

USER'S GUIDE

Site device with an in-built transmitter REEF String RS-202TP (further referred to as Transmitter) is part of Radio Channel Surveillance Security System RS-202, and is used to transmit wireless Intrusion, Fire and other Emergency alarm signals for the purposes of centralized security surveillance of stationary sites, such as apartments, country houses, cottages, car parks, commercial real estate, etc. The radio signals from Transmitter will be further referred to as Messages.

Alarm and informative messages about event at a particular site are transmitted via a radio channel to the Base Station RS-202BS, and are displayed at the Centralized Control Panel (CCP) and on a computer with security monitoring software. Light and sound alarms signal on site.

This device is certified for full compliance, cert. №РОСС.RU.ME96.H00513.

TECHNICAL DESCRIPTION

Working frequency:	433,92 ± 0,2% MHz
Transmitter power:	10 m Wt
External aerial output:	coax cable 50 ohm
Average transmission range:	5-20 km (in a city, with an external aerial) 10-30 km (in the country, with external targeted aerial)
Communication control:	6-12 minutes, depends on # of sites in the system
Data capacity:	5 fixed alarm contours
Type of counters:	5,6 k ohms
Power in-contour:	12 V
Counter Failure Duration:	over 350 ms
Arming-Disarming:	"touch-memory" keys by Dallas (up to 20 keys)
Output to Siren:	12 V 300mA
Output to Light Alarm:	12 V 300mA (more than 100mA not advised)
Relay output:	to CCP or a powerful external siren
Access Control Mode:	one door electrical lock control
Commutated Power, max.:	72V with up to 500 mA
Commutated Current, max.:	3A at 24V
External Power Supply:	10V...15V AC power
NORMAL mode current:	not more than 75mA
Operation temperatures:	from -20 to +50C
Use conditions:	closed unheated spaces
Size:	160*110*32mm (w/o antenna)

TECHNICAL DESIGN

Controls and Display Indication

Transmitter is enclosed in a plastic box with 8 LED indicators and a button located on the front panel. LED indicator SERVICE MODE is stable green when Transmitter is on, and blinks when Transmitter is being trained, tested or engaged in some other service (non-guard) operations. Group of 5 red LD indicators (DOOR, PERIMETER, VOLUME, CALL, FIRE) blink to signal alarms in a corresponding contour. Green LED TRANSMISSION lights when broadcast is active. Yellow LED ARMED lights when the site is armed, and blinks after alarms.

The button is used for cancellation of ALARM indication and for several other purposes. The device is equipped with a regulated in-built sound siren (Beeper)

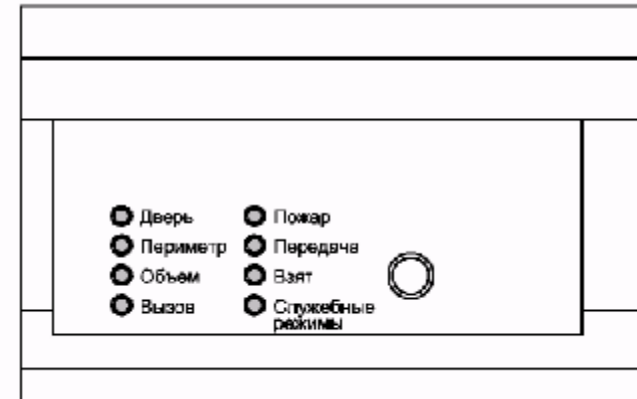


Fig. 1. External View of the Transmitter

Working Mode

Transmitter has two main working modes: ARMED and DISARMED. In ARMED Mode transmitter controls all of 5 contours, in DISARMED Mode – only FIRE and ALARM BUTTON contours. As a rule, ARMED Mode switches on in the absence of users on site, and switches to DISARMED when users are present. ARMED Mode may be activated with users on site premises (e.g., during nighttime when no one comes in or goes out), but not when volume sensor detectors are used.

ARMED and DISARMED modes are stored in the power independent memory, so if transmitter is powered off and back on again, it will return to the mode in which it was before power-down.

In both ARMED and DISARMED modes transmitter can be in either NORMAL or ALARMED state. ALARMED state turns on when one or more ARMED contours are reported broken and persists until alarm is cancelled by a key-holding user. During alarm the siren and light signals go on and alarm messages are sent via a radio channel. Alarms are not stored in the power independent memory, so if transmitter is powered down when in ALARMED state and switched back on, the alarm will be cancelled.

Contours (Guard Zones)

Transmitter has five alarm contours AC1-AC5. Contours are preset and cannot be changed.

CONTOUR	PURPOSE	NOTE
SC-1	DOOR	delay at entry and exit
SC-2	PERIMETER	guarded only in ARMED mode
SC-3	VOLUME	guarded only in DISARMED mode
SC-4	ALARM BUTTON	Always guarded
SC-5	FIRE	Always guarded

The sensor detector for AC-1 DOOR contour switches on when the door is opened; as a rule, this is a magnetically controlled ГЕРКОНОВЫЙ sensor. If it is not possible to install the contact sensor onto the door, a volume sensor may be connected to AC-1 mounted inside right after the doorway entrance.

