Triboelectric and seismic autonomous security sensor STS-116

Purpose

Security sensor STS-112 (hereinafter referred to as the sensor / detector) is designed to create an alarm line on a metal mesh-wire fencing in order to detect intruders impacting on it, when trying to overcome, as well as to detect signs of unauthorized overcoming (crossing) of a site by crossing the perimeter line that is not equipped with fences.

Scope of Supply:

- Security detector processing unit – 1 pc.;
- STS-930 unit – 1 pc.;
- Connecting cable – 1 pc.
- Sensitive element set for detectors STS-116, STS-117 (hereinafter referred to as SE set) – 1 set.
- Single SPTA set - 1 set.

Structurally, the detector is a security detector processing unit, which cable sensitive elements and vibration-seismic sensitive element (from SE set) are connected to. The security detector processing unit power supply and radio communication is provided by STS-930 unit.

The processing unit provides for generation of two detection areas based on different physical principles: triboelectric and seismic.

The detector power supply and radio communication is provided by STS-930 unit. STS-930 unit is made in a metal body equipped with storage batteries, solar module for maintaining battery charge, radio modem with antenna and charger.

SE set consists of two cable and one vibration-seismic sensitive elements.

The detector processing unit has three inputs for connection of sensitive elements. The signal from each input is processed individually with separate output of an alarm, thus, one detector has two security areas.

When the intruder overcomes the fencing system by climbing over or cutting it, the cable sensitive element generates electrical signals entering the security detector processing unit, where signals are processed according to a specific algorithm and trip command is transmitted via STS-930 unit to the data collection and processing system.

The vibration-seismic sensitive element is installed directly in the ground and detects the intruder's steps or vibration from passing vehicles.

BRDM unit is intended for reception of alarms from the detector. This unit allows for connecting up to 63 security detectors STS-116 to a single Ethernet data bus.

The detector has the adaptive threshold function to adapt to the environment "noise", which is especially useful in windy or rainy weather.

The detector has almost no false alarms making it possible to clearly detect an intruder.

The detector provides for self-monitoring and performance diagnostics.

The detector is configured in the configurator using STS-4920 tuning cord (it is not included in the delivery set and is purchased at an additional cost).

Application

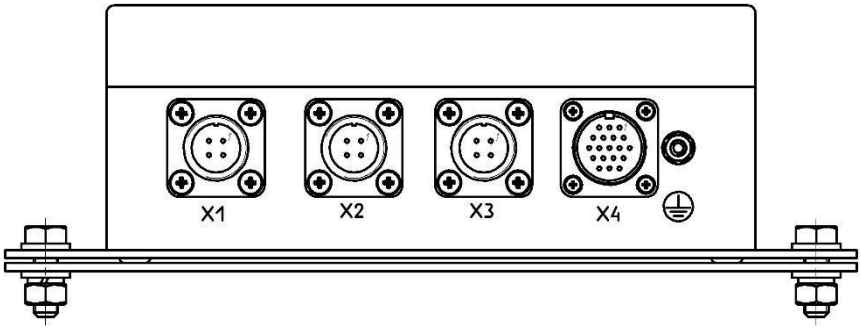
Security sensor STS-116 can serve as an independent level of security, and can be used as part of integrated facility security systems together with detecting means of other operating principles.

Specifications

Characteristic	Value
The vibration-seismic line	1
Triboelectric line	1
Protection section length, m	2 lines x 250
Detection probability	0.95
Alarm message – Transmission frequency, MHz – Radiated power, not more, mW	 433 10
Maximum transmission range of alarm message under direct visibility conditions, at least, m	9000
Guaranteed transmission range of alarm message under direct visibility conditions, at least, m	1,000
The number of detectors in the area of the alarm receiver operation, max., pcs.	63
Readiness time after power-on, s	60
Restoring time after alarming, s	10
Alarm duration, s	from 1 to 60
DC power voltage, V	12 ± 10%
SB total capacity, Ah	7.2
Current consumption, max., mA – maximum – rated	 45 4
Informational contents	15
Operation mode	Continuous
Operating temperature range, °C	from -40 to +50
Dimensions – of detection unit, mm – of unit STS-930 (without bracket and antenna)	 210x118x76 341x250x115
Weight, max., kg – of detection unit – unit STS-930 without bracket	 2 6.8
Number of lines in CSE set, pcs.	2 x 250m
Number of lines in vibration-seismic sensitive elements set, pcs.	1 x 250 m

Connection

Connection of Security Sensor Processing Unit



X1 - port for connection of vibration-seismic SE;

X2, X3 – ports for connection of LF and HF sensitive elements;

X4 - port for connection of tuning cord STS-4920 and wire.

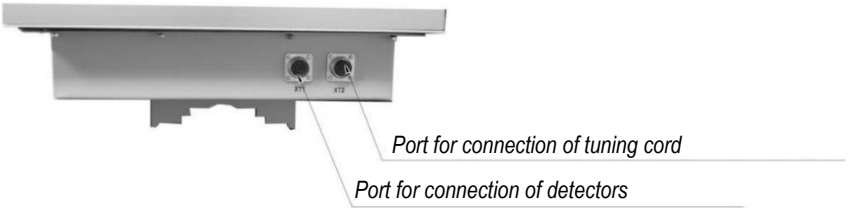
CAUTION!!! Grounding is a mandatory condition for reliable operation of the article.

X4 connector contact assignment:

Cont. No.	Name
1	Fail LF-A
2	Fail LF-B
3	Fail PF-A
4	LF-A alarm
5	LF-B alarm
6	PF-A alarm
7	PF-B alarm
8	+12V
10	Tamper sensor-A
11	Common
14	Fail PF-B
15	RC
16	Tamper sensor-B
17	Check A
18	Check B
19	RS-485 "A"

Contacts 9, 12, 13 – not used.

Connection of STS-930 Unit

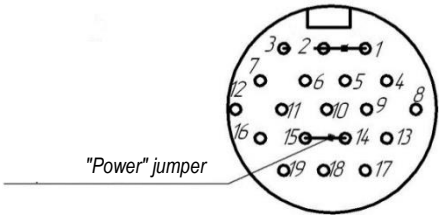


X1 – for connection of detectors,

X2 – for connection of tuning cord.

X1, X2 connectors contact assignment:

Jumper 14-15 on X2 connector – detector power supply.



Cont. No.	Name of connector contacts	
	X1	X2
4	Alarm input	
6	Charge "+"	Not used
8, 9	+12V	
10	Common	
12	Charge "-"	Not used
14, 15	"+12V" jumper	
16	RS-485 A	
17	RS-485 B	
18, 19	control	

Other contacts are not used