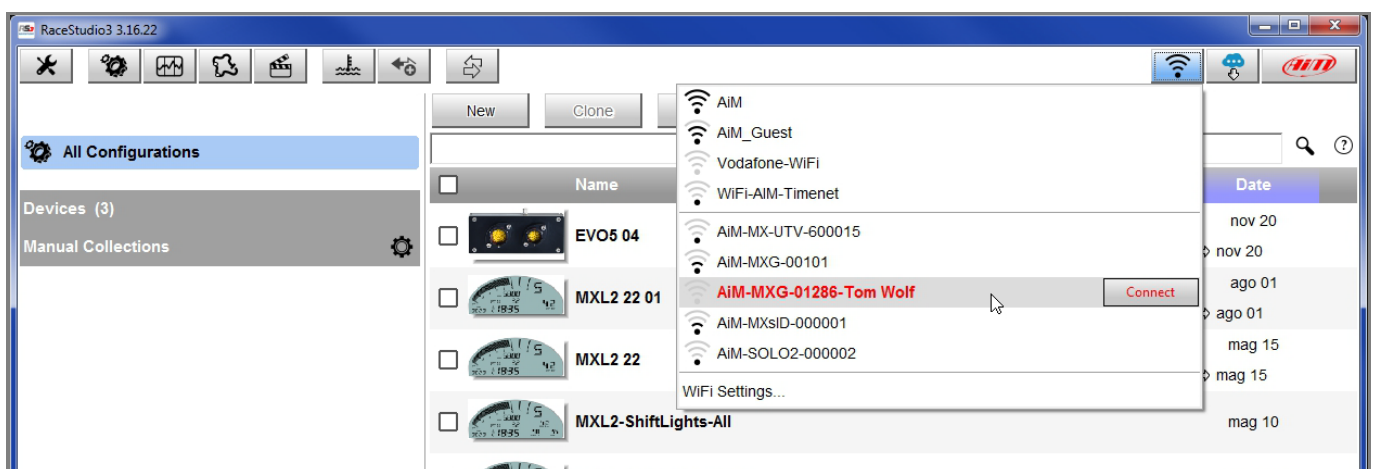
If your AiM device is protected by a password, as recommended, Race Studio 3 will then require that password to authenticate.
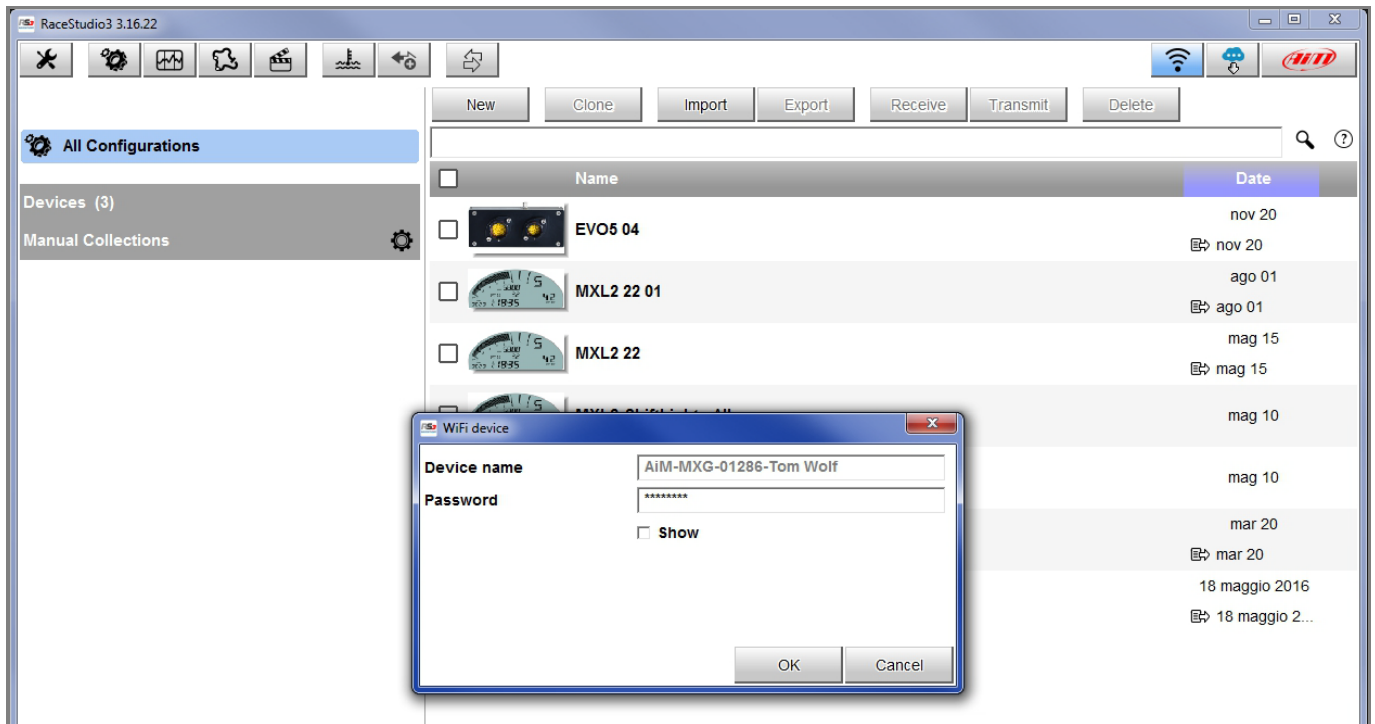
Please note: you can make the same Wi-Fi connection using the Wi-Fi tools of your operating system.

