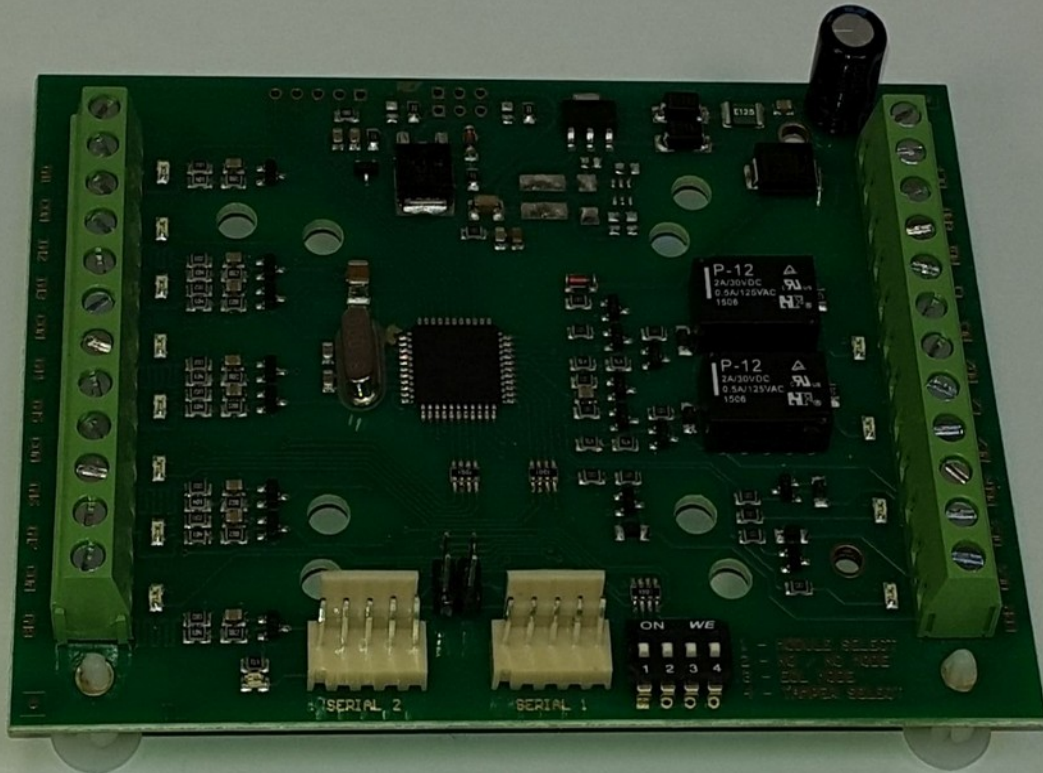


IO-84



I/O Expansion Module

FOR VB SERIES COMMUNICATORS

Installer Manual

Rev. 2016.05.27.



DECLARATION OF CONFORMITY

(in accordance with 93/68/EEC)

We, **VILLBAU Security Systems Ltd.** (1182 Budapest, Üllői út 611., HUNGARY) declare, that the following products:

IO-84 I/O Expansion Module

are in conformity with the following EU directives:

2014/30/EU	Electromagnetic Compatibility
2014/35/EU	Low Voltage Equipment Safety
1999/05/EEC	R&TTE Directive
2011/65/EU	RoHS2 Directive

The products named above comply with the requirements of these EU Directives by meeting the following standards:

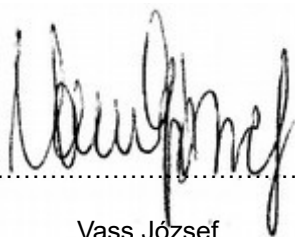
EN 61000-6-3:2001 EMC	Generic emission standard. Residential and commercial.
EN 50130-4:2011	Immunity Environmental Class I
EN 50136-1:2012	Alarm Transmission Systems
EN 60950-1:2006+A12:2011	Information technology equipment, Safety, General requirements
TBR 21, ETSI EN 300 001	PSTN Communication

We hereby declare that the products named above has been designed to comply with the relevant sections of the above referenced standards and specifications. The units comply with all essential requirements of the directives when installed and used as per manufacturer's instructions.

