MACHINES CAN TALK

Installation Guide

IG 023 / Rev. 1.5

eWON FLEXY - 201H

This installation guide describes the hardware of the eWON Flexy 201H, its extension cards and how to get started with its web interface.

support.ewon.biz

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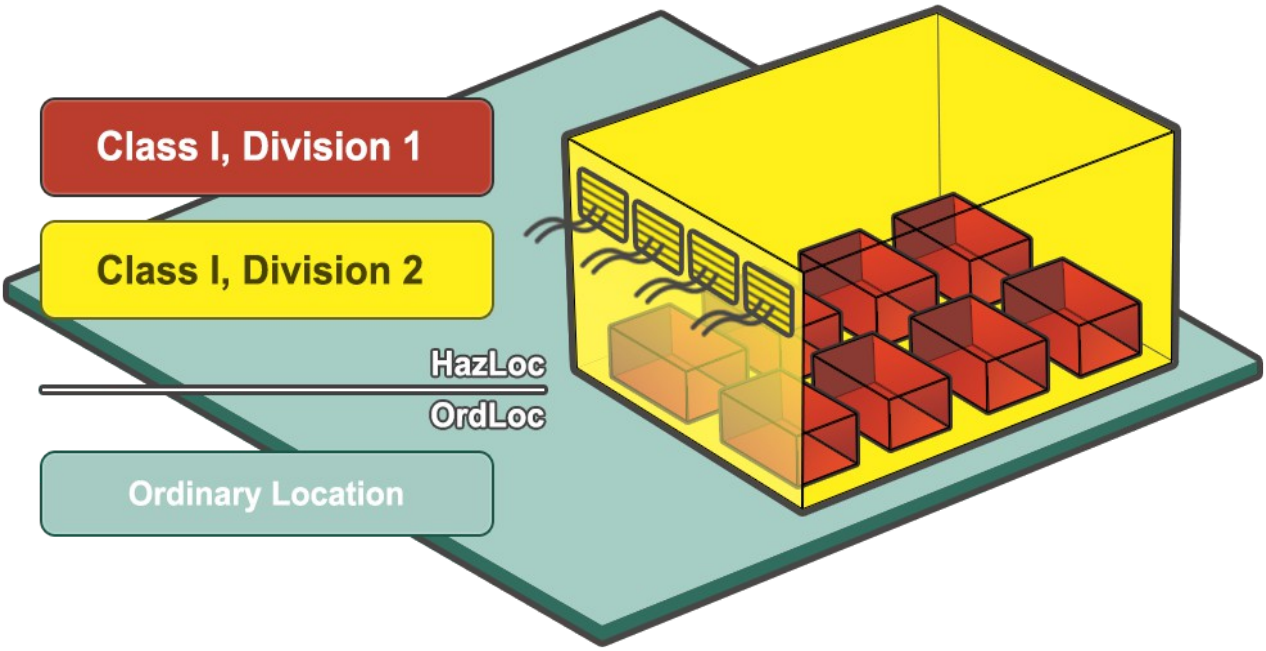
1. Product Summary

The present Installation Guide describes the hardware of the **eWON Flexy 201H** as well as the basic software features needed to install the equipment.

"H" stands for **HazLoc** (**Hazardous Location** as opposed to OrdLoc, Ordinary Location) also called **eWON Flexy CID2** which refers to **Class** I **Division 2**.

The Flexy 201H has the same features as the eWON 201 but it has also been officially certified to be placed and work in a CID2 area.
If your Flexy is in an Ordinary Location, please visit the Flexy page.

1.1. Where can you set the Flexy 201H



The eWON Flexy 201H must be used in the yellow area (Class I, Division 2) or the green one. The Standard Flexy, the OrdLoc, may only be set in the green area.

Their usage in the red zone is strictly forbidden (Class I**, Division 1) !**

Class I Division 2, quick overview

Indoor use only

Class I: Danger of explosion due to flammable gas or vapor.

- no dust
- no fibres
- no flyings

Division 2: Hazard only exists due to abnormal conditions

- Gas / Volatile liquids confined in closed containers
- Ignitable concentration normally prevented by ventilation
- Adjacent to Class I, Division 1 locations
  (or Adjacent to Class I, Zone 1 locations)

1.2. Introduction

The eWON Flexy is the first modular industrial M2M router available on the market.

It has been designed to fulfill the following key requirements:

- Flexible WAN, allowing within the same product to address different Internet connectivity technologies (Ethernet, Wifi, 3G,…) and securing the investment in case of technology upgrade (eg. 2G->3G)
- Flexible Field, providing easy connection to a wide range of external devices, including various field protocols
- Flexible Apps, embedding alarms, data logging, remote access, routing and web HMI applications with mouse click based configuration, and customization offering all openness and programming tools

The eWON Flexy is fully compatible with the Talk2M cloud connectivity services (www.talk2M.com) and with the eFIVE (VPN server appliance) for real-time control application.

SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C AND D HAZARDOUS LOCATIONS, OR NONHAZARDOUS LOCATIONS ONLY.

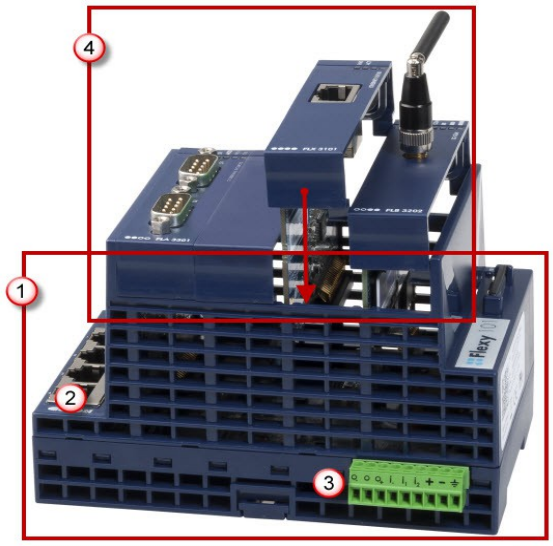
WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOW TO BE FREE OF IGNITABLE CONCENTRATIONS.

WARNING - EXPLOSION HAZARD - SUBSTITUTION OF ANY COMPONENT MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Housing of the Base Unit Flexy with its original 4 slot fillers

1.3. Modular Concept of the eWON Flexy Family

The eWON Flexy family is a range of modular industrial gateway/router. As the name eWON Flexy suggests, it has been designed to enable numerous different combinations by addition of ***Extension Cards***.



1	Base Unit
2	Communication interface
3	Main connector incl. power input terminals, 1 DO and 2 DIs
4	Extension cards

Basic features

- Two DI and one DO.
- Four free slots allowing to add Extension Cards

See feature matrix in #1.5.Functions of the eWON Flexy

Extension Cards fitting all Base Units allow to add either:

- WAN communication interfaces (Ethernet WAN, wireless modem, ...)
- Field communication interfaces (serial, IO card, ...)

How the Extension Cards integrate the Base Units is explained in #4.Extension Cards

1.4. Functions of the eWON Flexy

The following section lists the different main features supported by the eWON Flexy 201H.

	M2M Router
Open VPN	•
Talk2M connections	•
Data Acquisition protocols (IOServers)	•
Alarm Management and Notification	•
Data Logging	•
BASIC scripting	•
JAVA ETK	•
Web server	•
ViewON 2 Web HMI	•
FTP client and server	•
HTTP client (HTML Get & Put requests)	•
Ethernet to Serial gateway	•
Routing between Ethernet interfaces (WAN to LAN)	•
Routing features: IP forwarding, NAT, Port forwarding	•

1.5. General specification of the hardware platform

Characteristic	Value
Design	Industrial design (24 VDC power supply, DIN Rail mounting, extended temperature)
Processor	ARM9
Clock	Backed up real time clock (RTC) Backup battery has 10 years life expectancy
Ethernet Interface	4 LAN Ethernet ports 10/100 Mbps
Digital Input	2
Digital Output	1
Mounting	Latch for DIN rail EN50022-compliant

1.6. Typical applications

- Remote access of serial and Ethernet devices
- Industrial VPN router
- Remote metering and monitoring

1.7. Part Numbers

The available part numbers are:

Part Number	Type	Description
FLEXY20100_00MA/SH	Flexy 201H	M2M Router – 4 x Ethernet Switch for Hazardous Location

Table: List of the available part numbers

- Note -

The MA extension means Multiple language A (ENG, FR, DE, SPA)
The part number syntax is explained in #3.1.Base Unit Label

2. Safety, Environmental & Regulatory Information

2.1. Scope

The present section addresses safety, environmental & regulatory Information for the eWON Flexy 201H. They generally have a similar compliance frame but some aspects differ. For example, in the case of telecommunication Extension Cards, additional directives, standards and instructions apply.

2.2. ESD Damage Prevention

To avoid possible damage to the Base Unit and Extension Card, please wait 30 seconds after powering off the equipment before inserting (or removing) an Extension Card.

- Caution -

Contains parts and assemblies susceptible to damage by electrostatic discharge (ESD). Always use ESD precautions when handling an opened Base Unit or Extension Cards.

The printed circuit boards (PCBs) of the Base Units described in the present Installation Guide are partially exposed when slot fillers are removed to place Extension Cards. In order to avoid ESD damage, the product, when it is opened, must be handled with the necessary precaution including:

- Grounded ESD functional work surface
- Personal grounding
- Verify that your configuration is compatible with the Firmware capabilities before operating.
- Verify that your configuration complies with the energy point balance before operating (see #Energy Demand Points).

The Extension Cards described in this Installation Guide are modules exposing both sides of an electronic printed circuit board. Therefore, they are packed in anti static ESD bags. In order to avoid ESD damage, the product must be handled with the necessary precaution as described above.

2.3. Applicable Directives, Standards and Compliance

The Base Unit 201H and these Extension Cards belong to class A Information Technology Equipment (ITE). In a domestic environment, this product may cause radio interference in which case the user might have to take appropriate measures.

2.3.1. Conformity to European Directives

The Base Unit 201H and these Extension Cards are in conformity with the following EC directives:

- RoHS Directive 2011/65/EU
- EMC Directive 2014/30/EU
- RE directive 2014/53/EU(*)

(*) When applicable, the product conforms to the corresponding R&TTE articles:
RF spectrum efficiency: Art 3(2); EMC: Art. 3(1)(b); Safety: Art. (3)(1)(a)

2.3.2. Applicable Safety Standards

The Base Units 201H and these Extension Cards are in conformity with the following safety standards:

- IEC/EN 60950-1
- UL 60950-1
- CSA-C22.2 No 60950-1-07

2.3.3. FCC Compliance

The Base Units 201H and these Extension Cards comply with Part 15 of the FCC Rules.

Operating is subject to the following two conditions:

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

2.3.4. Certifications

The Base Units 201H and these extension cards have been duly certified by authorized bodies:

- UL Certificate of Compliance (COC) # 20160502-E350576
- CB certificate # DK-53957-UL

These certificates can be downloaded as PDF files on the eWON Support web site: http://support.ewon.biz/flexy & http://support.ewon.biz/flexy-h.

2.4. Reference Standards for Type Tests

The eWON Flexy 201H and these Extension Cards have been fully validated on temperature, vibration and shock against the requirements of the following standards:

2.4.1. Operating & Storage Temperature

Test nature	Reference Standard
Cold test	IEC 60068-2-1
Dry heat test	IEC 60068-2-2
Temperature change test	IEC 60068-2-14
Cyclic damp heat test	IEC 60068-2-30

2.4.2. Vibration & Shocks Tests

Test nature	Reference Standard
Programmable controllers test	IEC 61131-2
Vibration test (sinusoidal)	IEC 60068-2-6
Vibration test (broad-band random)	IEC 60068-2-64
Shock test	IEC60068-2-27

2.5. Internal Battery

2.5.1. Purpose and Reference

The eWON Flexy 201H features a small battery for RTC-backup in case of power failure. The life expectancy of the battery is greater than 10 years from product manufacturing date.

The battery type is CR2032. Only the CR2032 battery delivered by eWON may be used to comply with the UL and safety standards. Please do not use any other battery than the one referenced below:

Replacement CR2032 Battery, eWON part number: FAC90101_0000.

2.5.2. Battery Replacement Procedure

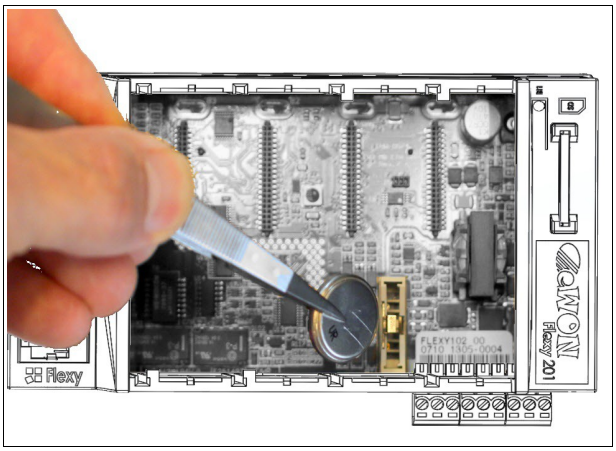
-Caution -

Explosion risk if battery is replaced by an incorrect type.
The battery replacement procedure MUST be executed in an Ordloc zone (Ordinary location).
Remove the unit from its Class I Division 2 zone to operate the procedure.

Battery is a critical component for safety. Only replacement battery listed into the eWON price list may be used to keep UL or Class I Div 2 compliance

Before starting, you have to make sure you took the necessary precautions to avoid ESD damage (see §#2.2.ESD Damage Prevention). You also have to be aware that you will need insulated tweezers (see below) to be able to handle the battery without short-circuiting it.

The RTC battery is located on the mother board in the alignment of slot 3 starting from the left (when the eWON logo is on the right side).



1. Power the unit off and wait 30 seconds before working on it.

2. To have a practical access, it is recommended to remove all slot fillers and/or Extension Cards. It is feasible but less comfortable to remove only the slot filler or Extension Card of slot

3. Carefully remove the battery from its holder and put the new one in place.

4. Check that the locking tab is correctly placed on top of the battery.

All slots have been cleared from their slot fillers or Extension Cards. Carefully remove battery with **insulated tweezers** (for example from manufacturer EREM model 249 SA).

- Caution -

Do not dismantle, crush or puncture battery. Do not attempt to open the service battery.
Do not dispose of batteries in fire or with household waste but according to instructions.
Consider the environment, check the battery recycling services available in your region.