Sensors connected to SC-2 PERIMETER are guarded only in ARMED Mode and switch on alarm without delay. Usually, these are contact or tear sensors mounted on windows, remaining doors besides the entrance, etc.

AC-3 VOLUME contour is connected to volume (active) movement sensors, which guard only in ARMED Mode similar to PERIMETER sensors, although with in a more complicated manner. Details of VOLUME contour operation will be reviewed further in this Guide.

AC-4 and AC-5 guard in both ARMED and DISARMED modes (so-called 24-hour contours). AC-4 is connected to an ALARM BUTTON or to the output of an external radio buttons' receiver. FIRE sensor is connected to AC-5.

Touch-Memory Key Scanner

To ARM or DISARM electric touch-memory keys (further referred to as Keys) are used. Up to 20 keys may be used. Key number (1 to 20) is included in Arm/Disarm messages.

Keys are briefly applied onto the contact pads of an external scanner, which is enclosed in the sales package. Scanner may be mounted planted outside or inside the site. If needed, 2 parallel scanners can be connected to the Transmitter.

A LED indicator on the case of the scanner displays the Transmitter's status (ARMED/DISARMED, NORMAL/ALARMED). It also shows that the applied key code was scanned and accepted. In case the scanner is mounted inside of the guarded site, an additional external LED may be installed to be seen from the outside of the closed area.

External alarm signals

To inform about potential alarms and status changes (ARM/DISARM), an external siren and a light signal (a Lamp) may be connected to the Transmitter. The siren or lamp must have working voltage 12 V and consumption current not more than 300 mA. A more powerful siren can be connected using the in-built Relay.

When the site is ARMED with no alarms the lamp gleams with stable light. In DISARMED and NORMAL Modes the Lamp turns off. The system has a programmable option of sound confirmation for ARM/DISARM commands by emitting short siren beeps.

When ALARMED, the siren turns on for 2 minutes and the Lamp blinks continuously if even one contour is broken, and keep on until 10 minutes after restore.

ARMING THE TRANSMITTER

Start of the Procedure

Neither the ARMED yellow LED on the Transmitter panel, nor the external scanner LED are on while in DISARMED NORMAL mode. These two LED's burn always with similar light, so below only the scanner's LED will be described, as seen by the user when the Transmitter is set into the armed mode. It is assumed that the ARMED LED on the Transmitter always displays similar behavior.

To begin the Arm procedure, apply and hold the key to the scanner. Immediately after the key is applied the scanner LED will flash once to show that the key code has been scanned and accepted. After approximately 1 sec pause the LED will begin to blink sparingly and the in-built Transmitter beeper will start beeping. After the blinking starts you may remove the key. When the key is applied the contours AC-1 DOOR and AC-3 VOLUME may be broken as well as intact – the Arm procedure will commence in either case, but if the contours have been broken the LED will blink differently (see later).

If Arming is attempted with a broken AC2 PERIMETER contour, the Transmitter will emit a warning sound signal, blink fast for several seconds, and will switch to a special Contour Mapping mode. This will also be accompanied by broken contours LED's blinking. Check to make sure that the AC-2 contour has really been broken, restore it to normal (when the contour is restored the LED blinking should stop) and begin the Arming procedure anew.

When AC-4 ALARM BUTTON or AC-5 FIRE contours are broken (i.e., when the Transmitter is in DISARMED-ALARMED state) you can not ARM the system. You will first need to remove disruptions in these contours in order to allow ARMING.

“Stranger” Key Response

If you apply a “stranger” key to the scanner in any operation mode (a key that has not been programmed to work with this Transmitter), the scanner's LED will blink fast for 1 sec, the Beeper will emit a low tone, and nothing will happen. If you apply an unknown key to the scanner for three times in a row the Transmitter will stop responding to any key for about 10 sec. This is a precautionary measure against the chances of breaking the key with random scanning by an external device.

If nothing happens after you apply the key (no LED signals from the scanner), then possibly there is insufficient key-to-scanner contact or the conductors have worn out. Apply the key by lightly moving it from the pad's center until full stop at the side wall, and regularly clean your keys and the scanner pad with spirits.

Exit Delay

If the Transmitter is mounted on the interior the User may be given a certain time lag in order to open the entrance door and exit from the guarded site. This 60 sec lag is called Exit Delay. The Volume contour state does not influence EXIT DELAY countdown, but is shown on the scanner's LED. With the shut door, a broken volume contour is indicated by a series of double blinks of the LED; and an intact contour – with single LED blinks. When the door is opened the EXIT DELAY countdown stops, and the transmitter waits for the door to be closed.

With the door open, the LED gives double blinks (irrespective of the volume contour status), beeping tones are higher. Time for door closing is not limited.

If you fail to open door before EXIT DELAY time is over the Transmitter will ARM and will begin guarding AC1, and you will not be able to exit the guarded site without setting the alarm off. If the scanner is mounted far from the entrance door and leaving the site takes longer than 60 sec, you may wish to open the door in advance before initiating the ARMING procedure. This precaution will allow unlimited time span for leaving the guarded premises.

