



Installation Guide

IG 014 / Rev. 1.6

eWON Flexy - Base Units

This installation guide describes the hardware of the eWON Flexy - Base Unit and explains how to get started with the embedded web site.



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1. Product Summary

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

1.1. 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

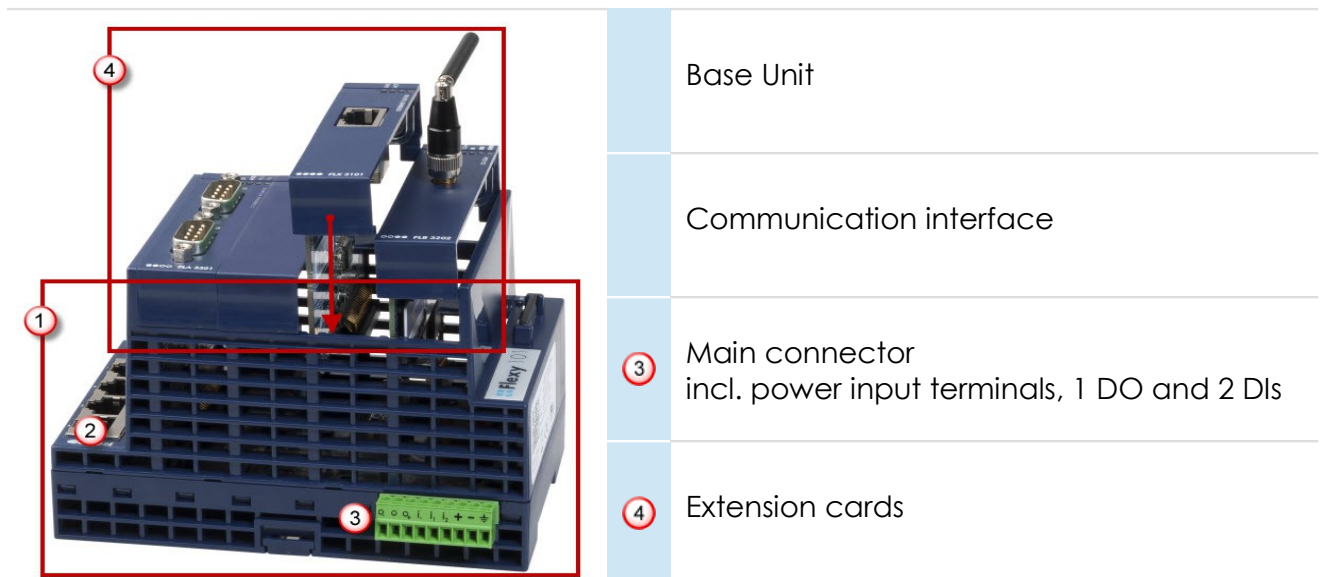
The eWON Flexy is fully compatible with the Talk2M cloud connectivity services (www.talk2M.com) and with the eFIVE (VPN server appliance) for real-time control application.

Housing of the Base Unit Flexy 201 with its original 4 slot fillers



1.2. 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**.



The **Base Units** (1) are available in 3 different versions (mother boards) depending on their communication interface (2):

- Ethernet Switch Flexy 101 & 201
- Serial & Ethernet Flexy 102 & 202
- MPI & Ethernet Flexy 103 & 203

Each Base Unit features

- two DI and one DO (3).
- four free slots allowing to add Extension Cards (4)

Each Base Unit version is available as:

- M2M Data Gateway Flexy 10X (without WA/LAN/Serial routing)
- M2M Router Flexy 20X (full version)

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](#)

1.3. Functions of the eWON Flexy

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

	M2M Data Gateway (Flexy 10x)	M2M Router (Flexy 20x)
Open VPN	•	•
Talk2M connections	•	•
Data Acquisition protocols (IO Servers)	•	•
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		•

1.4. 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

1.5. Typical applications

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

1.6. Types & Part Numbers

The available types are:

Routability	Communication Interface		
	Ethernet only Switch 4-Ports	Ethernet + 1 Serial-Port	Ethernet + 1 MPI-Port
M2M Data Gateway	Flexy 101	Flexy 102	Flexy 103
M2M Router	Flexy 201	Flexy 202	Flexy 203

The available part numbers are:

Part Number	Type	Description
FLEXY10100_00MA	Flexy 101	M2M Data Gateway - Ethernet Only Switch 4-Ports
FLEXY10200_00MA	Flexy 102	M2M Data Gateway - Ethernet + Serial
FLEXY10300_00MA	Flexy 103	M2M Data Gateway - Ethernet + MPI
FLEXY20100_00MA	Flexy 201	M2M Router - Ethernet Only Switch 4-Ports
FLEXY20200_00MA	Flexy 202	M2M Router - Ethernet + Serial
FLEXY20300_00MA	Flexy 203	M2M Router - Ethernet + MPI

Table: List of the available part numbers

- Note -

The MA extension means Multiple language A (EN, FR, DE, IT)
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 Base units. 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 Units 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 Units 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 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 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 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 family 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

All eWON Flexy Base Unit models 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.

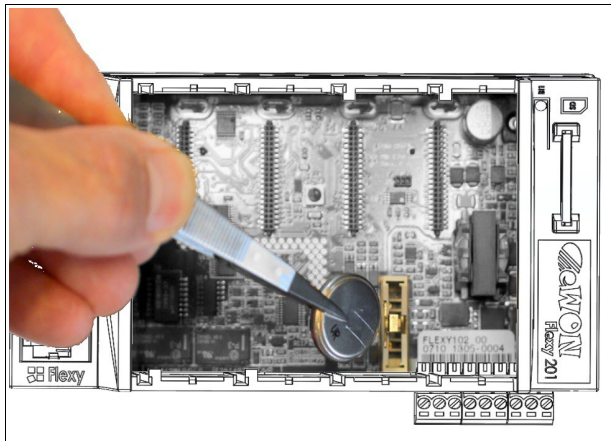
2.5.2. Battery Replacement Procedure

-Caution -

Explosion risk if battery is replaced by an incorrect type.

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).

	<ol style="list-style-type: none"> 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 \(EN 50022\)](#).

