R.BOT Corporation

RCP Code _____

INTERACTIVE MOBILE SOFTWARE AND HARDWARE COMPLEX OF «R.BOT» SERIES

Operating Manual

2011

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The operational manual (hereafter referred to as OM) includes general information necessary for study and proper use of interactive mobile software and hardware complex of «R.BOT» series (hereinafter referred to as the Product).

Use of the Product should be carried out by persons who are familiar with the principles of operation of the Product, RBOT user manual and this manual.

Maintenance of the Product and repair should be carried out only by properly trained personnel.

1. Description and Operation

1.1 Product Description and Operation

1.1.1 Product designation

Name of the Article

Interactive mobile software and hardware complex of «R.BOT» series, specification ТУ 4017-003-68937793-2011.

Product Designation

R.BOT

Purpose of the Product

Interactive mobile software and hardware complex of «R.BOT» series (hereinafter referred to as the Product) is designed to provide the "presence" of a remote operator in a place where the Product is located, with an ability to control the movement of the Product, receive real time video and voice communications over the Internet and/or an intranet. The operator, who can be anywhere in the world where there is an Internet connection, through the use of a personal computer, laptop, netbook, etc. is capable of using the Product to communicate with people around the Product and everything else, to see, hear, speak, and move around the room. The Product can be placed in the office, school, hospital, home, shopping center, exhibition and other places where you need to remotely conduct audio-visual control of the situation, object, negotiations, meetings, mobile videoconferencing or presentation.

Area of Application

The Product can be applied in all areas of human activity where the is a need for remote presence and remote control of the situation with an ability to move around and to receive "live" audio-video information: remote customer care (stores, shopping centers, showrooms, etc.), remote consulting (IT services, management, law, etc.), remote participation in various events (exhibitions, forums, conferences, meetings),

remote presence at cultural and sport activities (visiting museums, art galleries, sporting events), distance learning, telemedicine, adaptation of people with disabilities, etc.

Characteristics of the Product

The Product complies with the requirements of specification ТУ 4017-003-68937793-2011 and a set of documents as per specification.

Product with the software is certified and satisfies the Federal Standard of the Russian Federation.

The Product is designed for continuous operation with occasional breaks to recharge the batteries. The Product is designed to operate in rooms with controlled climate conditions and in the absence of direct effects of environmental factors (rain, snow, etc).

All parts and matherials of the Product comply with corresponding technical standards.

1.1.2 Technical Specifications

Visual appearance of the Product is shown in Figure 1.

Figure 1

Product specifications are given in Table 1.

Table 1

Specification	Meaning
1.Drive type	Electrodrive Two driving wheels3rd castor wheel, nondriven, for stability purpose
2. Sensor Devices	camera; microphone; stereo speakers; photodetectors; touch-screen monitor.
3. Communication interface	Wi-Fi standard of 802.11 b/g (option - 802.11 a)
4. Required Internet (intranet) traffic-carrying channel capacity - Upload/Download, Kb/s	Min. 512/512 **Recommended 1024/1024**
5. Maximum movement speed:	5 Km/h

Specification	Meaning
forward and reverse (km/h)	
6. Moving elements	Head – 4 degrees of freedom; Wheels – 2 degrees of freedom
7. Camera	Color camera Resolution: up to 640x480 Speed: up to 25 fps. / Sec.
8. Display	Color touch-screen display Size: 8 in Resolution: 800x600
8. Power Source	Lead-acid battery with rated voltage 12 V
9. Continuous work time	Up to 8 hours *
10. Charging time	Less than 5 hours
11. Size (m)	Height - 1.05 m Diameter - 0.55 m
12. Weight (kg)	36 Kg
13. Shell material	ABS plastic
14. Configuration	Standard equipment: Product assembled (with three batteries); Dock station for the Product; Wi-Fi access point 802.11 b / g. Extras: Touch screen Monitor 8 "; Server R.BOT

1.1.3 Device Components

The delivery package includes:

- Product R.BOT 100, assembled – 1 pc.
- Charging dock – 1 pc.
- Wi-Fi router – 1 pc.
- Server R.BOT – 1 pc.
- Set of required cables and wires – 1 pc.
- RBOT Product Description – 1 pc.
- RBOT Operating Manual – 1 pc.
- RBOT Service Book – 1 pc.