When the door is closed the Transmitter will test the VOLUME contour. If the test is passed the LED will start blinking with single flashes, and the Transmitter will turn to ARMED after 5 sec: a sound tone signal will be played, the scanner LED light will light smoothly, the external lamp will light, and ARMED message with a user key number will be transmitted.

If Volume sensors did not reset by the in the time the door was closed the Transmitter will wait until they fully reset and will continue blinking with double flashes. After the sensors reset and the VOLUME contour is restored, the LED will blink with single flashes and the Transmitter will turn to ARMED after 5 sec.

Most Volume sensors will reset after 5-10 sec, so if the Transmitter is not ARMED 20-30 sec since the door was closed it probably means that one of the Volume sensors or the AC3 contour wires are broken. You must return to the site, apply the key to the scanner and cancel ARM command, then check the AC3 in the SERVICE mode for Contour test.

The Arming procedure may be cancelled at any stage by applying your key one more time before the Transmitter switches to ARMED mode. The Transmitter will remain in DISARMED mode and no radio signals will be transmitted.

If the door is not opened after the setting procedure begins, the Transmitter will go to ARMED mode after EXIT DELAY time is over. In case you fail to leave before EXIT DELAY time is over and transmitter is armed, disarm and arm the device once again.

To arm the site with the user inside apply the key without leaving premises. After 60 sec the Transmitter will turn to ARMED mode and will guard the DOOR, PERIMETER and VOLUME contours. You can not use the VOLUME contour for guarding the site with the user inside it.

Zero Exit Delay

If the scanner is mounted on the exterior set the Zero Exit Delay with the help of J8 fuse. After you exit from the guarded premises close the door, then apply and hold the key. If DOOR, PERIMETER and VOLUME contours are OK the Transmitter will arm after 1 sec.

If the PERIMETER contour is violated the Transmitter will indicate a refusal to arm as was described earlier in this Guide.

If contours DOOR or VOLUME are violated the scanner's LED will begin to blink with double flashes. After both contours are restored the LED will start blinking with single flashes, and the Transmitter will arm after 5 sec.

DISARMING

To DISARM the Transmitter apply the key to the scanner. The Transmitter will switch to the DISARMED Mode, play a sound tone and the scanner's LED and external Lamp will go out. If the Sound Confirmation mode is switched on the siren will give two short sound signals. A DISARMED message with the key number will be transmitted to the CCP.

If the scanner is mounted inside the guarded building then after opening the door the user will be given a certain time lag in order to reach the scanner and disarm the Transmitter. This time lag is called ENTRY DELAY. During the Entry Delay lag the in-built beeper will emit warning sound signals, both the scanner's and the ARMED LED's will blink. If the Entry Delay time is over before the Transmitter disarms the ALARM SIGNAL will go on.

The Entry Delay lag value is set with the help of jumper fuses to 15, 30 or 60 sec. It is possible to set a zero value Entry Delay lag. In this case if the Transmitter is not disarmed after you enter the building the ALARM SIGNAL will go on immediately after the door is opened.

It is recommended to set the minimal entry delay confidently sufficient for disarming the Transmitter, considering how far the scanner is located from the door.

If scanner is mounted inside the building you should select the zero Entry Delay and apply the key to the scanner before the door is opened.

Sometimes, for increased security, users prefer making it impossible to enter without the siren going on (i.e., having the Alarm Signal turn on before each time the Transmitter is disarmed – a so-called ALARMED DISARMING). To do this mount the scanner inside the guarded zone and select the zero Entry Delay.

ARMED/DISARMED Audio Confirmation

If you wish you may activate the option of the siren giving short sound signals at each ARM/DISARM operation. It will give one signal when ARMING, and two signals - when DISARMED. To activate this option you need to set jumper fuse J1.

ALARM SIGNALS

ALARM goes on whenever one of the currently guarded contours is violated. The beeper begins to produce alarm sound signals, the violated contour LED blinks with frequent flashes, and both the scanner's and the transmitter's yellow LED's blink with a special pattern (as noted earlier, the ARMED and the scanner's LED's mirror each other's operation).

The scanner's ALARM LED blinking is different for the current Armed or Disarmed mode. When disarmed, the scanner's LED flashes briefly once every 2 sec, and when in armed mode it goes out briefly once every 2 sec. It is easy mnemonics: short alarm blinks at 2 sec intervals corresponds to indication of those modes in NORMAL (DISARMED NORMAL – light off, ARMED NORMAL – constant light). The scanner's LED does not indicate violated contour's number.

In case of alarm the external siren is turned on and the external lamp starts to flash. The siren works for 2 minutes from the moment of contour violation and turns off automatically (regardless of whether the contour has been restored or not). The lamp continues to flash continuously while even one guarded contour remains violated and 10 minutes after the contour has been restored (then turns off if the Transmitter was in Armed mode or burns smoothly if it was Disarmed). If the contour is restored and violated once more before the 10 min period runs out, the lamp will continue flashing for 10min again.

