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Wireless Thermo Recorder
RTR-53

Wireless Temperature Data Logger

User's Manual

Thank you for purchasing this product. Carefully read and fully understand these instructions before using this unit.

T&D CORPORATION

2005.04 16004354060

⚠Wireless Regulations

Radio, EMC and Safety Regulations

This device complies with part 15 of the Federal Communications Commission (FCC) rules and with RSS-210 of the Industry Canada (IC). Operation is subject to the following 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: 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.

Inquiries

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Product Specifications

	RTR-53
Measurement Channels	1 Temp and 1 Humidity Channel
Measurement Item	Temperature and Humidity
External Temp. / Humidity Sensor	0 to 55℃ (32.0 to 131.0˚F) ・10 to 95%RH
Measurement Display Resolution	0.1℃ (0.2˚F) ・1%RH
Measurement Accuracy	Avg. ± 0.3℃ (± 0.6˚F) ± 5%RH {at 25℃ (77.0˚F) and 50%RH}
Recording Interval	1,2,5,10,15,20,30 seconds, 1,2,5,10,15,20,30,60, minutes, Total of 15 choices
Recording Capacity	8000 readings × 2 Channel
Recording Mode	Endless (Overwrite oldest data when capacity is full) ・ One-time (Stop reading when capacity is full)
LCD Display Items	Current Readings ・Recording Settings ・Battery Life Warning ・Over Measurement Range Warning ・Unit
Power	Lithium Battery (LS14250(SAFT))
Battery Life	Approx. 6 months / Approx. 2.5years with RTR-05B1 (Battery life depending on measurement environment, recording interval and battery performance)
Wireless Method	FCC Part 15 Section 249
Transmission Distance	Up to 330 ft [100 meters] (May vary with conditions)
Interface	Wireless Communication (RTR-57C) ・Optical Communication (RTR-57C, TR-57C, TR-50C)
Communication Speed	When downloading data (Wireless) Approx. 2,000 readings per minute [Collection of a full unit of data=Approx. 420 seconds (optical communication=Approx. 160 seconds)]
Water Resistance	IP64 (rated for use in daily life) ※1
Dimensions	H62 x W47 x D19mm (excluding protrusions / antenna length 20mm) / with Large Capacity Battery Pack: D50mm
Weight	Approx. 1.98oz. (including 1 lithium battery) / with Large Capacity Battery Pack : Approx. 3.85oz.
Unit Temp. Resistance	− 40˚F to 176˚F ※2
Standard Sensor / Input Cable	TR-3310 (length: Approx. 1m) × 1
Accessories Included:	Lithium Battery (LS14250 (SAFT)) × 1・Tube × 1, Strap × 1・User's Manual (Warranty) × 1

※1 Note: The Water resistance rating with the sensor or input cable connected is IP64; not for continued immersion.
※2 Radio commnication can not be operated at below -22 ˚F degrees or less.

◆ Notices about this User's Manual

- Please read this manual carefully before using the product.
- All rights of this User's Manual belong to T&D Corporation. It is prohibited to use, duplicate and/or arrange a part or whole of this User's Manual without the permission of T&D Corporation.
- Please follow the safety precautions carefully. We cannot guarantee nor are we responsible for safety if this product is used in any manner other than was intended.
- 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.
- T&D Corporation accepts no responsibility for any result or effects from using this User's Manual.
- Figures and illustrations in this manual may be slightly simplified and may differ from the actual product.
- On screen messages, figures or illustrations in this manual may vary slightly or be simplified from the actual messages and product.
- We sincerely hope that the contents of this manual are true and complete. If you find any information to have been omitted, or if the information within is confusing or mistaken please, contact your retailer or T&D Corporation.
- Microsoft®, Windows® and WindowsNT® are registered trademarks of Microsoft Corporation USA and are binding in the USA and all other countries. Company names and product names are trademarks or registered trademarks of each company.
- This User's Manual cannot be reissued, so please keep it in a safe place.
- Please carefully read this User's Manual and Warranty.

◆ Safety Precautions and Instructions

※ Please carefully observe the following safety measures when using our product.

To prevent any loss or damage to our customers, other people and/or property, and to ensure the proper use of our products we ask that before using our product you carefully read, understand and follow the safety rules and precautions for our products as outlined below.

