# FLB 3271 - Wi-Fi Extension Card

## INSTALLATION GUIDE

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# Table of Contents

Page


**1 Preface ... 3**

1.1 About This Document ... 3
1.2 Document History ... 3
1.3 Related Documents ... 3
1.4 Trademark Information ... 3

**2 Product Summary ... 4**

**3 Safety, Environmental & Regulatory Information ... 5**

3.1 Scope ... 5
3.2 ESD Damage Prevention ... 5
3.3 Applicable Directives, Standards and Compliances ... 5
3.4 Official Modem Identification ... 6

**4 Hardware Description ... 7**

4.1 Mechanical Layout and Interfaces ... 7
4.2 Extension Card Label ... 7
4.3 Front Panel LEDs ... 8
4.4 Specifications of the FLB 3271 ... 9
4.5 Ewon Flexy Extension Card Environmental Conditions ... 9
4.6 Plug the FLB 3271 into the Base Unit ... 10
4.7 Extension Card Insertion ... 11

**5 Powering on the Base Unit with its Extension Cards ... 15**

**6 Check Card Detection on the Embedded Web Page ... 16**

6.1 Connecting to the Embedded Web Server ... 16
6.2 Detected Cards Displayed in the System Page ... 16

**A Configure the Wi-Fi connection ... 17**

A.1 Wi-Fi Network Selection ... 17
A.2 Internet Interface Selection ... 17

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# 1 Preface

## 1.1 About This Document

This document describes the hardware of theFLB 3271 - Wi-Fi extension card which belongs to the Ewon Flexy family

The Ewon Flexy family is a range of modular industrial gateway/router and as its name *Ewon Flexy* suggests, it has been designed to enable numerous different combinations of base units with extension cards.

For additional related documentation and file downloads, please visit www.ewon.biz/support.

## 1.2 Document History

| Version | Date | Description |
|---|---|---|
| 1.0 | 2014-05-15 | First release |
| 1.1 | 2014-06-20 | Minor updates + add § 6 Ewon Configuration to Work with a Wi-Fi card |
| 1.2 | 2014-11-12 | Added chapter 2.4 “Official Modem Identification” |
| 1.3 | 2014-11-17 | Changed: chapter 3.2 “Extension Card Label”: Wi-Fi Sticker reference adapted, CE Mark Notified Body Number added |
| 1.4 | 2015-11-17 | Changed specifications of Wi-Fi extension card |
| 1.5 | 2016-07-27 | Update of Legal References |
| 1.6 | 2017-09-29 | New Template<br>Changed: *Label Location and Included Information, p. 7* |
| 1.7 | 2019-09-03 | Changed: *Safety, Environmental & Regulatory Information, p. 5*<br>Changed: *Ewon Flexy Extension Card Environmental Conditions, p. 9* |
| 1.8 | 2020-05-10 | Changed: Certifications |

## 1.3 Related Documents

| Document | Author | Document ID |
|---|---|---|
| Ewon Flexy - Base Units | HMS | IG-0014-00 |
| Ewon Flexy 205 | HMS | IG-0028-00 |

## 1.4 Trademark Information

Ewon® is a registered trademark of HMS Industrial Networks SA. All other trademarks mentioned in this document are the property of their respective holders.

# 2 Product Summary

The present Installation Guide is focusing on the FLB 3271 - Wi-Fi extension card which, as such, needs to be inserted in one of the Flexy base units to work.

The base units have their own Installation Guide which can be found in the Related Documents.

This guide also addresses shortly how the extension cards integrate the base units as well as some recommendations on how to mount them. See
Plugging the Extension Card into the Base Unit for more details.

# 3 Safety, Environmental & Regulatory Information

## 3.1 Scope

The present heading addresses Safety, Environmental & Regulatory Information about the FLB 3271 - Wi-Fi extension card.

This extension card is belonging to the same compliance frame than the base units. In the present case of a telecommunication extension card, additional directives, standards and instructions apply.

## 3.2 ESD Damage Prevention

> **!** Always use ESD precautions when handling extension cards and / or opened base unit as they contain parts and assemblies susceptible to be damaged by electrostatic discharge (ESD).

