



# blue PiraT2 / 5E / Mini / Remote WLAN User Guide

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### 3 Overview

This user guide describes the feature of the license **WLAN** for the data loggers

- blue PiraT2
- blue PiraT2 5E
- blue PiraT Mini
- blue PiraT Remote

of Telemotive AG

This license enables the following options:

- wireless connection to the data logger
- configuring the data logger
- downloading data from the data logger
- reading the actual configuration of the data logger

This user guide describes the configuration and usage of this feature. The general configuration is described in the user guides of the used data logger as well as the Telemotive System Client, which is valid together.

The client software was only tested with Microsoft® Windows® 7.

This document refers to **firmware version 02.04.01** and the **Telemotive System Client** from **version 2.4.1**. Some features depending on model and feature license or may not be available in older versions.

Software updates and user guides for other, optional, licensed enhancements are available in the Telemotive ServiceCenter. *(Please find the address under Contact at the last page.)*

To ensure the most reliable operation of your system as possible, please make sure to use always current firmware and software versions.

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## 4 System requirements

### Control Unit

A Windows based Laptop or PC is needed to configure the devices of Telemotive AG by **Telemotive System Client**. It also allows to save the recorded data and to use them offline later.

### Telemotive System Client

The software client is used for configuring the data logger as well as downloading the recorded data or convert these into your needed file format. An firmware update can be performed by the **Telemotive System Client** too to ensure that your devices are always up to date.

### blue PiraT2 / blue PiraT2 5E / blue PiraT Mini

The communication between bus systems and control units is monitored and relevant data can be recorded very precisely with the data logger of Telemotive AG. The collected data are stored to the logger and can be downloaded via Ethernet to a PC.

The **blue PiraT2** is our top-class all-in-one data logger. Seven models cover a wide range of interfaces.

Additionally, the **blue PiraT2 5E** offers improved power management and power backup, five integrated Ethernet ports and super-fast start-up behavior. The blue PiraT2 can be flexibly expanded via [Telemotive System Link](#).

The **blue PiraT Mini** is smallest data logger in the world with an outstanding functional scope. It offers a wide range of interfaces, stable temperature behavior, very low energy consumption, four GBit Ethernet ports, and much more. Different blue PiraT Mini can be flexibly expanded to one cluster and therefore handled very easily by using [Telemotive System Link](#).

### Remote Control Touch (optional)

Operate your blue PiraT Mini or blue PiraT2 data loggers safely and comfortably from the driver's or passenger seat. Via Telemotive System Link our new remote control becomes part of your logger network. One remote control can handle all connected loggers.

### blue PiraT Remote (optional)

While Remote Control Touch is just a control unit for handling unique devices or a TSL network, the blue PiraT Remote additional has logger functionality by offering internal storage and some interfaces.

### Extension

The blue PiraT2 can be extended by an internal GPS/Wi-Fi module. Alternatively it is possible to connect an external USB Adapter to blue PiraT2 / 5E or blue PiraT Mini. By using a blue PiraT Mini an adapter cable USB 2.0 connector A to USB 2.0 connector Micro B is necessary. These adapters are supported:

- NETGEAR® N150 Wireless-USB-Adapter WNA1100-100PES
- NETGEAR® N300 WiFi USB Mini Adapter WNA3100M-100PES
- NETGEAR® A6100 WiFi USB Mini Adapter AC600 Dual Band
- Edimax® AC600 Wireless Dual-Band Mini-USB-Adapter EW-7811UTC
- Edimax® AC1200 Wireless Dual-Band USB Adapter EW-7822UAC

## License

For the additional feature **WI-FI** an installed license is required. Settings for licensed features can be performed with a valid license only.

If you need a license for your logger, please contact our sales department (please find the address under contact at the last page).

## 4.1 Further manuals

Beside this user guide we offer the main manuals for our client as well as for the different data logger generations in our ServiceCenter at <https://sc.telemotive.de/bluepirat>.

### User manual for the Telemotive System Client

[https://sc.telemotive.de/4/uploads/media/TelemotiveSystemClient\\_UserManual.pdf](https://sc.telemotive.de/4/uploads/media/TelemotiveSystemClient_UserManual.pdf)

### User manual for blue PiraT2 / blue PiraT2 5E

[https://www.telemotive.de/4/uploads/media/blue\\_PiraT2\\_UserManual.pdf](https://www.telemotive.de/4/uploads/media/blue_PiraT2_UserManual.pdf)

### User manual for blue PiraT Mini

[https://www.telemotive.de/4/uploads/media/blue\\_PiraT\\_Mini\\_UserManual.pdf](https://www.telemotive.de/4/uploads/media/blue_PiraT_Mini_UserManual.pdf)

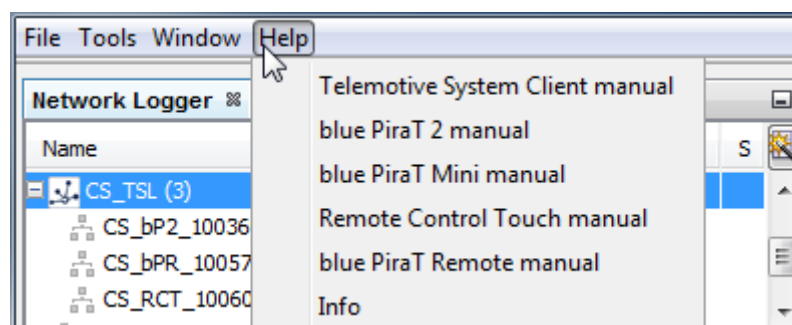
### User manual for Remote Control Touch

[https://sc.telemotive.de/4/uploads/media/RCTouch\\_UserGuide.pdf](https://sc.telemotive.de/4/uploads/media/RCTouch_UserGuide.pdf)

### User manual for blue PiraT Remote

[https://sc.telemotive.de/4/uploads/media/blue\\_PiraT\\_Remote\\_UserGuide.pdf](https://sc.telemotive.de/4/uploads/media/blue_PiraT_Remote_UserGuide.pdf)

For having an easy access if necessary, the most important manuals are linked in the client under the menu item **[Help]** and are reachable easily from there.



