ENGLISH

Ewon Flexy Extension Card FLA 3301 - 2 Serial Ports extension card - 2 Serial Ports

INSTALLATION GUIDE

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14 rue Edouard Petit
42000 St-Etienne
Tel : +33 477 92 03 56
Email : contact@rg2i.com
www.rg2i.com

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1. Preface

1.1. About This Document

This document describes the hardware of the FLA 3301 - 2 Serial Ports extension card extension card which belongs to the Ewon Flexy family.

The Ewon Flexy family is a range of modular industrial gateways/routers. 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	2013-05-07	Pre-release version
1.1	2013-11-21	Official product release version
1.2	2015-11-17	New template
1.3	2018-03-18	New template and Flexy 205 release
1.4	2019-09-03	Changed: Safety, Environmental & Regulatory Information (page 3) Changed: Environmental Conditions (page 5)
1.5	2023-05-10	Changed: Certifications
1.6	2024-03-05	Changed: Part Number Structure chapter Added: Hazardous Locations - Class 1 Division 2 chapter

1.3. Related Document

Document	Author	Document ID
Ewon Flexy - Base Units	HMS Networks	IG-0014-00
Ewon Flexy 205	HMS Networks	IG-0028-00
FAC91201_0000 - 4G Bracket Antenna	HMS Networks	SSH-0300-00

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 FLA 3301 - 2 Serial Ports 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 Plug the FLA 3301 - 2 Serial Ports extension card into the Base Unit (page 10) chapter.

The Ewon Flexy Extension Cards have their own Installation Guide which can be found on www.ewon.biz/support.

For additional related documentation and file downloads for the Ewon® Flexy extension card FLA 3301 - 2 Serial Ports , please visit www.ewon.biz/support.

3. Safety, Environmental & Regulatory Information

3.1. Scope

The present heading addresses Safety, Environmental & Regulatory Information about the FLA 3301 - 2 Serial Ports 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

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

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

3.3. Applicable Directives, Standards and Compliances

The FLA 3301 - 2 Serial Ports 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 FLA 3301 - 2 Serial Ports 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 FLA 3301 - 2 Serial Ports extension card is in conformity with the required safety standards.

These safety documentation can be downloaded on the Certifications section of our Ewon Support website.

3.3.3. FCC Compliance

The FLA 3301 - 2 Serial Ports extension card complies with Part 15 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 FLA 3301 - 2 Serial Ports extension card has been certified by authorized bodies: These certificates can be downloaded as PDF files on the Certifications section of Ewon Support website.

3.4. Hazardous Locations - Class 1 Division 2

This chapter concerns the FLA3301_00H device.

"**H**" stands for **HazLoc** (*Hazardous Locations* as opposed to *OrdLoc - Ordinary Location*) and refers to **Class 1 Division 2** area.

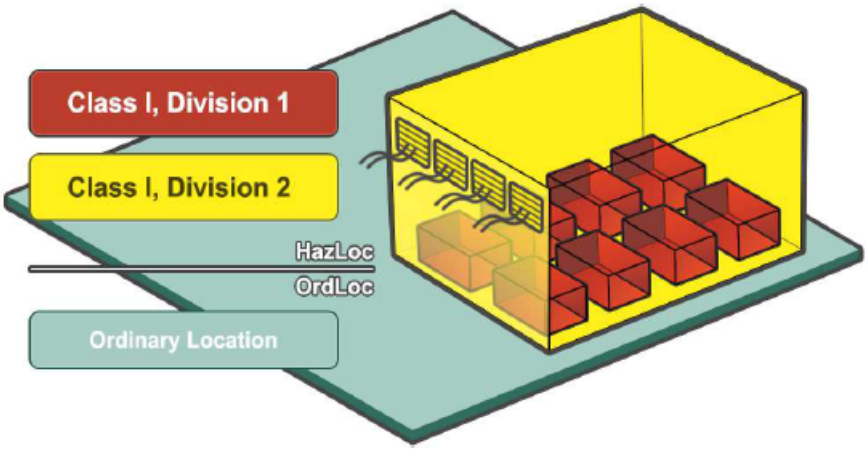
The FLA3301_00H has the same features as the FLA 3301 - 2 Serial Ports extension card (*FLA3301_00*) except it received official certification to be placed and used in a Class 1 Division 2 area.

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D OR non-hazardous locations only.

WARNING
EXPLOSION HAZARD: Do not disconnect while the circuit is live or unless the area is free of ignitable concentrations.

