



Mounting and installation of FL WLAN 1000/2000 product family

User manual



User manual

Mounting and installation of FL WLAN 1000/2000 product family

UM EN FL WLAN 1000/2000 Mounting and installation, Revision 00

2019-09-04

This user manual is valid for:

Designation	Order No.
FL WLAN 1100	2702534
FL WLAN 1101	2702538
FL WLAN 2100	2702535
FL WLAN 2101	2702540

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1 For your safety

Read this user manual carefully and keep it for future reference.

1.1 Identification of warning notes



This symbol indicates hazards that could lead to personal injury.

There are three signal words indicating the severity of a potential injury.

DANGER

Indicates a hazard with a high risk level. If this hazardous situation is not avoided, it will result in death or serious injury.

WARNING

Indicates a hazard with a medium risk level. If this hazardous situation is not avoided, it could result in death or serious injury.

CAUTION

Indicates a hazard with a low risk level. If this hazardous situation is not avoided, it could result in minor or moderate injury.



This symbol together with the **NOTE** signal word warns the reader of actions that might cause property damage or a malfunction.



Here you will find additional information or detailed sources of information.

1.2 Qualification of users

The use of products described in this user manual is oriented exclusively to electrically skilled persons or persons instructed by them. The users must be familiar with the relevant safety concepts of automation technology as well as applicable standards and other regulations.

1.3 Field of application of the product

This product is recommended for use in both industrial and domestic environments. Functional ground needs to be connected in industrial environments to comply with immunity requirements. For domestic environments, functional ground must be omitted if a shielded Ethernet cable is used, in order to meet the emission requirements.

Observe the permitted operating temperatures of the wireless module when using it outdoors. The device is suitable for installation in protected outdoor areas (e.g., under a porch roof). Direct sunlight may lead to overheating and permanent damage of the device.

Observe the applicable regulations for using wireless devices outdoors.

1.3.1 Product changes

Modifications to hardware and firmware of the device are not permitted.

Incorrect operation or modifications to the device can endanger your safety or damage the device. Do not repair the device yourself. If the device is defective, please contact Phoenix Contact.

1.4 Safety and installation instructions



VORSICHT: Noise susceptibility of medical equipment

This device emits radio frequency (RF) energy in the ISM (Industrial, Scientific, Medical) band. Make sure that all medical devices used in proximity to this device meet appropriate noise susceptibility specifications for this type of RF energy.



NOTE: Radio interference in residential areas

This is a Class A item of equipment. This equipment can cause radio interference in residential areas; in this case, the operator may be required to implement appropriate measures.



ACHTUNG: Electrostatic discharge

This product contains parts that can be damaged by electrostatic discharge (ESD). Take appropriate protective measures against electrostatic discharge.



ACHTUNG: Requirements for the power supply

The module is designed exclusively for operation with safety extra-low voltage (SELV) in accordance with EN/IEC 60950-1 and VDE 0805.



ACHTUNG: Requirements for the current source

This device should only be operated with power supplies that meet the requirements of EN/IEC 60950-1 for limited power sources. Otherwise, the device is to be operated in a housing that meets the requirements for fire protection enclosure according to EN/IEC 60950-1.



ACHTUNG: Statement regarding RF emission

This device should be operated with a minimum distance of 20 cm between the emitter/antenna and your body.

1.5 Industrial security



ACHTUNG: Risk of unauthorized network access

To prevent unauthorized network access, please read the following notes.

Connecting devices to a network via Ethernet entails the danger of unauthorized access to the network.

If possible, deactivate unused communication channels.

Assign passwords such that third parties cannot access the wireless module and make unauthorized changes.

Due to its communication interfaces, the wireless module should not be used in safety-critical applications unless additional security appliances are used.

Please take additional protective measures in accordance with the IT security requirements and the standards applicable to your application (e.g., virtual networks (VPN) for remote maintenance access, firewalls, etc.) for protection against unauthorized network access.

On first request, you shall release Phoenix Contact and the companies associated with Phoenix Contact GmbH & Co. KG, Flachsmarktstrasse 8, 32825 Blomberg in accordance with §§15ff. AktG (German Stock Corporation Act), hereinafter collectively referred to as "Phoenix Contact", from all third-party claims made due to improper use.

For the protection of networks for remote maintenance via VPN, Phoenix Contact offers the mGuard product range as security appliances, which is described in the latest Phoenix Contact catalog (phoenixcontact.net/products).

Additional measures for protection against unauthorized network access can be found in the AH EN INDUSTRIAL SECURITY application note. The application note can be downloaded at phoenixcontact.net/products.

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2 Technical description



Unless otherwise expressly stated, all information provided in this user manual always applies.

2.1 General description

Robust, compact WLAN module with integrated antennas:

- Turnkey solution with integrated antenna and wireless module in a single device
- Saves space in the control cabinet, optimized for direct mounting on machines, mobile units, or control cabinets
- Fast and reliable wireless communication, thanks to powerful MIMO antennas
- Quick and easy connection, thanks to single-hole mounting
- Extremely robust housing, shock-proof in acc. with IK08
- Operation as a WLAN access point, client, or repeater
- Supports WLAN 802.11 standards a, b, g, and n
- Operation in the 2.4 GHz and 5 GHz band



Figure 2-1 FL WLAN 110x/210x

2.1.1 Product versions

Table 2-1 Product versions

Device	Characteristics
FL WLAN 1100 2702534	<ul style="list-style-type: none"> – Protection class IP54 (when mounted on a level surface, such as control box or similar) – Temperature range 0°C...60°C – Approval for Europe and other countries
FL WLAN 1101 2702538	<ul style="list-style-type: none"> – Like FL WLAN 1100, with approval only for USA and Canada
FL WLAN 2100 2702535	<ul style="list-style-type: none"> – Protection class IP65/66/67/68 (when mounted on a level surface, such as control box or similar) – Temperature range -40°C...60°C – Approval for Europe and other countries
FL WLAN 2101 2702540	<ul style="list-style-type: none"> – Like FL WLAN 2100, with approval only for USA and Canada

2.2 Country approvals and standards FL WLAN 110x/210x

2.2.1 FL WLAN 1100/2100

The FL WLAN 1100/2100 is a WLAN device with access point and client functionality. The device uses the WLAN standard in the license-free 2.4 GHz and 5 GHz bands, which are free of charge.

