ritm
SECURITY SOLUTIONS

Satellite tracking system
Voyager 15

Data sheet

Device identification number

1. General Information

The Voyager 15 is a satellite monitoring system (hereinafter referred to as the device) for mobile objects with the ability to transmit video from external analog video cameras.

The device is designed for installation in vehicles or other mobile objects with the 12/24 V on-board supply.

2. Manufacturer

RITM Company

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3. Package Contents

Voyager 15 Satellite tracking system	1 piece
MicroSD card with operating system	1 piece
GSM antenna	1 piece
GSM antenna	1 piece
Connection cable with 12-pin connector	1 piece
Holder	1 piece
Wi-Fi antenna	1 piece
Battery B600BE	1 piece
Data sheet	1 piece
Package	1 piece
Additional equipment[1]	
MicroSD card up to 128 GB; 10 class	
HDD drive size 2.5" capacity up to 2 TB	
SSD drive size 2.5" capacity up to 2 TB	
Analog video camera 12V	
USB flash drive up to 128 GB	
4G modem	

4. Technical Specifications

Parameter	Value
Geolocation System	
GPS	+
GLONASS	+
GPS/GLONASS antenna	External active, SMA connector
EGTS protocol support	+
Communicator	
Communication channels	GSM (CSD, GPRS), LAN, Wi-Fi

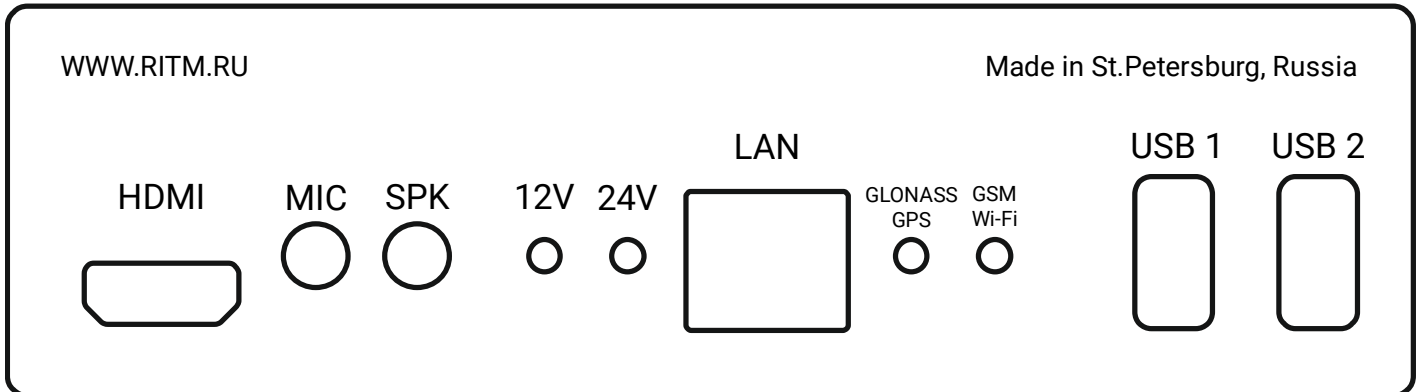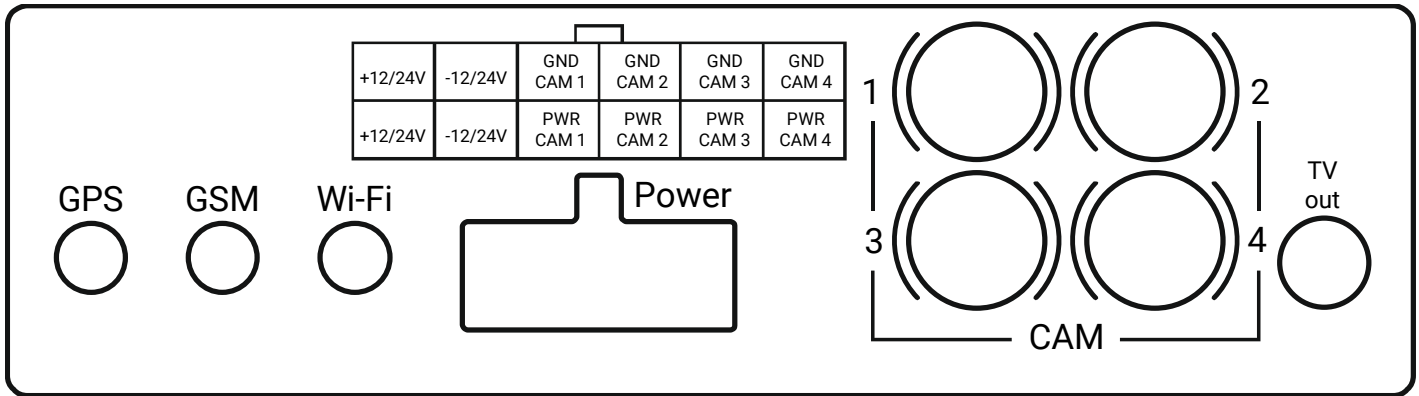[1] Additional equipment of the Voyager 15 satellite tracking system is not included in the delivery package and should be purchased separately.