2.6. Field Implementation & Environmental Conditions

2.6.1. Ingress Protection

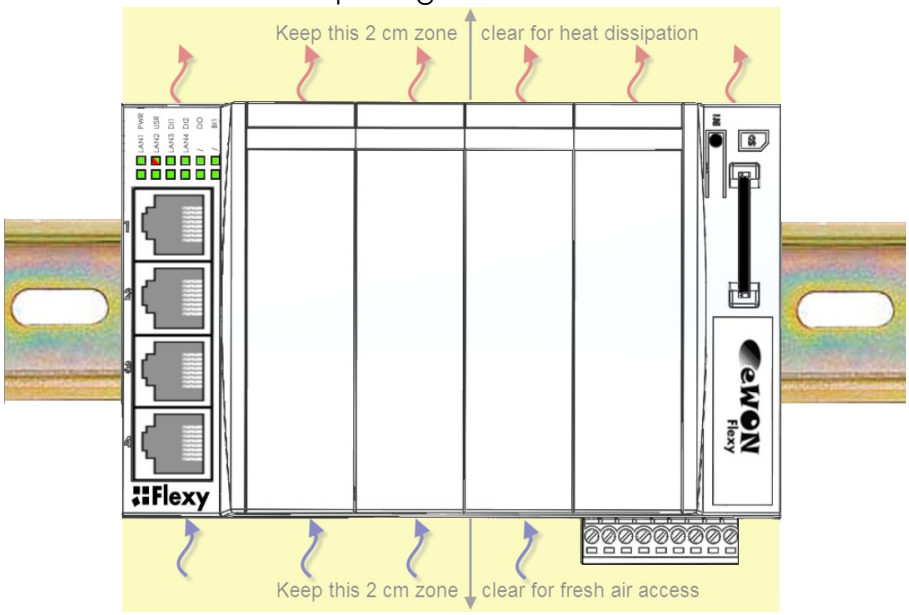
The eWON Flexy Base Units have an IP20 protection grade. Therefore, the eWON Flexy Base Units are NOT suited for outdoor mounting. They have to be integrated in an electrical cabinet, protected from excessive heat, humidity and dust. Do not push any sharp object into the air vents or openings of the equipment.

2.6.2. Mounting Recommendations

The normal mounting position of the eWON Flexy is wall mounted on a horizontal Omega type DIN-rail (EN 50022).

- **Mounting the unit on DIN-rail**
  Present the unit in front of the DIN rail and tilt it upwards in order to hang it on the upper edge of the DIN rail by the hooks at the rear. Gently tilt the unit downwards until the slide lock snaps. The slide lock is located in the middle at the bottom of the unit (see § 3.2 Mechanical Dimensions).
- **Removing the unit from DIN-rail**
  Insert a medium size screwdriver in the small slot of the slide lock located in the middle at the bottom of the unit. Release the unit by pulling the slide lock downwards while gently tilting the unit upwards. Free the unit by unhooking it from the upper rail edge (see #3.2.Mechanical Dimensions).

To ensure a proper ventilation of the equipment, a free gap of at least 2 cm must be respected in front of all ventilation openings of the unit:



- Caution -

In any other mounting position than the one explained here above, the specified temperature has to be derated to -25°C to +40°C.

2.6.3. Earthing

Earthing the eWON is necessary to eliminate unwanted transients (lightning protection) and to conform to the EMC requirements. Therefore, a functional earth (FE) terminal is available on the main connector as shown in § #A.1.Main Connector . Connect this terminal directly to a low impedance ground. Shielded cables have to be used for Ethernet and serial connectivity to comply with the EMC requirements.

2.6.4. Environmental Limits

The equipment will operate properly within following environmental limits provided it is mounted according to the above mentioned recommendations:

Characteristic	Value
Operating temperature	T4A, -25° ≤ Ta[1] ≤ +60 °C
	T6, -25° ≤ Ta[1] ≤ +40 °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
Mounting	Latch for DIN rail EN50022-compliant

- Caution -

If the use of the Flexy 201H is restricted to the autoignition temperature of the gas described in the table here above, it is then intrinsically safe.

2.6.5. Labelling Information

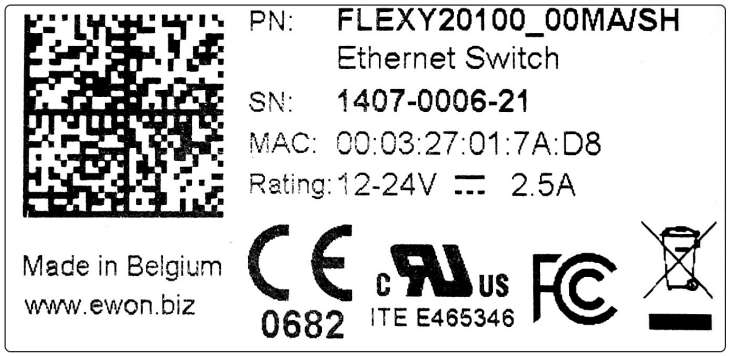
- The OEM User Manual (for integrators) must provide clear instructions, to the OEM, explaining the labeling requirements, options and OEM User Manual instructions that are required.
- The host OEM User Manuel (eWon's manual) must contain clear instructions on how end-users can find and/or access the module and the FCC ID

1 *Refers to ambient temperature*

3. Base Unit Hardware Description

3.1. Base Unit Label

The identification label of the eWON Flexy 201H base unit is placed on the right hand side of the housing. The different parts of the label are described below:



PN	Part Number (see syntax in table below)
SN	Serial Number **YYWW-SSSS-PP** YY = 2 last digits of production year WW = production week number SSSS = Sequential production number PP = Product Code
MAC	MAC address of the Ethernet adapter
Rating	Power supply requirements
Marks	CE, UL,... logos if applicable

3.1.1. Syntax of the Part Number (PN)

FLEXY12233_44AA/BB			
Position(s)	**Description**	**Acceptable values**	
FLEXY	Name of the family	Only FLEXY (constant)	
1	1 numeric sign Defines routability	2	M2M Router
22	2 numeric signs Define the type of motherboard	01	MB with 4 Ethernet ports
33	2 numeric signs Define primary software option	00	No primary software option
44	2 numeric signs Define secondary software option	00	No secondary software option
AA	2 alphabetic signs (CAPS) Define the firmware language	MA	UK + FR + DE + SPA
/BB	2 alphabetic signs Defines the model type	S	Compliance with UL/IEC/EN 60950 Standard
		H	Hazardous Location Compliance (C1D2)

3.1.2. Marks

Marks	Description
CE	Conformité Européenne or European Conformity (**EC**)
0682	Notified Body Number, warrantor of the CE Mark validation
c UL us	**UL Recognized** (*Underwriters Laboratories*)
FC	**FCC** *Federal Communications Commission*

3.1.3. C1D2 Label

Class I, Division 2, Groups A, B, C, D
T4A, -25°C ≤ Ta ≤ 70°C
T6, -25°C ≤ Ta ≤ 40°C

Class I, Zone 2, IIC, T4, -25°C ≤ Ta ≤ 70°C
Class I, Zone 2, IIC, T6, -25°C ≤ Ta ≤ 40°C
Maximum surrounding temperature 70°C

For use in Class 2 circuits
Battery CR2032, Ø20mm 3.2mm thick, 3.0VDC
See control drawing# EHW-0070-011-CD

WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOW TO BE FREE OF IGNITABLE CONCENTRATIONS
ATTENTION - RISQUE D'EXPLOSION - NE PAS DECONNECTER L'EQUIPEMENT SOUS TENSION A MOINS QUE LA ZONE SOIT LIBRE DE TOUTE CONCENTRATION INFLAMMABLE

WARNING - EXPLOSION HAZARD - BATTERIES MUST ONLY BE CHANGED IN AN AREA KNOWN TO BE NON-HAZARDOUS
ATTENTION - RISQUE D'EXPLOSION - LA BATTERIE NE PEUT ETRE REMPLACEE QU'EN DEHORS DE TOUTE CONCENTRATION INFLAMMABLE

In addition to their own labels, each package is marked

Class I Div. 2

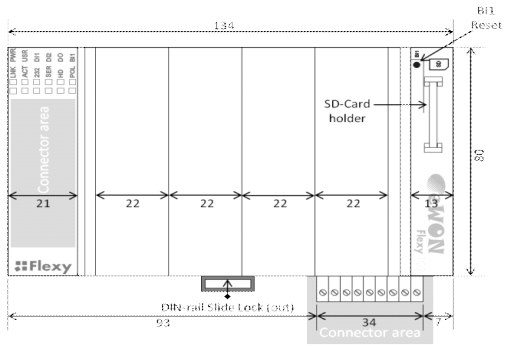
Packaging samples:

3.2. Mechanical Dimensions

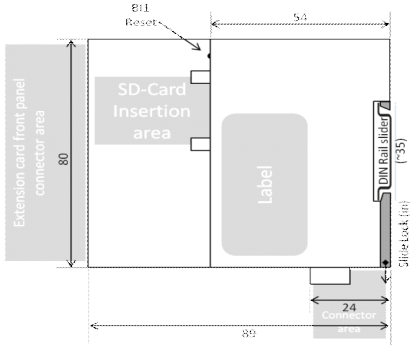
Unit: Dimensions are in millimeters (mm).
Accuracy: Suited only for implementation drawings (rounded @ full mm).

Shaded areas show provisions of empty space that should be considered in the implementation arrangement. The provision of empty space in front of the slot fillers is for the connectors of Extension Cards. Even if the application requires no Extension Card(s) you might plan the free space anyhow, in case you need to add one or more later on.

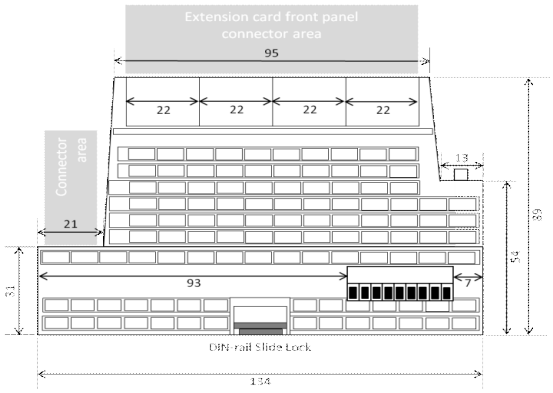
Front view



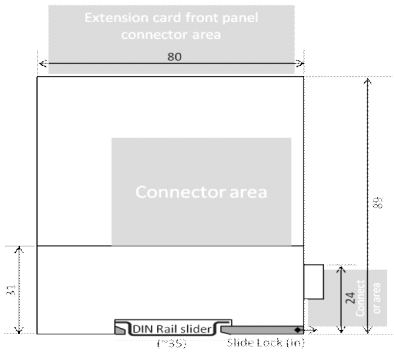
Right side view



Bottom view

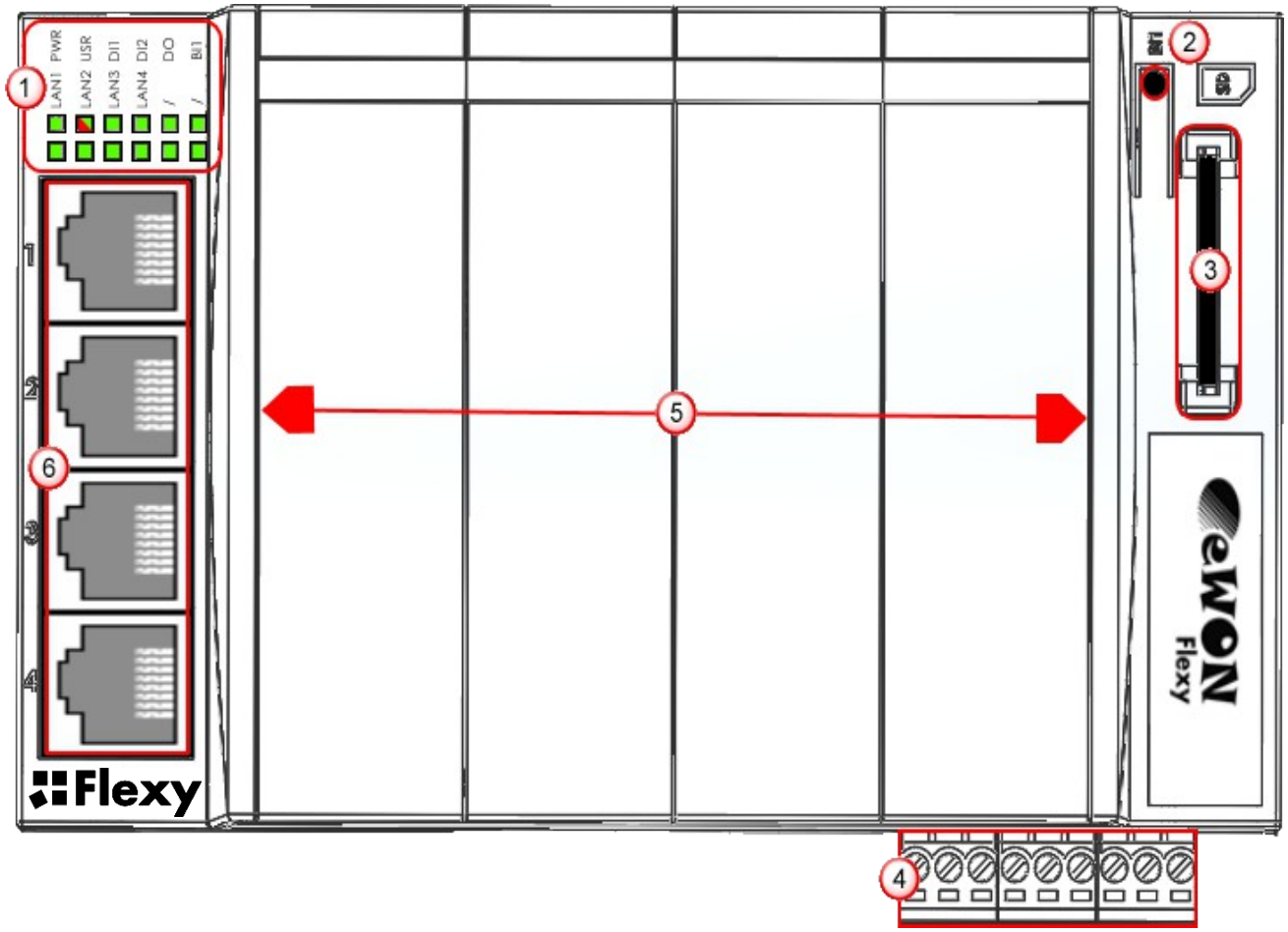


Left side view



3.3. Base Unit Interface

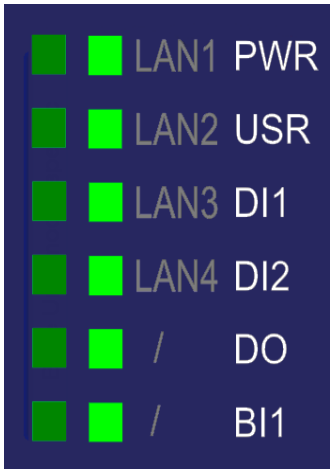
This chapter addresses the interface that represents the Base Unit. The items numbered in the image below are explained subsequently in separate paragraphs.



1	LED panel
2	RESET button (BI1)
3	SD card slot
4	Main connector *used to connect the power supply and the digital inputs & outputs*
5	4 slots fillers *(that can be removed and replaced by Extension Cards)*
6	Main board communication interfaces *(4 Ethernet Ports)*

3.3.1. LED Panel

3.3.1.1. System



PWR	Power Green ON = power is present
USR	User Green ON + OFF, slowly = Unit is OK RED pattern = special attention required
DI1	Digital input 1 Green ON = Signal on input 1 detected
DI2	Digital input 2 Green ON = Signal on input 2 detected
DO	Digital output Green ON = Output is in ON state (energized)
BI1	Button BI1 input Green ON = Reset button is being pressed

3.3.1.2. Communication Interfaces

LAN1	Ethernet activity on port 1 Green steady = Ethernet link OK Green flashing = Ethernet traffic (Rx and Tx)
LAN2	Ethernet activity on port 2 (same as above)
LAN3	Ethernet activity on port 3 (same as above)
LAN4	Ethernet activity on port 4 (same as above)

3.3.2. Reset Button

The reset button allows to reset the Base Unit partially or completely. For the reset procedures check § #6.Resetting the eWON Flexy.

