Mobile Base Station

RTR-500MBS

Introductory Manual

Thank you for purchasing our product. This manual provides a brief explanation of how to set up and get started with the RTR-500MBS.

Details about how to use the software "RTR-500MBS for Windows" and its functions can be found in the Software "Operation Guide (Help)".

2013.04 16504550021 (5th Edition)

Table of Contents

Notices

Carefully read this manual so that you can properly use this product.

T&D Corporation accepts no responsibility for any malfunction of and/or trouble with this product or with your computer that is caused by the improper handling of this product and will deem such trouble or malfunction as falling outside the conditions for free repair of the attached warranty.

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- Company names and product names are trademarks or registered trademarks of each company.
- Specifications, design and other contents are subject to change without notice.
- On screen messages in this manual may vary slightly from the actual messages.
- Please notify the shop where you purchased this product or T&D Corporation of any mistakes, errors or unclear explanations in this manual. T&D Corporation accepts no responsibility for any damage or loss of income caused by the use of our product.
- This product has been designed for private or industrial use only. It is not for use in situations where strict safety precautions are necessary such as in connection with medical equipment, whether directly or indirectly.
- We are not responsible for any malfunction or trouble caused by the use of our product or by any problem caused by the use of measurement results of our Unit. Please be fully aware of this before using our product.
- Some of our products, which come under the category of strategic goods in foreign trade law, need the permission of the Japanese government to be exported outside of Japan.
- The Manual itself can be downloaded from our Website: http://www.tandd.com/

Software User Agreement

Disclaimers

- T&D Corporation does not guarantee the operation of RTR-500MBS for Windows.
- T&D Corporation shall not accept any responsibility for any damage, whether direct or indirect, that results from the usage of RTR-500MBS for Windows.
- Specifications of RTR-500MBS for Windows may be subject to change and service may be terminated without advance notice to the user. In such a case, T&D Corporation shall not be responsible for any damages, whether direct or indirect, from the inability to use RTR-500MBS for Windows.
- T&D Corporation has no obligation to correct any defects found in RTR-500MBS for Windows.

Copyright

- The Copyright for RTR-500MBS for Windows, including the program and relevant documents, belongs solely to T&D Corporation.
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- Please do not attempt to make any changes or modifications to RTR-500MBS for Windows.

Safety Precautions and Instructions

Before using please read the following precautions and instructions. The following items should be strictly obeyed for the safe usage of the Unit, and for protecting yourself and other people from bodily harm and/or damage to property.

Explanation of Symbols

Explanation of Warning Symbols

⚠ **DANGER**	These entries are actions that absolutely under no circumstance should be taken. The taking of such an action may cause serious personal physical damage or death.
⚠ **CAUTION**	These entries are actions that if taken may lead to physical injury or damage to persons or things.

Explanation of Picture Symbols

	Denotes a forbidden action.
	Denotes a forbidden action. Inside or near the symbol will appear another symbol giving details.
	Denotes an action that you must take.

⚠ DANGER

Power must be turned off before entering, and the Unit not used in any of the following places:

Areas where explosive gas may be present including gas stations

This may cause a fire or explosion.

Areas where the use of the Unit has been prohibited including aircraft and hospitals, as the Unit may transmit signals that could interfere with aircraft or medical equipment.

Be sure to follow the warnings and notices about use from your PC maker when installing and using the Unit.

Do not take apart, repair or modify the Unit.

Doing so may cause fire or electrocution.

If water or a foreign body enters the Unit, immediately disconnect the cables from the Unit, remove batteries, and stop using.

Continued use may cause fire or electrocution.

Do not use the Unit in wet or humid places, such as a bathroom.

It may cause a fire or other trouble including malfunction.

Store main Unit, batteries, SIM card and communication cables out of the reach of children.

It is dangerous to touch or swallow them.

Do not connect the communication cable to a telephone line.

It may cause a fire or other trouble including malfunction.

If any smoke or strange smells are emitted from the Unit, immediately disconnect the cables from the Unit, remove batteries, and stop using.

Continued use may cause fire or electrocution.

Do not drop the Unit, or expose the Unit to a strong impact. If that happens to the Unit, immediately disconnect the cables from the Unit, remove batteries, and stop using.

Continued use may cause fire or electrocution.

Make sure to periodically remove dust and dirt from the AC adaptor plug.

If dust is allowed to accumulate on the plug, moisture may cause poor insulation and result in fire.

Do not unplug the AC adaptor with wet hands.

This may cause electrocution.

⚠ CAUTION

This product has been designed for private or industrial use only. It is not for use in situations where strict safety precautions are necessary such as in connection with medical equipment, whether directly or indirectly.