Note: *components and assembly of the Product may vary depending on the chosen options.*

1.1.4 Structure and Functioning

R.BOT connection options depending upon its supply option is shown in Figure 2.

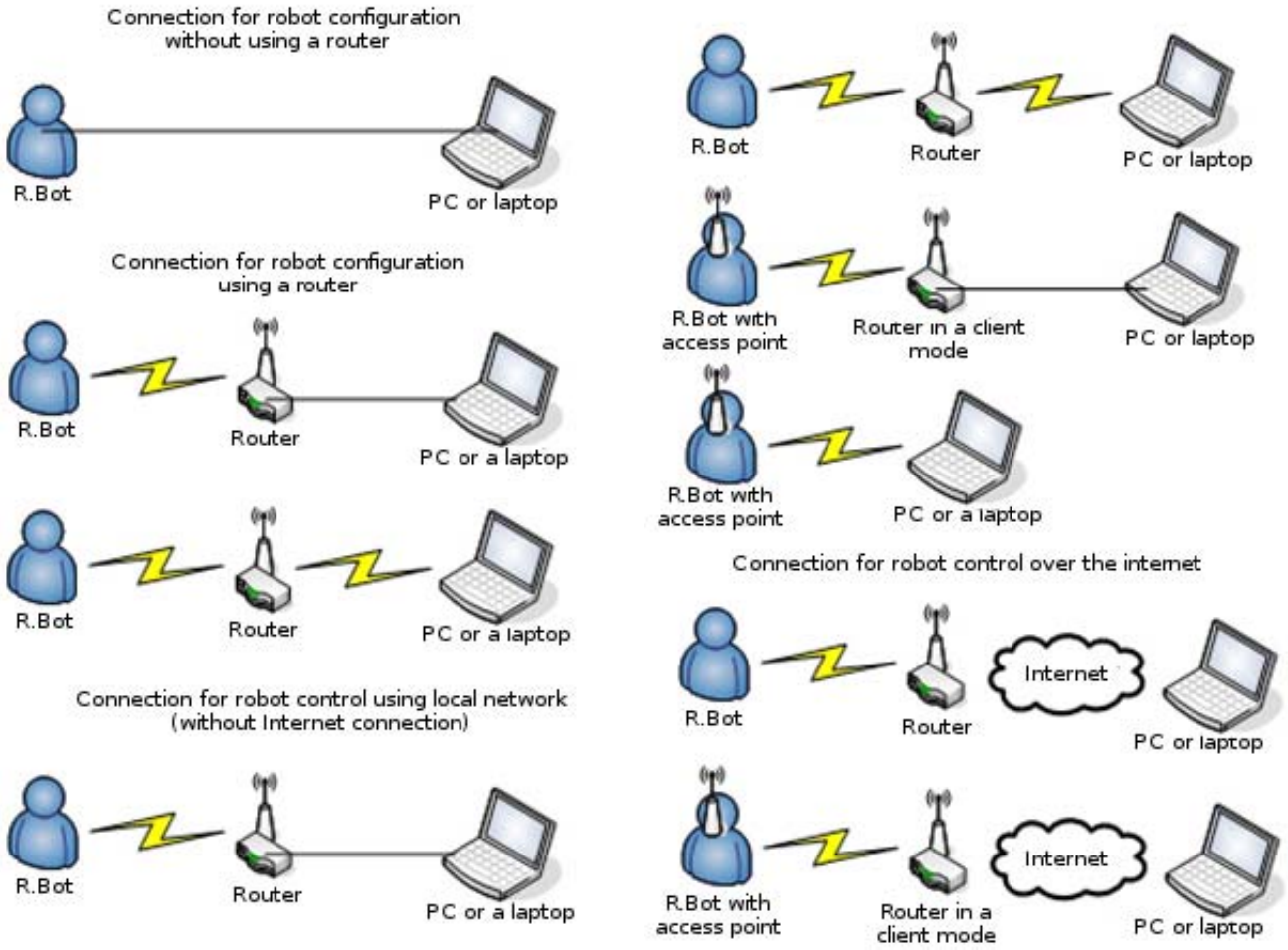

Figure 2

The following configuration options are available for the user:

1) The Product is supplied with an external access point. The Product is configured to the wireless network with an access point, and has an internal network address. The access point attempts to obtain an IP address from DHCP server and allows the robot to connect to the network through NAT.