The device satisfies all the requirements of Directive 2014/53/EU:

- Further information is available in the manufacturer's declaration in the e-shop at phoenixcontact.net/products.

Depending on the maximum possible transmission power, device operation must be approved or registered in some countries. Furthermore, there may be a usage restriction for the transmission power.



An up-to-date list of approvals for countries can be found in the e-shop under phoenixcontact.net/products.



Make sure you observe the regulations of the relevant regulatory body for device operation in all countries.

Approvals for other countries are available on request.

Phoenix Contact hereby declares that this wireless system complies with the basic requirements and other relevant regulations specified in Directive 2014/53/EU. The EU Declaration of Conformity is to be found in the "Download" area via the following link phoenixcontact.net/products.

Europe (ETSI)	
Frequency range	Maximum transmission power at antenna output
2400 ... 2483 MHz	20 dBm (EIRP)
5150 ... 5725 MHz	19 dBm (EIRP)

2.2.2 FL WLAN 1101/2101



The devices FL WLAN 1101 (Order No. 2702538) and FL WLAN 2101 (Order No. 2702540) can be used in USA and Canada. They do not have CE approval and may not be operated in Europe.

Furthermore, the following approvals have been performed and passed for the FL WLAN 1101 device:

- FCC/CFR 47, Part 15 (USA)
- Radiocommunication Act R.S.C., 1985, c. R-2

2.2.2.1 FCC information

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

NOTICE:

This Class A digital apparatus complies with the Canadian standard ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

NOTICE:

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions:

- 1 this device may not cause harmful interference, and
- 2 this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- 1 l'appareil ne doit pas produire de brouillage, et
- 2 l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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NOTICE:

Changes or modifications made to this equipment not expressly approved by Phoenix Contact GmbH & Co. KG may void the FCC authorization to operate this equipment.

Information on radio frequency radiation exposure:

This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

Ce transmetteur ne doit pas être placé au même endroit ou utilisé simultanément avec un autre transmetteur ou antenne.

2.3 Firmware



For additional information on the firmware of the devices, refer to the separate user manual under phoenixcontact.net/products.

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3 Mounting / Antenna configuration

3.1 Connections and operating elements

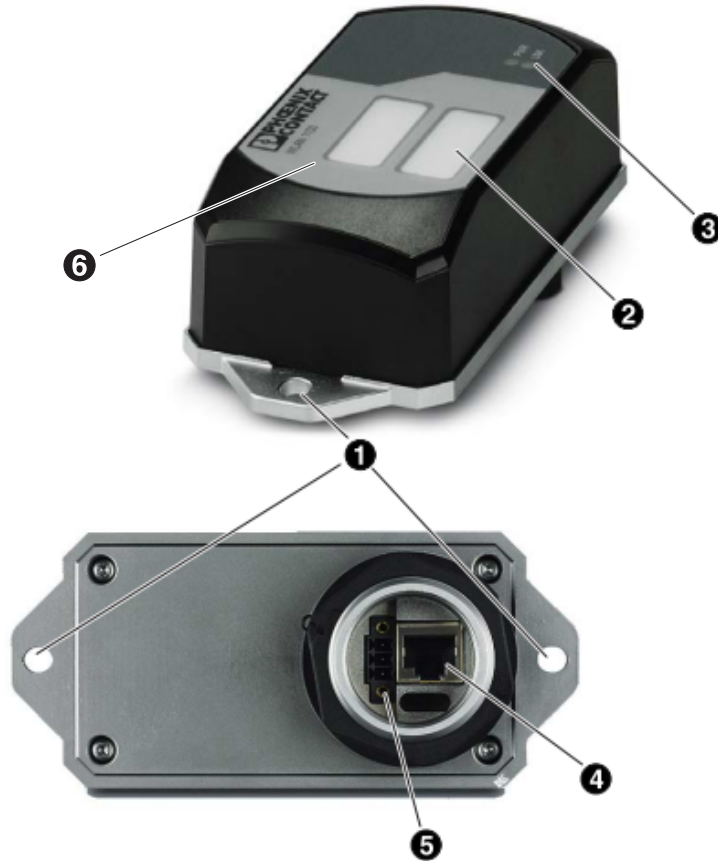


Figure 3-1 Connections and operating elements of the device

1. Mounting holes
2. Marking fields
3. Status and diagnostic LEDs
4. Ethernet connection in RJ45 format with 100 Mbps
5. Connections for supply voltage and one digital input via COMBICON
6. Two integrated WLAN antennas

3.1.1 Housing dimensions

The outside dimensions of the FL WLAN 110x and FL WLAN 210x devices are 62.8 mm x 36.5 mm x 113.2 mm (width x height x depth).

