S2000M
Fire and Intrusion
Monitoring and Control Panel

Installation Guide

This Installation Guide provides basic instructions for installation of the S2000M panel and getting it ready to work.

Description and instruction for the panel programming and usage are provided in the User's Guide (it can be found on the supplied CD or downloaded at bolid.ru).

1   CAUTION

- *The panel does not have circuits containing hazardous voltages.*
- *The design of the panel complies with the requirements of electrical and fire safety as per Russian Standards GOST 12.2.007.0-75 and GOST 12.1.004-91.*
- *The design of the Panel ensures its fire safety in case of malfunction and misuse according to GOST 12.1.004091*
- ***Installation and maintenance work can be provided only when the panel power supply is OFF***
- *Installation and maintenance shall be carried out by personnel qualified for the Electrical Safety of Level Two or higher.*

2   INSTALLATION

The panel shall be installed in secured areas in easy-for-access locations keeping the panel protected from atmospheric perceptions and mechanical damage. Usually, the panel is installed on vertical surfaces (walls) at height of 1.4-1.5 meter above the floor. It is not recommended installing the panel in areas where it can be exposed to the direct sunlight. The Panel is not designed to be used in aggressive, dust, explosive and fire-hazardous environments

Figure 1 shows the panel's view, dimensions, and installation layout. The connection shall be provided as shown in Figure 3.
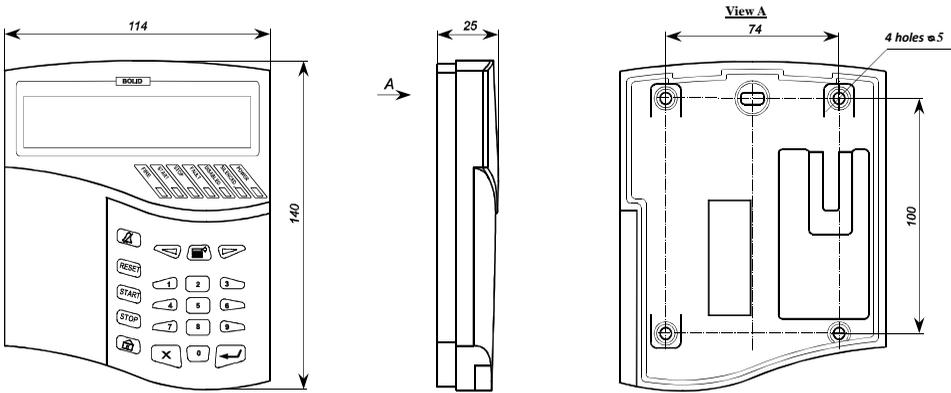
Figure 1. Dimensions and Installation Layout

3 INSTALLATION

3.1 Mounting to Wall

3.1.1   Make sure that the wall for the panel installation is smooth, clean, and dry.

3.1.2   Apply installation layout to the wall (See Figure 13). Drill three holes (two upper holes and one of the lower holes as required)

3.1.3   Remove the panel base as it is shown in Figure 2: press base latches 1 and 2 and remove the panel body.

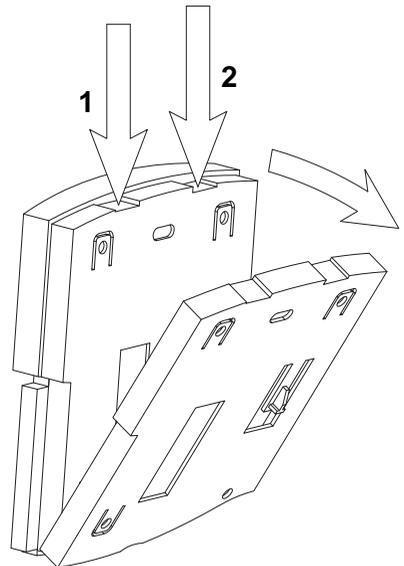3.1.4   Insert nail plugs in the drilled holes and secure the panel base using screws.

Figure 2. Dismounting

4 CONNECTING PANEL

The S2000M's connectivity is described in Table 1. The conductors of the cable for connections shall be not less than 0.2 mm^2 in cross section and no more than 1.5 mm^2.

