The JA-120Z Bus back-up booster unit

*The JA-120Z is a component of the **JABLOTRON** system. It serves for boosting the current of the bus. It provides two independent bus branches / terminals on the output side with 2 A maximum output current and the maximum length is 500 m for every leg. The input terminal is galvanically separated, this is because of safety isolation and with a difference of potentials between the grounds on the input and output part of the booster. The module is powered by mains electricity and allows the connection of a back-up battery with a capacity of up to 18 Ah. The product is sold as a electronic module with a JA-107PWR power supply. It is recommended to install it into a PLV-CP-L plastic housing. The product can only be installed by a trained technician with a valid certificate issued by an authorised distributor.*

***This product is compatible with JA-101K, JA-103K, JA-106K, JA-107K control panels**.*

Purpose / application

The booster extends the operational range of an existing bus system. It serves for:

- Providing sufficient current for connected devices when the control panel output current is not enough, see Figure 1.
- Extending the bus for more than 1x 500 m (JA-101K, JA-103K) or 2x 500 m (JA-106K, JA-107K), see Figure 2.

Do not connect two or more bus signal repeaters in series. Such a configuration may lead to communication faults.

Warning! The JA-120Z does not increase maximal number of addressable devices available in the JA-100 system. To each JA-120Z bus terminal can be connected up to 50 addressable devices.

Providing sufficient current

The JA-120Z booster provides current up to 2 A on its output terminals. There can be several bus boosters connected to one system, and they cannot be connected one after the other.

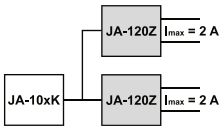

Figure 1: Boosting the bus output current for up to 2 A by each JA-120Z unit

Extending the bus

The JA-120Z also behaves as a signal repeater and it allows bus extension by booster for about 2x 500 m. There can be several bus boosters connected to one system, and they cannot be connected one after the other.

For further bus extension a maximum of one JA-110T isolator can be connected to JA-120Z output terminals.

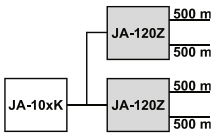

Figure 2: Extending the bus length for another 2x 500 m by each JA-120Z unit

The JA-120Z booster has galvanically separated input and output terminals from its own booster electronics. It ensures immunity against interference by various potentials between buildings or various power systems.

Product behaviour description

Output terminals (18) are protected by an electronic fuse against overloading (short circuit or current taken from the module higher than 2 A). If overloading ends, then the output voltage is recovered automatically. The booster also informs the control panel about mains faults, failures or low battery indication. The backup battery (5) is protected against deep discharging when a mains fault lasts for a longer period. If the backup battery voltage drops below 9.7 V, the module is then switched off and all devices connected to its output terminals report faults. LED (14) optical indicates the status of the JA-120Z.

Status	Description
Yellow flashing	Not enrolled to the system
Yellow ON	Not connected to control panel bus
Green flashing	Ongoing bus communication

Table 1: LED optical indication

The booster occupies one position in the control panel. Line voltage drops are always related to branches connected to the output part of the booster. See a more detailed description in the chapter *Setting the module properties.*

Installation

The JA-120Z booster is supplied as a module with a power supply. We recommend installation in a PLV-CP-L plastic housing. When an alternative installation box is to be used, always connect the tamper contacts to the terminals (17).

Installation in a PLV-CP-L plastic housing - description:

1. Punch the holes in the PLV-CP-L (11) plastic housing for bus cables and supply cable.
2. Install the rear tamper contact (10).
3. Put the cables through and attach the rear plastic housing part on selected place.
4. Install the JA-107PWR power supply (1) and booster module (9) inside the housing and fix it with 4 screws (7) to the position marked on Figure 3.
5. Plug the front and rear tamper contact (10) into the connectors (17) on the module. Block any unused tamper inputs by jumper (pins are next to every connector on the left side).
6. Connect the bus cable from the control panel (13) and bus output cables (18).

When connecting the module to the system bus, always switch the power off.