Once connected you can interact with your device selecting it among the available "Connected Devices" header in Race Studio 3.

3
Adding your AiM device to an existing Wi-Fi network

In this scenario both your AiM device and the PC join an existing Wi-Fi network (WLAN).

This situation is ideal for a race team with multiple drivers and crew members and is desirable to communicate with one or more devices using the same PC network.

Each AiM device can have an unique password that is in addition to the network password and adds a layer of privacy and security.

Race Studio 3 will display any and all AiM devices connected to the same network as the PC.

Connected devices can be seen under "Connected Devices" header as if they were connected via USB.

To configure your AiM device to join an existing wireless network:

- connect your device to your PC via USB
- run Race Studio 3
- click your device in the left pane under "Connected Devices"
- go to "Wi-Fi and Properties" tab
- set Wi-Fi Mode on "Existing Network"
- enter the network password and the device password, should you choose to add one, in the appropriate fields
- click "Transmit" and "Refresh": your device will restart and join the specified network
- connect your PC to the same network and you will see your device under "Connected Devices" just as if connected via USB.
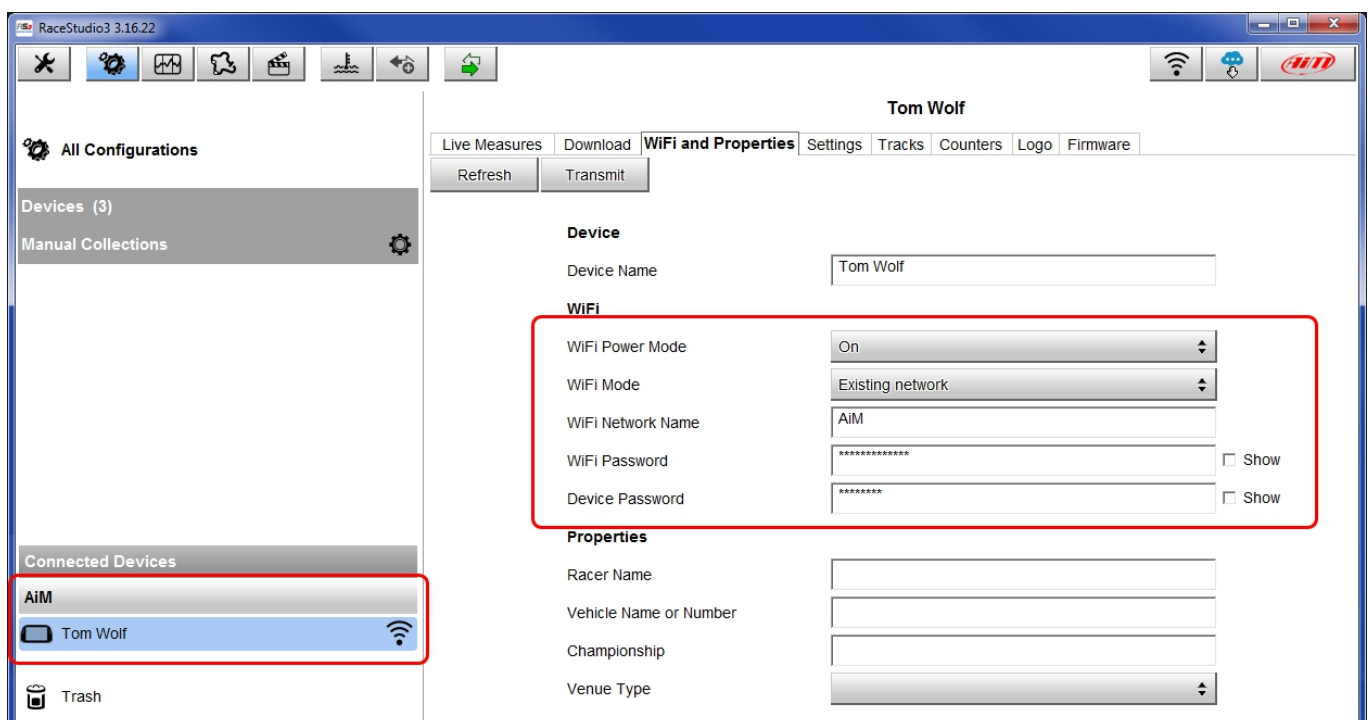
As mentioned in the introduction, when connecting your AiM device to an existing network there are two layers of security available:

- Network Authentication: the "Wi-Fi password".
- Device Authentication: the "Device Password".

AiM devices support the WPA2-PSK network encryption standard.

With your PC and AiM device authenticated and connected to the same WLAN network, you can configure an unique device password thus requiring any PC on the network to have the device password to communicate with or configure it. Below is an example configuration page, with two connected AiM devices.
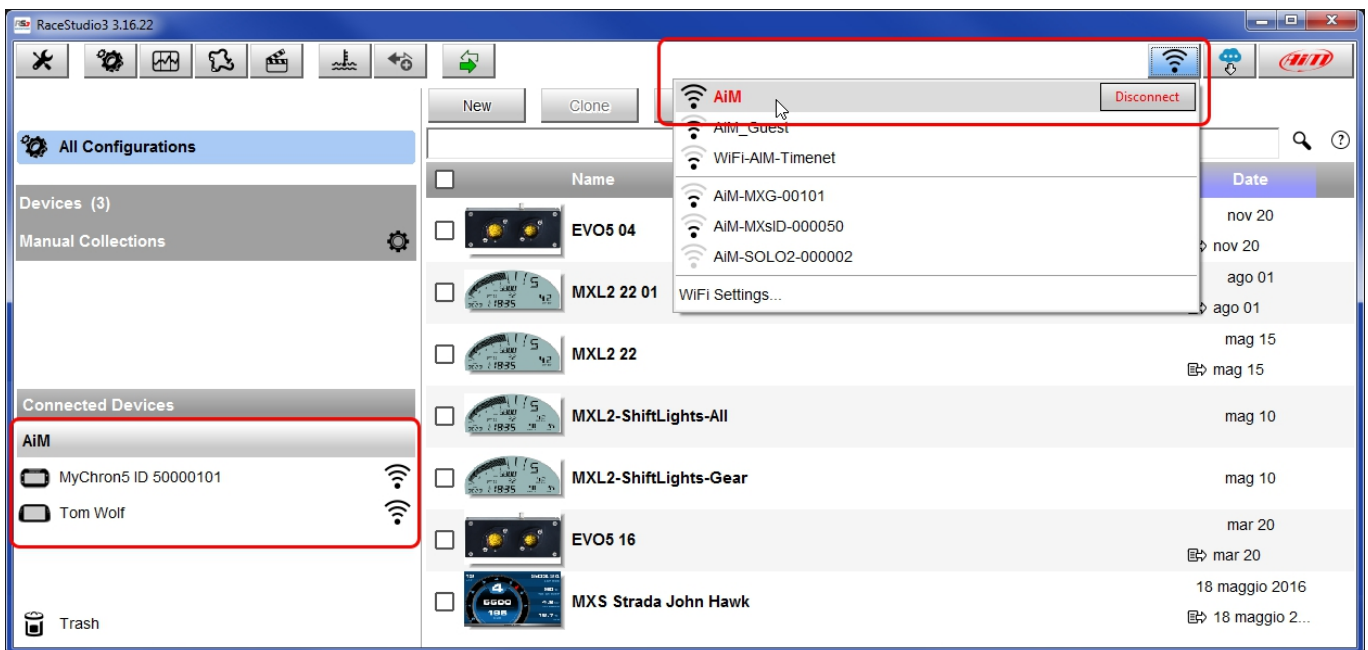
4
High-performance WLAN setup