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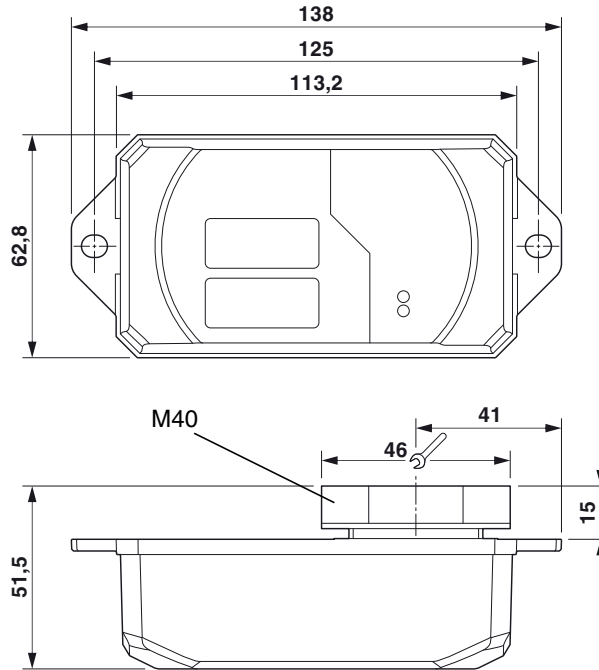


Figure 3-2 Housing dimensions and distances

3.1.2 Electrical connection

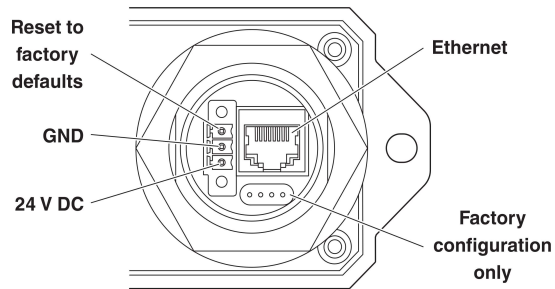


Figure 3-3 Connection of the supply voltage, Ethernet, and the "Reset to Factory Defaults" input

The supplied connector is an FMC 1,5/ 3-STF-3,5 (Order No. 1966101).



A cable with a cross section of 0.75 mm² and a trapezoidal or square crimped ferrule that is 10 mm long is recommended.
Always use the appropriate conductor cross section and ferrules to ensure that the cable is fixed securely.

Table 3-1 Connection data for the male connector

Conductor cross section solid/stranded min.	0.2 mm ²
Conductor cross section solid/stranded max.	1.5 mm ²
Conductor cross section, stranded, with ferrule without plastic sleeve, minimum	0.25 mm ²
Conductor cross section, stranded, with ferrule without plastic sleeve, maximum	1.5 mm ²
Conductor cross section, stranded, with ferrule with plastic sleeve, minimum	0.25 mm ²
Conductor cross section, stranded, with ferrule with plastic sleeve, maximum	0.75 mm ²
Conductor cross section AWG min.	24
Conductor cross section AWG max.	16
Conductor cross section AWG min. according to UL/CUL	24
Conductor cross section AWG max. according to UL/CUL	16

3.1.2.1 Assignment of the RJ45 Ethernet connectors

Table 3-2 Pin assignment of RJ45 connectors

Pin number	10Base-T / 10 Mbps	100Base-T / 100 Mbps
1	TD+ (transmit)	TD+ (transmit)
2	TD- (transmit)	TD- (transmit)
3	RD+ (receive)	RD+ (receive)
4	-	-
5	-	-
6	RD- (receive)	RD- (receive)
7	-	-
8	-	-

3.1.2.2 Grounding of device



Grounding protects people and machines against hazardous voltages. To avoid these dangers to the greatest extent possible, correct grounding, taking the local conditions into account, is vital.



Functional grounding of the device:
The device must be connected to ground (functional earth ground) via the metal part of the housing. If this is not possible, ensure a low-resistance ground connection (functional earth ground) for the shielding of the Ethernet cable.

FL WLAN 110x and FL WLAN 210x: Ground the base plate of the device by connecting the mounting screws to a grounded metal surface (functional earth ground/FE).

If this is not possible, e.g., because the device is installed on a plastic surface, make sure that the Ethernet cable is properly shielded during mounting. This is particularly important if the housing is not grounded by other means, e.g., via the base plate.

3.1.3 Mounting the device on a level surface

The devices in the FL WLAN 110x/210x series are suitable for external mounting on control cabinets, machines, automatic guided vehicle (AGV) systems, or similar equipment.

To mount the device on a level surface, a bore hole is required for the mounting flange (40 mm in diameter). You have to tighten the nut (8-10 Nm maximum) to ensure a tight seal. You can secure the device additionally to the surface with two screws (M6). When using this additional screw connection, make sure that the entire system is sealed tight.

You can install the device in any mounting position.

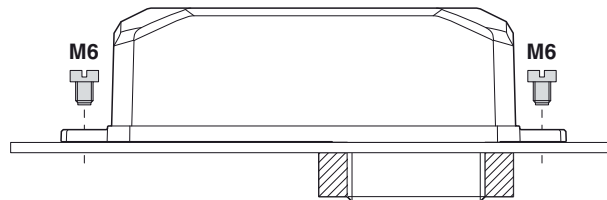


Figure 3-4 Mounting on a level surface

3.1.3.1 Drill hole template

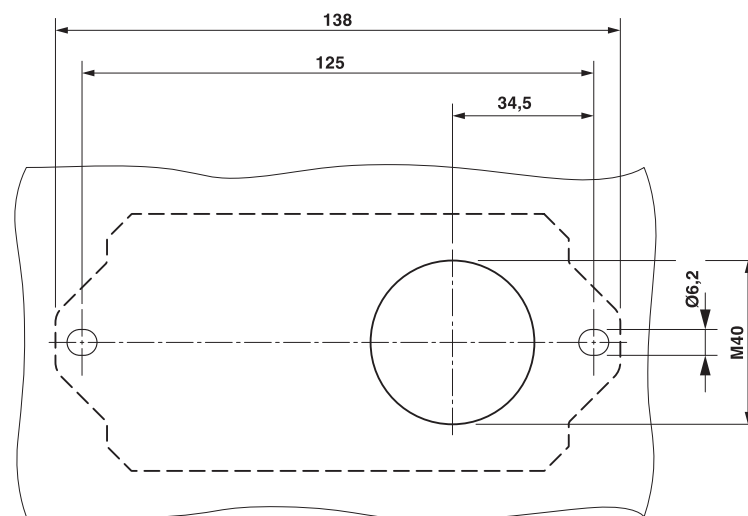


Figure 3-5 Drill hole template

3.1.4 Mounting the device with cable feed-through and seal

When mounting the device outside the control cabinet (e.g., on a mounting bracket), you can use a cable feed-through with seal to seal the connection dome for the supply line. Screw the metal cable feed-through (FL M32 ADAPTER, Order No. 2702544) into the M32 internal thread of the FL WLAN 110x/210x connection dome. The FL WLAN 110x/210x is therefore sealed acc. to IP54 even outdoors.

