Ewon®
BY HMS NETWORKS

FLA 3301 - Serial Ports Extension Card

HMS Connecting Devices™

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Table of Contents

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1   Preface

1.1   About this Document

This document describes the hardware of the FLA 3301 - Serial Ports Extension Card which belongs to the Ewon Flexy family

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

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

1.2   Document History

Version	Date	Description
1.0	2013-05-07	Preliminary 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, p. 5* Changed: *Ewon Flexy Extension Cards Environmental Conditions, p. 10*

1.3   Related Documents

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

1.4   Trademark Information

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2 Product Summary

The present Installation Guide is focusing on the FLA 3301 - 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 into the Base Unit, p. 11*

3 Safety, Environmental & Regulatory Information

3.1 Scope

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

> **!** 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

TheFLA 3301 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 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 is in conformity with the following safety standards:

- IEC / EN 60950-1
- UL 60950-1
- CSA-C22.2 No 60950-1-07
- EN/IEC 62368-1
- UL 62368-1
- CAN 62368-1

3.3.3 FCC Compliance

The FLA 3301 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 has been certified by authorized bodies:

- UL Certificate of Compliance (COC) # 20190529_E350576

- CB certificate # DK-84039-UL

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

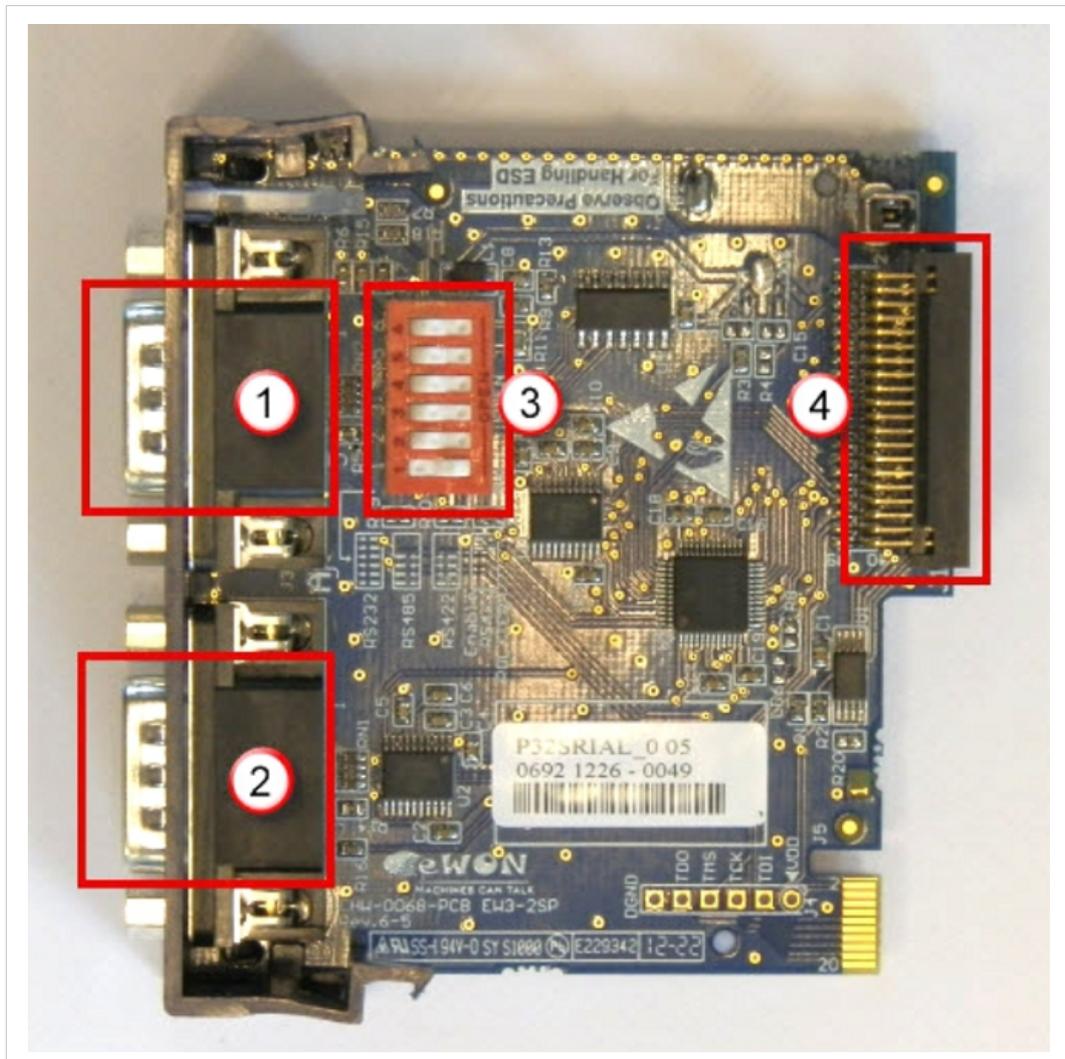# 4 Hardware Description

4.1 Mechanical Layout and Interfaces

Fig. 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 Extension Card Label

4.2.1 Label Location and Included Information

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

The different parts of the label are described below:

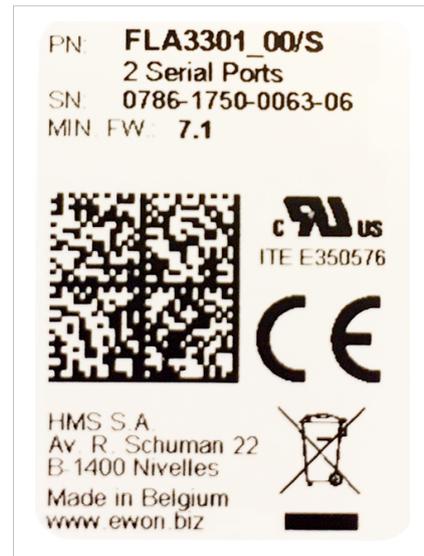| Label	Description
PN	Part Number (see syntax table below)
SN	Serial Number in the form: **MMMM-YYWW-SSSS-PP** • MMMM : MTID (product related) • YYWW : Year and week • SSSS : Sequential manufacturing order • PP : Product type
MIN. FW	Minimum firmware version required in the Ewon device
Marks	CE, UL...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

Fig. 2   FLA 3301 label

4.2.2   Part Number Structure for Extension Cards

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

4.3   Dip Switch Configuration of Port S1
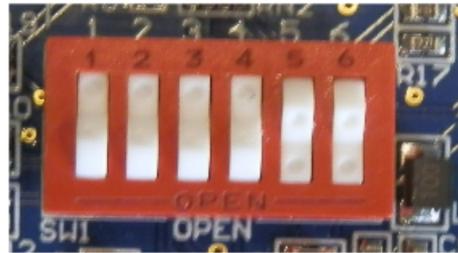
RS232 (ex-factory)
All six switches OPEN (pressed in on OPEN side, raised out on numbers side)
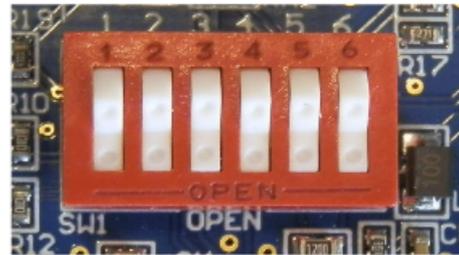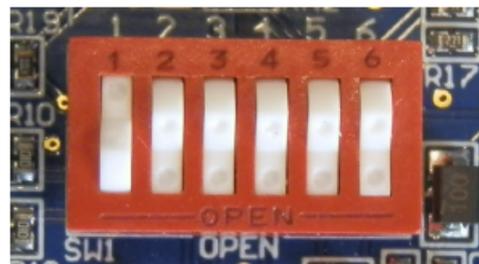

RS232

RS485
Switches 1 to 4 CLOSED (pressed in on numbers side, raised out on OPEN side) Remaining 2 switches see terminations (below)

