CONTROL AND INDICATOR MODULE

ИСО 9001

Potok-BKI

INSTRUCTION MANUAL

1. TECHNICAL DATA

1.1 General

1.1.1 The control and indicator module Potok-BKI of version 1.00 (hereinafter referred to as the module) is designed to operate as part of a water or foam fire-fighting system in an Orion ISS in cooperation with a Potok-3N panel of version 1.04 or higher under control of the network controller (S2000M console of version 2.03 or higher or Orion Pro Software 1.12).

1.1.2 The module provides light and sound indication of states of partitions of a pump station and remote control for a Potok-3N panel (switching automatic mode on and off, start of discharge / cancel of extinguishing).

1.1.3 The view of the module is shown in Figure 1.

1.1.4 The module is to be mounted inside the protected premises and is destined for round–the–clock operation.

1.1.5 The module must not be used in aggressive medium or dust condition, or in explosion-hazardous premises.

1.2 Specifications

- **Light Indication**

  Logic groups of indicators:

  «Unit 1» to «Unit 4»: 24 LEDs grouped as four columns to indicate states of four fire-fighter units;

  «Pump Station»: 14 LEDs to indicate states of a Potok-3N panel and the Potok-BKI module;

  Indicators of extra partitions «1» to «12»: 12 LEDs indicating states of the Potok-3N zones not related to the indicators of the groups said above and states of the fire partitions

- **Partitions** - 17
- **Power Voltage** - 10.2 V dc to 28.4 V dc. Bolid manufactured RIP-12 or RIP-24 power supplies are recommended to be used
- **Consumed Power** - 3 W max
- **Consumed Current**

  alarm mode
  - 200 mA max at 12 V dc
  - 100 mA max at 24 V dc

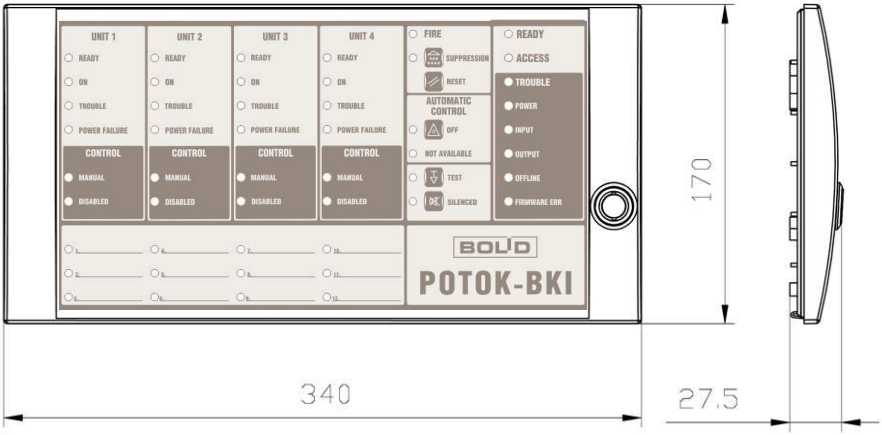
  quiescent mode (all LEDs are off)
  - 50 mA max at 12 V dc
  - 50 mA max at 24 V dc

- **Tamper Switch** - Yes
- **Built-in Sounder** - Yes
- **RS-485 Communication Port (to work as part of an Orion ISS)** - Yes
- **Pre-Operation Time** - 2 s max
- **Programming** - By means of UProg (ver. 4.1.0.38 and higher)
- **Reader Input** - 1 for a reader with Touch Memory output interface
- **Weight** - 0.6 kg max
- **Overall Dimensions** - 170 mm × 340 mm × 25.5 mm

1.3 Parts List

1) Potok-BKI Control and Indicator Module – 1
2) This Instruction Manual – 1
3) Woodscrew – 4
4) Wall Plug – 4
5) Package – 1

Front View:



Rear View:

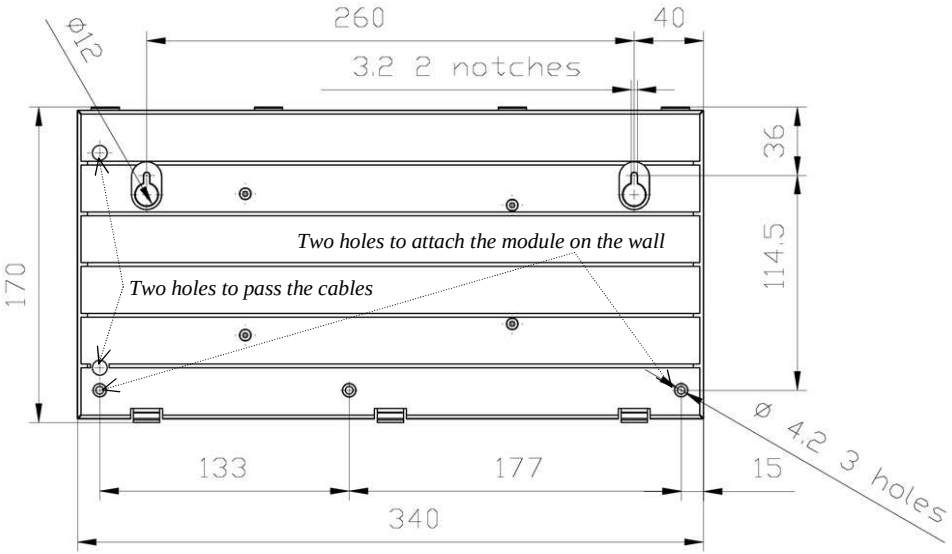


Figure 1. View and Overall and Mounting Dimensions of the Potok-BKI Module

2. MOUNTING AND WIRING

2.1 Mounting the Module

2.1.1 Mount the module in accordance with your applicable local standards, codes, regulations, and ordinances. Mount the module at that height above the floor which is suitable to operate and maintain it.

2.1.2 The module is to be mounted on walls or other constructions of premises at places protected against atmospheric fallouts and mechanical damage.

2.1.3 Prior to attaching the module, please ensure that the wall the module is to be mounted to is solid, flat, clean, and dry.

2.1.4 Mark four mounting points on the wall in accordance with Figure 1.

2.1.5 Drill the mounting holes. Then insert wall plugs into the holes and screw two woodscrews provided in the two upper holes so that the distance between a woodscrew head and the wall is about 7 mm.

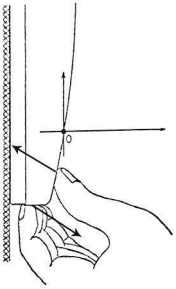


Figure 2.
How to Open the Front Cover

2.1.6 Remove the front cover of the module by bending it relative to point «0» in accordance with Figure 2. Place your thumbs over the clips as close to the point «0» as you can.

2.1.7 Hang the module on two woodscrews. Screw the remaining woodscrews into the lower mounting holes and fix the module on the wall.

2.2 Wiring the Module

2.2.1 Connect wires to the module's terminals as shown in Figure 3.

2.2.2 Please observe polarity while connecting the module to the power supply.

2.2.3 Use wires with the cross section of no more than 1.5 sq. mm.

2.2.4 If the module, or the console, or other Orion system devices connected to the RS-485 interface bus are supplied with power by different power supplies, couple their "0V" circuits.

2.2.5 Unless the module is the last or the first device in the RS-485 interface bus, remove the EOL jumper from the module's PCB (see Figure 3).

2.2.6 Connect the module to an iButton reader as shown in Figure 3.

2.2.7 Close the front cover of the module in the order which is opposite to that one in which the cover was open (see Figure 2).