The technical documentation supporting this declaration is available at the above address for inspection by the relevant authorities. The products are marked with the CE mark.

In case of any change made to the instruments without the written permission of VILLBAU Security Systems, including any hardware or software changes, or the improper use of the instruments, this declaration should be considered void.

Budapest, 4. May 2016.



Vass József
on behalf of **VILLBAU Ltd.**



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1. BEVEZETÉS

The IO-84 Input/Output Expansion Modules provide 8 additional inputs and 4 additional programmable outputs for VB series communicators (VBIP, VBIP-G, VBG-S, etc.) The inputs can provide NO or NC functionality, and sabotage protected operation with End-Of-Line resistors, as well.



To be able to use and understand all the features of the VBG series communicators, please, read this *Installer Manual* carefully.



SAFETY NOTICE! Please, take care of installing and using this product according to the instructions and procedures detailed in this manual to ensure proper product safety.

2. SYSTEM OVERVIEW

The IO-84 I/O Expansion Module must be connected to the serial connector of the VB series communicators. In one system, up to 2 IO-84 modules can be used, (cascaded), or alternatively, one IO-84 module can assist two communicators at the same time, if needed.

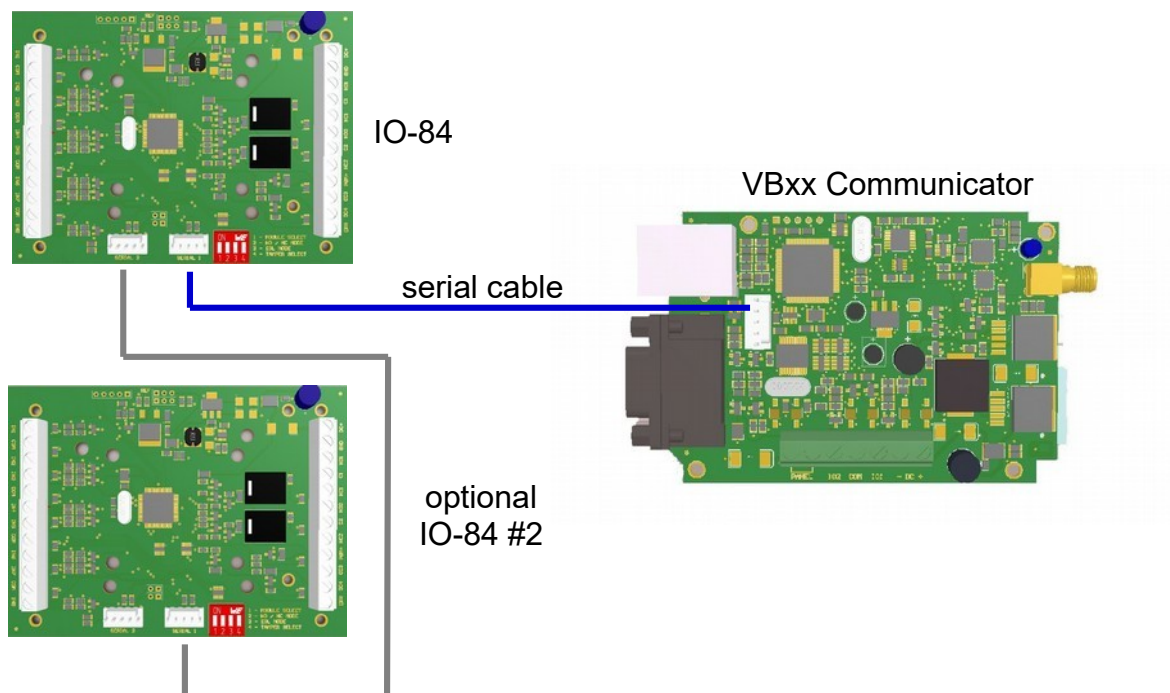
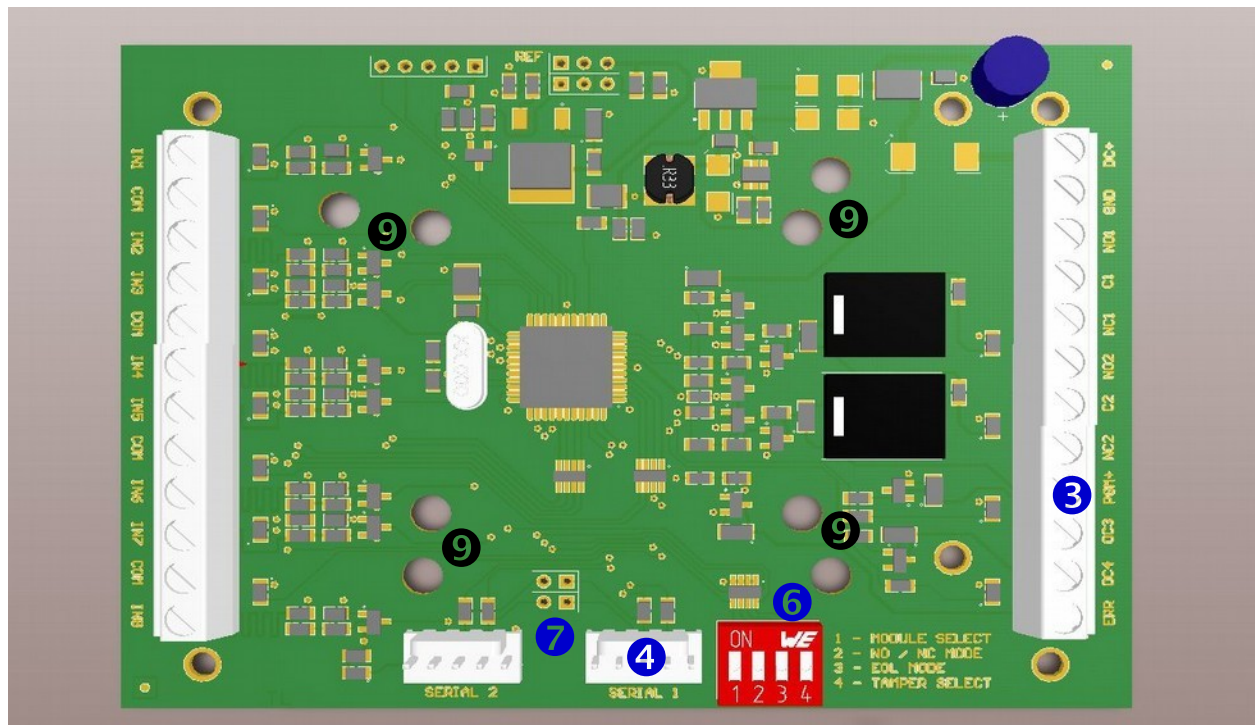