2) The Product, which comes with a build-in access point configured in client's mode for a particular network, tries to obtain a network address by DHCP. An Internet connection is required to control the Product. To control the Product, you need to assign it a local IP address, manually or by DHCP server using its mac-address, and open this IP address using a browser.

3) The Product comes with a built-in access point, configured to a specific network address space and enabled DHCP server. To manage the device, client must be connected to its access point operating in Wi-Fi client mode (using a laptop with Wi-Fi, or a PC with Wi-Fi a card / Wi-Fi USB adapter, or through a second access point which can operate in a Wi-Fi client mode, and then connect your computer to the second access point via cable).

By user's request, during the installation process of the Product, the following configuration can be made:

1) The server part: users, permissions, setup of an Internet server through which the device is controlled (redirect).

2) Network setting: enable DHCP-client, static IP-address, subnet mask, default router, DNS-server.

3) Access Point settings: enable DHCP-client, static IP-address, subnet mask, default router, DNS-Server, SSID, encryption method, PASSPHRASE.

General information regarding the operating principle

Product, by receiving the control signals over a local network or over the Internet from any location where there is an access to Product's network, can perform the following functions:

- Move around its location (apartment, office, class, hospital room, museum, production areas, etc.)

- Transfer images from the device's camera to the user's monitor
- Transfer images from user's web-camera to Product's monitor (for Products with a monitor)
- Transmit sounds and voices to user's computer, the source of which is in range of 3 - 5 meters of the Product
- Play back user's voice messages and other audio messages
- Autonomously find its charging dock;
- Call operator by pressing a button on the Product
- Record audio and video
- Remote turn on - turn off home appliances (optional).

Interaction between the components of the device

Control signals from the user's computer (optionally, from any Wi-Fi enabled mobile device with a web-browser) are received by the Wi-Fi router and are then transmitted to the Product to connect the Product with the user (to transfer video and sound).

Minimum computer and software requirements:

- Processor - Intel Pentium 1GHz or equivalent

- RAM - 2GB

- Audio Headset

- OS - Windows XP or above, Linux, MacOS

- Internet browser - Mozilla Firefox 3.2 and above, Google Chrome, or Opera are recommended

- Adobe Flash Player 10.2 or higher.

Requirements to the communication channel:

- Minimum Internet bandwidth: 512 Kbit/s incoming and outgoing traffic;

- Recommended Internet bandwidth - 1 Mbit/s incoming and outgoing traffic.

Charging R.BOT

It is necessary to recharge the batteries after continuous operation of the Product. If the charge is below a certain voltage level, the Product's indicator button will change its color to pink first, then red. The Product will periodically tell by "voice" about the low battery power and user's display will have a message stating the need to charge the Product, meaning that the Product must be connected to the charging station. Charging the Product does not take more than 5 hours. The charging time depends on the amount of power left on the battery.

WARNING: Long term storage of the Product is recommended only when the Product is completely switched off. The Product can be switch off by the button on the bottom of the device. If the Product is left on for a long time, the battery will lose its charge. At a certain discharge level, the Product goes into a "sleep" mode in which power consumption is minimal. The Product may stay in sleep mode for no longer than 1 month. If the Product is left on for longer than 1 month, the battery may be discharged completely, which would lead to its malfunction. In this case, battery replacement may be required. Battery replacement in that case is not covered by the warranty and will be made at the expense of the owner or lessee of the Product.

WARNING: In the event of prolonged storage of the switched off Product, batteries must be fully charged before turning the Product off in order to prevent the degradation of batteries, which will damage the batteries.

WARNING: The Product should be switched on to charge using the charging dock. The Product is on when the power switch on the bottom left of the hull is in the "on" position and the indicator light on the Product's body is on.

