eWON Flexy 2 Serial Ports Ext. Card FLA 3301

This Installation Guide explains how to install the eWON Flexy 2 Serial Ports Extension Card FLA 3301.
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1. Product Summary

The present Installation Guide describes the hardware of the 2 Serial Ports Extension Card FLA 3301 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 of Extension Cards and Base Units. The present Installation Guide is focusing on an extension card which, as such, needs to be inserted in one of the Base Units in order to work. The Base Units have their individual installation Guide IG-014-0-EN “eWON Flexy - Base Units”. The present guide addresses shortly how the Extension Cards integrate the Base Units and we give some recommendations to mount them (see §3.7 Plugging the Extension Card into the Base Unit).
Chapter 2
Safety, Environmental & Regulatory Information

2. Safety, Environmental & Regulatory Information

2.1. Scope
The present heading addresses Safety, Environmental & Regulatory Information for the 2 Serial Ports Extension Card FLA 3301. This Extension Card is basically belonging to the same compliance frame than the Base Units.

2.2. ESD Damage Prevention

- Caution -

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

The Extension Card described in the present Installation Guide is a module exposing both sides of an electronic printed circuit board. Therefore, it is packed in antistatic ESD bags. In order to avoid ESD damage, the product must be handled with the necessary precaution including:

- Grounded ESD protective work surface
- Personnel grounding

2.3. Applicable Directives, Standards and Compliance
The Extension Card described in the present Installation Guide 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.

2.3.1. Applicable European Directives
The Extension Card described in the present Installation Guide is 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 RE-D articles: RF spectrum efficiency, Art 3(2); EMC, Art. 3(1)(b); Safety, Art. 3(1)(a)
2.3.2. Applicable Safety Standards

The Extension Card described in the present Installation Guide is in conformity with the following safety standards:

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

2.4. FCC Compliance

The Base Units described in the present Installation Guide 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.

2.4.1. Certifications

The Extension Card described in the present Installation Guide has been 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://ewon.biz/support/docs/flexy
3. Hardware Description

3.1. 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
### 3.2. Extension Card Label

#### 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:

<table>
<thead>
<tr>
<th>PN</th>
<th>Part Number: identifies the type of the card. Description see <a href="#">3.2.2 Part Number Syntax for Extension Cards</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>Serial Number: Structure of the Serial Number 1111-2233-0001-44</td>
</tr>
<tr>
<td></td>
<td>1111 = MTID (product related) 2233 = Year Week 0001 = sequential mfg order 44 = product type</td>
</tr>
<tr>
<td>Marks</td>
<td>CE, UL,... certificate number and logos if applicable.</td>
</tr>
</tbody>
</table>
3.2.2. Part Number Syntax for Extension Cards

<table>
<thead>
<tr>
<th>FLA 3301_00</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Position(s)</strong></td>
</tr>
<tr>
<td>FL</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>3301_00</td>
</tr>
</tbody>
</table>

3.3. Dip Switch Configuration of Port S1

- **RS232 (ex-factory)**
  - All six switches OPEN
    - (pressed in on OPEN side, raised out on numbers side)

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

- **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)
### Terminations (RS485/422)

activated:
switches 5 & 6 BOTH CLOSED
(pressed in on numbers side)

Termination values,
see § 3.6 Serial Port Specifications

### 3.4. Front Panel LEDs

<table>
<thead>
<tr>
<th>Item</th>
<th>Mark</th>
<th>Function</th>
<th>Picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>S1</td>
<td>GREEN flashing Rx/Tx activity on port S1</td>
<td><img src="image" alt="S1 LED" /></td>
</tr>
</tbody>
</table>
| 2    | 232  | GREEN steady if S1 is configured in RS232  
OFF in all other cases | ![232 LED](image) |
| 3    | HD   | GREEN steady if S1 is configured in Half Duplex (RS485)  
OFF in all other cases | ![HD LED](image) |
| 4    | S2   | GREEN Flashing Rx/Tx activity on port S2 | ![S2 LED](image) |
## 3.5. eWON Flexy Extension Cards Environmental Conditions

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>-25 to +70 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40 to +70 °C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>10 to 95% non-condensing</td>
</tr>
<tr>
<td>Operating altitude</td>
<td>Up to maximum 2000m</td>
</tr>
<tr>
<td>Storage altitude</td>
<td>Up to maximum 3000m</td>
</tr>
</tbody>
</table>