The extension card described in this document is a module exposing both sides of an electronic printed circuit board. Therefore, it is packed in an antistatic ESD bag. In order to avoid ESD damage, the product must be handled with the necessary precaution including:

- Grounded ESD protective work surface
- Personnel grounding

## 3.3 Applicable Directives, Standards and Compliances

The FLB 3271 complies with the Radio Equipment Directive (RE-D) 2014/53/EU and the FCC regulations related to the wireless modems.

The FLB 3271 inserted in a base unit belongs to class A Information Technology Equipment (ITE). In a domestic environment this product may cause radio interference in which case the user may be required to take appropriate measures.

### 3.3.1 Applicable European Directives

The FLB 3271 is in conformity with the following EC directives:

- RoHS Directive 2011/65/EU
- RE Directive 2014/53/EU

### 3.3.2 Applicable Safety Standards

The FLB 3271 is in conformity with the following safety standards:

- IEC / EN 60950-1
- UL 60950-1
- CSA-C22.2 No 60950-1-07
- EN IEC 62368-1:2020 + A11:2020
- UL 62368-1 Third Edition, revised October 22, 2021
- CAN/CSA C22.2 No. 62368-1: 19 Third Edition, revised October 22, 2021

### 3.3.3 FCC compliance

The FLB 3271 complies with Part 15B, 22H, 24E and 27 of the FCC Rules. Operating is subject to the following two conditions:

- This product may not cause harmful interference
- This product must accept any interference received, including interference that may cause undesired operation.

### 3.3.4 Certifications

The FLB 3271 has been certified by authorized bodies:

- UL Certificate of Compliance (COC) # E350576-20230306
- CB certificate # DK-133387-UL

These certificates can be downloaded as PDF files on the Ewon support web site: www.ewon.biz/support

## 3.4 Official Modem Identification

This product contains part identified as follows by national authorities:

- FCC ID: QOQWF111
- IC ID: 5123A-BGTWF111
- RRA ID: KCC-CRM-BGT-WF111
- GITEKI (MIC) ID: 209-J00061

# 4 Hardware Description

## 4.1 Mechanical Layout and Interfaces

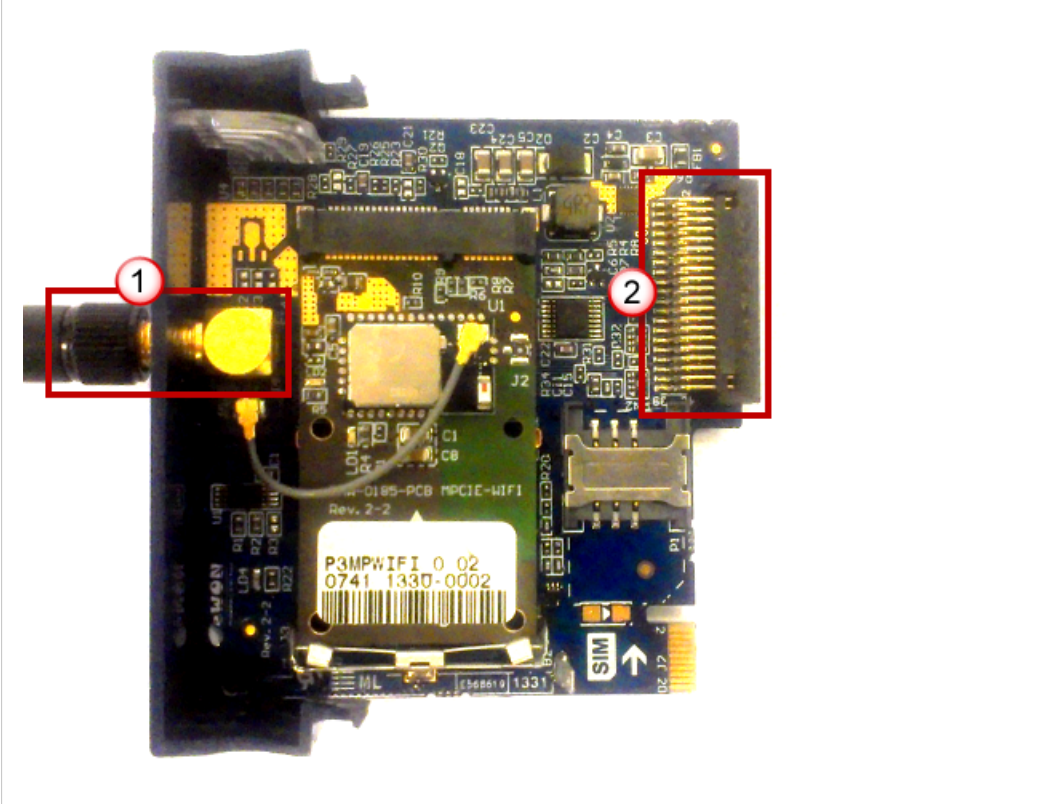


**Fig. 1** **Mechanical layout and interfaces**

| | |
|---|---|
| **1** | SMA-F Male antenna connector |
| **2** | Backplane connector |