To ensure a proper ventilation of the equipment, a free gap of at least 2 cm must be respected in front of all upper and lower ventilation openings of the unit. A free gap of at least 1 cm must be respected on each side of the unit.

- Where can you place and use the FLA3301_00H?
  The FLA3301_00H may be used in the yellow area: Class 1, Division 2.



The standard FLA 3301 - 2 Serial Ports extension card, can only be placed and used in the green area: OrdLoc.

WARNING
None of the FLA 3301 - 2 Serial Ports extension card variant can be placed in the red zone: Class 1, Division 1!

3.5. Environmental Conditions

Characteristic	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. Hardware Description

4.1. Mechanical Layout and Interfaces

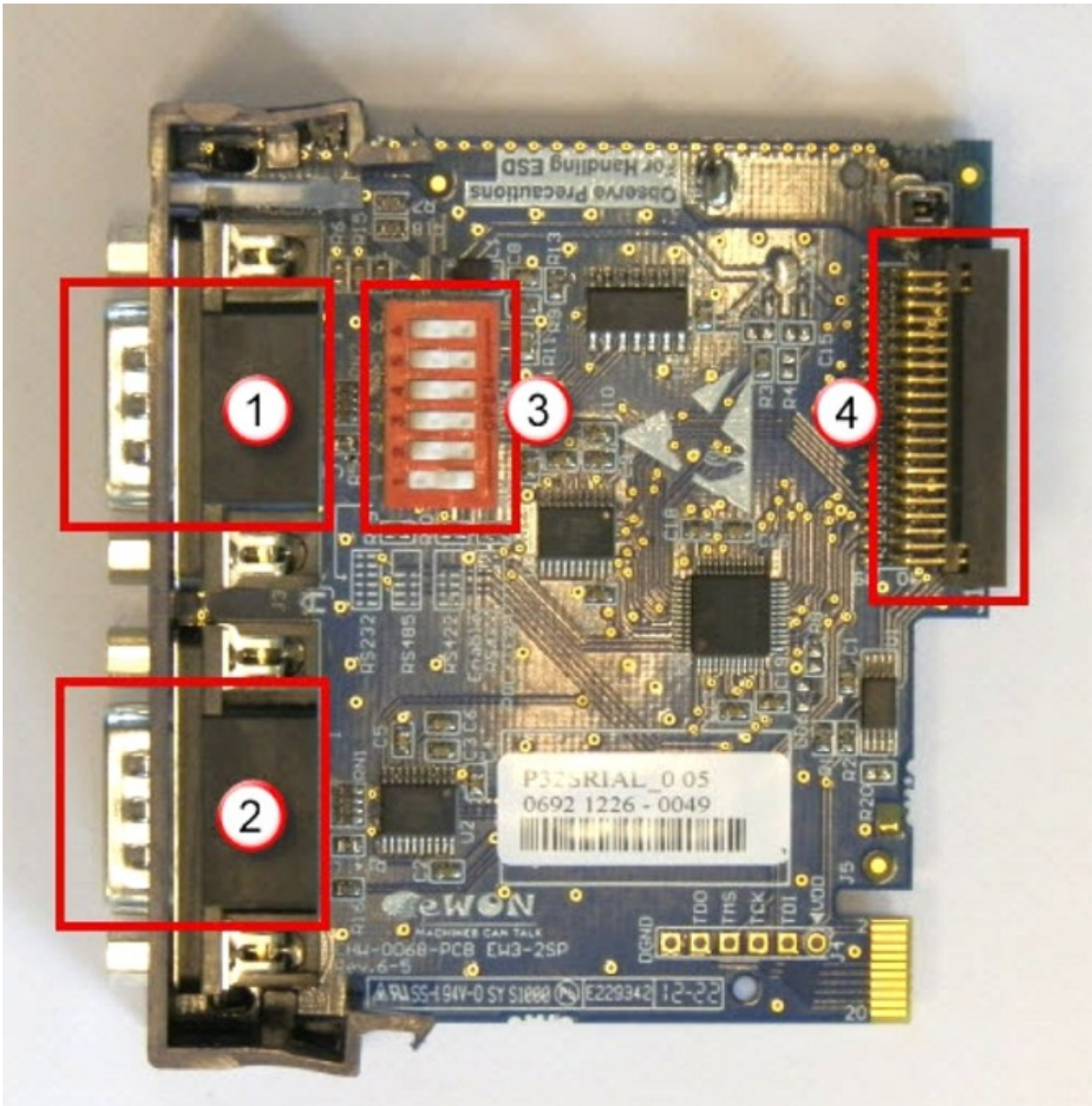


Figure 1. Mechanical layout and interfaces

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.