7. Connect the power supply connector (8) to the terminal (12) and plug in the back-up battery. Fix the back-up battery using the prepared strap (6). Mind the correct polarity (red +, black -).
8. Connect mains power to terminals N and L (2) and switch it on.

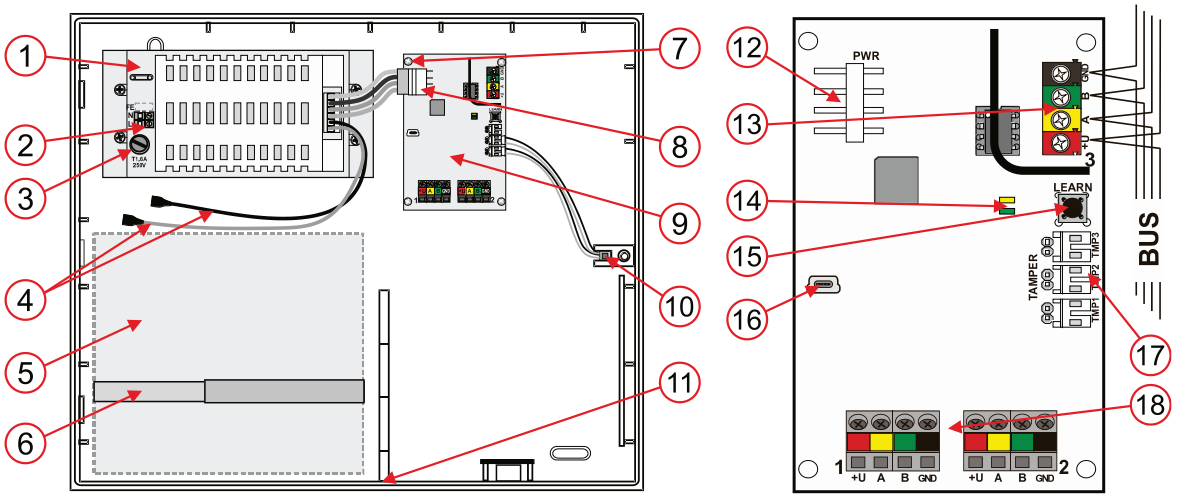

Figure 3: Description of internal parts of the product

***1** – mains power supply; **2** – mains power terminals; **3** – mains power fuse (T1.6 A); **4** – back-up battery connecting cables; **5** – back-up battery; **6** – belt clip to fix the back-up battery; **7** – screws to fix the PCB into the installation box; **8** – connecting terminal from power supply; **9** – the JA-120Z PCB; **10** – front and rear tamper contact of the box; **11** – PLV-CP-L plastic housing; **12** – power terminal from power supply; **13** – bus input terminals; **14** – LED indicators; **15** – LEARN (enrol) button; **16** – USB connector; **17** – connectors for tamper contacts; **18** – bus output terminals*

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9. Proceed according to the control panel installation manual.
   Basic procedure:
   a. When the module is switched on, the yellow LED (14) starts flashing repeatedly to indicate that the module has not been enrolled into the system.
   b. Go to the ***F-Link*** software, select the required position in the ***Devices*** tab and launch the enrolment mode by clicking on the ***Enrol*** option.
   c. Click on the ***Add new bus devices option***, select the JA-120Z module and confirm its enrolling by a double-click – the yellow LED (14) goes off.
10. Close the front cover of the PLV-CP-L plastic housing.
11. Continue with the chapter Setting the module properties.

Notes:

- The module can also be enrolled by pressing the LEARN button (15) or by entering the production code via the F-Link software. All digits are required (1400-00-0000-0001). The production code is printed on the sticker under the bar code on the PCB of the product.
- If you need to remove the module from the system, erase it from its position in the control panel.

Setting the module properties

The module properties can be set in the Devices tab of the F-Link software. When at the module position, use the Internal settings option to open a dialogue window where you can set the following parameters (* factory default settings):

Tamper contacts: Enabled*: Parameters enables / disables tamper contacts.