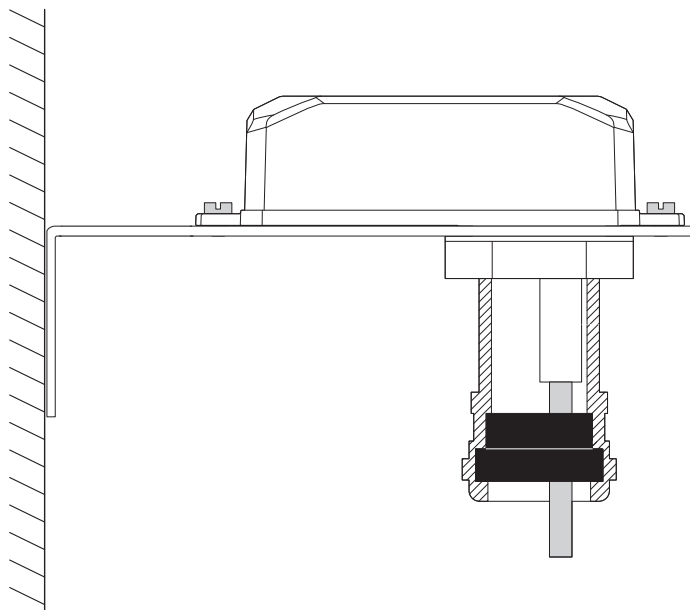


Figure 3-6 Mounting on a mounting bracket

If the device is not mounted directly on a control cabinet, use the FL M32 ADAPTER (Order No. 2702544) to create the seal.

In this case, use for example the items 1421126, 1413163 or comparable RJ45 connectors as connectors for the Ethernet cable.

3.1.4.1 Handling the FL M32 ADAPTER

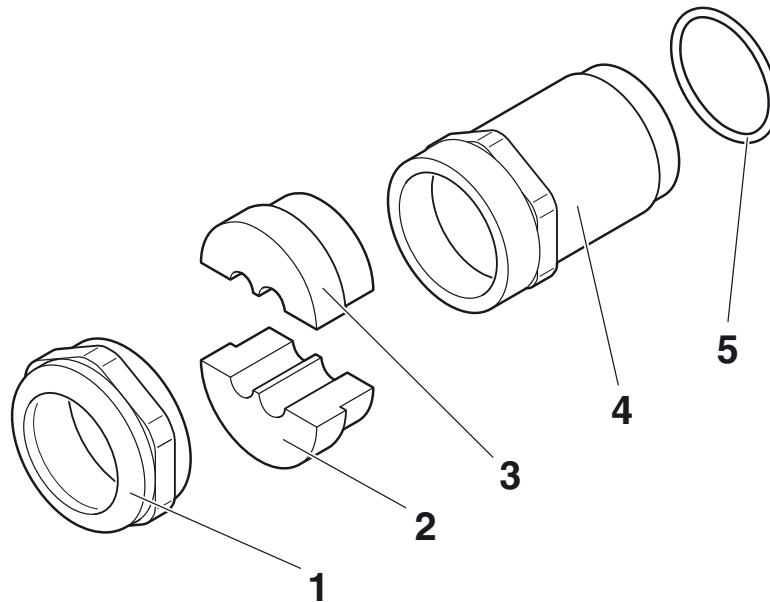


Figure 3-7 Handling the FL M32 ADAPTER

3.1.4.2 Tightness of seal, retention, and strain relief (in accordance with EN 50262)

Tightening torque (double nipple): 15 Nm for M32

Tightening torque (pressure screw): 20 Nm for PG29

Tightness of seal for 7 mm hole pattern and 8.5 mm for cable:

IP65 degree of protection is achieved in accordance with DIN EN 60529(2014.09) if the difference between the cable diameter and hole is less than 10%.

If both are the same, IP68 can be achieved up to 10 bar with defined "retention" in accordance with EN 50262 Class A. The tightness of seal and strain relief depend on the cable used.



During the disassembly, make sure that no torsion forces act on the cables. For this, first loosen the double nipple (1). Then remove the seal (2,3). Do not turn the pressure screw (4) against the housing of the WLAN device beforehand.

3.1.4.3 Mounting, taking the internal antennas into account

The FL WLAN 110x/210x has two internal antennas that transmit through the plastic housing. Take the following into account when mounting the device: In order to ensure that the WLAN signal can be transmitted via the built-in antennas, the device should not be installed inside control cabinets or other metal housings.



The devices of the FL WLAN 110x/210x series contain internal antenna for WLAN communication. You should therefore mount the device on the outside of metal objects to ensure that the WLAN signal can be transmitted.

Mounting / Antenna configuration

In order to optimize the device's performance with respect to transmission, observe the same rules that apply when mounting antennas. An important criterion here is the lateral distance from conductive surfaces. These surfaces can influence the radio propagation (directional characteristics of the antenna) due to reflections and interferences.

