



ZAO "NTC "TEKO"

CONTROL PANEL

# ASTRA-713

Technical passport

This passport is intended for studying the operating principles, proper use, storage, and maintenance of the control panel Astra-713.

The manufacturer reserves the right to make changes to the design, software, circuit solutions and product packaging that do not worsen its technical characteristics, do not violate mandatory regulatory requirements, without prior notice to the consumer.

## 1 Function

- 1.1. The device is intended for stand-alone use or to combine up to 30 devices via an RS-485 interface into a network controlled by an Astra-812 Pro or Astra-8945 Pro control panel.
- 1.2. Device operating mode settings for stand-alone use are configured using jumpers. To operate under the control of an Pro control panel, the device firmware must be replaced.
- 1.3. In **stand-alone** mode, the device performs arming/disarming functions as follows:
  - using the button, connected to the TM key input;
  - using TM keys or devices that generate a TM format code, for example, the Astra-RVC (the Astra-TRC is used as the TM key);
  - using alarm loop indicator buttons.

The device has two basic alarm loop types: "Intrusion" and "Fire."

- 1.4. A device with **intrusion** alarm loops monitors loop resistance using rigid "Normal" and "Alarm" values. A "Failure" alarm loop state is not recognized.

A device with **fire** alarm loops monitors loop resistance using rigid "Normal," "Alarm," "Failure," and "Warning" values.

Device alarm loops may contain:

- detectors and control unit NO/NC output circuits of "dry-contact"-type;
  - fire-type detectors, supplied with power by the alarm loop and capable of operating at supply voltages of 14–21 V.
- 1.5. The device outputs alarm notifications to the monitoring station even if power to the device is completely turned off.
  - 1.6. The device can control external elements using programmable relay outputs and OC outputs.
  - 1.7. At supply voltages below 10 V, the device will enter "Sleep" mode, with minimum current consumption. In "Sleep" mode, the device turns off all outputs and does not monitor alarm loop state. Exit from "Sleep" mode occurs upon recovery of supply voltage, which also recovers alarm loop state.
  - 1.8. The device has a two-color indication of alarm loop and power circuit state.
  - 1.9. The device is protected against overloads and malfunctions in alarm loop circuits.
  - 1.10. The device is designed to operate on a continuous, around-the-clock basis.
  - 1.11. Device design is not designed to be operated in corrosive environments, dust, water, or in fire-hazardous spaces. The device is not intended to be used in an automatic fire-suppression control system.

## 2 Specifications

	+3
Power supply voltage, V .....	12 -2
Current consumption, mA, maximum:	
in standby mode .....	180
in alarm mode .....	230
Number of alarm loops connected to the device .....	8
Number of relay outputs .....	2
Number of OC outputs .....	2
Power supply voltage at which indications are displayed	
"Power supply below normal," V .....	11±0.3
Power supply voltage at which the device transitions to	
"Sleep" mode, V .....	10±0.2
<b>Interface RS-485 (terminals 485A, 485B):</b>	
Line length, m, maximum .....	1000
Number of devices that can be connected to the Pro control panel, pcs., maximum .....	30
<b>Relays (RELAY 1, RELAY 2):</b>	
Voltage, V, maximum .....	100
Current, mA, maximum .....	150
Mode selection .....	MONITORING STATION alarm, warning light, arm/disarm, executive, alarm, siren, custom
<b>"Open collector" outputs (terminals OC1, OC2):</b>	
Maximum loading current, mA .....	500
Maximum loading voltage, V .....	15
Mode selection .....	MONITORING STATION alarm, warning light, arm/disarm, executive, alarm, siren, custom
<b>Alarm loop specifications (ZONEx, GND terminals):</b>	
Alarm loop terminals voltage in standby mode, V .....	from 14 to 21
Alarm loop current for power supply, mA, maximum .....	5
Alarm loop short circuit current, mA, maximum .....	20
Alarm loop resistance*, kOhm, in state:	
- "Normal" .....	from 3 to 5
- "Alarm" intrusion .....	from 0 to 3, or over 5
- "Alarm" fire .....	from 1,5 to 3, or from 5 to 12
- "Failure" - fire .....	from 0 to 1.5, or over 12
<b>Fire alarm loop resistance in double-event mode*</b> , kOhm, in status:	
- "Normal" .....	from 3.0 to 5.0
- "Alarm" .....	from 0 to 1.5, or from 5 to 12
- "Warning" .....	from 1.5 to 3
- "Failure" .....	over 12
Alarm loop integration time, ms:	
- intrusion .....	70±10
- fire .....	300±30
Alarm loop wire resistance (without external elements), Ohm, maximum:	
- intrusion .....	220
- fire .....	150
Leakage resistance between ZONE output wires or wire and "Ground", kOhm, minimum:	
- intrusion .....	20
- fire .....	50
Number of registered TM keys, maximum .....	28
Weight, kg, maximum .....	0.12
Dimensions, mm, maximum .....	120.5x79x30.5
<b>Operating conditions:</b>	
Temperature range, C .....	from -30 up to +50
Relative air humidity, % .....	up to 93 at + 40 °C without moisture condensation

