

# 1 Technical description



Unless otherwise expressly stated, all information provided in this user manual always applies to both the FL WLAN 1100 and the FL WLAN 1101.

## 1.1 General description

Robust, compact WLAN module with integrated antennas:

- Turnkey solution with integrated antenna and wireless module in a single device
- Space savings in the control cabinet, optimized for mounting directly 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 according to 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 1-1 FL WLAN 1100

## 1.2 FL WLAN 110x country registrations

### 1.2.1 FL WLAN 1100

The FL WLAN 1100 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. It is approved for use in Europe.



An up-to-date list of additional country registrations can be found in the e-shop at [phoenixcontact.net/product/2702534](http://phoenixcontact.net/product/2702534).



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.

### 1.2.2 FL WLAN 1101



The FL WLAN 1101 device, Order No. 2702538, can be used in the USA and Canada. It does not have CE approval and may not be operated in Europe. It is only available for export.

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

- FCC/CFR 47, Part 15 (USA)
- RSS 210 (Canada)

#### 1.2.2.1 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 Canadian 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.

### 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.

### Radiofrequency radiation exposure Information:

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.

### 1.3 Firmware

Table 1-1

Firmware version	Functions
FW 1.0x	Initial version



Additional information on the latest firmware changes for the respective product can be found in the e-shop at phoenixcontact.com or at [phoenixcontact.net/product/2702534](http://phoenixcontact.net/product/2702534).

## 2 Mounting/antenna configuration

### 2.1 Connections and operating elements

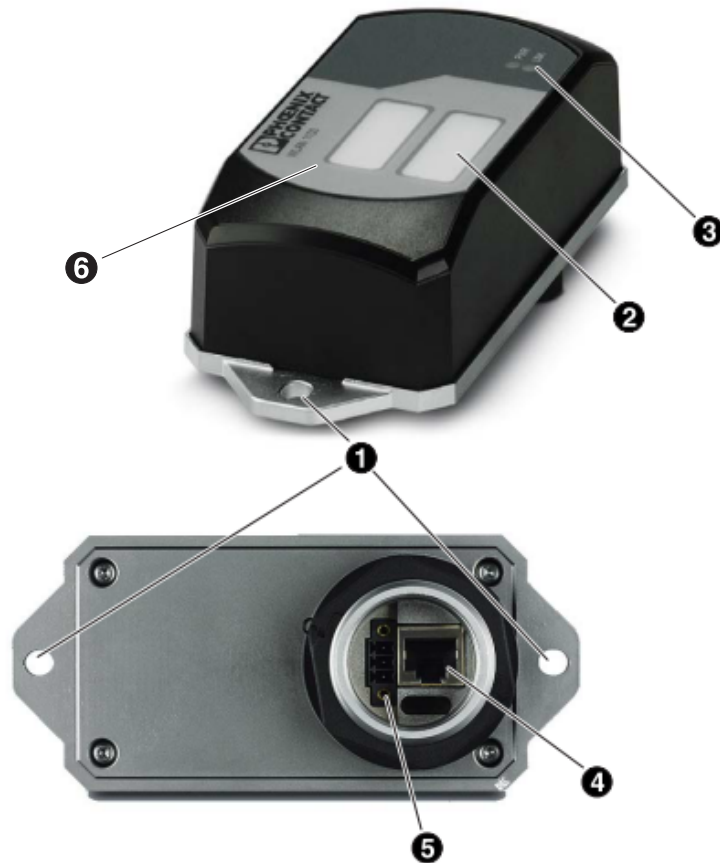


Figure 2-1 Connections and operating elements of the device

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

### 2.1.1 Housing dimensions

The outside dimensions of the FL WLAN 1100 and FL WLAN 1101 devices are 62.8 mm x 36.5 mm x 113.2 mm (width x height x depth).

