

# **Thermo Recorder**

## **TR-71U/TR-72U**

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### **User's Manual**

Thank you for purchasing our product.  
Carefully read this instruction manual  
before using this unit.

# **CE**

## Notices about this User's Manual

In order to properly use this product, please carefully read this manual 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 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.
- Microsoft® and Windows® are registered trademarks of Microsoft Corporation USA and are binding in the USA and all other countries.  
Windows Vista™ is a registered trademark of Microsoft Corporation USA .
- Company names and product names are trademarks or registered trademarks of each company.
- Specifications, design and other contents outlined in this manual 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.
- Please read the warranty and provisions for free repair carefully.

## FCC Compliance Statement for American Users

This device complies with Part 15 of the FCC Rules.

Operation is subject to following two conditions: (1) this device may not cause harmful interference. and (2) this device must accept any interference received, including interference that may cause undesired operation.

### **NOTE**

This equipment has been tested and found to comply with the limits for a Class A 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.

### **WARNING**

This equipment has been verified to comply with the limits for a Class A personal digital device, pursuant to Subpart B of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified or verified to comply with the Class A or B limits may be attached to this equipment. Operation with non-certified or non-verified personal computer and/or peripherals is likely to result in interference to radio and TV reception. The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC Certification of this device and may cause interference levels which exceed the limits established by the FCC for this equipment. You are cautioned that changes or modifications not expressly approved by party responsible for compliance could void your authority to operate the equipment.

# Safety Precautions and Instructions



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## ■ To ensure safety obey all of the following warnings







The following items should be strictly obeyed for the safe usage of this unit, and for protecting yourself and other people from bodily harm and/or damage to property. Before using make sure to carefully read, understand and follow the safety rules and precautions for our products as outlined below.

## ■ Explanation of Symbols

### Explanation of Warning Symbols

 <b>WARNING</b>	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.
 <b>CAUTION</b>	These entries are actions that if taken may lead to physical injury or damage to persons or things.

### Explanation of Picture Symbols

	Denotes an important warning or caution. Inside or near the symbol may appear another symbol giving details. ( EX:  Be careful of electrocution)
	Denotes a forbidden action. Inside or near the symbol may appear another symbol giving details. ( EX:  Do not use in wet areas.)
	Denotes an action that you must take. Inside or near the symbol may appear another symbol giving details. ( EX:  Unplug power plug from outlet)

## **WARNING**



When installing and using this product, make sure to follow all warnings and directions from your computer manufacturer.

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Do not take apart, repair or modify the main unit.  
Doing so may cause fire or electrocution.

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If water or a foreign body enters into this unit, immediately remove the batteries and stop using.  
Continued use may cause fire or electrocution.

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Do not use this unit in wet or humid places, such as a bathroom.  
It may cause a fire or other trouble including malfunction.

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Store main units, sensors, batteries and communication cables out of the reach of children.  
It is dangerous to touch or swallow batteries.

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If any smoke or strange smells are emitted from the unit, immediately remove the batteries and stop using.  
Continued use may cause fire or electrocution.

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This device is designed to measure and record temperature and humidity. Do not use it for any other purpose than to measure and record temperature and humidity.

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## CAUTION



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



Do not expose the unit to harmful gases or chemicals. It may cause corrosion and / or other danger to the unit and to people handling the unit.



Do not use batteries other than specifies. Doing so may cause fire or damage.



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



Condensation may occur if the units 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 great.  
Use the unit in an environment where the ambient temperature is from -10 to 60°C and the humidity is 90%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.



If the unit will not be used for period of time, for safety reasons please remove the battery.  
If left in the unit, it may leak and lead to malfunctioning.



Please take extra caution when plugging in and pulling out the USB plug while another USB device such as CD-RW/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.



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



Do not use any other batteries than those that are specified in this User's Manual.  
It may cause a fire or other trouble including malfunction.



Do not use or store the Thermo Recorder 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 including malfunction.

-Areas exposed to excessive vibration

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

-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.

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## **Cautions about using the Sensors**

### ■ Cautions about using the temperature sensor TR-0106



The possible temperature measurement range for this sensor is -40 to 110°C . Please use it within this range.



It is possible to use just one extension cable per temperature sensor.

### ■ Cautions about using the temperature/humidity sensor TR-3100



The sensor can measure temperature within the range of 0 to 50°C and humidity within the range of 10 to 95%RH. Only use the sensor within these ranges.



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.



This sensor is not waterproof. Do not get wet.



When measuring with the temperature/humidity sensor in an environment of 0 to 50°C and less than 30%RH, the measurements may sometimes fluctuate. This is not abnormal.



## [Handling the temperature/humidity sensor]

- The temperature/humidity sensor should probably be changed after a period of about one year. After removing the sensor from its package, please change the temperature/humidity sensor after one year's usage. During use the temperature/humidity sensor will accumulate impurities (dirt) on the surface of the sensor is being used in a bad environment (smoky or dusty places) it may be necessary to change the sensor sooner.
- When the temperature/humidity sensor is not being used, please place it in the attached vinyl bag with the drying agent included and store it in a cool dark place with a temperature of between 5 to 25°C and a humidity of below 30%RH.
- Attached to the temperature/humidity sensor are two stickers: a wetness detection sticker and a temperature detection sticker. If either of the stickers shows abnormality, you should change the old sensor to a new one immediately.



### -Wetness Detection Sticker

Informs you that the sensor has been wet.



#### Normal

Under normal conditions, black dots will appear on a white



#### Abnormal

Under abnormal conditions, it will turn to red.

### -Temperature Detection Sticker

Informs you that the sensor measured a temperature measurement over 60°C .



#### Normal

Under normal conditions, the number 60 will lightly appear on a pinkish white background.



#### Abnormal

Under abnormal conditions, the number 60 will clearly appear on a red background.

## Before Using...

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### Important Notes about the Installation Procedure (for using this product with USB communication)

Thank you for choosing T&D Products

In order to use a USB connection to communicate between this product and a PC, it is necessary to install the application and the USB driver.

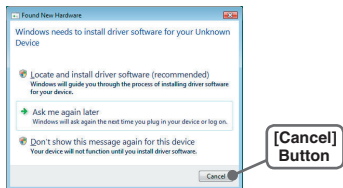
**Before connecting this product to a PC with a USB cable, it is necessary to first install the application and the USB driver.**

If you use the USB cable to connect the product to a PC before installation, the USB driver may not properly install.

If you have connected the product to a PC without first installing the driver, please make sure to press [Cancel] in the [Installation Wizard] window when it pops up the PC screen and then disconnect the USB cable from the product.

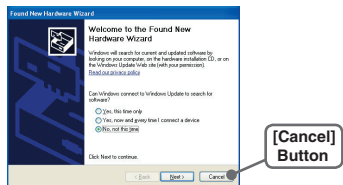
For more details about the proper installation procedure, see the Software User's Manual that accompanies [T&D Recorder for Windows].

### ■ Windows Vista



### ■ For other Windows Operating Systems

\*The screen shot below is from Windows XP. For other Windows OS, there is also a [Cancel] button in the lower right of the screen. (Your screen may differ slightly if you are using a Windows OS other than XP.)



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# About Thermo Recorder TR-71U/72U

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## ■ Outline

TR-71U/TR-72U Thermo Recorders are data loggers capable of measuring, displaying and recording temperature and humidity data. TR-71U has two temperature channels and TR-72U has one temperature and one humidity channel. The data recorded into the TR-71U/TR-72U units can then be downloaded quickly via USB cable to your computer whereby with our exclusive software you can easily process the data into graphs, tables, save to files and/or print it out. Moreover, it is possible to connect more than one unit at the same time.

## ■ Basic Functions

### - Temperature Measuring Range : -60 to 155°C (TR-71U)

The TR-71U with the sensor included in this package can measure and record in a range of -40 to 110°C , but by purchasing one of our optional sensors it is possible to measure and record in the wider range of -60 to 155°C . Please take a look at our full range of optional sensors to find one to match your application.

### - Humidity Measuring Range : 10 to 95% RH (TR-72U)

The TR-72U with the sensor included in this package can simultaneously measure and record temperature in a range of 0 to 50°C and humidity in a range of 10 to 95% RH.

### - Data Recording Capacity : 8000 readings × 2 channels

One channel can record and hold up to 8000 measurement readings. If set at a recording interval of 1 hour, a unit can continuously record for about one year.

### - 1 Year of Operation with just 1 AA Alkaline Battery

Our low energy consumption design gives you one year of continuous operation with only one AA alkaline battery. This gives you the freedom to use the data loggers in places where they can be left alone for long periods of time, such as, in transportation or refrigeration.

#### **Note**

- Battery life varies depending upon the type of battery, the measuring environment, the frequency of communication, and the ambient temperature in which it is used. Specifications and explanations used in this User's Manual are based on operations carried out with a new battery and are in no way a guarantee of your actual battery life.

## **- Battery Life Warning Display**

When the battery power becomes low, a battery life warning signal will appear in the unit's LCD display. If the battery power becomes even lower the unit will automatically go into sleep mode in order to protect the data.

## **- 15 Recording Intervals**

Select from 15 Recording Intervals (from 1 second to 1 hour) to meet your needs. Select from 2 Recording Modes

One-time Mode: When the number of recorded readings reaches 8000, "FULL" will appear in the unit's LCD display and recording will automatically stop.

Endless Mode: When the number of recorded readings reaches 8000, the oldest data reading will be overwritten and recording will continue.

## **- Backup Function**

When battery power becomes low, a battery life warning signal will appear in the unit's LCD display and if the battery power becomes even lower the unit will automatically go into sleep mode in order to protect the data. In sleep mode all normal operations will stop and it will become impossible to switch on the power of the main unit.

### **Note**

- If the main unit remains in sleep mode for about 1 month without a change of battery, or if the battery is left out of the unit for more than 2 minutes, all recorded data will be lost.

## **- Current Readings Monitoring Display**

With our exclusive software, you cannot only monitor the current measurements at a set interval, but can view those measurements in a continually changing graph. You can simultaneously display the current measurements and corresponding graphs for the number of units you have connected.

## **- Adjustment Function**

By setting adjustment values beforehand, you can record and display the post-adjusted measurement values. You can choose from two adjustment methods: 1-point and 2-point. Adjustment will be carried out using an adjustment equation of  $Y = aX + b$ ; where X is the pre-adjusted measurement value and Y is the post-adjusted value.

# Package Contents

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The following items are included in the package:

## [TR-71U]



Thermo Recorder TR-71U × 1 unit



T&D Recorder for Windows  
Software CD-ROM × 1



AA Alkaline Battery  
(LR6) × 1



USB Communication Cable  
US-15C × 1



Temperature Sensor  
TR-0106 × 1



Hardware User's Manual (Warranty) × 1



Software User's Manual × 1

## [TR-72U]



Thermo Recorder TR-72U × 1 unit



T&D Recorder for Windows  
Software CD-ROM × 1



AA Alkaline Battery  
(LR6) × 1



USB Communication Cable  
US-15C × 1



Temperature Sensor  
TR-3100 × 1



Hardware User's Manual (Warranty) × 1



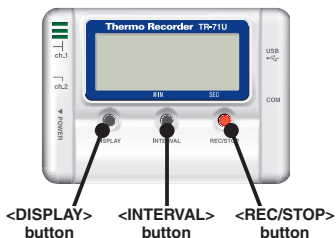
Software User's Manual × 1

# