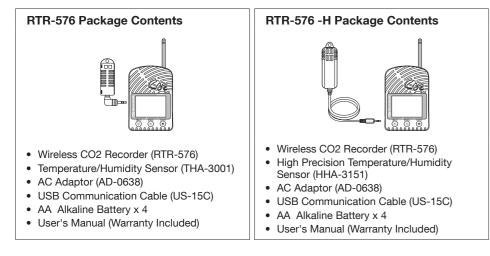
Notes about Operation



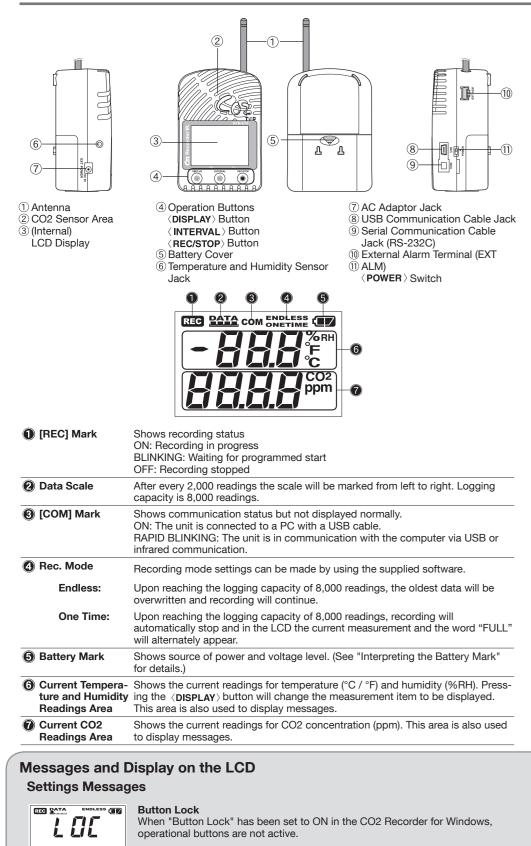
Thank you for purchasing our product. To ensure safe and proper operation, please read this manual thoroughly before use.

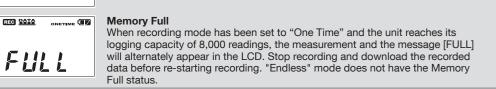


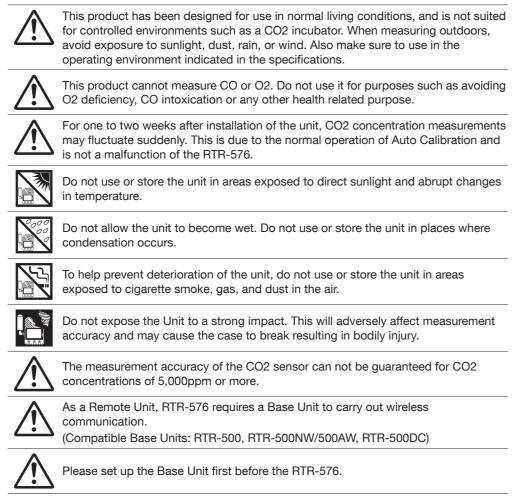
T&D Corporation

http://www.tandd.com/ © Copyright T&D Corporation. All rights reserved. 2012.07. 1650480XXXX 1st Edition Printed on recycled paper.

Part Names and LCD Display







Interpreting the Battery Mark

Checking the Power Supply Condition Whether the battery mark is "blinking" or "on" indicates the source of power. This mark will not appear when batteries are not installed.

BLINKING (Running on battery):

The battery mark will blink on the LCD display when measuring and recording by battery power

ON (Running on external power): The battery mark will blink on the LCD display when measuring and

recording by battery power Checking the Battery Level

The battery level will be shown in three stages as below.

0.⊈ Battery Power - OK

Battery Power - Getting Low 2

- It is recommended to change the batteries as soon as possible 3 Battery Power - Too Low When the battery power has become low running on batteries only, it is impossible to measure and record CO2 concentration at this stage. Also, wireless communication may result in error.
- When running on batteries only, it will take about 24 hours to go from Stage 1 to 2 and another 24 hours from Stage 2 to 3

④ Sleep Mode (stopping measurement and recording) After Stage ③, if the battery is not changed but it remains in use, the Unit will enter sleep mode and stop measurement and recording in order to protect recorded data until this point.