\*Allowable resistance variation is 10% maximum; for 12 kOhm is ±2 kOhm maximum.

### 3 Delivery Set

Astra-713 Control Panel .....	1 pcs.
Resistor 3.9 .....	8 pcs.
Screw 2.9 x25 .....	4 pcs.
Dowel 5 x 25 .....	4 pcs.
Sticker .....	1 pcs.
Technical passport .....	1 copy

### 4 Structure

4.1 The unit's structure is a block consisting of a base and a removable cover. Inside the block is a circuit board with radio elements. (Figure 1).

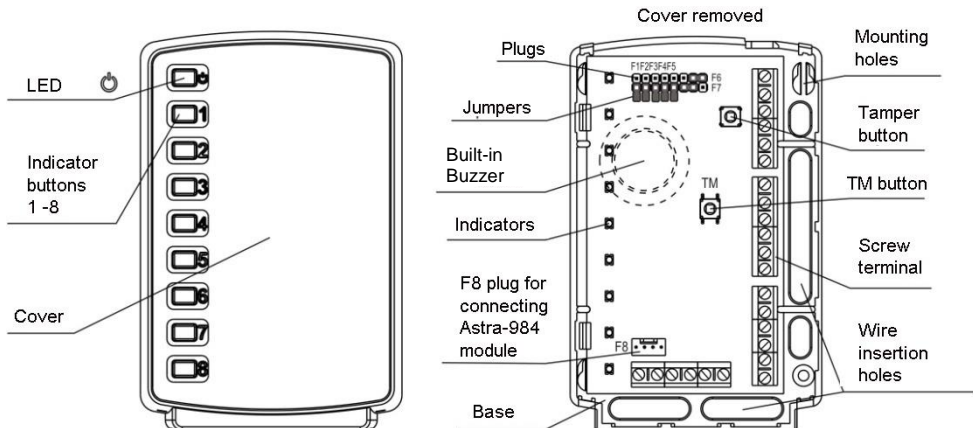



Figure 1

4.2 Jumper plugs with pins are mounted on the device circuit board to permit selection of device operating mode and two-color indicators:

- "1"-"8" indicate the state of the corresponding alarm loop;
-  indicate the state of device supply voltage and the status of the RS-458 interface.

4.3 Silicon indicator buttons "1"-"8" are mounted in the device's cover, and are used to arm/disarm the corresponding alarm loops.

4.4 There is a tamper switch on the circuit board, which supplies a BZ when the cover is opened and, if required, supplies a message to the relay and OC outputs (set up with Pconf-713 software).

4.5 The circuit board contains a built-in buzzer for audible notifications.

### 5 Installation

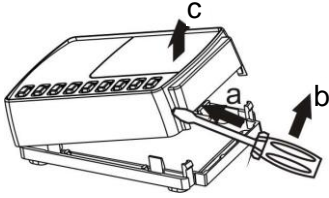
The device shall be mounted per RD.78.145-93, "Rules for work performance and acceptance. Installation of security, fire, and security-fire alarm systems".

#### 5.1 Mounting location selection

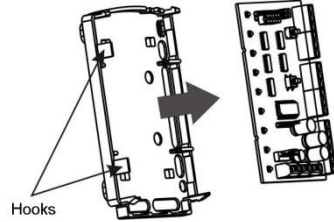
The device must be mounted on walls or other surfaces at premises, protected from rain, snow, mechanical damage and unauthorized access.