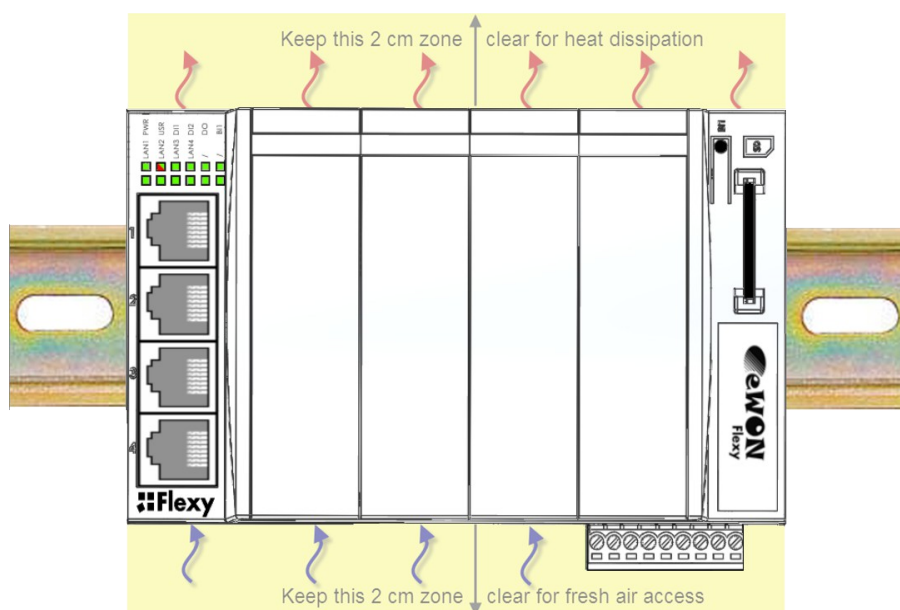
- **Mounting the unit on DIN-rail**

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	-25° to +70 °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

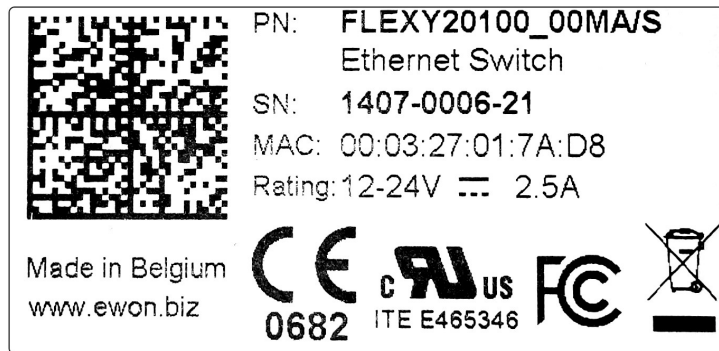
2.6.5. Labelling Information

- 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 Manual (eWon's manual) must contain clear instructions on how end-users can find and/or access the module and the FCC ID

3. Base Unit Hardware Description

3.1. Base Unit Label

The identification label of the eWON Flexy base units 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	1	M2M Data Gateway
		2	M2M Router
22	2 numeric signs Define the type of motherboard	01	MB with 4 Ethernet ports
		02	MB w/1 ETH & 1 Serial port
		03	MB w/1 ETH & 1 MPI port
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
	Conformité Européenne or European Conformity (EC)
0682	Notified Body Number, warrantor of the CE Mark validation
	UL Recognized (<i>Underwriters Laboratories</i>)
	FCC <i>Federal Communications Commission</i>

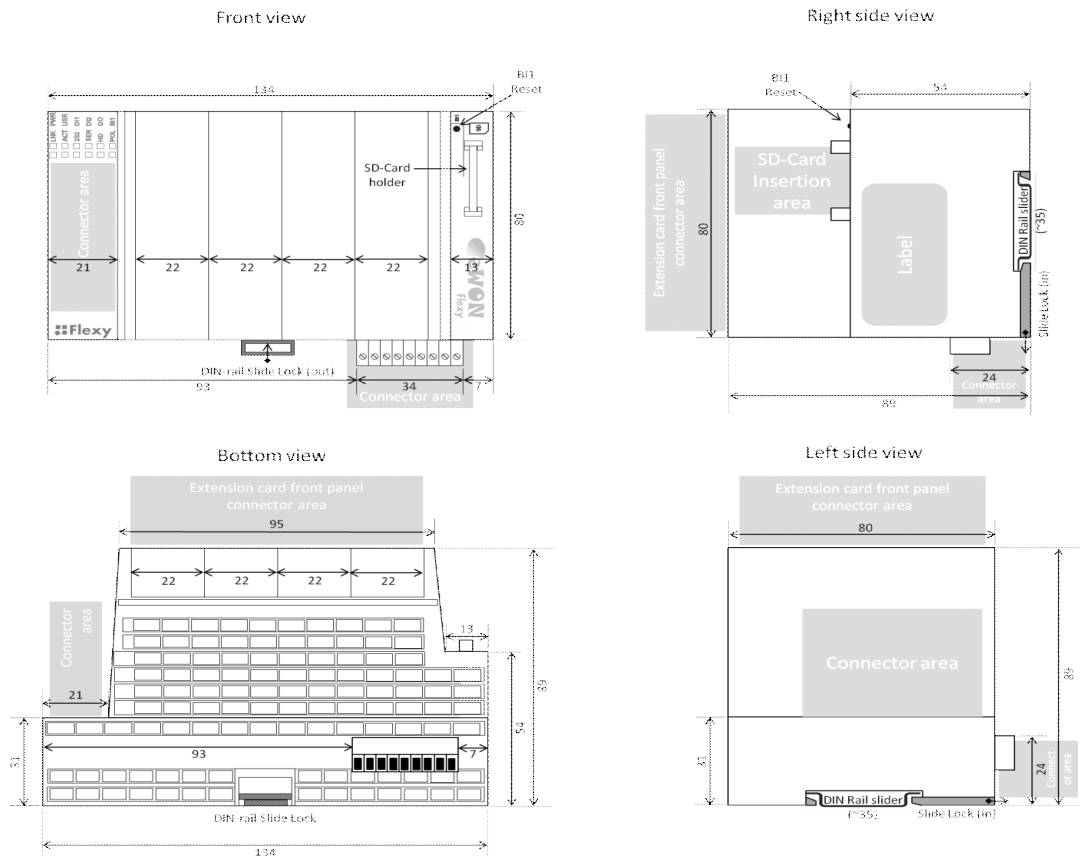
3.2. Mechanical Dimensions

Unit: Dimensions are in millimeters (mm).

Accuracy: Suited only for implementation drawings (rounded @ full mm).