**Figure 4.1: links to the manuals**

Our licensed enhancements have own manuals which are stored in the ServiceCenter too. You will find a list of these enhancements in the user manuals in the chapter **Additional features by optional licenses**.

## 5 Configuring

**Note:**

Any network changes have to be applied to the device by clicking on [Write to logger]. If changes are applied only after restart, the client software will inform you and offers the direct restart.

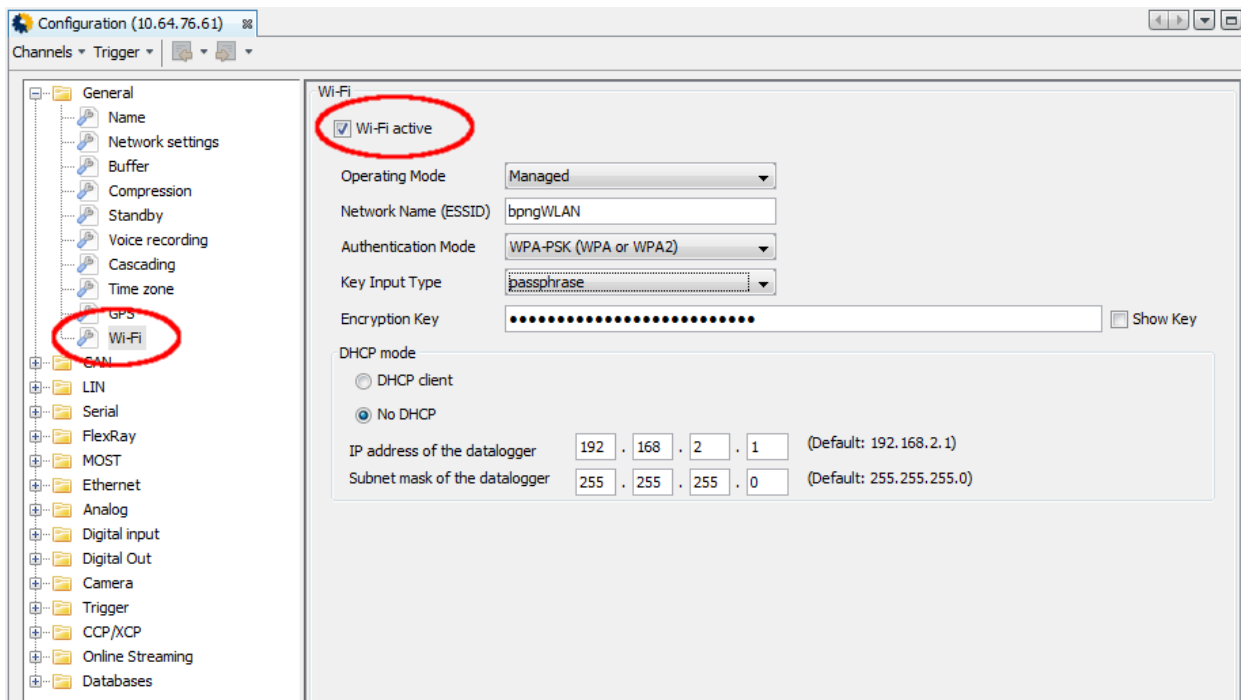
For configuring the Wi-Fi feature (Managed/Ad-hoc/Master) a connection between the data logger and the Telemotive System Client on the PC is required. Please connect the data logger to the PC. If you configure the logger the first time for Wi-Fi, you have to connect via LAN cable. Later you can also change the configuration via an existing Wi-Fi connection.

Start the Telemotive System Client and select the data logger in the window <Network Logger>. Start the application [Open configuration] 5.



Expand the folder [General] in the configuration tree and choose the sub category [Wi-Fi].

Enable the checkbox **Wi-Fi active** on the right.



**Figure 5.1: Example Wi-Fi configuration**

If WiFi is activated on the data logger, connected WiFi modules are automatically detected and activated by the logger.

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## 5.1 Operating Mode

Choose the operating mode from the dropdown menu. There are three ways using the WLAN feature in the data logger.

### 5.1.1 Managed

The common way is using the data logger in the “Infrastructure” mode (**[Managed]** mode). In this mode you can integrate the data logger in an existing LAN/Wi-Fi infrastructure.

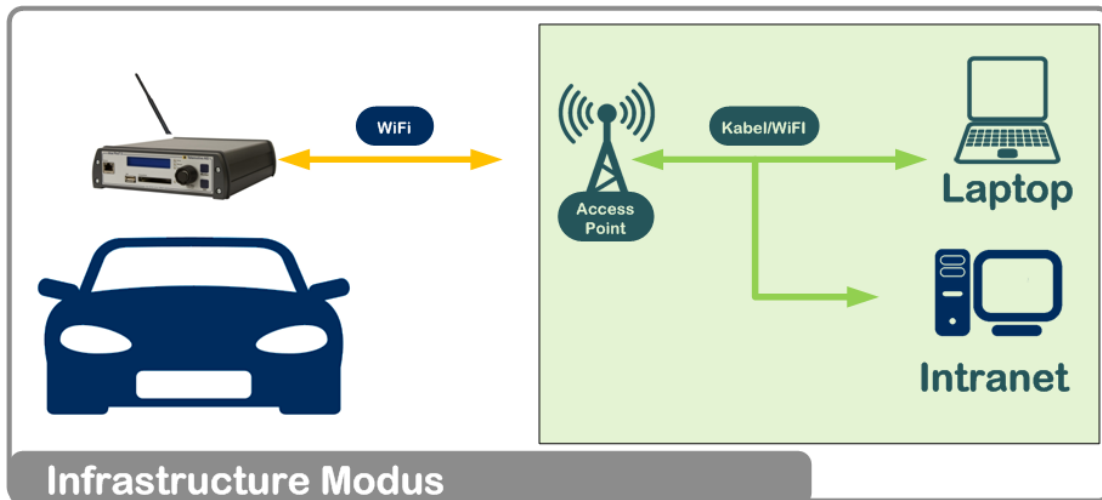


Figure 5.2: “Infrastructure” mode

### 5.1.2 Ad-hoc

The second mode is the **[Ad-hoc]** configuration. This scenario can be used if you want to connect the data logger directly with a notebook, without switching an access point in between.