1.1.5 Labeling and Sealing

The main body of the Product is marked with:

- Model name of the Product
- Name of the manufacturer
- Serial number
- Month and year of the release
- Configuration number
- Confirmatory mark of Russian Federation quality standard ГОСТ Р.

The passport is included in the shipping container. Information regarding the manufacturer's warranty, approval certificate, packaging, and information on the manufacturing facility is all described in the RBOT product description. The Product is also sealed with a permanently attached sealing label to prevent unauthorized opening.

1.1.6 Packing

A ready to use Product is packed in a shipping container (cardboard, wood or plywood box).

Plastic film cover is used for packaging.

Operational and shipping documentation is sealed in a polyethylene film and placed with the Product.

2. Intended Use

2.1 Operational Limitations

The use of the Product outdoors is not recommended due to possible damage by harsh weather conditions (rain, hail, dust exposure, etc.)

2.2 Preparation for Use

2.2.1 Safety Precautions

After transporting the Product in cold temperatures, unpacking should be done only after exposure to a room temperature of 15-25°C for at least 3 hours.

To avoid Product damage, carefully follow the handling instructions on the Product package.

2.2.2 Visual Inspection of the Device

During the inspection of the Product, the following items should be checked:

- completeness of the package in accordance with the passport;
- absence of visible physical damage;
- paint and labels condition.

2.2.3 Commissioning

All start-up operations should be carried out only by representatives of the manufacturer or authorized representatives of the service center.

The Product is ready for its intended use.

Power up and check the Product (after the Wi-Fi access point is installed and configured).

2.3 Usage of the Product

2.3.1 Starting Process

If necessary, charge the device’s battery by connecting the Product to the charging dock.

Turn the power on (the power switch is located on the bottom of the hull, on the left rear part of the device). You will hear a slight click coming from the speakers of the Product. The indicator button on the Product's body will turn red. Then, after the self-test, the device will go into an operating mode. The process takes about 3 minutes, after which the Product announces by “voice” the ready-to-work condition and charging status (connected/disconnected to the charging station). The front indicator light will turn white.

WARNING: It is possible to remotely shut-down the Product from user interface. In that case, the Product is not turned off completely. The indicator button will light up red and the power switch will be in the "on" position. To start the Product, press and hold the indicator button for 6 seconds.

2.3.2. Shutdown Sequence

Power shutdown can be done by switching the power switch at the bottom in the left rear end of the Product. Simply turn the switch to “off” position.

WARNING: It is possible to remotely shut-down the Product from user interface. However, the Product does not turn off completely. The product key indicator will light up red and the power switch will be in the "on" position. In this case, follow 2.3.1 guidelines.

2.3.2 Monitoring of Performance

The luminescence indicator button on the Product is meant to evaluate the condition of the device:

- White glow means that the battery is charged, and the Product is ready to use (you can move the Product and rotation the head);
- Red glow means that the battery is low or the "Stop" mode is on (you can only rotate the head);
- A flashing red and white color means that the Product is in charging mode.

To test the functions of the Product, you must be connected to it via a local network or the Internet and perform follow the section 3.2 of RBOT User Guide.

2.3.3 Starting process for related equipment

All additional equipment included with the Product and required for its proper work should be powered on. R.BOT server must be plugged in the proper power network (110V for USA, 220V for Russia). Before starting the R.BOT server, make sure that the USB flash media that came with the R.BOT server has been inserted in the USB-socket located on the back of the server. Enable the server by shortly pressing the button on the front panel. Complete powering-up and booting-up of the server can take up to 10 minutes. The shutdown of the R.BOT server also can be performed with a single short press of the power button.

WARNING: Do not unplug the power cord of R.BOT server from the power outlet while in operation. It can damage the server.

WARNING: During the operation of the R.BOT server, do not disconnect or touch the flash drive inserted into the socket on the back of the R.BOT server. It can damage the server.

To power the Wi-Fi router, plug it into a proper electrical power outlet (110V for USA, 220V for Russia). After that, the indicators on the front panel should light up. The Wi-Fi router comes fully configured and ready to work. To find out more about using the Wi-Fi router, refer to the manufacturer's documentation.

