SIGNAL-20M

INTRUSION AND FIRE ALARM CONTROL PANEL

Operation Manual

ISO 9001

1 GENERAL INFORMATION

1.1 The Signal-20M Intrusion and Fire Alarm Panel (hereinafter referred to as Panel) is intended for use as a combined device to monitor and control alarms in the following systems:

- Fire alarm and extinguishing systems
- Evacuation and alarm system of Type 1 and Type 2
- Intrusion detection and panic alarm system
- Auxiliary alarm systems

1.2 The Signal-20M supports conventional (nonaddressable) threshold wire-connected detectors.

1.3 The Signal-20M can operate as a processing module of rate-of-rise heat detectors and supports sensing elements (thermal cables) detecting temperature threshold exceedance.

1.4 The Signal-20M automatically monitors communication lines with detectors, call points and actuating devices of fire protection systems.

1.5 The panel is not a scalable system.

1.6 The panel supports connection to PC for control and programming functions.

1.7 The panel is designed for 24\7 continuous operation

1.8 The panel is a reparable device with periodic maintenance

1.9 The Panel is not designed for the use in aggressive, dust, explosive and fire-hazardous environments.

2 SPECIFICATIONS

Table 2.1 Panel specifications

No	Description	Value
2.1	DC supply voltage, V	10.2 … 28.0
2.2	Consumption current, mA, no more * - in 'Quiescent' mode - in 'Fire' mode * excluding current consumption of alarm devices	 400 650
2.3	Power inputs	2
2.4	Startup time, s	5
2.5	Inputs	20
2.6	Voltage on unloaded input terminals, V	26.5 … 27.5
2.7	Input short-circuit current limitation, not more than, mA	26.5
2.8	Resistance of input terminal resistor, kΩ	4.7±5 %
2.9	Max. current consumption of all detectors in standby mode, mA - Type 1 (Fire smoke) inputs - Type 2 (Fire combined) inputs	 3.0 1.2
2.10	Input resistance in various states	See **Table 2.2**
2.11	Maximum allowable resistance of the sensing element of a linear heat detector (thermal cable), kΩ	1.5
2.12	Input communication line: - max. wire resistance (excluding terminal resistor), Ω - insulation resistance of wires, not less, mΩ	 100 50
2.13	Input voltage reset time, s	3,0
2.14	Number of outputs: - non-monitored, 'dry contact' (130 VAC / 170VDC, 0.1 A) - monitored (10.2 ... 28.0 V, 2.5 A)	 3 4
2.15	Rated load current of monitored output, mA	5 … 2500
2.16	Output terminal resistance, kΩ	4.7±5 %
2.17	Voltage (negative) on inactive output with the connected terminal resistor, mV	- 1100 … - 2200
2.18	Output line health check current (reverse), no more, mA	- 1.5
2.19	Ingress protection according to GOST 14254-2015	IP40
2.20	Mechanical tolerance according to OST 25 1099-83	Placement category 3

Table 2.1 Panel Specifications *(continued)*

No	Description	Value
2.21	Vibration load: - Frequency range, Hz - Accelerated up to	 1 … 35; 0,5
2.22	Mechanical stability according to OCT 25 1099-83	O3
2.23	Operating temperatures, °C	– 30 … + 55
2.24	Air humidity , % (at + 25 °C)	98
2.25	Weight , kg	0.5
2.26	Dimensions , mm	332 x 177 x 42
2.27	Mean time between failures in Quiescent mode, h	- no less than 80000
2.28	Probability of no-failure	- 0.98758
2.29	Average service life , years	10

2.30 The Panel meets the standards of industrial radio interference established for equipment of class V in accordance with GOST R 51318.22

2.31 The industrial radio interference tolerance of the panel meets requirements for Severity of Third Level of GOST R500009.