#### 5.2 Installation procedure

**Step-1** Push clips from the cover slots. Remove cover



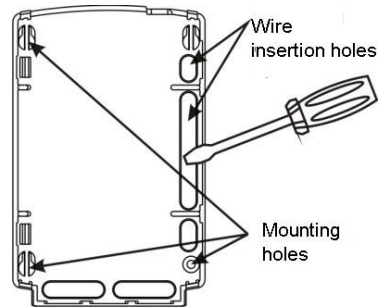
**Step-2** Unbend hooks on the base and remove the circuit board.



**Step-3**

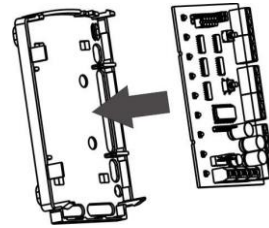
2. Make marks at a level selected location for mounting holes by using holes on the detached base as a template.

- Pull out the plugs out of selected wire input holes in the device base.
- Run wires from the power supply unit, alarm loop, RS-485 interface, relays, OC, Astra-TM reader (if TM keys are being used) and Astra-RVC (if Astra-TRC key fobs are being used) through the wire insertion holes.
- Affix the device base.

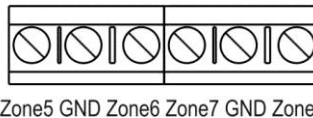
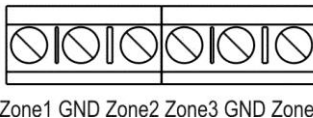
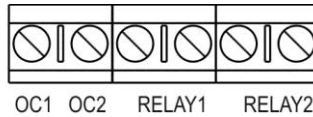
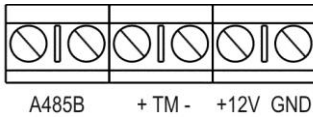


**Step-4**

Install the circuit board into place.

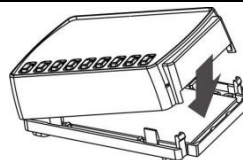


**Step-5** Electric wiring to the output terminals of the device is to be carried out in accordance with selected wiring diagrams in **Appendices A and B**.



**Step-6**

Replace the device cover in its position, until a click is heard. If necessary, apply a label from the delivery kit to the device cover.



## 6 Default Settings

The firmware of the delivered device is for **stand-alone** use with **default settings** in memory, which are shown in Table 2. To use the device with default settings, install the jumper on **one** pin of plug **F7**; positions of the remaining jumpers are ignored.

Table 2

<b>Operating mode</b>	<b>Parameters</b>
AL1 - AL4	Intrusion, instant, 70 ms integration time
AL5 - AL8	Fire
Entry delay (for AL1 and AL2) Exit delay (for AL1 and AL2)	0 sec. 0 sec.
Operating mode via RS-485 interface	Stand-alone
Arming	TM Key
Locking AL buttons	Forbidden
“Auto-arming” function	Forbidden
AL1 and AL2 operation tactics	“Closed door”
“Silent alarm” function	Forbidden
<b>Operating mode</b>	<b>Parameters</b>
“Passageway area” function	Forbidden
Relay operating modes	MONITORING STATION alarm
Relay assignment to AL	AL1 –AL4– relay 1, AL5-AL8 – relay 2
OC1 output operating mode	Siren
OC1 output assignment to AL	AI1 - AL8
OC2 output operating mode	Warning light
OC2 output assignment to AL	AI1 - AL8
Relay delay for AL1 and AL2	No
Notification duration processed by the BZ and OC1 output in “Siren” mode	180 sec
Notifications processed by the BZ	Complete set per Table 1

# 7 Setting Operating Mode by Jumpers

When the device is operating in **stand-alone** mode, the device may be configured using jumpers. Jumper-specifiable operating modes (Fig. 2) are shown in Table 3.