2.3.4 List of Potentical Problems

Issue	Possible cause, Troubleshooting
Product cannot be turned on with power switch, indicator light is red.	1. Batteries are discharged. Connect the device to the charging station
The power switch is on, but the Product does not work, indicator light is off.	1. Device is in sleep mode, caused by the critical battery discharge. If the Product's power switch is "on", and the indicator button is off, the Product may be in sleep mode. Connect the Product to a charging station. At the minimum required charge level, the indicator button will start flashing with red and white. Alternatively, press and hold the indicator button for 6 seconds to force power on the Product. Indicator button should start flashing with red and white light after that. 2. The Product has been remotely disabled by the user. Turn off the power switch to completely shutdown the Product.
Product was started by the power switch, but does not work, the indicator light is red.	1. The Product has been remotely disabled by user. Switch off the power switch, wait 15 seconds, switch it "on". You will hear a click; the Product will begin the start-up sequence
Working window of the robot on the computer screen is gray, no control buttons.	1. Access point is not enabled. Turn on the access point. 2. Server does not work. Turn the server on.

	If necessary, report to the service center. 3. No connection to the server. Check the local network connection or Internet connection. If necessary, report to the service center. 4. Electronics of the device is broken. Report to the service center.
Product cannot be driven	1. Motion mode is disabled. Enable motion mode by pressing the indicator button on the Product until it is white, or switch it on from user interface. 2. Managing window of the Product has not been activated. On user's computer, activate the window by clicking on it with the left mouse button until the blue frame around the window appears.
Not hardware or software related failure or other failures that cannot be fixed	Report to the service center.
No audio is broadcasting	1. Microphone is disabled. Turn on the headset microphone. 2. Sound at user interface is off. Left-click on the icon "microphone" at the top management window. In the dialog box, select "Allow". The microphone indicator will change its color. To turn microphone off click on it again (color indicator will change to "off"). 3. Sound is in use by another user. Take the sound control away from another user by left-click on the "microphone" indicator at the top of the control window.

Do not attempt to take apart the machine or break the seals on the machine.

2.3.5 Shutdown Sequence, Content and Inspection of Device after Use

Turn off the power switch on the bottom of the device.

Perform a visual inspection to ensure absence of mechanical damage, check the joints.

2.3.6 List and Description of the Basic Modes of Operation

"Motion" mode

Enables the ability to move. Can be enabled either with a signal from the host computer or by pressing the indicator button on the Product, if the indicator button is red (the button will glow with white light).

In this mode, you can do the following:

- Move the Product in all directions.
- Rotate the "head" of the Product.
- Get video and sound from the Product.
- Transmit sound from user’s microphone to the speakers of the Product.
- Transmit video from user’s webcam to the monitor of the Product.

"Stop" mode

Stop mode can be enabled by pressing the indicator button when it glows white (the button will turn red). Control of the head and all functions, except the motion of the Product, are still available in that mode.

Charging mode

Connect the charging station to an appropriate power supply (110V for USA, 220V for Russia). After that, the indicator on top of the charging station will be blinking

red. The Product can be connected to the charging dock by direct contact of the front side of the Product with the front side of the charging dock, equipped with contact plates. The contact plates should be firmly pressed into the body of charging station. The Product "says" that it is connected to the charging station. Indicator button on the Product should start flashing red and white. Top left part of user's control panel window screen should indicate the process of charging of the device (moving blue bar on the battery indicator). All features of the Product are available in that mode. Attention, accidental displacement of the Product can move it away from the charging station and stop the charging process.

Attention:

During any mode, enabling/disabling of user's microphone is possible.

2.3.7 Safety Precautions

The Product should be operated by trained personnel only who are familiar with the principles of operation of the Product, RBOT product description, and this Operation Manual.

- Never disassemble the Product.

- Do not allow moisture inside the Product.

2.3.8 Actions in the Extreme Conditions

In the event of an emergency, water inside the device, unusual noises or odors from inside of the device, overheating, falling, serious physical damage to the cover or charging station: immediately shut down the Product by turning the Product off using the switch on the bottom of the machine, disconnect the charging station from the power outlet, and contact a qualified service technician. Do not use the Product or the charging station before the arrival of the specialist.