Table 2.2 Input Resistance in Different States

Type	Input States				
Type 1 – Fire Smoke	Short-Circuit	Activation of two and more smoke detectors	Activation of one smoke detector	Normal	Open Circuit
	R < 100 Ω	0.15…1.56* kΩ	1.1*…2.0 kΩ	2.4…5.4 kΩ	R > 6.6 kΩ
		* – Depends on the current consumed by detectors in quiescent mode			
Type 2 – Fire Combined	Short-Circuit	Activation of smoke detector	Normal	Activation of heat detector	Open Circuit
	R < 100 Ω	0.15…1.8 kΩ	2.2…5.4 kΩ	6.6…14.4 kΩ	R > 16 kΩ
Type 3 – Fire Heat	Short-Circuit	Normal	Activation of one heat detector	Activation of two or more heat detectors	Open Circuit
	R < 1.8 kΩ	3.0…5.4 kΩ	6.6…11 kΩ	12.5…22.5 kΩ	R > 25 kΩ
Type 4 – Intrusion	Normal		Intrusion Alarm		
	2.2…10 kΩ		R < 1.8 kΩ or R > 12 kΩ. or resistance jump of more than 10 %		
Type 5 – Intrusion and Tamper	Normal	Intrusion Alarm	Tamper Alarm		
	2.2…5.4 kΩ	R < 1.8 kΩ or R > 6.6 kΩ or jump exceeding 10 %	6.6…9.0 kΩ; R > 20 kΩ; R < 100 Ω		
Type 6 – Auxiliary	Aux Input Normal		Aux Input Activated		
	2.2…5.4 kΩ		R < 1.8 kΩ or R > 6.6 kΩ		
Type 7 – Lobby	Normal		Intrusion Alarm (Lobby)		
	2.2…5.4 kΩ		R < 1.8 kΩ or R > 6.6 kΩ. jump of more than 10 %		
Type 11 – Panic	Normal		Panic (Attack)		
	2.2…5.4 kΩ		R < 1.8 kΩ or R > 6.6 kΩ. jump of more than 10 %		
Aux Programmable	State 1*	State 2*	State 3*	State 4*	State 5*
	Lees than R1*	R1* to R2*	R2* to R3*	R3* to R4*	More than R4*

Table 2.2 Input Resistance in Different States

Type 16 – Fire Manual	Short-Circuit	Fire2	Normal	Fire2	Open Circuit
	R < 100 Ω	0.15…1.8 kΩ	2.2…5.4 kΩ	6.6…14.4 kΩ	R > 16 kΩ
Type 17 – Flood Alarm	Flooding Detected		Flood Detector Normal		Open Circuit
	R < 1.8 kΩ		2.2…5.4 kΩ		R > 6 kΩ
Type 18 – Manual Release	Short-Circuit	RCU Activation	RCU Activation	RCU Activation	Open Circuit
	R < 100 Ω	0.15…1.8 kΩ	2.2…5.4 kΩ	6.6…14.4 kΩ	R > 16 kΩ

3 STANDARD DELIVERY

Reference No.	Description	Qty
АЦДР.425513.017	Signal-20M Intrusion and Fire Alarm Control Panel	1
Set of spare parts and accessories :[1]		
	Resistor 0.5 W – 4.7 kΩ (MF 1/2W-4K7±5% or MF 1/2W-4K7±1% or similar)	24
	Screw 1- 3x25.016 GOST 1144-80	4
	Wall plug 6x30	4
Documents:		
АЦДР.425513.017 РЭ	Signal-20M Operation Manual [2)]	1

Note:

1) DS1990A dongles are optional delivery.
2) The User Guide can be downloaded at the product page at www.bolid.ru

4 DESIGN, INSTALLATION AND CONNECTION

Design, installation and connection procedures are described in full detail in the User Guide (full version) downloadable on the Signal-20M page at www.bolid.ru .

5 DESCRIPTION AND OPERATION

The description of the product and its operation are provided in in full detail in the User Guide (full version) downloadable on the Signal-20M page at www.bolid.ru .

6 FUNCTIONALITY CHECK

The functionality check instructions are provided in full detail in the User Guide (full version) downloadable on the Signal-20M page at www.bolid.ru .

7 MAINTENANCE AND REPAIR

7.1 The maintenance shall be provided by persons qualified for Safety of Class II at least.

The Product maintenance shall be preventive and scheduled providing for annual scheduled maintenance. Routine maintenance activities include:

- checking the external state of the device;
- checking the reliability of the device fastening, the condition of external installation wires, contact connections;
- functionality check in accordance with para 6 of this manual.