This section provides example of WLAN settings to support multiple AiM devices and PCs using a Linksys AC3200 as network device; it is a tri-band Wi-Fi router designed for heavy usage and relatively high data rates (3200 Mbps).
Hundreds, if not thousands, of routers exist that can create a network working with your AiM device. The important thing is that the router or access point provides DHCP service and requires your AiM device to obtain an IP address to join an existing network.
To maximize bandwidth of your WLAN, it is recommended that Internet is not configured on the same network. The following settings are optimized for this aim and do not include DNS or a routable gateway address. The settings below prohibit Internet connectivity through this WLAN; for further information see Internet Connectivity paragraph. These settings are tuned for performance.

- Wireless Network Name: AiM-WLAN (this is an example; you can name your network as you wish)
- Gateway Address: 192.168.0.1
- Primary DNS server: 0.0.0.0
- Secondary DNS server: 0.0.0.0
- Subnet Mask: 255.255.255.224
- Enable DHCP server: yes
- DHCP IP Address range: 192.168.0.1 to 192.168.0.30; this example of IP range allows the DHCP server to assign IP addresses for up to 30 devices on this network, PCs included.

The number of devices on a WLAN depends on the subnet mask; the table below shows the subnet mask and IP address ranges suggested according to the number of devices required on the network.

Subnet Mask	IP Address Range	Number of devices
255.255.255.0	192.168.0.1 - 254	254
255.255.255.128	192.168.0.1 – 126	126
255.255.255.292	192.168.0.1 – 62	62
255.255.255.224	192.168.0.1 – 30	20
255.255.255.240	192.168.0.1 – 14	14
255.255.255.248	192.168.0.1 – 6	6

The smaller the IP address range is, the faster your devices will be recognized and connected; this because the network scans then entire range you've configured. It is then important, to use the IP range that best fits your network needs.

5

About Internet connectivity

For an optimal network speed of your AiM device(s) we recommend not to allow the Internet on the same network. The WLAN settings previously provided – in the previous chapter – prohibit an Internet connection.

It is certainly possible to allow the Internet on the network but this can degrade the performance of AiM device communication. These slightly slower network speeds may anyway be suitable for your needs.

It is also possible to have a second Wi-Fi connection using an additional hardware (NIC). Such a configuration would provide optimal data network speed for your AiM device(s) and simultaneously provide Internet access via the second NIC.