• By replacing the batteries with new ones, the display will return to the current readings display mode. If the Unit is already in sleep mode, download the recorded data into the

PC before re-starting recording. **5** Erasing recorded data

If the battery is further left unchanged, the display will automatically shut off and all previously recorded data will be lost Recording settings will remain.

Removing the Batteries during Recording

- 1. If the batteries are removed when running on battery power only, the Unit will start a sixty-second countdown.
- 2. To continue recording, before the countdown comes to an end, insert new batteries or connect the AC adaptor to supply power.
- 3. If power is not supplied within 60 seconds, the Unit will enter sleep mode.

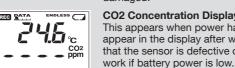
When [____] appears in the following:

Temperature and Humidity Display Area This appears when the temperature/humidity sensor is not connected to the



RTR-576, the connection is loose, the wire is broken, or when power has just been turned ON. If after re-connecting the sensor, measurements can still not be displayed, it is very possible that the sensor or the logger is defective or has been

CO2 Concentration Display Area



damaged. This appears when power has just been turned ON. If measurements don't appear in the display after waiting for a considerable time, there is a possibility that the sensor is defective or has been damaged. Also, the CO2 sensor will not

51 P

- recording to start.



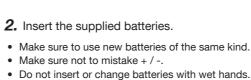


If running on only batteries, the estimated battery life is about two days. Keeping batteries in the unit allows a backup source of power for when and if electrical power is cut from the AC adaptor. • Note: When using batteries as a backup power supply, it is recommended to replace them approximately once every two years to avoid battery leakage



unit.







P

Countdow

5LP

51

Mark blinks when running on

238.

pattery power.

REC DAT





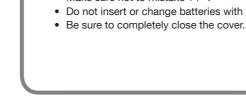




- on the display.

(DISPLAY) Button: Changing the LCD Display Pattern

- Humidity:



Press the (REC/STOP) button for about two seconds until the [REC] mark disappears from the display.

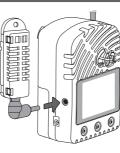
It is possible to change the current readings display for temperature and humidity (upper row). CO2 concentration (lower row) is always displayed. (DISPLAY) With each pressing of the button the item on the display will change. Temperature and The display will alternate every one

- Humidity only

Setting up the RTR-576

/ Do not connect an RTR-576 to your computer before first installing the supplied software that comes with the Base Unit you are using.

1 Connect the Sensor



2 Turn ON the Power

When measuring and recording over long periods of time, please use a supplied AC adaptor.

Four AA Alkaline Batteries

Install the Battery

If battery power is issued. If battery power is lost, all recorded data stored in the unit will be erased. Do not

1. Remove the battery cover from the back of the

1 While pressing down on the triangular mark, slide the cover to the bottom of the unit.

Lift off the cover.

2. Insert the supplied batteries.

Turn on the $\langle POWER \rangle$ switch.

After setting up the power supply, turn on the (POWER) switch. See Button Operations
for notes about turning off the (POWER) switch



Warm-up Time for CO2 Sensor

After switching on the unit, it will take about one minute to display the normal CO2 concentration.

Begister Remote Units

Register RTR-576 as a Remote Unit by using the software supplied with the Base Unit. After connecting an RTR-576 to your computer via USB cable, carry out registration using your software: Settings Utility * - [Remote Unit Settings] Menu -[Register] Button

* includes [RTR-500W Settings Utility], [RTR-500 Settings Utility], and [RTR-500DC Settings Utility].

When the wizard window appears:

If upon USB connection, the [New Hardware Detection Wizard] opens, it is necessary to follow directions to install the USB Device Driver

USB Connection	
	Wizard Window

 If you have connected a unit without having installed the software supplied with the Base Unit, and the New Hardware Wizard has opened, please close the wizard window and disconnect the USB cable from your computer

For details see the Introductory Manual that came with your Base Unit

(INTERVAL) Button: Checking Recording Interval

Atmospheric Pressure Correction:

Measurement results of CO2 concentration are affected by atmospheric pressure. When high measurement accuracy is required, we recommend that Atmospheric Pressure Correction be carried out before a recording session is started.

