

ИСО 9001 EAC

USB/RS-485 INTERFACE CONVERTER

S2000-USB

User's Manual

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This user's manual explains the principles of operating S2000-USB USB/RS-485 Interface Converter (hereinafter referred to as the converter).

Only the personnel who have studied this manual are allowed to operation activities. All activities on mounting, start-up, programming, and testing shall be performed in compliance with the requirements of the regulatory documentation in force at the place of operation.

Abbreviations:

ISS: Integrated Security System

1 Description and Operation

1.1 Purpose

S2000-USB USB-to-RS485 Interface Converter is designed to convert USB interface signals to the relevant signals of two-wire trunk interface RS-485 with galvanic isolation.

The converter is to be powered from the USB port of a personal computer.

The S2000-USB USB-to-RS485 interface converter can be operated under such operating systems as Windows 2000, XP, Server 2003, Vista, Server 2008, Server 2008 R2, Windows 7, Windows 8, Windows 10 as a virtual COM port.

Scope of the product's application: autonomous or centralized protection of premises (offices, shops, banks, warehouses, residential buildings, enterprises) against unauthorized intrusions and fires.

The unit is classed as a restorable and regularly maintainable item.

The design of the unit doesn't imply operating it in aggressive and dusty environments or in ex-hazardous and flammable premises.

1.2 Specifications

Essential specifications for the unit are given in Table 1.2.1.

Table 1.2.1

Parameter	Value
Power voltage, V	+5 (USB port of a PC)
Current consumed in the quiescent mode, mA, max	200
Baud Rates, bit/s	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Enclosure protection degree	IP40
Resistance to mechanical exposure as per OST 25 1099-83	Arrangement Category III
Environmental category as per OST 25 1099-83	O3
Operating temperature range, °C	Minus 30 to +50
Weight, kg, max	0.040
Overall dimensions, mm, max	56 × 38 × 20
Non-stop operation	Round-the-clock
MTBF in the quiescent mode, hours	80,000
Survival probability (for 1000 hours)	0.98758
Expected lifetime, years	10

The equipment passes the man-made radio disturbance standards prescribed for Class 'B' equipment as per GOST R 51318.22.

As to immunity to man-made radio disturbance, the equipment meets the requirements for Test Severity Level III as per GOST R 50009.

1.3 Scope of Delivery

The standard delivery is shown in Table 1.3.1.

Table 1.3.1

Item	Quantity
S2000-USB USB/RS-485 Interface Converter	1 pc.
Accessory Kit:	
Cable USB Type-A & Micro B	1 pc.
Woodscrew 1-3×25.016 GOST 1144-80	2 pcs.
Wall Plug (for 6×30 screw)	2 pcs.
Documentation	
S2000-USB USB/RS-485 Interface Converter Operations Manual	1 pc.

1.4 Arrangement and Operation

S2000-USB provides converting USB signals to the RS-485 signals and back. Upon having connected to a PC and driver's having installed, the interface converter operates as a virtual COM port providing data transmission in the half-duplex mode. Parameters of transmitting data over the RS-485 interface (data transmission rate, parity, quantity of stop bits) are to be set by the same way as for a hardware COM port of the PC.

1.5 Measuring Instruments, Tools, and Accessories

While mounting, commissioning, and maintaining the unit, please use the instruments, tools, and accessories shown in Table 1.5.1.

Table 1.5.1

Instrument	Specifications
Digital multimeter	UT33D
Flat head screwdriver	SL 3.0x50 mm
Cross slot screwdriver	PH 2x100 mm
Side-cutting pliers	160 mm
Pliers	160 mm

Note: Other measuring instruments, tools, and accessories can also be used.

1.6 Marking and Sealing

Every unit has a marking applied to the back of its closure.

The marking contains the name of the unit, its decimal number, factory number, the year and quarter of production, and conformity marks.

1.7 Packaging

The unit along with its accessory kit and operation documentation is packed in a separate cardboard box.