## 3.6. Serial Port Specifications

### 3.6.1. Configurable Port S1

Port S1 is configurable by dip switch in 3 different physical modes RS232, RS422 and RS485, see § 3.3 Dip Switch Configuration of Port S1.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical modes</td>
<td>Port S1= RS232/422/485</td>
</tr>
<tr>
<td>Polarization</td>
<td>300 Ω on 3.3V (if polarization &amp; termination are activated)</td>
</tr>
<tr>
<td>Termination</td>
<td>120 Ω (if polarization &amp; termination are activated)</td>
</tr>
</tbody>
</table>

**SUBD9 connector pinout**

<table>
<thead>
<tr>
<th>in #</th>
<th>RS232</th>
<th>RS485</th>
<th>RS422</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>RXD</td>
<td>-</td>
<td>Rx+</td>
</tr>
<tr>
<td>3</td>
<td>TXD</td>
<td>A+</td>
<td>Tx+</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>GND</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>RTS</td>
<td>-</td>
<td>Rx-</td>
</tr>
<tr>
<td>8</td>
<td>CTS</td>
<td>B-</td>
<td>Tx-</td>
</tr>
<tr>
<td>9</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
3.6.2. RS232 Port S2

Port S2 is RS232 only.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical modes</td>
<td>RS232</td>
</tr>
</tbody>
</table>

**SUBD9 connector pinout**

<table>
<thead>
<tr>
<th>Pin #</th>
<th>RS232</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RXD</td>
</tr>
<tr>
<td>2</td>
<td>TXD</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>RTS</td>
</tr>
<tr>
<td>7</td>
<td>CTS</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

3.7. Plugging the Extension Card into the Base Unit

3.7.1. Base Unit Slot Compatibility

The **2 Serial Ports Extension Card** (FLA 3301) must be inserted inside one of the **2 “A” slots of the Base Unit**.

**Explanation:**

The Flexy Base Units feature two type of slots. The A slots are the two first slots starting from the left. The B slots are the two last slots. Some cards fit in A and B slots. Some not. Cards that fit only one type of slot have a mechanical mistake-proof security.
The reference code of the Extension Cards includes a letter that defines their compatibility either with “A” slots, “B” slots or both:

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

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

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

### 3.7.2. Extension Card Insertion

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 out-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 hooks are *clicking*. 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 insert the card in a wrong slot. In such case, check slot compatibility of the relevant Extension Card.

- Note -

Would an extension card be inadvertently forced in a wrong slot, the Base Unit will detect it 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).

### 3.7.3. Multiple Serial Extension Cards

The eWON Flexy firmware supports up to 2 extension Cards of type FLA 3301.

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

**eWON 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)

<table>
<thead>
<tr>
<th>Front Panel Marking</th>
<th>First 2 Serial Ports Extension Card</th>
<th>Second 2 Serial Ports Extension Card</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>COM 1</td>
<td>COM 3</td>
</tr>
<tr>
<td>S2</td>
<td>COM 2</td>
<td>COM 4</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Front Panel Marking</th>
<th>Base Unit serial port</th>
<th>First 2 Serial Ports Extension Card</th>
<th>Second 2 Serial Ports Extension Card</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial</td>
<td>COM1</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>S1</td>
<td>NA</td>
<td>COM 2</td>
<td>COM 4</td>
</tr>
<tr>
<td>S2</td>
<td>NA</td>
<td>COM 3</td>
<td>COM 5</td>
</tr>
</tbody>
</table>
3.7.4. Power Requirements

The internal power converter of the eWON 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 IG-014-0-EN “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.

<table>
<thead>
<tr>
<th>Serial Extension Card FLA 3301</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Demand Points</td>
</tr>
</tbody>
</table>

The Installation Guide IG-014-0-EN “eWON Flexy - Base Units” includes practical examples of power balance calculations.
4. 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)

- Note -

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).
5. 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.

5.1. 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 is adm
- password is adm

- Warning -

For security reasons, changing the default password adm 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.

5.2. 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 (5).
Revision Information

Revision

Revision History

<table>
<thead>
<tr>
<th>Revision Level</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>05/07/2013</td>
<td>Preliminary version</td>
</tr>
<tr>
<td>1.1</td>
<td>21/11/2013</td>
<td>Official product release version</td>
</tr>
<tr>
<td>1.2</td>
<td>17/11/2015</td>
<td>New template</td>
</tr>
<tr>
<td>1.3</td>
<td>27/07/2016</td>
<td>Update of Legal References</td>
</tr>
</tbody>
</table>

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