Enter Atmospheric Pressure at Measurement Location:Directly enter the pressure (hpa) in the [Atmospheric Pressure] field.

Calculate Atmospheric Pressure from Altitude:

This setting can also be made by having the software calculate the estimated pressure at the altitude (meters) entered by the user



Button Operations

If "Button Lock" has been set to ON in the CO2 Recorder for Windows, the operational buttons will not be active

(REC/STOP) Button: Starting and Stopping Recording

Starting Recording

(REC/STOP) button for about two seconds until the [REC] mark appears

· It is possible to start recording even while waiting for a programmed

• Upon the start of recording, all previously recorded data in the RTR-576 will be deleted.

Stopping Recording

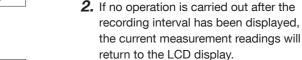
- second.

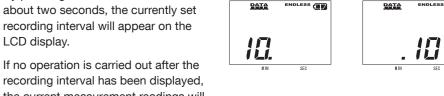
Temperature only

1. When the desired display pattern appears, stop pressing the button.



738.





$\langle\,\text{INTERVAL}\,\rangle\,\text{Button:}$ Changing the Recording Interval Setting

Recording interval settings cannot be changed while a recording session is in progress.

It is possible to check the recording interval during recording or while waiting for a pro-

1. Stop recording.

grammed recording to start.

LCD display.

1. By pressing the (INTERVAL) button for

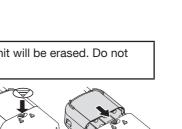
- **2.** Press the **(INTERVAL)** button for about two seconds to display the currently set recording interval on the LCD screen.
- **3.** With each pressing of the (INTERVAL) button the recording interval time will change; stop pressing the button when the desired interval appears.
- **4.** Restart the recording session.

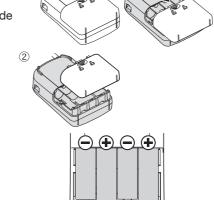
Turning Off the (POWER) Switch

During recording or when the "Button Lock" is set to ON in the software, the power During recording or when the "Button Lock" is set to ON in cannot be turned off even by pressing the (POWER) switch.

1. Stop recording.

- **2.** Turn off the **(POWER)** switch.
- If the RTR-576 is connected to an AC adaptor, standby power will be supplied even after turning off
- the (**POWER**) switch, allowing the CO2 sensor to continue operation. Therefore,
- When running on battery power only, CO2 sensor stops working if the (POWER) switch is turned off.





Getting Ready to Use External Alarm Terminal

It is possible to connect an external device such as siren or lamp to the RTR-576. Please make sure to check specification details of the external alarm terminal before purchasing or getting an external device ready for connection.

About the External Alarm Terminal (EXT ALM)

EXT ALM	Enabling ① Warnings —	Warning Output (Enable / Disable)	Internal Pull-up: 3V 100 kΩ Maximum Input Voltage: 30V
	warnings <u>2</u>	GND	
	Warning Output ^③ (OUT)	Output Terminals (Warning Output) Open Drain Output Voltage when OFF: DC less 30V Current when ON: less tha Resistance when ON: 15Ω	
	(4)	GND	

The connection between ① and ② decides whether Warning Output is enabled or disabled. If a warning condition occurs while Warning Output is enabled, a connection between (3) and (4) will be established and a warning will be output.

About the Compatible Connector

The JST Connector PAP-04V-S is compatible with the external alarm terminal. For questions concerning sales of the connector, please directly contact JST Mfg. Co., Ltd. http://www.ist-mfa.com/

Auto Calibration Function for CO2 Sensor Accuracy

What is "Auto Calibration" ?

Auto calibration is a function designed to enable long-term accurate measurements by adjusting the lowest CO2 concentration measured in a certain period of time to the set standard measurement in the air (atmospheric CO2 levels of 400 ppm). • The factory default setting for auto calibration is enabled.

