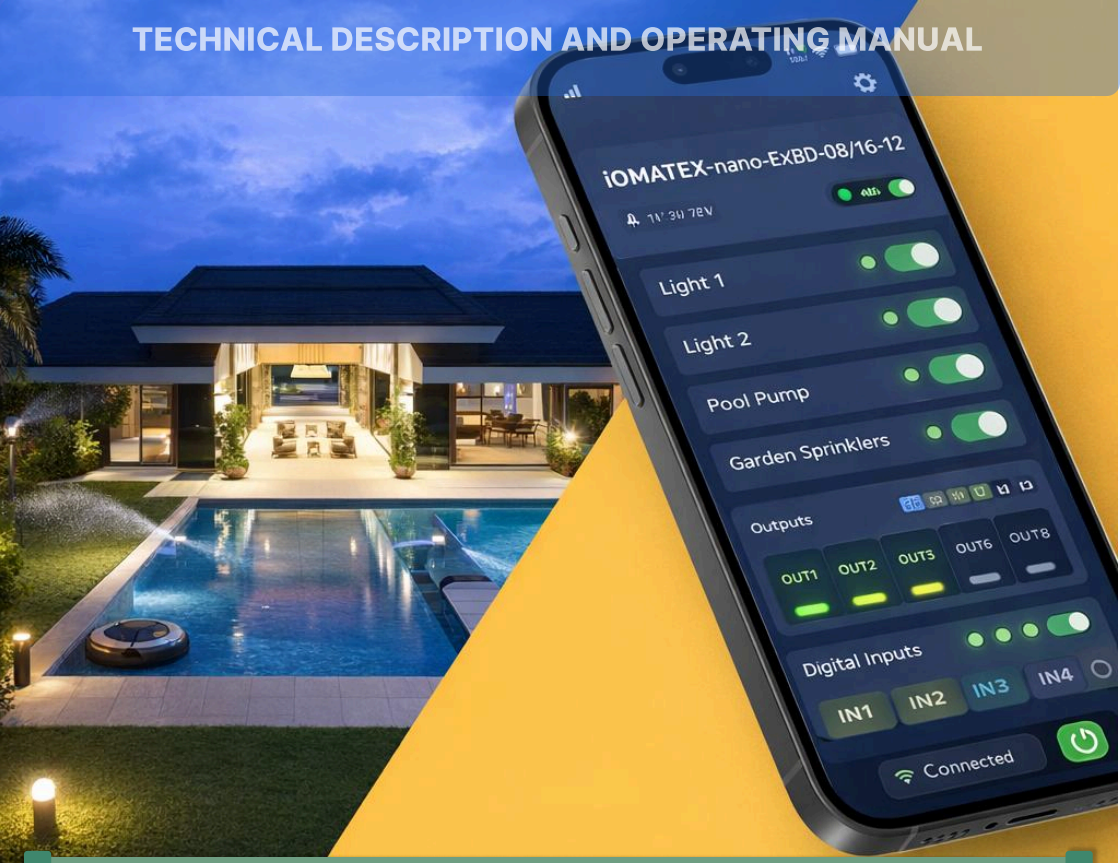
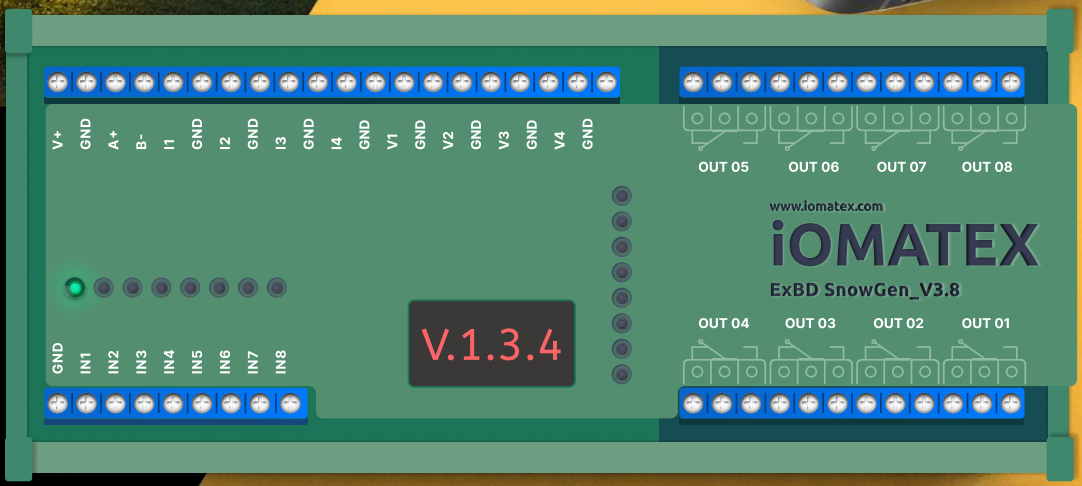
TECHNICAL DESCRIPTION AND OPERATING MANUAL





