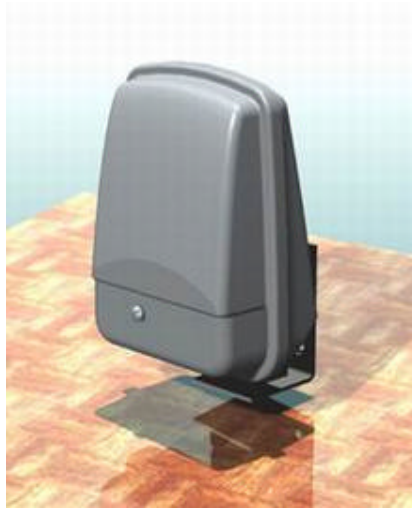




**Volumetric Microwave Detector  
AGAT-SP6**



# ***USER MANUAL***

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This operating manual contains information regarding purpose, design, operation, technical specifications and the structure of the volumetric microwave detector “AGAT - 6”(further “detector”) as well as installation and usage instructions necessary for providing the most effective application of its technical potential.

### **1. Detectors’ main function**

The detectors’ main function is intrusion detection in the protected premise. The detector may be used outdoors as well.

The size of the detection zone (DZ) can be adjusted.

The detector generates an alarm signal (further “alarm”) in form of opening its NC output circuit and turning on the indicator when:

- There is a moving human in the detection zone at a no more than 1 m distance;
- The power is off or less than 10.2V;

The detector generates an alarm in form of opening the tamper switch contacts when the front cover (which covers the controls) is opened.

The detector requires a 12-24 V DC power supply unit with no more than 0.3V ripple amplitude.

Exploitation conditions:

- Operation temperature range is from -40°C up to + 65°C;
- Relative air humidity of up to 100% at +25°C air temperature.

The detector is resistant to the following:

- movement of small animals and birds at 2 or more meters away from the detector;
- thunderstorm power line fluctuations of up to 1000 V;
- Luminescent lamps in the protected zone.

The detector casing has an anti-dust and a water resistant coating.

Several detectors may be installed together, with at least a 2m distance separating them.

## 2. Main technical specifications

Main technical specifications are listed in Table 1.

Table 1

Parameter	Value
Range of detected speed, m/s	
radial direction	From 0.3 up to 3.0
peripheral direction	From 0.3 up to 5.0
Detection zone length at maximum range, m	20+4
Detection zone maximum area, sq m; at least	120
Maximum protected zone width, sq m, at least	20
Detection zone length at minimum range, m, no more than	6
Power supply voltage range, V	From 10.2 to 27
Power consumption, mA, no more than	60
Warm-up time after power up, s	30
Signal parameters in alarm and tamper circuits:	
- current (AC or DC), mA, no more than	100
-voltage amplitude, V, no more than	72

Alarm signal duration, s, at least	2
Operating frequency, GHz	9.25+/- 0.25
Size (packaged) without initial assembly kit (IAK), mm	105x65x45
Device weight (packaged), kg,	0,45
Average life time, years,	8

### 3. Detector's modes of operation

Detector's modes of operation are listed in Table 2.

Table 2

Mode	Indicator status	Output relay contacts status
PROTECTION	Off	Closed
ALARM	On (for 2-30 s)	Opened (2-30 s)
POWER SUPPLY VOLTAGE DEFICIT	Flashes at regular intervals (flash duration- 1s; period- 2s)	Constantly closed (more than 30 s)
INTERFERENCE	Irregularly flashes (flash duration-0,25 s)	closed
DEFECT	Constantly on (more than 30s)	Constantly opened (more than 30 s)

Attention! If the front control cover is open, the tamper switch contacts will open as well.

#### **4. Detector' delivery kit**

The delivery kit of the detector includes:

- Receiver-transmitter (RCR-TMR) - 1 pc;
- Initial assembly kit (IAK) – 1 pc;
- Operating manual;

#### **5. Principle of operation**

The detector is a passive Doppler type radio-locator, based on frequency modulation of emitted signal with adjustment of the signal reflected from moving objects according to the target distance.

Its core difference from regular Doppler based alarm detector, is a constant “sensing” of the entire detection zone.

#### **6. Design**

The detector includes RCR-TMR and IAK. RCR-TMR (diagram 1) is a one-block unit with anti-dust and water-resistant casing.

The bracket ensures RCR-TMR can be turned horizontally within the +/- 45 degrees range, and turned vertically – up: at least 45 degrees; down: at least 25 degrees.