7.2 Maintenance is recommended to be carried out using the methodological manual ‘Maintenance of fire alarm systems and SOUE type 1-2 in Orion ISS that can found at: bolid.ru.

Attention!
Removing the panel print circuit board from the enclosure will automatically void the manufacturer's warranty.

4.1 . Failure of the product as a result of non-compliance by the consumer with the installation or operation rules is not a basis for a complaint and warranty repair.

4.2 If any issues are encountered during product operation, it is recommended to contact technical support by multi-line phone +7 (495) 775-71-55, or by email **support@bolid.ru.**

4.3 The inoperative equipment should be sent to: ZAO NVP ‘Bolid’, Russia, 141070, Moscow region, Korolev, st. Pionerskaya, 4.Tel./fax: +7 (495) 775-71-55 (multichannel), e-mail: **info@bolid.ru**.

Note!

The equipment must be submitted for repair assembled and clean, in the complete set as specified in the technical documentation.
Claims are accepted only if there is an attached claim with a description of the malfunction.

8 Shipment, storage, and disposal

8.1 The product can be shipped and stored in the shipment container at ambient temperatures of -50 to +55 °C and relative humidity up to 95% at a temperature of +35 °C.
8.2 In consumer packaging, storage is allowed only in heated rooms at temperatures from +5 to +55 °C and relative humidity up to 80% at a temperature of +20 °C.
8.3 The device is disposed of taking into account the absence of toxic components in it.
8.4 Content of precious materials: does not require accounting during storage, write-off and disposal (clause 1.2 of GOST 2.608-78).
8.5 Content of non-ferrous metals: does not need to be taken into account when writing off and further disposal of the product.

9 MANUFACTURER WARRANTY

9.1 The manufacturer guarantees that the Signal-20M panel meets with technical requirements if the user follows the instructions for shipment, storage, installation, and usage.
9.2 Warranty period is 18 months but no more than 24 months from the manufacturer's date of issue

10 CERTIFICATION

10.1 The Signal-20M fire alarm control panel complies with the requirements of the 'Technical Regulations on Fire Safety Requirements' (Federal Law No. 123-FZ) and has a certificate of conformity No. RU C-RU. CHS13.V.00155 / 19 issued by the certification body OS 'POZHTEST' FGU VNIIPO EMERCOM of Russia, 143903, Moscow region, Balashiha, md. VNIIPO, 12.
10.2 The Signal-20M fire and intrusion alarm control panel meets the requirements of the Customs Union Technical Regulations 'Electromagnetic Compatibility of Technical Means' (TR TS 020/2011). Has a declaration of conformity: EAC No. RU D-RU.HP15.B.06633 / 20.
10.3 The Signal-20M fire and intrusion alarm control panel is a part of the Orion addressable fire alarm system which has a certificate of conformity No. BY / 112 02.01.033 00573, issued by the Institution 'Republican Center for Certification and Expertise of Licensed Activities 'Ministry of Emergency Situations of the Republic of Belarus, 220088, Minsk, st. Zakharova, 73a.
10.4 9.4 The Signal-20M fire and intrusion alarm control panel is a part of the Orion fire alarm and control system which has a certificate of conformity No. BY / 112 02.01.033 00845, issued by the Institution 'Republican Center for Certification and Expertise of Licensed Types of Activities' Ministry of Emergency Situations of the Republic of Belarus, 220088, Minsk, st. Zakharova, 73a.
10.5 9.5 The Signal-20M fire and intrusion alarm control panel has certificates of conformity of technical means of ensuring transport security with the requirements for their functional properties No. MVD RF.03.000036 and No. MVD RF.03.000037.
10.6 9.6 The production of devices has a certificate of conformity GOST R ISO 9001. The certificate of conformity is posted on the website bolid.ru in the section 'ABOUT THE COMPANY'.

11 ACCEPTANCE CERTIFICATE

The Signal 20-M Intrusion and Fire Alarm Control Panel Serial No_____ manufactured and accepted in accordance with the requirements of national standards and applicable technical documentation is approved as ready for use and packaged by the Bolid Company.

Responsible for the acceptance and package

QCD _____ _____
Name Date/month/year