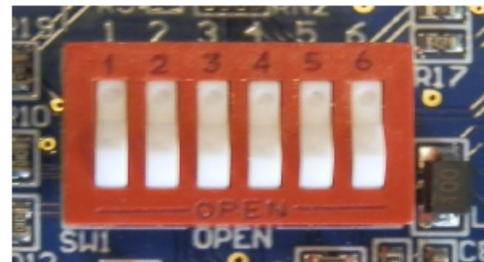

RS485 without terminations

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)
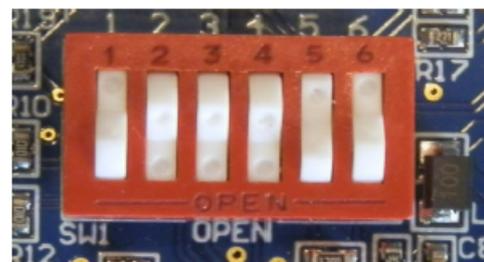

RS422 without terminations

Terminations (RS485/422)
Activated: Switches 5 & 6 BOTH CLOSED (pressed in on numbers side)

RS485 with terminations

Termination values, see *Serial Port Specifications, p. 10*

RS422 with terminations

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

Fig. 3   Front panel LEDs

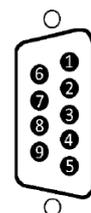## 4.5   Ewon Flexy Extension Cards Environmental Conditions

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

4.6   Serial Port Specifications

4.6.1   Configurable Port S1

Port S1 is configurable by dip switch in 3 different physical modes RS232, RS422 and RS485, see

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	-	-	-

4.6.2   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	-	
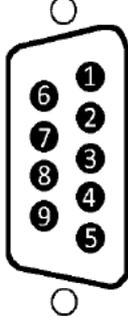
4.7   Plug the FLA 3301 into the Base Unit

4.7.1   Base Unit Slot Compatibility

The FLA 3301 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 can be inserted in both slots.

Fig. 4   Position of the "A" Slots on a Flexy 205.

Ewon Flexy 10x & 20x

The FLA 3301 must be inserted in the "A" slots which are the two slots on the far left of the Flexy 10x & 20x.

Fig. 5   **Position of the "A" Slots on a Flexy 10x & 20x.**

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

4.7.2   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.
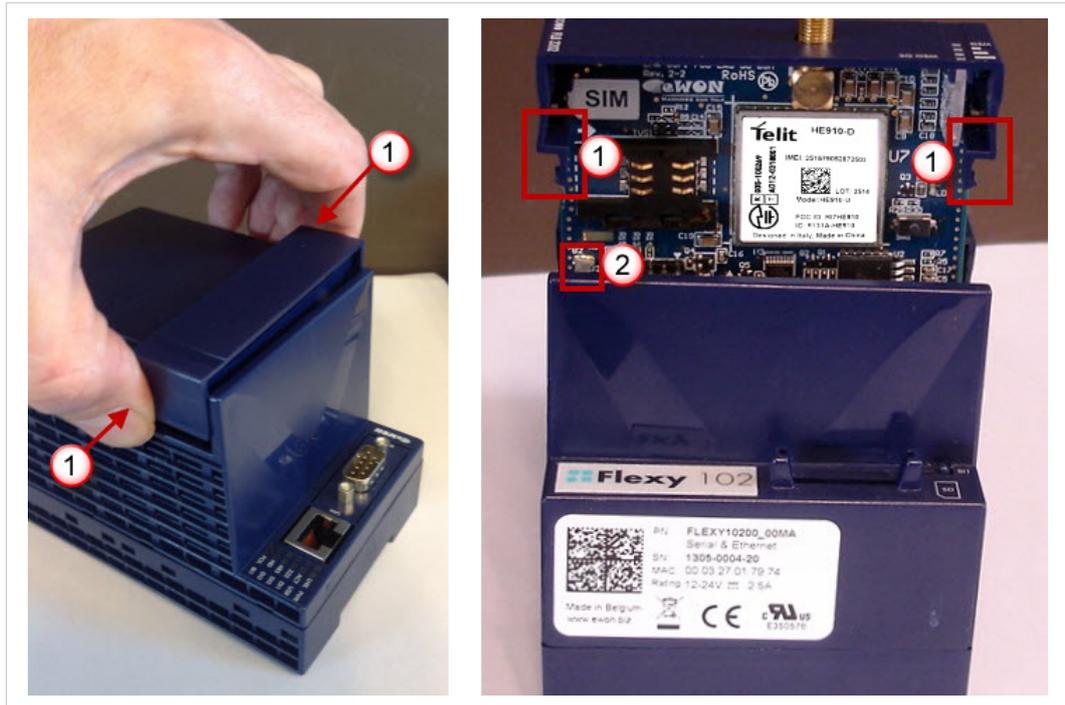
Fig. 6   Remove the slot fillers

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

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

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

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

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

4.7.3   Insertion of Multiple FLA 3301

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.