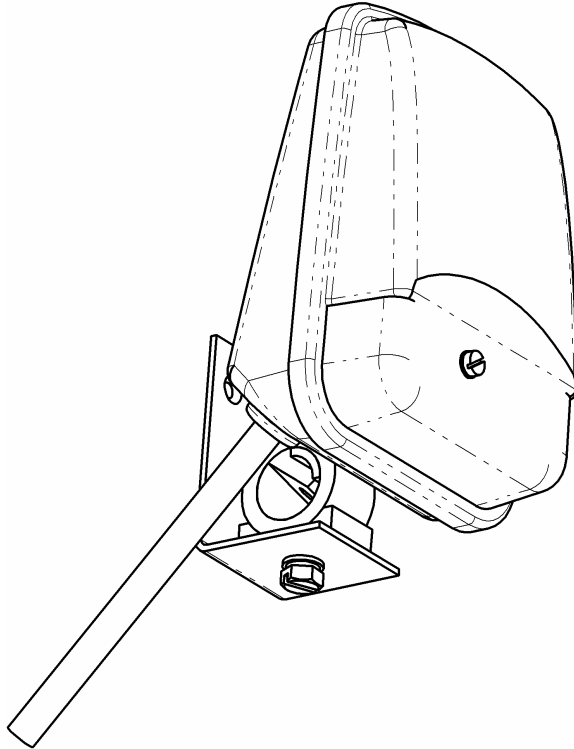


Diagram 1- Design of the detector

## 7. Installation site requirements

**ATTENTION! STABLE OPERATION OF THE DETECTOR DEPENDS ON MEETING THE FOLLOWING REQUIREMENTS!**

The detector should be installed on vibration free walls at a height of at least 1.5 m.

Animals, birds, vibrating and moving objects (windows, doors and etc.) are not allowed in the protected area.

Buildings which have walls, floor or ceiling (wooden, glass etc.) transparent to radio signals, the size of the detection zone should not exceed the size of the building. It is recommended to direct the detector towards blank main walls.

In case of an outdoor installation, the following requirements should be met:

- Movement of bushes, branches or other objects like gates, old wire fences and etc (because of wind, for example) is not allowed in the detection zone;
- Grass level should not exceed 0.2 m;
- Moving transport, people and animals are not allowed in the detection zone.
- In case of wall mounting, water drainage from rooftops should not be close to the detector (front distance of at least 2 m; side distance of at least 0.5 m);
- It is recommended to use a fence in the protected area to avoid accidental crossing of the detection zone by people or animals.
- The location of the installation should be at least 2 m away from areas of possible animal movement and bird nesting/perching.

Take into consideration the fact, that a signal reflected from a moving human depends on the sight perspective (the area of the observed shape). For example, signal from a person observed from above is 2-3 times weaker, than the signal from the same person observed from the front or from the side. The shape of a person observed from above is comparable with the shape of a medium sized dog, severely affecting the ability to differentiate between them.

**To avoid water flow forming a coating on the emitting surface during heavy rainfall causing false alarms the detector should be installed under a cover or protective visor.**

## **8. Installing the detector**

Mark the selected location, drill 5 mm holes and install anchors from ISA in the holes (anchors should not be installed in wooden walls). Fasten

bracket to the wall with screws. The RCR-TMR should be installed in a way where the detectors' front cover is aligned with the detection zone axis.

An example of connecting the detector to alarm control panel is shown on diagram 2. Terminal zone resistor R is connected to the socket which is placed under the control cover.