**Notice:**

You also have to configure your notebook for “Ad-hoc” connections. You need an administration account on your notebook.

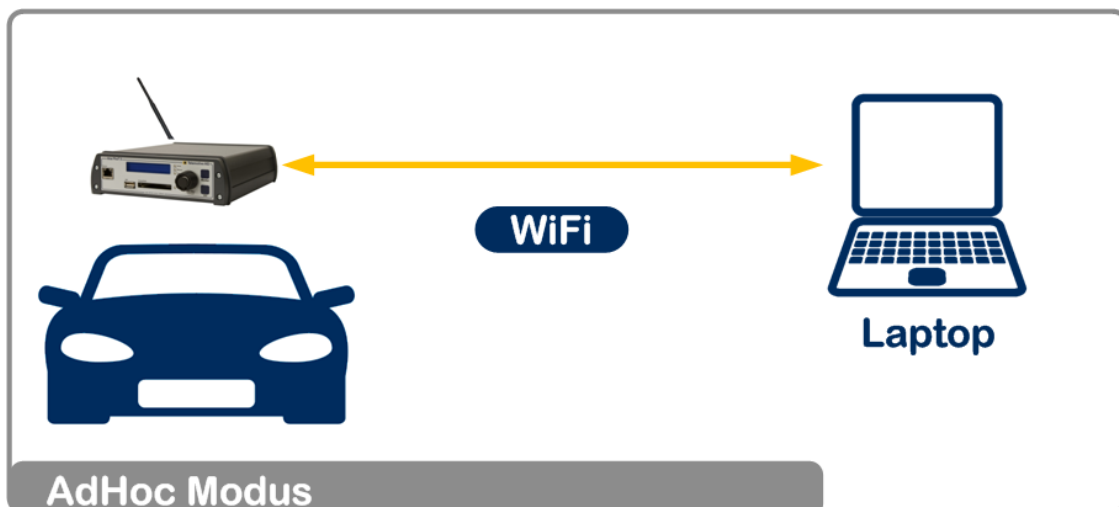


Figure 5.3: “Ad-hoc” mode

### 5.1.3 Master

In **[Master]** mode the data logger takes the function of the Access Point. Devices (Laptops, Smartphones) can be connected to the logger directly to use DHCP services.

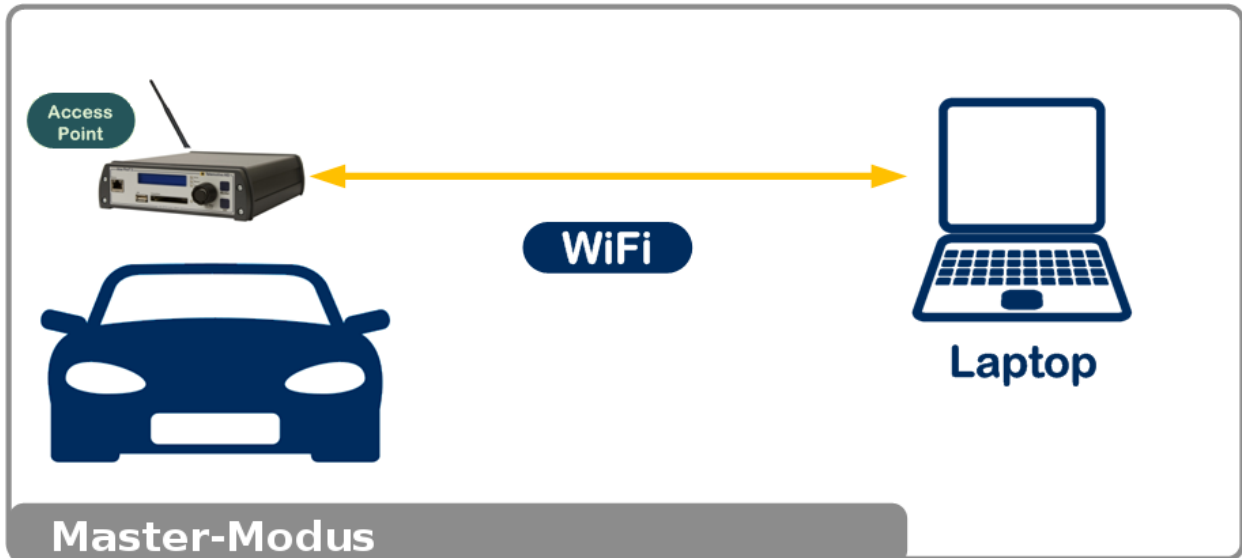


Figure 5.4: "Master" mode

### 5.1.4 Channel

In the Operating Mode **[Master]** you can switch to another Wi-Fi channel. Select a channel that is as far away as possible from other wireless networks in your environment.

The screenshot shows the 'Wi-Fi' configuration window. It includes a checked checkbox for 'Wi-Fi active', a dropdown menu for 'Operating Mode' set to 'Master', a text input field for 'Channel' containing the number '6', and another text input field for 'Network Name (ESSID)' containing 'WLAN1'.