Harmful gases or chemicals may cause corrosion and/or other danger to the Unit. Also, by coming in contact with hazardous substances, harm may occur to the people handling the Unit. Therefore, do not use in any environment that is exposed to chemicals and harmful gases.

The Unit is not water-resistant.
If the Unit gets dirty, wipe it with a clean cloth and a mild detergent.

Please do not insert your fingers or any foreign objects into any of the devices' jacks.

Make sure that the cable and AC adaptor are inserted fully, so as not to cause an improper connection. Also, when unplugging the cable from the Unit, do not pull the cord, but hold the connector to disconnect.

Battery life depends on the measurement environment, communication frequency, recording interval and battery quality.

Do not use any other batteries and AC adaptor than those that are specified in this Introductory Manual.
It may cause a fire or other trouble including malfunction.

Do not put anything on top of the AC adaptor.
This may cause overheating.

Remove batteries from any Unit that is not to be used for a long period of time.
Batteries left in a Unit not being used for a long time may leak and cause a malfunction.

Battery terminals may provide insufficient contact due to age or vibration.
This may lead to data loss.

Condensation may occur if the Unit is moved from one environment to another where the difference in temperature is great.
Use the Unit in an environment where the ambient temperature is from 10 to 55 °C and the humidity is 20 to 80%RH (no condensation) or less.

To prevent damage to the Unit from static electricity, remove static electricity from your body by touching metal around you (door knob, window frame) before touching the Unit.

Static electricity may cause not only damage to the Unit, but may cause breaks in or a loss of data.

Please take extra caution when plugging in and pulling out the USB plug while another USB device such as CDD/HDD is in operation. It may cause problems to your CD-RW or other device.

We shall not guarantee the operation of our device if you have connected it to your computer using a USB hub or a USB extension cable.

Do not use or store the Unit in any of the following places. Doing so may cause electrocution, fire and/or other adverse effects to the device and/or your computer.

- Areas exposed to direct sunlight.

This will cause the inside of the device to become overheated and may cause fire, deformation, and/or other damage including malfunction.

- Areas prone to strong magnetic fields.

This may cause damage including malfunction.

- Areas exposed to water leakage.

This may cause electrocution or other damage incluing malfunction.

- Areas exposed to static electricity.

This may cause damage including malfunction.

- Areas exposed to excessive vibration.

This may cause injury, malfunction, damage or loss of proper electrical contact.

- Areas that are not flat or level.

This may cause the Unit to fall and result in injury and/or damage.

- Areas near fire or exposed to excessive heat.

This may cause damage including malfunction and deformation.

- Areas prone to smoke, dust and dirt.

This may cause damage including malfunction.

Notes and Precautions for Installing Wireless Communication Devices

When installing wireless communication devices take special care in selecting locations so as to ensure proper communication.

Note that even after a successful installation, due to changes in environmental conditions, communication errors may occur when restarting the system.

As far as possible, try to keep wireless communication devices away from metals and set them up in high unobstructed positions.

- Please take note that in many instances, walls, floors, stairs, fences and desks will contain metals. In order to carry out communication between indoor and outdoor Units, please locate indoor Units near a window so that radio waves can be easily transmitted.
- Please install these devices more than 30cm away from walls or boards containing metal.
- If wireless communication Units are placed in a metal container such as a freezer or refrigerator, the possible wireless communication range will be shortened. In most cases radio waves are transmitted via doors and door openings so place devices as near to doors as possible.

As far as possible, keep the devices away from noise-emitting sources.

- Equipment such as some industrial instruments, electronic devices or fluorescent lamps generate noise. Please place Units more than 1 meter away from such devices.
- Please place Units more than 1 meter away from computers and other devices which emit noise.
- Keep all wires as far away from wireless communication devices as possible. Please be careful about placing near any wiring or cables such as power supply cables, telephone wires or LAN cables.

Objects which contain lots of water, such as plants or soil, absorb radio waves. We highly recommend that such materials should not be placed between or near wireless communication Units.

- When measuring temperature in a greenhouse it has been reported that as plants grew, communication errors also increased.
- Do not place Units directly on the ground.

Do not place devices which are using the same communication frequency channel in the same area.

- If the same channel is used for multiple devices not only will more communication errors occur, but battery life will also be shortened.
- If there is a possibility that devices with the same frequency channel will be in wireless communication at the same time, please make sure to make changes to the frequency channels so they are not the same. For more details about frequency channels for our wireless products, see the Specifications.

After having made an installation check the wireless signal strength.

- The supplied software application includes a feature to check for wireless signal strength. In the RTR-500MBS Settings Utility in the "Wireless Route Settings" menu it is possible to check click signal strength.
- Note that by moving Units 20 cm in any direction may result in communication results being significantly changed.
- If no change occurs after moving the Units to several nearby locations, we strongly suggest adding one or more Repeaters (RTR-500) to enhance communication.