6

Working with Mac™ OS and virtualized Windows™

When running a Windows OS virtualized on Mac OS X, the Mac Wi-Fi connection is shared with the Windows OS and some changes are required.
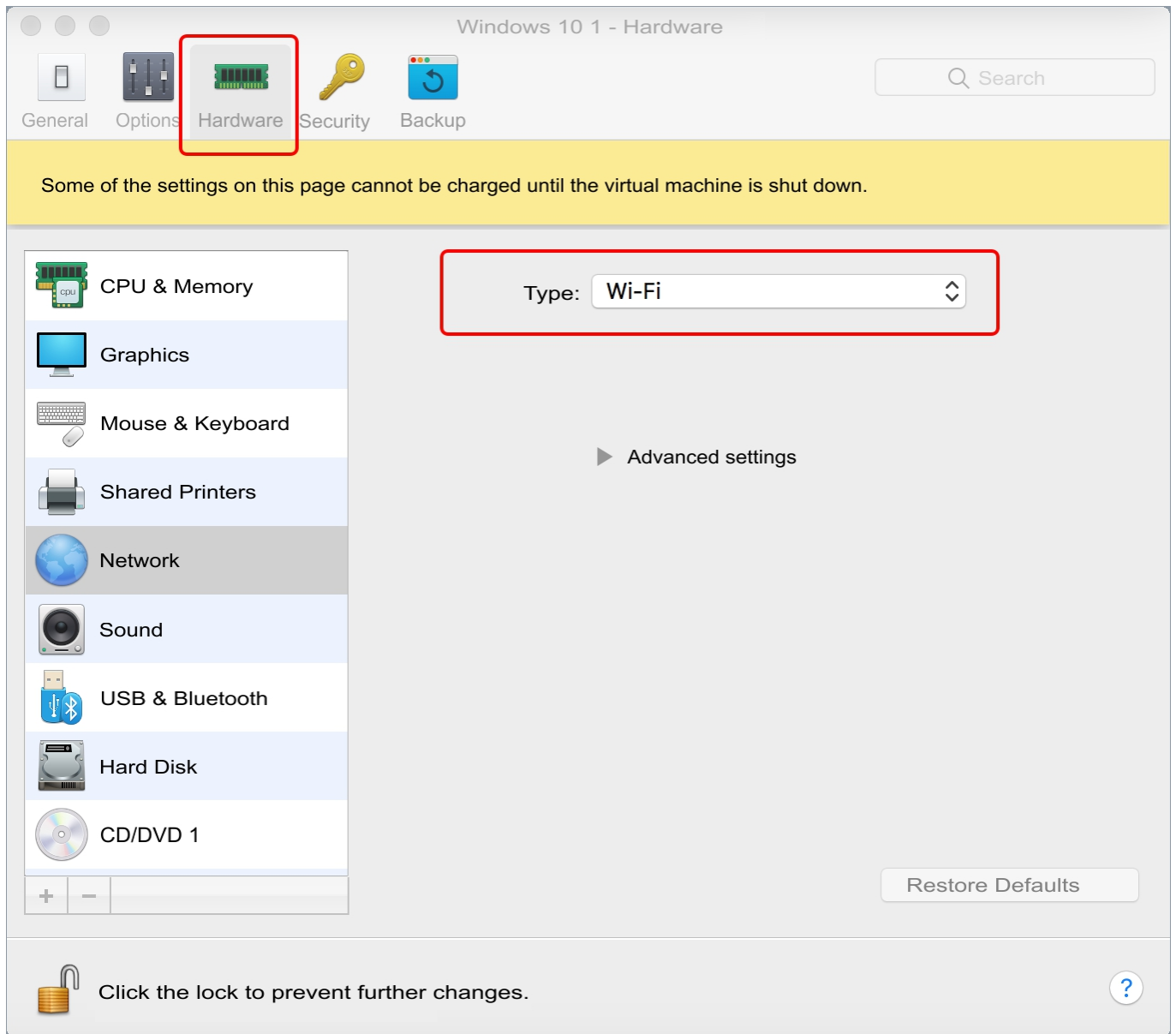
This example is using Parallels software. To configure Parallels(™):