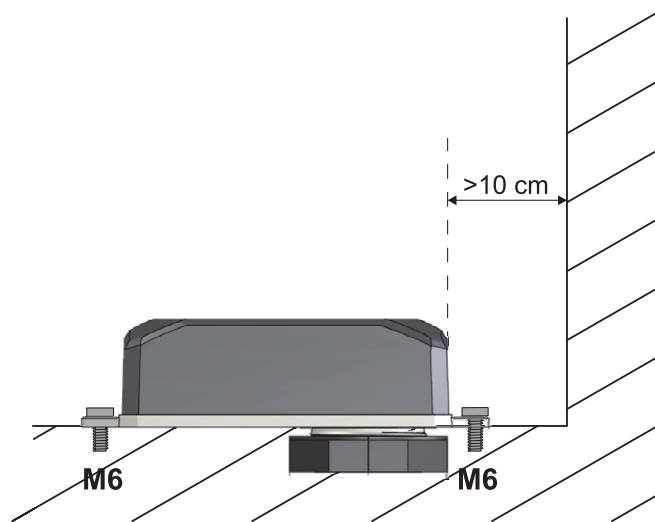


Figure 3-8 Mounting distance from lateral conductive surfaces

Due to its internal antennas, the device should not be located too close to conductive objects, if possible. Maintain a distance of more than 100 mm, if possible. Smaller distances may adversely affect transmission.

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4 Startup and configuration

4.1 Delivery state / Factory settings



Observe the safety and installation instructions in [“Safety and installation instructions”](#) on page 6.

The following factory settings are valid up to including firmware 2.21:

In the delivery state or after the system is reset to the factory defaults, the following functions and properties are available:

- The user name is “admin”.
- The password is “private”.
- All IP parameters are deleted. The device has no valid IP address.
- BootP is activated.
- WLAN is disabled.

The following changes in the factory settings are valid from firmware 2.40:

- WLAN is activated.
- Operating mode: MCB (client)
- SSID: PhoenixContact, encryption WPA2: 2bchanged
- Transmission power: 5 dBm

The following factory settings are valid from firmware 2.50:

- The user name is “admin”.
- The password is “private”.
- Only with factory settings can the device also be accessed via the link local IPv4 address 169.254.2.1.
- BootP is activated.
- WLAN is activated.
- Operating mode: MCB (client)
- SSID: PhoenixContact, encryption WPA2: 2bchanged
- Transmission power: 5 dBm

4.1.1 Meaning of diagnostic and status indicators

The device indicates the following information via the LEDs. Additional diagnostic options can be accessed via the CLI or web-based management.

Table 4-1 Meaning of the diagnostic and status indicators

Des.	Color	Function	
		Access point	Client
US	Green (on)	Supply voltage is present	
WLAN	Off	WLAN interface deactivated	

Table 4-1 Meaning of the diagnostic and status indicators

Des.	Color	Function	
	Blue (on)	WLAN interface activated	WLAN interface connected*
	Violet (on)	Automatic channel selection (only with DFS)	Scanning for access point
	Green (on)	WLAN interface in Idle mode if radar check (DFS) is active at 5 GHz.	WLAN interface in Idle mode

*WLAN connection established (blue):

Whether data transmission occurs depends on whether the passwords and certificates are valid. A WLAN connection can therefore exist although data cannot be transmitted. If WLAN authentication fails, this is indicated in the log file.

4.1.2 General sequence for startup

For startup, supply the device with operating voltage (nominal value: 24 V DC). The assignment of the connector is shown in [“Connections and operating elements” on page 15](#).

Then you have to assign an IP address to the device. This is done via BootP. The IP address is allocated by a corresponding server in the network or a PC tool (see [“Assigning the IP address using IPAssign.exe” on page 25](#)). Afterwards, you can configure the device via the web interface (WBM) or the Command Line Interface (CLI).

Connect the device via its Ethernet interface by an appropriate cable (RJ45 connector) to the device used for configuration.

By default upon delivery (factory settings), the WLAN interface is deactivated for security reasons. Configuration via the WLAN interface is therefore not possible in this state.

All settings of the parameters on the device can be configured via the web interface or Command Line Interface (CLI). For further information, refer to the separate manual [“Configuration of the FL WLAN 1000/2000 Product family” at phoenixcontact.net/products](#).

4.1.3 Assigning the IP address via BootP (with IPAssign)

This section explains IP address assignment using the “IP Assignment Tool” Windows software (IPAssign.exe). This software can be found at phoenixcontact.net/products where it can be downloaded free of charge. The tool can also be found under “Help & Documentation” on the web page for the device. You will be able to download it directly from there.

Notes on BootP

During initial startup, the device sends BootP requests without interruption until it receives a valid IP address. As soon as the device receives a valid IP address, it stops sending additional BootP requests.

After receiving a BootP reply, the device no longer sends BootP requests. Following a restart, a device that was previously configured sends three BootP requests. If these requests do not receive an answer, the device starts with the IP address that was last assigned via BootP. After the factory settings are restored, the device sends BootP requests until it receives an answer.



An activated firewall on the PC can hinder the allocation of IP addresses via BootP.

Requirements

The device is connected to a computer with a Microsoft Windows operating system.

4.1.4 Assigning the IP address using IPAssign.exe

Step 1: Downloading and executing the program

You can either load the tool from the Internet or from the device itself.

From the Internet:

- On the Internet, select the link phoenixcontact.net/products.
- Enter IPASSIGN in the search field, for example.

The BootP IP addressing tool can be found under “Configuration file”.

- Double-click on the “IPAssign.exe” file.
- In the window that opens, click on the “Run” button.

Step 2: IP Assignment Wizard



For the device to send BootP requests, you have to switch the device back to BootP on the “Quick setup/IP Address assignment” web page.

The program opens. The start screen of the addressing tool appears.

The program is mainly in English for international purposes. However, the program buttons change according to the country-specific settings.

The start screen displays the IP address of the PC. This helps when addressing the device in the subsequent steps.

- Click on the “Next” button.