## 4.2 Extension Card Label

### 4.2.1 Label Location and Included Information

The identification label of the extension cards is placed on the solder side of the PCB.

The different parts of the label are described below:

| Label | Description |
|---|---|
| PN | Part Number (see syntax table below) |
| SN | Serial Number in the form: **MMMM-YYWW-SSSS-PP**<br>• MMMM : MTID (product related)<br>• YYWW : Year and week<br>• SSSS : Sequential manufacturing order<br>• PP : Product type |
| MAC | MAC Address of the Wi-Fi card |
| MIN. FW | Minimum firmware version required in the Ewon device |
| Marks | CE, UL... certification number and logos if applicable |

**Fig. 2 FLB 3271 label**

### 4.2.2 Part Number Structure for Extension Cards

| FLYXXXX_00/S | | | | |
|---|---|---|---|---|
| FL | FL is the prefix for the extensions of the Ewon Flexy family | Only FL (constant) | | |
| Y | 1 alphabetic sign (CAP)<br>Defines the slots of the base module in which the extension card can be inserted. | A | 2 first slots only | ●●○○ |
| | | B | 2 last slots only | ○○●● |
| | | X | Any slots | ●●●● |
| | | C | Any slots. Available for Flexy 205 only. | ○○○○ |
| XXXX_00 | The extension card type. The suffix _00 is used for software options. | | | |
| /S | The suffix might have an optional "/" character<br>It might also be blank or include "S" character => Indicates compliance with the UL/IEC/EN 60950 standard. | | | |

## 4.3 Front Panel LEDs

| Item | Mark | Function |
|---|---|---|
| 1 | STAT | Green ON = Interface is online |
| 2 | ■ | Reception signal level Yellow ON = level is higher than -80 dBm: poor signal |
| 3 | ■■ | Reception signal level Yellow ON = level is higher than -70 dBm: signal is OK |
| 4 | ■■■ | Reception signal level Yellow ON = level is higher than -50 dBm: good signal |

**Fig. 3 Front panel LEDs**

If all signal level LEDs are OFF, it can indicate that:

- the Wi-Fi interface is not activated in the Ewon configuration
- there is no signal at all (level 0)
- there is a reception error (level XX)

## 4.4 Specifications of the FLB 3271

| Item | Value(s) | | | |
|---|---|---|---|---|
| Protocols & Frequencies | IEEE802.11b/g/n, 2.4 - 2.5GHz | | | |
| Antenna Connector | Type SMA-F Male (SMA reverse polarity) | | | |
| Antenna (not included in the delivery) | **Characteristic** | **Value(s)** | | |
| | Impedance | 50 Ohms | | |
| | Input Power | IEEE 802.11b/g/n | 2.4GHz | 19dBm |
| | Tightening Torque | 0.5 Nm<br>*In the absence of a torque wrench, a soft manual tightening is sufficient.* | | |
| **Device conformity has been tested with the reference antenna: Pulse W1030** | | | | |

The absolute maximum antenna gain as per FCC's rules and regulations 47CFR is for ärt 15C: 2.14dBi.

> **!** This device is intended to be used only in fixed applications. The antenna used for this transmitter has to be installed to provide a distance of at least 20 cm from any person and may not be co-located or operating in conjunction with any other antenna or transmitter.

### 4.4.1 Isolation Scheme

In the Installation Guide: "eWON Flexy - Base Units" quoted in the Related Documents, details on the isolation scheme of the Flexy base units and the different extension cards can be found.