GSM and Wi-Fi antenna	External passive, SMA connector
Number of SIM cards installable, pcs	2
Support of 3G and 4G using an external 4G modem	+
Built-in sensor	
Built-in motion sensor	+
Power supply	
External supply, V	11-15, 22-30
Load on each power output of video cameras, mA, to	350
Type of a backup battery	B600BE
Battery nominal capacity, mAh	2000
Short circuit protection in the circuit of cameras	+
Power consumption of the device, W, up to (depending on a mode)	15

General Specifications		
External connections	USB 2.0 / LAN	2 / 1
	GPS / GSM / Wi-Fi	1 / 1 / 1
	HDMI / RCA (TV out)	1 / 1
	AV input	4
	output for a video cameras supply (12)	4
	input for a microphone connection	1
	input for a loudspeaker connection	1
	input for a device supply	2
	IP-cameras	6^2
External indicators	GPS	+
	GSM/Wi-Fi	+
	External supply is 12V	+
	External supply is 24V	+
Image compression codec / frame rate, fps		H.264 / 25
Size of the video image from one PAL camera, points		720×576
Size of the video image from 4 cameras		1440×1152
RAM, Gb		1
Event history, records		512,000
Head parking, vibration protection		+ (depends on HDD installed)
Media types for video and history recording	USB flash drive (with video bitrate no more than 4 Mbps)	+
	HDD (SSD) 2,5" (SATA)	+
	MicroSD (class 10)	+
Design		
Dimensions, mm		47×156×150
Weight, g		300
Operating temperature range[3], °C		0...+85

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[2] IP cameras are connected to the "LAN" connector using a switch. It is recommended to use the "RITM switch" which provides constant 12V voltage for cameras. Operation with IP cameras via Wi-Fi is not supported.

[3] Without regard to battery characteristics.

5. Designation of Elements

+12/24V	-12/24V	GND CAM 1	GND CAM 2	GND CAM 3	GND CAM 4
+12/24V	-12/24V	PWR CAM 1	PWR CAM 2	PWR CAM 3	PWR CAM 4

GPS   GSM   Wi-Fi   Power

1   2   3   4   TV out   CAM

WWW.RITM.RU   Made in St.Petersburg, Russia

LAN   USB 1   USB 2

HDMI   MIC   SPK   12V   24V   GLONASS GPS   GSM Wi-Fi

Element	Designation
HDMI[4]	Connector for monitor with digital input for viewing images from video cameras in a real time mode.
MIC	Connector 3.5 mm for a microphone connection. If an IP camera is connected an audio track is recorded together with video of camera #1.
SPK	Connector 3.5 mm for a loudspeaker connection.
LAN	Connector for an Ethernet cable and IP-cameras.
USB1 and USB2	Connectors for Flash drive and external 4G modem.
GPS	SMA-M/F connector for an external GPS/GLONASS antenna.
GSM	SMA-M/F connector for an external GSM antenna.
Wi-Fi	SMA-F/F connector for an external Wi-Fi antenna.
Power	Connector for a power supply.
CAM[4]	AV input connectors (BNC) for analog video cameras.
12V	Indicator of external power 12V.
24V	Indicator of external power 24V.
GPS	Positioning indicator.
GSM/Wi-Fi	Data link detection indicator.
TV Out[4]	AV output connector (RCA).