3.3.3. SD-Card

SD Card must not be inserted when the product is operated in Hazardous Location

3.3.4. Main Connector

The eWON Flexy is powered via its main connector using a male connector (a mating female connector with screw terminals is delivered with the eWON Flexy Base Unit).

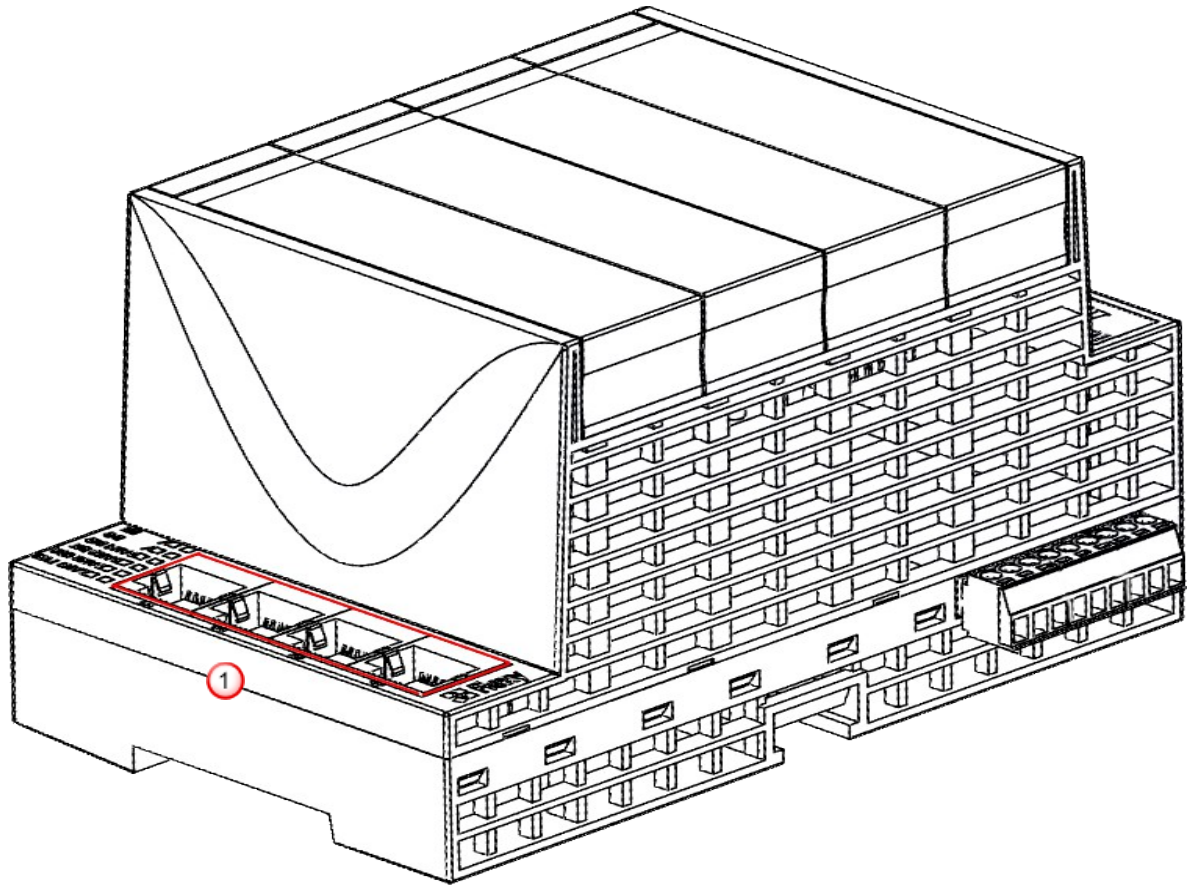
For details see § #A.1.Main Connector

3.3.5. Four Slots for Extensions

The slot fillers can be removed to add Extension Cards. A general overview of the available Extension Cards is available below in this guide.

For details on Extension Card insertion see § #B.Flexy 201H - Extension Cards

3.3.6. 4-Ports Switch interfaces



1	4 x RJ45 ports switch LAN Ethernet 10/100.

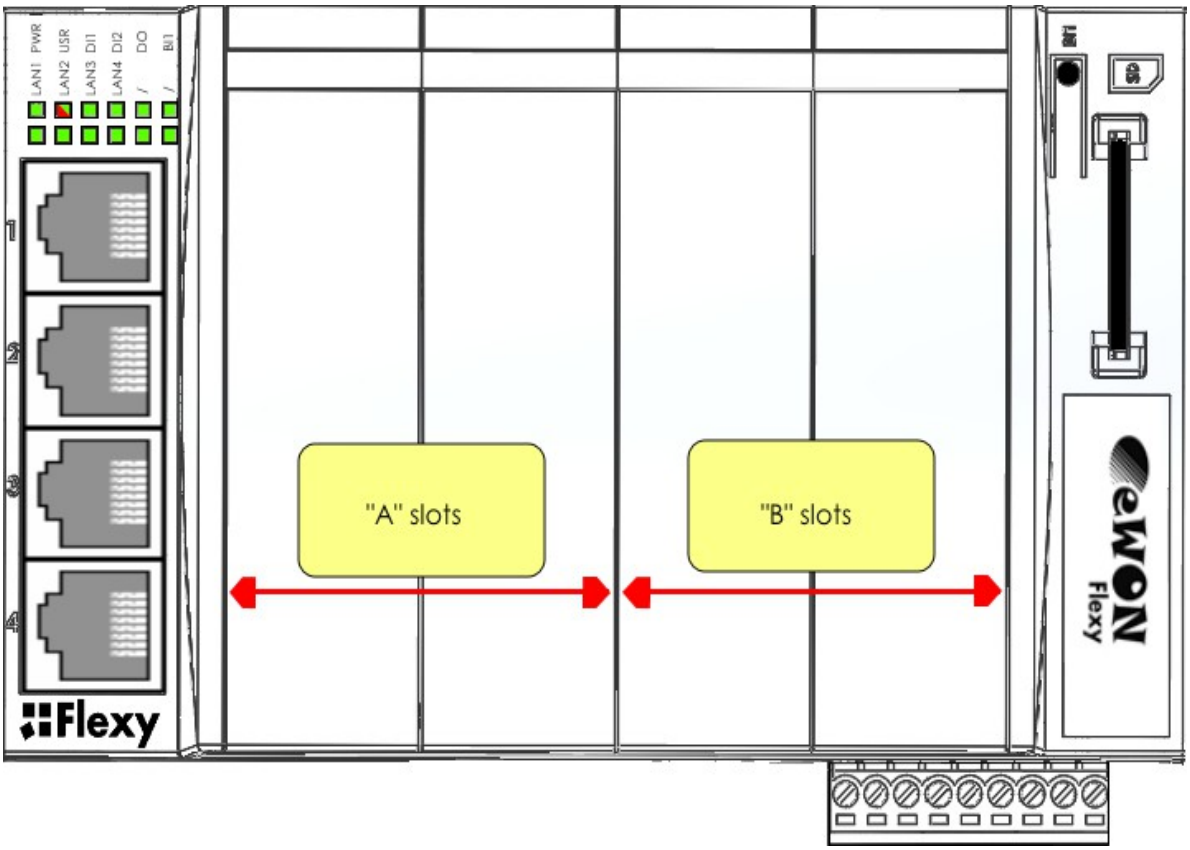
The device LAN interface consists of a four ports auto-sense Ethernet switch (10/100 Mbps). Auto-sense meaning that you can use both UTP Class 5 direct and crossed cables with RJ45 terminations at both ends. Default parameters see § #5.1.Factory Default IP settings.

The minimum required Ethernet cable type is Cat,5 with RJ45 connectors.

4. Extension Cards

4.1. Base Unit Slot Compatibility

The Base Units feature two type of slots. The type-A slots are the two first slots starting from the left. The type-B slots are the two last slots. Some cards fit in both type-A and type-B slots. Others don't. Cards that fit in only one type of slot have a mechanical Poka-Yoke security.



The reference code of the Extension Cards includes a letter that defines their compatibility either with “A” slots, “B” slots or both.

- FL**A** xxxx - designates cards that fit into “A” slots
- FL**B** xxxx - designates cards that fit into “B” slots
- FL**X** 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:

1	●●○○	2 first slots only (A)
2	●●●●	In any slot (X)
3	○○●●	2 last slots only (B)

An example of hardware configuration is shown in the picture below:

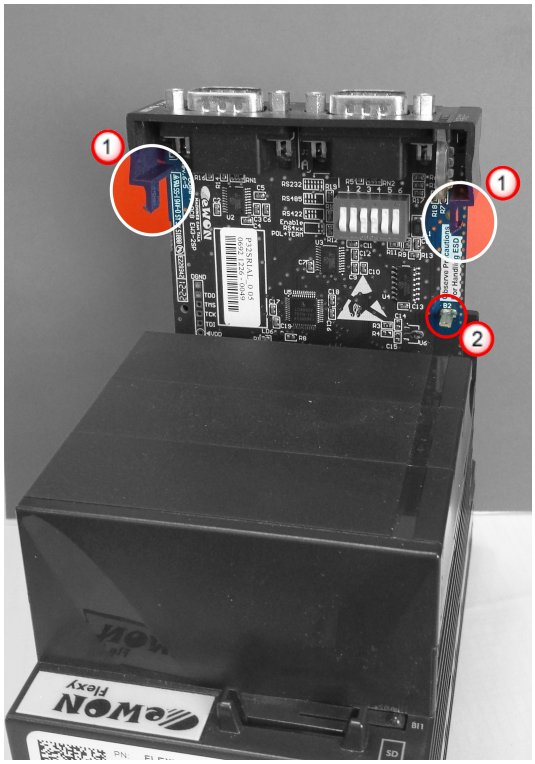
Base Unit Flexy 201H featuring 3 different Extension Cards.
Slot compatibility markings.

4.2. Extension Card Insertion

- Caution -

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 where you want to insert the new card. To do this, press on both ends of the cover, note that the hooks (1) are off-centered like shown on the pictures.



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)

Insert the Extension Card carefully and slide it down until the hook ***clicks***. Make sure the card is completely inserted. **DO NOT insist** if you feel some resistance when trying to insert the card. It probably means you are trying to put it in a wrong slot. In such a case, check slot compatibility of the relevant Extension Card. Refer to § #4.1.Base Unit Slot Compatibility.

- Note -

Would an Extension Card be inadvertently forced in a wrong slot, the Base Unit will detect it and will NOT complete its BOOT sequence. Therefore, the unit will not be accessible through its LAN interface. The slot error is returned by the USR LED. (red ON 1sec, OFF 0.5 sec).

Boot the unit so it can detect the inserted Extension Cards. As explained in § 5.5 Detected Cards Displayed in the System Page the web interface of the eWON Flexy has a diagnostic page showing the Extension Cards in their order of detection (from left to right).

4.3. Powering On the Base Unit with its Extension Cards

The normal boot sequence of the eWON Flexy takes approximately 25 seconds to complete. During this process, all LEDs of the left row go ON for a while, except BI1 as long as the RESET button is not pressed. During this sequence, the ***USR*** LED is going ON orange for some time. As soon as the boot process is finished, the ***USR*** LED is slowly flashing green ON and OFF.

The Extension Card types are detected slot per slot during the boot sequence and are automatically installed from a system standpoint. If an Extension Card was inserted in a wrong slot, the boot sequence is interrupted and the ***USR*** LED is flashing RED 1x short 3x long and communication through the Ethernet port is no longer possible.

4.4. Multiple Extension Cards

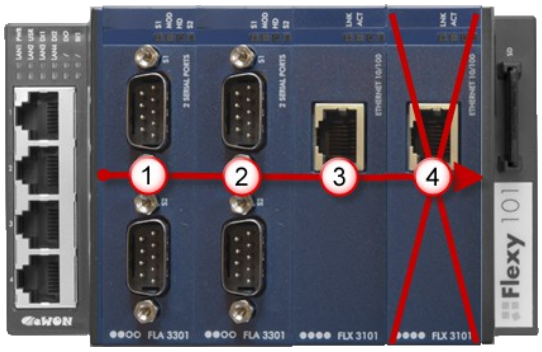
4.4.1. Detection Order

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 (from 1 to 4 in the example shown in the next §).

4.4.2. Software Compatibility of Multiple Card Combinations

The Flexy Base Units allow to insert multiple Extension Cards 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 so that the Base Unit and its running Extension Cards will operate normally. The ignored card(s) will appear in the ***Diagnostic > Status > Info > System*** but they will NOT operate.

See multiple cards compatibility in the table of #2.Flexy Extension Cards | outline.



Example of configuration that would be OK mechanically and power wise but that is not supported by the firmware.

During the boot process, the first 2 Serial Port extension cards (1 & 2) are detected and can be used, then the 2 Single Ethernet Extension (3 & 4) are also detected.
The second Single Ethernet Card (4) is not supported by the firmware so that it CANNOT be used.
The presence of this "ignored" card in the Base Unit does not alter the operation of the Base Unit itself and its "accepted" Extension Cards.

4.5. Extension Card Power Requirements

The internal power converter of the eWON Flexy Base units has been thought 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.

4.5.1. Available Energy Points (Base Units)

Each Base Unit type has a certain amount of **Available Energy Points**. The available energy points depend on the temperature range in which the equipment will actually be used. Considering the fact very few applications require the equipment to actually work between 50° and 70°C, the available energy points per Base Unit type are specified for both up to 50°C max. and up to 70°C max.:

	Ethernet Flexy 201H
Available Energy Points (max. 50°C)	29
Available Energy Points (max. 70°C)	20

Table of the Available Energy Points per Base Unit type

4.5.2. Energy Demand Points (Extension Cards)

Each Extension Card requires a certain amount of **Energy Demand Points**.

The energy demand points per Extension Card type are specified in this guide. Values are given in the table of #B. Flexy Extension Cards | outline. Examples are given below:

	2 Serial Ports FLA 3301H	**Single Ethernet** FLX 3101H	**3G GSM** FLB 3202H
Energy Demand Points	1	1	10

Table of the Energy Demand Points for 3 types of Extension Cards

4.5.3. Power Balance Check Example

Considering the configuration shown in the second picture of § #4.1.Base Unit Slot Compatibility

	Energy Points (max 50°C)	**Energy Points** (max 70°C)
Available Energy Base Unit **Flexy 201H**	29	20
Energy Demand 2 Serial Ports Extension **FLA 3301H**	-1	-1
Energy Demand Single Ethernet Extension **FLX 3101H**	-1	-1
Energy Demand 3G GSM Extension **FLB 3202H**	-10	-10
Energy Balance	17 > 0 = OK	8 > 0 = OK

5. eWON Flexy IP Address and Access to the Web Configuration

5.1. Factory Default IP settings

Characteristic	Value
LAN IP address	10.0.0.53
LAN Subnet Mask	255.255.255.0
Gateway	0.0.0.0

5.2. Powering ON

Power the unit on and wait approximately 25 sec until the boot sequence is done. After a successful boot sequence the ***USR*** LED is flashing ON and OFF green slowly.

If the ***USR*** LED is flashing RED according to a given pattern, it indicates that the boot sequence was interrupted due to an issue. Most frequent issues include :

- an Extension Card was inserted in a wrong slot
  USR LED flashing pattern is RED 1x short, 3x long
- a duplicate IP address was detected on the LAN Network
  USR LED falshing pattern is RED 1x short, 1x long

For the other LED patterns in case of error, please refer to the General Reference Guide RG-001.