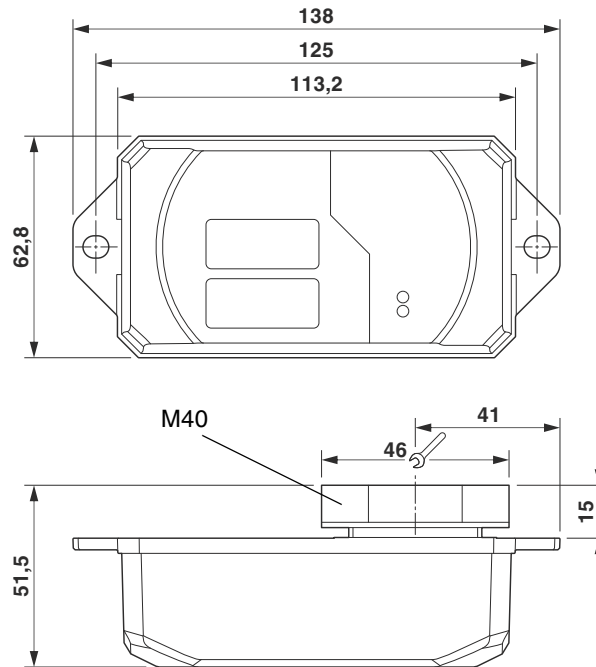


Figure 2-2 Housing dimensions and distances

### 2.1.2 Electrical connection

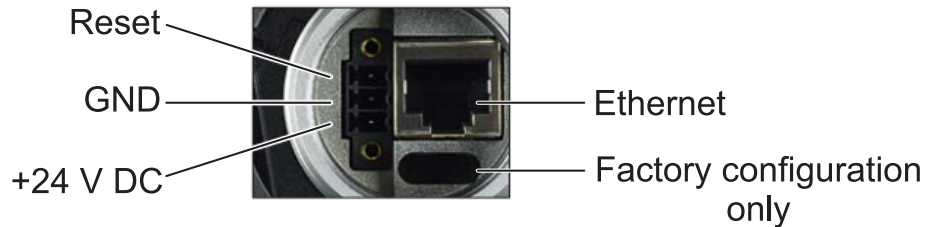


Figure 2-3 Connection of the supply voltage, Ethernet, and the reset input

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



A cable with a cross section of 0.75 mm<sup>2</sup> 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 2-1 Connection data for the connector

Conductor cross section solid/stranded min.	0.2 mm <sup>2</sup>
Conductor cross section solid/stranded max.	1.5 mm <sup>2</sup>
Conductor cross section stranded with ferrule without plastic sleeve min.	0.25 mm <sup>2</sup>
Conductor cross section stranded with ferrule without plastic sleeve max.	1.5 mm <sup>2</sup>
Conductor cross section stranded with ferrule with plastic sleeve min.	0.25 mm <sup>2</sup>
Conductor cross section stranded with ferrule with plastic sleeve max.	0.75 mm <sup>2</sup>
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

**2.1.2.1 Assignment of the RJ45 Ethernet connectors**

Table 2-2 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	-	-

**2.1.2.2 Grounding of the device** 



Grounding protects people and machines against hazardous voltages. To avoid these dangers, as far as 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 1100 and FL WLAN 1101: it is recommended that the base plate of the device is grounded 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, you must make sure that the Ethernet cable is properly shielded. This is particularly important if the housing is not grounded by other means, e.g., via the base plate.

### 2.1.3 Mounting the device on a level surface

The devices in the FL WLAN 110x series are designed 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). The nut must be tightened (8 - 10 Nm maximum) to ensure a tight seal. The device can be additionally secured to the surface with two screws (M6). When using this additional screw connection, make sure that the entire system is sealed tight.

The device can be installed in any mounting position.

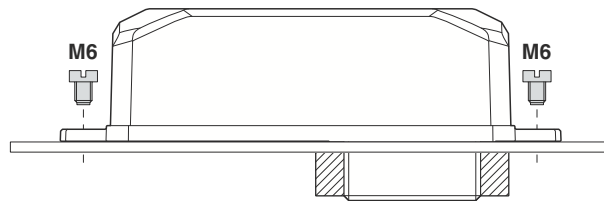


Figure 2-4 Mounting on a level surface



2.1.3.1 Drill hole template

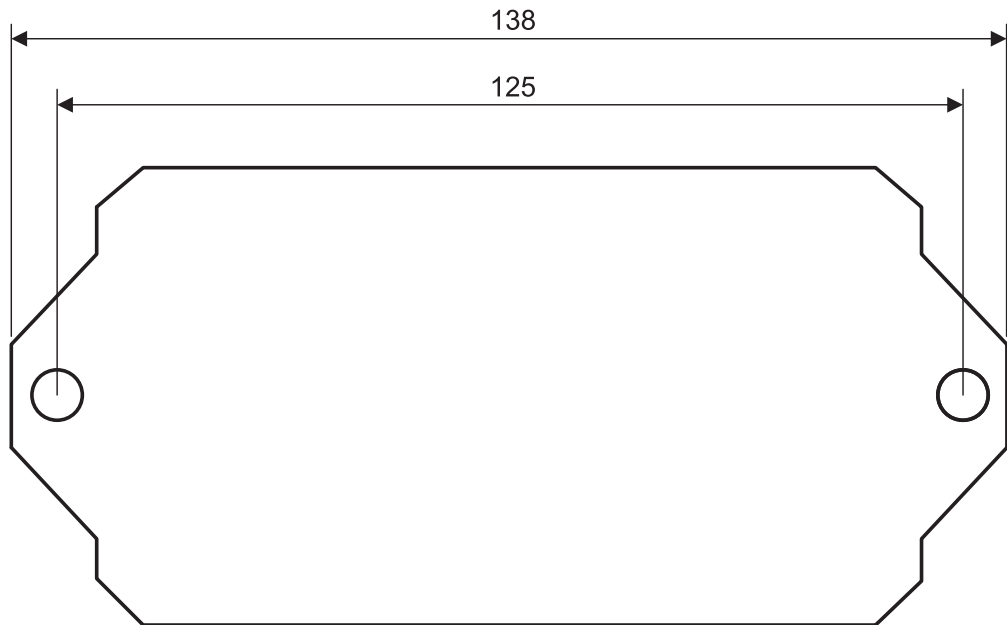


Figure 2-5 Drill hole template (original size)