Step 3: IP Address Request Listener

All devices that send a BootP request are listed in the window that opens. These devices are waiting for a new IP address.

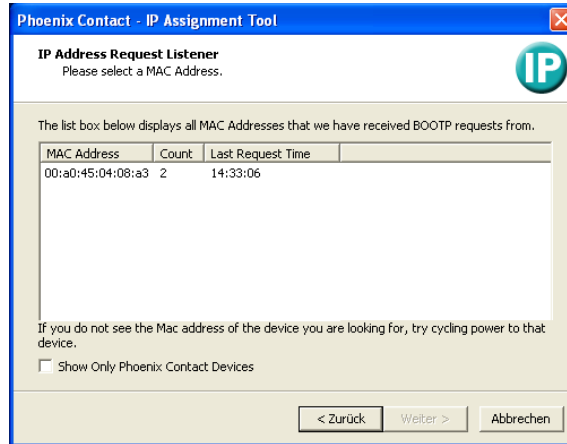


Figure 4-1 “IP Address Request Listener” window

In this example, the device has MAC ID 00.A0.45.04.08.A3.

- Select the device you want to assign an IP address to.
- Click on the “Next” button.

Step 4: Set IP Address

The following information is displayed in the window that opens:

- IP address of the PC
- MAC address of the selected device
- IP parameters of the selected device (IP address, subnet mask, and gateway address)
- Any faulty settings

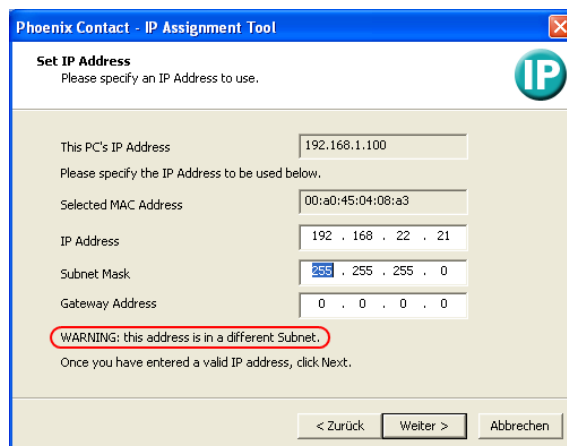


Figure 4-2 “Set IP Address” window with faulty settings

- Adjust the IP parameters according to your requirements.

If inconsistencies are no longer detected, a message appears indicating that a valid IP address has been set.

- Click on the “Next” button and perform a voltage reset.

Step 5: “Assign IP Address”

The program attempts to transmit the set IP parameters to the device.

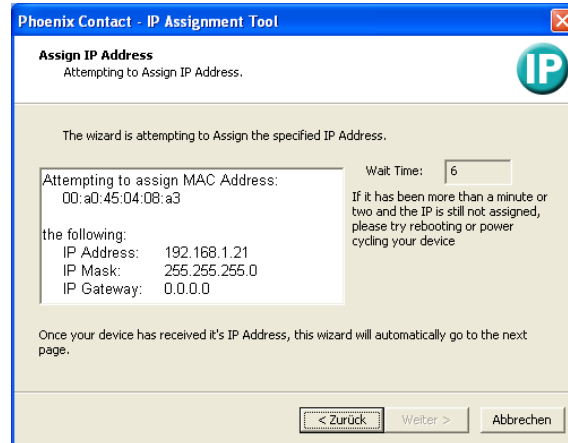


Figure 4-3 “Assign IP Address” window

Following successful transmission, the next window opens.

Step 6: Completing IP address assignment

The window that opens informs you that IP address assignment has been successfully completed. It gives an overview of the IP parameters that have been transmitted to the device with the MAC address shown.

To assign IP parameters for additional devices:

- Click on the “Back” button.

To exit IP address assignment:

- Click on the “Finish” button.

4.1.5 Reset to the factory settings

The device has a digital input. This digital input on the device is used exclusively to reset the device to the factory settings.

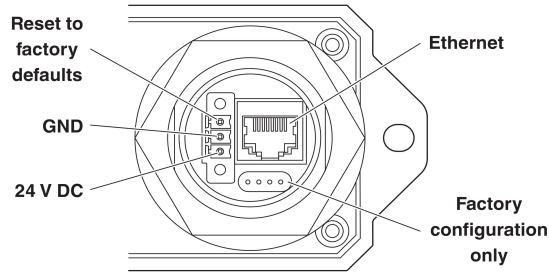


Figure 4-4 Connection of the supply voltage and reset on the bottom of the device

4.1.5.1 Detailed instructions for resetting the device to the factory settings

Connect the device to the supply voltage.

As soon as the device has started up and is ready for operation (after approx. 30 seconds), you have 1 minute to reset the device to the factory settings. To do this, the digital input has to be supplied with voltage equivalent to the operating voltage. The operating voltage has to be applied at the digital input for at least 5 seconds. The device is then reset to factory settings and is restarted.

5 Technical data

General data	
Function	WLAN access point/client/repeater, 2.4 GHz, 5 GHz, internal MIMO antennas
Housing dimensions (width x height x depth) in mm	
Outside dimensions, without mounting brackets	62.8 mm x 36.5 mm x 113.2 mm
Permissible operating temperature	0°C to 60°C (FL WLAN 110x) -40°C to 60°C (FL WLAN 210x)
Permissible storage temperature	-40°C to 85°C (FL WLAN 110x) -40°C to 60°C (FL WLAN 210x)
Degree of protection	IP54 for FL WLAN 110x IP65/66/67/68 for FL WLAN 210x (not assessed in compliance with UL, assessed by PTL), IEC 60529
Humidity	
Operation	5% to 95%, non-condensing
Storage	5% to 95%, non-condensing
Air pressure	
Operation	800 hPa to 1080 hPa, up to 2000 m above sea level
Storage	660 hPa to 1080 hPa, up to 3500 m above sea level
Mounting position	Any
Connection to protective ground	By means of lower housing part or additional screw connection
Configuration	Web-based management via http or https, SNMPv2/v3, CLI via Telnet/SSH, password-protected
Pollution degree	2
Overvoltage category	None
Weight	340 g