【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】

△	This symbol denotes an important warning or caution. Inside or near the symbol will appear another symbol giving details. (EX: ⚠ stands for ELECTROCUTION)
⃠	This symbol denotes a forbidden action. Inside or near the symbol will appear another symbol giving details. (EX: ✋ stands for DO NOT TAKE APART)
●	This symbol denotes an action that you must take. Inside or near the symbol will appear another symbol giving details. (EX: ❗ stands for TAKE PLUG OUT OF SOCKET)

⚠DANGER

Do not take apart, repair or modify the main unit.
It may cause fire, electrocution or damage. Ask the shop where you purchased the products or T&D Corporation to carry out any repairs.

If any smoke or strange smells are emitted from the unit, immediately cease using it.
Continued use may cause fire, electrocution or damage.

Do not use any batteries other than those that are recommended. It may cause fire or damage.

If water or a foreign object enters the case, immediately cease using it.

Store all batteries, sensors and Thermo Recorder units out of the reach of children. It is dangerous to swallow batteries.

Please be careful when using in overly hot or cold environments, touching the units may cause burns or frostbite.

The RTR-53 is a devices to measure temperature humidity. Do not use this unit for any purpose other than temperature humidity measurement.

⚠CAUTION

We are not responsible for any malfunction or trouble caused by the use of our product or by any problem caused by the malfunction of our unit. Please be fully aware of this before using 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.

Do not drop or expose the unit to strong impact.

Do not put your fingers or foreign matter into the sensor connection.

Battery terminals may provide insufficient contact due to age or vibration. Please be careful not to lose data due to insufficient contact.

Pay attention to water leakage or foreign objects entering into the unit case as in the following cases.
- The case was closed with dust, hair, etc., on the rubber packing or in the groove for the packing.
- The rubber packing becomes damaged. (In this case, please purchase the optional maintenance set.)
- The unit suffered from significant temperature change while wet. Especially if the temperature change is from high to low.

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

Operate the units with the latest version of [T&D Recorder for Windows● (RTR-5 US)].
The latest version software can be downloaded from our home page.

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.

Do not use or store the unit in places such as listed below:
It may cause electrocution, fire or damage to the unit or to your computer.
- Areas exposed to direct sunlight
- Areas exposed to water or high-pressure water flow.
- Areas exposed to organic solvents and corrosive gas.
- Areas exposed to strong magnetic fields
- Areas exposed to static electricity.
- Areas exposed to fire or overheating.
- Areas exposed to excessive dust or smoke.

About the TR-3310, the standard temperature and humidity sensor for RTR-53.
- Use the sensor only within the measurable temperature and humidity range (Temperature: 32.0 to 131.0 ˚F , Humidity: 10 to 95% RH)
- The Temperature/Humidity sensor cable cannot be extended.
- When the sensor is not used, put it in the attached plastic bag with a drying agent and keep it in cool, dark place at 41 to 77 ˚F and 30% RH or less.
- The replacement period for the standard sensor is 1 year. Replace it when 1 year has passed after opening the bag.

1. Wireless Thermo Recorder RTR-53

◆ Outline of System

This system makes use of the RTR-53 unit to measure and record temperature and humidity data, which can then be downloaded via wireless transmission to our handheld RTR-57C Data Collector Unit. The RTR-57C Unit can then be connected to your computer for data analysis and management with our exclusive software.

Besides the collection of recorded data, it is possible to monitor current temperature and humidity readings, start recording and check data anytime without physically collecting the RTR-53 units. Communication between units can be done via optical communication, as well as wireless communication.

◆ Basic Functions of RTR-53

● Wireless Communication Function

Via special short wave radio communication recorded data can be downloaded from an RTR-53 unit and saved to the RTR-57C Data Collector Unit. Recording settings and recording start can also be controlled via wireless communication.

Note: In order to collect data via wireless communication, it is necessary to register via computer the RTR-53 unit as a Remote Unit in the RTR-57C Unit you wish to use. For details about making these settings, please see the Help Menu in [T&D Recorder for Windows] or the User's Manual for [T&D Recorder for Windows].

● Humidity Measurement Range: 10 ～ 95%RH

With the included sensor, the RTR-53 can simultaneously measure temperature (32 ～ 131 ˚F) and humidity (10 ～ 95% RH).

Our newly designed sensor for RTR-53 can withstand a certain amount of condensation.

Note: The main unit is designed for use in environments with an ambient temperature between -40 ～ 176 ˚F and is water resistant. The sensor is designed for use in areas with a temperature between 32.0 ～ 131 ˚F and should not be used areas that are wet or are prone to condensation.

● Data Capacity: 8000 Readings x 2 Channels

Can record up to 8000 temperature and 8000 humidity readings for a total of 16,000 readings.

ONE-TIME MODE: When the data capacity of 8,000 readings is reached, the LCD display will indicate [FULL] and recording will stop.

ENDLESS MODE: When the data capacity of 8,000 readings is reached, the data will be erased in order from the oldest data first and recording will continue.

*Below is an estimate of the amount of time it will take for the unit to become [FULL] in the ONE TIME MODE.

Calculation Example:

30 sec (recording interval) x 16,000 readings (capacity limit) = 480,000 seconds = about 5 days and 13 hours.

Recording Interval	1 second	30 seconds	15 minutes	60 minutes
Time period	4 hours 26 min.	5 days 13 hours	166 days 16 hours	1 year 10 months

● Recording Condition Settings

Settings such as Recording Mode, Recording Interval, Programmed Start, Immediate Start, and Unit of Display can be easily made via computer or an RTR-57C.

● Recording Start / Stop

Recording can be started / stopped via computer and started via RTR-57C.

Note: By starting a new recording session, all previously recorded data will be erased form the main unit. If you wish to save the data, make sure to download it to an RTR-57C unit or to your computer before beginning a new recording session.

● Downloading Recorded Data (Data Collection)

Data downloaded to your computer can be processed into graphs, lists, saved to files, changed to text file, and printed out.

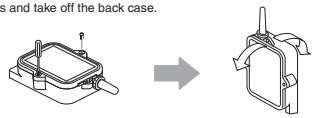
● Upper and Lower Limit Settings for Temperature and Humidity

By setting upper and lower limits, a check will occur for data exceeding those limits each time data is downloaded to an RTR-57C unit.

2. Getting Started

◆ Insert the batteries

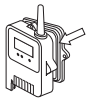
1.Remove the screws and take off the back case.



2. Insert the battery in its tube and place it in the unit as shown in the diagram.

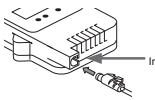
● Make sure that + and - are correct.

3. Check the rubber packing for any cuts or scratches and replace the cover as it was when opened.



● Make sure no water or foreign objects get inside the case.
● If dirt or scratches are present on the rubber packing, water resistance will be reduced.
● Be sure to fasten the cover tightly.

4. Connect the Temperature and Humidity Sensor.



● Make sure that the sensor is properly connected by inserting it until you hear a clicking sound.
● Measurement range is 32.0~131 ˚F (Temperature) and 10~95%RH (Humidity)

5. After Inserting the Batteries

If necessary make changes to the default recording settings according to your usage and needs. If you are going to be using wireless communication it is necessary to register the [Group Name] and [Remote Unit Name] information at this time. See [3. Settings and Communication]

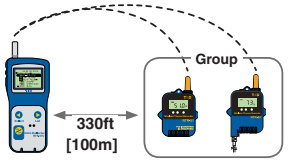
Note:
● When changing batteries make sure to carefully read [5.Changing Batteries].
● If nothing appears on the LCD Display, please follow the above instructions again.
● Upon first installation of the batteries, measuring and recording will automatically begin at the factory set default recording settings: (Recording Interval: 1 minutes / Endless Mode / Immediate Start)
● After replacing the batteries the settings will return to the most recent recording settings.

3. Settings and Communication

To start and stop recording, make or change the various recording settings and/or collect data please see the following instructions. For details about communication please see the User's Manual that comes with the RTR-57C or the TR-50C. You can also find detailed information in the User's Manual that accompanies the software (Thermo Recorder for Windows) and in the Help Menu of the software.

◆ Using Wireless Communication with an RTR-57C Unit

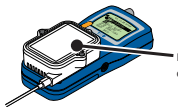
By registering an RTR-53 unit as a Remote Unit of an RTR-57C, it is possible to carry out wireless data communication (special short wave radio) allowing you to start and stop recording, make recording condition settings and collect data without having to handle the RTR-53 units.