Figure 1.: Normal operation, one communicator with 1 or 2 IO-84 modules

3. OVERVIEW



4. LED INDICATORS

Input Indicator LEDs

The current state of the inputs is indicated by these LEDs according to the actual configuration of the inputs. (NC/NO, EOL, DEOL)

<i>no light</i>	The input is inactive (normal state)
<i>light</i>	The input is active
<i>flash</i>	Input tamper (short or cut, in EOL or DEOL modes only)

Output Indicator LEDs

These LEDs indicate the state of the outputs. For relay outputs the normal output is the NC state. If the module is powered down, the relay outputs will become active (NO).

<i>no light</i>	The output is inactive (normal state)
<i>light</i>	The output is active

Operation LED

This LED indicates the operation of the expansion module, according to the selected operating mode. If the communicator polls the IO-84 module correctly, this LED must flash.

<i>no light</i>	Polling error, check the serial cable and communicator setup
<i>flash</i>	Normal operation, one communicator is connected
<i>dual flash</i>	Normal operation, two communicators are connected



In case the Operation LED does not flash, the serial cable and the communicator must be verified for proper operation. The polling of the IO-84 module must be enabled at the communicator programming.

5. GENERAL INFORMATION, OPERATING MODES

The IO-84 I/O Expansion Modules must be connected to the VB series communicator with the supplied serial cable. Once polling is enabled at the programming of communicator it will process the data from the expansion module automatically.