⚠ Compliance Information

FCC Statement

This device complies with Part 15 of the Federal Communications Commission (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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to 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 into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To comply with the limits for the Class B digital device, pursuant to Part 15 of the FCC Rules, this device must be installed in computer equipment certified to comply with the Class B limits.
All cables used to connect the computer and peripherals must be shielded and grounded. Operation with non-certified computers or non-shielded cables may result in interference to radio or television reception.

Caution:
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Radiation Exposure Statement:
This equipment complies with FCC/IC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body (excluding extremities: hands, wrists, feet and ankles).
This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.
Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles les radioélectriques (RF) de la FCC lignes directrices d'exposition et d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'IC. Cet équipement doit être installé et utilisé en gardant une distance de 20 cm ou plus entre le dispositif rayonnant et le corps (à l'exception des extrémités : mains, poignets, pieds et chevilles).

IC Statement

This Class B digital apparatus complies with Canadian ICES-003.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

⚠ Important Notice

Wireless products cannot be used in countries other than where those products have been approved for use, according to that country's wireless regulations.
T&D Corporation shall in no manner whatsoever take responsibility for the usage of these products, nor be liable in any manner for legal consequences stemming from the usage of these wireless products in unapproved areas.
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⚠ Notes about SIM Cards

The SIM card stores the user's cell phone number and other unique user identification information. Please take adequate care to prevent the loss or theft of your SIM card. Also, be sure to keep your PIN number in a safe place.

Please note that this Introductory Manual has been written based on the presupposition that the functions / specifications of the SIM card being used and the details of the contract have already been confirmed between the user and the cell phone carrier.

T&D Corporation shall not be responsible for any damages which a contractor, a user or a third party may suffer, whether direct or indirect, due to the inability to use communication devices.

What are Base Units, Remote Units and Repeaters?

Base Units: RTR-500MBS

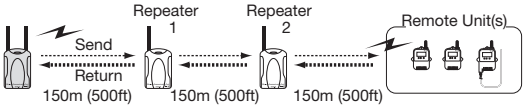
A Base Unit can collect data measured by and recorded in Remote Units via wireless communication, and send the collected data either by FTP or e-mail to a server whereby the data can be downloaded to your computer via an external network, such as the Internet. Also, by setting Upper and Lower Limits, warning monitoring can be carried out for each Remote Unit at each Location.

Remote Units: RTR-501 / 502 / 503 / 507 / 574 / 576 / 505

A Remote Unit is a Data Logger designed to measure and record temperature and humidity. The wireless communication range between a Remote Unit and a Base Unit, if unobstructed and direct, is about 150m (500 ft).

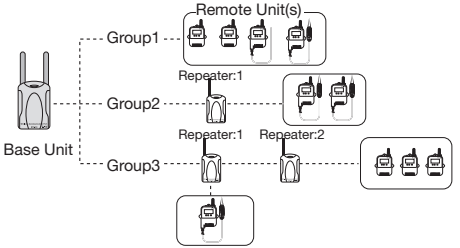
Repeaters: RTR-500

If wireless communication cannot successfully be carried out due to obstacles, or if you wish to extend the wireless communication range, please add Repeater(s) between Remote Unit(s) and the Base Unit.



About Registration

It is first necessary to register the desired Remote and Repeater Units (where needed) to a Base Unit. It is possible to register them into Groups by place or by purpose. Assign a Wireless Communication Frequency Channel for each Group. Remote Units and Repeaters can only be registered to one Group at a time.

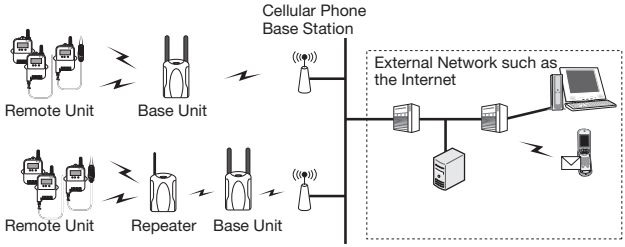


Features of RTR-500MBS

The RTR-500MBS has the following two built-in communication capabilities: Wireless Communication with Remote Units and 3G Mobile Data Communication.

The 3G Mobile Data Communication capability makes it possible to carry out the following with temperature and humidity data received from wireless communication with Remote Units.

- **Transmission of Warning Reports by E-mail, SMS*, or E-mail + SMS**
- **Periodic Transmission of Current Readings by E-mail or FTP**
- **Periodic Sending of Recorded Data by E-mail or FTP**



* SMS stands for Short Message Service.

Power can be supplied via AA alkaline batteries or an external power source (an AC adaptor or an DC 10-34V external power source). If AA alkaline batteries are installed while using an external power source, the batteries will act as a backup power supply in the event the external power supply is cut for any reason.