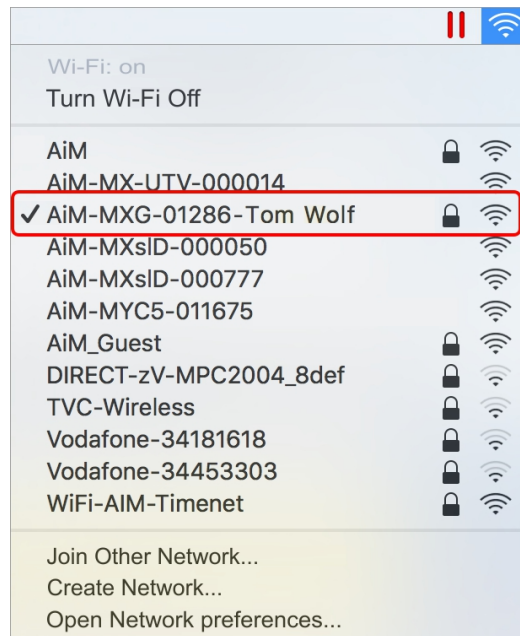• type "Parallels" in the desktop research bar as shown here below.
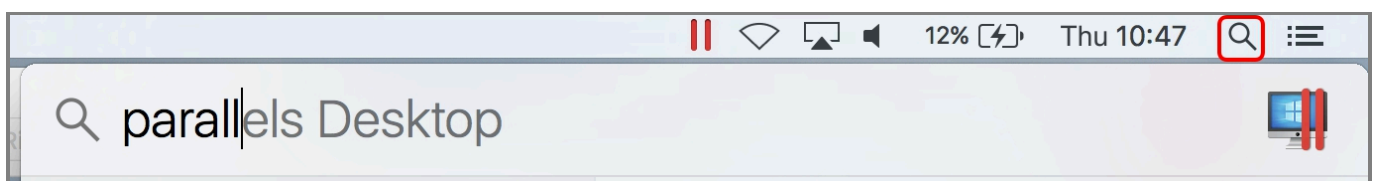
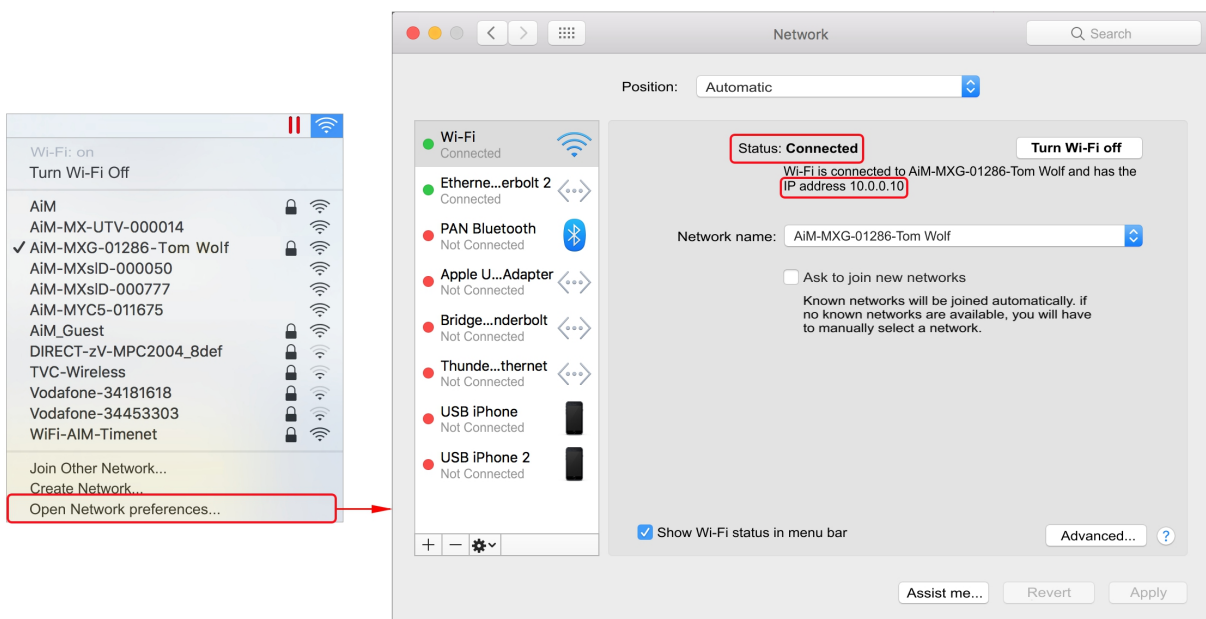"Parallels" control panel appears as shown here below:
- select "Hardware" layer
- select "Wi-Fi" connection in "Type" drop down menu

Select your network or the AiM device you want to connect to.

You can check the connection status opening "Network preferences…" option and verifying that status is shown as "Connected" and device IP status looks like "10.0.0.x.".

Last operation to perform is:
- run Race Studio 3
- click "Wi-Fi" icon
- select "Wi-Fi settings" from the drop down menu
- enable "Enable if Windows is running as virtualized on Mac OS" checkbox