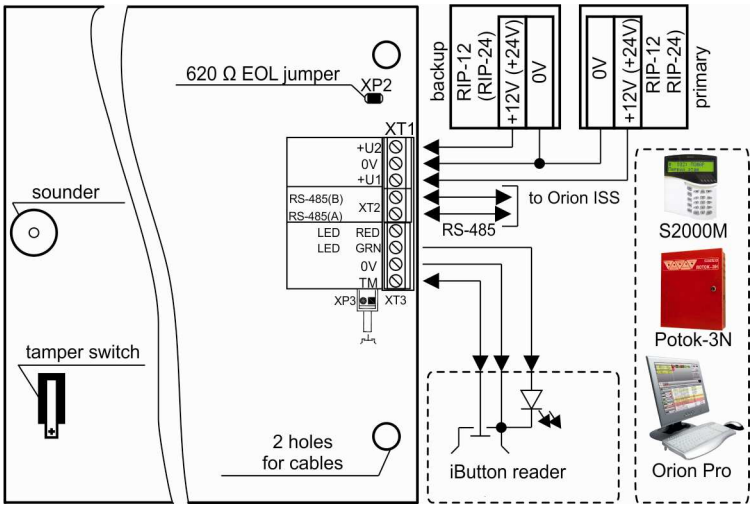


Figure 3. Module's Connection Diagram

3. INSPECTING THE MODULE

3.1 To make sure your Potok-BKI module keeps proper operability, it must be inspected by a competent specialist at least on receipt and annually.

3.2 Inspect the module at following ambient conditions:

- The relative humidity 45% through 80%;
- The ambient temperature 15°C through 35°C;
- The atmospheric pressure 630 mm Hg through 800 mm Hg.

3.3 While inspecting the module, always shut off the module's power before connecting and disconnecting its external circuits.

3.4 Full inspection of the module implies inspecting the module's operability and testing module's indication in self-diagnostic mode.

3.2.1 Preparing for inspection:

а) Check the packing and unpack the module;
б) Inspect the parts list in accordance with Clause 1.3;
в) Ensure the module case is undamaged;
г) Shake the module to ensure there are no debris inside the module's case;
д) Ensure the terminals are tightened properly.

3.5 Inspecting Operability of the Module

3.5.1 To inspect the module, use an S2000M console. Connect the module's RS-485 circuits and power circuits to the relevant terminals of the console (see the S2000M manual for detailed instructions).

3.5.2 Connect a milliammeter in series with the power circuit of the module.

3.5.3 Apply power to the module and the console.

3.5.4 READY LED of the Potok-BKI shall show green solid light within 2 s.

3.5.5 Measure the current consumed by the module. Its value shall not exceed 200 mA.

3.5.6 Within a minute since powering on the console it shall display a message about detecting a device with the network address assigned to the Potok-BKI (factory value of the module address is 127). Figure 4 shows the display of the S2000M console with the relevant message.

3.5.7 If several messages accumulated by the module have been received by the console, you can browse them by the arrow buttons «◄» and «►» on the S2000M.

Figure 4

3.6 Testing the Module in the Self-Diagnostic Mode

3.6.1 Switch the module to the self-diagnostic mode by pressing the button TEST. If the module operates properly, the indicators turn on as follows:

a) All LEDs except for the indicators of the right column switch on simultaneously in green, then in amber, then in red, and finally all the said indicators switch off;
b) The LEDs of the right column switch on one at a time (from up to down). READY LED switches on with green, ACCESS LED switches firstly with green, then in red, and other LED switch on with amber.

3.6.2 The self-diagnostic mode terminates automatically in 15 s.

4. PROGRAMMING THE MODULE

4.1 To be adjusted for a specific application, the module supports changing its configuration parameters which are stored in its non-volatile memory with the help of UProg Configuration Tool (of version 4.1.0.38 or higher). To do this, please use a computer and an interface converter such as PI-GR, S2000-PI, S2000-USB, USB-RS485, or S2000M (of version 2.03 or higher). The last version of UProg Configuration Tool along with additional information related to using the module is available at the address **http://bolid.ru**. Table 1 shows configuration parameters of the module.