FL WLAN 1000/2000

Supply voltage	
Connection	Via MINI COMBICON Push-in spring connection Conductor cross section solid, min.: 0.2 mm ² Conductor cross section solid, max.: 1.5 mm ² Conductor cross section stranded min.: 0.2 mm ² Conductor cross section stranded max.: 1.5 mm ² Conductor cross section stranded with ferrule without plastic sleeve min.: 0.25 mm ² Conductor cross section stranded with ferrule without plastic sleeve max.: 1.5 mm ² Conductor cross section stranded with ferrule with plastic sleeve min.: 0.25 mm ² Conductor cross section stranded with ferrule with plastic sleeve max.: 0.75 mm ² Conductor cross section AWG min.: 24 Conductor cross section AWG max.: 16 AWG according to UL/CUL min.: 24 AWG as per UL/CUL max.: 16 Stripping length 10 mm
Notes on connection	Recommended conductor cross section: 0.75 mm ² Recommended ferrule: connection length 10 mm Recommended crimping pliers: trapezoidal or square
Nominal value	24 V DC / SELV
Supply voltage range	18 V DC - 32 V DC, PELV/SELV
Current consumption at 24 V	120 mA typical @24 V DC 250 mA maximum @18 V DC
Functions	
Operating modes	Access point / Client adapter / Repeater
Configuration	Web-based management, automated CLI
Quality of Service (QoS)	Yes
Security	802.11i, WPA PSK, WPA2, AES, TKIP, MAC filter
Interfaces	
RJ45 Ethernet interface	
Number	1
Connection format	RJ45 socket at device, auto negotiation and auto crossing
Data transfer rate	10/100 Mbps
Segment length	100 m
Assignment of the IP address	BootP
Wireless interface	

Technical data

Interfaces [...]	
Antenna connection	2 internal antennas, MIMO, permanently installed
Wireless standards for the FL WLAN 1100 (Europe ETSI)	IEEE 802.11a/b/g/n, up to 300 Mbps
Wireless standards for the FL WLAN 1101 (USA, Canada FCC/IC)	IEEE 802.11a/b/g/n
Wireless modules that can be connected	10 (in access point mode max. 2 SSIDs)
Gain	5 dBi

FL WLAN 1100/2100 regulatory domain: Europe (ETSI)

Mode	Bandwidth (MHz)	Channels (for 40 MHz: central channels)	Maximum transmission power radiated (EIRP)
802.11b	20	1 to 13	20
802.11g	20	1 to 13	20
802.11n	20	1 to 13	20
	40	3 to 11	19
802.11a	20	36 to 140	18
802.11na	20	36 to 64	18
		100 to 140	19
	40	38 to 62	17
		102 to 138	17

FL WLAN 1101/2101 regulatory domain: USA/Canada (FCC/IC)

Mode	Bandwidth (MHz)	Channels (for 40 MHz: central channels)	Maximum transmission power radiated (EIRP)
802.11b	20	1 to 20	20
802.11g	20	1 to 11	20
802.11ng	20	1	20
		2 to 10	20
		11	18
	40	3	14
		4 to 8	20
802.11a	20	36 to 165	18
802.11na	20	36 to 64	18
		100 to 165	19
	40	38 to 62	17
		102 to 159	17

Security

Security mechanisms	802.11i, WPA PSK, WPA2, AES, TKIP, MAC filter
---------------------	---

FL WLAN 1000/2000**Mechanical tests**

Shock test in acc. with EN 60068-2-27/IEC 60068-2-27	30 g, 11 ms half-sine shock pulse
Vibration resistance in acc. with EN 60068-2-6/IEC 60068-2-6	5g, 10 - 150 Hz
Continuous shock according to EN60068-2-27/IEC60068-2-27	10g, 16 ms, 6000 shocks
Broadband noise according to EN 60068-2-64	Category 1, Class A

Conformance with EMC directives for the FL WLAN 1100/2100

Noise emission in accordance with EN 55022	Class B
Electrostatic discharge (ESD) in accordance with EN 61000-4-2	Contact discharge: ± 4 kV Indirect discharge: ± 6 kV
Electromagnetic fields in accordance with IEC 61000-4-3	80 MHz - 1000 MHz, 10 V/m 1000 MHz - 6000 MHz, 3 V/m
Conducted interference in accordance with IEC 61000-4-6	0.15 MHz - 80 MHz, 10 V
Fast transients (burst) in accordance with IEC 61000-4-4	± 2.2 kV
Surge voltages in accordance with IEC 61000-4-5	± 0.5 kV symmetrical ± 1 kV asymmetrical

EMC data for FL WLAN 1101/2101

Noise emission in acc. with FCC/CFR 47, Part 15.107	Class B
Noise emission in acc. with FCC/CFR 47, Part 15.109	Class A
Noise emission in acc. with ICES-003 Issue 6 section 6.1	Class B
Noise emission in acc. with ICES-003 Issue 6 section 6.2	Class A

Approvals for FL WLAN

Compliance with the "Safety of information technology equipment" test specification	DIN EN 60950 (VDE 0805, IEC 950)
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Differences between this version and previous versions of the user manual

Rev. 00: This user manual on "Mounting and installation of FL WLAN_1000/2000 product family" replaces, in combination with the separate user manual "Configuration of FL WLAN 1000/2000 product family" on the firmware, the previous "User manual" (last revision 02).