Basic Procedures

The following outline shows the basic procedures for getting ready, making settings and using the product.

- Details about making settings can be found in "Operation Guide" which is located in the drop down menu found by clicking on the program's name under [All Programs] in the [Start] Menu.

Getting Ready

1. **Get the Base Unit (RTR-500MBS) ready to use**
   Please purchase a SIM card separately.
2. **Install the software "RTR-500MBS for Windows"**
3. **Install the USB device driver and confirm its usage**
4. **Make Initial Settings for the RTR-500MBS**
   From the RTR-500MBS Settings Utility in the supplied software
5. **Get Remote Units ready to use**
   For details, see the Introductory Manual that accompanies the Remote Unit.
6. **Get Repeaters ready to use (only if necessary)**
   For details, see the User's Manual that accompanies the Repeater Unit.

Making the RTR-500MBS Unit Settings (using the supplied software)

1. **Make Base Unit operational settings**
2. **Register Remote Units and Repeaters and make necessary settings**
3. **Make settings for the transmission of Current Readings, Warning Reports, and for the Auto-Downloading of Data**
4. **Carry out transmission tests**

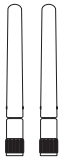
Getting Ready

This section provides instructions on getting the RTR-500MBS ready to use.

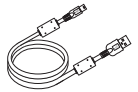
Package Contents

The following items are included in the package:

Mobile Base Station
RTR-500MBS x 1



Antenna x 2



USB Communication
Cable (US-15C) x 1
Cable length 1.5m

AA Alkaline
Battery x 4

External Power Cable
(BC-0302) x 1
Cable length 2m

Software CD-ROM
x 1

Introductory Manual
(including Warranty)
x 1

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About SIM Cards

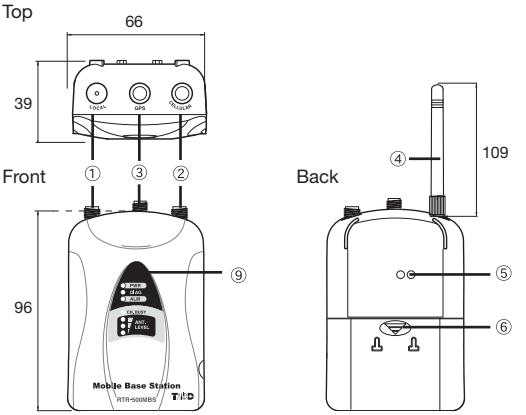
Please purchase a SIM card separately from your cell phone carrier.

RTR-500MBS can be used with any SIM card which complies with the following specifications:

- Compatible with GSM ,WCDMA
- Able to use SMS (Short Message Service) and GPRS (General Packet Radio Service)
- The card has been activated

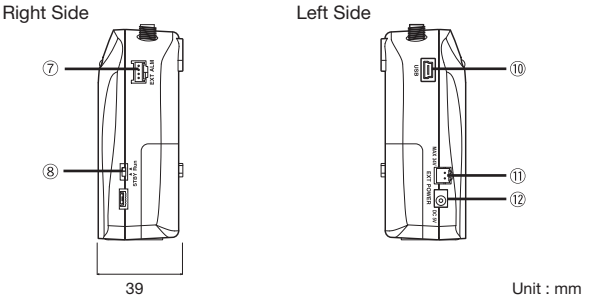
For details contact your cell phone company or the place where you purchased the SIM card.

RTR-500MBS Appearance Diagrams and Part Names



① 3G Antenna Connector
② Local Wireless Antenna Connector
③ GPS Conector(SMA Male Plug)

④ Antenna
⑤ Optical Communication Area
⑥ Battery Cover



Unit : mm

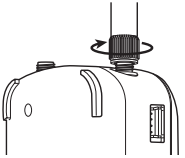
⑦ External Contact Output / Input Connector
⑧ Operation Switch (STBY / Run)
⑨ LED (ERR / POWER / ALM)

⑩ USB Connector (Mini-B)
⑪ External Power Connector
⑫ AC Adaptor Jack
(EIAJ Voltage Classification 2)

Getting the RTR-500MBS Ready to Use

1. Connect the Antennas.

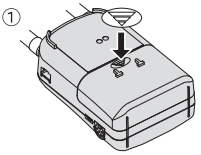
Connect the two supplied antennas to the antenna connectors. (The two antennas are of the same type.)



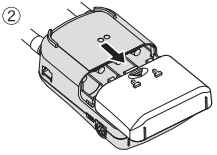
2. Install a SIM Card.