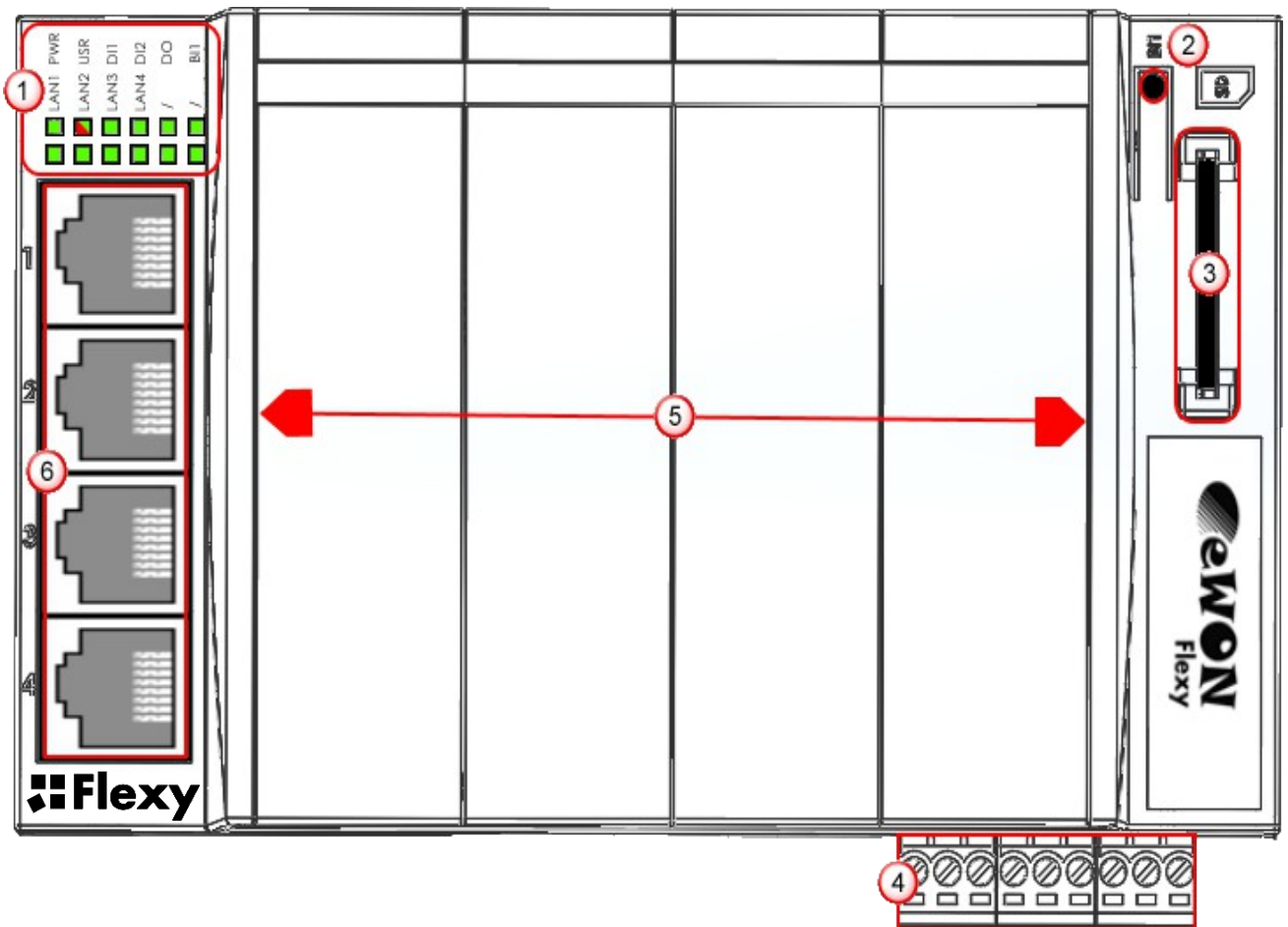
Shaded areas show provisions of empty space that should be considered in the implementation arrangement.

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.



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 <i>used to connect the power supply and the digital inputs & outputs</i>
5	4 slots fillers <i>(that can be removed and replaced by Extension Cards)</i>
6	Main board communication interfaces <i>(depending on the Base Unit type)</i> <i>(In our example: 4 Ethernet Ports)</i>

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

- Note -

The Base Unit model specific LEDs are addressed in the specific interfaces of each model. .

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

Currently not supported, the Base Unit operates normally without SD-Card inserted.

3.3.4. Main Connector

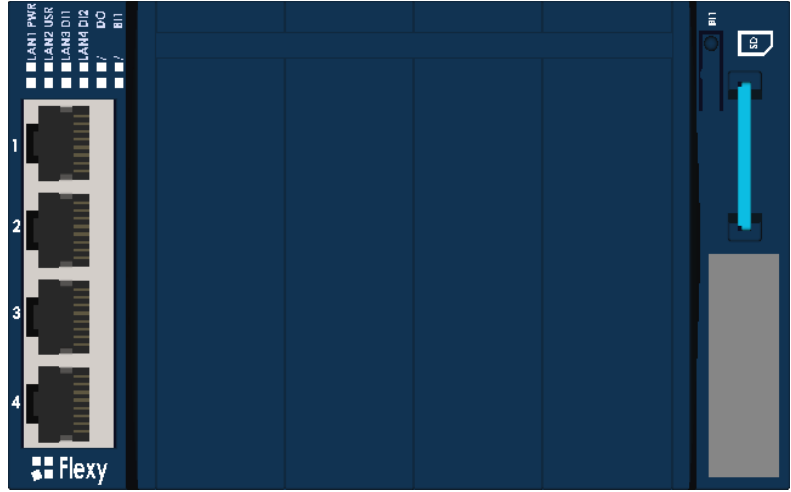
The eWON Flexy is powered via its main connector using a male connector (a mating female connector with screw terminals is delivered with the eWON Flexy Base Unit).

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.