iOMATEX NANO ExBD-08/16-12 (24)

PROFESSIONAL DEVICE SERIES

Multifunctional I/O expansion module

Industrial execution

CONTENTS

INTRODUCTION

Before starting work with the iOMATEX NANO ExBD-08/16-12 (24) multifunctional I/O expansion module (hereinafter referred to as the Module), you must read this manual. The document contains instructions for setting up, connecting, and safely operating the device.

The Module has been designed in accordance with electrical safety standards. Violation of the operating rules may result in electric shock or fire.

- Installation, commissioning, and maintenance must be performed by qualified personnel.
- Operation at ambient temperatures below -20°C or above +60°C is prohibited.

PURPOSE OF THE MODULE AND SCOPE OF APPLICATION

PURPOSE OF THE MODULE

The iOMATEX NANO ExBD-08/16-12 (24) module is an intelligent peripheral controller designed to expand the capabilities of the iOMATEX platform and compatible systems.

The main function of the device is scalable data acquisition and discrete signal control in industrial automation systems. The module provides galvanic isolation of channels and flexible I/O configuration.

SCOPE OF APPLICATION

The module is designed to solve tasks of automation, monitoring, and control of discrete signals in the following areas:

- Building automation: lighting, climate control, and access control.
- Industrial automation: control of technological equipment (machine tools, conveyors) and small-scale data collection from sensors.
- Agricultural engineering: automation of irrigation and microclimate control in greenhouses.
- Security and fire alarm systems and telemetry.
- Prototyping: creation of prototypes of industrial devices and test benches.

TECHNICAL SPECIFICATIONS

PARAMETER NAME	VALUE / DESCRIPTION
Communication interface	RS485 (isolated)
Communication protocol	Modbus RTU
Device address	Customizable, 1-247
Data transfer rate (Baud Rate)	9600, 19200, 38400, 57600, 115200 bits/s (configurable)
Power supply voltage	12 (24) DC (±20%), terminal connector
Current consumption	≤ 100 mA (excluding relay load)
Installation	On DIN-rail (TS-35)
Operating temperature	-20°C ~ +60°C
Analog inputs (AI)	
Number of channels	4 by current (I1-I4), 4 by voltage (V1-V4)
Signal type	Current or voltage (programmable)
Current range	0-20 mA, 4-20 mA (automatic break detection at 4-20 mA)
Voltage range	0-5 V, 0-10 V
ADC resolution	16 bits
Accuracy	±0.1%
Input resistance	125 Ω (for current loop), >100 kΩ (for voltage)

PARAMETER NAME	VALUE / DESCRIPTION
Digital Inputs (DI)	
Number of channels	8
Signal type	«Dry contact» or 12 V logic level (24 V)
Logic level «1»	12 V (24 V) DC
Logic level «0»	0-5 V DC
Internal lift	Yes, to +12 V (+24 V)
Survey frequency	Up to 1 kHz
Ripple protection	Software and hardware
Digital outputs (DO / Relay outputs)	
Number of channels	8
Output type	Electromechanical relay
Switchable voltage (for relay version)	Up to 250 V AC / 30 V DC
Maximum switchable current	up to 10 A
Contact resistance	100 mΩ
Response time	< 10 ms
Mechanical wear resistance	> 10 million cycles

PARAMETER NAME	VALUE / DESCRIPTION
Indication	
Power (PWR)	Green LED
Communication (COM)	Yellow LED, flashes during data exchange
Digital inputs (DIx)	8 LEDs (green/red) indicate status
Digital outputs (DOx)	8 LEDs (red) indicate the status of the relay
Other characteristics	
Dimensions (WxHxD)	~ 180 mm x 72 mm x 19 mm
Weight	~ 312 g

COMPLETENESS

NAME	QUANTITY
Multifunctional expansion module iOMATEX NANO ExBD-08/16-12 (24)	1 pc.