● If you are going to be using wireless communication it is necessary to register the [Group Name] and [Remote Unit Name] information in the RTR-57C units.
● The wireless communication range, if unobstructed and direct, is about 330 ft [100 meters]. In some cases communication cannot take place even within 330 ft [100 meters]. Please check first by carrying out the wireless communication test with the remote units.

◆ Optical Communication with an RTR-57C

By simply placing an RTR-53 unit face down on an RTR-57C you can carry out recording start settings and changes, as well as, collect recorded data via optical communication.



Place the RTR-53 unit face down on the RTR-57C

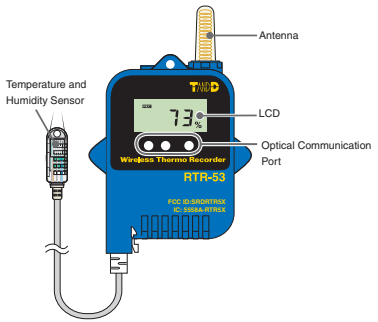
◆ Communication with your Computer

By placing an RTR-53 unit face down on an RTR-57C unit that is connected to your computer, you can make any necessary recording conditions settings and changes, start recording and download recorded data easily via your computer display.

Place the RTR-53 unit face down on the RTR-57C

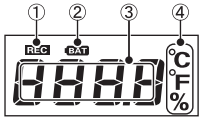
4. Part Names and Functions

◆ Part Names



◆ LCD Display

Use in cold environments may cause difficulty in reading the display; this is not a malfunction.



① Recording Status (REC)
LIT UP: displayed during recording or when FULL of data.
BLINKING: displayed when waiting for a programmed recording to start
② Low Battery Life Warning Indicator (BAT): displayed when time to change the battery.
③ Measurement Reading and Message Display
④ Unit of Measurement: displays unit of measurement

● CHECK

This is displayed under the following conditions: after purchasing and putting in the batteries for the first time, if the battery terminals +/- were mistaken and a short occurred, or if the batteries are replaced after having been taken out for a long period. If this is displayed, all data that had been stored in the main unit has been erased.

● Full Memory

If recording under the ONE-TIME MODE, when the data readings reach the upper limit of 8,000 readings, recording will stop and this will be displayed intermittently with the current temperature.

● Wireless Transmission

This will be displayed when transmitting data to an RTR-57C unit via wireless communication.

● No Sensor Connected

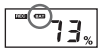
Displayed when a sensor has not been connected, disconnected or the wire has been broken. Measurement and recording will continue and battery power consumed.

5. Changing the Battery

Note:
● Once the battery indicator [BAT] appears, replace the old battery with a new one as soon as possible.
● After removing the old battery, all recorded data will be lost if a new battery is not inserted within 1 minute. Make sure to complete the battery change within 1 minute.
● If the battery direction is incorrect (+/−) and a short occurs, all recorded data saved in the main unit will be lost.

1.When battery power becomes low, the battery indicator (BAT) will appear in the LCD display.

● If you change the battery at this time, recording will continue uninterrupted and the downloading of recorded data is possible.



If you do not change
Recording: OK
Wireless Communication: OK
Data Download: OK

2.If you do not change the battery and continue using the unit, the measurement display will intermittently display [bAtt]. Please change the battery at once.

● If at this time a new battery is placed in the unit, recording will continue and downloading of saved data can be done.

If you do not change
Recording: OK
Wireless Communication: NO
Data Download: NO

3.If you do not change the battery even under conditions in 2 above, the REC indicator will disappear and measurement display area will display [SLP].

● Recording will stop and recorded data until this point will be saved
● If at this time a new battery is placed in the unit, downloading of saved data can be done. To start recording again please set the recording conditions via your computer or RTR-57C and begin recording. See {1. Outline of System}
● If you wish to start recording using the previous recording settings, see the user's manual for RTR-57C or the TR-50C or the software (Thermo Recorder for Windows) and in the Help Menu of the software.

If you do not change
Recording: NO
Wireless Communication: NO
Data Download: NO

4. If you do not change the battery even under conditions in 3 above, the display will go blank.

● All of the recorded data will be erased. If at this time a new battery is placed in the unit, [CHEC] will appear on the display after which recording will begin again using the previously set recording conditions.