4.2. Label

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-SSSSPP - MMMM : MTID (product related) - YYWW : Year and week - SSSS : Sequential manufacturing order - PP : Product type
MIN. FW	Minimum firmware version required in the Ewon device
Marks	CE, UL... certification number and logos if applicable

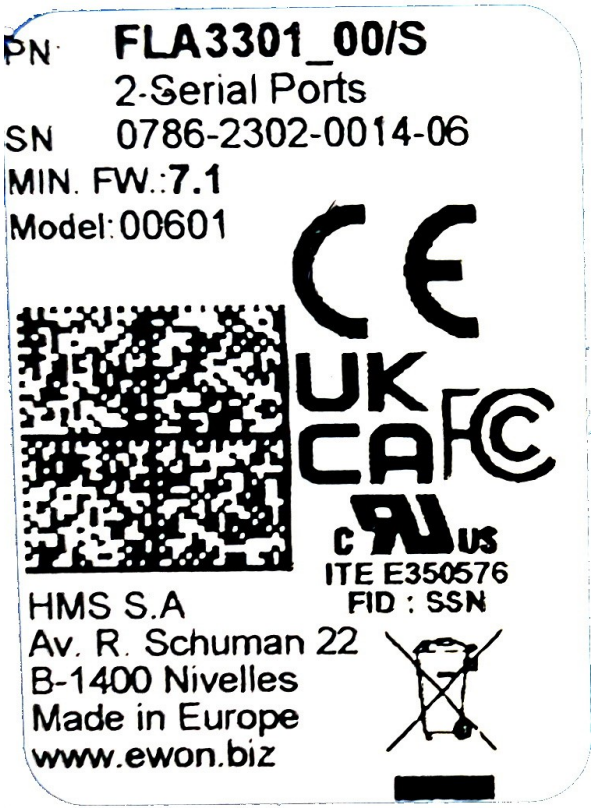


Figure 2. FLA 3301 - 2 Serial Ports extension card label

4.3. Part Number Structure for Extension Cards

FLYXXXX_00 [Suffix]				
FL	FL is the prefix for the extensions of the Ewon Flexy family	Only FL (constant)		
Y	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	Any slots	●●●●
		C	Any slots. Available for Flexy 205 only.	○○○○
XXXX_00	The extension card type. The suffix _00 is used for software options.			
[Suffix]= /S	The suffix indicates compliance with the UL/IEC/EN 62368-1 standard.			
[Suffix]= H	The suffix indicates compliance with the UL 121201, 9th Ed., and CSA C22.2 NO. 213-17, 3rd Ed., for usage in Hazardous Locations, Class 1, division 2.			

4.4. Front Panel LEDs

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

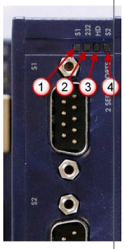
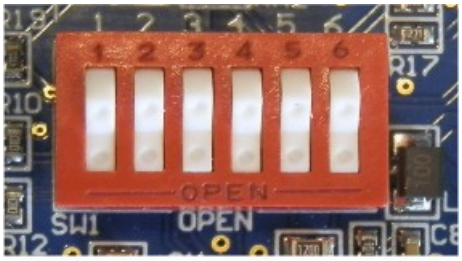
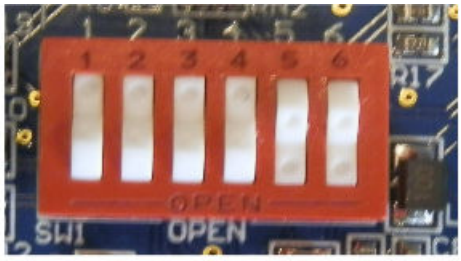
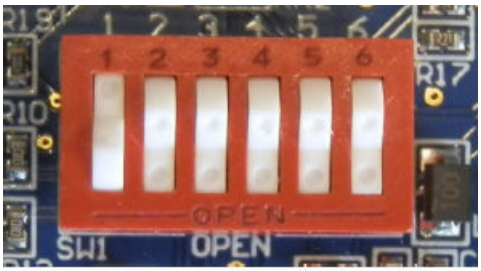
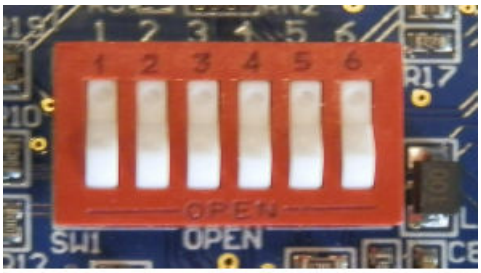
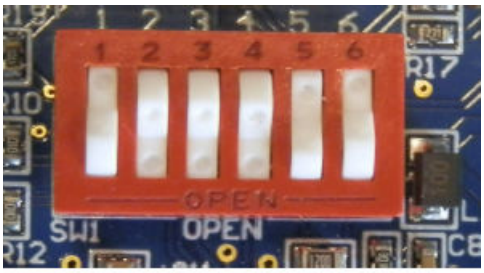