5.3. Setting the eWON Flexy LAN IP Address

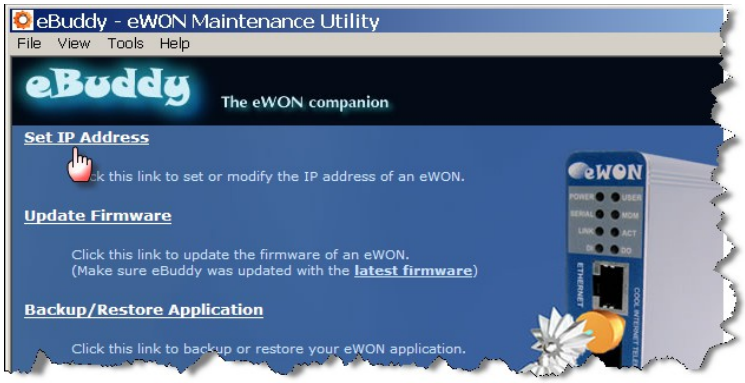
You can easily establish your first communication with your eWON Flexy by using the software ***eBuddy*** *which* can be downloaded from http://support.ewon.biz/software

Connect one of the LAN-ports of your eWON Flexy with your PC point-to-point or through a network provided there is no risk that default IP-address of the eWON (10.0.0.53) would conflict with another connected device.

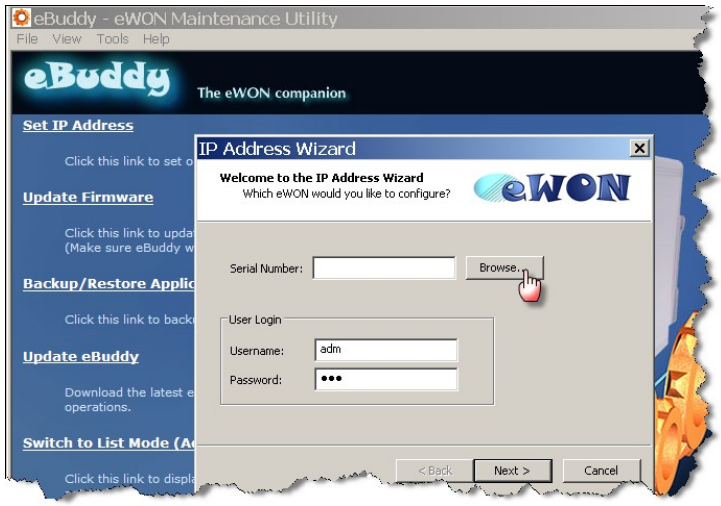
Start the eBuddy application. The application scans through the Ethernet adapter network and retrieves the connected eWON, including its IP Address, Subnet Mask and serial number. The utility also allows you to change the default IP address without being necessarily in the same network range.

Start the ***eBuddy*** utility on your PC

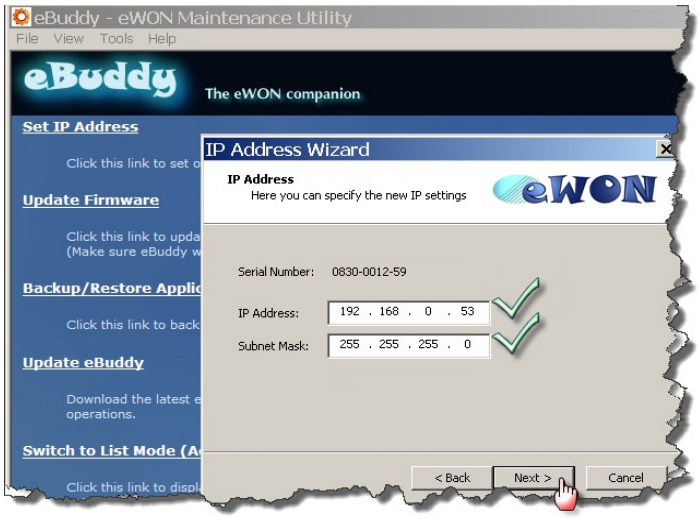
In the home page, select ***Set IP Address***



Fill out the Serial Number of your Flexy or click on ***Browse*** and select it**.** The Serial Number of the Flexy is on its label, see § 3.1 Base Unit Label. Click ***Next***



Enter new LAN IP address and Subnet Mask. Click ***Next***

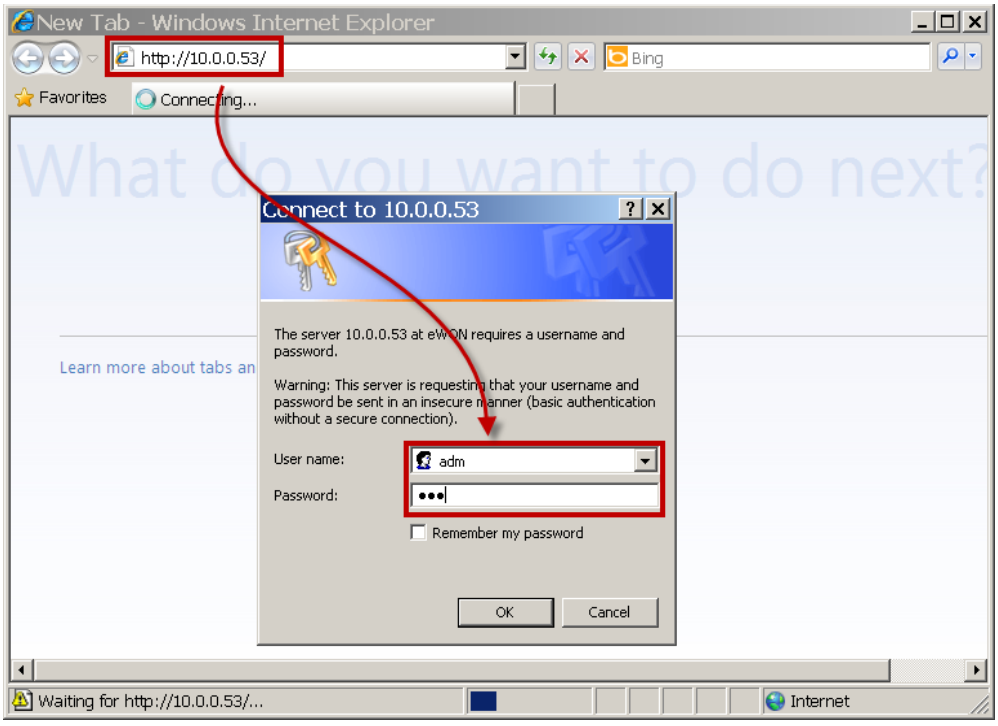


Wait until the address is updated and the device rebooted. Click ***Finish***.

5.4. eWON Flexy's Web Interface

To access the web pages of your eWON Flexy proceed as follows:

- Connect the PC to one of the LAN port of the eWON Flexy.
- Open your Internet browser and access the eWON Flexy internal Web page by entering the LAN IP address in the URL field (the default address is http://10.0.0.53).
- The default login is: adm
  with password: adm



The home page of the eWON Flexy is opening:

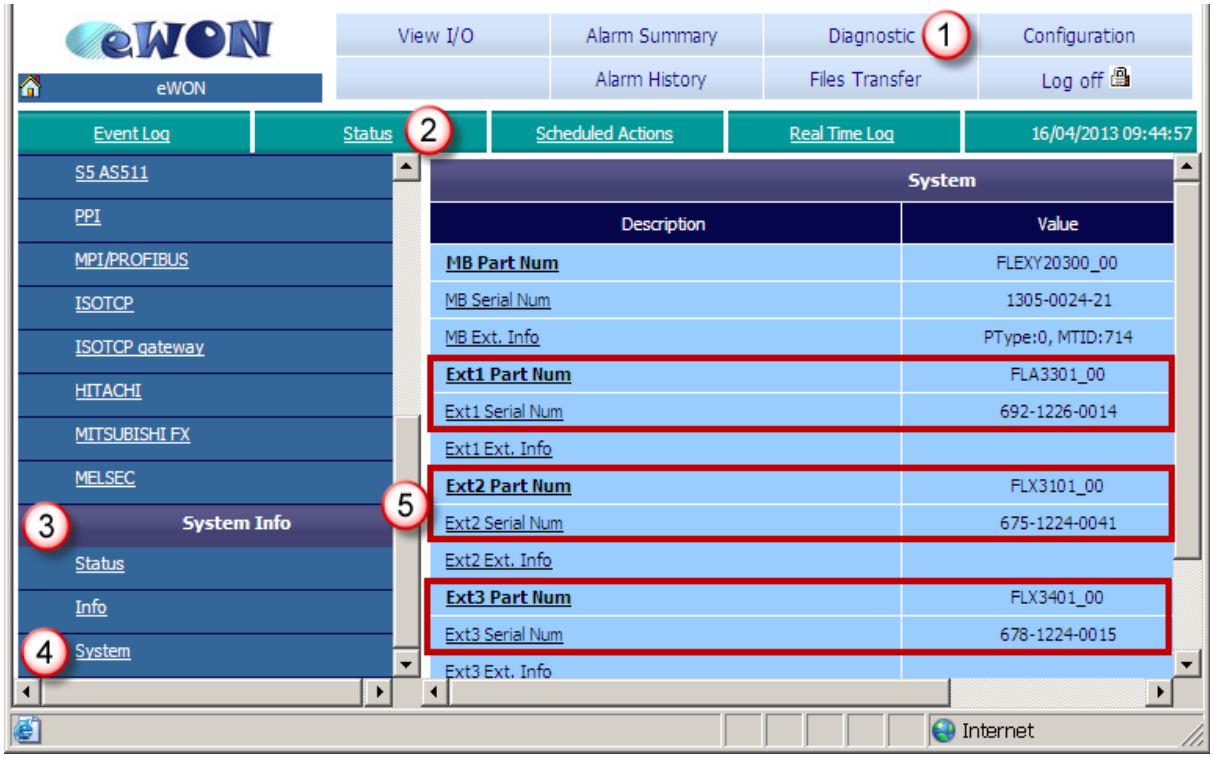
- Warning -

*For security reasons, changing the default password **adm** is an absolute necessity.*
*To change the **adm** password, from the menu bar, click on **Configuration**, **Users Setup** and double click on the **adm** entry to edit its parameters. Enter the new password twice and click **Save**.*

5.5. Detected Cards Displayed in the System Page

The ***System*** page allows to check the status of the system including detected Extension Cards.

To access the system status summary, click on ***Diagnostic (1) > Status (2) > System Info (3) > System (4).*** The screen capture below gives an example of 3 different Extension Cards that have been detected (5).



6. Resetting the eWON Flexy

The reset button B1 is located on the right side of the Base Unit (see § 3.3.2 Reset Button). The reset function of this button is active only if pressed while powering on. The eWON Flexy features two type of reset levels. A table follows with the impacted configuration zones per reset level.

6.1. Normal Boot Sequence

The normal boot sequence of the eWON Flexy takes approximately 25 seconds to complete. During this process, all LEDs of the left row are shortly ON, except BI1 as long as the RESET button is not pressed. During this boot sequence, the ***USR*** LED is orange. As soon as the boot sequence has finished and the unit is ready to be used, the ***USR*** LED flashes GREEN slowly.

6.2. First Level Reset (user reset)

The first level reset consists in formatting only the « ***user files*** » part of the non volatile memory. This type of reset does not modify the communication parameters of the eWON Flexy.

How do I generate a first level reset?

- Power the unit OFF and ON again
- ***Immediately press and maintain*** the reset button. The LED labeled BI1 turns ON.
- Wait approximately 30 seconds until the ***USR*** LED flashes RED 1x per second.
- Immediately release the button. The LED labeled BI1 turns OFF.
- *if you wouldn't, you'd reach the second level reset phase.*
- Wait approximately 30 secs until the reset procedure is completed.
- The eWON restarts automatically and the unit is ready to be used, the ***USR*** LED flashes GREEN slowly.

6.3. Second Level Reset (factory reset)

This second level reset formats all non volatile memories and returns the eWON to its factory defaults. This operation consists in 3 steps:

- Formatting of all non volatile memories, including all COM parameters and IP addresses
- Full hardware auto test with result shown by the ***USR*** LED
- Return to ex-factory configuration (default config)

How do I generate a second level reset?

- Power the unit OFF and ON again

- ***Immediately press and maintain*** the reset button. The LED labeled BI1 turns ON.
- Wait approximately 35 seconds until the ***USR*** LED remains RED steady.
- When this state is reached, release the button. The LED labeled BI1 turns OFF.
- It takes no longer than 2 seconds to complete.
- Check if the auto test is successful, the ***USR*** LED flashes RED with a pattern of 200ms ON and 1,5 sec OFF (*). The eWON Flexy ***does NOT restart in normal mode*** by itself and remains running in this diagnose mode.
- You have to power the eWON Flexy OFF and ON again to reboot the unit in normal mode. As described before, the eWON returns to its default COM parameters and factory IP addresses (like LAN 10.0.0.53) after this level 2 reset is performed.

(*) Any other pattern reflects a problem. The pattern will start with 200ms ON (beginning of the pattern) followed by OFF and a certain number of times 1 sec ON allowing to identify the nature of the detected problem. Please write down the pattern you observed and contact your distributor if you are confronted with an error pattern on the ***USR*** LED.

6.4. Reset Impact Matrix

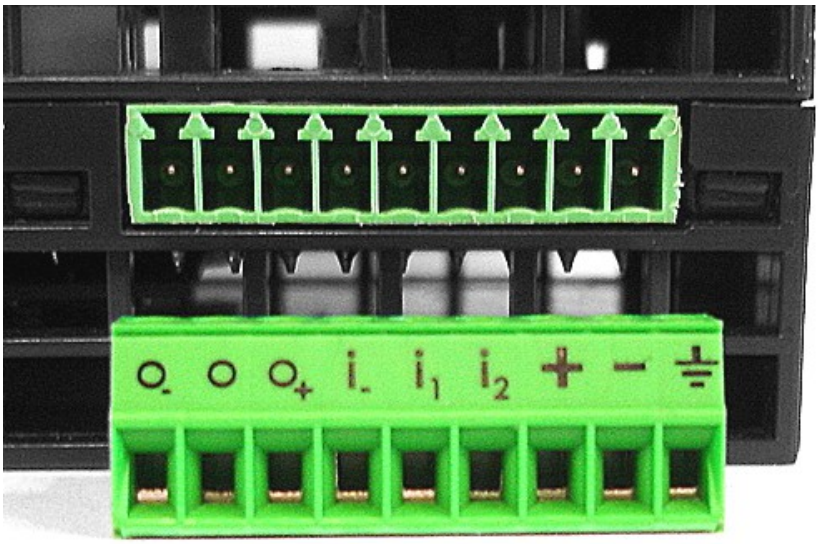
	Erased or Reset	Preserved
Impact Reset Level 1 (user reset)	User(s)	LAN IP address + mask
	adm password	Internet access
	Tags	Language settings
	IO Server config	COM settings (modem, etc)
	Gateway config	Talk2M config + key
	eWON Identification	Proxy configuration
	User Web site	Memory configuration
	User Scripts	

Impact Reset Level 2 (factory reset)	LAN IP address + mask	Nothing
	Internet access	
	Language settings	
	COM settings (modem, etc)	
	Talk2M config + key	
	Proxy configuration	
	Memory configuration	
	User(s)	
	adm password	
	Tags	
	IO Server config	
	Gateway config	
	eWON Identification	
	User Web site	
	User Scripts	

Appendix A - Connector Pinout & Related Specifications

A.1 - Main Connector

As shown on the picture, the female mating connector is labeled with the appropriate symbols.



