

The JA-121T BUS RS-485 interface

The JA-121T is a BUS component of the JABLOTRON system. It is a universal converter which interfaces communication between the system BUS and the RS-485 serial line and vice versa. For example, it is suitable for instant connection of a smart home systems thus giving you the possibility to fully use the features of both systems. It includes galvanically separated circuits protecting the device against up to 4kV. Data is sent during a status change or when requested. The module is addressable and takes one position in the system. The module should be installed by a trained technician with a valid certificate issued by an authorised distributor.

Installation

1. Attach the module to an appropriate place, in the range of the JABLOTRON 100 BUS and RS-485 serial line. We recommend using a JA-190PL installation box and utilizing a spring on the LEARN button (5) – used as a tamper contact.
2. If the module is placed in a different box with its own tamper protection, use the TMP contacts (3). After enrolling the module in the control panel, you can select a type of tamper protection (the LEARN button or the TMP contact).
3. Connect the wires to the RS-485 (6) output terminals including the common power supply which serves to supply the serial line.

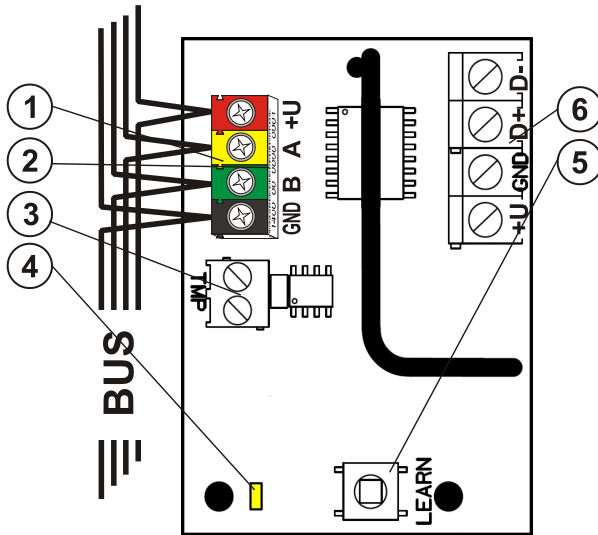


Figure 1: 1 – BUS terminals; 2 – production code (sticker on the BUS terminals); 3 – TMP terminal; 4 – yellow LED; 5 – LEARN (enrollment) button (tamper – spring is included); 6 – galvanically separated RS-485 BUS output



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

4. Connect the BUS cables to the terminals (1).
5. Proceed according to the control panel installation manual. Basic procedure:
 - a. When the system is switched on, the yellow LED (4) starts flashing repeatedly to indicate that the module has not been enrolled into the system yet.
 - b. Go to the **F-Link** software, select the required position in the **Devices** tab and launch the enrollment mode by clicking on the **Enroll** option.
 - c. Click on the option **Scan/add new BUS devices**, select the JA-121T module and double-click to confirm selection – the yellow LED indicator (4) goes off.
6. Close the cover of the installation box with the module.

Notes:

- It is possible to enroll the device by pressing the front LEARN button (5).
- The detector can be enrolled by entering the production code (2) in the F-Link software (or using a bar code reader). Enter all digits located below the bar code (1400-00-0000-0001).
- If you want to remove the detector from the system, erase it from its position in the control panel.

Terminal mode – function description

The communication of the RS-485 serial line is coded in ASCII, speed 9600 baud, 8N1 (8 data bits, no parity, 1 stop-bit). Control is realized by the following commands; the valid syntax is **code space command**.

List of commands:

VER	Returns the JA-121T module version.
HELP	Returns help (valid commands and also examples of correct syntaxes).
SET	Sets selected sections: a command followed by digits representing the sections which are to be set – each digit always has to be separated by a space. When sections are not specified, the system is completely set.
SETP	Sets partially selected sections: a command followed by the digits representing the sections which are to be set partially – each digit always has to be separated by a space. When sections are not specified, the system is set partially i.e. all sections which have partial setting enabled.
UNSET	Unsets selected sections: a command followed by digits representing the sections which are to be unset – each digit always has to be separated by a space. When sections are not specified, the system is unset completely.
PGON	Activates PG outputs: the reference numbers of the PG outputs you want to activate must be added after the command. Each digit always has to be separated by a space.
PGOFF	Deactivates PG outputs: the reference numbers of the PG outputs you want to deactivate must be added after the command, each digit always has to be separated by a space.

*Commands **SET**, **SETP**, **UNSET**, **PGON** and **PGOFF** cannot control sections or PG outputs for which the used code does not have access rights.*

STATE	Returns the states of sections: a command followed by the digits representing sections of which status you want to check – each digit always has to be separated by a space. When sections are not specified, the system always returns the status of all sections.
PGSTATE	Returns the state of PG outputs: a command followed by the digits representing the PG outputs of which status you want to check – each digit always has to be separated by a space. When the PG outputs are not specified, the system always returns the status of all PG outputs.
FLAGS	Returns the active indexes in sections: the reference numbers of the sections you want to check the indexes for can be added – each digit always has to be separated by a space. When sections are not specified, the system always returns the indexes of all sections.
PRFSTATE	Returns the status of all devices in HEX code, for details it is necessary to convert it to BIN code (1 – active, 0 – inactive).

Examples:

The command has to be in a specific order: valid code (with prefix), command and additional information (list of sections which can be set, PG outputs which can be turned off, and so on). **Each command must end with an ending character (Enter)**. The entered code is used as a system user therefore it is recorded in the event history and possible restriction linked with the user's code may be applied.