APPEARANCE

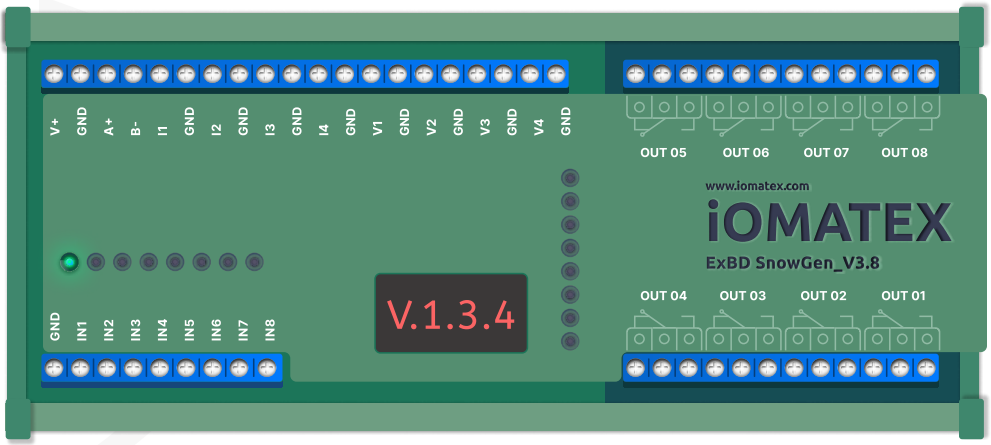


Figure 1. Multifunctional expansion module iOMATEX NANO ExBD-08/16-12 (24)

PREPARATION FOR WORK

CONNECTION DIAGRAM

General connection diagram for iOMATEX NANO ExBD-08/16-12 (24) to controlled devices.