From right to left

Item	Labels	Description
Power Supply	⏚	Functional Earth (FE) See § 2.6 Field Implementation & Environmental Conditions
	-	Power in GND - (0V)
	+	Power in VDD + (between +12 et +24 VDC) *Related specification see below*
Digital Inputs	i_2	Input signal 2 - *Related specification see below*
	i_1	Input signal 1
	i_-	Common ground of the inputs (isolated)
Digital Output	O_+	Common of the external predrive power supply (between +12 and +24 VDC)
	O	Output signal connected to the drain of the MOSFET transistor
	O_-	Output signal (0V ground) connected to the emitter of the MOSFET transistor

-Note -

The maximal tightening torque is 0.25Nm

A.2 - Specification of the External Power Supply

The eWON Flexy must be powered by a safety Limited Power Source (LPS) for use in Class 2 circuits in accordance with clause 2.5 of UL/IEC 60950-1 Ed2. Standard, 12-24Vdc, 30W min. Certified for 65°C and for altitudes up to 2000m. The safety LPS is not part of the delivery.

Suggested power supply:

SIEMENS SITOP logo power 24V 2.5A 60W - Siemens order ref: 6EP1332-1SH43

Equivalents are available on the market.

Characteristic	Value
Power supply voltage	external 12-24 VDC +/- 20%
Max. input power	30W max.
Internal voltage protection	max 30V
Input protection	protected against polarity inversion

A.3 - Digital Output & Digital Inputs

Characteristic	Value
Type of digital output (*)	Open drain MOSFET
Max. current (ext. source)	200 mA @ 30 VDC
Isolation (both DI and DO)	1,5 kV
DI voltage range	0 to 24 VDC
DI protection	33 VDC Max
DI OFF state input voltage range	0 to 5 VDC
DI ON state input voltage range	10 to 30 VDC
DI ON state current range	< 2 mA @ 12 VDC to < 6 mA @ 24 VDC

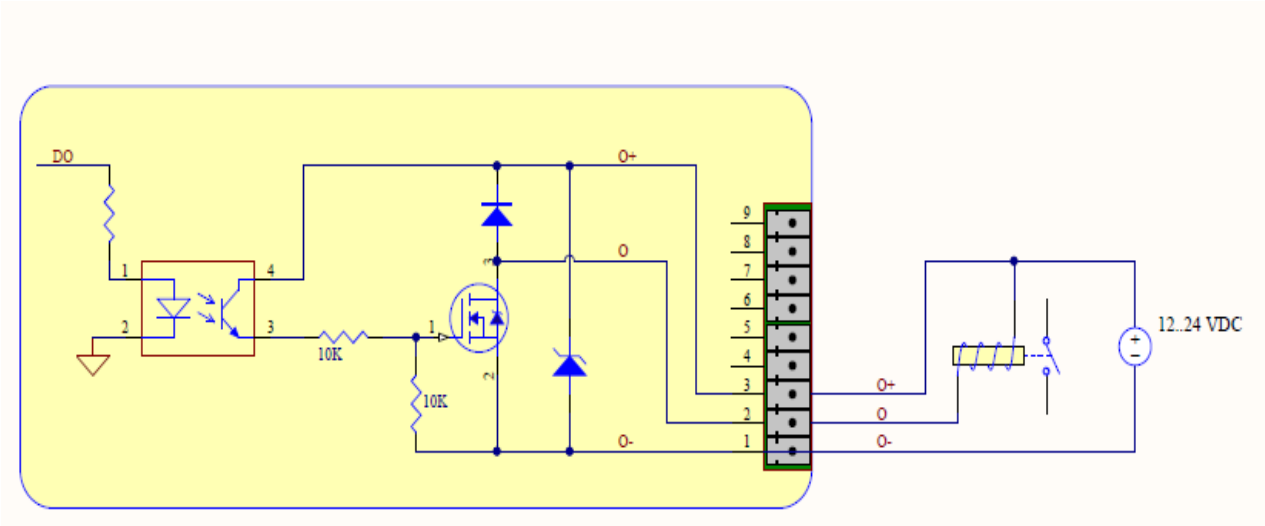
(*) when the eWON Flexy reboots, a short phase of ON state is part of the starting process.

The digital output is activated by an open drain MOSFET transistor driven by an optocoupler. The maximum current flow into this transistor has a characteristic above the value specified in the eWON, in order to cope with the switching power losses.

The transistor used is in an open drain type with predrive. This means the relay power supply has to be supplied from an external source to the predrive electronics. The diagram next page shows the external wiring needed for correct operation of the digital output. A relay has been chosen for this sample application but any load within the specifications can be used instead.

- Note -

This is a sink only output to ground (the transistor acts like a switch to ground).



Appendix B - Flexy 201H Extension Cards

Picture	Reference + Name	Slot compatibility	Number supported (firmware) (1)	Energy Demand Points (2)
	FLA 3301H 2 Serial-Ports	●●○○	2	1
	FLX 3101H Ethernet 10/100	●●●●	1	1
	FLX 3401H 8DI-4AI-2DO	●●●●	4	2
	FLB 3202H 3G GSM	○○●●	1	10
	FLA 3501H PSTN	●●○○	1	2
	FLB 3271H WiFi	○○●●	1	4

As explained in § 4.4.2 Software Compatibility of Multiple Card Combinations, the number of cards of the same type that are supported by the firmware is limited to the number stated in this column.

As explained in § 4.5 Extension Card Power Requirements please make sure the sum of Energy Demand Points of the extension cards does not exceed the Available Energy Points at the Base Unit level.

- Important -

Since July 2016, the FLX 3401H is tagged as End of Life. No replacement is planned.

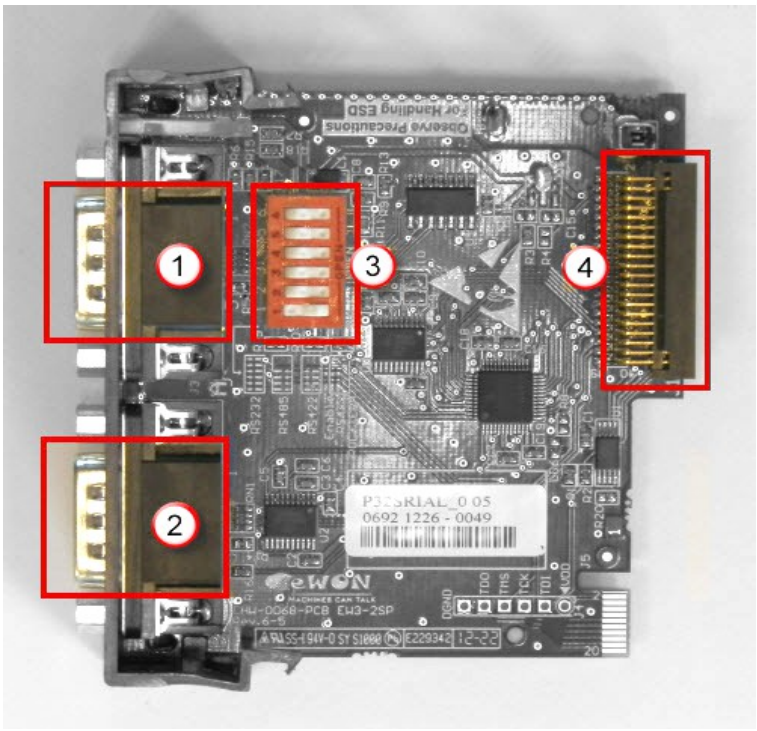
B.1 - FLA 3301H – 2 Serial Ports Extension card

- Warning -

Be sure to use only Hazloc labeled Extension Cards with the eWON Flexy 201H to assure the compliance with the Class I, Division 2 requirements.

B.1.1 - Hardware Description

B.1.1.1 - Mechanical Layout and Interfaces

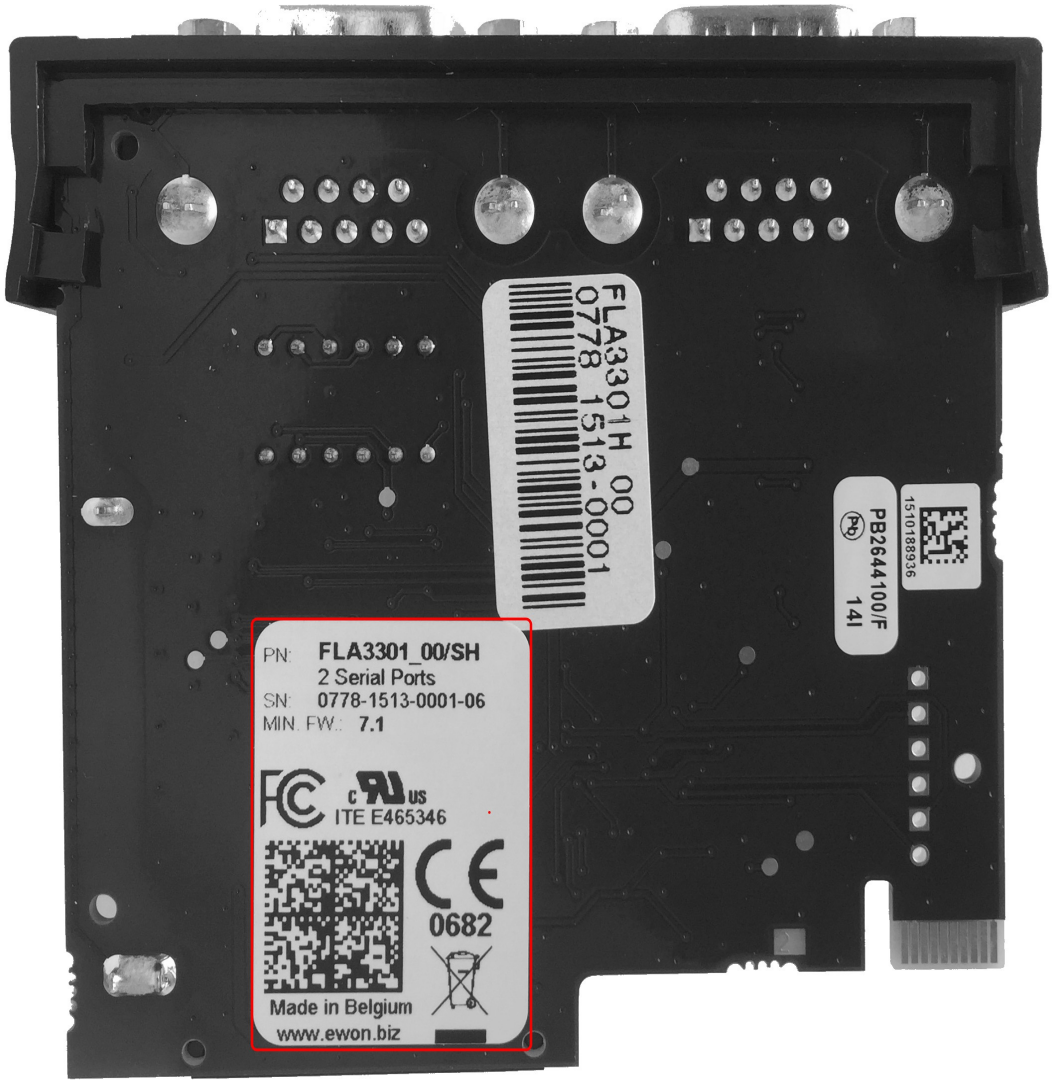


1	Configurable RS232/RS422/RS485 serial port (DB9 male) – marked S1
2	Non configurable RS232 serial port (DB9 male) – marked S2
3	Dip switch block to configure port S1 – factory setting ALL OFF (RS232)
4	Back-plane connector

B.1.2 - Extension Card Label

B.1.2.1 - Label Location and Information Included

The identification label of the Extension Cards is placed on the solder side of the PCB.



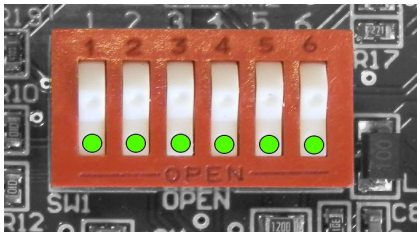
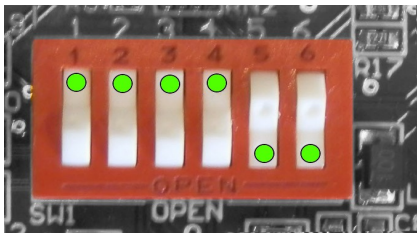
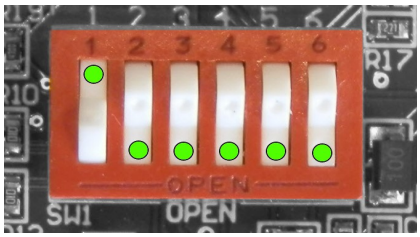
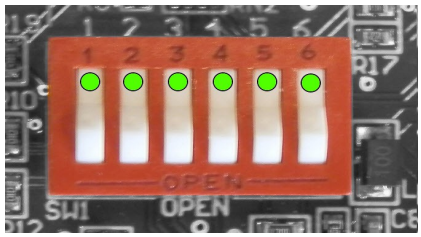
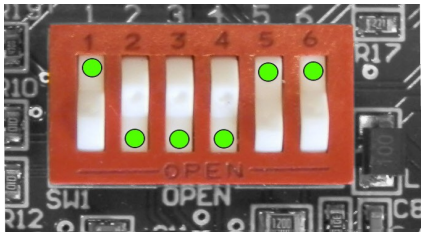
The different parts of the label are described below:

PN	**Part Number:** identifies the type of the card.
SN	**Serial Number** Structure of the Serial Number 1111-2233-0001-44 1111 = MTID (product related) 2233 = Year Week 0001 = sequential mfg order 44 = product type
Marks	CE, UL,... certificate number and logos if applicable.