Figure 5.5: Enter Channel

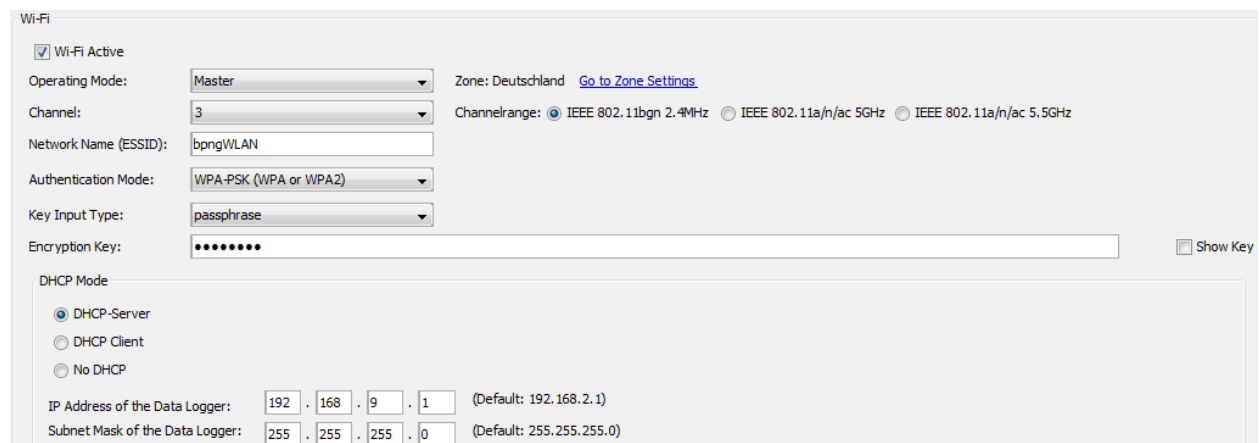
## 5.1.5 Wi-Fi Standard Selection

From firmware version 2.4.1 on the wireless standard 802.11ac is supported in the Operating Mode Master.



**Figure 5.6: Wi-Fi Standard Selection**

## 5.1.6 Example configuration: Connection Smartphone with logger



**Figure 5.7: Example Wi-Fi configuration**

## 5.2 Network Name (ESSID)

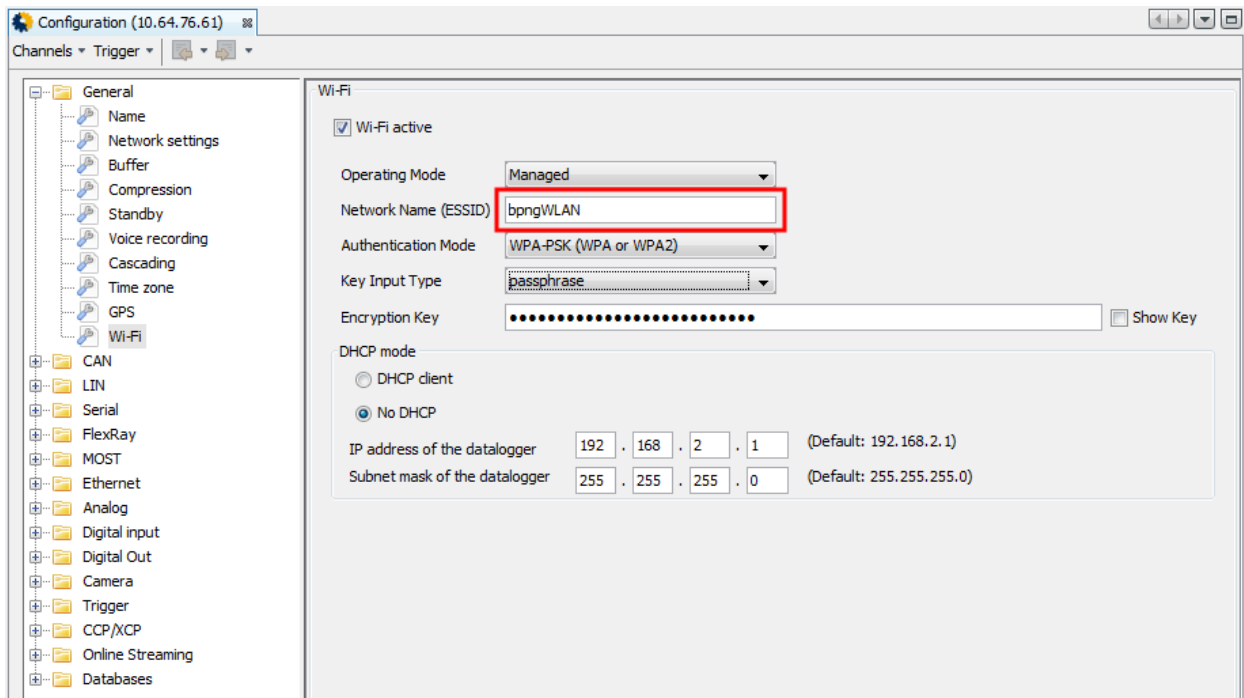
The Network Name is set individually by the user.

### Managed:

For “Infrastructure” mode the user has to set the ESSID (Network Name) for the network, to which the logger should be connected.

### Ad-hoc/Master:

Here the user can freely configure the ESSID, to later connect manually to the logger.



**Figure 5.8: Enter Network Name**

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### 5.3 Authentication Mode

WEP (Wired Equivalent Privacy) is a ciphering method for wireless networks which conforms to the IEEE 802.11 standard. A definite key is stored in every single client.

The following Authentication Modes can be used.

**WEP-Open:**

The client's key must match the Access Points (AP) key.

**WEP-Open (no authentication):**

In this case is no Encryption Key provided. Everybody is able to make a connection with this network.

**WEP-Shared Key:**

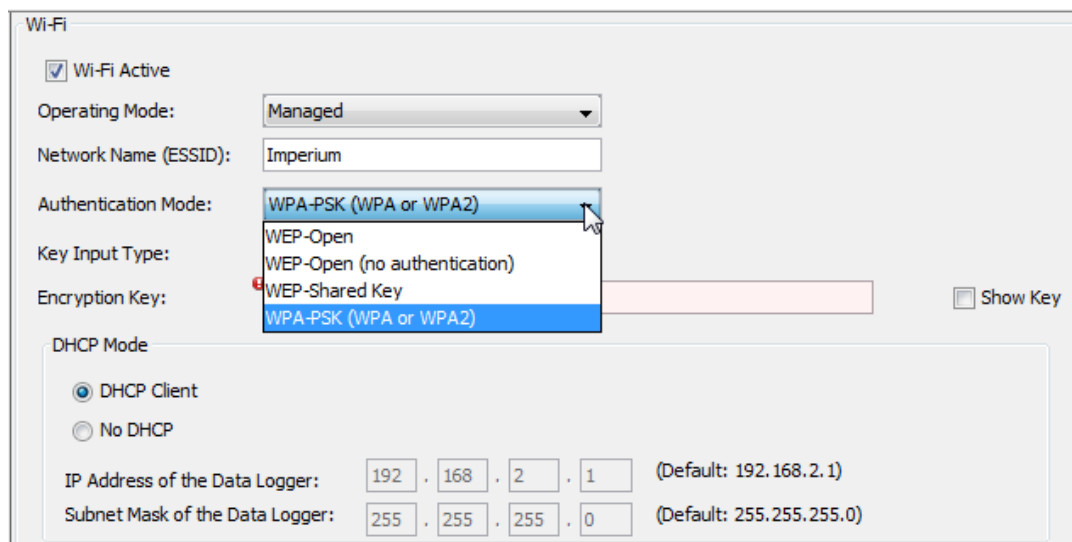
You have to set the same key at the data logger and at your PC.