3.3.6. Specific interfaces to 4-Ports Switch models (eWON Flexy 101 & 201)



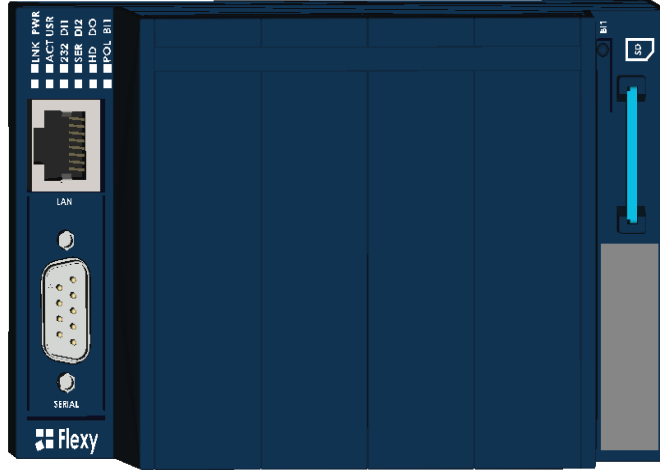
4 x RJ45 ports switch LAN Ethernet 10/100.

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.

<ul style="list-style-type: none"> ■ LAN1 PWR ■ LAN2 USR ■ LAN3 DI1 ■ LAN4 DI2 ■ / DO ■ / BI1 	<p>LAN1</p>	<p>Ethernet activity on port 1 Green steady = Ethernet link OK Green flashing = Ethernet traffic (Rx and Tx)</p>
	<p>LAN2</p>	<p>Ethernet activity on port 2 (same as above)</p>
	<p>LAN3</p>	<p>Ethernet activity on port 3 (same as above)</p>
	<p>LAN4</p>	<p>Ethernet activity on port 4 (same as above)</p>

3.3.7. Specific interfaces to Serial-Port Models (eWON Flexy 102 & 202)




- 1 x RJ45 ports switch LAN Ethernet 10/100.
- SubD 9 male RS232/422/485 port.
- 1500V functional galvanic isolation through the power supply isolation from ground.

3.3.7.1. LAN Port

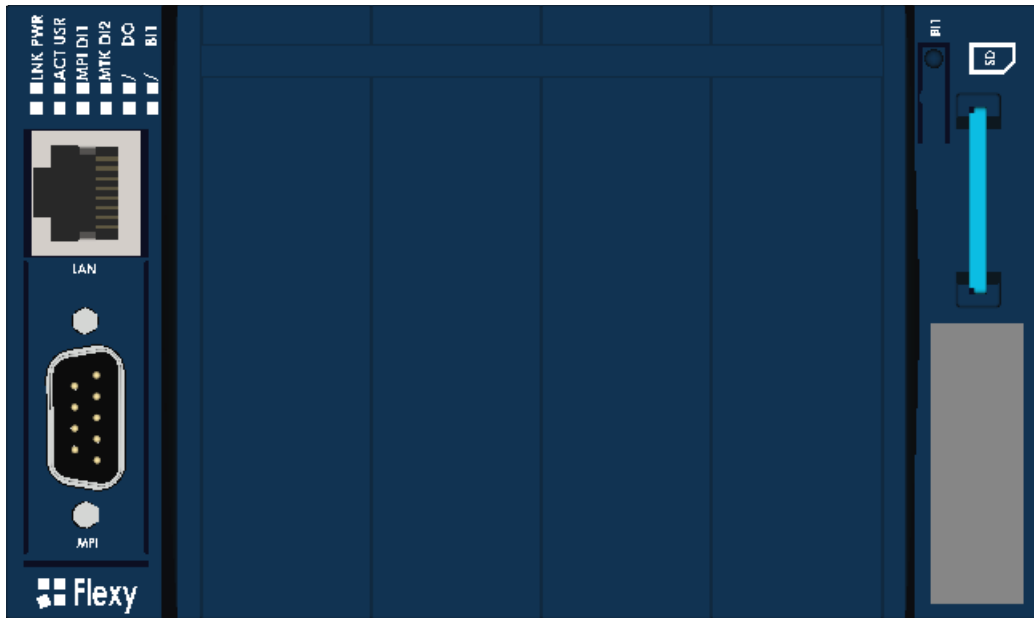
The LAN interface consists of one auto-sense Ethernet port (10/100 Mbps). Auto-sense meaning that you can use both UTP Class 5 direct and crossed cables with RJ45 terminations at both ends. Default parameters see § 5.1 Factory Default IP settings.

3.3.7.2. Serial Port

The configuration of the physical serial mode is done via the eWON software configuration. Possible configurations are RS232, RS422 and RS485. No dip switch settings required. Port specifications, see

	LNK	Ethernet Link Green steady = Ethernet link OK
	ACT	Ethernet activity Green flashing = Ethernet traffic (Rx and Tx)
	232	RS232 mode Green steady = port configured in RS232 mode
	SER	Green flashing = RX/TX traffic on serial port
	HD	Half duplex Green steady = configured in RS485 mode
	POL	Polarization resistors Green steady = Polarization and termination ON

3.3.8. Specific interfaces to MPI-Port Models (eWON Flexy 103 & 203)



- 1 x RJ45 ports switch LAN Ethernet 10/100.
- SubD 9 female MPI-port.
- 1500V functional galvanic isolation through the power supply isolation from ground.

3.3.8.1. LAN Port

The LAN interface consists of one auto-sense Ethernet port (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](#).