Table 1. Configuration Parameters of the Module

Parameter	Description	Value Range	Default Value
1. Partition Number	The Partition Number is to be assigned with an indicator	0 – 9999	0

Parameter	Description	Value Range	Default Value
2. Network Address	The address of the module within the RS-485 interface bus	1 – 127	127
3. Response Pause	A time before module's answering for a request from the network controller	(3 – 500) ms	3 ms
4. Both Power Inputs Monitoring		On / Off	Off

5. OPERATING MODES OF THE MODULE

5.1 Indication Modes

5.1.1 Table 2 shows behavior of indicator groups «Unit 1»…«Unit 4».

Table 2. Behavior of Indicator Groups «Unit 1»…«Unit 4»

Indicator	Unit Condition	Indicator Behavior	
READY	The partition (unit) is not configured	-	Off
	The unit operates properly	Green	Lit steady
	The unit is out of service	Amber	1 s on / 1 s off
ON	The unit is on	Green	Lit steady
	The unit is off	-	Off
TROUBLE	The unit is out of service	Amber	1 s on / 1 s off
	The unit operates properly	-	Off
POWER FAILURE	Power has failed	Amber	1 s on / 1 s off
	The unit operates properly	-	Off
CONTROL Group Indicators			
MANUAL	The unit is controlled in manual mode	Amber	Lit steady
	The unit is not controlled or controlled automatically	-	Off
DISABLED	The unit is not controlled at all	Amber	Lit steady
	The unit is controlled manually or automatically	-	Off

5.1.2 Table 3 shows the indicator group «Pump Station» which is designed to indicate condition of a Potok-3N panel: fire conditions, extinguishing process, automatic control conditions, and troubles if any.

Table 3. Behavior of the Pump Station Indicator Group

Indicator	Conditions of the Pump Station	Indicator Behavior	
FIRE	Quiescent Mode	-	Off
	Fire	Red	Lit steady
SUPPRESSION	Extinguishing/Emergency Start	Red	Lit steady
	Others	-	Off
TEST	Indication of the Potok-BKI is being tested	Amber	Lit steady
	Others	-	Off
SILENCED	Sounder is disabled	Amber	Lit steady
	Others	-	Off
READY	Power has been applied to the module	Green	Lit steady
ACCESS (external Access indicator)	Request for access	Green	0.25 s On / 0.25 s Off
	Access has granted	Green	Lit steady
	Access has rejected	-	Off
Indicators of the AUTOMATIC CONTROL Group			
OFF	Automatic control for the pump station has been off	Amber	Lit steady
	The pump station is controlled automatically	-	Off
NOT AVAILABLE*	The pump station is controlled automatically	-	Off
	The pump station cannot be controlled automatically	Amber	Lit steady

Indicator	Conditions of the Pump Station	Indicator Behavior	
TROUBLE Indicator Group**			
POWER, INPUT, OUTPUT, OFFLINE, FIRMWARE ERROR	A trouble	Amber	1 s On / 1 s Off
	No troubles	-	Off

* This situation means that this attempt to switch the automatic control mode on for the pump station has failed. For example, if automatic control is switched off for at least for a single unit.

** Operating of these indicators depends only on conditions of the partitions of the Potok-3N panel (Unit 1 … Unit 4, Pump Station) and doesn't depend on states of the zones which were included to the extra partitions «1»…«12».

5.1.3 Table 4 demonstrates operating modes of the indicators «1» to «12». The group of indicators of extra partitions is designed to indicate states of the zones of a Potok-3N panel not related with indicators of previous logic groups, in order to get more information. These states can be states of fire partitions, inputs of starting extinguishing, sensors of process stabilization, control sensors of jockey pumps, emergency level switches, end switches of dampers, etc.

Table 4. Operation of Indicators of Extra Partitions «1»…«12»

Status of the Indicated Zone*	Indicator Behavior	
Fire Prealarm	Red	0.5 s On / 0.5 s Off
Emergency Discharge / Fire Alarm / Discharge / Extinguishing	Red	Lit steady
AC Power Failed	Amber	1 s On /1 s Off
Fire Equipment Failed		
Open / Short circuit failure of an input / output		
Too Low / High Level		
Tamper Alarm		
Power Failure		
Battery Failed / Discharged		
Pressure Indicator Failed		
Auxiliary Zone Alarm	Green	1 s On /1 s Off
Low Level		
High Level	Green	Lit steady
Pump On		
Automatic Mode Off	Amber	Lit steady
Others	-	Off

* States of the zones included in the extra partitions don't affect operation of the Pump Station indicators and are not indicated by them.