2 Intended Use

2.1 Operating Restriction

Long-term operation of the equipment with any mechanical damage, violation of geometry, violation of the insulation of the supply wires or the casing it not allowed.

2.2 Preparing for User

2.2.1 Safety Precautions

- The interface converter design meets the requirements of electric and fire safety including emergency operation in accordance with Russian standards GOST 12.2.007.0-75 and GOST 12.1.004-91;
- The equipment has no circuits under a hazardous voltage;
- Do SHUT OFF power from the equipment before mounting, installing, and maintaining this one.

Installation and maintenance shall be carried out by professionals qualified for Accident Prevention of Class II or higher.

2.2.2 Design

The view of the interface converter along with its overall and mounting dimensions are shown in Figure 1.

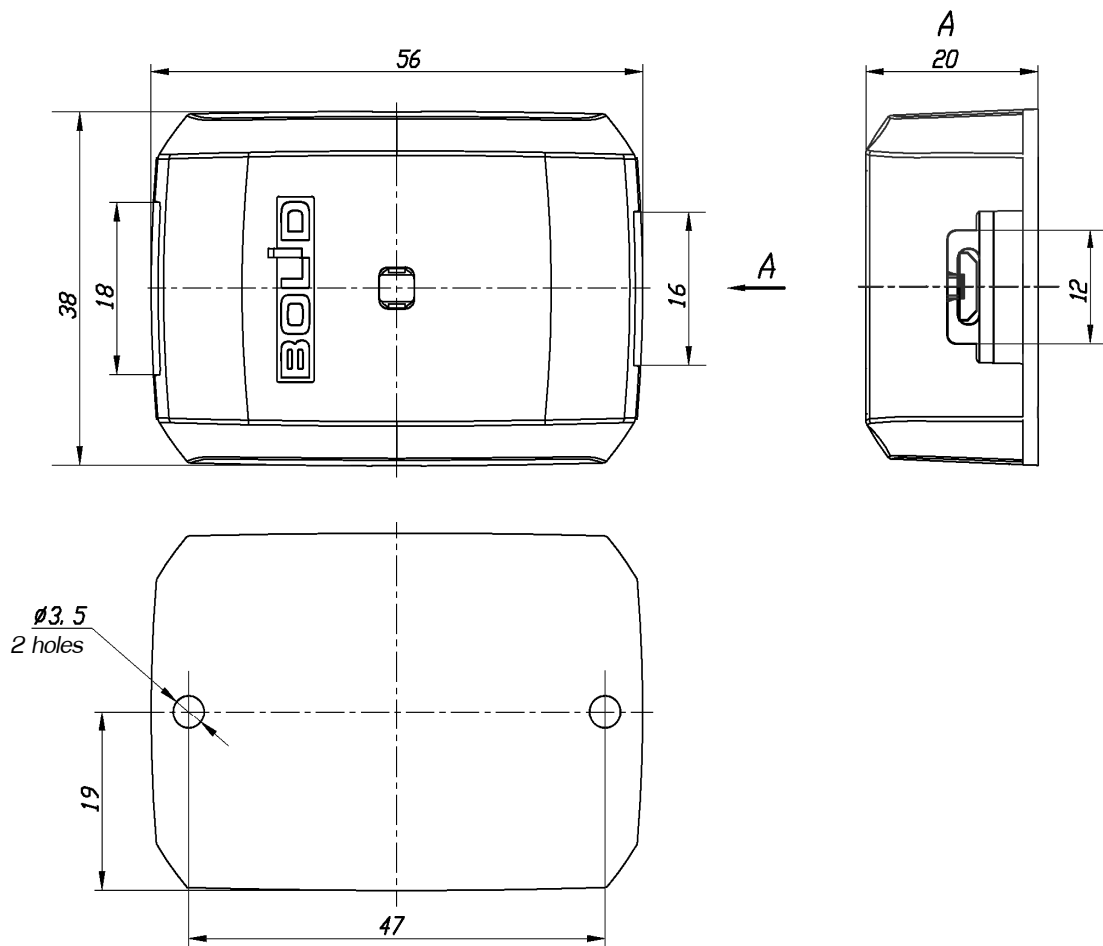


Figure 1

2.2.3 Connecting the Interface Converter

A schematic for external connections of the S2000-USB converter is shown in Figure 2.