3.3.8.2. MPI Port

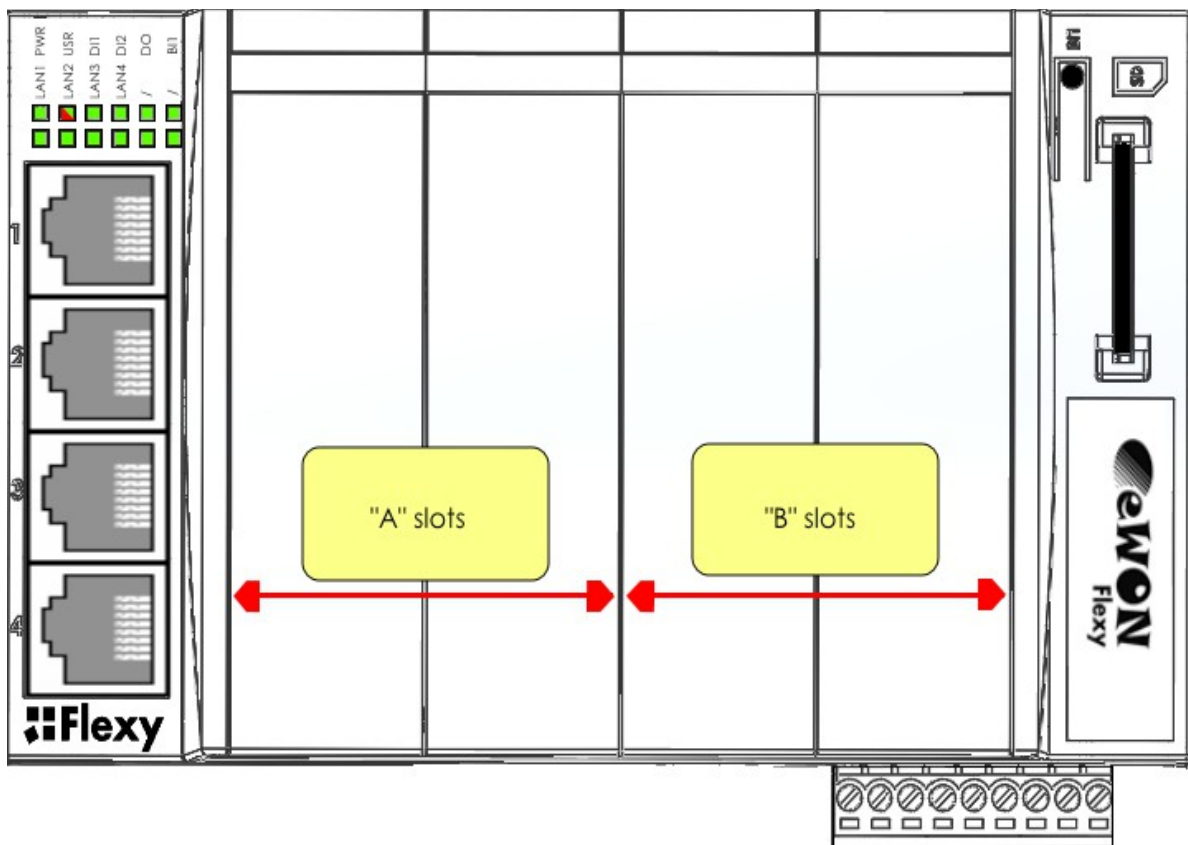
The MPI - Profibus port allows to connect to an MPI or Profibus network. No further hardware configuration required. Port specifications, see

<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 15px; height: 15px; background-color: #00ff00; margin-right: 5px;"></div> LNK PWR </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 15px; height: 15px; background-color: #00ff00; margin-right: 5px;"></div> ACT USR </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 15px; height: 15px; background-color: #00ff00; margin-right: 5px;"></div> MPI DI1 </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 15px; height: 15px; background-color: #00ff00; margin-right: 5px;"></div> MTK DI2 </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 15px; height: 15px; background-color: #808080; margin-right: 5px;"></div> / DO </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 15px; height: 15px; background-color: #808080; margin-right: 5px;"></div> / BI1 </div>	<p>LNK Ethernet Link Green steady = Ethernet link OK</p> <hr/> <p>ACT Ethernet activity Green flashing = Ethernet traffic (Rx and Tx)</p> <hr/> <p>MPI MPI status Green flashing = TX activity on the MPI port</p> <hr/> <p>MTK MPI token Green steady = Hold Token in MPI operation mode</p>
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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.



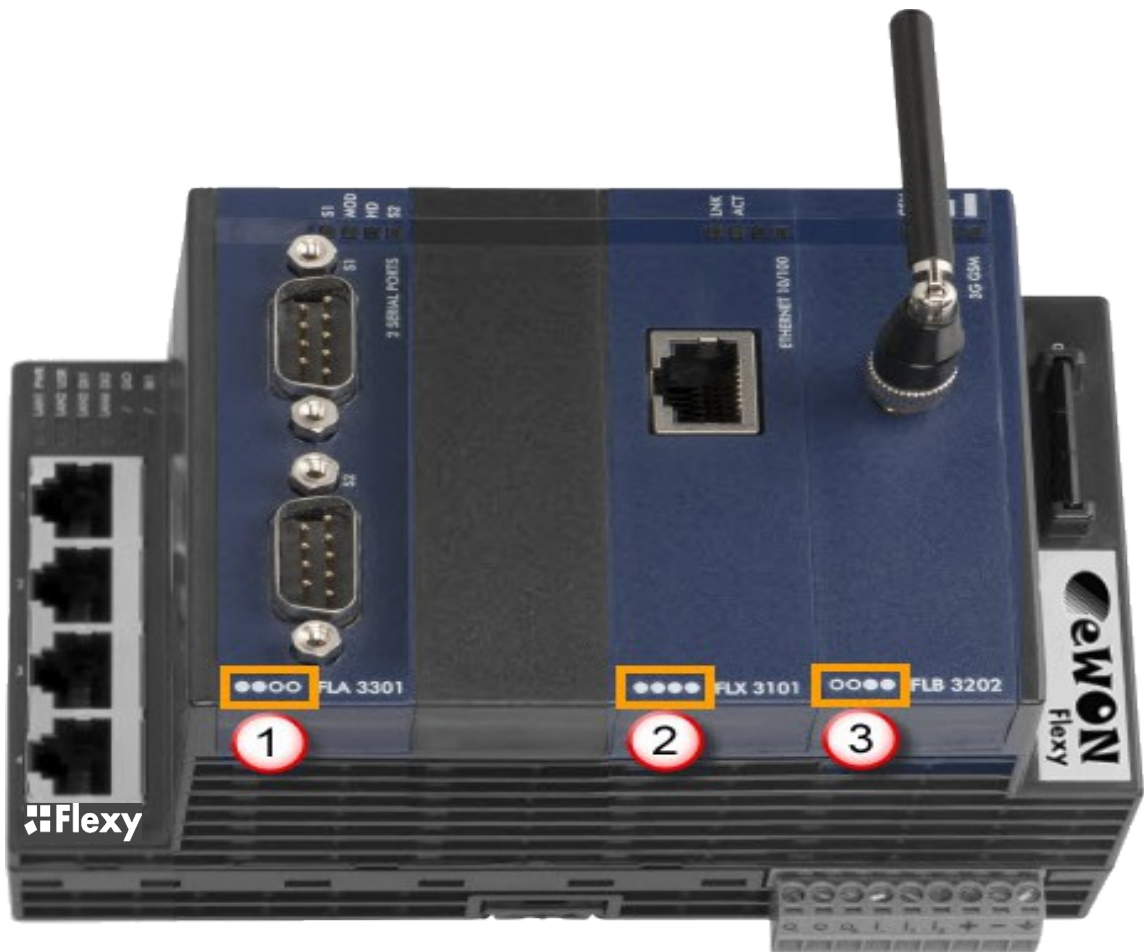
The reference code of the Extension Cards includes a letter that defines their compatibility either with "A" slots, "B" slots or both.