- When installing a card, please be careful about static electricity.
- Before installing the card, disconnect all cables (AC adaptor, USB cable and External power cable) that may be connected to the RTR-500MBS and make sure that wireless communication cannot occur.
- Be careful not to touch or scratch the IC area of the card.
- Make sure to insert the card in the proper direction.
- Do not force the cover open or closed.

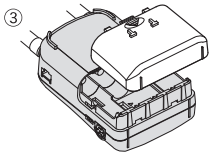
2-1. Remove the battery cover from the back of the Unit.



While pressing down on the triangular mark...

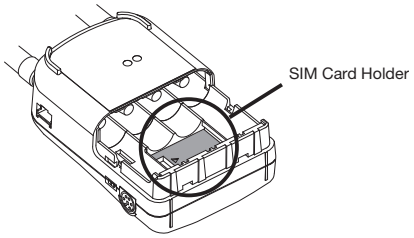


Slide the cover to the bottom of the Unit...



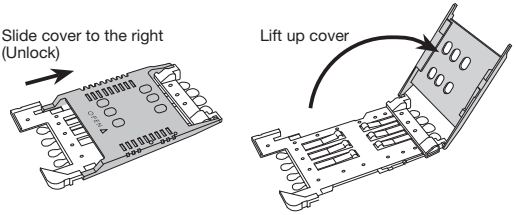
and lift off the cover.

- Replace the battery cover to as it was when opened.

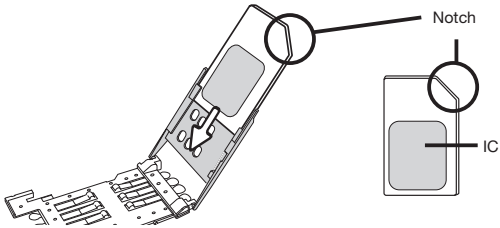


2-2. Lightly slide the cover of the Card Holder to the right to unlock it.

2-3. Slowly lift up the cover to its open position.



2-4. Making sure that the IC (gold area) is facing out and toward the bottom insert the SIM card into the cover.

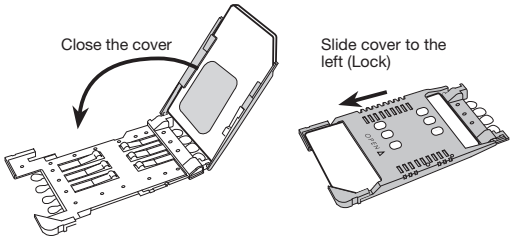


2-5. Slowly close the cover.

- If the cover does not close properly, make sure that the card is inserted correctly and try closing the cover again.

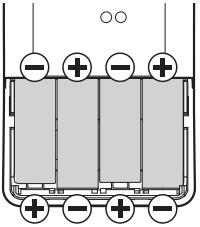
2-6. Lightly slide the cover back to the left to lock it.

- If the cover is not properly locked it may cause insufficient contact with the IC and result in a communication error.



3. Install Batteries.

Insert 4 AA alkaline batteries, making sure that the + and – are in the correct direction as shown in the figure.



* Leaving alkaline batteries in the unit for a long period of time may cause battery leakage and corrosion. When using as a backup source, we recommend that you change the batteries every few years.

4. Confirm that the RTR-500MBS has electrical power.

4-1. Slide the Operation Switch to the <Run> position for operation.

<Run> Switch: Upper

<STBY> Switch: Lower

About the Operation Switch

Run

When the switch is set to <Run>, the functions: "Auto-download of Recorded Data", "Warning Monitoring" and "Automatic Sending of Current Readings" will become useable for the RTR-500MBS.

STBY (Standby)

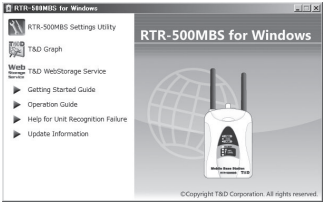
When the switch is set to <STBY>, the RTR-500MBS will go into a low energy consumption mode whereby it will be impossible to use the functions listed above.

Launcher Window and Applications

How to Open

Open the “RTR-500MBS for Windows” from the Start Screen or Start Menu.

Launcher Window



Operation Guide:

This provides detailed information related to the software in general, including "Basic Procedures" and "Troubleshooting". For details about how to use each application or description of the menus, open [Help] in the application menu.

Other Items

RTR-500MBS Settings Utility :

This allows the user to make Base Unit settings, Register Remote Units and Repeaters, Check Signal Strength, make settings for the Downloading of Recorded Data, the Monitoring of Current Readings and Warning Monitoring. This application is also used to Start and Stop Recording in Remote Units.

T&D Graph :

These graph applications help users view downloaded data from Remote Units in graph and table form, as well as print or convert into text file data.

T&D WebStorage Service :

Click here to open the T&D WebStorage Service website. Current readings and previously recorded data can be accessed via Internet by using T&D WebStorage Service.