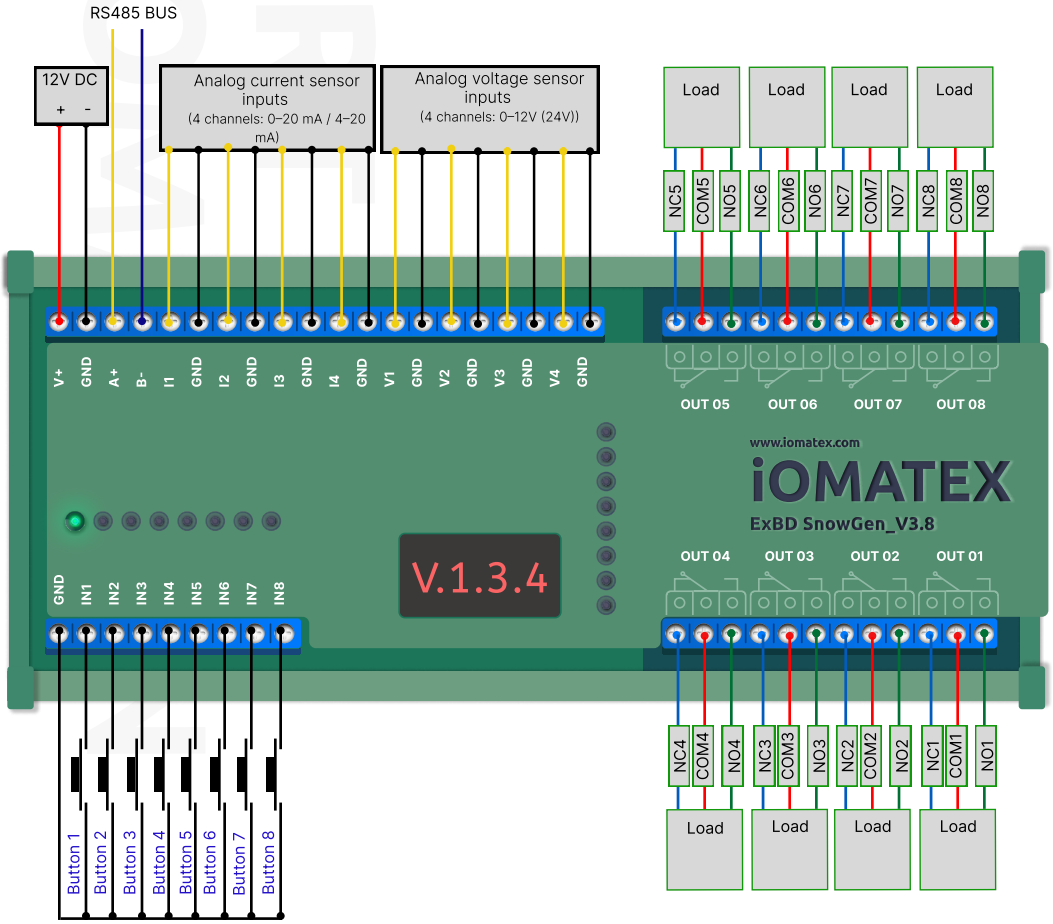


Figure 2. General view of the iOMATEX NANO ExBD-08/16 connection system (24)

DESCRIPTION OF THE CONNECTION DIAGRAM

1. Power connection

- Terminal: +V and GND
- Source: Stabilized 12V (24V) DC power supply.

(see Figure 2.)

2. RS485 interface connection (Modbus RTU)

- Terminals: A+, B-.
- Topology: Linear bus (not star).
- Number of connectable devices: up to 32
- Terminators: At the end of the physical bus (the last device in the line), a terminating resistor (usually 120 ohms) must be installed between terminals A+ and B-.

3. Connecting analog inputs (I1-I4 and V1-V4)

- Terminals: For each channel: Ix and Vx (signal) and GND - common for analog inputs.
- For sensors with current output (4-20 mA):
  - (+) sensor → Ix module.
  - (-) sensor → module GND.
- For sensors with voltage (0-12V) (0-24V):
  - (+) sensor output → module Vx.
  - (-) sensor output → module GND.

(see Figure 2.)

4.Connecting digital inputs (IN1 - IN8)

- Terminals: INx and common GND.
- «Dry contactконтакта connection (button, limit switch):
  - One button contact → INx.
  - Second button contact → GNDI.

5.Connecting loads to digital (relay) outputs (OUT1 - OUT8)

- Terminals: For relay circuit: → COMx (common), NOx (normally open), NCx (normally closed).

(see Figure 2.)

| CONNECTING AND CONFIGURING THE MODULE IN THE WEB APPLICATION OF THE **iOmatex** ONLINE SERVICE

1. Ensure that the IOMX G-Box 023D gateway is connected to the Ethernet/Wi-Fi network and registered in the **iOmatex** system.