Thus, if the lamp does not burn at all off, this means that all violated contours were restored not less than 10 minutes ago.

If during or after the first alarm another guarded contour is violated, the siren will switch on again and the new contour alarm radio signals packet will be transmitted. If the violated contour was restored and violated again after 2 minutes or longer, the repeated violation will be considered as new alarm by the system.

Alarm Memory

Each instance of alarm activation and the violated contours' numbers are stored and reported by the transmitter's LED's, by the scanner's LED blinking and by the Transmitter's beeper until the key holding user will cancel the alarm signaling. Unlike the siren and the external lamp, the LED's and the beeper do not turn off automatically.

Alarm Relay

With each new alarm, the Transmitter's Switching Alarm Relay is activated. It may be set to activate from 3 sec to 2 min with the help of jumper fuse J6 (J5 fuse should be removed in this case).

Transmitter's Relay may be used for sending alarm signals via the ground wiring to the CCP's, for connecting auto-dialing devices, additional sirens, etc. When connecting you should consider maximum possible values of the switched current and power voltage.

Alarm Cancellation

To cancel the alarm signaling apply your key to the scanner. The siren and the external lamp will turn off at once, however, the violated contour LED and the scanner's LED blinking will continue, the in-built beeper will not turn off. If the Transmitter was armed it will change to the DISARMED mode.

After this you should check which contours have been violated (reading the Transmitter's indicators), unload the alarm memory and reset the whole alarm episode. To unload the alarm memory press the Transmitter button for not less than 0.25 sec. The alarm can not be cancelled if you have not applied your key before this. If the Transmitter is mounted out of reach and the button is not easily accessible you may cancel the alarm by applying the key to the scanner one more time.

“Silent” Alarm

For AC4 ALARM BUTTON contour you may set a special “silent” Alarm Mode with the help of a fuse connector. In this mode, when the SC4 contour is violated, the ALARM Radio Signal will be sent, the LED's indication on transmitter and scanner will turn on, the Relay will be activated, but the beeper, the siren and the lamp will not start. Silent Alarm Mode is usually set for attack threats when the user prefers sending the alarm signal without giving it off to the attacker.

GUARD MODES OF THE VOLUME CONTOUR

VOLUME contour has two guard modes which may be set with the help of J4 fuse.

Instant mode of VOLUME contour

If J4 fuse is not installed the guard tactic for the AC3 VOLUME is not different from that of the AC4 PERIMETER – both of these contours are guarded only in the armed mode and turn on the alarm for any violation instance. The only difference is in the reported alarm type.

Instant mode of VOLUME contour is usually applied when the scanner is mounted outside the guarded building or when the scanner is mounted behind the door inside of the building where volume sensors are not used.

It should be noted that a volume sensor may still be connected to the AC1 DOOR contour in such an area (serial to the door contact), however, in such case the alarm signals will not differ for door and volume sensor intrusions.

VOLUME Contour with Entry Delay

If J4 fuse is installed the guard tactic for the AC3 is more complex. The VOLUME contour violations in the armed mode may trigger either an immediate or a delayed alarm, depending on whether the DOOR contour was violated first before it.

Suppose that the scanner is mounted inside the building and several volume sensors are installed and are connected to the AC3 in the same area with the scanner.

If in the armed mode the door was violated prior to the VOLUME contour and the latter is giving out an alarm signal (which always happens when ARMED area is intruded), then until the Entry Delay lag is over the AC3 VOLUME contour violation is ignored and does not turn on an alarm, which gives the user time to disarm the Transmitter without too much noise.

If the Transmitter is not disarmed before the Entry Delay runs out the alarm turns on and is sent via the DOOR contour. When the Door alarm turns on the Transmitter begins to guard the AC3 again, so if the AC3 is violated or will be violated once more the VOLUME alarm will be transmitted after the DOOR alarm signal.

If the volume sensor, which is integrated into the AC3, is violated when in the armed mode although the door was not opened (when the intruder enters through the window or similar) the alarm is activated via the VOLUME contour and transmitted immediately. This mode is recommended for most guard cases.

ACCESS CONTROL MODE

Besides just guarding the area, the Transmitter is also capable of performing an ACCESS CONTROL function. With this function the user can open an electric or electromagnetic lock of one of the doors with the same touch-memory key as for Arming/Disarming operation.

Access Control Mode is activated with the J5 jumper fuse. The lock is managed by the same Relay which is used for additional alarm signaling in the other modes. Length of the lock- opening impulse may be set to 1 sec or 5 sec with the J6 jumper fuse.

In the ARMED mode the application of your key to the scanner simultaneously disarms the Transmitter and unlocks the door. In the DISARMED mode a brief key application unlocks the door, and a longer one first unlocks the door, and afterwards begins the arming procedure. Generally, Arming, Disarming and Cancellation of an alarm in the Access Control mode are similar to all other modes, except that every time you apply the key to the scanner, the door is unlocked.