Turning ON and OFF Auto Calibration

Turn off auto calibration (*1) when continuously measuring in an environment where measurements are greatly different from the standard 400ppm CO2 concentration. Then, to get more accurate measurement results, place the RTR-576 in general atmospheric environment and periodically check if the CO2 concentration gets closer to 400ppm or not. If not, we recommend that you carry out manual calibration (*2).

- *1: To change settings, it is necessary to download "Adjustment Tools" application (free) from our website. Detailed info can be found below.
- *2: Manual calibration is expected to be performed no more than once a month. Operational procedures and other reference info can be found below.

For RTR-500 / 500AW / 500NW

[P Operation Guide] - [How to Use] - [Other Useful Functions] Menu

For RTR-500DC

[RTR-500DC Settings Utility Help] - [How to Use] - [Basic Settings] - [Remote Unit Registration] Menu

Temperature/	TH	A-3001	HHA-3151(High-Precision Type)		
Humidity Sensor (External)	Thermistor	Polymer Resistance	Platinum Resistance	Electrostatic Capacitance	
Measurement Channels	Temperature 1ch	Humidity 1ch	Temperature 1ch	Humidity 1ch	
Units of Measurement	°C, °F	%RH	°C, °F	%RH	
Measurement Range (*1)	0 to 55 °C	10 to 95 %RH	-30 to 80 °C	0 to 99 %RH	
Accuracy	±0.5 °C	±5 %RH [at 25 °C, 50 %RH]	±0.3°C [at 0 to 50 °C] ±0.5°C [at all other temperatures]	±2.5 %RH [at 25 °C, 10 to 85 %RH] ±4.0 %RH [at 25 °C, 0 to 10 % or 85 to 99 %RH] At temperatures other than 25 °C and ≥ 0 °C, add ±0.1 %RH per degree of difference from 25. Humidity Hysteresis: ±1.5 %RH or lower (*2)	
Measurement Resolution	0.1 °C	1 %RH	0.1 °C	0.1 %RH	
Responsiveness	Response Time	(90%): Approx. 7 min.	Response Time (90%): Approx. 7 min.	Response Time (90%): Approx. 20 sec.	
Logging Capacity	8,000 data se	ts (One data set consists	of readings for all channe	els in that type of unit.)	
Recording Interva	I Select from 1	Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.			
Recording Mode (*4) Endless (Over	Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is ful			
Communication Interfaces	FCC Part15	Wireless Communication (Short Range Radio Communication) FCC Part15 Section247 / IC RSS-210 (Frequency Range: 902 to 928MHz, RF Power: 7mW) ETSI EN 300 220 (Frequency Range: 869.7 to 870MHz, RF Power: 5mW)			

Specifications

Interfaces	ETSI EN 300 220 (Frequency Range: 869.7 to 870MHz, RF Power: 5mW) USB Communication"
Wireless Transmission Range	Approx. 150 meters (500 ft) if direct and unobstructed
External Alarm Terminal	Output Terminal: Open Drain Output (Voltage when OFF: DC less than 30V / Current when ON: less than 0.1A / Resistance when ON: about 15Ω)
Power	AC Adaptor (AD-0638 or AD-0638-C), AA Alkaline Battery (LR6) x 4
Battery Life (*5)	Approx. 2 days (batteries only without AC adaptor)
Dimensions	H 96 mm x W 66 mm x D 46 mm (excluding protrusions and sensor) Antenna Length: 60 mm
Weight	Approx. 220 g (including battery, excluding sensor)
Operating Environment	Temperature: 0 to 45 °C Humidity: 90 %RH or less (no condensation)
Compatible Base	RTR-500, RTR-500NW/500AW, RTR-500DC

*1: Make sure to use the data logger within the operating environment as listed in the specifications

*2: When used in environments where temperature and humidity are over the values of 50°C 75%, 60°C 50%, 70°C 35%, and 80°C 25%, sensor hysteresis may fluctuate by values greater than ±1.5%RH. Under certain circumstances, it may take some time to return to nor. *3: Stated value is the measurement accuracy of the CO2 sensor when Auto Calibration is operating properly. A change in atmospheric pressure directly influences the reading of CO2, which can cause measurement errors; a decrease in pressure by 10hPa result.