RCR\_TMR

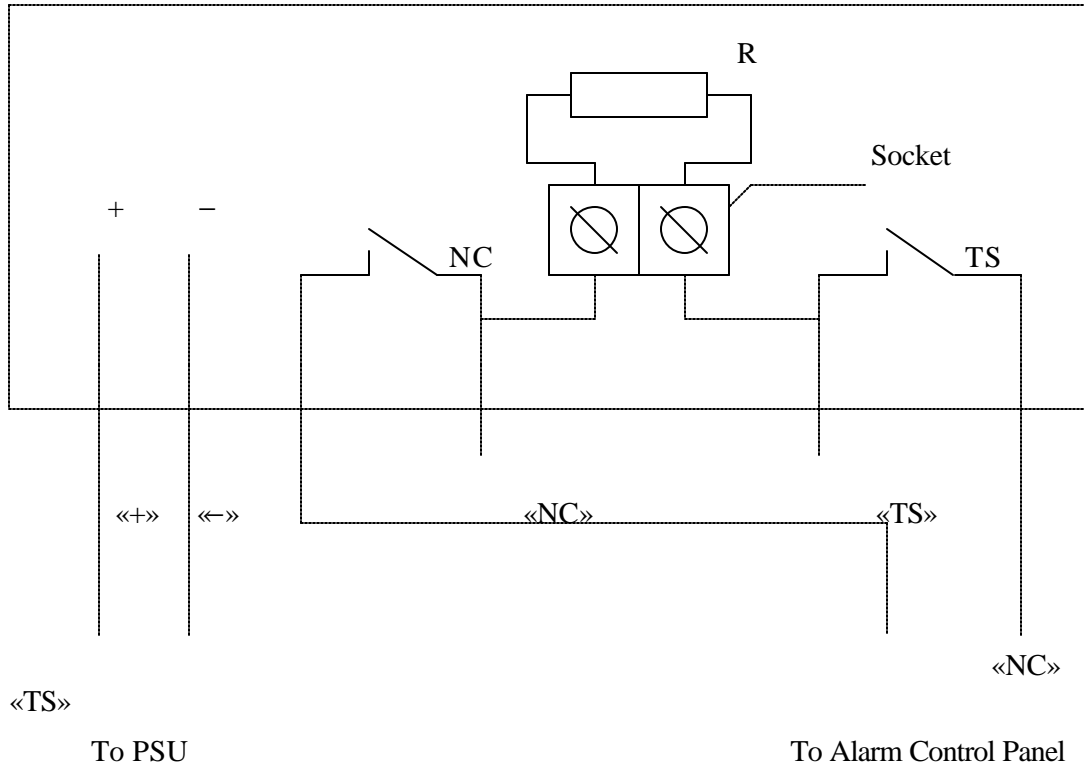


Diagram 2. Detector connection chart with joint output and tamper circuits.

Detector wiring is listed in Table 3.

Table 3

#	Marking of contact	Function of contact
1	+	Power supply “Positive”
2	-	Power supply “Negative”



3,4	??	Output relay contacts
5,6	??	Tamper switch contacts

## 9. Preliminary actions and detector adjustment

9.1 Apply power voltage to the detector and check voltage on the respective cord outlets. Apply power to the detector and check voltage on the respective contact. Measured value should be in the 11.5 -27 V range

9.2 Take off the front control cover, set sensitivity adjustment jumper in the middle position and check indicator status. In there are no moving objects in the detection zone, 15 s after power up, the indicator should be off, which corresponds to the PROTECTION mode of operation.

9.3 Set the required detection distance with distance adjustment resistor control (should be checked with test crossing). The counter-clockwise up to stop position of the resistor control corresponds to the minimum distance range.

9.4. Detector sensitivity should be set as follows:

- a) Set sensitivity jumper to the bottom position;
- b) Enter the detection zone center and stand motionless until the indicator stops flashing (about 15 s). Check the detection (alarm generation) moving while bent, or crawling along the detection zone axis at a speed of 1-2 m/s towards the detector, at no more than 1 m distance.
- c) Repeat b) at least 3 times.
- d) If an alarm signal is not generated, b) and c) should be repeated and sensitivity consecutively increased by setting sensitivity jumper in higher positions. Try to achieve alarm signal generation on every crossing.

9.5 After setting the sensitivity, check the detection distance and, if needed, adjust the distance according to 9.3 instructions.

9.6 If the detector is installed on premises with walls, floors or ceilings transparent to radio signals, please check the detectors' sensitivity towards people moving outside the protected area. If detections are generated in case of people moving in adjacent areas, the detection distance should be decreased or detectors' orientation changed.

9.7 Reinstall the controls cover and check detector's normal operation (check alarm signal being transferred to the alarm control panel, during a detection zone crossing test).

**ATTENTION! MINIMAL NECESSARY DISTANCE AND SENSITIVITY VALUES SHOULD BE SET, TO ENSURE THE REQUIRED DETECTION ZONE SHAPE IS PRESENT! DETECTION ZONE SIZE SHOULD NOT BE INCREASED BY INCREASING THE SENSITIVITY SINCE IT WOULD CAUSE LOSS OF NOISE PROTECTION!**

## 10. List of possible defects and troubleshooting

Possible defects and troubleshooting are listed in Table 4.