Figure 3. Front panel LEDs

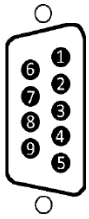
4.5. Dip Switch Configuration of Port S1

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) Activated: Switches 5 & 6 BOTH CLOSED (pressed in on numbers side) Termination values, see Serial Port Specifications, p. 10	 RS485 with terminations

Termination values, see Serial Port Specifications (page 10) chapter.	 RS422 with terminations

4.6. Serial Port Specifications

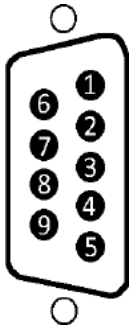
Port S1 is configurable by dip switch in 3 different physical modes *RS232*, *RS422* and *RS485*, see Dip Switch Configuration of Port S1 (page 9) chapter.

Characteristic	Value				
Physical modes	Port S1= RS232/422/485				
Polarization	300 Ω on 3.3V (if polarization & termination are activated)				
Termination	120 Ω (if polarization & termination are activated)				
SUBD9 connector pinout	**in #**	**RS232**	**RS485**	**RS422**	
	1	-	-	-	
	2	RXD	-	RX+	
	3	TXD	A+	TX+	
	4	-	-	-	
	5	GND	GND	GND	
	6	-	-	-	
	7	RTS	-	Rx-	
	8	CTS	B-	Tx-	
	9	-	-	-	

4.6.1. Port S1 Configuration

4.6.2. RS232 Port S2

Port S2 is RS232 only.

Characteristic	Value		
Physical modes	RS232		
SUBD9 connector pinout	**Pin #**	**RS232**	
	1	-	
	2	RXD	
	3	TXD	
	4	-	
	5	GND	
	6	-	
	7	RTS	
	8	CTS	
	9	-	

4.7. Plug the FLA 3301 - 2 Serial Ports extension card into the Base Unit

4.7.1. Base Unit Slot Compatibility

The FLA 3301 - 2 Serial Ports extension card must be inserted in one of the “A” slots of the base unit.