Range settings: Select the range of peripherals that are expanded by the JA-120Z unit - Options 1-120 / 121-230. The actual position of the unit itself does not affect this setting. Peripherals connected after the JA-120Z and assigned outside this range will not work. *Valid only for JA-107x.

Note: when 121-230 range is selected, you cannot use the radio module JA-11xR behind the bus booster

Disable the bus power supply: Inactive*: By pressing a specific button, power to the selected bus output is switched off. Power supply status is indicated below the bus button. The function is meant for temporarily switching off the power to a specific bus because of installation of a new device. When you leave service mode, F-Link informs you about the switched off power for a bus output and after confirmation the power is switched on again. When power is restored (mains and back-up battery), the system always switches on the power for both terminals.

To set the JA-120Z module to comply with security grade 2 or other requirements use F-Link SW, Parameters tab and the option "System profiles".

Diagnostics

See **F-Link** SW, ***Diagnostics*** tab. On the JA-120Z booster position you can find the following information:

- ***Status:*** Indicates current device status.
- ***Battery status / voltage:*** Indicates current back-up battery status (OK, Battery, NO AC – mains fault).
- ***Voltage / loss:*** Showing voltage and current taken from individual bus outputs terminals.

Devices connected to the JA-120Z booster:

- have their voltage losses measured by the booster
- have in the ***Position*** column the icon
- have a topology description in the ***Channel*** column = list of devices and communication paths via which they communicate with the control panel

FW upgrade

A FW upgrade can be performed using the F-Link software in service mode by a user with Service authorisation. Go to **Control panel ->Upgrade firmware**. All devices connected via the JA-120Z can be upgraded. When a mains power fault or a fault of the back-up battery of the control panel or the JA-120Z booster occurs, a FW upgrade cannot be performed.

Technical specification

The kit includes: a JA-120Z module PCB and JA-107PWR power supply. A backup battery and PLV-CP-L plastic housing has to be bought separately.

Power (the JA-107PWR power supply)	***110–230 V, 50–60 Hz***
Input power	*50 VA*
Fuse	*T1.6 A / 250 V, 5 x 20 mm*
Input part	
Powered from the control panel bus	*12 V DC (9…15 V)*
Quiescent current consumption	*10 mA*
Maximal current consumption	*10 mA*
Output part	
Output voltage	*typically 13.7 V DC*
Maximum ripple	*0.1 Vpp*
Maximum load current	*2 A*
Galvanically separated	*(testing voltage 4 kV)*
General	
Back-up battery 12 V	*type lead, gel (7–18 Ah)*
Low battery level	*≤ 10.9 V*
Protection against deep discharging	*≤ 9.7 V*
Typical back-up battery lifetime	*4 years*
Maximum time for charging back-up battery	*<72 h / 80% C for 18 Ah*
Weight of module PCB	*45 g*
Weight of the JA-107PWR power supply	*360 g*
PCB dimensions	*102 x 66 x 14 mm*
Power supply dimensions	*170 x 80 x 65 mm*
PLV-PC-L plastic housing dimensions	*357 x 297 x 105 mm*
	PLV-CP-L plastic housing is not supplied!
Classification	*security grade 2 / environmental class II*
Note: *Valid for only installation into a PLV-CP-L plastic housing or into another box of a security grade 2 or higher certified device.*	
Environment	*general indoor*
Operational temperature range	*-10 °C to +40 °C*
Average operational humidity	*75% RH, non-condensation*
Certification body	*Trezor Test s.r.o. (no. 3025)*
Complies with	*EN 50131-1, -6, EN 62368-1, EN 50130-4, EN 55032, EN IEC 63000*

JABLOTRON a.s. hereby declares that the JA-120Z is in a compliance with the relevant Union harmonisation legislation: Directives No: 2014/35/EU, 2014/30/EU, 2011/65/EU. The original of the conformity assessment can be found at www.jablotron.com - Section Downloads.

Note: Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling. Please return the product to the dealer or contact your local authority for further details of your nearest designated collection point.