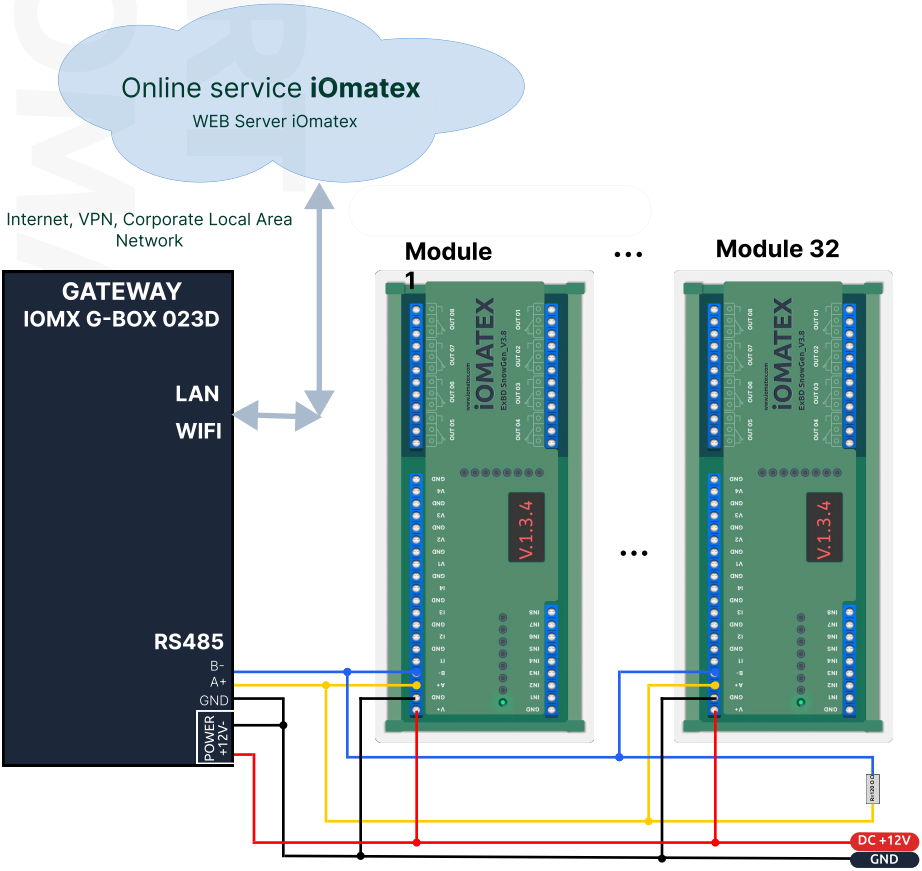


Figure 3. Connecting the iOMATEX NANO ExBD-08/16-12 (24) module and the IOMX G-Box 023D gateway to the RS485 interface and the iOmatex network.

2. Connect the iOMATEX NANO ExBD-08/16-12 (24) module to the gateway via RS-485 (lines A and B, observe polarity).

(Up to 32 modules can be connected to one gateway via RS-485).

3. Add the module in the **iOmatex** web interface
- Open the **iOmatex** web interface. Go to the «Devices» section.
- Enable the «Auto-detect devices» function. The system will automatically find the connected module in the RS-485 network.

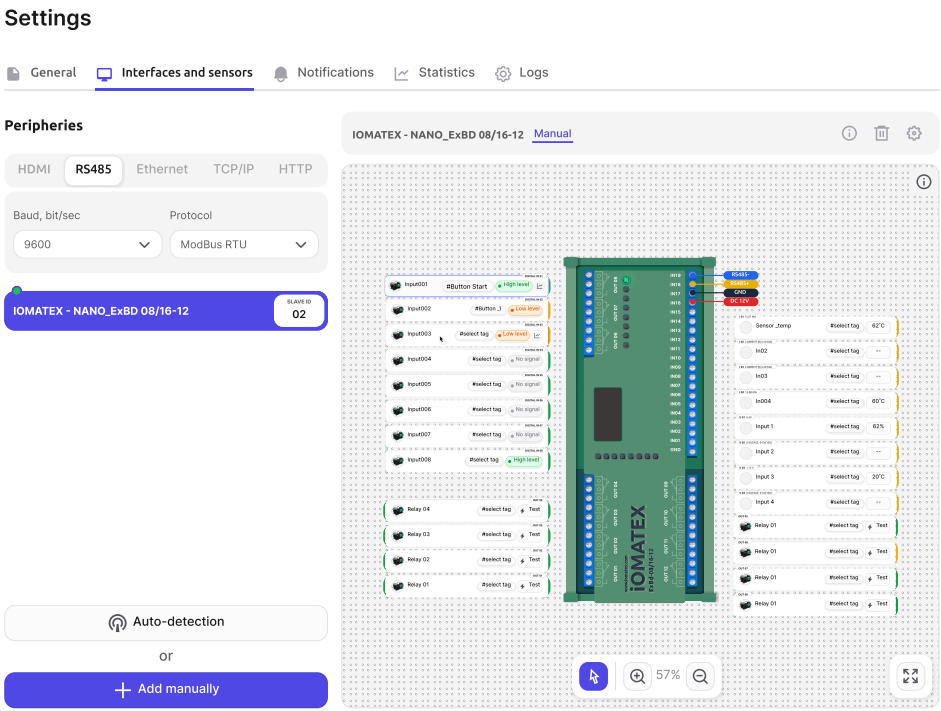


Figure 4. Web interface for configuring the iOMATEX NANO ExBD-08/16-12 module (24)

4. Configure the module settings (if necessary)

After adding the module, set:

- **Slave ID** — unique module address;
- **Baud Rate** — data transfer rate.