It works with a "Challenge Response" procedure. The client sends an inquiry to the AP. The AP sends a random text back to the client. The client encrypts the text with its key and sends it back to the AP. Then the AP decrypts the incoming text with its key and compares the texts of the beginning and end of the process. Both texts have to match.

**WPA-PSK (WPA or WPA2):** PSK (Pre Shared Key)

The key of the user is known in advanced. Keys are exchanged before communication starts. The transmitted key and the stored key must match.

**Note: In Operation Mode [Ad-hoc] only the Authentication Mode [WEP-Open (no authentication)] works.**



**Figure 5.9: Select Authentication Mode**

If you set the Operating Mode **[Managed]**, select the Authentication Mode, which is used by your Access Point (AP).

For the Operating Modes **[Ad-hoc]** and **[Master]** select the Authentication Mode, which is to be used for the connection between logger and terminal. On both sides the same authentication method has to be used.

## 5.4 Key Input Type

Choose one of the following Key Input Types.

### Hexadecimal:

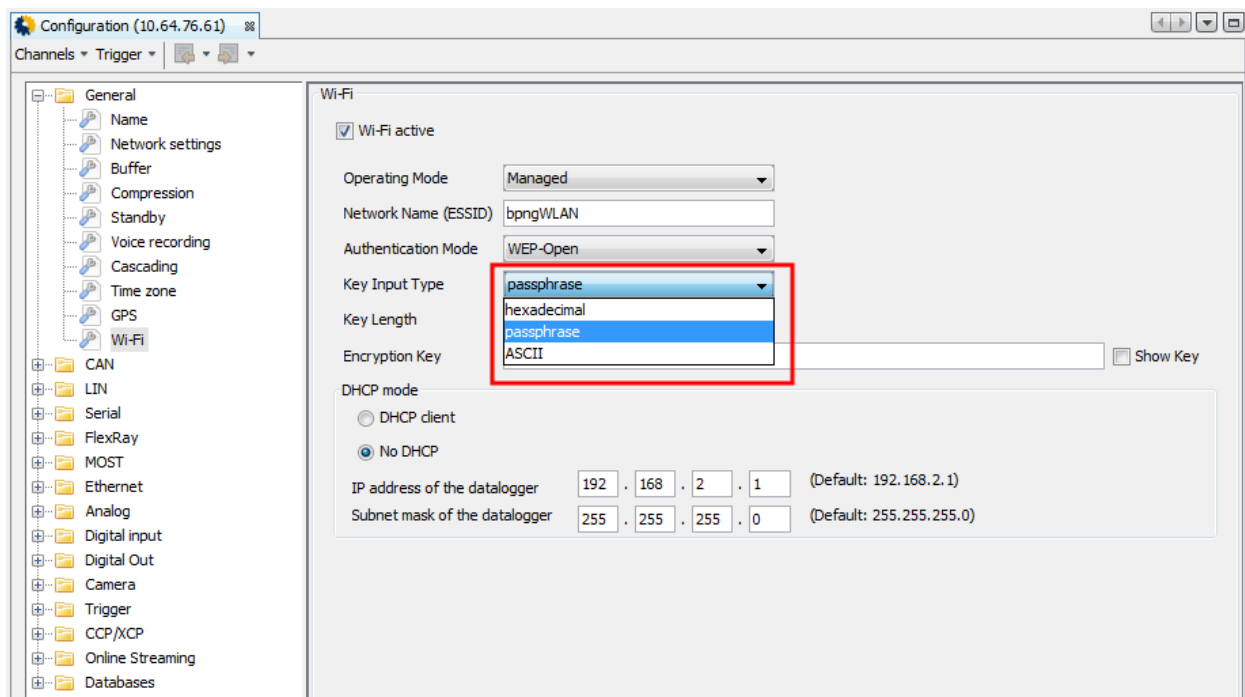
Security key has to be set and is displayed in hexadecimal digits.

### Passphrase:

Security key is generated from a password.

### ASCII:

Security key has to be set and is displayed in ASCII code.