Table 1: S2000M Connectivity

| Legend	Descriptions
0V	- power 10.2 … 28.4 V (primary supply)
+U1	+ power 10.2 … 28.4 V (primary supply)
0V	- power 10.2 … 28.4 V (backup supply)
+U2	+ power 10.2 … 28.4 V (backup supply)
A	RS-485 input/output
B	RS-485 inverse input/output
TxD	RS-232 data output
RxD	RS-232 input: Printer ready signal (when connecting a printer) or data received (for other operating modes of the RS-232 interface)
GND	RS-232 common circuit
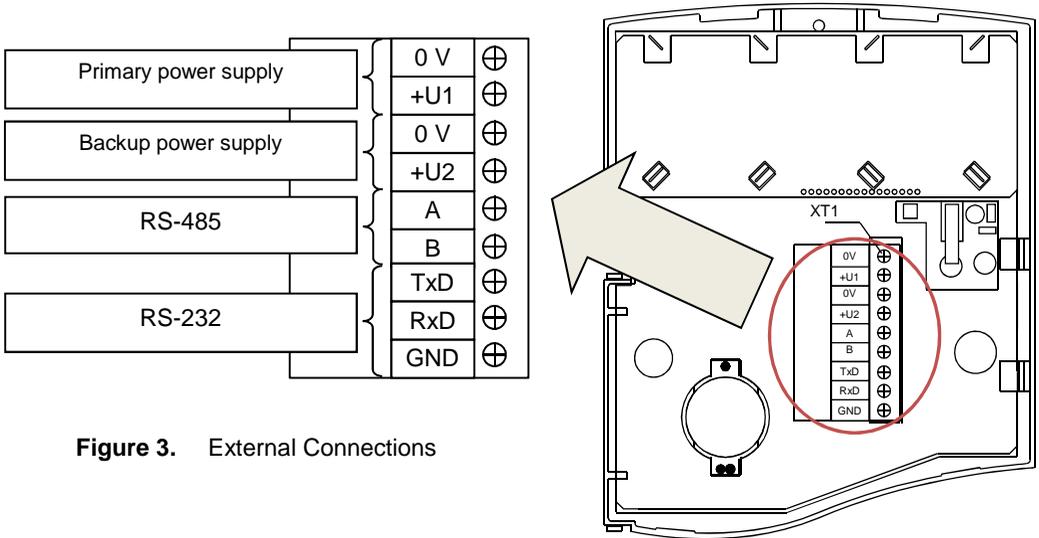
Figure 3. External Connections
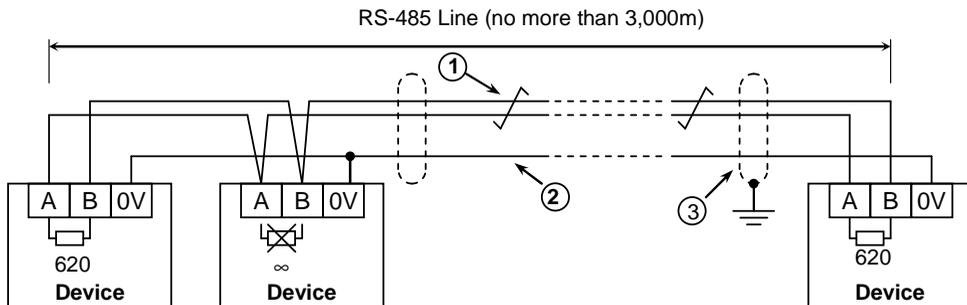
4.1 Connecting RS-485 Lines

4.1.1   When installing RS485 line, it is recommended using twisted pair cable. If RS485 line is 100 meters or longer, only a twisted pair must be used.

4.1.2   The Bus topology is recommended for the RS485 line (see Figure 4). If needed, the RS485 trunk can be branched with short branches (no longer than 100 meters). Longer branches shall be made using S2000-PI interface converter (see Fig. 6)

4.1.3   The maximum length of RS485 line is 3,000 meters, if cable of 0.5 mm^2 conductors is used. If cable of 0.2mm^2 conductors is used, the recommended RS485 line length is no longer than 1,200 meters. The RS485 line can be extended using the S2000-PI interface converter as shown in Figure 5.

