

INSTALLATION MANUAL
IMMOBILIZER: IM125R-24A

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IMMOBILIZER SPECIFICATIONS

- IM125R-24A is a transponder immobilizer (wireless authorization) powered by 12V to 24V, that operates on the frequency of 125kHz and offers basic anti-theft functionality. Despite its simple design the IM125R-24A immobilizer features all logical operations and self-check functions.
- The IM125R-24A features 2 internal electrical cut-off relays, operating on normally closed (NC) contacts. The immobilizer is operated by pendant shaped transponders (2 transponders are included). The immobilizer installation kit includes: a central unit, a 16-connector bundle of wires with a buzzer, LED, authorization switch and antenna.

IMMOBILIZER FUNCTIONS

- The ability to assign up to 30 transponders;
- Possibility of non-transponder disarming using PIN CODE;
- 2 x electrical cut-off circuits in the NC configuration (normally closed, 2 x 30A relays);
- AS – Authorization Switch used for entering PIN CODE;
- IGNITION ON input line (bringing the immobilizer off the power saving mode);
- STATUS output line (active low state);
- HORN output line (active low state);
- Auto-arming;
- "Service" mode;
- 4 programmable functions.

PACKAGE CONTENTS:

- Main control unit of the IM125R-24A immobilizer - 1 pc.
- 16-pin bundle of wires IM125R-24A-W16 1 pc.
- LED holder 1 pc.
- Transponders 2 pcs.

Picture of all system components.



LOGICAL FUNCTIONS

DISARMING THE IMMOBILIZER

In order to disarm the immobilizer, place the transponder close to the receiving antenna. Disarming the immobilizer is signalled in the following way:

- Buzzer - 2 short signals
- LED - goes OFF (stops flashing)
- STATUS - high impedance state.

(each transponder read-out while the immobilizer is disarmed is signalled by 2 buzzer sounds). NOTICE: Armed immobilizer is in power saving mode. The antenna circuit is powered in 1 sec. on – 2 sec. off cycle. Turning the ignition on causes the antenna circuit is powered constantly. Turning the ignition on while in the armed state causes disconnection of circuits of the electric lock (switching the relays).

NON-TRANSPONDER DISARMING THE IMMOBILIZER

In case of losing or damaging the transponder there is possibility of immobilizer disarming using the 4-digits PIN CODE entered with the Authorization Switch (AS).

Example of entering the PIN CODE 1 2 3 4:

- Turn ignition off (if it is turned on)
- FIRST DIGIT 1: Press AS 1 time (The LED starts light constantly), after 2 seconds the single buzzer signal confirms the digit was entered;
- SECOND DIGIT 2: Press AS 2 times, after 2 seconds the single buzzer signal confirms the digit was entered;
- THIRD DIGIT 3: Press AS 3 times, after 2 seconds the single buzzer signal confirms the digit was entered;
- FOURTH DIGIT 4: Press AS 4 times, after 2 seconds the single buzzer signal confirms the digit was entered;

The LED goes off.

Entering correct PIN CODE will be confirmed with 2 buzzer short signals, the immobilizer will be disarmed.

In case the entered PIN CODE is incorrect there will be heard single, long for 3 sec. buzzer signal.

Entering the incorrect PIN CODE for the fourth time causes that further entering PIN CODE is impossible for 60 sec. Every pressing the Authorization Switch in this case causes the long for 3 sec. buzzer signal.

NOTE: THE FACTORY SETTING OF PIN CODE IS 2 2 2 2.

AUTO-ARMING OF THE IMMOBILIZER.

The immobilizer is automatically armed after a defined period of time (30 seconds or 3 minutes, depending on the "auto-arming time" function setting - see the chapter "Programmable functions" of the manual) from the moment of turning the ignition off. Going into the armed state is signalled in the following way:

- Buzzer - a single signal lasting for 5 seconds
- LED - flashes once per 1 second (50 ms ON - 1 second OFF)
- STATUS – active state (ground level).

NOTICE: Each read-out of the transponder resets the auto-arming countdown time again.

SIGNALLING THE IMMOBILIZER STATUS WITH THE LED

- OFF - the immobilizer is disarmed,
- flashes - the immobilizer is armed,
- ON – indication that the armed immobilizer enters the alarming state with HORN output active or state of entering the PIN CODE (after pressing AS).

STATUS OUTPUT

The STATUS output indicates the immobilizer status:

ground level ($I_{max}=50mA$) - the immobilizer is armed.

high impedance state - the immobilizer is disarmed.

HORN OUTPUT

The HORN output is the alarm output:

- HORN - the intermittent signal (0,5 sec. ON - 1 sec. OFF) for 30 seconds.

Turning the ignition on for the time longer than 10 seconds when the immobilizer is armed causes the LED begins to light constantly and triggers the intermittent operation of the HORN. The alarm can be interrupted by disarming the immobilizer (placing the transponder close to the antenna). The output active state: ground level ($I_{max}=50mA$).