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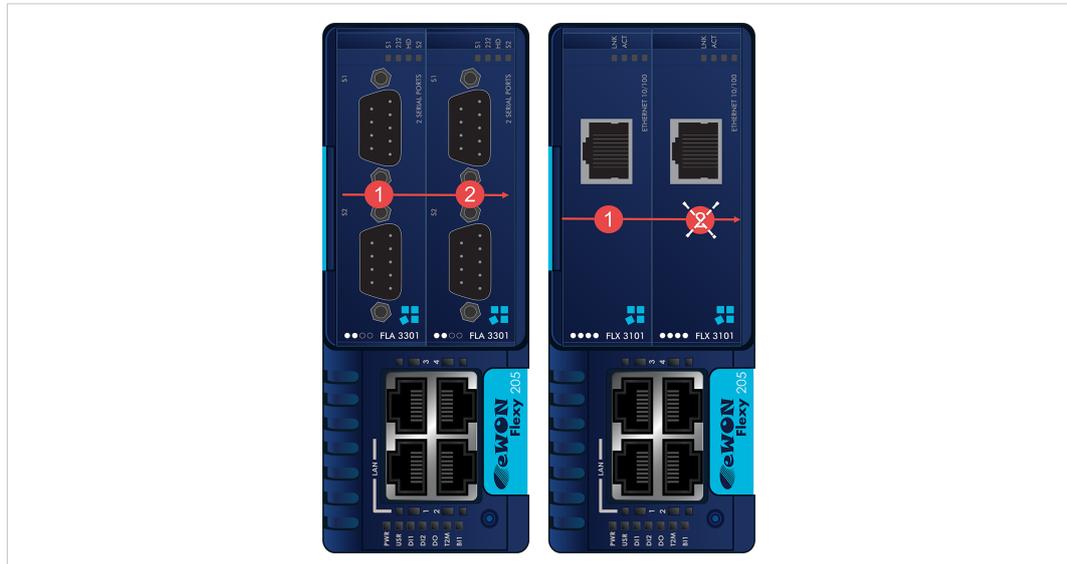

Fig. 7   Order of the Extension Cards

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

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

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

4.8   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

> ❗ The "Power Requirements" concept doesn't apply to Flexy 205 and its inserted extension cards.

The internal power converter of the Flexy base units has been dimensioned to cover a broad range of different combinations of extension cards. Users should make sure the total power demand of the extension cards does not exceed the capabilities of the base unit. That is why the notion of "Energy Points" has been introduced.

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

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

The Energy Demand Points of the FLA 3301 is **1**

The Installation Guide of the "eWON Flexy - Base Units" 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)

> ❗ Would the USR LED of the Base Unit be flashing RED, it might be because the Extension Card was improperly inserted (for example in a wrong slot).

7 Check Card Detection on the 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, 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: **Diagnostic (1) > Status (2) > System Info (3) > System (4).** The screen capture below gives an example of an FLA 3301 extension card that has been detected in slot 1.

Name	Description	Value	Unit
MbPartNum	MB Part Num	FLEXY20500_00	
MbSerNum	MB Serial Num	1729-0019-24	
MbExtInfo	MB Ext. Info	PType:0, MTID:9...	
Xb1PartNum	Ext1 Part Num	FLA3301_00/S	
Xb1SerNum	Ext1 Serial Num	786-1717-0015-06	
Xb1ExtInfo	Ext1 Ext. Info		
Xb2PartNum	Ext2 Part Num		
Xb2SerNum	Ext2 Serial Num		
Xb2ExtInfo	Ext2 Ext. Info		
Xb3PartNum	Ext3 Part Num		
Xb3SerNum	Ext3 Serial Num		
Xb3ExtInfo	Ext3 Ext. Info		
Xb4PartNum	Ext4 Part Num		
Xb4SerNum	Ext4 Serial Num		
Xb4ExtInfo	Ext4 Ext. Info		