4.1.4   To connect the panel to RS485 interface, please connect A and B lines of RS485 interface to A and B terminals on terminal strip

4.1.5 If devices connected to the RS485 interface are powered from different power supplies, please integrate them into 0V circuits (see Fig. 4). As in integrating wire, it is recommended using a free conductor or pair in RS485 cable. Using an ungrounded cable screen (if available) for 0V circuit is also acceptable.
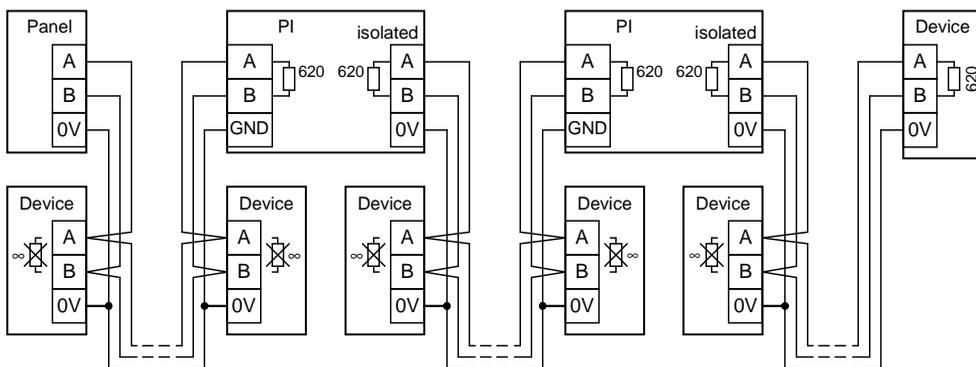
RS-485 Line (no more than 3,000m)

Device: Orion system device connected to the S2000M panel over RS-485 (up 127) or S2000M panel (1 only.);
1: RS-485 line (twisted pair)
2: Potential equalization conductor
3: Screen (if screened cable is used).

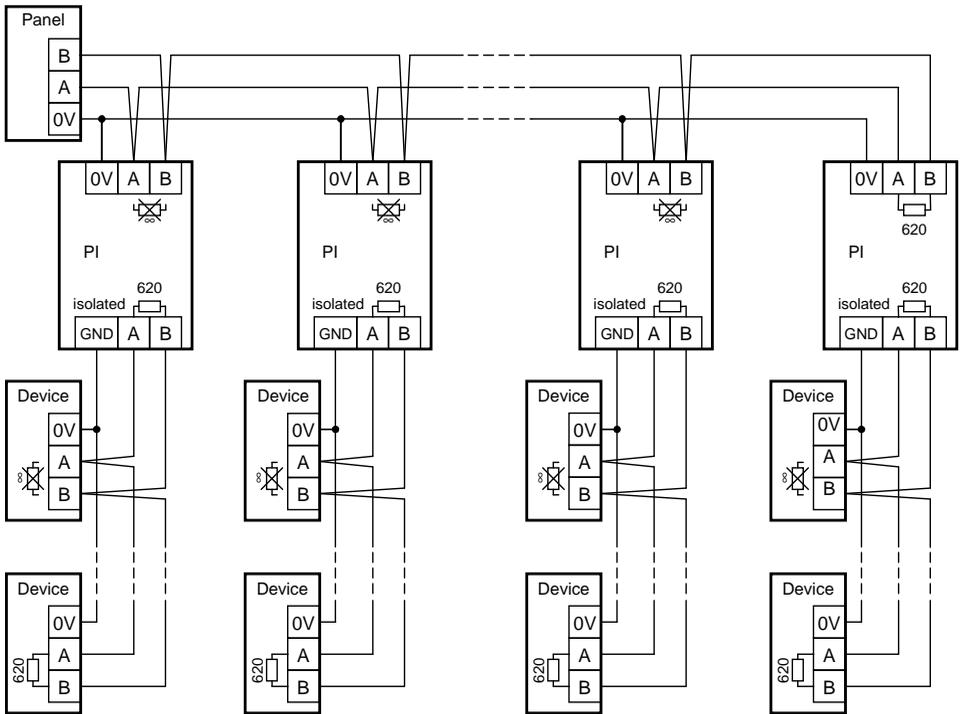**Figure 4.**   Connecting to RS485 Interface

Panel – S2000M Panel
Device – Device of   Orion security system;
PI – RS485 Interface Converter/Repeater w/ galvanic isolation (S2000-PI);

Figure 5.   RS485 Extension Using Interface Converter
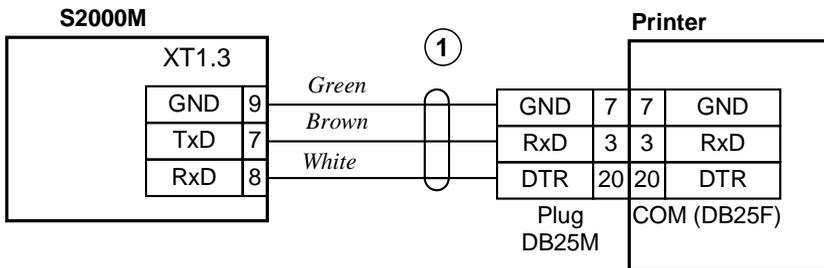
Panel – S2000M Panel
Device – Device of the Orion security system;
PI – RS485 Interface Converter/Repeater w/ galvanic isolation (S2000-PI)

Figure 6.   Star Topology RS485 Network Based on Repeaters/Converters

4.2 Connecting RS-232

4.2.1   Connection to RS 232 is shown in Figures 7 - 11.

1 – Printer-to-S2000M connection cable ACDR. 685611.015

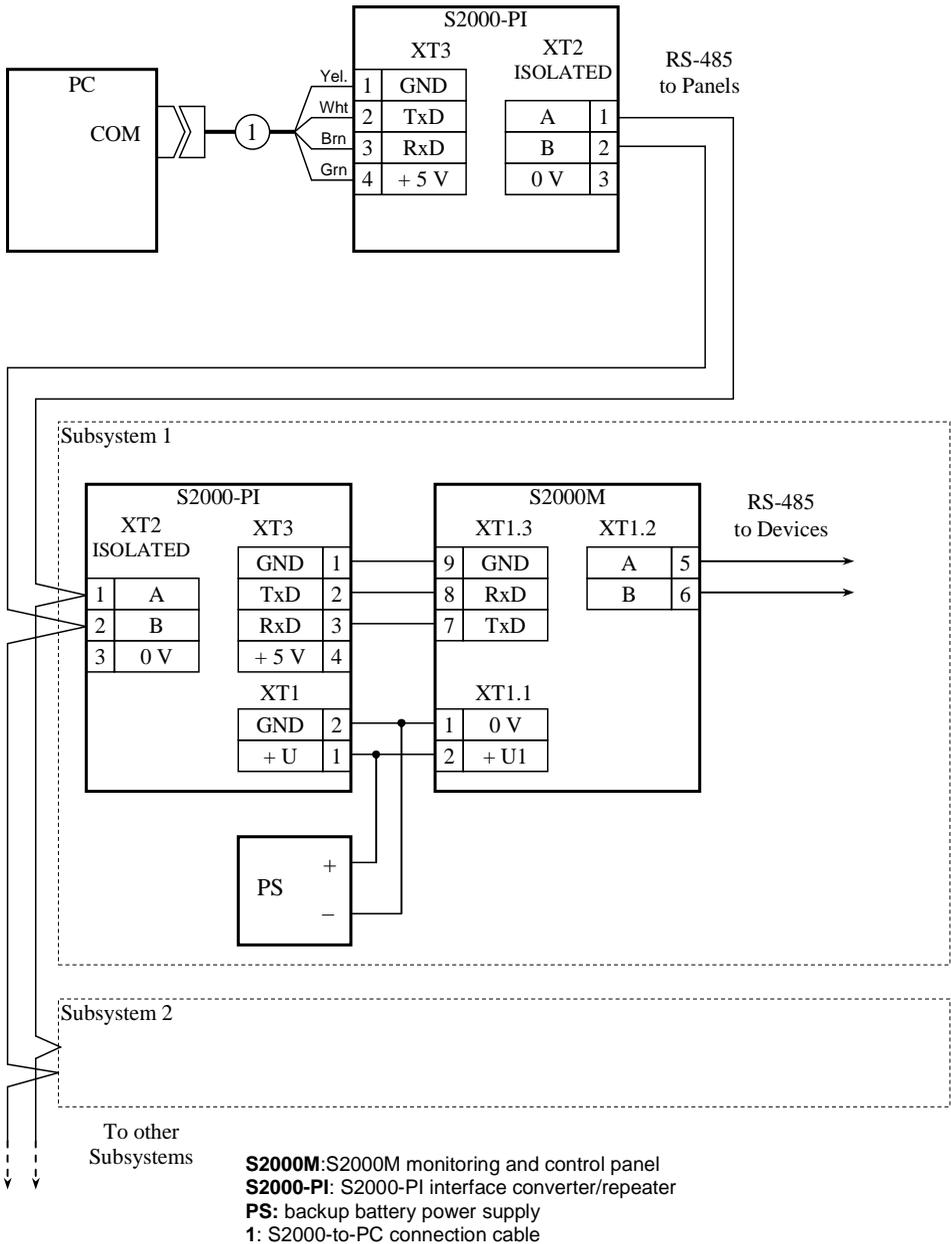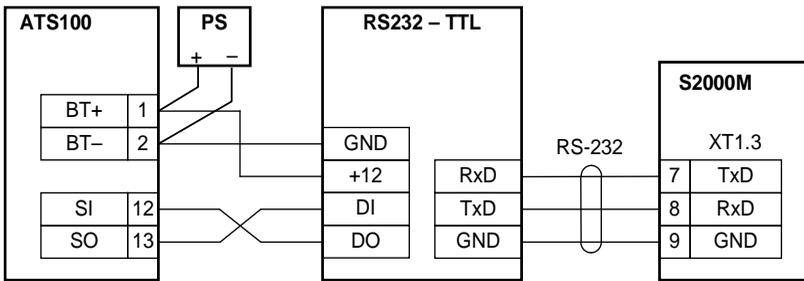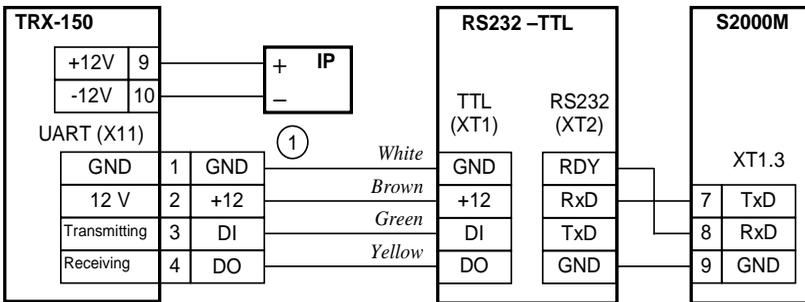**Figure 7.**   Connection of Printer to S2000M