IMMOBILIZER "SERVICE" MODE

The "service" mode is used, when it is necessary to leave the car for servicing, to enable the service teams to access and operate the vehicle. In this mode the immobilizer is disarmed (no auto-arming) while the power saving mode for antenna circuit is active. To activate the "service" mode you should:

- Disarm the immobilizer.
- Turn the ignition ON.
- Place the transponder close to the antenna for 10 seconds, until you hear a single, 2-second buzzer sound and then move the transponder away from the antenna vicinity and turn the ignition OFF within the 5 seconds time.
- The immobilizer is now in the "service" mode.
- The "service" mode of the immobilizer is signalled in the following way:
- Each turning the ignition ON or OFF is signalled by a 2-second buzzer sound.

To deactivate the "service" mode you should proceed in the same way as when activating the "service" mode.

PROGRAMMABLE FUNCTIONS

ENTERING THE PROGRAMMING MODE OF THE IMMOBILIZER FUNCTIONS:

To enter the programming mode of the immobilizer functions you should:

- Activate the immobilizer "service" mode.
- Turn the ignition OFF (if it is turned on).
- Place the transponder close to the antenna for 10 seconds, until you hear a 5-second buzzer sound and then move the transponder away from the antenna vicinity.
- The buzzer will start beeping to indicate the number of the current programmable function and its current setting by emitting short signals with 3 second intervals (see the table below). The selection of the function setting is confirmed by placing the transponder close to the antenna after a particular number is signalled in accordance with the table below (the number of the buzzer signals) for approx. 2 seconds. Setting of function is confirmed by a 5-second buzzer sound.
- When a function has been set up, the process of signalling a function number restarts from 1.
- If within 5 seconds from signalling the last function number the transponder is not placed close to the antenna, the programming mode is deactivated. Deactivation of the programmable functions mode is signalled by a 5 second buzzer sound.
- Deactivate the immobilizer "service" mode.

DESCRIPTION OF THE PROGRAMMABLE FUNCTIONS:

FUNCTION No.:	FUNCTION NAME	FUNCTION SETTING
1	Auto-arming time	3 min (standard)
2		30 sec
3	Delay of activation cut-off relays	0 sec. - immediate (standard)
4		10 sec.
5	Assigning of transponders	The ability to assign up to 30 transponders
6	Programming PIN CODE	Programming of 4-digits PIN CODE (see function F6 description)

F 1 - The immobilizer will be automatically armed after 3 minutes from turning the ignition off.

F 2 - The immobilizer will be automatically armed after 30 seconds from turning the ignition off.

F 3 - Turning the ignition on while the immobilizer is armed will immediately disconnect the locked circuits.

F 4 - Turning the ignition on while the immobilizer is armed will disconnect the locked circuits with a 10 seconds delay.

F 5 - Transponders should be assigned to device by placing them close to the antenna (once), with 4-second intervals for each transponder. You can assign max. 30 transponders to immobilizer.

The immobilizer will automatically leave the assigning mode if it does not read any transponder for 5 seconds. You should assign all transponders the immobilizer is to read. This mode of transponder assigning does not modify the settings of the programmable functions.

F 6 – PIN CODE is programmed using the Authorization Switch (AS) after turning the LED on.

Example of programming the PIN CODE 1 2 3 4:

FIRST DIGIT 1: Press AS 1 time, after 2 seconds the single buzzer signal confirms the digit was entered;

SECOND DIGIT 2: Press AS 2 times, after 2 seconds the single buzzer signal confirms the digit was entered;

THIRD DIGIT 3: Press AS 3 times, after 2 seconds the single buzzer signal confirms the digit was entered;

FOURTH DIGIT 4: Press AS 4 times, after 2 seconds the single buzzer signal confirms the digit was entered.

PIN CODE was changed. The LED goes off.

FACTORY ASSIGNING TRANSPONDERS.

Turning on the power supply with shorted pins as described on the picture will enter the mode of factory transponders assignment, which is signalled with a single, short buzzer sound.

The assignment process involves placing transponders close to the antenna one by one, confirmed each time with a single, short buzzer sound.

After all 30 transponders are assigned to the device or if it does not read any transponder for 5 seconds the assignment mode is automatically deactivated, which is signalled by a 5-second buzzer sound.

This mode of transponders assignment modifies the settings of the programmable functions, resetting them to factory defaults.

WHERE AND HOW TO INSTALL THE IMMOBILIZER

The immobilizer main control unit should be mounted inside the vehicle cabin, preferably under the dashboard. You should avoid places exposed to humidity, e.g. areas near air-conditioning outlets, etc. The main control unit should be mounted to the vehicle fixed elements, using band clips.

INSTALLATION OF THE RECEIVING ANTENNA

To avoid the significant reduction of the transponder reading range, the receiving antenna should be installed

under the upholstery, in adequate distance from the vehicle metal parts. It is not permissible to shorten or lengthen the antenna.

INSTALLATION OF THE BUZZER

The buzzer should be installed in a place that would assure good conditions for propagation of emitted sound signals.