Operation Guide :

This document is available in PDF file format.

Help for Unit Recognition Failure :

Click here for information on how to check and install the USB driver.

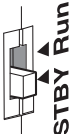
Update Information :

Click here for Information about software and firmware updates.

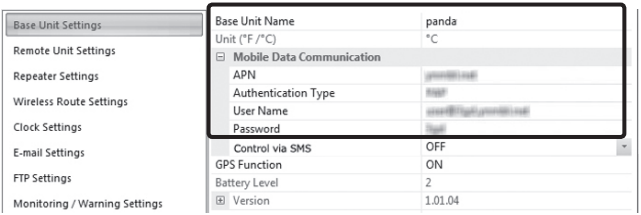
RTR-500MBS Initial Settings

Basic Settings for Base Unit

- In order to prevent unnecessary or unexpected data transmission, we suggest turning the Operation Switch on the Base Unit to ‹STBY› until the units have all been set up and ready for communication.
- Once the Operation Switch has been moved to ‹Run›, auto-sending of current readings and/or recorded data becomes activated.



1. Open the RTR-500MBS Settings Utility and connect the Base Unit via USB to your PC.
2. The settings window will automatically open.
3. Open the [Base Unit Settings] menu and enter the necessary information such as the Base Unit Name and Mobile Data Communication info.



Base Unit Name	Assign a unique name for the Base Unit.
Mobile Data Communication	Enter the information provided by your carrier.

4. After having completed all entries, click [Apply] at the bottom of the window to apply the settings(*).

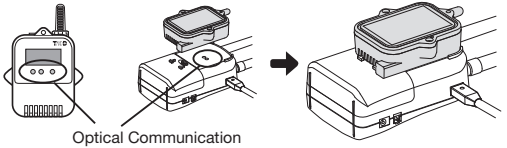
* It is necessary to apply the settings in each setting menu.

Remote Units and Repeaters

The following outline shows the procedures for connecting a Remote Unit / a Repeater to the computer.

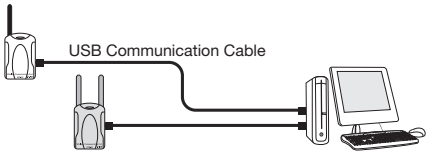
Connecting a Remote Unit (Optical Communication)

1. **Open the software application.**
2. **When the direction appears in the application window, connect the Base Unit with a USB communication cable to the computer.**
3. **Place the Data Logger (Remote Unit) face down on the RTR-500MBS (Base Unit), making sure that the optical communication areas are aligned properly.**



Connecting a Repeater

1. **Open the software application.**
2. **When the direction appears in the application window, connect the Repeater with a USB communication cable to the computer.**



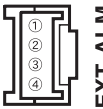
* A Repeater can be connected to the computer simultaneously with the Base Unit as shown in the figure above.

External Parts

About the External Contact Output / Input Connector

The following figure shows External Output / Input Terminals and the table shows its pin assignment. Please purchase a compatible connector and cable separately.

* The JST Connector PAP-04V-S is compatible with this product. For all inquires and questions concerning sales of the connectors, please directly contact JST Mfg. Co., Ltd. (http://www.jst-mfg.com/).



	No.	Name	Specifications
Contact Input	①	Input Terminal	Internal Pull-up: 3V 100KΩ Maximum Input Voltage: 30V
	②	GND	
Contact Output	③	Output Terminal	Open drain output - Voltage when OFF: AC/DC 50V or less - Current when ON: less than 0.1A - Resistance when ON: about 35Ω
	④	GND	

Contact Input

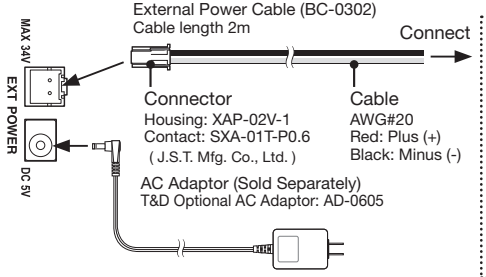
ON is when contact is closed between terminal ① and ② . When the external contact input turns ON, a warning mail and/or an SMS will be sent.

Contact Output

ON is when contact is closed between terminal ③ and ④ . When a warning has been judged to have occurred, the contact output will be turned ON, making it possible to output a warning signal to an external device.

About External Power Sources

To supply power from an external source, it is possible to use an AC adaptor or connect to some other compatible external source of power.



Power Source Conditions
Voltage: DC 10-34V
Current: MAX 2A

Other than the optional AC adaptor, we do not handle or sell external power sources. Please purchase compatible external power sources from a dealer of such products.

FAQ's

Q&A about RTR-500MBS

Q1: Can this be used in any country in the world?