(default value — 9600 bits/s).

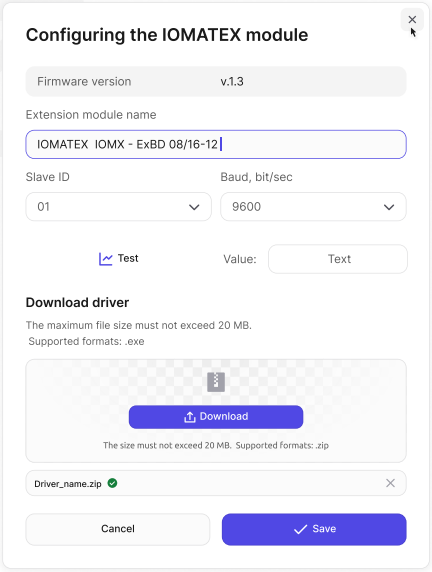


Figure 5. Peripheral settings

If you have any questions, please contact: service@it-screen.com

PACKAGING

The overall dimensions of the iOMATEX NANO ExBD-08/16-12 (24) module are: W x H x D ≈ 180 mm x 72 mm x 19 mm.

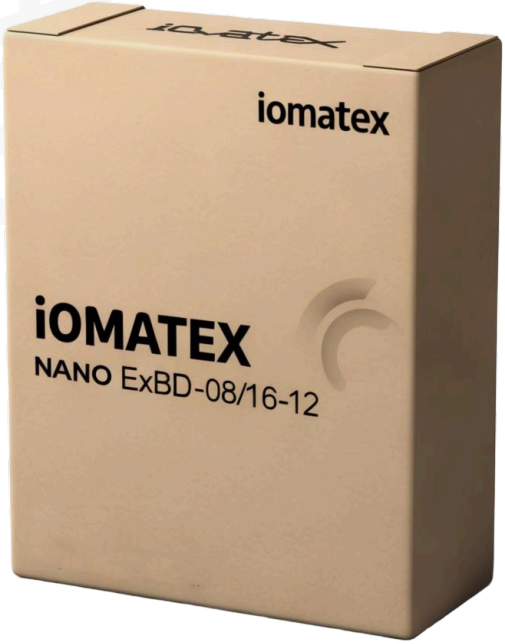


Figure 6. Packaging of the iOMATEX NANO ExBD-08/16-12 module (24)

TECHNICAL SERVICE

The iOMATEX NANO ExBD-08/16-12 (24) module does not require any special scheduled maintenance.

TRANSPORTATION AND STORAGE RULES

- The device may only be transported in its original packaging.
- Ambient temperature: -20°C to +60°C.
- Relative humidity: max. 80% (non-condensing).

MANUFACTURER'S WARRANTIES

GENERAL PROVISIONS

The manufacturer guarantees the trouble-free operation of the iOMATEX NANO ExBD-08/16-12 (24) module, provided that the rules for operation, transportation, and storage set forth in this manual are followed. The warranty period is 12 months from the date of sale to the end user.

TERMS AND CONDITIONS OF WARRANTY OBLIGATIONS

The manufacturer undertakes to repair any defects found or replace the product during the warranty period. These obligations are fulfilled subject to the following conditions:

1. The defect is not the result of the buyer's violation of the rules of operation, storage, transportation, or installation.
2. No unauthorized changes have been made to the module's design, including the electrical circuit.
3. The module has not been repaired or disassembled by a person not authorized by the manufacturer.
4. A completed and properly executed warranty card with the date of sale and a certificate of connection has been provided.

LIMITATIONS OF WARRANTY

The manufacturer shall not be liable and the warranty shall not apply in the following cases:

- Incompleteness or mechanical damage discovered after the module has been transferred to the buyer.
- Malfunctions caused by natural disasters, fires, or other force majeure circumstances.
- Absence of the date of sale on the warranty card (in this case, the warranty period is calculated from the date of manufacture indicated in the product passport).