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

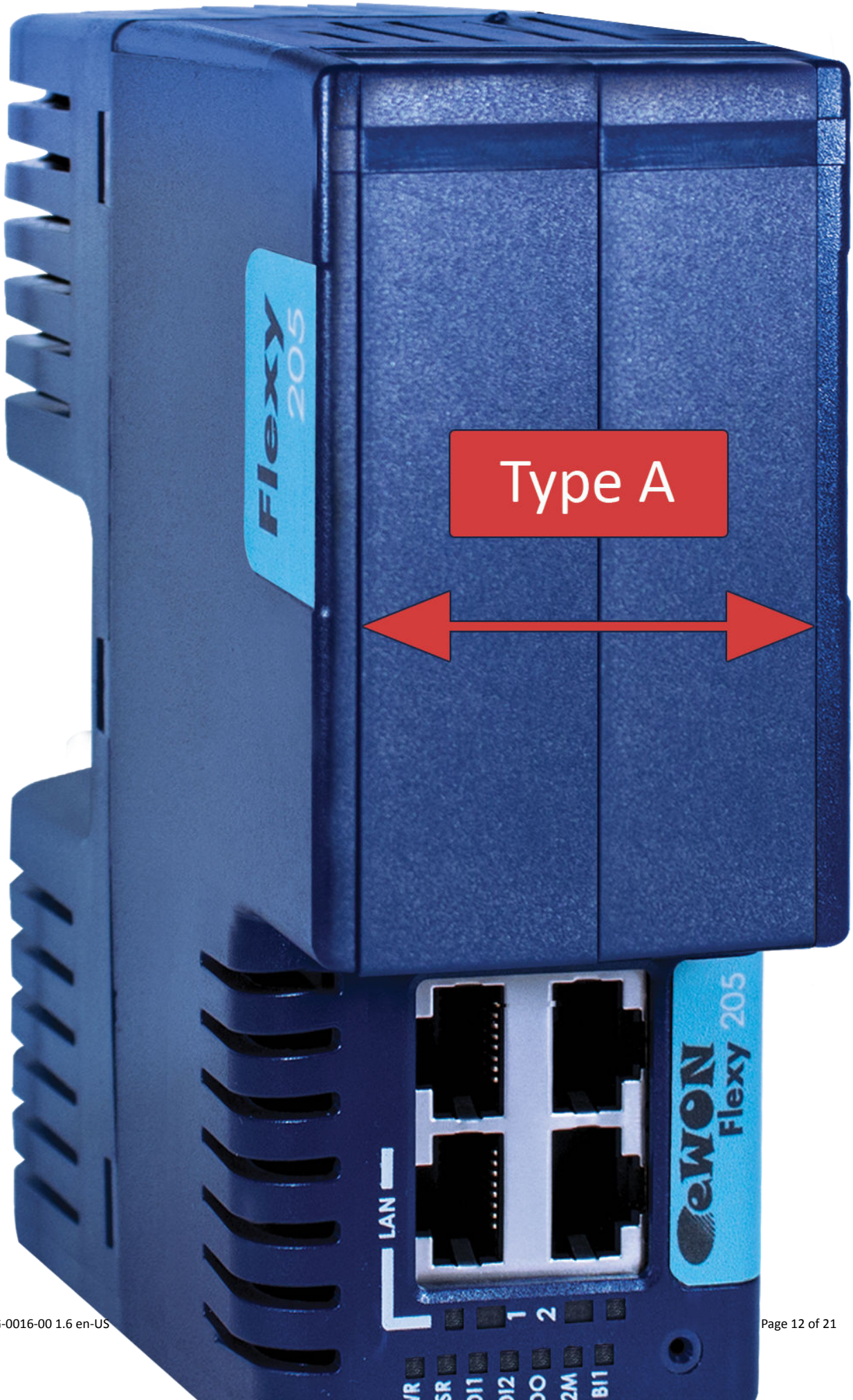
- FL**A** xxxx: designate cards that fit into “**A**” slots.

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
●●○○	A	Any slot	2 first slots only

Ewon Flexy 205:

As the Flexy 205 has room for 2 slots, the type slot compatibility rule doesn’t apply. The FLA 3301 - 2 Serial Ports extension card can be inserted in both slots.


Type A
Flexy 205
LAN
1
2
eWON Flexy 205

Ewon Flexy 10x & 20x:

The FLA 3301 - 2 Serial Ports extension card must be inserted in the “A” slots which are the two slots on the far left of the Flexy 10x & 20x.