- **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:

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:



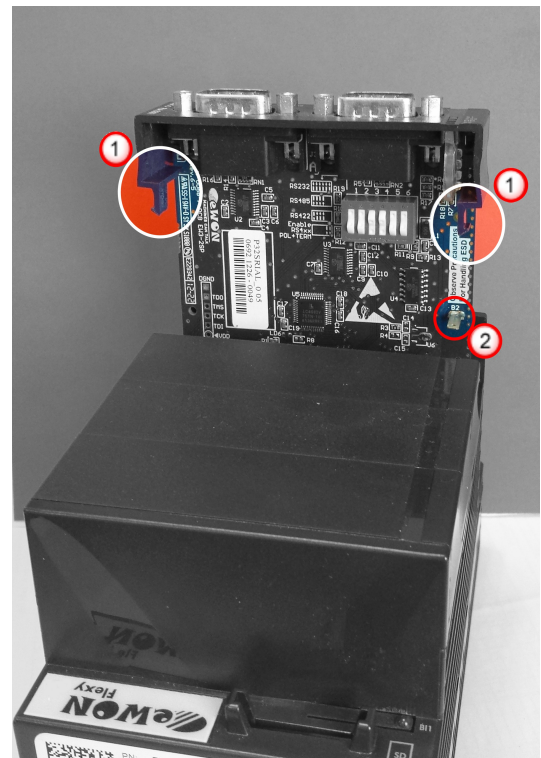
Base Unit Flexy 201 featuring 3 different Extension Cards.
Slot compatibility markings.

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

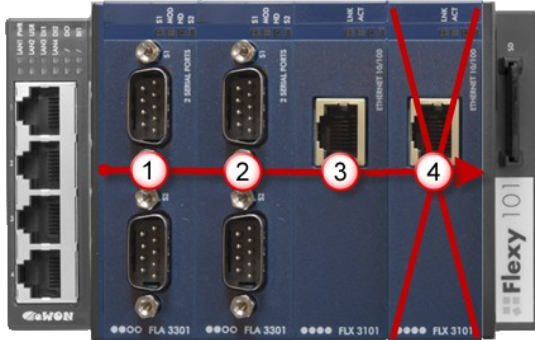
4.4.1. Detection Order

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.



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 201 Flexy 101	Serial Flexy 202 Flexy 102	MPI Flexy 203 Flexy 103
Available Energy Points (max. 50°C)	29	30	31
Available Energy Points (max. 70°C)	20	21	22

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 3301	Single Ethernet FLX 3101	3G GSM FLB 3202
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)
<i>Available Energy Base Unit Flexy 201</i>	29	20
<i>Energy Demand 2 Serial Ports Extension FLA 3301</i>	-1	-1
<i>Energy Demand Single Ethernet Extension FLX 3101</i>	-1	-1
<i>Energy Demand 3G GSM Extension FLB 3202</i>	-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 flashing 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

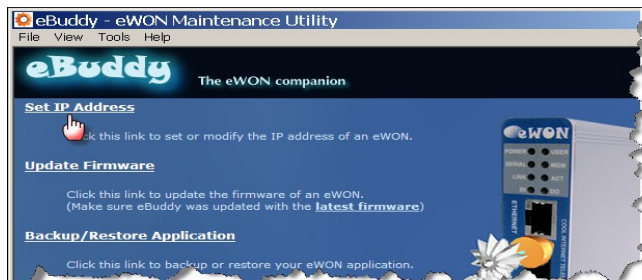
You can easily establish your first communication with your eWON Flexy by using the software **eBuddy** which can be downloaded from <http://support.ewon.biz/software>

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.

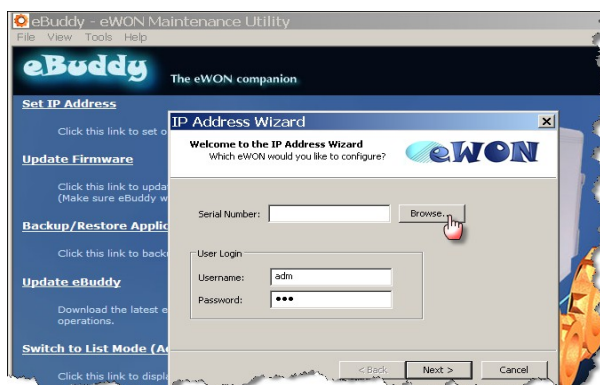
Start the **eBuddy** utility on your PC

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

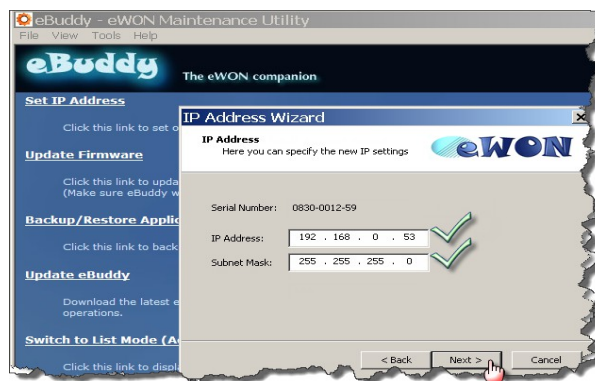


Fill out the Serial Number of your Flexy or click on **Browse** and select it. The Serial Number of the Flexy is on its label, see § 3.1 Base Unit Label.

Click **Next**

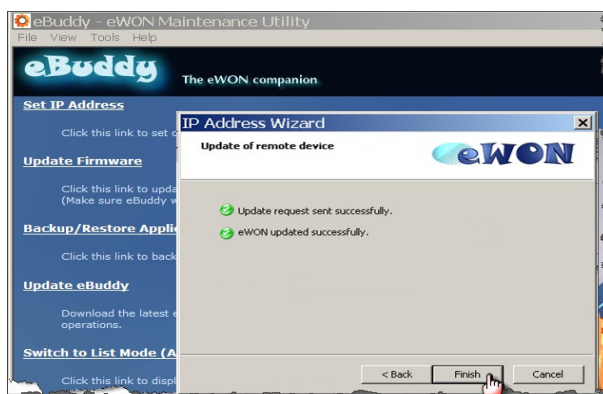


Enter new LAN IP address and Subnet Mask. Click **Next**



Wait until the address is updated and the device rebooted.

Click **Finish**.

