The JA-121T BUS RS-485 interface

*The JA-121T is a bus component of the **JABLOTRON 100** system. It is a universal converter which interfaces the signals between the system BUS and the RS-485 serial line and vice versa. For example, it is suitable for instant connection to intelligent home control 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. When in passive mode, data is sent only by request. The module is addressable and takes one position in the system. 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 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 (can be used as a tamper contact).
2. If the module is placed in a different box with its own tamper contact, use the TMP contacts (3). The maximum length of the connected cables can be up to 3 metres. After enrolling the module in the control panel, select a type of protection against tampering (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.

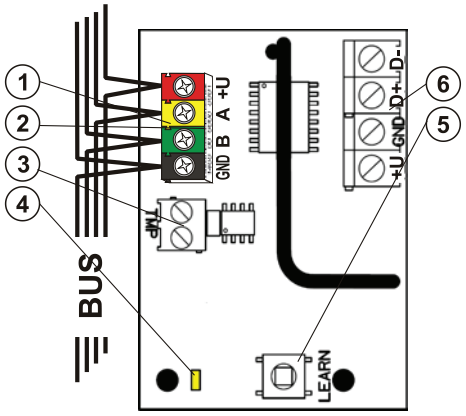

Figure 1: 1 – BUS terminals; 2 – production code (sticker on the BUS terminals); 3 – TMP terminal; 4 – yellow LED; 5 – LEARN (enrollment) button (tamper – spring is included); 6 – galvanically separated RS-485 BUS output

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. Press the **LEARN** (enrollment) button (5) in the detector – the detector is thus enrolled and the yellow LED (4) indicator shuts down.
6. Close the module cover or installation box.

Note:

- *It's possible to enroll the device by pressing the LEARN button at the front (5).*
- *The detector can be enrolled by entering the serial number (7) 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 Displays the JA-121T module version.

HELP Displays 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 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.

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 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** cannot 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 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's recorded in the event history and possible restriction linked with the user's code may be applied.

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

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

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 system answers:

ERROR: 4 INVALID_VALUE

On an incorrectly entered command, the system answers:

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
SERVICE	Service
BLOCKED	Blocked (blocking after an alarm)
OFF	Section disabled

Table 1

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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

Table 2

A conversion of the numerical sequence from HEX form to BIN has to be performed. This sequence is automatically sent every 8 seconds after any change or after the ***PRFSTATE*** command. The 14 characters are included for the JA-101Kxx control panel, 32 characters are for the JA-106Kxx control panel and 32 by request.

Example:

PRFSTATE 1880000000000000000000000000000000.
According to figure 2 below we can say which devices have been triggered in the past 8 seconds - #2, #5, #35, #59, #81 a #119

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, it is visible as a next 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 (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 10 s / Disabled – determines if the communication with the RS-485 serial line is confirmed or not.*

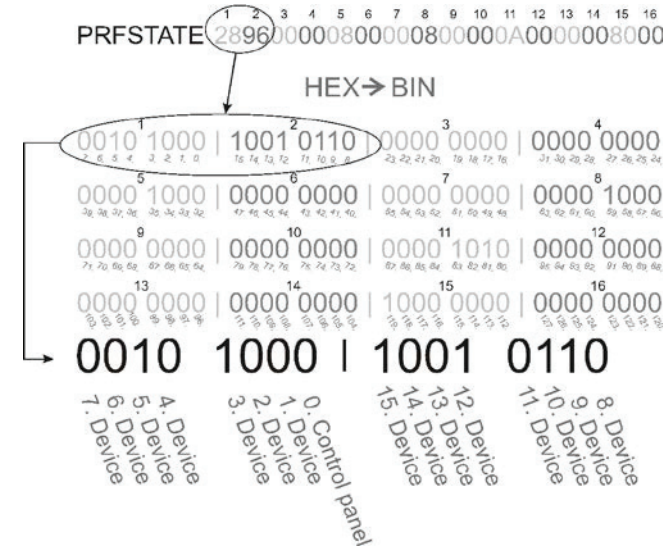

Figure 2: Displayed layout conversion from HEX to BIN

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	
Current consumption	
- to calculate the backup	15 mA
All inputs connected with GND	
- maximum 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	15 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 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: 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.