Proper programming of the VB series communicators is necessary for the operation of the IO-84 expansion module. Module polling must be enabled. More information can be found in the EniTerm software.

The expansion module can be operated in two modes. During normal operation the module will assist one communicator. In this mode, up to 2 expansion modules can be linked together to provide altogether 16 additional inputs and 4 additional programmable outputs. A schematic of the normal operation can be seen on Figure 1., on page 5. For normal operating mode the (7) serial port jumpers must be closed, so that the primary and secondary ports will be linked together.



When using two IO-84 modules in a system, it is necessary to set the modules with DIP switch #1 to different addresses. .to ensure proper operation. There cannot be two modules assigned with the same address in a system!

When using the IO-84 I/O Expansion modul in „Dual“ mode, it can support two VB series communicators at the same time. In dual operating mode, the (7) serial port jumpers must be left open. This ensures, that the primary and secondary serial ports are independent, and it makes possible to connect two different communicators to them. The schematic of the dual operating mode can be seen on Figure 2. on page 9.



In dual operating mode, there can be only one IO-84 Expansion Module in the system. In this case the DIP Switch #1 must be set to OFF for the module.

In dual operating mode the IO-84 I/O Expansion Module monitors both serial port connections continuously. In case any of the serial ports fail, the module will activate the „ERR“ open collector output, and indicates the failure on the Operation LED as well.

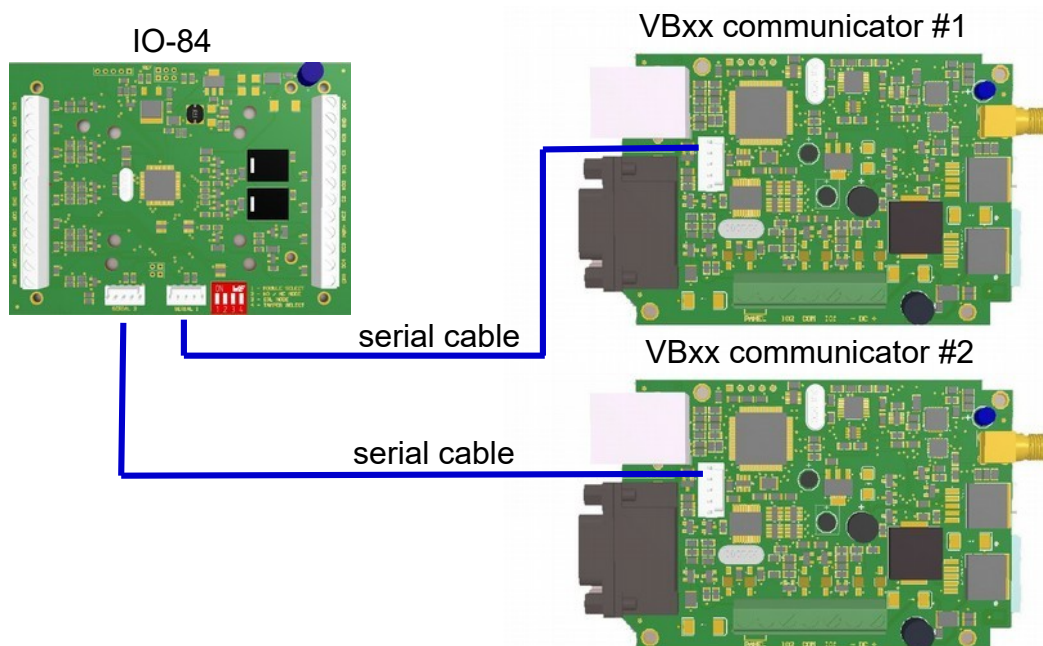


Figure 2. : Dual operating mode – two communicators, one common IO-84 module

In dual operating mode, for both connected communicators it can be set independently, how the inputs of the IO-84 must be handled, and how the outputs should be controlled. The programmable outputs will be activated through a logical „OR“ connection, so the output will be active if any of the two communicators activates it.



Take care, when programming the output control for IO-84 module in dual operating mode, that any of the two connected communicators can activate the same output.