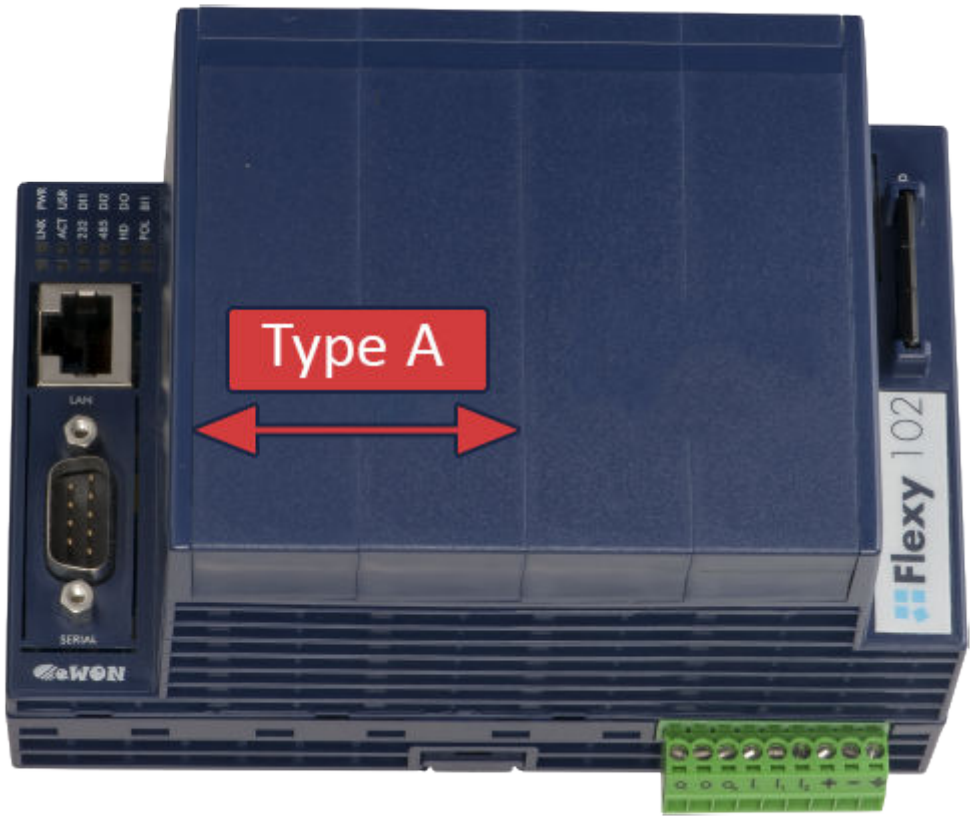


Figure 5. Position of the “A” Slots on a Flexy 10x & 20x.

WARNING
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.

4.7.2. 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.

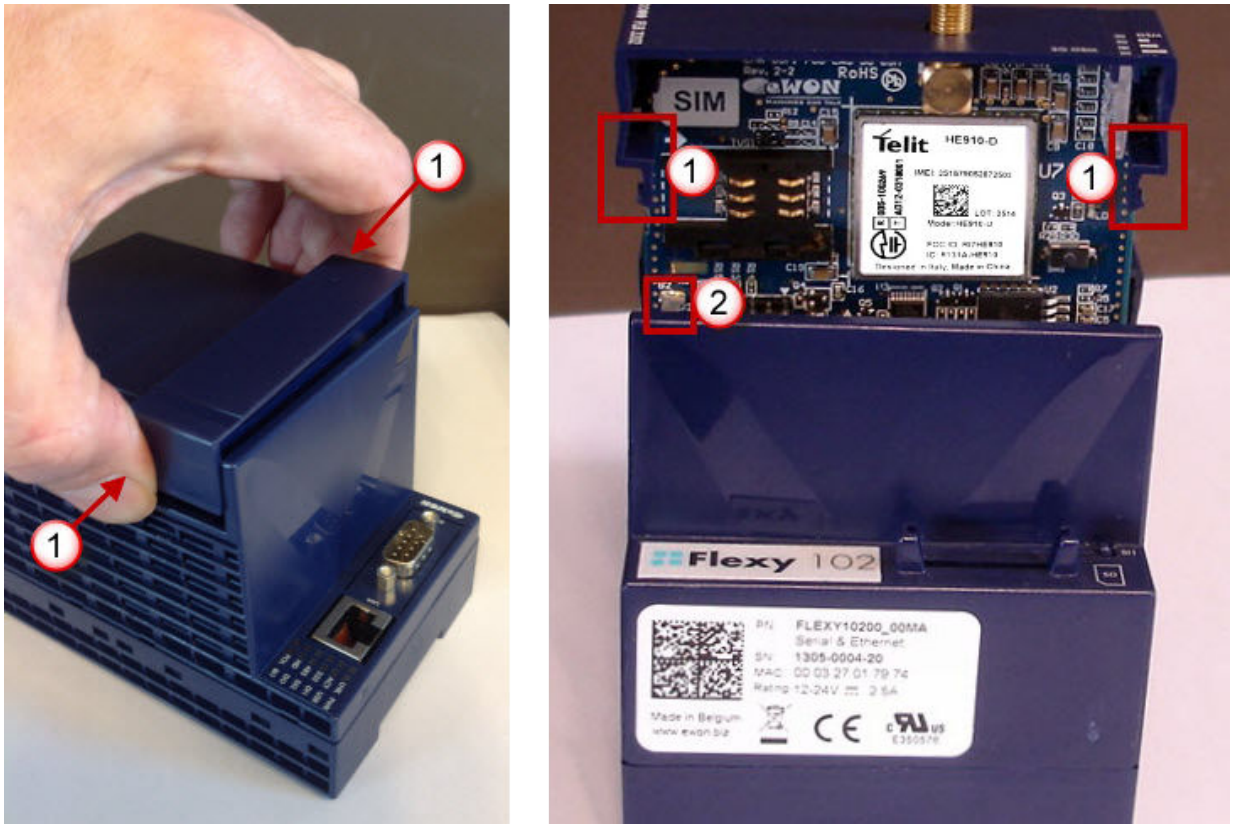


Figure 6. Remove the slot fillers

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). 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.

CAUTION
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.

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).

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).

4.7.3. Insertion of Multiple FLA 3301 - 2 Serial Ports extension card

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 **2** FLA 3301 - 2 Serial Ports extension card.