You can control either the front door – in this case the scanner should be mounted on the exterior of the guarded building; or one of the inside doors – in which case the scanner is mounted next to the particular door you wish to control. It is possible to mount two scanners – one at the front door for arming or disarming the Transmitter, and another near the door selected for Access Control.

A usual switch access button (not included in the sales package) should be mounted on the inside of the door equipped with the electric lock, which will unlock the door from inside the premises in both armed and disarmed modes.

RADIO SIGNAL TRANSMISSION

When a contour is violated, during arming, disarming or other operation which alters the state of the Transmitter, a corresponding message is instantly transmitted. For increased reliability, messages are transmitted by packets in several transmissions, approx. 3 sec each. During transmission the green TRANSMISSION LED lights up.

NB! The Transmitter normal operation may experience failures due to power source outage or strong interferences from the wiring, power and aerial cables. To indicate such a failure the TRANSMISSION LED blinks with dim frequent flashes during breaks between the transmissions instead of turning off. Should you notice such dim blinking, make sure that the J11 jumper fuse is in place, and then turn the Transmitter power off and back on. If this does not help the Transmitter may need technical maintenance.

After a contour is restored, the corresponding message is transmitted with some delay, which does not usually exceed 2 minutes.

If a new event takes place while the message packet transmission is still under way, the report of the second event will be transmitted immediately following the current broadcast. This means that the latter message will be sent to the security center with some delay.

If a row of several events take place the corresponding messages will be queued and transmitted serially: first event will be reported in the first packet, followed by the second event, etc. until the last queued message.

In the Monitoring mode, when no events take place, special communication test radio signals will be transmitted in pseudo-randomly determined time intervals between 45 and 75 sec.

MESSAGE CODES TABLE

All Contact ID messages sent by the Transmitter to the CCP are listed in the Table below:

EVENT	CODE	MESSAGE TO CCP	FLAG	CHAPTER	User # or Zone #	
ARMING	401	ARMED BY USER	ARM	0	# of key	
DISARMING	401	DISARMED BY USER	DISARM	0	# of key	
SC1 DOOR	violated	134	ENTER/EXIT	!	0	1
	restored	134	ENTER/EXIT	n	0	1
SC2 PERIMETER	violated	131	PERIMETER	!	0	2
	restored	131	PERIMETER	n	0	2
SC3 VOLUME	violated	132	INTERNAL	!	0	3
	restored	132	INTERNAL	n	0	3
SC4 ALARM BUTTON	violated	120	ALARM BUTTON	!	0	4
	restored	120	ALARM BUTTON	n	0	4
SC5 FIRE	violated	110	FIRE	!	0	5
	restored	110	FIRE	n	0	5
POWER	under 10 V	302	BATTERY LOW	!	0	0
	restored	302	BATTERY LOW	n	0	0
Device power on	308	SYSTEM POWER OFF	n	0	0	

SERVICE MODES

Beside the working (Guard) mode, the Transmitter has several service modes used for installation and testing.

Switching to Service Modes

To enter any of the Service Modes turn off the Transmitter's power, insert the J9 jumper fuse and one of the J1-J8 fuses (all other J1-J8 fuses must be removed), and turn the Transmitter on. The green SERVICE MODES LED will begin to blink (dim) frequently. If the J9 fuse was installed with none or more than one of J1-J8 fuses, the beeper will begin to emit short frequent sound signals to indicate error.

SERVICE MODE (J9 fuse is set)	Fuse
Transmit TRAIN signal	J1
Transmit TEST Signal	J2
- unused -	J3
Check Transmitter Contours	J4
- unused -	J5
- unused -	J6
Register / Delete Key	J7
Display Transmitter's current version	J8

NB! Before switching to Register / Delete Key Mode the Transmitter must be DISARMED (not necessary for switching to other Service Modes).

After switching to one Service Mode you may change between other modes by replacing the fuse into another of the J1-J8 positions without powering on and off the Transmitter. Further on we take it by default that the J9 fuse is installed and the Service Modes are on.

Transmission of TRAIN signal

Every transmitter has a factory-set unique individual code enclosed in all transmitted radio signals. Before the start of its operation this code should be registered in the power independent memory of the CCP (or, as it is termed, "train" the Transmitter). Training is done through broadcast with the Transmitter switched into TRAIN Signal Service mode, and the CCP – in the TRAIN Signal receiving mode.

Connect antenna to the Transmitter. Set the J1 fuse to begin the TRAIN signals transmission (sent after every 10 sec). Each transmission instance is indicated by a sound tone signal. The CCP will need to receive and store the Transmitter's code in its memory.

Transmitting communication test signals

To test the radio channel communication, select the best spot for mounting an antenna, etc. you may use the special TEST Signal mode. Install the J2 fuse to start transmission of TEST radio signals (once every 10 sec). Each transmission is indicated by a sound tone signal.

The CCP must be turned into a special mode for TEST signal reception. Once a TEST signal is received the CCP will indicate it with a sound signal and display the received signal strength.

Checking contours

This mode helps to identify and remedy problems in contours, sensors, wiring, etc. Install the J4 fuse to view contours' state as indicated by the red LED's: no light if OK, blinking if there is a problem. Unlike in the working mode, identified contour problems are not stored in memory, and all indications are valid for current contour state only. No messages are transmitted.

Registering new key

Before use each key must be registered in the Transmitter's memory. If needed one key may be registered with a number of transmitters. Dallas touch-memory keys often used for residential intercoms can be registered with the Transmitter as well.

To register a key you will need a special master-key enclosed in the sales package. We recommend that you keep it separately in a secure place to avoid its loss or illegitimate copying by unwanted persons. Remember that in case of loss you can not register a new master key, which needs to be done only by the manufacturer.

NOTE. Master key may be used to disarm the Transmitter and cancel an alarm if needed - however, it can not be used to arm the system. If you apply the Master key to the scanner in the DISARMED NORMAL mode, you will hear a low tone sound signal, the scanner's LED will flash once and nothing further will happen.

Make sure the Transmitter is DISARMED. Switch on the Service Mode and set the J7 fuse. Apply the Master key to the scanner. You will hear a long tone signal followed by shorter ones, the scanner's LED will start blinking with double flashes.

Apply the new key you want to be stored in the Transmitter's memory. A tone signal will sound, the scanner's LED will go out – your new key has been stored. The green Service Modes LED will continue blinking. If you wish to register another key apply the Master key to the scanner again, then your second new key, and so on for all new keys.

If the key you apply to the scanner after the Master key has already been registered in the memory, the indication will be the same as for a new one, although the new key will not be re-registered. If no key is applied within 20 sec, double flashes will stop, the LED will go out, and the Transmitter will return to the awaiting Master key mode.

If 20 keys have already been stored, but you attempt to register the 21st key you will hear a low tone signal, the scanner's LED will blink fast for several seconds, and the Transmitter will return to the awaiting Master key mode. This means that the memory is full and no more keys may be stored.

Leave the Service Mode (by removing J9 and J7 fuses) and test the newly registered keys. To do this, apply your new key to the scanner and hold to cancel Arming, after which the Transmitter will disarm. Repeat the procedure for the remaining keys.

Deleting keys

If a key has been lost or stolen, it must be removed from the memory. In this case you will need to remove all keys and register the remaining ones again, since it is not possible to delete one key separately.

Key are deleted in the same Service mode as for registering. Install the J7 fuse, then use the pincer or a piece of wiring to short-circuit two board contacts marked CL. You will hear a tone signal, which means that the memory has been erased. Now you may store all your keys once again.

Transmitter version indication

In this Service mode four red contour LED's indicate the Transmitter's version number (binary coded), which you may need when contacting the manufacturer for technical assistance.

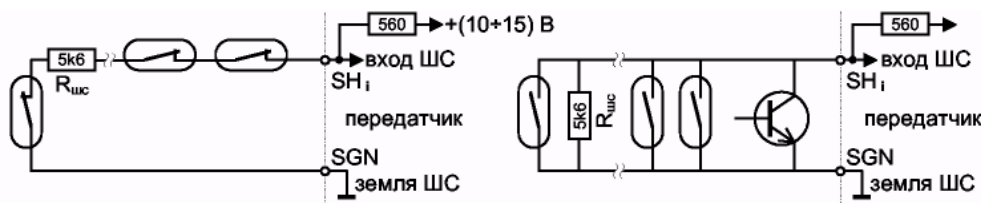
Exiting the Service mode

In order to return to a normal operation mode remove the J9 fuse (the Service modes LED will immediately go out) and restore the previous J1-J8 setup (which defines the settings of the guard mode operation). You do not need to power the Transmitter off and on again in order to return to the operation mode.

POWER SUPPLY

The Transmitter can be operated from any external regulated DC power source with voltage and current output meeting the Transmitter's technical requirements. For potential 220 V power outages we recommend using a backup battery.

The Transmitter checks the current Voltage and reports BATTERY LOW if it goes below 10 V. No sound or lights signaling is turned on. If the nominal Voltage is restored, this will be reported in a message transmitted in a short while. The Transmitter is fully operative until as low as 8 V (at this level only the Relay operation is not guaranteed, all other components should work fine). However, you should remember that firstly, the battery can drain below 10 V very rapidly, and secondly, a deep drain can irreversibly damage the battery. It must also be noted that active sensors, if used, may not work when the Voltage is below normal.



TESTING THE TRANSMITTER

Lightly press one of the two brackets on the right and left side of the box to remove the cover.

Connect terminal resistors 5.6 k Ohm directly to the AC1-AC5 contours contact pads according to the installation scheme. Connect the scanner, the siren and the lamp. Remove all jumper fuses J1-J9 if they are installed.

Connect the power supply to contact terminals +12 and GND. You should see the green SEVICE MODES LED light up. If it does not, check if the power supply connections and voltage are correct. The Transmitter is protected against electric polarization error.

Arm the Transmitter using the key included in the sales package. Check whether the scanner, the scanner's LED and the external lamp work as needed. Disarm the Transmitter. Repeat the procedure for all ARM/DISARM keys. Check whether you can enter the service mode for new key registration using the enclosed Master key.

