FLB 3271 - Wi-Fi Extension Card

INSTALLATION GUIDE
IG-0020-00 1.6 ENGLISH
Important User Information

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# Table of Contents

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 extension card ............................................................... 9  
   4.5 eWON Flexy Extension Card Environmental Conditions ........................................... 9  
   4.6 Plugging the Extension Card into the Base Unit ............................................................ 10  
   4.7 Extension Card Insertion ............................................................................................... 11  
5 Powering on the Base Unit with its Extension Cards ............................................................. 13  
6 Check Card Detection on the Embedded Web Page ............................................................. 14  
   6.1 Connecting to the Embedded Web Server ...................................................................... 14  
   6.2 Detected Cards Displayed in the System Page ............................................................. 14  
A Configure the Wi-Fi connection ............................................................................................ 15  
   A.1 Wi-Fi Network Selection ............................................................................................... 15  
   A.2 Internet Interface Selection ......................................................................................... 15
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1 Preface

1.1 About This Document

This document describes the hardware of the FLB 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

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1.0</td>
<td>2014-05-15</td>
<td>First release</td>
</tr>
<tr>
<td>1.1</td>
<td>2014-06-20</td>
<td>Minor updates + add § 6 eWON Configuration to Work with a Wi-Fi card</td>
</tr>
<tr>
<td>1.2</td>
<td>2014-11-12</td>
<td>Added chapter 2.4 &quot;Official Modem Identification&quot;</td>
</tr>
<tr>
<td>1.3</td>
<td>2014-11-12</td>
<td>Changed: chapter 3.2 “Extension Card Label”: Wi-Fi Sticker reference adapted, CE Mark Notified Body Number added</td>
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<tr>
<td>1.4</td>
<td>2015-11-17</td>
<td>Changed specifications of Wi-Fi extension card</td>
</tr>
<tr>
<td>1.5</td>
<td>2016-07-27</td>
<td>Update of Legal References</td>
</tr>
</tbody>
</table>
| 1.6     | 2017-09-29 | New Template
Changed: Label Location and Included Information, p. 7                    |

1.3 Related Documents

<table>
<thead>
<tr>
<th>Document</th>
<th>Author</th>
<th>Document ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>eWON Flexy - Base Units</td>
<td>eWON CTS</td>
<td>IG-0026-00</td>
</tr>
</tbody>
</table>

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 extension card 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 extension card 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 extension card is in conformity with the following safety standards:

- IEC / EN 60950-1
- UL 60950-1
- CSA-C22.2 No 60950-1-07
3.3.3 **FCC compliance**

The FLB 3271 extension card 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 extension card has been certified by authorized bodies:

- UL Certificate of Compliance (COC) #20161219-E350576
- CB certificate # DK-53957-A1-UL

These certificates can be downloaded as PDF files on the eWON Support web site: [www.ewon.biz/support](http://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

![Mechanical layout and interfaces](image)

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SMA-F Male antenna connector</td>
</tr>
<tr>
<td>2</td>
<td>Backplane connector</td>
</tr>
</tbody>
</table>

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:
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
- **Y**: 1 alphabetic sign (CAP) Defines the slots of the base module in which the extension can be inserted. See also [Base Unit Slot Compatibility](#)
- **YYYY_00**: The FLB 3271 extension card. The suffix _00 is used for software options.
- **/S**: The suffix might have an optional “/” character. It might also be blank or include “S” character => Indicates compliance with the UL/IEC/EN 60950 standard.
- **Only FL (constant)**
  - A: 2 first slots only
  - B: 2 last slots only
  - X: Any slots

### 4.3 Front Panel LEDs

<table>
<thead>
<tr>
<th>Item</th>
<th>Mark</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>STAT</td>
<td>Green ON = Interface is online</td>
</tr>
<tr>
<td>2</td>
<td>◆</td>
<td>Reception signal level Yellow ON = level is higher than -80 dBm: poor signal</td>
</tr>
<tr>
<td>3</td>
<td>◆◆</td>
<td>Reception signal level Yellow ON = level is higher than -70 dBm: signal is OK</td>
</tr>
<tr>
<td>4</td>
<td>◆◆◆</td>
<td>Reception signal level Yellow ON = level is higher than -50 dBm: good signal</td>
</tr>
</tbody>
</table>
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 extension card

<table>
<thead>
<tr>
<th>Item</th>
<th>Value(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocols &amp; Frequencies</td>
<td>IEEE802.11b/g/n, 2.4 - 2.5GHz</td>
</tr>
<tr>
<td>Antenna Connector</td>
<td>Type SMA-F Male (SMA reverse polarity)</td>
</tr>
<tr>
<td>Antenna (not included in the delivery)</td>
<td>Characteristic</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ohms</td>
</tr>
<tr>
<td>Input Power</td>
<td>IEEE 802.11b/g/n 2.4GHz 19dBm</td>
</tr>
<tr>
<td>Tightening Torque</td>
<td>0.5 Nm In the absence of a torque wrench, a soft manual tightening is sufficient.</td>
</tr>
</tbody>
</table>

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 ãrt 15C: 2.14dBi.

The 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

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-25 to +70°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40 to +70°C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>10 to 95% non-condensing</td>
</tr>
<tr>
<td>Operating altitude</td>
<td>Up to maximum 2000m</td>
</tr>
<tr>
<td>Storage altitude</td>
<td>Up to maximum 3000m</td>
</tr>
</tbody>
</table>
4.6 **Plugging the Extension Card into the Base Unit**

4.6.1 **eWON Firmware Compatibility**

Before inserting the FLB 3271 extension card 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 extension card must be inserted in one of the “B” slots of the base unit.

The Flexy base units feature two types of slot:

- The A slots are the first two slots starting from the left.
- The B slots are the last two slots starting from the left.

Some cards fit in both A and B slots. Others don’t and fit only in one of the slot types.

![Slot position on Flexy](image)

Fig. 4 Slot position on Flexy

Cards that fit only in one slot type have a mechanical mistake-proof security.

The reference code of the extension cards includes a letter defining their compatibility either with “A” slots, “B” slots or both:

- FLA xxxx : designates cards that fit into “A” slots
- FLB xxxx : designates cards that fit into “B” slots
- FLX xxxx : designates cards that fit into both “A” and “B” slots

In addition to the card reference, each type of extension card bears a visual compatibility symbol on its front panel. The visual symbols are shown in the table below:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>●●○○</td>
<td>2 first slots only (A)</td>
</tr>
<tr>
<td>●●●●</td>
<td>In any slot (X)</td>
</tr>
<tr>
<td>○●●●</td>
<td>2 last slots only (B)</td>
</tr>
</tbody>
</table>
4.7 Extension Card Insertion

4.7.1 How to Insert into the Flexy Base Unit

Please wait 30 seconds after powering off the equipment before inserting (or removing) an extension card. This is to avoid possible damage to the base unit and extension card.

Remove the slot filler of the location you want to insert the new card in. To do so, press on both ends of the cover. Note that the hooks are off-centered like shown on the pictures.

![Image of slot filler removal process](image.png)

Insert the extension card carefully and slide it down until the hooks are clicking. Make sure the card is completely inserted.

DO NOT insist if you feel any resistance when trying to insert the card. It probably means you are trying to insert the card in a wrong slot type. In such case, check slot compatibility of the relevant extension card.

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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 Multiple FLB 3271 extension cards

The Flexy firmware currently supports up to one FLB 3271 extension card.

The boot process of the base unit includes an automated detection of the inserted extension cards. This detection is done sequentially, slot per slot starting from the left to right.

Only the first FLB 3271 extension card detected (the most left one) will be taken in consideration by the eWON firmware. An additional card of the same type will be ignored.

Contrary to what happens when it is inserted in a wrong slot, the FLB 3271 extension card in excess will not alter proper operation of the base unit and other extension cards.

4.7.3 Power Requirements

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 extension card 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, you should observe the following LED status:

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

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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

On the computer used to reach the web pages, configure the network parameters in such way that it is located in the same IP range that 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 Configuration > Users Setup 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, go to the System page which allows the verification of the system’s status including detected extension cards. To access 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 extension card 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