**Figure 8.** Multiple S2000M Connection to Orion Pro Workstation

ATS100: ATS100;
S2000M – S2000M Panel;
RS232-TTL: RS232-TTL Converter;
PS– 12V battery backup power supply

Figure 9. ATS100 Connection to S2000M

TRX-150: TRX-150 or TRX-450 radio transmitter;
RS232-TTL: RS232-TTL converter;
1: RS232-TTL to TRX-150 connection cable (ACDR.685611.229)
IP: battery backup power supply (12 V).

Figure 10. TRX-150 Connection to S2000M for Transmission to Orion-Radio
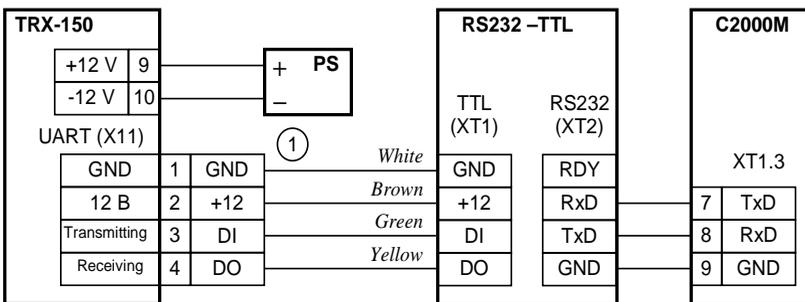
TRX-150: TRX-150 or TRX-450 radio transmitter;
RS232-TTL: RS232-TTL converter;
1: cable (ACDR.685611.229) connecting RS232-TTL to TRX-150;
PS: battery backup power supply 12V

Figure 11. Connecting TRX-150 to S2000M for Contact ID Transmission

4.3 Connecting Power Supply

4.3.1   Connect the primary power supply to 0V and +U1, and backup power supply to 0V and +U2. When connecting, please take of the polarity.