5.2 Sound Signaling

5.2.1 Table 5 shows operating of the module's sounder.

Table 5. Souder Behavior

Status of Partition / Device	Module Sounder Operating
A button has been pressed (can be controlled)	Beep
A command has been executed	
Access is not granted	A long sound
A button has been pressed (cannot be controlled)	
A command has not been executed	
Access granted	Two beeps
Control timeout has been reached	Two beeps
Extinguishing	Long dual-tone solid signal (1)
Discharge failed	Long dual-tone solid signal (2)
Fire Alarm / Discharge Delay / Discharge	Short dual-tone solid signal

Status of Partition / Device	Module Sounder Operating
Fire Prealarm	Dual-tone pulse signal
Trouble	Single-tone pulse signal

* Operating modes are listed in order of priority, i.e. “Beep” is of the most priority while “Single-tone pulse signal” is of the lowest priority.

5.2.2 Sounds are to be silenced by pressing the SILENCE button . But sound signaling will be activated again in case of receiving a new event which requires to be indicated by a sound. To cancel silencing, press the button repeatedly.

5.3 Two access levels are implemented for the module. The first access level (without limitations) enables silencing (by the SILENCE button) and starting the indication test (by the TEST button). The second access level enables remote controlling the Potok-3N panel.

5.4 Remote Control for the Potok-3N Panel

5.4.1 To enable control by buttons AUTOMATIC CONTROL, SUPPRESSION, and RESET, a relevant iButton must be presented to an iButton reader (the built-in or external one). The iButton must be pre-programmed with the list of partitions which the user can control and the user’s control rights. These partitions, in turns, must be associated with the indicators of the Potok-BKI module. The control mode is active within 20 s since presenting the iButton. Each press on a control button increases control time by 10 s. Using the buttons, you can do the following:

Switch the automatic mode on	Pressing AUTOMATIC CONTROL when the automatic mode is off
Switch the automatic mode off	Pressing AUTOMATIC CONTROL when the automatic mode is on
Send a discharge command	Pressing SUPPRESSION
Cancel discharge	Pressing RESET

5.4.2 If access is granted, the module issues a double beep, otherwise if access is rejected the module issues a long sound. The result and the process of granting access are indicated by ACCESS LED.

5.4.3 If access is granted, pressing a control button is acknowledged by a beep, otherwise, if access is not granted the module issues a long sound when you press a control button.

5.4.4 Executing a command (receiving an acknowledgement from the Potok-3N panel) also is accompanied by a beep. If the command is not executed, the module issues a long solid sound.

5.4.5 Each press on a control button increases control time by 10 s.

5.4.6 When the control time has reached, the indicator ACCESS is off and three beeps are issued.

5.5 Messages Transmitted to the Network Controller

5.5.1 The module transfers the network controller the following messages over the RS-485 interface:

TAMPER ALARM	The module’s case has been open
TAMPER RESTORED	The module’s case has been closed
POWER FAILED	The power voltage has been below the normal value
POWER RESTORED	The power voltage is in norm

5.6 Operating Offline

5.6.1 In case communications over the RS-485 interface have lost for more than 60 s, all events are transmitted with the time registered in accordance with the internal module clock. The module is synchronized with the S2000M console at the beginning of every hour.

6. OPERATION DIRECTIVES

6.1 Main Operating Factors

6.1.1 The module design provides IP20 ingress protection rating.

6.1.2 The module is designed to operate under ambient temperatures from minus 30°C to +50°C.

6.2 Safety Precautions

6.2.1 The module has no circuits under a hazardous voltage.

7. MAINTENANCE

7.1 To make sure your Potok-BKI module keeps proper operability, it must be inspected by a competent specialist at least on receipt and annually. The inspection algorithm shall include:

- Visual checking the Potok-BKI against contaminations and mechanical damage;
- Verifying the Potok-BKI for secure mounting and wire connection conditions;
- Inspection of the Potok-BKI operability in accordance with Section 3 of this Manual.

ZAO NVP Bolid, 4 Pionerskaya Str., Korolev 141070, Moscow Region, Russia

Phone/fax: +7 495 775-7155

Email: info@bolid.ru

Technical Support: support@bolid.ru

http://bolid.ru