A: The RTR-500MBS uses radio communication that is subject to local rules and regulations for the area in which it is being used. It is the responsibility of the user to make sure that the product complies with local rules and regulations before using it.

Also, the product can only be used in areas where MBS type cellular phone service is available.

For more details please contact the distributor from which you purchased the product.

Q2: The LED lamps do not come on, nor do they blink, what may be wrong?

A: If none of the three LED lamps come on nor do they blink, please check the following:

Check to make sure that the operation switch is set to the “Run” position.

Check to make sure that the batteries are installed in the proper direction.

Please try installing new batteries.

If you are using an optional AC adaptor or have a cable connected to an external power source, check that the connection to the RTR-500MBS is OK.

If after checking and trying the above, no change occurs to the LED, please contact the dealer where the product was purchased.

Q3: If I use batteries as the power source, about how long can I expect them to last?

A: Expected battery life will vary depending on the environment where it is being used and upon signal conditions. If warning monitoring is carried out every 10 minutes, you can expect new batteries to last about 10 days.

Q4: I want to use the Unit outdoors, is the Unit waterproof, moistureproof and dustproof?

A: The RTR-500MBS is not waterproof, moistureproof or dustproof. If you wish to use outdoors, or in areas where the Unit may come into contact with moisture, water or excessive dust, we suggest using some type of case to place the RTR-500MBS out of which cables can be passed.

Q5: Is it possible to change the batteries while the Unit is in operation?

A: If the Unit is connected to an AC adaptor or some other external power source, it is possible to change the batteries.

If the Unit is running only on battery power, first turn the operation switch to "STBY" and then change the batteries.

Q&A about SIM Cards and MBS

Q1: About how much are the communication costs?

A: Actual costs and fees will depend on which cell phone carrier you are using. Please refer to the following when contacting your cell phone carrier about estimated costs.

Estimated Data per Type of Communication

	E-mail (*1) / FTP	SMS (*2)
Current Readings	about 3.5KB per set of data (1 Remote Unit)	n/a
Warning Reports	about 2.0 KB per report (1 Remote Unit)	One report (1 Remote Unit)
Auto-Download of Recorded Data	about 4.5 KB / 1 day of data (1 Remote Unit at recording interval of 1 min)	n/a

*1) Includes mail header

*2) Depedning on the number or warnings, the report may be split into two or more seperate reports

Product Specifications

RTR-500MBS

UNIT	
Compatible Devices	Remote Units: RTR-501 / 502 / 503 / 507 / 574 / 576 / 505-TC / 505-Pt / 505-V / 505-mA / 505-P (Including L Type and H Type) Repeater: RTR-500
Maximum Number of Registrations	- Remote Units: 20 units - Repeaters: 4 units x 4 groups
Communication Interfaces	<Mobile Data Communication> WCDMA/HSDPA: 850 / 1900 MHz GSM/GPRS: 850 / 900 / 1800 / 1900 MHz <Between Base Unit(s) - (Repeaters) - Remote Unit(s)> - Wireless Communication (short range radio communication) FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz, RF Power: 7 mW) - Optical Communication (proprietary protocol) (With compatible Remote Units except RTR-574 and RTR-576) <Between Base Unit - PC> - USB Communication (For Setup)
Wireless Transmission Range	Approx. 150 meters (500 ft) if direct and unobstructed
Communication Time	Data Download Time between Remote Unit and Base Unit (for 16,000 readings) - Via wireless communication: About 2 min. The same amount of time will be necessary for each Repeater. Does not include communication time from Base Unit to mobile device.
External Alarm Input/ Output Terminal (*1)	<Input Terminal: Contact Input> Internal Pull-up: 3V 100kΩ Maximum Input Voltage: 30V <Output Terminal: Photo Mos Relay Output> Voltage when OFF: AC/DC 50V or less Current when ON: 0.1A or less Resistance when ON: 35Ω
Communications Protocol	SMTP (POP before SMTP, SMTP-AUTH <LOGIN>, FTP, SMS(*2)
Power	AA Alkaline Battery (LR6) x 4 AC Adaptor (AD-0605) (5V, 2A) External Power Supply (DC 10-34V)
Battery Life (*3)	Expected battery life with only AA alkaline batteries: Approx. 2 days under the following conditions (only one Remote Unit and no Repeaters, warning monitoring ON, downloading data once a day, sending current readings at a 10 minute interval)

Dimensions	H 96 mm x W 66 mm x D 39 mm (excluding antenna) Antenna Length (Cellular/Local): 54 mm
Weight	Approx. 210 g (including batteries)
Operating Environment	Temperature: 10 to 55 °C (-10 to 55 °C with external power connected) Humidity: 90 %RH or less (no condensation)
GPS Interface (*4)	Connector: SMA Male Plug Power Supply: 2.5 to 2.7V
SIM Card (*2)(*5)	SIM card compatible with GSM (standard size)

Software	**RTR-500MBS for Windows**
Compatible OS (*6)	Microsoft Windows 8 32 / 64 bit (*7) Microsoft Windows 7 32 / 64 bit Microsoft Windows Vista 32 bit (SP1 or later)
Display Languages (*8)	English

*1: In order to use the external alarm terminal, please prepare a compatible connector: JST PAP-04V-S.