One by one, short-circuit all contours using a pincer or a piece of wiring. You should see and hear sound and lights alarm signaling, the siren and the Relay should start working. Cancel the alarm.

Train the system CCP with the new transmitter and test the transmission of messages ARMED, DISARMED and ALARM in contours. Now the Transmitter has been tested.

SELECTING ANTENNA AND ITS MOUNTING LOCATION

Transmitter must be mounted in a dry and well covered area preferably in the PERIMETER or VOLUME connected sensor guarded zone. In most cases you should use an external antenna mounted on the exterior of the building, e.g., a cost-effective and compact AN2-433 antenna transmitting up to 20 km distance on open terrain. The distance range may be less in the urban environment. In extreme conditions or for marginal distances you should choose a multi-component directional antenna AN-433, which covers up to 5 km distance on open terrain.

The external antenna mounting location must be chosen following the guidelines specified in the antenna manual. The Transmitter's mounting location is not critical if an external antenna is used.

In rare cases, if the distance between the Transmitter and the Receiver is small (500-1000 m) and there are no grave obstacles for radio transmission, the Transmitter may be used with the plug-in antenna enclosed in the sales package. The best mounting site for the Transmitter with the plug-in antenna will be in the frame of the window facing the receiver. It is best to fix the Transmitter in the center of the window glass with the help of adhesive tape.

If the Transmitter can not be mounted in the window or windows face a wrong direction, it is acceptable to mount the Transmitter inside but as far as possible from the electric wiring and large metal objects; at the maximum height but not higher than 50 cm to the ceiling. If mounted onto an iron cast wall the Transmitter should be separated from it by the gap not less than 10 cm.

Sometimes moving the Transmitter with a plug-in antenna for even several meters may significantly increase transmission quality and distance reach. It is highly recommended to try out several options before you settle for the best quality location.

In any case, the distance and quality characteristics of the plug-in antenna are significantly lower, and we recommend using an external antenna for all settings.

Scanner

To connect the scanner lines TM and GND use a twisted pair, the type of line to the LED is not critical. Maximum TM line length, if made of a standard twisted pair, is 30 m; with a longer line operation is possible but is not guaranteed.

If two scanners are connected the contact key pads are connected in parallel, and the LEDs serially. Two scanners can be connected in one chain (one twisted pair, one scanner in the middle, another on the line's end) or "star"-wise (using two separate twisted pairs. Still, the total length of the TM lines must not exceed 30 m.

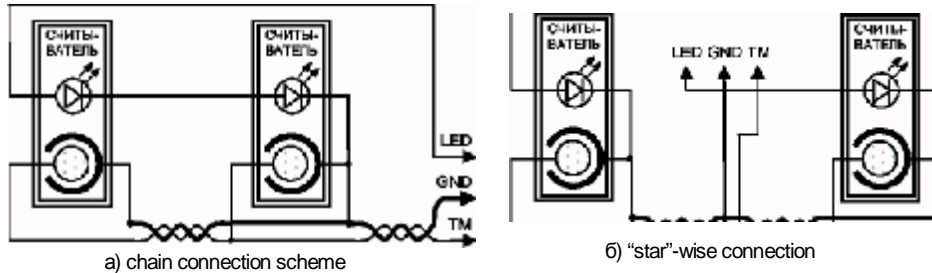
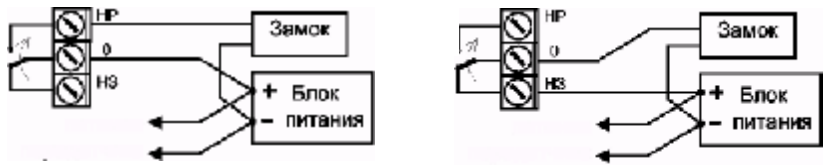


Fig. 3 Connecting two scanners

If the scanner is mounted inside the premises, it is possible to install an external LED indicator for the Transmitter status check. This LED is connected serially to the scanner's LED (like the second scanner's LED) and mounted in the spot visible from the outside (on the door frame, behind the window, etc.).

Electric Lock

Normal switch relay contacts and impulse 1 c are typically used for electric click-on locks, and normal circuted relay contacts with impulse 5 – for electric hold-up locks.



Transmitter's power

Transmitter's power

a). connecting power-on triggered lock

b). connecting a power-down triggered lock

Fig. 4 Connecting an electric lock

NB! It is recommended to power the lock from an independent source. If the lock and the Transmitter use the same power source it is advised to install separate power lines joining them just before the power supply terminals in order to reduce interference (see pic. 4).

Normal switch access button is mounted inside next to the door and is connected to the KEY terminals of the board.