> ℹ️   *We recommend that you should use RIP-12 or RIP-24 battery backup power supplies manufactured by Bolid*

4.3.2   Insert the panel into the installed base.

5   PANEL TEST

5.1 The panel must be tested by suitably qualified personnel with the electrical safety qualification of Level II.

Conduct test in normal climate environments as per Russian National Standard GOST 15150-69:

− Air humidity: (45 – 80)%;

− Air temperature: (25 ± 10) °C;

− Atmosphere pressure: (630 – 800) millimeters of mercury., (84 – 106.7) kPa

5.2 Connection and disconnection of external circuits must be provided only when the Panel is powered off.

5.3 Checking Main Parameters

5.3.1   The testing shall be carried out as shown in Figure 12. The total time for working conditions shall not exceed 20 minutes for each panel.

5.3.2   The preliminary check shall include the following in the order as specified:

а) Check the package before unpacking the panel;

б) Check the contents of delivery in accordance with User's Guide;

в) Check for the physical damage of the panel ;

г) Check the panel visually and shake it for the foreign items inside the panel;

д) Check the tightness of the terminals;

е) Check to see that the Panel's number and manufactured date are the same as specified in the Data Sheet.

5.3.3   Before powering the S2000M on, please visually inspect the panel for any short circuits, tack discontinuity and defects on PCB.

5.3.4   Set the output voltage A1 as (10.2±0.3) V.

5.3.5   Assemble the testing system as shown in Figure 12.

5.3.6   Power the panel on. The panel display will illuminate on and show the **Power On** message. The panel will find a connected device during the several seconds. The panel will report on found devices, device rebooting, and power failure (if any) on the panel display

5.3.7   Power on the printer. The printer is to print events with the last one reporting on powering the panel and printer, and finding devices. Press any key of the panel. The keyboard will illuminate (visible in the low light condition). Measure the consumption current using an ammeter (PA1). The measured value shall not exceed 110 mA. Press each key of the panel. Key pressing shall be accompanied by short beep.

5.3.8   Turn off the devices. Set the output voltage of A1 power supply as (28.4±0.6) V. Repeat the above test actions. The measured current consumption shall not exceed 45 mA

5.3.9   Disconnect A1 power supply from the first power input (+U1) and connect it to the second one (+U2). Repeat the actions.
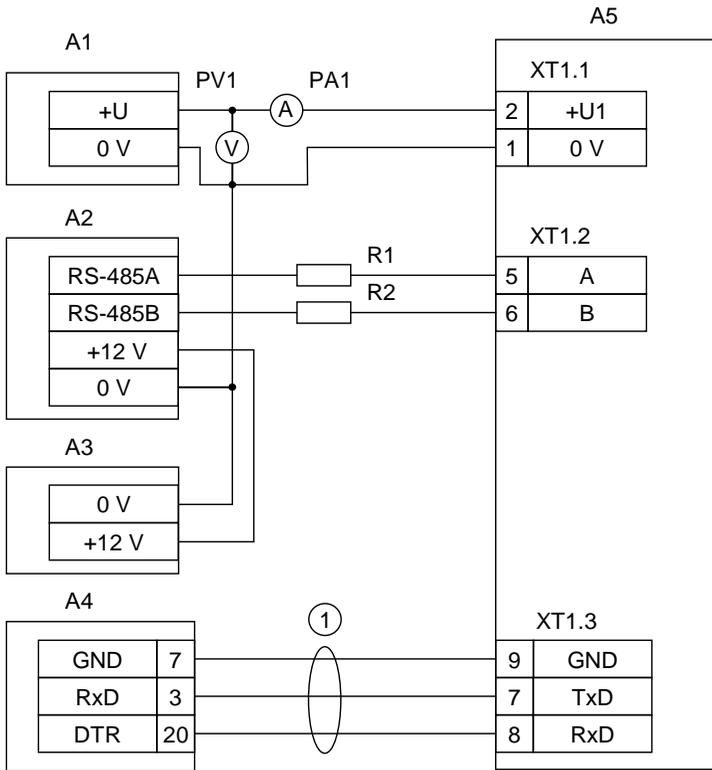
A1 – Power Supply 12 V, 0.2 A;
A2 – Signal -20, Signal -20P, S2000-4);
A3 – Power Supply 12 V, 1 A (RIP-12);
A4 – Epson LX-300+ printer or PC with installed PKUEventReader application;
A5 –S2000M;
1 - Printer cable, ACDR .685611.015 (connecting printer to the S2000M panel);
R1, R2 – resistors 220 Ohm, 0.125 W to ensure signal attenuation in the line between the panel and a connected device;
PV1 – Voltmeter;
PA1 – Ammeter.