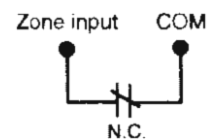
When selecting normal or dual operating mode on the IO-84 I/O Expansion Module by setting the serial port jumpers on or off - the IO-84 module must be powered down and restarted for the new setting to take effect.

6. INPUT CONFIGURATION

The inputs of the IO-84 I/O Expansion Module can be configured by the DIP Switches. The connected communicator(s) process the input data according to the input configuration. The function of the relevant DIP switches are as follows:

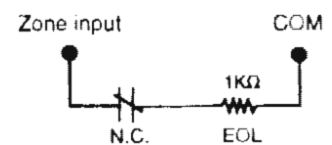
Switch #2 – NO/NC mode

When the DIP switch #2 is set to OFF (default), the inputs of the module follows the NC schema, so the normal state is when the input is closed, and active state corresponds to open contact (NC mode). Setting the DIP switch #2 into ON position will change input behavior to the opposite (NO mode).



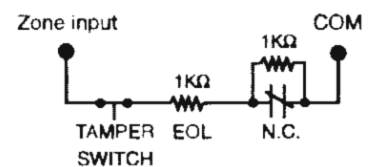
Switch #3 – End-Of-Line Resistor (EOL)

Setting the DIP switch #3 into ON position will activate the usage of end-of-line resistors, which makes simple tamper recognition possible. (short). In this mode, presuming that NC mode is selected, inactive state will correspond to 1 k Ω terminal resistance, an open loop will indicate active state, and shorting the loop will result loop-tamper status.



Switch #4 – Double EOL mode (DEOL)

Switch #4 will activate DEOL mode, which, by adding another EOL resistor, provides advanced tamper recognition. This option can only be used together with Switch #3. In NC mode, the input status is similar to EOL mode, except, that active state corresponds to 2 k Ω terminal resistance, and opening the loop will activate loop-tamper, just as well as shorting it.



7. TROUBLESHOOTING



In case there is any functional problem in the operation of the device, it is always recommended to upgrade the controlling communicator to the latest firmware version, as this might solve the majority of the eventual problems.

SYMPTOM: The communicator does not seem to poll the module correctly, the operating LED does not flash.

SOLUTION: Check the serial cable between the IO-84 and the communicator. Check the programming of the communicator, whether the IO-84 polling is enabled. Check if the module select switch (DIP switch #1) is correctly set. When using one module, this switch always have to set to OFF position.

SYMPTOM: The communicator seems to poll the IO-84 module all right, but the change of input status is not sent to the AMS central correctly.

SOLUTION: Check the programming of the communicator. Check if regular „reset“ and „test“ events arrive at the AMS. Check if a proper event code is programmed for the inputs – when there is no code set, it disables reporting the input to the AMS.

SYMPTOM: Using two IO-84 modules in dual operating mode, the second module is not polled correctly, inputs 9-16 and outputs 5-8 cannot be used.

SOLUTION: Check, if the serial port jumpers are removed from the pins, and if the modules have been assigned different addresses by the DIP Switch #1.

SYMPTOM: The IO-84 module does not work properly in dual operating mode, one of the communicators cannot activate the outputs.

SOLUTION: Check if the serial port jumpers are removed from the pins. In dual operating mode, the primary and secondary serial ports must not be connected.

HIBA: The IO-84 module seems to operate in dual mode properly, but the „ERR“ trouble output is active.

MEGOLDÁS: Check, if both communicators are programmed correctly. The operation LED must indicate double-flash. If one of the communicator does not poll the module correctly, the „ERR“ output will be active, indicating communication problem.

8. TECHNICAL DATA

	IO-84
Supply Voltage	10,5 – 28,0 Vdc
Standby Current	10 mA
Max. Current Load	80 mA
Inputs / Outputs	8 / 4
Output Type / max. Load	2 x Relay – NO/NC @ max. 1 A 2 x Open Collector / max. 50 mA
Operating Temperature	-10 °C / 50 °C
Size (W / L / H)	80 x 110 x 22 mm
Weight	50 g



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