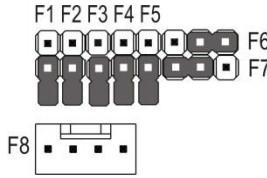



Figure 2

**ATTENTION!** Device power must be **off** when installing or removing jumpers.

Table 3

Plug	Plug Name	Jumper Position		Operating mode
F1	Arming method	–		With TM keys
		+		With control button
F2	Limit sound notifications to BZ and SA	–		All messages
		+		Alarm, Fire
F3	Auto-arming mode	–		Forbidden
		+		Valid
F4, F5	AL Operating mode	F4	F5	All ALs are of intrusion type AL1 with delay Remaining ALs are instant
		–	–	
		+	–	AL1 intrusion-type with delay AL2 –AL4 intrusion-type, instant AL5–AL8 fire-type, without double-event
		–	+	All ALs are of intrusion type AL1 with delay AL2, 24-h, silent alarm Remaining ALs are instant
		+	+	All ALs are of fire type
F6	Entry/exit delay (for AL1)	–		Deactivated (AL1 - instant)
		+ to right two pins		1 min for entry, 2 min for exit
		+ to left two pins		30 sec for entry, 1 min for exit
F7	Setup and FW updating mode	–		Use operating modes from device memory (the position of remaining jumpers is ignored)
		When jumper is installed on <b>F1</b> plug and <b>TM</b> button is pressed		Setting up operation modes using computer
		+ to left two pins		Setting up operation modes using jumpers
		+ to right two pins		
F8	Astra-984 or Terminal resistor connection	Astra-984 connected		Firmware update
		–		Resistor switched off

Plug	Plug Name	Jumper Position	Operating mode
		+ to left two pins	The resistor is connected (for an interface line length of more than 200 m in expanded mode)
"-" - jumper is removed (or installed on one plug pin) "+" - jumper is installed on two plug pins			

## 8 Registering and Deleting TM Keys

TM key codes can be recorded to (deleted from) memory by:  
 - using the TM button on the circuit board;

### Using the TM button to register (deletion) the TM key

Operating procedure:

- 1) turn off power supply;
- 2) remove the cover by inserting a flat screwdriver blade into the cover slot (section 8);
- 3) install jumper on one pin of **F1** plug (arming mode while using TM keys);
- 4) press **TM button** and turn on power supply. Indicator **1** will light up **red**;
- 5) release the **TM button**. Indicator **1** will **blink green**, indicating the device is in TM key registration (deletion) standby mode;
- 6) to delete a previously registered TM key:
  - press the **TM button** (indicator **1** will light up red) and keep the **TM button** pressed until indicator **1** goes out automatically. All codes of previously registered TM keys will be deleted from device memory,
  - release the **TM button**;
- to register new TM keys:
  - **briefly** press the **TM button**. Indicator **1** will **blink green**, indicating the device is ready for registration (if indicator **1** starts to blink red, this means the maximum number of TM keys that can be registered, i.e., 28, has been reached).
  - bring the TM key near the reader or press the button on the Astra-TRC key fob.
    - If registration is **successful**, indicator **1** will light up **green**. The TM key can be authorized to arm/disarm all alarm loops.
    - If the TM key is **already present** in device memory, indicator **1** will light up **red**;
- 7) if necessary, repeat the registration or deletion procedure;
- 8) turn off power to the device;
- 9) install jumpers per the required operating mode (Table 3);
- 10) replace the cover;
- 11) turn on power to the device.

**Attention!** Registered TM keys are only authorized for stand-alone device operating mode.



## 9 Maintenance

**9.1** Maintenance of the device must be carried out in accordance with an annual maintenance schedule. Annual maintenance is to be carried out by a specialist of a servicing organization and include:

- a) inspection of the device external condition;
- b) inspection of reliability of fixtures, condition of its external mounting wires and contact connections;
- c) inspection of conformity with technical parameters and operability in accordance with this manual.

**9.2** Inspection of the technical condition of this device should be arranged by laboratories and repair shops of security departments, and should be carried out by service personnel who are aware of the operating principles of this device and this operating manual, and who are hold qualifications not lower than fire and security alarm electrician 3<sup>rd</sup> grade.

**Note.** *Additional equipment should be connected and disconnected only with device power turned off.*

## 10 Labeling

**10.1** The label attached to the base on the underside of the device displays:

- the manufacturer's trade mark;
- the abbreviated name or identifying code of the device;
- the firmware version;
- the month and year (last two digits) of manufacture;
- conformity marks (if the certificate of conformity is present);
- a bar code, duplicating the textual information.

**10.2** The label situated inside the device cover displays:

- the device name;
- jumpers function for device operating mode setting;
- information on AL status.

## 11 Recycling

The device does not represent any hazards to life, health or environment; after the end of their service life, they can be disposed without special environmental protection measures.

## 12 Manufacturer Warranty

**12.1** The manufacturer guarantees conformity of the device with requirements of the technical specifications, provided that the user observes the specified technical standard of operating, transportation, storage and installation.

**12.2** The guaranteed shelf life of the indicator – 5 years and 6 months from the date of manufacture.

**12.3** Guaranteed service life – 5 years from the date of putting into operation, but not more than 5 years and 6 months from the date of manufacture.

**12.4** The manufacturer is required to perform repairs or replace the device during their warranty period.

**12.5 The warranty is not applicable in the following situations:**

- nonobservance of this operating manual;
- mechanical damage;
- repair by any third-party service.

**12.6** The warranty is only applicable to the device. All equipment from other manufacturers that are used in conjunction with the device, including batteries, is subject to their own safeguards.

**The manufacturer is not responsible for death, injury, property damage or other incidental or premeditated loss based on the user's statement that the device has failed to fulfill its functions.**

# Appendix A

## Astra-713 connection schematic

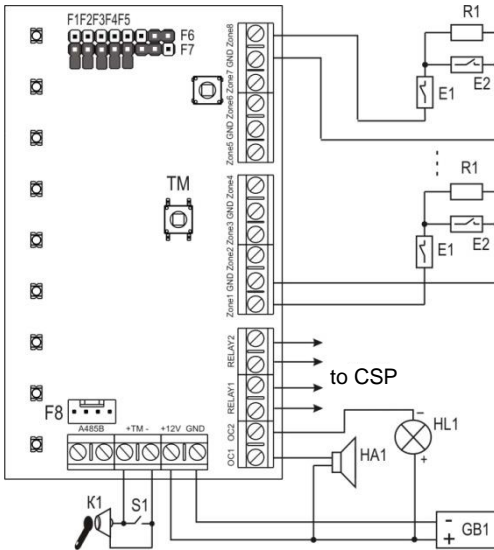


Fig. A.2. Wiring diagram for detectors with NO/NC outputs of “dry contact”-type;

Where:

- E1: detector with NC contacts;
- E2: detector with NO contacts;
- GB1 – 12V power supply unit;
- HA1 – sound alerter;
- HL1 – light alerter;
- K1 – TM key reader;
- R1 – resistor, 3.9 kOhm;
- S1 – control button.

**ATTENTION!** When a TM key reader is mounted in a metal housing on a metal surface (for example, at a garage), an insulating gasket must be used to ensure the device is shielded against lightning discharges.

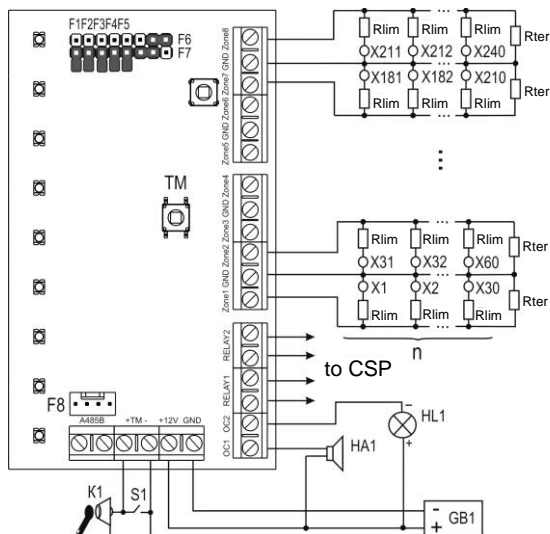


Fig. A.3. Active detector connection schematic

Where:

GB1 – 12V power supply unit;

HA1 – sound alerter;

HL1 –light alerter;

K1 – TM key reader;

n – number of detectors ( $n \leq 30$ );

Rlim – resistor 2 kOhm;

Rter – rating, see Table A.3;

S1 – control button;

X1...X240 - active detector

Table A.3

Number of detectors, n	Resistor rating, kOhm
less than 5	3.9
from 6 to 10	4.7
from 11 to 20	5.1
from 21 to 30	6.2

**Note.** This rating calculation has been made for detectors with an average AL current consumption of 70–90  $\mu$ A in standby mode.

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