

# The JA-121T BUS RS-485 interface

The JA-121T is a component of the **JABLOTRON 100** system. It interfaces the signals between the system **BUS** and the **RS-485** serial line and vice versa. It allows for instance connection to intelligent home control systems. It includes galvanically separated circuits protecting the device against up to 4kV. The product 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 a JA-190PL box for example, or in a different mounting box protected by a tamper contact.
2. Connect the wires to the RS-485 (6) output terminals (+12V, GND) – JA-121T does not provide voltage.

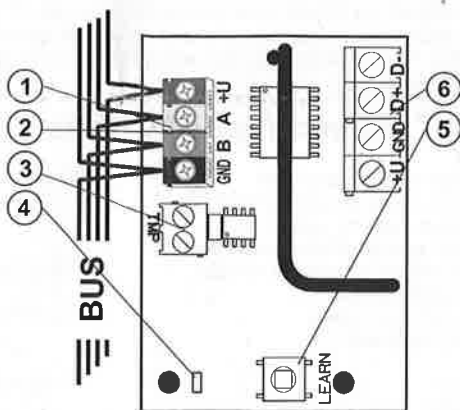


Figure 1: 1 – BUS terminals; 2 – production code (sticker on the BUS terminals); 3 – TMP terminal; 4 – yellow LED; 5 – LEARN (enrollment) button (tamper – spring is included); 6 – galvanically separated RS-485 BUS output

3. Connect the BUS cables to the terminals (1).



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

4. 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 window and launch enrollment mode by clicking on the **Enroll** option.
  - c. Press the **Learn** (enrollment) button (5) in the detector – the detector is thus enrolled and the yellow LED (4) indicator goes off.
5. Plug the tamper contact into the TMP (3) terminals (maximum cable length is 3 m) or use the built in microswitch. If you choose the microswitch then it's necessary to enable the function **Tamper** in **Internal settings**.
6. Close the module cover or installation box.

## 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:

<b>VER</b>	Displays the JA-121T module version.
<b>HELP</b>	Displays help (valid commands and also examples of correct syntaxes).
<b>SET</b>	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.
<b>SETP</b>	Sets partially selected sections: a command followed by the digits representing the sections which can 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.
<b>UNSET</b>	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.
<b>PGON</b>	Activates PG outputs: the reference numbers of the PG outputs you want to activate can 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 can be added after the command, each digit always has to be separated by a space.

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

### STATE

Lists 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 lists the status of all sections.

### PGSTATE

Lists 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 lists the status of all PG outputs.

### FLAGS

Lists the active indexes in sections (see table 2): 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 lists the indexes of all sections.

### PRFSTATE

Lists the status of all devices. The result is in HEX code, it is necessary to convert it to BIN code (1 – active, 0 – inactive).

**Examples:** The command has to be in 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).

### 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 weren't set before, the 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 system answers the command:

**STATE 2 ARMED**  
**OK**

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

**ERROR: 4 INVALID\_VALUE**

On an incorrectly entered command, the system answers:

**ERROR**

When an entered command is found to be correct, but with invalid authorisation, the system answers:

**ERROR: 3 NO\_ACCESS**

**Basic statuses of the sections:** STATE <section> <status>  
**STATE 1 READY**

### List of statuses

<b>READY</b>	<b>Normal mode</b>
<b>ARMED PART</b>	<b>Partially set</b>
<b>ARMED</b>	<b>Set</b>
<b>SERVICE</b>	<b>Service</b>
<b>BLOCKED</b>	<b>Blocked (function blocking after an alarm)</b>
<b>OFF</b>	<b>Section disabled</b>

Table 1

**Additional flags of the sections:** <flag> <sections> ON/OFF  
**INTERNAL\_WARNING 2 ON**

### List of flags:

<b>INTERNAL_WARNING</b>	internal siren active
<b>EXTERNAL_WARNING</b>	external siren active
<b>FIRE_ALARM</b>	fire alarm
<b>INTRUDER_ALARM</b>	intruder alarm
<b>PANIC_ALARM</b>	panic alarm
<b>ENTRY</b>	entrance delay
<b>EXIT</b>	exit delay

Table 2

# The JA-121T BUS RS-485 interface

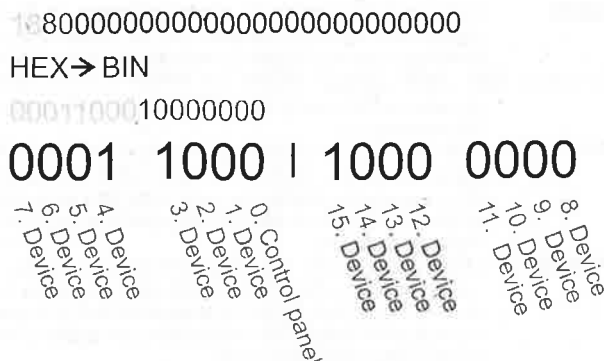


Figure 2: Displayed layout conversion from z HEX to BIN

A conversion of the numerical sequence from HEX form to BIN has to be performed. This sequence is automatically sent every 8 sec after any change or after the **PRFSTATE** command. The 14 characters are included for the JA-101K control panel and 30 characters are for the JA-106K control panel. Example:

PRFSTATE 18800000000000000000000000000000.

According to figure 2, we can say at which position the alarm has been triggered. Here it is visible that the active devices are detectors #3, #4 and #15.



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

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

The events are converted to U1-A code, is visible as a next ARC – concerning the radio communication module (F-Link sets up 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 (fault of U1-A communicator), a communication error is triggered.

## 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 an intelligent 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 10s / Disabled – determines if the communication with the RS-485 serial line is confirmed or not.

**Passive mode:** The module only listens to the RS-485 serial line of the system BUS in Passive Mode. Any other data is only sent when required by a specific command.

## Technical specifications

### Input part

Powered from control panel BUS	12 V DC (9 ... 15 V)
Current consumption in standby mode	10 mA
Current consumption for cable choice	20 mA

### Output part: supply of an external device

Operational voltage for external devices	12 V DC (6 – 28 V)
Maximum output current	12 mA
RS-485 operational voltage	5 V (4,75 ... 5,25 V)
Galvanically separated	(up to 4 kV)

### General

Dimensions	52 x 38 x 14 mm
Classification	Grade 2
According to	EN 50131-1, EN 50131-3
Operational environment according to EN 50131-1	II. general indoor

Operational temperature range

-10 to +40 °C

Also complies with

EN 60950-1, EN 50130-4, EN 55022



JABLOTRON ALARMS a.s. hereby declares that the JA-121T is in compliance with the essential requirements and other relevant provisions of Directive 2006/95/EC, 2004/108/EC, 2011/65/EU. The original of the conformity assessment can be found at [www.jablotron.com](http://www.jablotron.com) - Technical Support section.



**Note:** Although this product does not contain any harmful materials we suggest you return the product to the dealer or directly to the producer after use. For more detailed information visit [www.jablotron.com](http://www.jablotron.com).