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[4] Connector is used only when working with analog cameras.

6. Power Connector Pin Table

Pin No.	Designation	Note
1, 2	Power positive terminal	12/24 V on-board mains connection.
3, 4	Power negative terminal	
5, 7, 9, 11	Power positive terminal	Video camera power supply connection.
6, 8, 10, 12	Power negative terminal	

7. Visual Indication

Indicator	State	Note
12V	Always on	11-15 V main power supply available.
	Blinks 1 time per second	Power less than 11 or more than 15 V
	Blinks 1 time in 3 seconds	Power less than 11,8 V. The device is off.
	Blinks 2 times per second	Power more than 11,8 and less than 15V. The power is testing (1 minute).
	Off	No power 12 V.
24V	Always on	22-30 V main power supply available.
	Blinks 1 time per second	Power less than 22 or more than 30 V.
	Blinks 1 time in 3 seconds	Power more than 15 and less than 23,6 V. The device is off.
	Blinks 2 times per second	Power more than 23,6 V. The power is testing (1 minute).
	Off	No power 24 V.
GPS	Blinks frequently (7 times per second)	Coordinates are not defined.
	Blinks slowly (1 time per second)	Coordinates are defined.
GSM/Wi-Fi	Blinks frequently (7 times per second)	No connection.
	Blinks slowly (1 time per second)	Connection is established in a GSM network (CSD, GPRS).
	Always on	Wi-Fi connection is established.

During operation in normal mode (power supply of 11-15V or 22-30V) the indicator is off if power changes from 12V to 24V. Testing of 24V power supply is performed (the 24V indicator blinks 2 times per seconds during 1 minute) and then it starts to lit permanently.

If in device power test mode the voltage changes from 11.9V to 24V for example than the devices starts testing of 24V power supply.

> ⓘ The device operates at temperatures above 0 °C. When the temperature is below minus 2 °C the device will be turned off and indicators 12V and 24V will blink 4 times per second.

> ⓘ When the device operates from the internal battery (the battery power more than 2,9 and less than 4,2 V) indicators 12V and 24V blinks synchronously 1 time in 3 seconds.

8. Configuration

To configure the device, connect to it using the most suitable way:

- **Desktop configuration**. To connect use a cable and the configuration software ritm.conf or Ritm Configure.
- **Remote configuration via digital GSM**. To connect use a GSM CSD channel and the configuration software ritm.conf or Ritm Configure.
- **Remote configuration via TCP/IP/.** Using the GEO.RITM or RITM-Link software via a TCP/IP connection, if the used device modification features this setting and works in Online mode.

> ⓘ To use the configuration software ritm.conf or Ritm Configure download it from the website of the "Ritm" (www.ritm.ru/en) and install all the required drivers.
>
> To connect via a digital CSD-channel make sure there is access to the digital data transmission service (CSD) and there are enough funds on the account of the SIM-card inserted into the device.
>
> Remote configuration via CSD is only possible from the engineering phone numbers.

9. Getting Ready for Operation

1. Remove the bottom cover of the device fastened with latches.
2. Insert a MicroSD card (if required) into the MicroSD-1 slot and SIM cards into their respective boxes. Before inserting SIM cards make sure they do not require a PIN code to be activated.
3. Install the battery from the device package.
4. Close the bottom cover of the device.
5. Remove the top cover of the device fastened with latches.
6. If necessary, install an HDD or SSD in the slot under the top cover of the enclosure. When installing an SSD, use an adhesive plastic dummy panel by sticking it to the disk. Fasten the disk with screws.
7. Close the top cover of the device.
8. If necessary, attach external GSM, GPS/GLONASS, or Wi-Fi antennas and a 4G modem to the device. Make sure the distances between the antennas, modem, and the device are 50 cm in order to eliminate signal attenuation by metal parts of the vehicle.

> ⓘ To eliminate interference and improve signal quality by connecting an external 4G modem, it is recommended to use an extension cord.