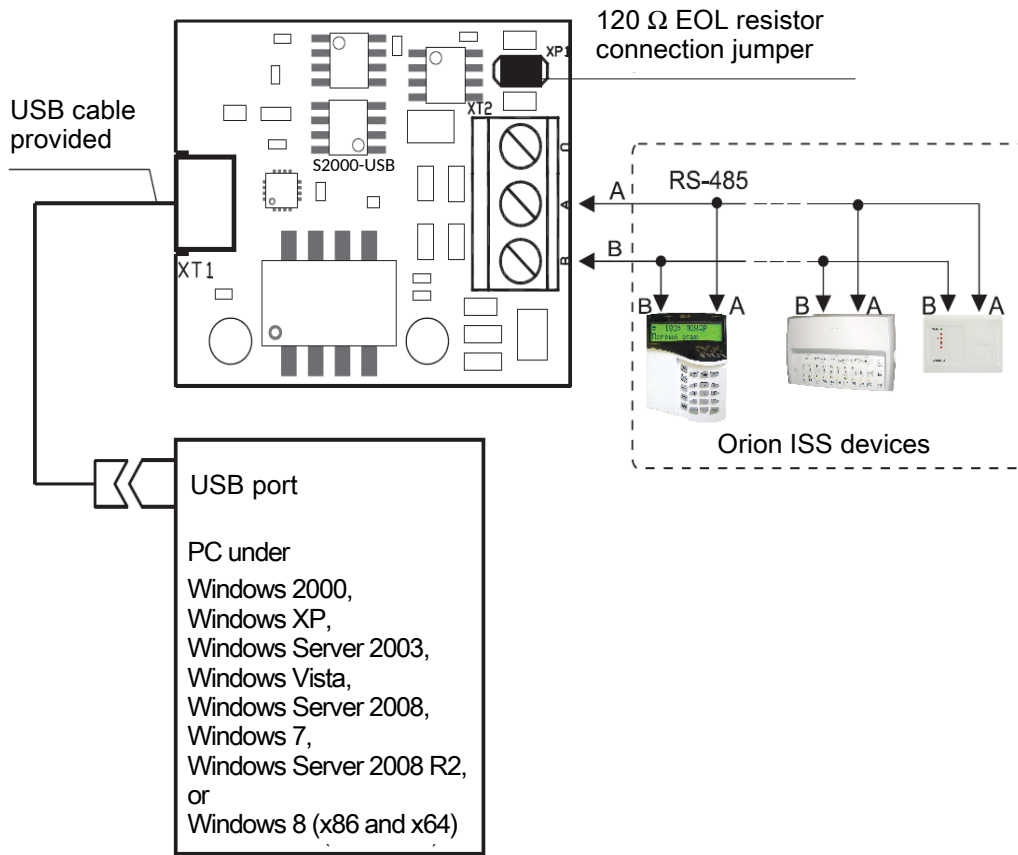


Figure 2

Connect RS-485 A and RS-485 B lines to the A and B contacts of the terminal block respectively. The maximum wire cross-section shall be 2 mm². If Orion ISS devices are supplied with power by different power supplies, please couple their 0V circuits with the 0V circuit of the converter. If the interface converter is the first or the last device in the RS-485 interface bus, please connect the 120 Ω resistor by closing the jumper located near the terminal block (see Figure 2). Otherwise, the jumper shall be open. Connect the converter to the PC via the standard USB cable provided.

2.2.4 Settings

Prior to connecting the interface converter to a PC, please install its driver (can be found at the company site <http://bolid.ru> in the section PRODUCTS on the page of the S2000-USB USB/RS-485 interface converter).