## 4.5 Ewon Flexy Extension Card Environmental Conditions

| Characteristics | Value |
|---|---|
| Operating Temperature | -25 to +60°C |
| Storage temperature | -40 to +70°C |
| Relative humidity | 10 to 95% non-condensing |
| Operating altitude | Up to maximum 2000m |
| Storage altitude | Up to maximum 3000m |

## 4.6 Plug the FLB 3271 into the Base Unit

### 4.6.1 Ewon Firmware Compatibility

Before inserting the FLB 3271 into the Flexy base unit, verify if the Ewon Flexy is running the required firmware version which is indicated on the label of the extension card (see Label Location and Included Information)

### 4.6.2 Base Unit Slot Compatibility

The FLB 3271 must be inserted in one of the “B” slots of the base unit.

The reference code of the extension cards includes a letter defining their compatibility:

- FL**B** xxxx: designate cards that fit into “B” slots.

In addition to the card reference, each type of extension card bears a visual compatibility symbol on its front panel:

| Design | Slot Type | Flexy 205 Location | Flexy 10x & 20x |
|---|---|---|---|
| ○○●● | B | Any slot | 2 last slots only |

**Ewon Flexy 205**

As the Flexy 205 has room for 2 slots, the type slot compatibility rule doesn’t apply. The FLB 3271 can be inserted in both slots.

**Fig. 4 Position of the “B” Slots on a Flexy 205.**

**Ewon Flexy 10x & 20x**

The FLB 3271 must be inserted in the “B” slots which are the two slots on the far right of the Flexy 10x & 20x.

**Fig. 5 Position of the “B” Slots on a Flexy 10x & 20x.**

> **!** Cards that fit only in one slot type have a mechanical mistake-proof security to prevent them from being inserted in an incorrect slot type.

## 4.7 Extension Card Insertion

### 4.7.1 How to Insert into the Flexy Base Unit

Wait 30 seconds after turning off the equipment before inserting (or removing) an extension card to avoid possible damage to the base unit and the extension cards.

Remove the slot filler of the location the new card will be inserted. To do so, press on both ends of the cover, note that the hooks are off-centered.

**Fig. 6 Remove the slot fillers**

| | |
|---|---|
| **1** | Hooks to be pressed are off-centered. Press while pulling upwards |
| **2** | This metal tag soldered on the PCB acts as mistake-proof security (mating stop in housing).<br>Doesn't apply on Flexy 205. |

Insert the extension card carefully and slide it down until the hook clicks. Make sure the card is completely inserted.

**DO NOT insist** if a resistance is felt when trying to insert the card. This can occur if the extension card is inserted in a wrong slot type. In such case, check slot compatibility of the relevant extension card.

Boot the unit for the inserted extension cards to be detected. The web interface of the Flexy base unit has a diagnostic page showing the extension cards in their order of detection (from left to right).

| | |
|---|---|
| ! | If an extension card is inadvertently forced in a wrong slot, the base unit will detect the misplaced card and will not complete its boot process. Therefore, the unit will not be accessible through its LAN interface. The slot error is returned by the USR LED. (red ON 1 sec, OFF 0.5 sec). |

## 4.7.2 Insertion of Multiple FLB 3271

### Detection Order

The boot sequence of the base unit includes an automated detection of the inserted extension cards. This detection is done sequentially, slot per slot starting from left to right (when holding the base unit with its logo on the right side).

### Software Compatibility

The base unit allows the insertion of multiple extension cards, sometimes of the same type. Some configurations including multiple extension cards, even if mechanically acceptable, are not supported by the embedded software. Cards in excess are ignored during the automated detection process which means that the base unit and its running extension cards will operate normally.

The Flexy firmware currently supports up to **1** FLB 3271.

The ignored card(s) will appear in the **Diagnostic** > **Status** > **System Info** > **System** but they will not be functional.

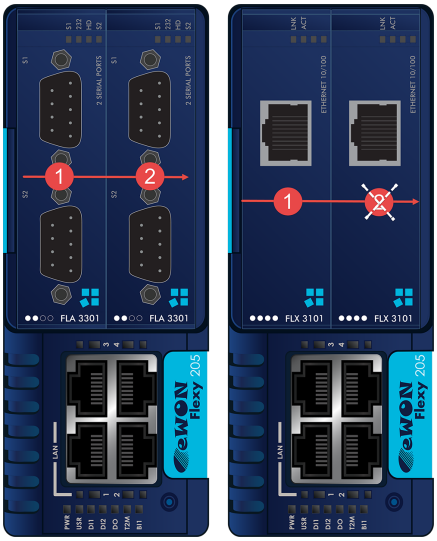


**Fig. 7 Order of the Extension Cards**

The picture above shows an example of a configuration that would be OK mechanically and power wise but would not be supported by the firmware.