9. Connect analog or IP video cameras to CAM or LAN connectors correspondingly.
10. Connect the power cable from the package to the device via the Power connector. Connect the cable wires to the on-board mains and power inputs of video cameras (the device supplies cameras with 12 V voltage).
11. To install the device, choose an appropriate location, which is most protected against atmosphere effects, dirt, process fluids, physical impact, and prevents free access of unauthorized persons. Make sure the device is located at least 0.5 m from all EMI sources. Fasten the device holder.
12. Install the device into the holder.
13. Power on the device.
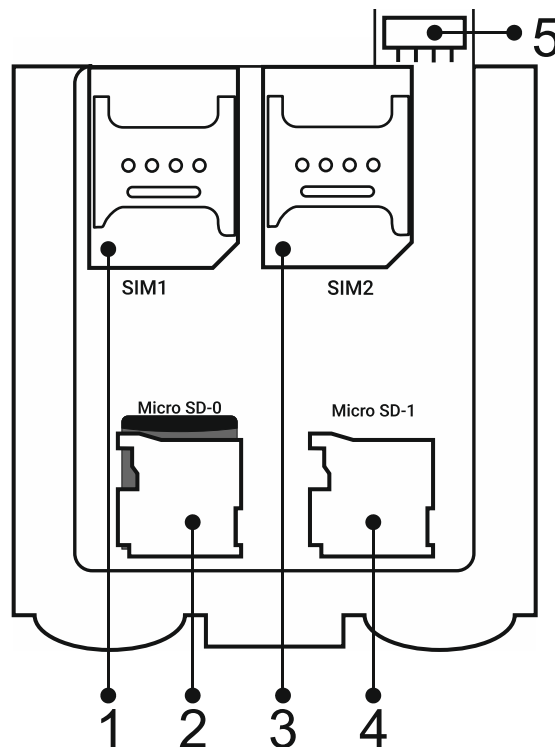
Elements under the cover: 1 - SIM1 – SIM card holder 1; 2 - MicroSD-0 – OS MicroSD holder; 3 - SIM2 – SIM card holder 2; 4 - MicroSD-1 – MicroSD medium holder; 5 - battery connector.

10. Operation with IP cameras

From the **V-15.003.005** firmware version the device supports operation with both analog and IP cameras of any manufacturer. However the device allows to connect only one type of cameras at the same time.

The type of connected cameras is defined by the version of the firmware. By default the device features a firmware supporting operation with analog cameras.

To install a firmware version supporting operation with IP cameras do the following:

1. Navigate to the "Update" section of the device configuration software.
2. In the "HTTP-server address" field insert the following link:
   http://device.ritm.ru/linux/voyager-15ip/firmware/
3. Click the "Connect" link.
4. Select an available build and a connection type and click "Download and install" link.

5. On completing updating wait for 2-3 minutes and restart the device in a mandatory manner.

To return to the software version supporting analog cameras follow the same procedure described above. However in the "HTTP-server address" field insert the following link:

http://device.unit.ritm.ru/linux/voyager-15/firmware/

11. Maintenance and Safety Measures

At least once per month check SIM card accounts for funds.

All setup and maintenance activities applied to the device should be performed by duly qualified personnel.

12. Transportation and Storage

The device should be transported in packaging in closed vehicles. Storage premises should be free of current-conducting dust, acid and alkaline fumes, corrosive gases and gases harmful to insulation

13. Manufacturer's Warranties

The manufacturer guarantees that the device complies to requirements of the technical specifications, provided the client ensures compliances to conditions of transportation, storage, installation and operation.

Developer and manufacturer guarantees full operation of the device only with the monitoring software GEO.RITM. Not guaranteed to work with other monitoring services (the device works "as is").

Warranty repairs of the device are done throughout the life cycle.

The warranty period is 1 year. The warranty does not cover the battery and the additional equipment included in the package.

The device life cycle is 6 years (provided the operating conditions are observed).

The manufacturer shall not be responsible for quality of data links provided by GSM operators and Internet service providers.

The manufacturer reserves the right for modification of the device in any way that does not degrade its functional characteristics without prior notice.

> ⚠ **Removing the SD-card with the operating system leads to early termination of the warranty!**

14. Information on Claims

In case of a device failure or defect during the warranty period, please fill in a malfunction report specifying the dates of issue and commissioning of the device and nature of the defect and submit it to the manufacturer.