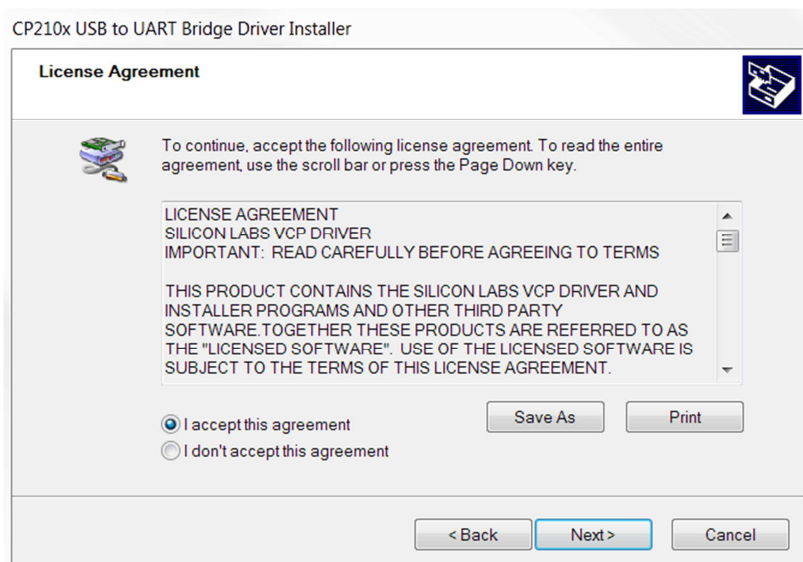
Unpack CP210x_VCP_Windows.zip and run the proper installer depending on the bitness of the operating system:

- CP210xVCPInstaller_x86.exe for 32-bit system, or
- CP210xVCPInstaller_x64.exe for 64-bit system.

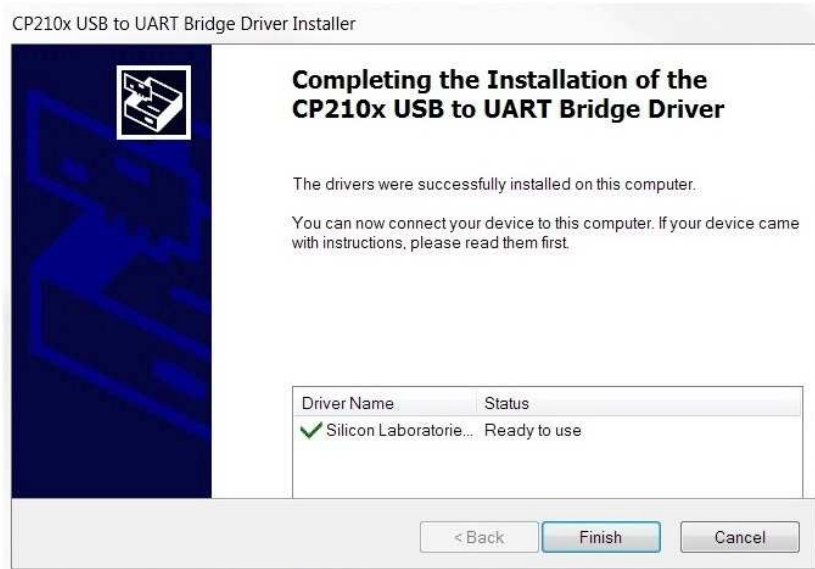
Upon appearing the installer window, select Next:



– Then, in the next window of the driver installer select the option button “I accept this agreement” and press Next again:



- Wait until the installation is completed and click Finish in the appeared window:



- When all necessary connections are completed, the interface converter can be connected to the PC. Please wait until a message about installation is finished successfully and the equipment is ready to operate appears. Upon installing the interface converter driver, Ports (COM&LPT) of the Device Manager will include the entry CP2104 USB to UART Bridge (COM x) ('x' is the number of the virtual COM port).

2.2.5 Testing Operability

Test operability of the interface converter as described in Clause 3.4 of this manual.

2.2.6 Extreme Situation Actions



Warning!