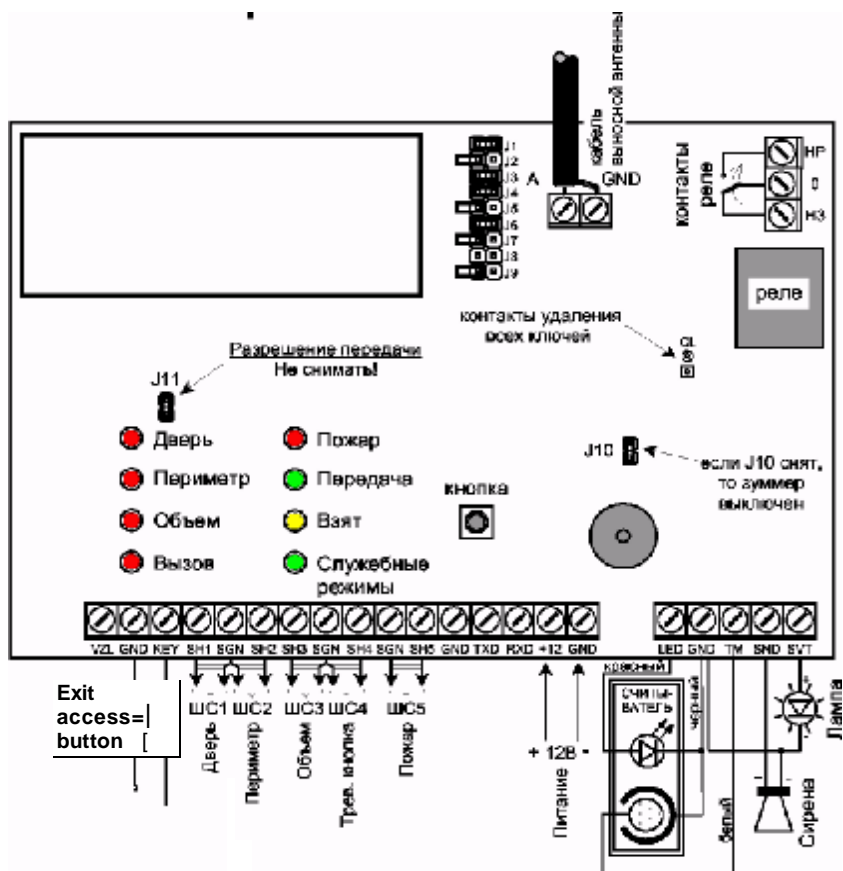
JUMPER FUSES SETTINGS TABLE

OPERATION MODE (J9 FUSE REMOVED)			SERVICE MODE (J9 FUSE INSTALLED)	
J1	Siren beeps at arming/disarming	J1	J1	TRAIN signal transmission
	No	-		
	Yes	+	J2	TEST signal transmission
J2 J3	Entry delay	J2 J3	J3	- unused -
	0 sec	- -		
	15 sec	+ -	J4	Transmitter zones test
	30 sec	- +		
	60 sec	+ +	J5	- unused -
J4	Alarm in VOLUME zone after entry	J4	J6	- unused -
	instant	-		
	with entry delay	+	J7	Register and delete keys (except Master key)
J5 J6	Relay mode	J5 J6	J8	Transmitter version indication
	alarmed: 3 sec	- -		
	alarmed: 2 minutes	- +		
	lock control: 1 sec	+ -		
	lock control: 5 sec	+ +		
J7	Alarm in CALL zone	J7		
	loud alarm	-		
	silent alarm	+		
J8	Exit delay	J8		
	60 sec	-		
	0 sec	+		

Notes:

- "+" and "-" represent installed or removed fuses correspondingly. Operation modes change immediately after repositioning the fuse. ("on-the-fly"). It is recommended to place removed fuses on the hook to prevent loss.
- To select a service mode turn the transmitter's power off, install the J9 fuse and one of the J1-J8 fuses, then turn the power on. To change for another service mode you only need to re-install the fuse to another J1-J8 position without turning the transmitter's power off..
- To erase all keys from memory switch to the service mode with J9 and J7 fuses, then short-circuit CL contact terminals.
- To exit service modes you need to remove the J9 fuse and return to the previous setting of the J1-J8 fuses. There is no need to turn the power on and off.
- By removing the J10 fuse you turn off the in-built beeper completely.

INSTALLATION SCHEME



Pic. 5 Transmitter installation scheme

NB! Do not install jumper fuses not described in the present Guide! Never remove the J11 fuse. Some of the bolt terminals are not used.

FACTORY WARRANTY

Manufacturer guarantees that this product fully meets the technical requirements providing correct exploitation conditions as set in the present GUIDE.

The WARRANTY for this product extends for the period during 1 year from the date of purchase or installation, but not more than 3 years from the date of Quality Acceptance by the Manufacturer.

SALES PACKAGE

Transmitter REEF String RS-202 String RS-202TP	1 pcs
Touch-memory Scanner	1 pcs.
Touch-memory Key.....	2 pcs
Touch-memory Master Key	1 pcs
Plug-in Antenna.....	1 pcs
Resistors MLT 5.6 K ohm – 0.25 wt.....	5 pcs
User's Guide	1 pcs

QUALITY ACCEPTANCE

REEF String RS-202P was produced, assembled, packaged and accepted by Quality Control as satisfying the enclosed technical description and ready for consumer exploitation.

SALES / INSTALLATION NOTES

дата приемки ОТК организация-продавец или установщик

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