During the boot process, the first 2 serial port extension cards are detected and both can be used.

In case of 2 single Ethernet cards, these 2 cards are also detected but the second Ethernet card is not supported by the firmware and cannot be used. The presence of this “ignored” card in the base unit does not alter the operation of the base unit itself nor does it alter its “accepted” extension cards.

## 4.7.3 Power Requirements

> **!** The “Power Requirements” concept doesn’t apply to Flexy 205 and its inserted extension cards.

The internal power converter of the Flexy base units has been dimensioned to cover a broad range of different combinations of extension cards. Users should make sure the total power

demand of the extension cards does not exceed the capabilities of the base unit. That is why the notion of “Energy Points” has been introduced.

The Installation Guide “eWON Flexy - Base Units” includes a section giving the **Available Energy Points** of each type of base unit.

The power requirements of each extension card is expressed in **Energy Demand Points.** This number is meant to check whether the balance with the **Available Energy Points** of a given base unit with extension cards is OK or not.

The Energy Demand Points of the FLB 3271 is **4**

The Installation Guide of the “eWON Flexy - Base Units” also includes examples of practical power balance calculations.

# 5 Powering on the Base Unit with its Extension Cards

When the base unit is powered on, it takes approximately 25 seconds for the unit to go through its self-test procedure. The slots in which the extension cards have been inserted and their type are detected during this process.

If the boot process completes normally, the following LED status should be observed:

- Base unit : **USR** LED flashing green slowly
- Extension card : None

> **!** If the **USR** LED of the base unit is flashing red, it might be because the extension card was improperly inserted (for example in a wrong slot).

# 6 Check Card Detection on the Embedded Web Page

The Flexy extension cards require no software configuration. They are automatically detected by the base unit when the device boots.

## 6.1 Connecting to the Embedded Web Server

Configure the network parameters to set the computer being used to reach the web interface on the same IP range than the LAN of the Ewon device.

Once both devices are in the same IP range, connect the PC to one of the LAN port of the Ewon device.

Open an Internet browser and access the homepage of the Ewon device by typing the LAN IP address in the URL field (the default address is http://10.0.0.53).

A dialog box will pop-up asking for credentials. Default ones are:

- login: adm
- password: adm

> **!** For security reasons, changing the default password *adm* is an absolute requirement. To change it, from the menu bar, click on ***Setup > Users*** and double click on the *adm* entry to edit and save its password.

## 6.2 Detected Cards Displayed in the System Page

Once connected to the embedded web pages of the Ewon device, the homepage displays the system status including detected extension cards.

To access in details the system status summary, click on ***Diagnostic > Status > System Info > System***.

# A Configure the Wi-Fi connection

*The initial configuration of the Internet access of the Ewon device is usually done by following the Internet Wizard.*

*Since firmware v8.0, this wizard includes the Wi-Fi connection possibility with specific options and settings. In this chapter, it is the manual configuration using the standard Web interface that will be shown.*

## A.1 Wi-Fi Network Selection

To select the Wi-Fi network the Ewon should be connected to, click on ***Configuration > System Setup > Communication > Networking > Internet Connection > WIFI – WAN***.

If the FLB 3271 is plugged-in and correctly detected, the available networks in the area are shown in the drop-down field near the ***Network Name*** field

Select the network, supply the ***Network Passphrase*** and finish by clicking ***Update***.

*In the drop-down list, symbols might appear near the network name. Can be seen:*

*Padlock: indicates the network is protected by a passphrase*

*Wi-Fi: indicated the signal strength*

## A.2 Internet Interface Selection

As the Ewon device knows which SSID to use to connect through Wi-Fi, select the interface the Ewon device should be using to connect to the Internet. To do so, go to ***Configuration > System Setup > Communication > Networking > Internet Connection***

Select the WIFI WAN connection from the drop-down list ***Network connection***. Click on ***Update*** to end the configuration

Unless the ***Maintain Connection*** option was already checked, the Flexy needs to be instructed to connect to the Wi-Fi network.

To do so, click on ***Connect***

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