5.1 Ordering data

Description	Order designation	Order No.
Access point, ETSI approval	FL WLAN 1100	2702534
Access point, FCC approval, only for use in the USA and Canada	FL WLAN 1101	2702538
Access point, ETSI approval	FL WLAN 2100	2702535
Access point, FCC approval, only for use in the USA and Canada	FL WLAN 2101	2702540

Technical data

Description [...]	Order designation	Order No.
RJ45 connector, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: zinc die-cast, connection method: IDC fast connection, connection cross section: 26 - 24 AWG, cable outlet: straight	CUC-IND-C1ZNI-S/R4IE8	1421607
Plug, nominal current: 8 A, rated voltage (III/2): 160 V, number of positions: 3, pitch: 3.5 mm, connection method: Push-in spring connection, color: green, contact surface: tin	FMC 1.5/ 3-STF-3.5	1966101
FL M32 ADAPTER	FL M32 ADAPTER	2702544
Patch cable, CAT5, pre-assembled, 0.3 m long, 10 pieces	FL CAT5 PATCH 0.3	28 32 25 0
Patch cable, CAT5, pre-assembled, 0.5 m long, 10 pieces	FL CAT5 PATCH 0,5	28 32 26 3
Patch cable, CAT5, pre-assembled, 1.0 m long, 10 pieces	FL CAT5 PATCH 1,0	28 32 27 6
Patch cable, CAT5, pre-assembled, 1.5 m long, 10 pieces	FL CAT5 PATCH 1,5	28 32 22 1
Patch cable, CAT5, pre-assembled, 2.0 m long, 10 pieces	FL CAT5 PATCH 2,0	28 32 28 9
Patch cable, CAT5, pre-assembled, 3.0 m long, 10 pieces	FL CAT5 PATCH 3,0	28 32 29 2
Patch cable, CAT5, pre-assembled, 5.0 m long, 10 pieces	FL CAT5 PATCH 5,0	28 32 58 0
Patch cable, CAT5, pre-assembled, 7.5 m long, 10 pieces	FL CAT5 PATCH 7,5	28 32 61 6
Patch cable, CAT5, pre-assembled, 10.0 m long, 10 pieces	FL CAT5 PATCH 10	28 32 62 9

FL WLAN 1000/2000

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Appendix A

FL WLAN 1000/2000

Please observe the following notes

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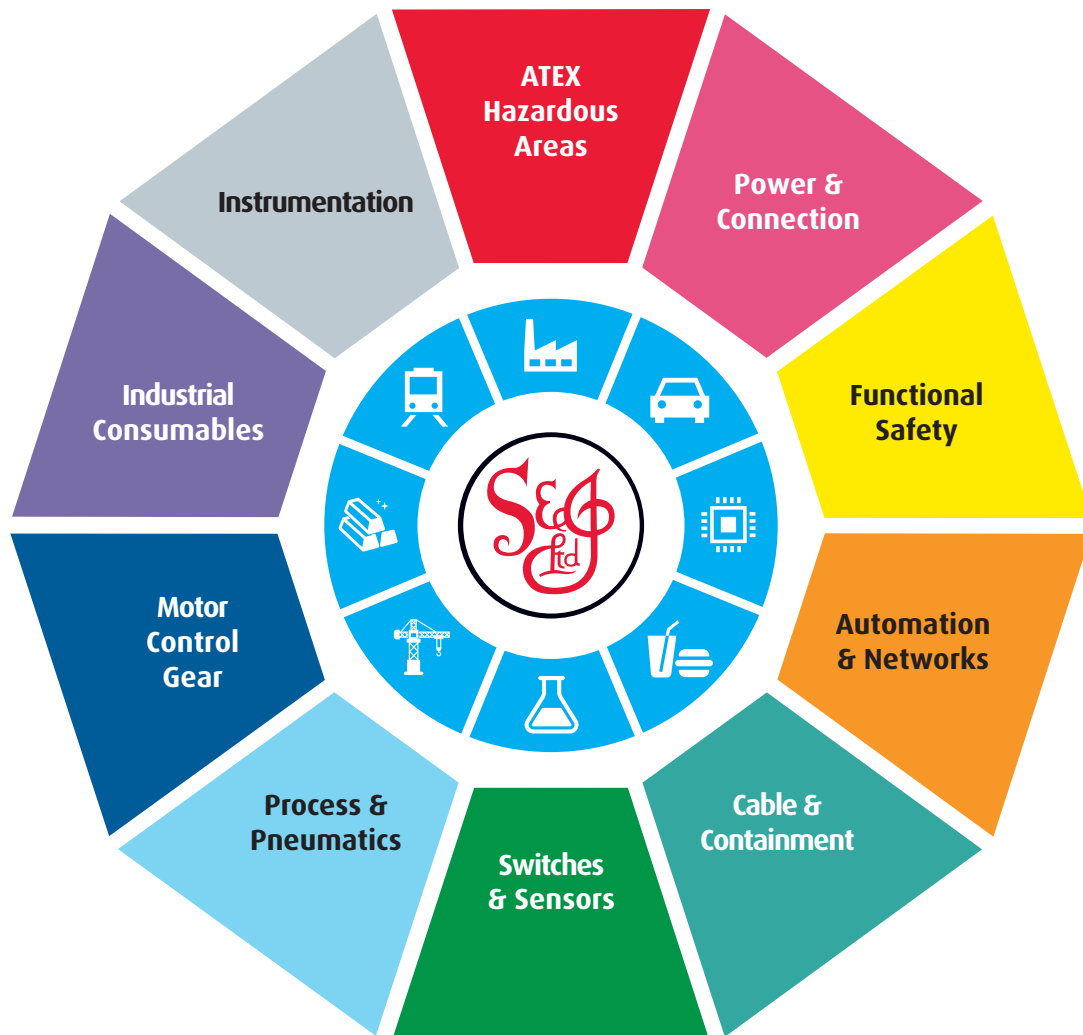
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