INSTALLATION OF THE LED

The LED should be installed in a place clearly visible to the vehicle user. You should avoid places exposed to excess sunlight.

INSTALLATION OF THE AUTHORIZATION SWITCH (AS)

Authorization switch should be mounted in easily accessible though hidden place.

CONNECTING THE IGNITION INPUT

Connection should be made to the wire with +12/24VDC when the ignition is switched to the ON position.

DESCRIPTION OF THE IMMOBILIZER INPUTS AND OUTPUTS:

INPUTS.

- Antenna input - terminal of the antenna that generates low power electromagnetic field of the 125 kHz frequency.
- Authorization switch – input used for entering PIN CODE, triggered by providing ground,
- Ignition - ignition ON identification input, triggered by supply of +12/24V,
- +12/24V - main power supply input +12/24V,
- GROUND – ground power supply.

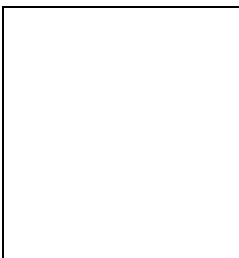
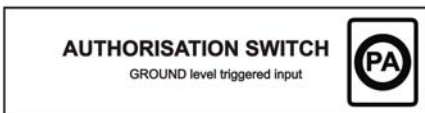
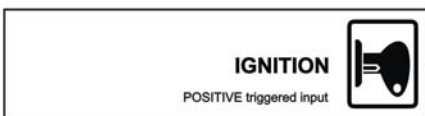
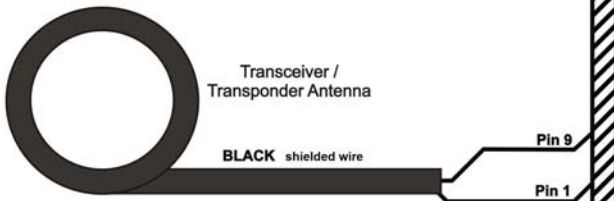
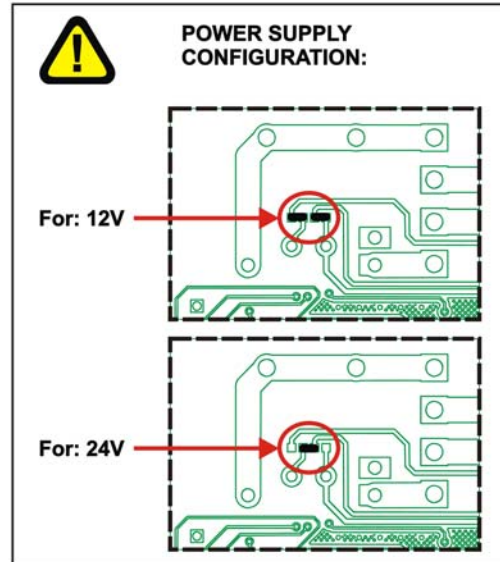
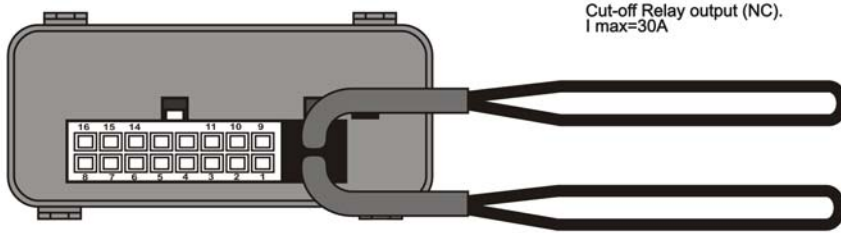
CONTROL OUTPUTS.

- Buzzer - control output providing +5V (max. 50mA),
- LED - control output providing +5V (max. 5mA),
- STATUS - control output providing ground level in active mode (max. 50mA),
- HORN - control output providing providing ground level in active mode (max. 50mA),
- CUT-OFF CIRCUITS - 2 independent NC (normally closed) circuits with load-carrying capacity of each circuit of 40A of constant current for 12V installation or 30A for 24V installation.

TECHNICAL SPECIFICATIONS

No.:	Parameter	Unit	Value	Remarks
1	Supply voltage	V	+12 do +24V	+/-30%
2	Operating temperature range	°C	-30 do + 85	
3	Current consumption at standby state Current consumption at disarmament state	mA	10 50	
4	Load-carrying capacity of outputs:			
	Load-carrying capacity of NC contacts of the cut-off relays	A	40 for U=12V 30 for U=24V	2 circuits
	Buzzer control	mA	20	Pin 11
	LED control	mA	5	Pin 10
	STATUS	mA	50	Pin 13
	HORN	mA	50	Pin 12
5	Inputs impedance			
	IGNITION	kohm	4,7	Pin 15
	AUTHORIZATION SWITCH	kohm	20	Pin 14
6	Radio communication frequency	kHz	125	
7	Communication range	cm	6	
8	Transponder type		SYKOMAT	

IMMOBILIZER INSTALLATION DIAGRAM



Factory assigning the transponders