Figure 12. Panel Test Connection Diagram

6   GETTING PANEL READY

Before using the panel the following settings shall be provided:
1)   Set the panel operation mode over RS-232 as compatible with a device connected to this interface;
2)   Program a system configuration as required using the PProg application;
3)   Set a system date and time.
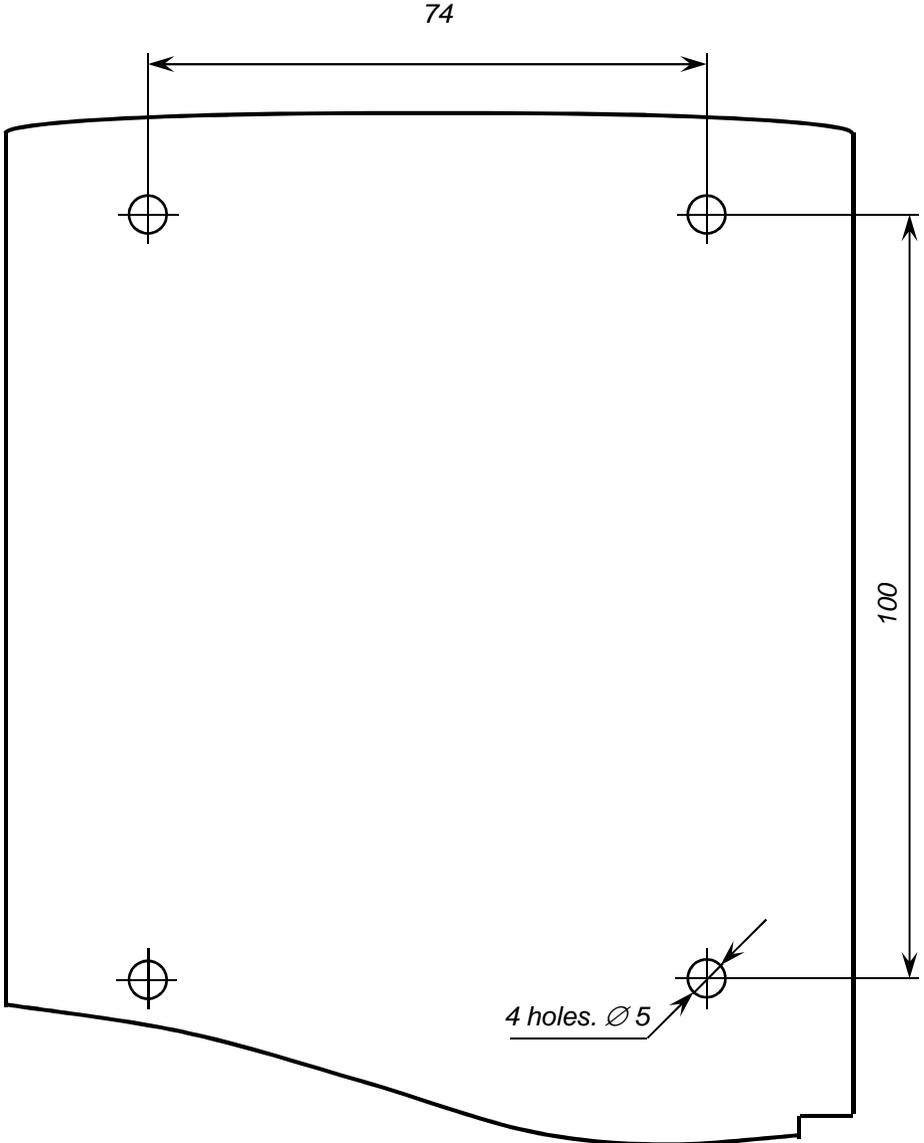These and all other settings must be provided as described in the User's Guide.

Figure 13.   Drilling Pattern