3. Maintenance

3.1 Maintenance of the Product

3.1.1 General Guidelines

During the operation of the Product, its body should be cleaned with a mild soap and water solution, as necessary. Prior to this, turn off the Product and avoid getting water inside the body frame during the cleaning. The camera's lenses should be cleaned with a clean, dry, soft cloth as necessary.

Charging dock should be time to time wiped with a clean, dry or slightly damp cloth. Prior to this, disconnect the charging station from the power outlet.

To ensure continuous operation of the Product, it is necessary to perform routine maintenance.

Routine maintenance support and the repair of the Product should be performed by trained personnel only.

3.1.2 Safety Measures

Follow the rules of the Product handling and safety measures specified in the RBOT product description. Under these conditions, as well as following the operating rules specified in this manual, the manufacturer guarantees reliable and trouble-free operation of the Product.

3.1.3 Maintenance Routine of Device

The Product should be serviced after 1 month of operation. Subsequent routine maintenance should be performed every three months.

In case of absence of the required service maintenance during the warranty period, the manufacturer declines all warranty responsibilities. The warranty can be recovered by the mutual agreement of the parties after the routine maintenance of the Product.

Routine maintenance includes the diagnostics of the main components of the Product, any necessary configuration and/or replacement of parts and mechanisms. The routine maintenance does not include modification, repair, or replacement of the plastic body parts and other units, unless it is explicitly specified in the warranty agreement. After the routine maintenance, the warranty period does not change. A warranty doesn't guarantee free repair if the damage is completely the user's fault.

4. Routine Maintenance

Repair of the Product and its components is conducted at the factory or service center of the manufacturer which has the manufacturer's permission to conduct this type of work.

All actions to repair the Product should be conducted by a service center technician or the manufacturer technician following corresponding guidance and instructions. . Make sure to turn off the Product and disconnect its parts from the power source in case the Product needs to be open.

5. Storage

Conditions of Product's storage

The Product should be stored in closed rooms with natural ventilation without artificially controlled climate conditions at temperatures from +5 to +40°C and relative humidity of 80% (at +25°C).

Storage requirements also apply to warehouse of supplier and consumer.

Storage time

The Product storage time in transportation containers without repacking cannot exceed 0.5 years.

Repacking includes unpacking, routine maintenance, battery maintenance (discharge-charge), and packing with proper notes and marking.

6. Transportation

Conditions of transportation

Transportation of the Product is allowed in a transport container by all types of transport (including heated sealed compartments of an aircraft without distance limitations).

During transportation, the Product should be protected from dust and rain. Tilting of the Product is not allowed. The acceptable climate conditions of transportation are shown in Table 2.

Table 2

Ambient air temperature, °C	From -20 to +50
Atmospheric pressure, kPa	From 70 to 106.7
Relative air humidity at 25°C	Up to 95%

Shaking while transporting should not exceed 80-120 beats per minute with a maximum acceleration of 20 m/s^2 and exposure duration of 1 hour.

Preparation for Transportation

Products must be secured to ensure sustainable provision, excluding displacement and shock. During handling and transportation all handling instructions marked on the transportation container must be strictly followed.

7. Disposal

The Product contains lead-acid batteries in its composition, and recycling has been undertaken by the manufacturer. Otherwise, the Product does not contain any hazardous or toxic substances that are likely to cause harm to human health or the environment. The Product is not dangerous to life, health, or the environment at the end of the term of service.

When disposing the Product, burning of its parts is strictly prohibited because it may cause formation of toxic substances.

Never touch a damaged or leaking battery!

Careless handling of the battery pack may create a risk of explosion or electric shock. Do not disassemble batteries, do not heat batteries above 60° C, do not or incinerate. Promptly dispose used or damaged batteries properly. Keep batteries out of reach of children.

Expired batteries can be recycled! You can help the environmental by sending used batteries to the nearest authorized recycling center.

8. FCC Statement:

This equipment has been tested and found to comply with the limits for Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment

off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: Modifications to this product will void the user's authority to operate this equipment.