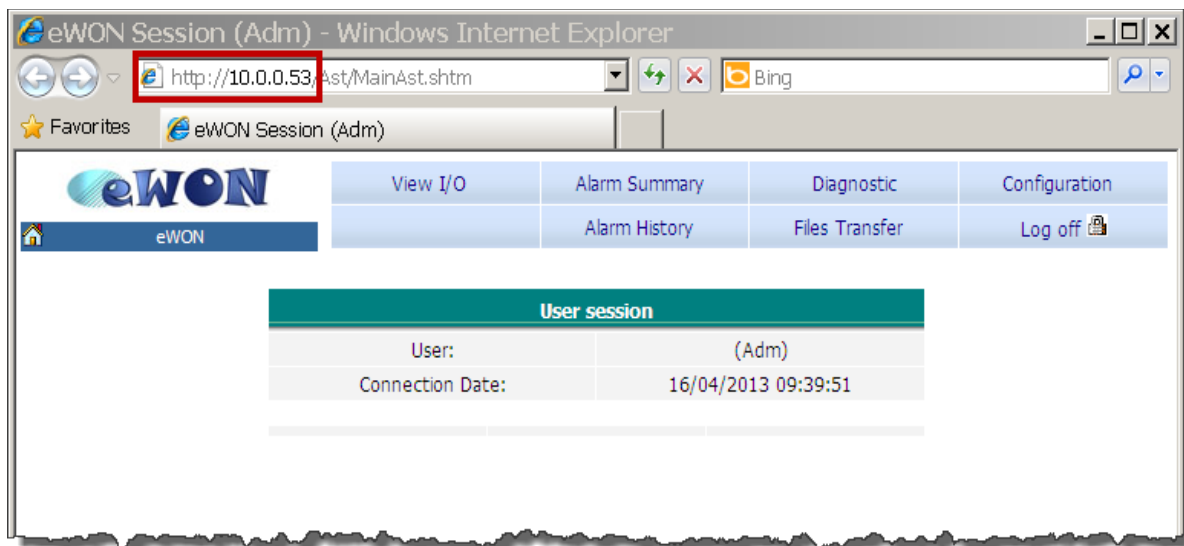


5.4. eWON Flexy's Web Interface

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 B11 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 B11 turns ON.
- Wait approximately 30 seconds until the **USR** LED flashes RED 1x per second.
- Immediately release the button. The LED labeled B11 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.

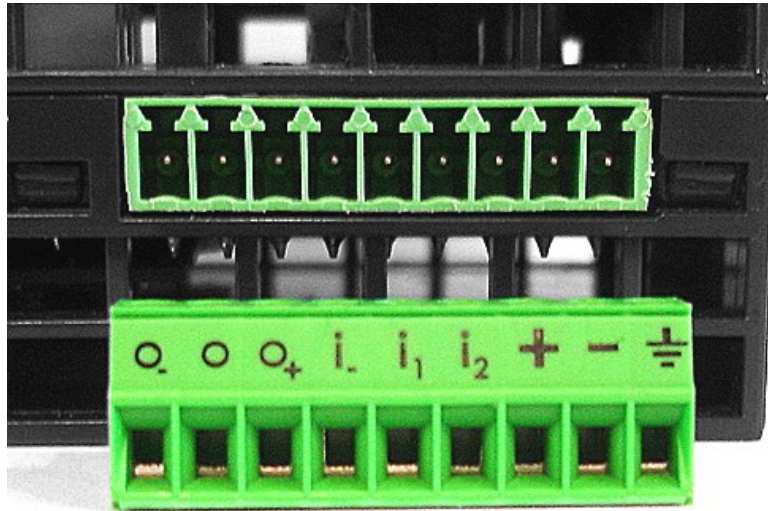
6.4. Reset Impact Matrix

	Erased or Reset	Preserved
Impact Reset Level 1 (user reset)	User(s)	LAN IP address + mask
	<i>adm</i> 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)	
	<i>adm</i> 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) <i>Related specification see below</i>
Digital Inputs	i ₂	Input signal 2 - <i>Related specification see below</i>
	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 ¹	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

¹ When the eWON Flexy reboots, a short phase of ON state is part of the starting process.

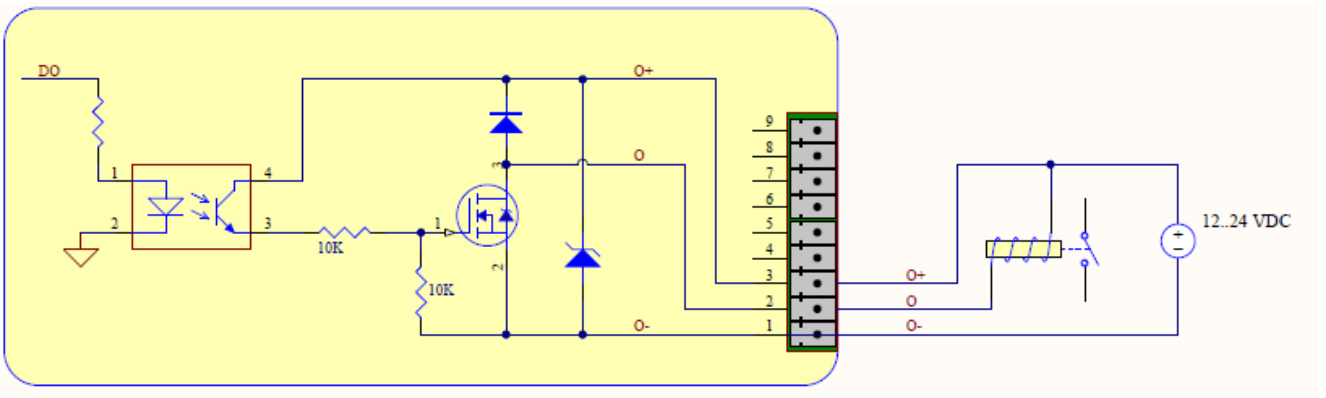
Appendix A - Connector Pinout & Related Specifications

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.

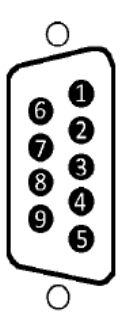
The transistor used is in an open drain type with predrive. This means the relay power supply has to be supplied from an external source to the predrive electronics. The diagram next page shows the external wiring needed for correct operation of the digital output. A relay has been chosen for this sample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

- Note -

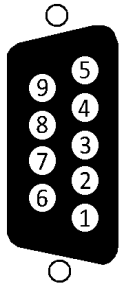
This is a sink only output to ground (the transistor acts like a switch to ground).