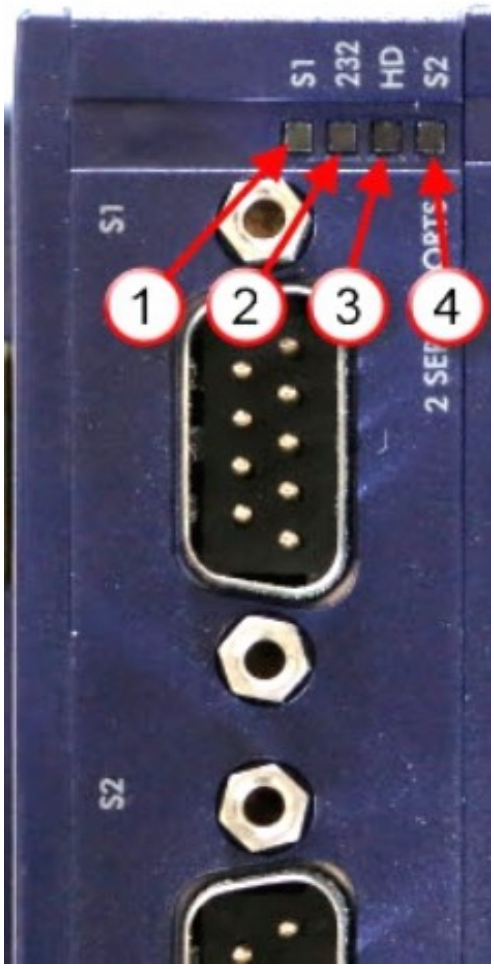
B.1.2.2 - Part Number Syntax for Extension Cards

FLA 3301_00/SH				
FL	FL is the prefix for the extensions of the eWON Flexy family	Only FL (constant)		
A	1 alphabetic sign (CAP) 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	In any slot	●●●●
3301_00	2 Serial ports Extension Card. The suffix _00 is used for software options.			
/SH	2 alphabetic signs	S	Compliance with the UL/IEC/EN 60950 Standard	
		H	Hazardous Location Compliance (C1D2)	

B.1.3 - Dip Switch Configuration of Port S1

RS232 (ex-factory) All six switches OPEN (pressed in on OPEN side, raised out on numbers side)	 RS232
RS485 Switches 1 to 4 CLOSED (pressed in on numbers side, raised out on OPEN side) Remaining 2 switches see terminations (below)	 RS485 without terminations
RS422 Switch 1 CLOSED (pressed in on numbers side) Switches 2 to 4 OPEN (pressed in on OPEN side, raised out on numbers side) Remaining 2 switches see terminations (below)	 RS422 without terminations
Terminations (RS485/422) <u>Activated:</u> Switches 5 & 6 BOTH CLOSED (pressed in on numbers side)	 RS485 with terminations  RS422 with terminations

B.1.4 - Front Panel LEDs

Item	Mark	Function	Picture
1	**S1**	GREEN flashing Rx/Tx activity on port S1	
2	**232**	GREEN steady if S1 is configured in RS232 OFF in all other cases	
3	**HD**	GREEN steady if S1 is configured in Half Duplex (RS485) OFF in all other cases	
4	**S2**	GREEN Flashing Rx/Tx activity on port S2	

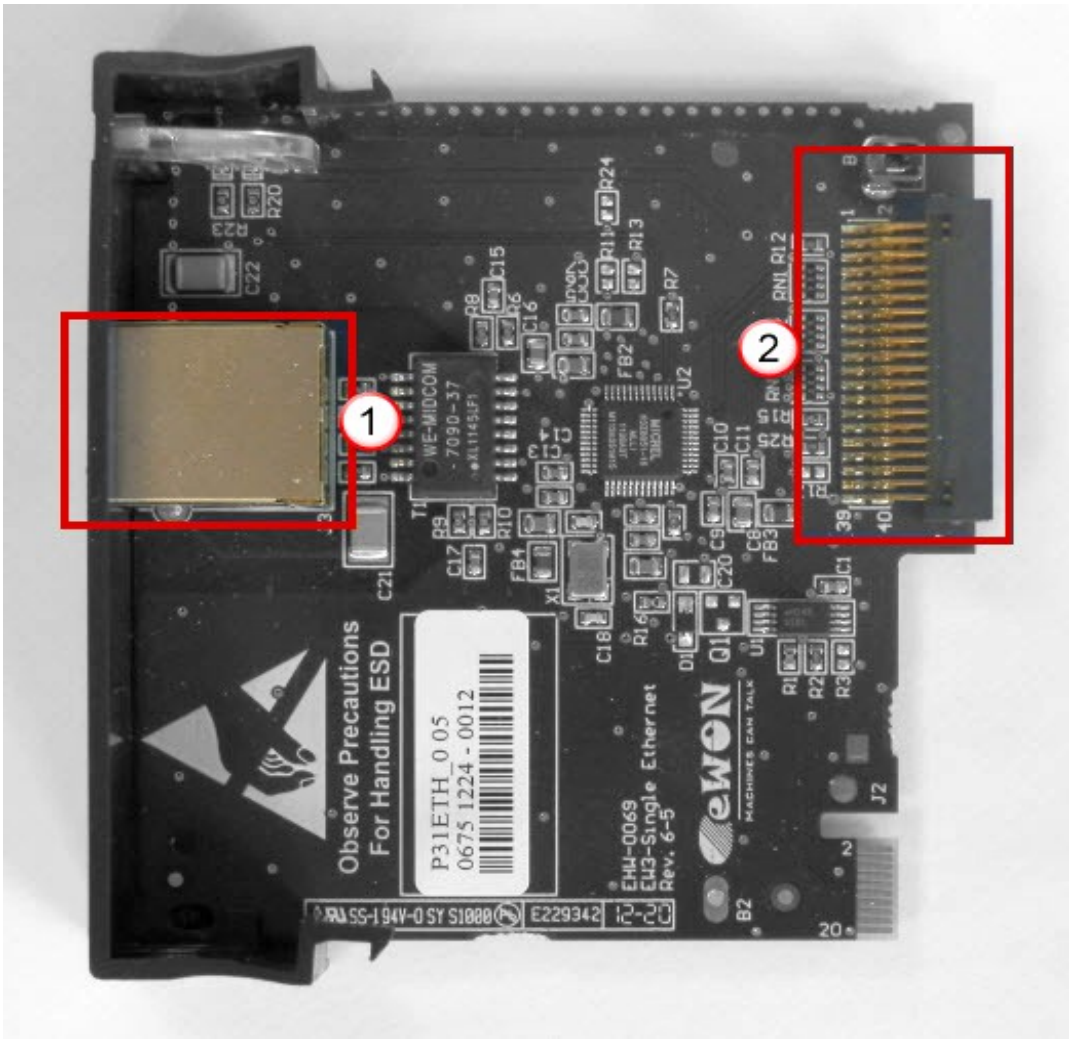
B.2 - FLX3101H - Single Ethernet Extension Card

- Warning -

Be sure to use only Hazloc labeled Extension Cards with the eWON Flexy 201H to assure the compliance with the Class I, Division 2 requirements.

B.2.1 - Hardware Description

B.2.1.1 - Mechanical Layout and Interfaces



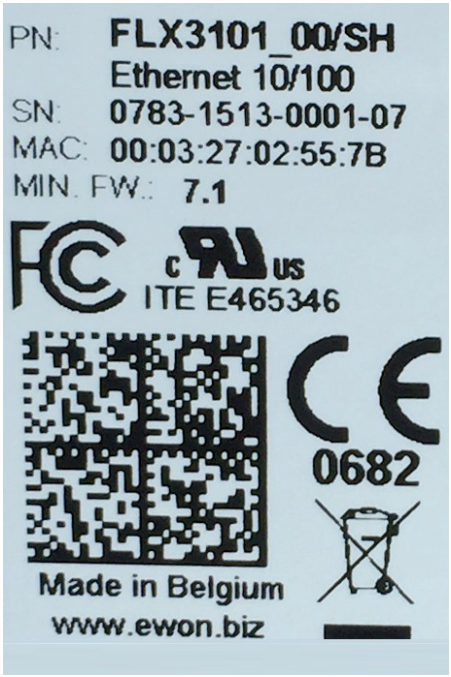
1	Ethernet Port Connector RJ45 - 10/100 Base-T
2	Back-plane connector

B.2.2 - Extension Card Label

B.2.2.1 - Label Location and Information Included

The identification label of the Extension Cards is placed on the left hand side (solder side of the PCB).

The different parts of the label are described below:



PN	**Part Number:** identifies the type of the card.
SN	**Serial Number** Structure of the Serial Number 1111-2233-0001-44 1111 = MTID (product related) 2233 = Year Week 0001 = sequential mfg order 44 = product type
MAC	**MAC-Address** of the Ethernet card
Marks	CE, UL,... certificate number and logos if applicable.

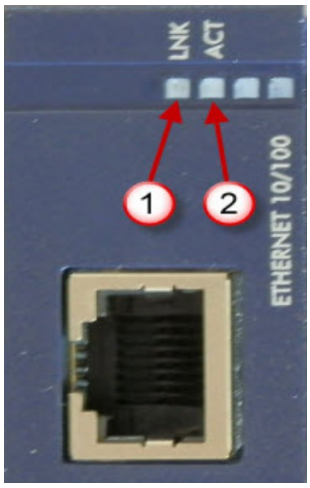
B.2.2.2 - Part Number Structure for Extension Cards

FLX 3101_00/SH				
FL	FL is the prefix for the extensions of the eWON Flexy family	Only FL (constant)		
X	1 alphabetic sign (CAP) Defines the slots of the base module in which the extension can be inserted. See § 4.1 Base Unit Slot Compatibility	A	2 first slots only	●●○○
		B	2 last slots only	○○●●
		X	In any slot	●●●●
3101_00	Single Ethernet Extension Card. The suffix _00 is used for software options.			
/SH	2 alphabetic signs	S	Compliance with the UL/IEC/EN 60950 Standard	
		H	Hazardous Location Compliance (C1D2)	

B.2.3 - Front Panel LEDs

Item	Mark	Function	Picture
①	**LNK**	ON Link ETH 10/100 present + Speed indication Green = 100 Mbps Amber = 10 Mbps	

2	**ACT**	Flashing Green Packets transfer activity



B.2.4 - Ethernet Port Specifications

Characteristic	Value
Ethernet Port	10/100Mbps
Default IP mode	Static
Default IP address (WAN)	10.1.0.53
Default Subnet Mask	255.255.255.0

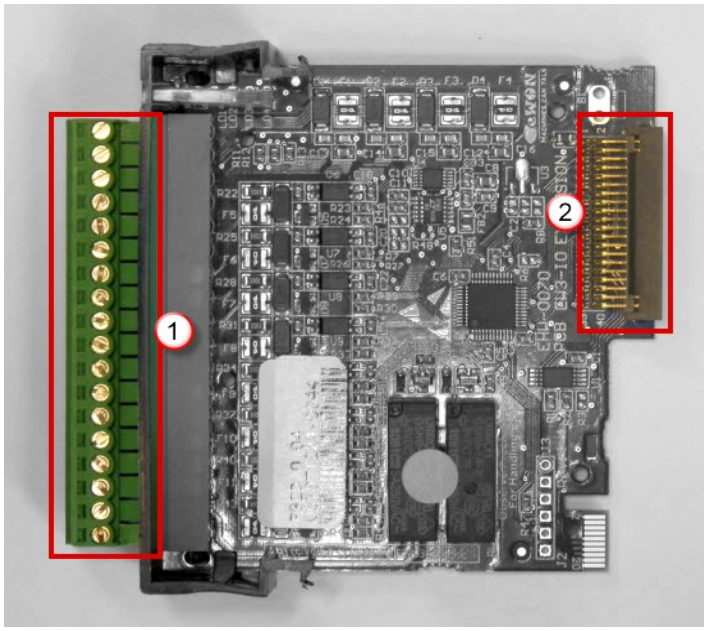
B.3 - FLX 3401H- 8DI-4AI-2DO Extension Card

- Warning -

Since July 2016, the FLX 3401H is tagged as End of Life. No replacement is planned.
Be sure to use only Hazloc labeled Extension Cards with the eWON Flexy 201H to assure the compliance with the Class 1, Division 2 requirements.

B.3.1 - Hardware Description

B.3.1.1 - Mechanical Layout and Interfaces

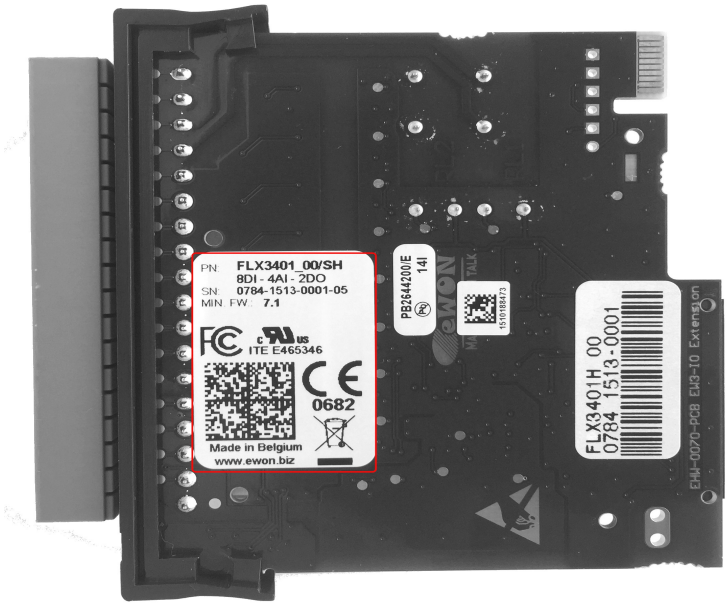


1	IO mating connector 18 screw terminals
2	Back-plane connector

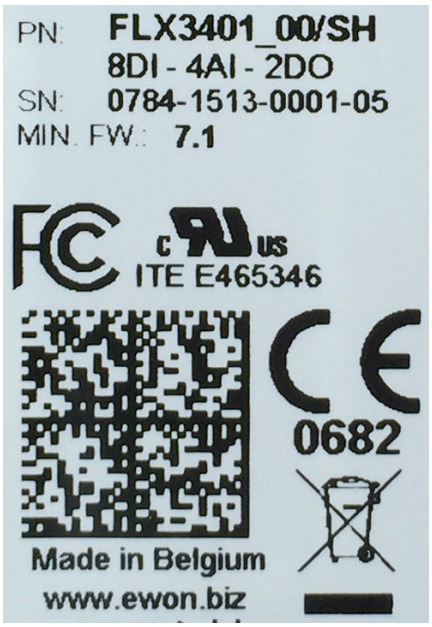
B.3.2 - Extension Card Label

B.3.2.1 - Label Location and Information Included

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:



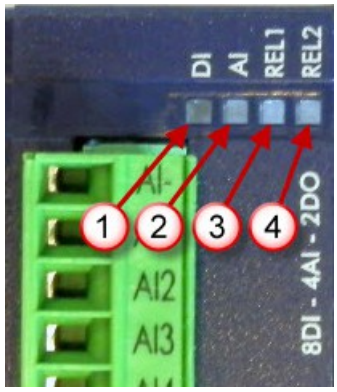
PN	**Part Number:** identifies the type of the card.
SN	**Serial Number** Structure of the Serial Number 1111-2233-0001-44 1111 = MTID (product related) 2233 = Year Week 0001 = sequential mfg order 44 = product type
Marks	CE, UL,... certificate number and logos if applicable.

B.3.2.2 - Part Number Structure for Extension Cards

FLX 3401_00/SH		
FL	FL is the prefix for the extensions of	Only FL (constant)

	the eWON Flexy family			
X	1 alphabetic sign (CAP) Defines the slots of the base module in which the extension can be inserted. See § 4.1 Base Unit Slot Compatibility	A	2 first slots only	●●○○
		B	2 last slots only	○○●●
		X	In any slot	●●●●
3401_00	8DI-4AI-2DO Extension Card. The suffix _00 is used for software options.			
/SH	2 alphabetic signs	S	Compliance with the UL/IEC/EN 60950 Standard	
		H	Hazardous Location Compliance (C1D2)	

B.3.3 - Front Panel LEDs

Item	Mark	Function	Picture
1	**DI**	Reflects a DI status change. Toggles between ON and OFF at every DI status change (see Note 2)	
2	**AI**	Blinking Green = Acquisition running on all AI (permanent even if no tag was configured and/or no input was wired)	
3	**REL1**	ON Green when relay 1 is closed	
4	**REL2**	ON Green when relay 2 is closed	

- Note -

During boot sequence all 4 LEDs are off

Two simultaneous status changes on different DI will result in no LED status change.