4: Only "Endless" is available when using RTR-500W for Windows. *5: Battery life varies depending upon the ambient temperature in which it is used, the recording interval, the frequency of communication, and

the battery performance. All estimates are based on operations carried out with a new battery and are in no way The specifications listed above are subject to change without notice.

Cautions about using the Temperature/Humidity Sensors

- If extremely severe temperature changes occur, the humidity measurements may appear ∕!∖ abnormal. Once the sensor's temperature becomes stable, the measurements will return to normal.
 - Do not connect the sensor to any data logger other than those specified by T&D Corporation.
 - Do not expose the sensor to a strong impact. This may adversely affect measurement accuracy and cause damage or malfunction
 - . When the sensor is not to be used for a long period of time, please store it at normal temperature and humidity
 - . Do not use the sensor on the human body
 - · Continued use may cause a decrease in the sensor's accuracy and sensitivity even under normal operational conditions. We suggest changing the THA-3001 after about one year of use. If the sensor is being used in a bad environment (smoky or dusty places) it may be necessary to change the sensor sooner.

This sensor is not water resistant. Do not allow the sensor to become wet. If the sensor gets

wet, immediately remove the sensor from the unit and wipe it with a clean cloth as soon as

possible. Then allow the sensor to dry in normal room temperature before using it again.

Initial Settings

Recording Conditions	Recording Mode: Endless Recording Interval: 10 min.
LCD Display Pattern	Alternating Display

Options

Temperature/Humidity Sensor: THA-3151

	<u> </u>	<u>}</u>	# `
--	----------	----------	------------

Measurement Range: Temperature: 0 to 55°C, Humidity: 10 to 95 %RH Measurement Resolution: Temperature: 0.1°C, Humidity:

1 %RH Accuracy: Temperature: ± 0.5°C, Humidity: ± 5 %RH (at 25°C and 50%RH)

Response Time (90%): Approx. 7 min. Cable Length: 1.5 m

Sensor Extension Cable: TR-1C30

Possible to use up to three extension cables per sensor

Compatible Sensor: THA-3001, THA-3151, HHA-3151 Temperature Durability: -25 to 60°C Material: Vinyl Coated Electrical Wire Cable Length: 3 m



High Precision Temperature/Humidity

Measurement Range: Temperature: -30 to 80°C, Humidity: 0 to 99 %RH Long Term Stability: ± 1%RH/yr, ± 0.1°C/yr (Do not expose to condensation, dampness, dust, corrosive gases or organic solvents.) Cable Length: 1.5 m

Wall Attachment: AT-76K

Accessories: Screw x 2



(\$)∕!∖

- · Areas exposed to strong magnetic fields

- designed.

- also increased.

• Do not place Units which are using the same communication frequency channel in the same area. If the same channel is used for multiple units not only will more communication errors occur, but battery life will also be shortened.

• If there is a possibility that Units 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.

LILLA 2151/Lligh Drasision Tur

is full)

Explanation of Symbols

Explanation of Warning Symbols These entries are actions that, if taken, may cause serious personal physical DANGER damage or death 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 Denotes an important Denotes an action that Warning or caution. should be carried out.

DANGER To Prevent Serious Accidents

Do not disassemble, repair or modify the unit and accessories.

Do not use the unit in any environment that is exposed to chemicals and harmful gases. Doing so may cause corrosion and/or other danger to the unit. Also, coming in contact with hazardous substances may cause bodily harm to the user or people nearby.

This Unit is not waterproof. If water or a foreign object enters the case, immediately remove batteries and stop using it.

Do not insert or replace batteries or sensors with wet hands.

This unit has been designed for private and/or industrial use only. It should not be used in situations where strict safety precautions are necessary such as with medical equipment, or in systems directly or indirectly connected with human life or well-being.

We shall not guarantee the unit's operation if it has been connected to a PC using a USB hub or a USB extension cable.

Do not drop or expose the unit to a strong impact.

Do not cut or process the sensor cables. Also, do not twist, pull on or swing any of the cords.

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

Place and store the unit and accessories out of the reach of children.

Further, T&D is not responsible for any damage, malfunction or trouble, whether direct or indirect, caused by the use of our products.

Do not use any power or sensors other than those specified by T&D Corporation.

If the unit produces heat, emits smoke or a strange smell, or makes unusual noise, immediately remove the batteries and stop using it.

A CAUTION Do not place or store in the following areas:

Areas exposed to direct sunlight

· Areas subject to high temperatures such as near fire or heating equipment

• Areas exposed to static electricity

· Areas exposed to dampness

· Areas subject to condensation or wet areas

Areas exposed to excessive vibration

· Areas exposed to excessive smoke, dust or dirt

CAUTION Other Precautions

Use the unit in the specified operating environment. Do not use it for any purpose other than for which it was

· Condensation may occur inside the case when a unit is moved from one environment to another where there is a great difference in temperature. Be careful to avoid condensation

• Do not use the unit in wet areas or places exposed to water such as bathroom.

· Do not insert any foreign objects into any of the units' jacks.

• If the unit gets dirty, wipe it with a clean cloth.

• Please note that this Introductory Manual has been written based on the presupposition that details about set-up of any necessary equipment to enable network connection have already been taken care of by the user and that connection has been confirmed as workable. 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 communicate or use communication devices.

Notes and Precautions for Installing Wireless Communica-**A** CAUTION tion 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 the Unit more than 30 cm away from walls or boards containing metal.

 If the Unit is 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 the Unit as near to doors as possible.

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

• Equipment such as some industrial instruments, electronic devices or fluorescent lamps generate noise. Please place the Unit more than 1 meter away from such devices.

Please place the Unit 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

• Do not place the Unit directly on the ground.

Important Notices and Disclaimers

In order to properly use this product, please carefully read all documents that accompany the product before using. 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 outlined in the attached warranty. • All rights of the attached documents belong to T&D Corporation. It is prohibited to use, duplicate and/or arrange

- a part or whole of the attached documents without the permission of T&D Corporation. · Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other
- countries
- Windows Vista is either a registered trademark or trademark of Microsoft Corporation in the United States and/ or other countries.
- All registered trademarks, company names, product names and logos mentioned herein or for products being used are the property or registered property of T&D Corporation or of their respective owners.
- Specifications, design and other contents outlined in the attached documents are subject to change without notice
- Please follow the safety precautions outlined in the attached documents carefully. We cannot guarantee nor are we responsible for safety if this product is used in any manner other than was intended
- On-screen messages in the attached documents 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 the attached documents. T&D Corporation accepts no responsibility for any damage or loss of income caused by the use of our product. Accompanying documents cannot be reissued, so please keep them in a safe place.
- · Please read the warranty and provisions for free repair carefully

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. Caution:

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

Note about Antenna Usage

This device has been designed to operate with the supplied antenna only. Use of any other antenna is strictly prohibited.

IC Statement

This device complies with RSS-210 of the Industry Canada (IC). 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. Ce dispositif est conforme à la norme RSS 210 d'Industrie Canada.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes : (1) il ne doit pas produire de brouillage et (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique recu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif. Wireless products cannot be used in countries other than where those products have been approved for

Important Notices

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.

For product information or questions contact us at:

T&D Corporation

817-1 Shimadachi Matsumoto, Nagano 390-0852 JAPAN

use, according to that country's wireless regulations.

Fax: +81-263-40-3152 E-mail: support@tandd.com

http://www.tandd.com/

We have opened an English Website for your convenience. Here you can find information about our company, news, products, upcoming events, software and Introductory Manual downloads, as well as, ther support. Please stop by and see what we have to offer.

Wireless CO2 Recorder RTR-576 Warranty

Guarantee Period	1 year from date of purchase
Date of Purchase	
Customer's name	
Address	
Phone No.	
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 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 distributor. 3. If you have moved after purchasing, or there are difficulties contacting the distributor 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 other service questions after the termination of the warranty period, contact your distributor.

T&D CORPORATION