Table 4

Defect	Possible reasons for defect	Troubleshooting
1.NC contacts of output circuit are constantly open (over 30 s), indicator is not on	Power supply voltage below normal value	Check power supply voltage. On absence or low voltage check power supply connection cable and PSU.
	Detector is defective	Detector should be replaced

2. NC contacts of output circuit are constantly open (over 30 s), indicator is not glowing constantly, but giving short flashes (from 2 up to 30 sec) while crossing the detection zone	Control panel alarm zone terminal resistor is damaged.	Disconnect terminal resistor from alarm control panel and check it.
	Controls cover improper installation.	Check if the cover was installed properly.
	Detector is defective	Detector should be replaced.
3. NC contacts of output circuit are constantly open (over 30 s) the indicator displays POWER SUPPLY LOW	Low power supply voltage	Check power supply voltage. On absence or low voltage check power supply connection cable and PSU.
4. Detector does not generate alarm signal during detection zone crossing test.	Detector has not been used in accordance with operating manual requirements.	Visually check the compliance of installation and usage conditions with sections 1 and 7 of this manual.
	Detector has been adjusted	Check the compliance of

	incorrectly	installation with section 9 instructions.
	Detector is defective	Detector should be replaced.
5. False alarms are generated too often	Detector has not been used in accordance with operating manual requirements.	Visually check the compliance of installation and usage conditions with sections 1 and 7 of this manual.
	Unstable power supply or too high ripple amplitude.	Check power supply connection cable and make sure that there are no strong interference sources in the vicinity.  Check PSU operation - perform test running of the detector using a different PSU.
	Defective terminal resistor circuit	With jumpers connect NC and tamper switch

		output circuits and perform test running. False alarm signals registered by alarm control panel are sign of defective terminal resistor or alarm control panel.
	Detector is defective	Detector should be replaced

Notice!

1. An actual detector defect should be determined by installing a new detector and performing test runs.
2. After completing the troubleshoot the detector should be adjusted according to section 9 instructions.

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STR International Inc herein referred to as "STR."

### LIMITED WARRANTY

STR hereby warrants, subject to the conditions here in below, that should this product become defective by reason of improper workmanship or material defect during the specified warranty period, STR will repair the same, effecting all necessary parts without charge for either parts or labor, or replace the unit at STR option.

Labor: ONE (3) Years from the date of original purchase from authorized Re-seller unless otherwise specified.

Parts: ONE (1) Year from the date of original purchase from authorized Re-seller unless otherwise specified.

### Void Warranty

Purchaser warranty will be void and purchaser waves any rights to make warranty claim if product has been opened, altered or modified, repaired or serviced by anyone, other then the service facilities authorized by STR to render such services. Further, the seal/serial number on the unit must not have been altered or removed. The unit must not have been subject to accident, misuse, and abuse or operated contrary to the instructions provided.

The opinion of STR with respect to this matter shall be final. This warranty does not include and is not extended to broken and damaged accessories, batteries and to parts wearing out due to normal wear and tear.

### Proper Delivery:

Returned products will not be accepted for warranty repair unless accompanied with a valid Return Merchandise Authorization (RMA) number issued by STR. RMA numbers issued by STR are valid for 15 days. Shipments received after 15 days will be refused. The unit must be shipped, freight prepaid or delivered to the STR service facility, in either its original package or similar package, affording an equal degree of protection and with instructions indicating the location within Canada or the United States to which the unit will be returned. The repaired unit will be returned to the customer freight prepaid unless the warranty claim is deemed void or invalid. All accessories included with the unit must be listed individually on the packing slip for the shipping documentation. STR will not accept any liability, for loss or damage to such accessories if they are not listed.

### Proof of Purchase Date:

This warranty applies and commences to STR products, from the original date of purchase from an Authorized Re-seller. Proof of purchase (i.e.: photocopy of invoice), must be included with product when submitting for warranty repair.

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? Original shipping charges are not refundable unless deemed that STR shipped incorrect item(s), incorrect quantity (ies) or original manufacturers defective product ( subject to STR validation ).

? Returned products will not be accepted unless accompanied with a valid Return Merchandise Authorization number (RMA).

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? Returns must include a copy of original invoice, the completed STR packing slip, and a detailed statement of reason for return.

? Customer is responsible for all freight charges, duties and taxes, if applicable. Product must be properly packaged and shipped, Prepaid to STR in its original packaging, or similar packaging that offers an equal degree of protection. STR will charge the full replacement cost for any missing components or parts. STR is not responsible for lost or damaged merchandise. We strongly recommend insuring products for return shipping.

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? Discontinued items, special or custom -made equipment items (items not carried as stock even though they may appear on price lists) may not be returned. Returned products will be evaluated at the original purchase price and not at any subsequent price increase or decrease.

\*\* Subject to the conditions stated above, the following re-stocking fees will apply to products returned for credit/refund.

STR reserves the right to determine the validity of the product returned and / or refuse to accept product for credit.

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**25% Re-Stocking Fee** (less original shipping charges): If product is returned within 60 days from original STR ship date.

**50% Re-Stocking Fee** (less original shipping charges): If product is returned within 90 days from original STR ship date.

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