**Figure 5.10: Select Key Input Type**

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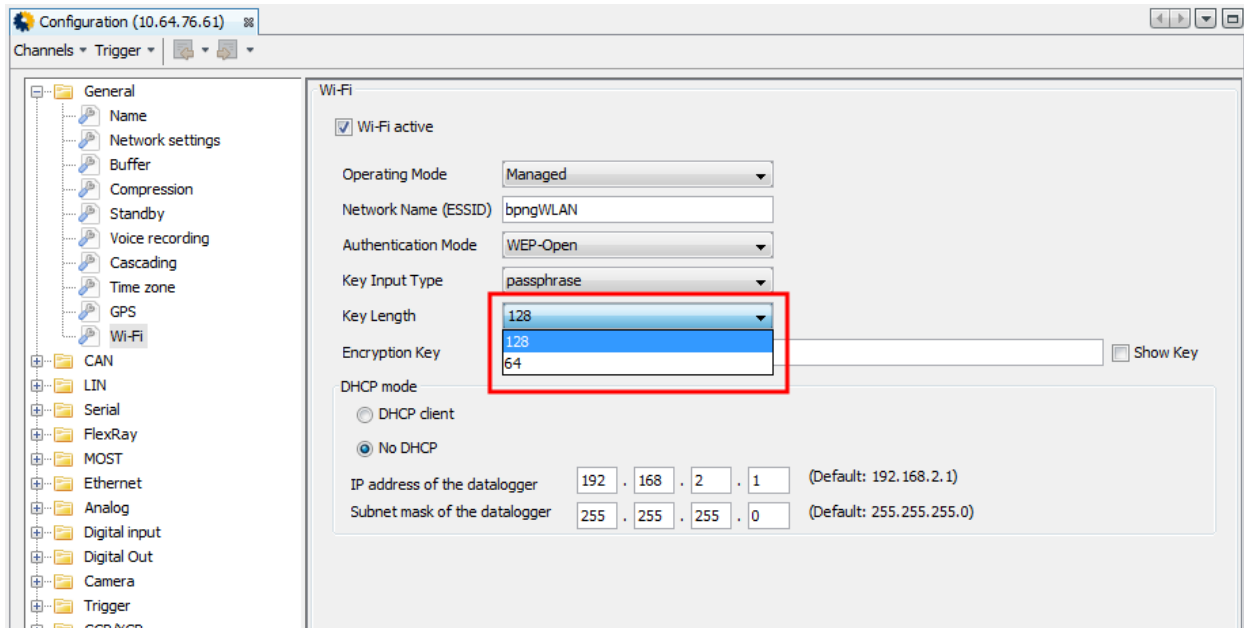
## 5.5 Key Length

Choose the Key Length for **WEP**:

- 64 bit            40 bit + initialization vector 24 bit:  
Hexadecimal        → 10 signs  
Passphrase            → individual  
ASCII                → 5 signs
  
- 128 bit           104 bit + initialization vector 24 bit:  
Hexadecimal        → 26 signs  
Passphrase            → individual  
ASCII                → 13 signs

For **WPA** the Key Length is defined with 256 bit:

- Hexadecimal        → 64 signs
- Passphrase            → 8 to 63 signs
- ASCII                → not available



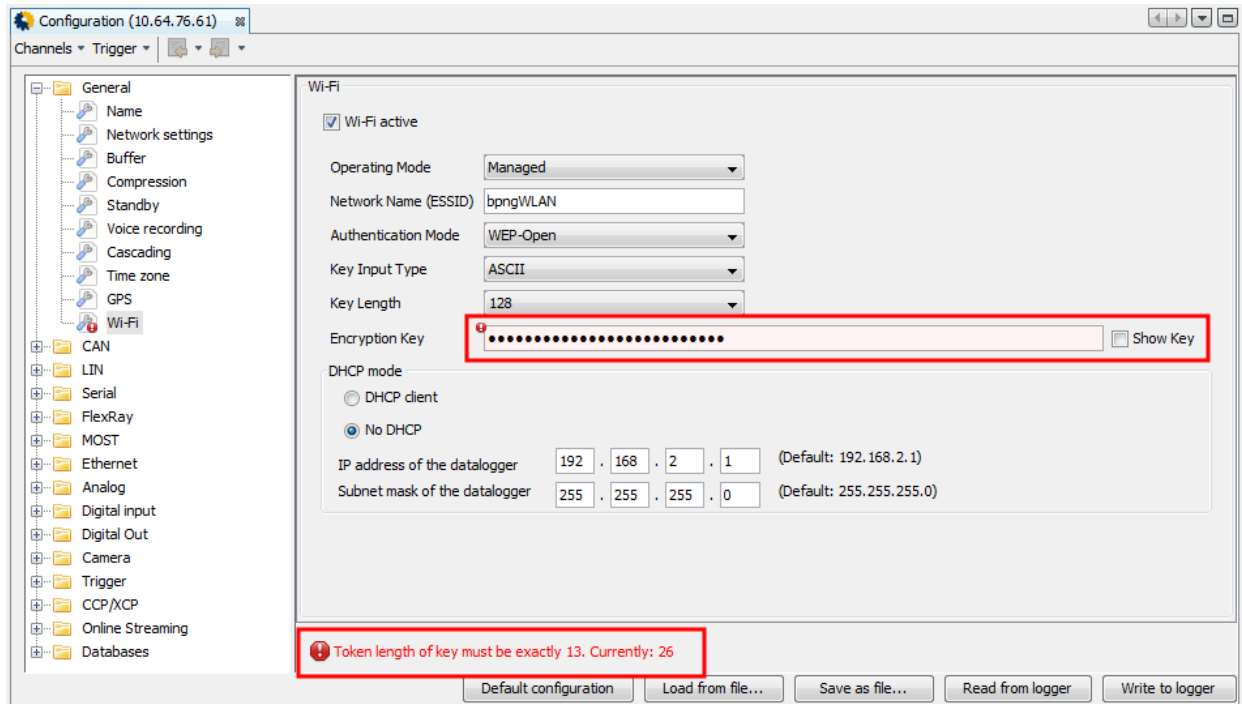
**Figure 5.11: Select Key Length**

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## 5.6 Encryption Key

The Encryption Key is set by the user. The length of the key depends on the Key Input Type and the Key Length (see section 5.5).

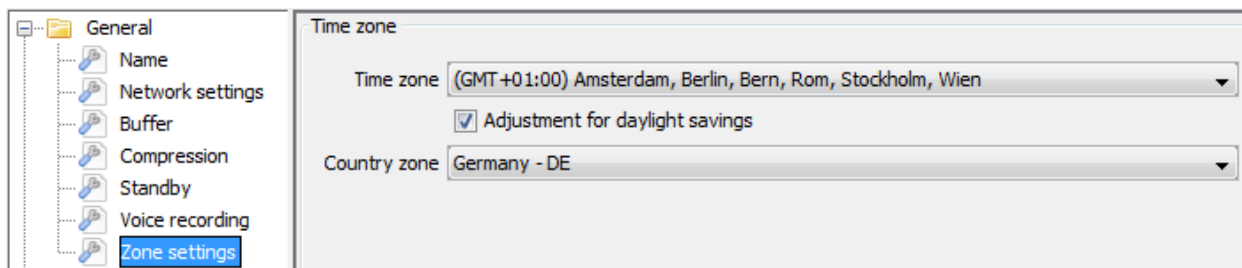
Red symbols with exclamation mark and a notification message indicate if a wrong Encryption Key is set.