If sparks, fire, smoke, or smell of burning is found at the installation site of the product, the product must be de-energized and sent for repair

3 Maintenance

3.1 General

The product shall be maintained according to a planned preventive strategy which provides annual scheduled maintenance.

3.2 Safety Precautions

The product shall be maintained by personnel qualified for the Electrical Safety of Level II or higher.

3.3 Maintenance Procedures

Scheduled annual maintenance works include:

- Visual checking of the interface converter conditions;
- Verifying the converter is secured reliably and external installation wires and contact joints are in proper conditions;
- Checking operability as per Clause 3.4 of this manual.



Warning!

Removing the PC board from the unit casing automatically voids the manufacturer's warranty

3.4 Performance Test

Testing operability of the converter is to check stable communication between the PC and the converter connected into the RS-485 line. By means of UProg utility, search a device within the RS-485 line and read its configuration.

Indicator's illuminating means receiving / transmitting signals over the RS-485 interface bus.

3.5 Technical Examination

Technical examination is not applicable for this product.

3.6 Preservation (Depreservation, Represervation)

Preservation is not applicable for this product.

4 Repair

Repair of faulty equipment is to be conducted by the manufacturer or in authorized repair centers. The product shall be sent for repair in compliance with Company Standard QMS 8.5.3-2015, which can be found online at our website <https://bolid.ru/support/remont/>.



Attention!

The equipment shall be submitted for repair being assembled and clean and along with all the parts listed in the documentation.

Claims are accepted only if a reclamation report describing the failure in question is applied to the submitted equipment.

A product's failure resulted from consumer's not observing rules of mounting and operation is not a reason for claims and warranty repair.

Claims should be submitted to the following address:

NVP BOLID, #4 Pionerskaya Str., Korolyov, Moscow Region, 141070, Russia

Phone: +7 (495) 775-71-55 E-mail: info@bolid.ru.

In case of any issue related to use of the product, please contact the technical support: +7 (495) 775-71-55 or e-mail: support@bolid.ru.

5 Storage

Storage in a transport container is permitted at ambient temperatures -50°C through +50°C and relative humidity up to 95% at +35°C.

Storage in the consumer package is permitted only in heated premises at temperatures +5 through +40°C and relative humidity up to 80% at +20°C.

6 Transporting

The product can be transported in a transport container at ambient temperatures minus 50 through +50°C and relative humidity up to 95 % at +35°C.

7 Disposal

7.1 The product can be disposed of considering that there are no toxic components in it.

7.2 The content of precious materials: doesn't require accountability for storage, retirement, and disposal (Clause 1.2 of GOST 2.608-78).

7.3 The content of non-ferrous metals: does not require accountability for retirement and further disposal.

8 Manufacturer Warranty

The manufacturer guaranties the equipment meets with technical requirements stated in the manuals if the user follows the instructions for transportation, storage, installation, and usage.

The warranty period is 18 months since putting the product into operation but no more than 24 months from the manufacturer's date of production.

9 Certification Information

9.1 S2000-USB USB-to-RS485 Interface Converter meets the requirements of Technical Regulations of Custom Union TR CU 020/2011 'Electromagnetic Compatibility of Technical Equipment' and is covered by Conformity Declaration EAЭC № RU Д-РУ.PA02.B.10502/21.

9.2 S2000-USB is a component of Intrusion and Panic Alarm System, which is covered by the certificate of conformity of transport safety technical arrangements with requirements for their functional properties No. МБД РФ.03.000971, issued by Federal State Institution Scientific-Production Association "Special Equipment and Communications" of the Ministry of Internal Affairs of the Russian Federation.

9.3 S2000-USB is a component of Access Control System, which is covered by the certificate of conformity of transport safety technical arrangements with requirements for their functional properties No. МБД РФ.03.000972, issued by Federal State Institution Scientific-Production Association "Special Equipment and Communications" of the Ministry of Internal Affairs of the Russian Federation.

9.4 The production of S2000-USB is awarded with Conformity Certificate GOST R ISO 9001. The Certificate is available on the website <https://bolid.ru> in the section ABOUT.