### 2.1.4 Mounting the device with cable feed-through and seal

When mounting the device outside the control cabinet (e.g., on a mounting bracket), a cable feed-through with seal can be used to seal the connection dome for the supply line. The metal cable feed-through (FL M32 ADAPTER, Order No. 2702544) screws into the M32 internal thread of the FL WLAN 1100 connection dome. The FL WLAN 1100 is therefore sealed to IP54 even outdoors.

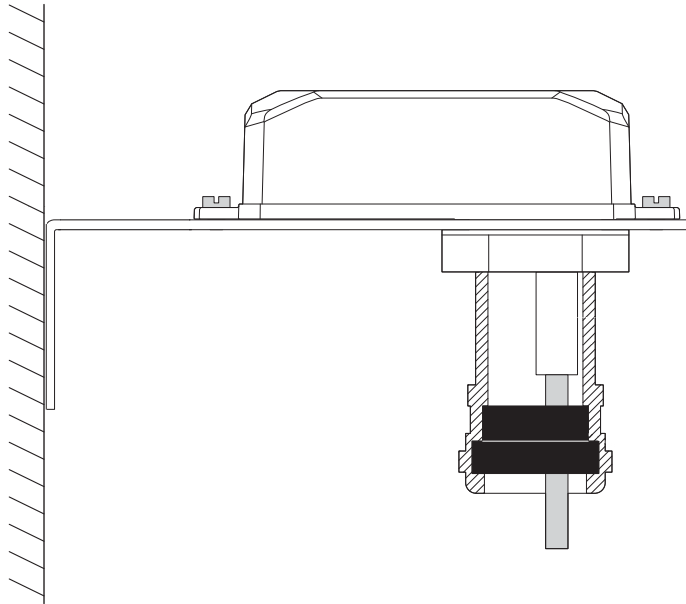


Figure 2-6 Mounting on a mounting bracket. If the device is not mounted directly on a control cabinet, use the FL M32 ADAPTER (Order No. 2702544) to create the seal.

**2.1.4.1 Handling the FL M32 ADAPTER**

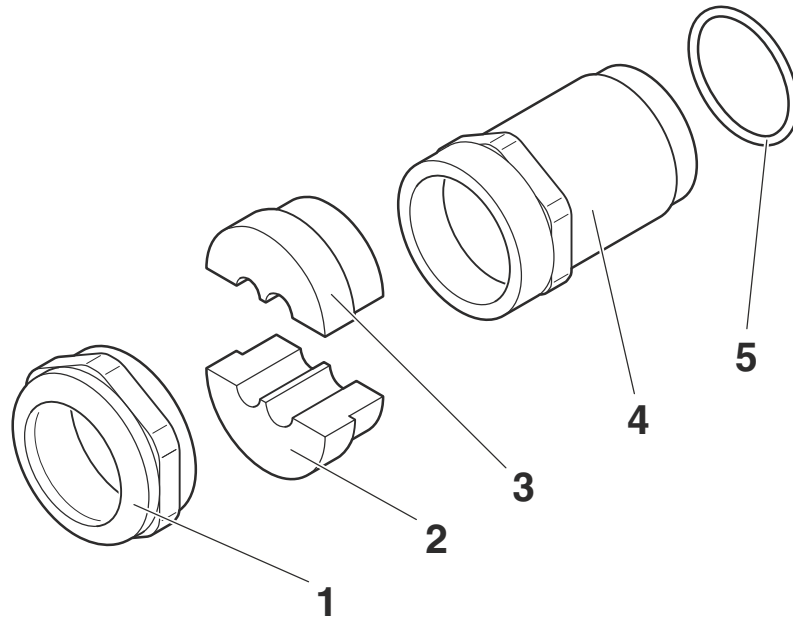


Figure 2-7 Handling the FL M32 ADAPTER

**2.1.4.2 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 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.

**2.1.4.3 Mounting taking the internal antennas into consideration**

The FL WLAN 1100 has two internal antennas which transmit through the plastic housing. This must be taken into consideration when mounting the device: in order to ensure that the WLAN signal can be transmitted via the built-in antennas, the device must not be installed inside control cabinets or other metal housings.



The devices in the FL WLAN 110x series have internal antennas for WLAN communication. The device should therefore be mounted on the outside of metal objects so as to ensure that the WLAN signal can be transmitted.