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Model example:

1*1234 SET 1 2 (set sections 1 and 2)
2*4321 PGOFF 5 6 (turn off PG 5 and 6)

When the syntax has been entered correctly and if the sections were not set before, the returned answer will be:

STATE 1 ARMED
STATE 2 ARMED
OK

According to this example it can be seen that the command has been done successfully so sections 1 and 2 have been set and the command was correct (OK).

If at least one section of the defined range has already been previously set, then it sets the rest of the sections. When section 1 is already set, the returned answer will be:

STATE 2 ARMED
OK

If an entered command is found to be correct, but with invalid authorisation, the returned answer will be:

ERROR: 3 NO_ACCESS

If the system was not able to execute any of the commands (for example when all sections are already set) the returned answer will be:

ERROR: 4 INVALID_VALUE

To an incorrectly entered command, the returned answer will be:

ERROR

Basic statuses of the sections: STATE <section> <status>

Example: STATE 1 READY

List of section statuses:

READY	Normal mode
ARMED_PART	Partially set
ARMED	Set
MAINTENANCE	Maintenance
SERVICE	Service
BLOCKED	Blocked (blocking after an alarm)
OFF	Section disabled

Additional flags of the sections: <flag> <sections> ON/OFF

Example: INTERNAL_WARNING 2 ON

List of section flags:

INTERNAL_WARNING	Internal siren active
EXTERNAL_WARNING	External siren active
FIRE_ALARM	Fire alarm
INTRUDER_ALARM	Intruder alarm
PANIC_ALARM	Panic alarm
ENTRY	Entrance delay
EXIT	Exit delay

A status of individual devices is returned after the PRFSTATE command or automatically every 10 seconds according to the *Passive mode*. A conversion of the numerical sequence from HEX form to BIN has to be performed. This numerical sequence consists of 14 characters for the JA-101K control panel, 32 characters for the JA-106K control panel and 60 characters for the JA-103K and the JA-107K control panels.

Example:

PRFSTATE 289600000800000800000A0000008000

According to the figure 2 below we can see, after conversion to the BIN format, which devices are triggered. The active devices are no. 3, 5, 9, 10, 12, 15, 35, 59, 81, 83 and 119.

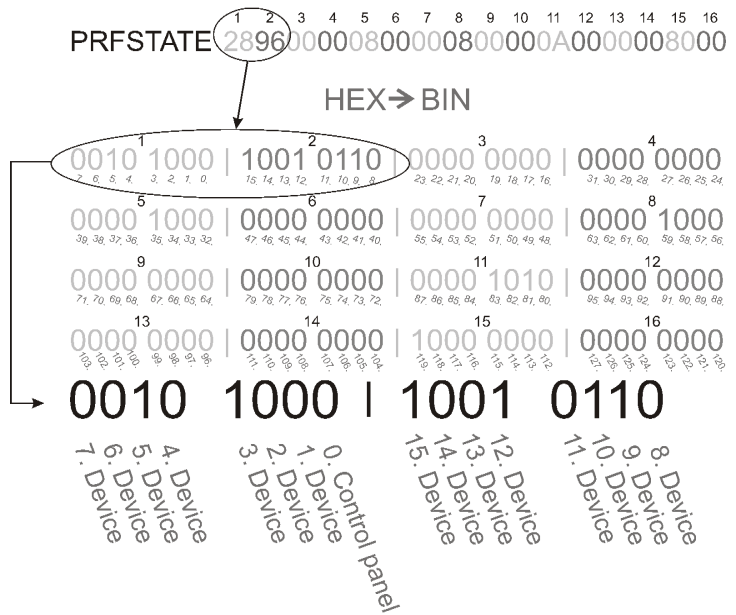


Figure 2: Displayed layout conversion from HEX to BIN

U1-A mode – function description (customer's settings)

The events are converted to the set U1-A mode code, it is visible as another ARC – concerning the radio communication module (F-Link sets up a new way of communication). When no U1-A device is connected and no data packets are transferred between the system BUS and the U1-A system, a communication error is triggered (fault of U1-A communicator).

Setting the module properties

The *Internal settings* option at the module position in the *Devices* tab in the F-Link software opens a dialogue window where you can set the following options for each output:

Device basic mode: Terminal / U1-A – for use with a smart home choose Terminal.

TMP terminal: Enabled / Disabled / Inverted – factory default NC can be changed to NO.

Motherboard button: Enrolling button / Tamper contact

Period after which a fault is triggered [min]: When an external communication fault is triggered it generates a fault in a pre-set time.

Connection confirmed: Every 10 s / Disabled – determines if the communication with the RS-485 serial line is confirmed or not.

Passive mode: In the passive mode the RS-485 serial line only receives the data, but sends them only on request (by relevant commands).



The manufacturer only guarantees correct functioning of the module. However, they cannot guarantee the correct functioning of the connected device on the serial line.

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Technical specifications

Input part

Power	from the control panel BUS 12 V DC (9 – 15 V)
Current consumption to calculate the backup (standby)	15 mA
Maximum current consumption for cable choice	20 mA

Output part – supply from an external device

Power	from an external device 12 V DC (6 – 28 V)
Nominal current load	15 mA
Maximum current load	15 mA
RS-485 operational voltage	5 V (4.75 – 5.25 V)
Input/output separation	galvanically (up to 4 kV)

General

Dimensions	52 x 38 x 14 mm
Weight	15 g
Classification	Environmental class II (According to EN 50131-1)
Operational environment	Indoor general
Operational temperature range	-10 to +40 °C
Average operational humidity	75 % RH, non-condensing
Complies with	EN 50130-4, EN 55032, EN 50581

JABLOTRON ALARMS a.s. hereby declares that the JA-121T is in a compliance with the relevant European Union harmonisation legislation: Directives No: 2014/30/EU, 2011/65/EU, when used as intended. 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.



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