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

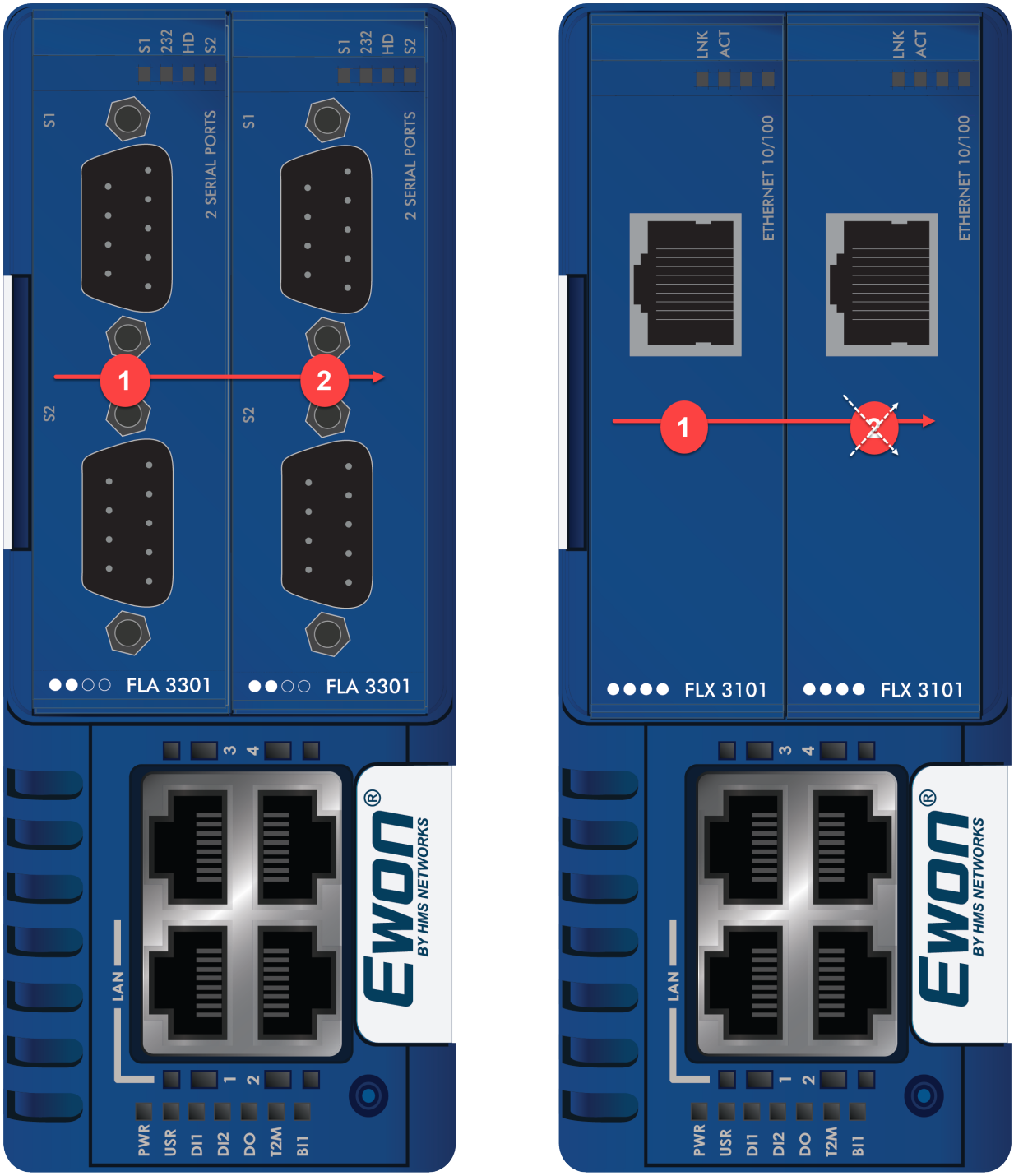


Figure 7. Order of the Extension Cards

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.

4.8. Firmware Port Naming Convention

Depending on the Base Unit and applying the left to right detection order of the extension cards, following port naming (COM1, COM2, ...) will be applied inside the Ewon firmware.