A.4 Serial Interface (eWON Flexy 102 & 202)

Characteristic	Value				
Physical modes	RS232/422/485 (1500V galvanic isolation through the power supply isolation from ground)				
Polarization	330 Ω (if polarization & termination are activated)				
Termination	120 Ω (if polarization & termination are activated)				
SUBD9 male connector pinout (eWON side)	Pin #	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	-	-	-	

A.5 MPI Interface (eWON Flexy 103 & 203)




Characteristic	Value		
Physical mode	MPI (1500V galvanic isolation through the power supply isolation from ground)		
Baud rates	From 9,6 kBauds to 12,0 MBauds		
Polarization	100 kΩ		
Termination	None		
SUBD9 female connector pinout (eWON side)	Pin #	MP	
	1	-	
	2	-	
	3	B+	
	4	-	
	5	GND	
	6	-	
	7	-	
	8	A-	
	9	-	

Appendix B - Flexy Products Overview

B.1. Base Units

Routability	Communication interface					
	Ethernet Only Switch 4-Ports		Ethernet & Serial		Ethernet & MPI	
	Reference	Available Energy Points (2)	Reference	Available Energy Points (2)	Reference	Available Energy Points (2)
M2M Router	Flexy 201	20	Flexy 202	21	Flexy 203	22
M2M Data Gateway	Flexy 101	20	Flexy 102	21	Flexy 103	22

B.2. Extension Cards

Picture	Reference + Name	Slot compatibility	Number supported (firmware) (1)	Energy Demand Points (2)	Installation Guide reference
	FLA 3301 2 Serial-Ports	●●○○	2	1	IG-016-0-EN
	FLX 3101 Ethernet 10/100	●●●●	1	1	IG-017-0-EN
	FLX 3401 8DI-4AI-2DO	●●●●	4	2	IG-018-0-EN

Appendix B - Flexy Products Overview

Picture	Reference + Name	Slot compatibility	Number supported (firmware) (1)	Energy Demand Points (2)	Installation Guide reference
	FLX 3402 8DI-4AI-2DO	●●●●	4	2	IG-018-1-EN
	FLB 3202 3G GSM	○○●●	1	10	IG-019-0-EN
	FLB 3204 4G EU	○○●●	1	8	IG-0026-00
	FLB 3271 WIFI	○○●●	1	4	IG-020-0-EN
	FLA 3501 PSTN	●●○○	1	2	IG-021-0-EN
	FLB3601 USB	○○●●	1	9	IG-024-0-EN

- (1) 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.
- (2) 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 3401 has been tagged as End of Life and is being replaced by the FLX 3402

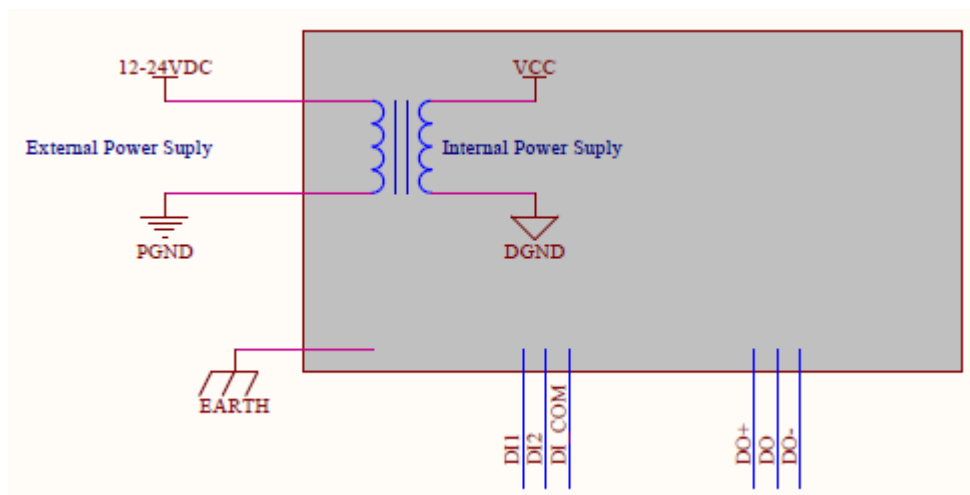
Appendix C - Flexy Isolation Scheme

C.1 - Base Unit

	Flexy 201	Flexy 202 & Flexy 203
Connector shielding	Earth connected	
Ethernet signals	Isolated from DGND with a transformer	
MPI / Serial port	/	Isolated from PGND Only

- Important -

Serial ports GND = DGND



Based on the above picture:

- External and internal power supplies are isolated from each other (1.5kV)
- DI signals: isolated from DO signals, PGND and DGND (optocoupler)
- DO signals: isolated from DI signals, PGND and DGND (optocoupler)
- Earth is isolated from external and internal power supplies

C.2 - Extension Cards

FLB 320x – Cellular

- DGND = GND RF from SMA connector

- Important -

Avoid external connections between GND RF and Earth.

FLX 3101 – WAN Ethernet

- Connector shielding: Earth connected
- Ethernet signals: isolated from DGND with a transformer

FLX 3271 – WiFi

- DGND = GND RF from SMA connector

- Important -

Avoid external connections between GND RF and Earth

FLX 340x – I/O

- DO signals: isolated relays outputs
- DI signals: isolated from DGND (optocoupler)
- AI signals: isolated from PGND only

- Important -

AI-GND = DGND

FLA 3301 – Dual Serial Ports

- Serial port signals: isolated from PGND only
- Connector shielding: connected to Earth

- Important -

Serial ports GND = DGND

FLB 3601 – 3 USB Ports

- USB signals: isolated from PGND only
- Connector shielding: connected to Earth
- Due to USB connector design, Earth-DGND isolation is limited to 500V when the USB extension card is inserted

- Important -

USB GND = DGND

Revision

Revision History

Revision Level	Date	Description
1.0	06/03/2015	Initial version
1.1	11/05/2015	Content/label modification
1.2	18/11/2015	New template
1.3	11/01/2016	Modified DO diagram
1.4	27/07/2016	Update of Legal References
1.5	05/09/2016	Energy points added for FLX3402 & FLB3601
1.6	22/05/2017	Added: Appendix C Added: Appendix B.2 - FLB3204

Document build number: 13

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