B.3.4 - IO Specifications

B.3.4.1 - Connector Pinout

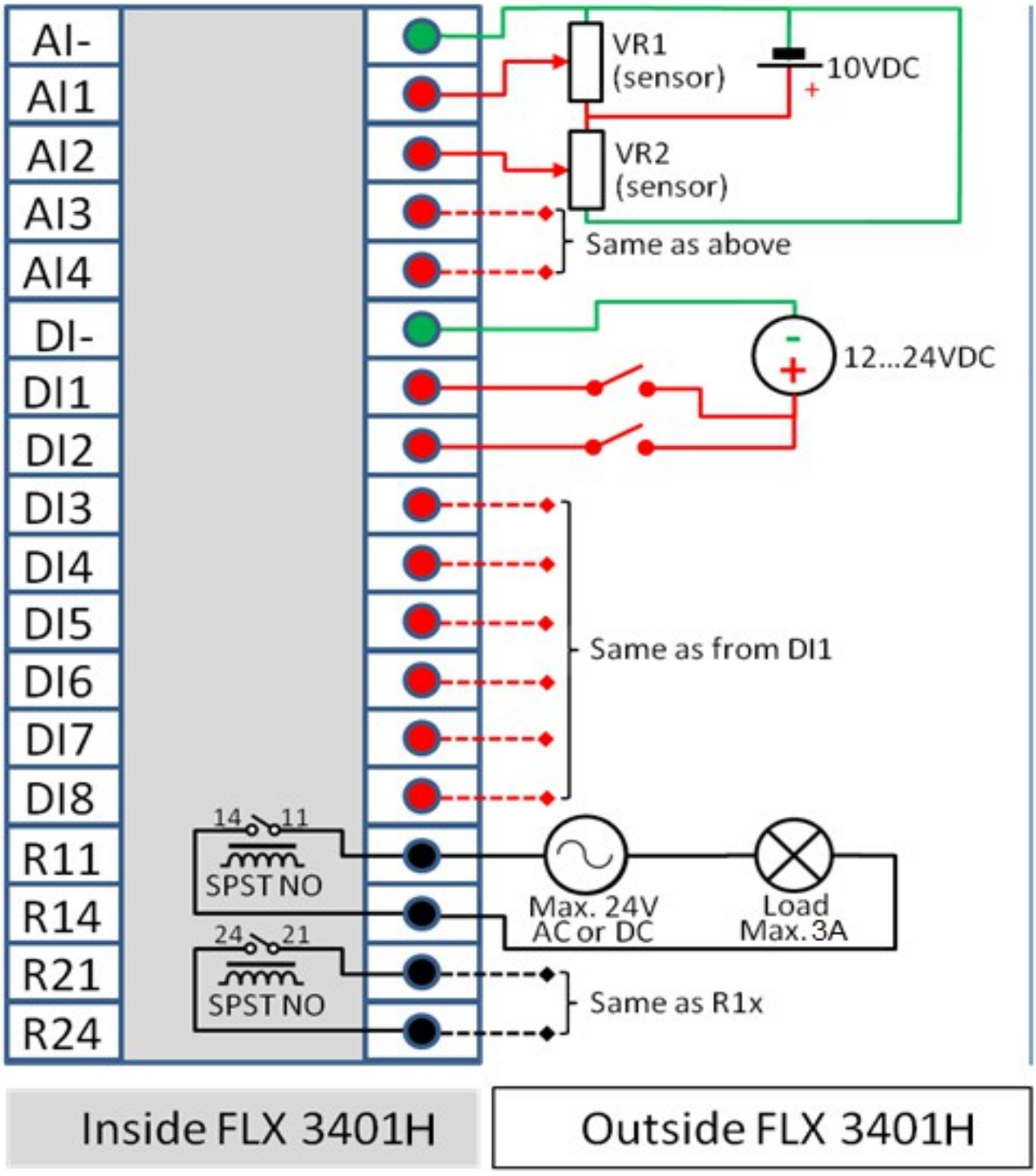
AI-	Ground of the analog input (isolated)
AI1	Analog Input 1
AI2	Analog Input 2
AI3	Analog Input 3
AI4	Analog Input 4
DI-	Ground of the digital input (isolated)
DI1	Digital Input 1
DI2	Digital Input 2
DI3.	Digital Input 3
DI4	Digital Input 4
DI5	Digital Input 5
DI6	Digital Input 6
DI7	Digital Input 7
DI8	Digital Input 8
R11	Relay 1 NO terminal 11 (*)
R14	Relay 1 NO terminal 14 (*)
R21	Relay 2 NO terminal 21 (*)
R24	Relay 2 NO terminal 24 (*)

(*) Terminal numbers R11, R14, R22 and R24 are derived from 11 (Common) and 14 (NO) that refer to the Single Pole, Single Throw, Normally Open (SPST NO) relay terminal numbering as per standard EN 50005.

- Caution -

Install per Control Drawing EHW-0070-011-CD

B.3.4.2 - Typical Wiring Diagram



- Caution -

Install per Control Drawing EHW-0070-011-CD

B.3.4.3 - Analog Inputs (4)

Characteristic	Value
AI Terminal count	5 (4 channels + common ground)
Isolation between AI	None (common ground)
AI rated input range	Rated 0 to 10 VDC (max. -0.6 V to 12 VDC)
AI max. input range	Over-voltage protection
AD converter resolution	16 bits
Sampling rate	4 sps
Max. gain error	0,40%
Input low pass filter cut-off	@ 1.3 Hz
Functional Isolation	1.5 kV

B.3.4.4 - Digital Inputs (8)

Characteristic	Value
DI terminal count	9 (8 + common ground)
Isolation between DI	None (common ground)
DI voltage range	0 to 24 VDC
DI protection	33 VDC Max
DI OFF state input voltage range	0 to 5 VDC
DI ON state input voltage range	10 to 30 VDC
DI ON state current range	< 2 mA @ 12 VDC to < 6 mA @ 24 VDC
Functional Isolation	1.5 kV from DGND (internal isolated ground)

B.3.4.5 - Output Relays (2)

Characteristic	Value
Terminal count	4 (2 independent outputs)
Relay type	Single Pole, Single Throw, Normally Open = SPST NO
Input voltage max.	24 VDC/VAC
Max. current (ext. source)	3 A
Functional Isolation	1,5 kV

B.3.5 - Multiple 8DI-4AI-2DO Extension Cards

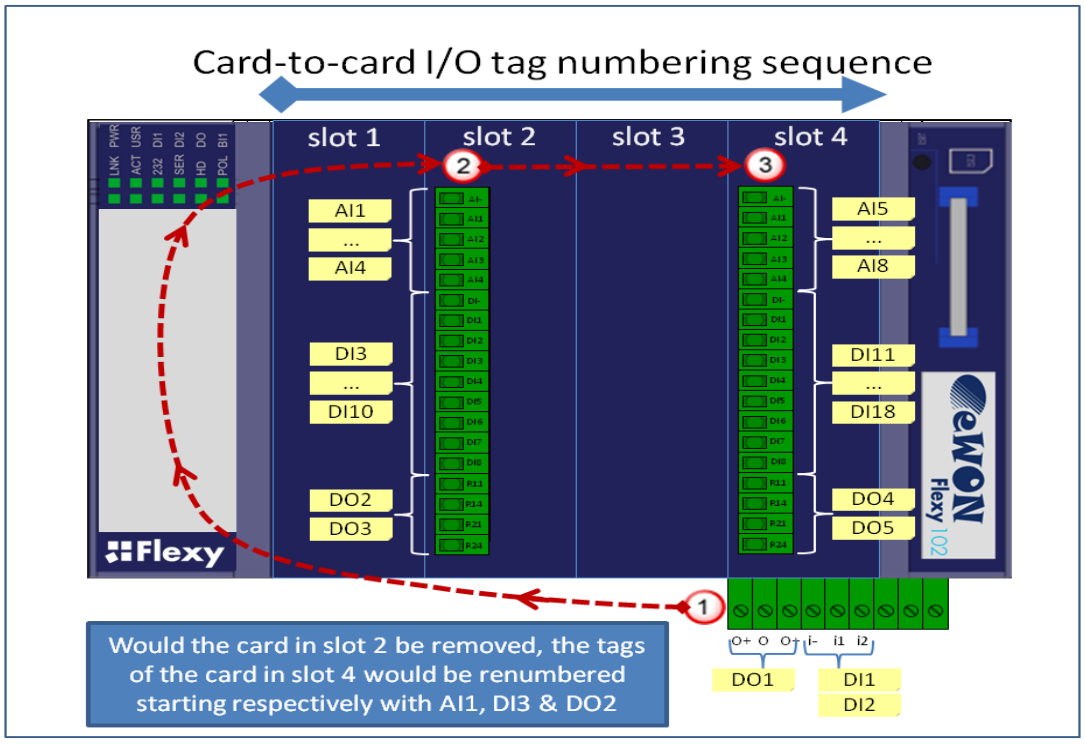
The boot sequence of the Base Unit includes an automated detection of the inserted Extension Cards. This detection is done sequentially, slot per slot starting from the left to right.

The Extension Cards of type FLX 3401 can be inserted in all slots. The eWON Flexy firmware supports up to 4 Extension Cards of this type.

B.3.6 - Basic Principles of the eWON Flexy I/O Tag Addresses

The internal tag addressing of the Flexy range always starts with the Inputs/Outputs of the Base Units. Remember that all Base Units feature 1 Digital Output and 2 Digital Inputs, those are the first ones that have to be considered when creating tags in the eWON.

The example below helps you to understand the syntax of the I/O Server tag addresses in the case of 2 I/O Extension Cards.



- Note -

Following the left-to-right order of slots, the first card to be detected is the Extension Card the most on the left, then the next on its right and so on. Removing an I/O card other than the one the most on the right will result in an internal reallocation of tag addresses that may result in a mismatch between physical I/Os and their software configuration. The software tag addresses can be "frozen" by adding the slot number in the tag definition. This prevents accidental I/O mismatch (see next page).

Slot number append to prevent tag address mismatch:

Let's take the example of an eWON Flexy featuring 2 IO cards FLX 3401 in slots #2 and #4 as shown in the picture above. The tag address for the eWON IO server can be extended as follows:

ABx,Ey

Where:

- AB is the type of IO (DI, AI, DO)
- x is the order number
- E is a constant prefix to the slot number
- y is the slot number of the card (0 = main board, 1 = slot #1, 2 = Slot #2, etc..)

The main IO syntax and order numbering remains unchanged.

In the example above, the IO server tag addresses are as follows:

Tag Syntax	Explanation
DO1, EO	Digital Output 1, main board (though E0 is not necessary in this case)
DO2	Digital Output 2, no position specified = second detected DO = first DO on first extension card detected (slot #2 most left).
DO3, E2	Digital Output 3, board in slot #2 = second DO on extension card in slot #2
DO4, E4	Digital Output 4, board in slot #4 = first DO on extension card in slot #4
DO5, E4	Digital Output 5, board in slot #4 = second DO on extension card in slot #4

Behavior if the card in slot #2 is removed:

In the ***Tag View*** page,

- **DO2** will appear normally as it was not frozen by a slot number append. But it can no longer reflect the status of the first DO of the board in slot #2 that was removed. DO2 now reflects the status of the first DO of the board in slot #4.
- The 3 other DOs with specified slot number E2 and E4 will all appear in error (red cross, value 0), because:
  - The address of DO3,E2 of the card in slot #2 could no longer be found, and
  - The software addresses of DO4,E4 and DO5,E4 of the card in slot #4 do no longer

match with the detected order of physical addresses.

The error messages in the **Trace** log file are "Invalid IO Tag name (DOx, addr. DOx,Ex)".

To have the DOs of the card in slot #4 responding, edit the tags and change their software addresses as follows:

- DO4,E4 to DO2,E4
- DO5,E4 to DO3,E4.

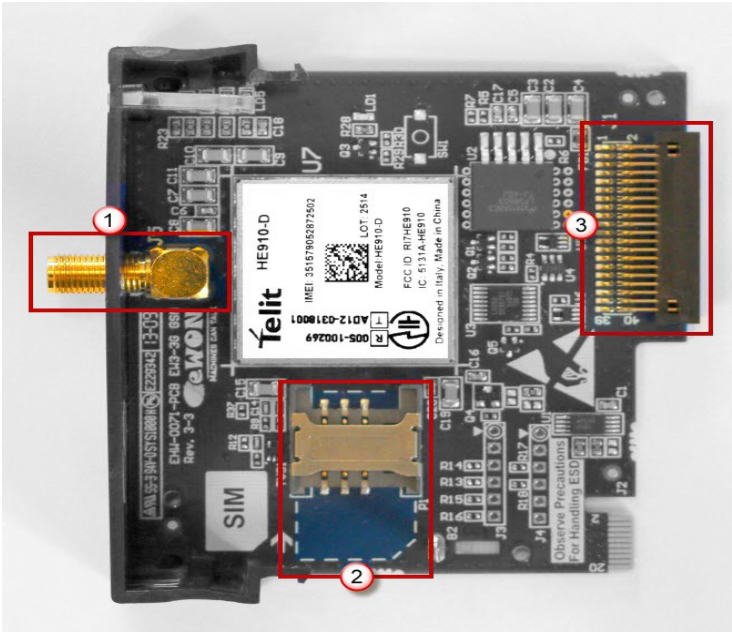
B.4 - FLB 3202H - 3G GSM Extension Card

- Warning -

Be sure to use only Hazloc labeled Extension Cards with the eWON Flexy 201H to assure the compliance with the Class I, Division 2 requirements.

B.4.1 - Hardware Description

B.4.1.1 - Mechanical Layout and Interfaces

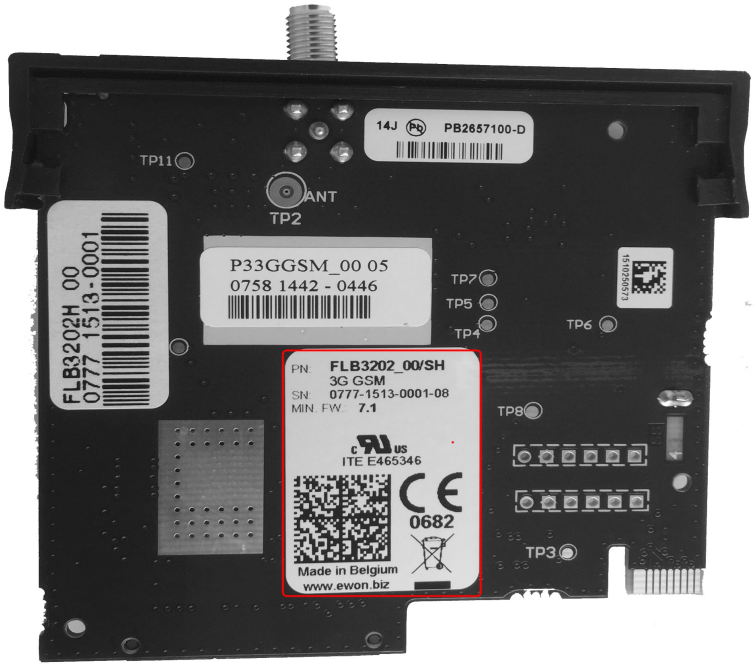


1	SMA-F Female antenna connector
2	SIM-Card drawer
3	Backplane connector

B.4.2 - Extension Card Label

B.4.2.1 - Label Location and Information Included

The identification label of the Extension Cards is placed on the solder side of the PCB.