A. **Base Units:** Ethernet Switch and MPI & Ethernet (Flexy 101, Flexy 201, Flexy 103, Flexy 203)

Front Panel Marking	First 2 Serial Ports Extension card	Second 2 Serial Ports Extension card
S1	COM 1	COM 3
S2	COM 2	COM 4

B. **Base Units:** Serial & Ethernet (Flexy 102, Flexy 202)

Front Panel Marking	Base Unit serial port	First 2 Serial Ports Extension card	Second 2 Serial Ports Extension card
Serial	COM1	NA	NA
S1	NA	COM 2	COM 4
S2	NA	COM 3	COM 5

5. Power Requirements

NOTICE
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 (page 1) 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 FLA 3301 - 2 Serial Ports extension card is **1**

The Installation Guide of the Ewon Flexy - Base Units (page 1) also includes examples of practical power balance calculations.

6. 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** flashing green slowly
- Extension Card **232** ON (Green if S1 is configured in RS232, OFF in all other cases)

CAUTION
If the **USR LED** of the device is flashing **RED**, it might be because of the improperly inserted extension (*for example*: in a wrong slot).

7. Card Detection on Embedded Web Page

The Ewon Flexy Extension Card requires no software configuration. It is automatically detected by the Base Unit when it boots.

7.1. Connecting to the Embedded Web Server

Configure the network parameters of your configuration PC to encompass the IP range of the Ewon LAN.

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**: adm
- **Password**: adm

WARNING
For security reasons, changing the default adm password is absolutely required.

To change the adm password:

- From the menu bar, click on **Configuration**.
- Select **Users Setup** and double click on the **adm** entry to edit its parameters.
- Enter the new password **twice** and click **Save**.

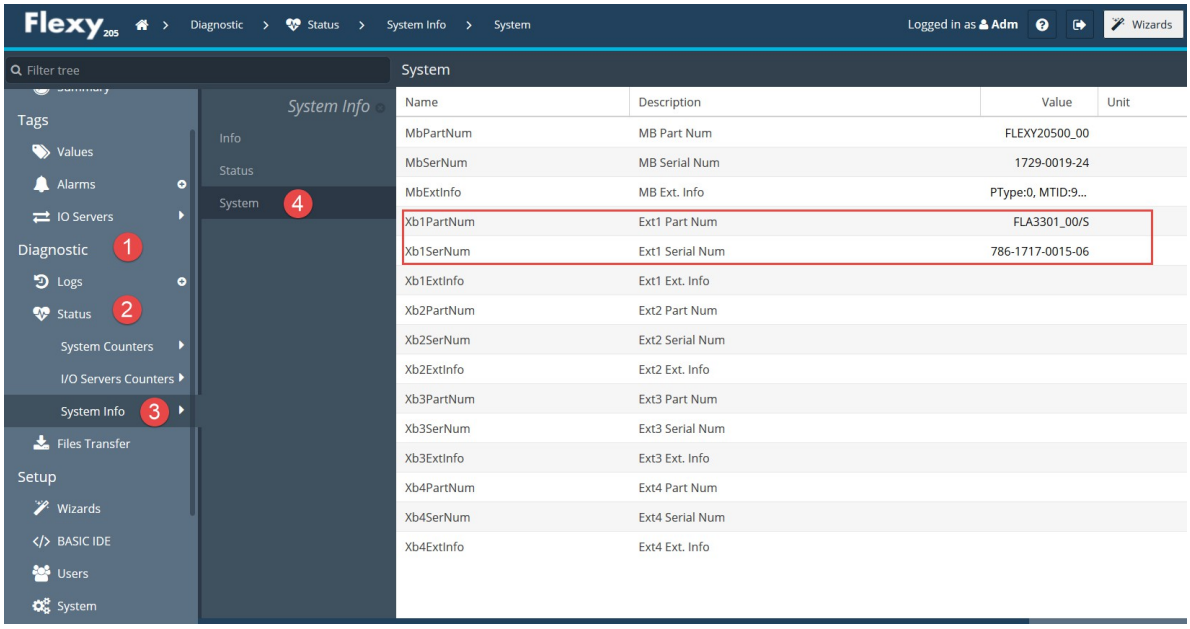
7.2. Detected Cards Displayed in the System Page

The detected card appears in the Ewon **System** hardware configuration page like shown below. The path to the **System** hardware configuration page showing the cards detected by the Base

Unit is:

1. **Diagnostic (1) > S >**
2. **Status (2)**
3. **System Info (3)**
4. **System (4)**

The image below shows an example of an FLA 3301 - 2 Serial Ports extension card that has been detected in slot 1:



RG2i Spécialiste IoT & M2M
14 rue Edouard Petit
42000 St-Etienne
Tel : +33 477 92 03 56
Email : contact@rg2i.com
www.rg2i.com