**Figure 5.12: Wrong input of Encryption Key**

## 5.7 Zone settings

By changing the <Country zone> you can set the frequency and transmission power which should be used in the country where you want to use the logger.



**Figure 5.13: Configuration – General – Zone settings**

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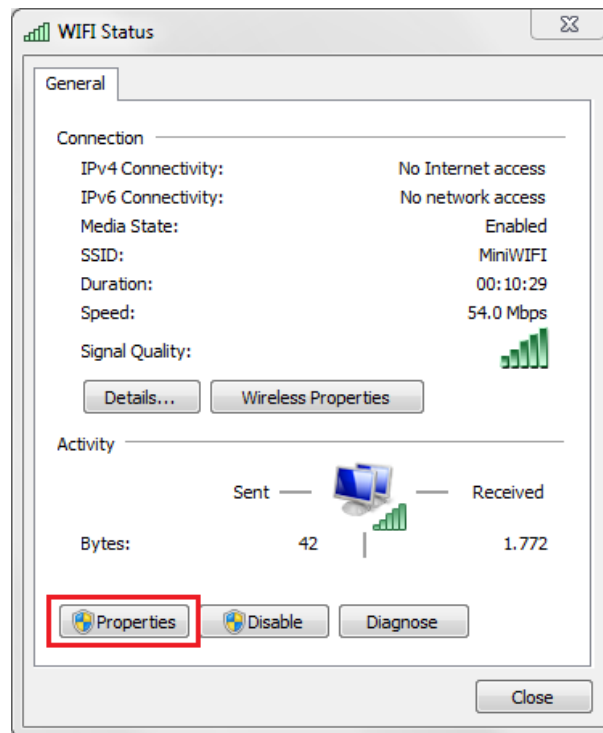


## 6 Additional information and settings for laptop/PC

If you have to set your IP address/subnet mask manually (e.g., when using the Operating Mode **[Ad-hoc]** or if no DHCP service is available in your infrastructure network), please open the "WIFI Status" of your wireless network card.

You can reach the Wi-Fi settings over the **[Properties]** button.

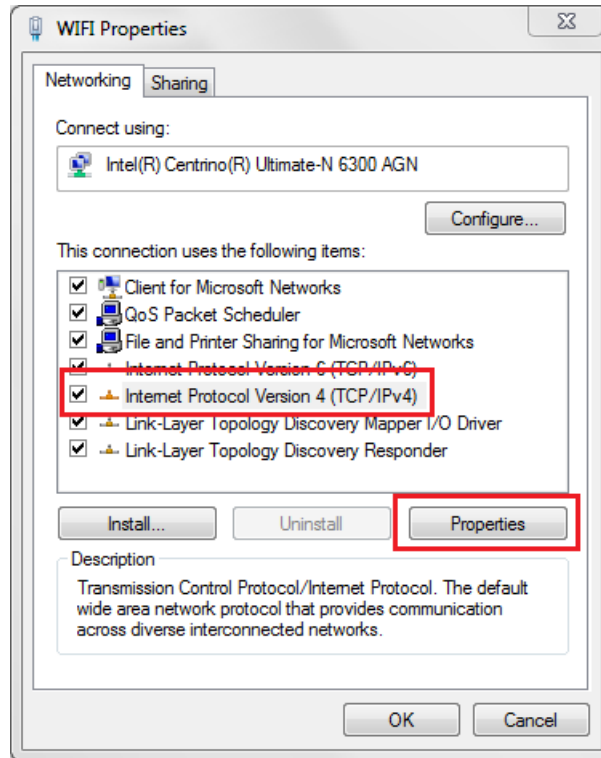
**Note:** For changes administration rights are required.



**Figure 6.1: WIFI Status**

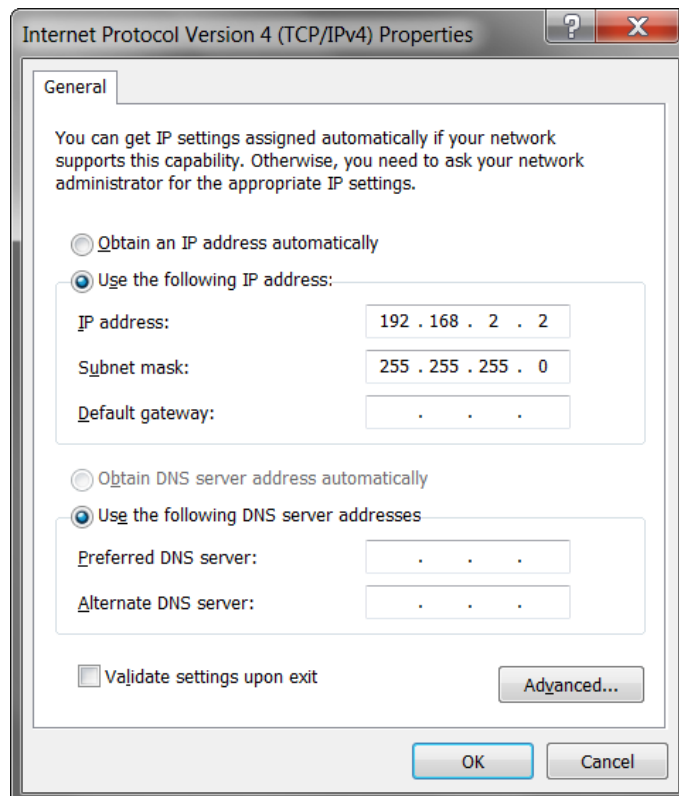
Now you have to choose your TCP/IP protocol. Please make sure to use the correct communication protocol. If necessary, contact your network administrator.

Select your used Wi-Fi protocol and click the **[Properties]** button.



**Figure 6.2: WIFI Properties**

Mark the checkbox **Use the following IP address:** to modify the IP address. Increase the last sign of the IP-address and use the default subnet mask. The settings for [Default gateway] and [DNS] do not have to be modified.