*2: SMS is required for some functions of the RTR-500MBS. If SMS is necessary, make sure that the contract you have with your carrier includes this service.

*3: Battery life varies depending upon multiple factors including number of warning reports sent, ambient temperature, frequency of communication, and battery performance. All estimates are based on operations carried out with a new battery and are in no way a guarantee of actual battery life.

*4: In order to use the GPS function (to attach geographical positioning info to current readings data), please purchase a compatible GPS receiver.

*5: Please prepare a contracted SIM card separately.

*6: For installation, it is necessary to have Administrator (Computer Administrator) rights.

*7: If you are using Windows 8, please note that our software is designed to be used in "Desktop" mode only.

*8: We recommend using an operating system in the same language as the display language. Operation in different languages is not guaranteed.

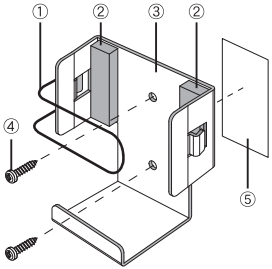
The specifications listed above are subject to change without notice.

Options

Wall Attachment

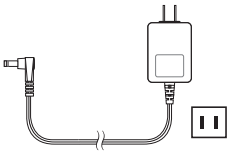
Type: TR-5GK1
① O-Ring (rubber) x 1
② Polyurethane Foam
③ Aluminum
④ Lock Screw x 2
⑤ Double-sided Adhesive tape x 1

Dimension (mm):
W73 x H72 x D43
Screw Holes: 2 - ϕ4.2



AC Adaptor

Type: AD-0605
Input: AC 100V(90-132V)
Output: DC5V 2A
Frequency: 50/60Hz
Cable Length: 1.85m
Plug Figure: A



External Power Cable

Type: BC-0302
① Cable: (AWG#20)
Red Plus (+) / Black Minus (-)
Cable Length: 2m
② Connector:
Housing XAP-02V-1
Contact SXA-01T-P0.6
(J.S.T. Mfg. Co., Ltd.)
Power Source Conditions:
Voltage DC 10-34V
Current MAX 2A

Product Support

For support, please contact the distributor from which you purchased the product.
A list of distributors can be found at:
http://www.tandd.com/about_tandd/contactus/

Product Information

Product information can be found at:
http://www.tandd.com/product/

Mobile Base Station RTR-500MBS Introductory Manual

T&D CORPORATION

817-1 Shimadachi, Matsumoto, Nagano 390-0852, Japan
Website : http://www.tandd.com/
FAX : +81-263-40-3152 E-mail : support@tandd.com

Printed on recycled paper.

Mobile Base Station RTR-500MBS Warranty

Warranty Period	1 year from date of purchase
Customer's name: Address: Phone No.:	
Date of Purchase:	
Distributor's name: Address: Phone No.:	
Object of Repair	Main Unit (excluding sensors and any other options.)
Method of Repair	Send in for Repair

Provisions for Free Repair

1. If the Unit does not work properly despite the fact that the customer used it properly and in line with the Introductory Manual, the Unit shall be repaired free of charge through the distributor which sold the Unit.
2. If the customer requests free repair because of trouble within the warranty period, bring or send the Unit along with the warranty to the dealer. A service charge may be added if a repairperson must be sent out to the place of use for repair.
3. If you have moved after purchasing, or the pr oduct was received as a gift, or there are difficulties contacting the shop from which you purchased the Unit, please contact T&D directly for service.
4. Free repair is not available in the following cases even though it is within the warranty period:
   1. Trouble or damage was caused by careless operation, natural disaster, fire, public pollution, or use of a power source other than specified.
   2. If repair, adjustment, disassembly or modification of the Unit has been carried out by a person other than a T&D authorized engineer.
   3. Trouble or damage was caused by transportation, movement or dropping of the Unit after purchase.
   4. Failure to submit the Warranty or failure to fill in all items required in the Warranty.
5. The Warranty cannot be reissued.
   This Warranty only promises customers free repair within the period and conditions clarified in this Warranty. Therefore, the customer's legal rights will not be limited by this Warranty. For further information on repair and others service questions after the termination of the warranty period, contact your dealer.

T&D Corporation