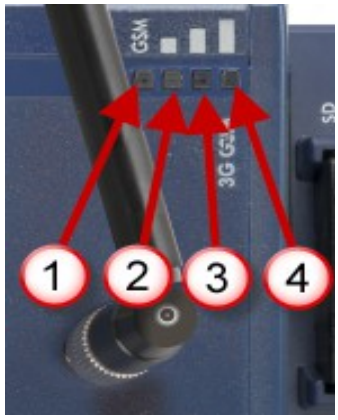
The different parts of the label are described below:

PN	**Part Number:** identifies the type of the card.
SN	**Serial Number** Structure of the Serial Number 1111-2233-0001-44 1111 = MTID (product related) 2233 = Year Week 0001 = sequential mfg order 44 = product type
Marks	CE, UL,... certificate number and logos if applicable.
0682	Notified Body Number warrantor of the CE Mark validation

B.4.2.2 - Part Number Structure for Extension Cards

FLB3202_00/SH				
FL	FL is the prefix for the extensions of the eWON Flexy family	Only FL (constant)		
B	1 alphabetic sign (CAP) Defines the slots of the base module in which the extension can be inserted. See also § 4.1 Base Unit Slot Compatibility	A	2 first slots only	●●○○
		B	2 last slots only	○○●●
		X	In any slot	●●●●
3202_00	3G GSM Extension Card. The suffix _00 is used for software options.			
/SH	2 alphabetic signs	S	Compliance with the UL/IEC/EN 60950 Standard	
		H	Hazardous Location Compliance (C1D2)	

B.4.3 - Front Panel LEDs

Item	Mark	Function	Picture
1	GSM	Tricolor RED/ORANGE/GREEN Green ON = Modem is online	
2	▪	Reception Signal level Orange ON = level >1 (*Poor signal)*	
3	▮	Reception Signal level Orange ON = level >10 (*Signal is OK)*	
4	▮	Reception Signal level Orange ON = level >16 (*Good signal)*	

- Note -

During the modem boot sequence all 4 LEDs are going ON ORANGE. If they stay ORANGE it means the modem card was inserted in a wrong slot (inducing a Base Unit boot error on its USR LED as well).

If all signal level LED's are OFF, either:
- *The modem was not configured*
- *The modem configuration is invalid (including wrong PIN code)*
- *There is no signal at all (level 0)*
- *There is a reception error (level 99)*

B.4.4 - Specifications of the 3G GSM Extension Card

<table>
<tr><th>Item</th><th colspan="2">Value(s)</th></tr>
<tr><td>Protocols and Frequencies</td><td colspan="2">GSM/GPRS/EDGE - 850, 900, 1800, 1900 MHz
UMTS/HSUPA - 800/850, 900 MHz</td></tr>
<tr><td>Class</td><td colspan="2">5 band GPRS/EDGE Class 33</td></tr>
<tr><td>Antenna Connector</td><td colspan="2">Type SMA-F Female</td></tr>
<tr><td rowspan="6">Antenna
(not included in the delivery)</td><td>Charact.</td><td>Value(s)</td></tr>
<tr><td>Range</td><td>Depending on frequency band(s) provided by the network operator, the customer shall use the most suitable antenna for that/those band(s).</td></tr>
<tr><td>Impedance</td><td>50 Ohms</td></tr>
<tr><td>VSWR</td><td><= 5:1 Absolute max. to avoid permanent damage
<= 2:1 Limit to fulfill all regulatory requirements</td></tr>
<tr><td>Max. Gain</td><td>1.4 dBi @900Mhz and 3dBi @1800Mhz
1.4 dBi @850Mhz and 3dBi @1900Mhz
1.43 dBi (WCDMA)</td></tr>
<tr><td>Input Power</td><td>> 33 dBm (2W) peak power in GSM
> 24 dBm average power in WCDMA</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>
</table>

This Extension Card complies with the R&TTE directive and the FCC regulations related to the GSM modems.

- Warning -

This device is to be used only in fixed applications. The antenna used for this transmitter has to be installed in a safe 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.

Antennas installed in end use are subject to the installation conditions of NEC 501 and to the inspection by the Authority having jurisdiction.

The antenna used for this module must not exceed the gains mentioned in the table above, No modifications can be made by the user that can be of influence on the EMC behaviour of the device.

B.4.5 - SIM-Card Insertion

A SIM-card obtained from a wireless phone provider is necessary to communicate through the 3G GSM Extension Card. It should be inserted before inserting the Extension Card in the Base Unit because there is no external access to the SIM-card holder.

The SIM-card holder is located on the components side of the Extension Card. Carefully slide the SIM-card in the holder as shown in the picture below. Make sure the card is fully inserted otherwise it could damage both the drawer and the SIM-card when the Extension Card will be inserted in the Base Unit. Note the position of the cutoff (1) of the SIM-card.

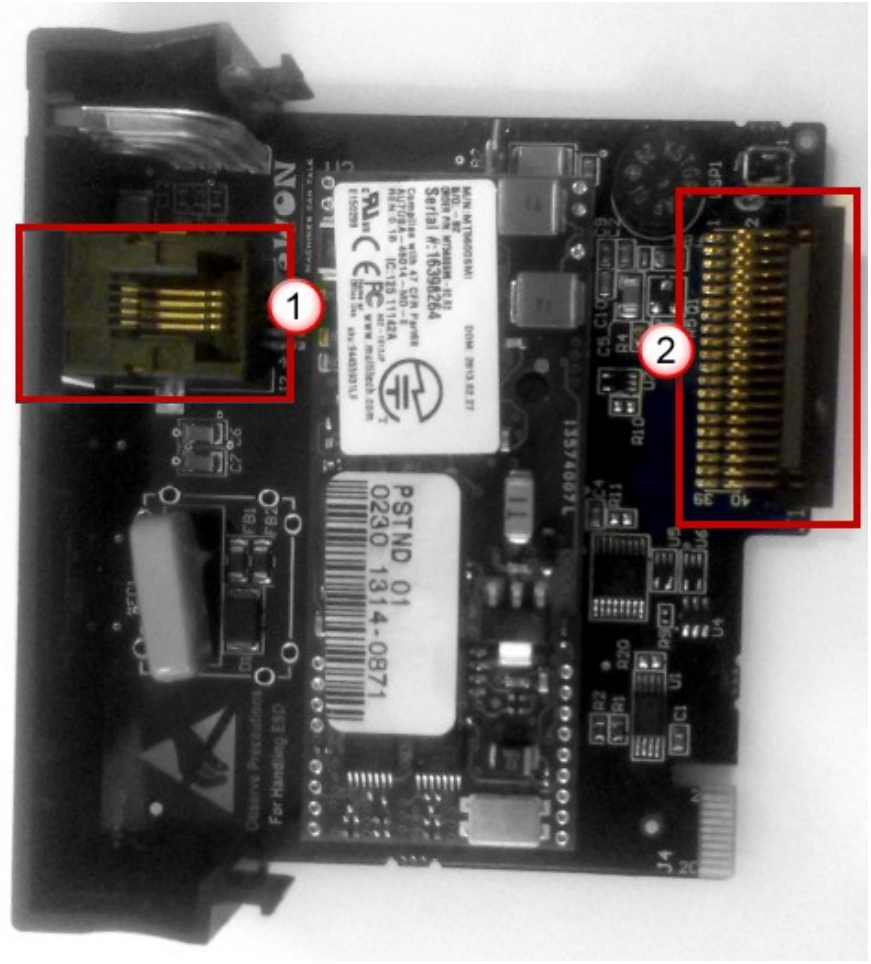
B.5 - FLA3501H - PSTN Extension Card

- Warning -

Be sure to use only Hazloc labeled Extension Cards with the eWON Flexy 201H to assure the compliance with the Class I, Division 2 requirements.

B.5.1 - Hardware Description

B.5.1.1 - Mechanical Layout and Interfaces



1	PSTN cable connector
2	Backplane connector

B.5.2 - Extension Card Label

B.5.2.1 - Label Location and Information Included

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:

PN	**Part Number:** identifies the type of the card.
SN	**Serial Number** Structure of the Serial Number 1111-2233-0001-44 1111 = MTID (product related) 2233 = Year Week 0001 = sequential mfg order 44 = product type
Min. FW.:	Minimum required firmware version of the eWON.
Marks	CE, UL,... certificate number and logos if applicable.

B.5.3 - Part Number Structure for Extension Cards

FLA 3501_00/SH				
FL	FL is the prefix for the extensions of the eWON Flexy family	Only FL (constant)		
A	1 alphabetic sign (CAP) Defines the slots of the base module in which the extension can be inserted. See also § 4.1 Base Unit Slot Compatibility	A	2 first slots only	●●○○
		B	2 last slots only	○○●●
		X	In any slot	●●●●
3501_00	PSTN Extension Card. The suffix _00 is used for software options.			
/SH	2 alphabetic signs	S	Compliance with the UL/IEC/EN 60950 Standard	
		H	Hazardous Location Compliance (C1D2)	

B.5.4 - Front Panel LEDs

Item	Mark	Function	Picture
1	STAT	Green ON = Modem is online	
2	ACT	Blinking when activity on transmission line	
3 4		(Not used)	

B.5.5 - Specifications of the PSTN Extension Card

Item	Value(s)
Protocol	V.92
Data rate	56kbps
Connector	RJ11 / 6p4c

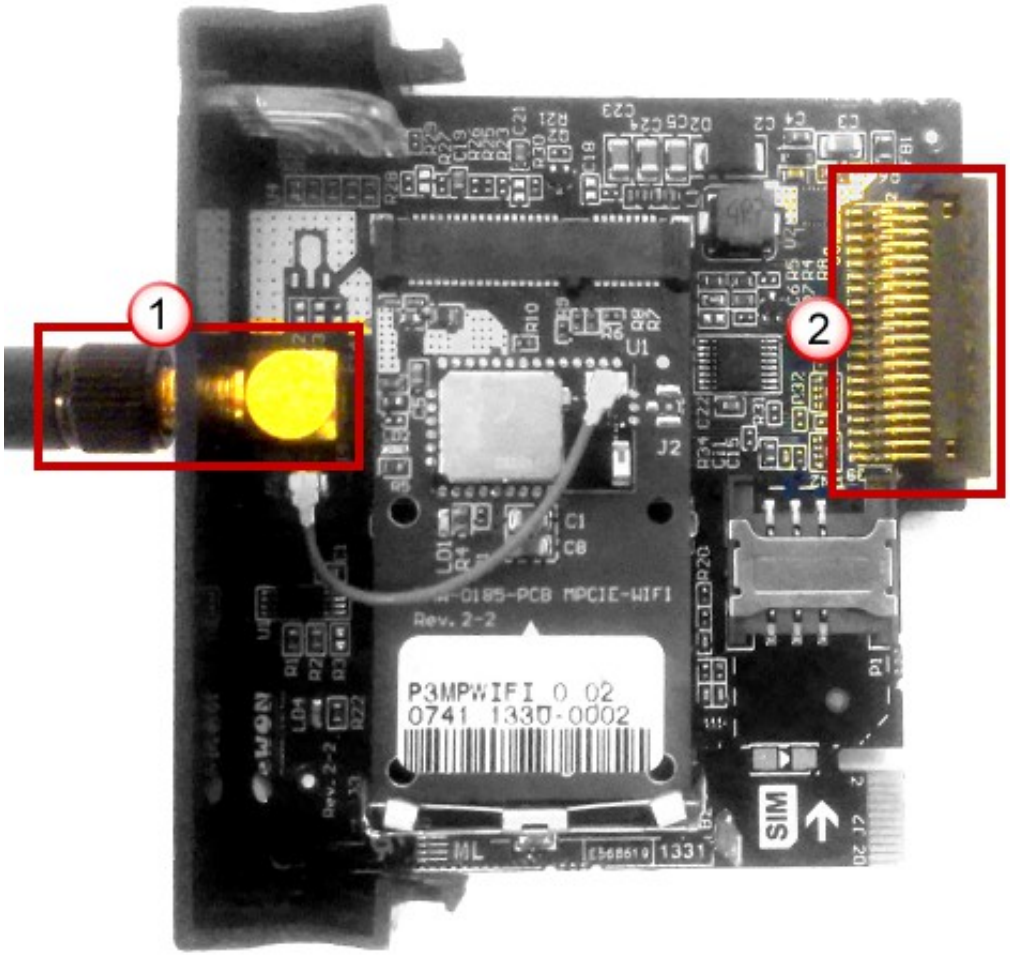
B.6 - FLB 3271H - WiFi Extension Card

- Warning -

Be sure to use only Hazloc labeled Extension Cards with the eWON Flexy 201H to assure the compliance with the Class I, Division 2 requirements.

B.6.1 - Hardware Description

B.6.1.1 - Mechanical Layout and Interfaces



1	SMA-F Male antenna connector
2	Backplane connector

B.6.2 - Extension Card Label

B.6.2.1 - Label Location and Information Included

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:

PN	**Part Number:** identifies the type of the card. Description see below
SN	**Serial Number** Structure of the Serial Number 1111-2233-0001-44 1111 = MTID (product related) 2233 = Year Week 0001 = sequential mfg order 44 = product type
MAC	**MAC Address** of the Wifi Card
MIN. FW.:	Minimum firmware required on the eWON
Marks	CE, UL,... certificate number and logos if applicable.
0682	Notified Body Number warrantor of the CE Mark validation

B.6.2.2 - Part Number Structure for Extension Cards

FLB3271_00/SH				
FL	FL is the prefix for the extensions of the eWON Flexy family	Only FL (constant)		
B	1 alphabetic sign (CAP) Defines the slots of the base module in which the extension can be inserted. See also § 4.1 Base Unit Slot Compatibility	A	2 first slots only	●●○○
		B	2 last slots only	○○●●
		X	In any slot	●●●●
3271_00	Wifi Extension Card. The suffix _00 is used for software options.			
/SH	2 alphabetic signs	S	Compliance with the UL/IEC/EN 60950 Standard	
		H	Hazardous Location Compliance (C1D2)	

B.6.3 - Front Panel LEDs

Item	Mark	Function	Picture
1	STAT	Green ON = Interface is online	
2	▪	Reception Signal level Yellow ON = level > -80 dBm Poor signal	
3	▮	Reception Signal level Yellow ON = level > -70 dBm Signal is OK	
4	▮	Reception Signal level Yellow ON = level >-50 dBm Good signal	

- Note -

If all signal level LED's are off, it might mean either that:

The WiFi interface is not activated in the eWON configuration
There is no signal at all (level 0)
There is a reception error (level XX)

B.6.4 - Specifications of the Wifi Extension Card

Item	Value(s)	
Protocols and Frequencies	IEEE802.11b/g/n, 2.4-2.5GHz	
Antenna Connector	Type SMA-F Male (SMA reverse polarity)	
Antenna (included in the delivery)	**Charact.**	**Value(s)**
	Impedance	50 Ohms
	Max. gain	2.14 dBi
	Input Power	> 17 dBm, IEEE 802.11b > 15 dBm, IEEE 802.11g/n
	Tightening Torque	0.5 Nm. *In the absence of a torque wrench, a soft manual tightening is sufficient.*

This Extension Card complies with the R&TTE directive and the FCC regulations related to the GSM modems.

- Warning -

This device is to be used only in fixed applications. The antenna used for this transmitter has to be installed in a safe 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.

Antennas installed in end use are subject to the installation conditions of NEC 501 and to the inspection by the Authority having jurisdiction.

The antenna must have a directional gain smaller or equal to 2.14dBi. No modifications can be made by the user that can be of influence on the EMC behavior of the device.

Revision

Revision History

Revision Level	Date	Description
1.0	06/03/2015	Initial version
1.1	11/05/2015	Content/label modification
1.2	11/01/2016	Modified DO diagram
1.3	27/07/2016	Update of Legal References
1.4	13/02/2017	Modification: Chapter 3.3.3 SD Card
1.5	30/05/2017	Modification: Chapter 2.6.4: Operating T°

Document build number: 126

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