**Figure 6.3: Internet Protocol Properties**

## 7 Connecting to the data logger via WLAN

### Step 1:

Connect your PC/laptop with the previously configured network.

### Step 2:

Open the Telemotive System Client and have a look at the Network Logger list. Upon successful connection to the data logger via WLAN the logger appears with a  symbol in the list.

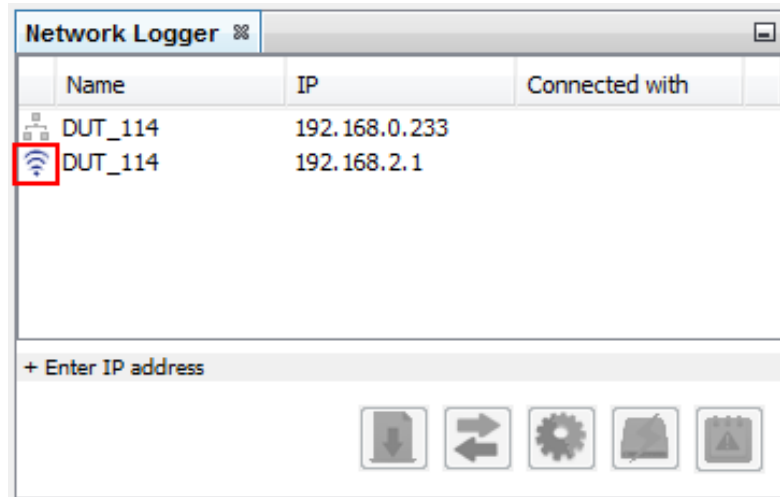


Figure 7.1: Tab “Network Logger”

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## 8 Abbreviations

Kürzel / abbreviation	Bedeutung / meaning
<b>blue PiraT</b>	<b>P</b> rocessing <b>I</b> nformation <b>R</b> ecording <b>A</b> nalyzing <b>T</b> ool
<b>bP</b>	<b>blue PiraT</b>
<b>bP2</b>	<b>blue PiraT2</b>
<b>bP2 5E</b>	<b>blue PiraT2 5E</b>
<b>bPMini</b>	<b>blue PiraT Mini</b>
<b>RC Touch</b>	<b>R</b> emote <b>C</b> ontrol <b>T</b> ouch
<b>bP Remote</b>	<b>blue PiraT Remote</b>
<b>A2L</b>	<b>A</b> SAM <b>M</b> CD-2 <b>M</b> C <b>L</b> anguage
<b>AE</b>	<b>A</b> utomotive <b>E</b> lectronics
<b>ACK</b>	<b>A</b> C <b>K</b> nowledged
<b>CAN</b>	<b>C</b> ontroller <b>A</b> rea <b>N</b> etwork
<b>CCP</b>	<b>C</b> AN <b>C</b> alibration <b>P</b> rotocol
<b>CF</b>	<b>C</b> ompact <b>F</b> lash
<b>CRO</b>	<b>C</b> ommand <b>R</b> eceive <b>O</b> bject
<b>DAQ</b>	<b>D</b> ata <b>A</b> cquisition
<b>DTO</b>	<b>D</b> ata <b>T</b> ransmission <b>O</b> bject
<b>ECL</b>	<b>E</b> lectrical <b>C</b> ontrol <b>L</b> ine
<b>ECU</b>	<b>E</b> lectronic <b>C</b> ontrol <b>U</b> nit
<b>FIBEX</b>	<b>F</b> ield <b>B</b> us <b>E</b> xchange <b>F</b> ormat
<b>FW</b>	<b>F</b> irmware
<b>GMT</b>	<b>G</b> reenwich <b>M</b> ean <b>T</b> ime
<b>INCA</b>	<b>I</b> N <b>T</b> egrated <b>C</b> alibration and <b>A</b> pplication <b>T</b> ool
<b>LAN</b>	<b>L</b> ocal <b>A</b> rea <b>N</b> etwork = Netzwerk
<b>LIN</b>	<b>L</b> ocal <b>I</b> nterconnect <b>N</b> etwork
<b>MAC</b>	<b>M</b> edia <b>A</b> ccess <b>C</b> ontrol
<b>MCD</b>	<b>M</b> easure <b>C</b> alibrate <b>D</b> iagnose
<b>MDX</b>	<b>M</b> eta <b>D</b> ata <b>E</b> Xchange <b>F</b> ormat
<b>MEP</b>	<b>M</b> OST <b>E</b> thernet <b>P</b> acket
<b>MOST</b>	<b>M</b> edia <b>O</b> riented <b>S</b> ystems <b>T</b> ransport ( <a href="http://www.mostnet.de">www.mostnet.de</a> )
<b>ODT</b>	<b>O</b> bject <b>D</b> escriptor <b>T</b> able
<b>ODX</b>	<b>O</b> pen <b>D</b> ata <b>E</b> Xchange
<b>OEM</b>	<b>O</b> riginal <b>E</b> quipment <b>M</b> anufacturer

<b>PHY</b>	<b>PHY</b> sical Bus Connect
<b>PW</b>	<b>Pass</b> wort
<b>RX</b>	<b>Re</b> ceiver Data
<b>SD</b>	<b>Secure Digital</b>
<b>SFTP</b>	<b>Secure File Transfer Protocol</b>
<b>SHA</b>	<b>Secure Hash</b>
<b>SSL</b>	<b>Secure Sockets Layer</b>
<b>TCP/IP</b>	<b>Transmission Control Protocol/Internet Protocol</b>
<b>TLS</b>	<b>Transport Layer Security</b>
<b>TMP</b>	<b>Telemotive Packetformat</b>
<b>TSL</b>	<b>Telemotive System Link</b>
<b>UDP</b>	<b>User Datagram Protocol</b>
<b>USB</b>	<b>Universal Serial Bus</b>
<b>UTC</b>	<b>Universal Time, Coordinated</b>
<b>Wi-Fi</b>	<b>Wireless Fidelity</b>
<b>WLAN</b>	<b>Wireless Local Area Network</b>
<b>XCP</b>	<b>Universal Measurement and Calibration Protocol</b>

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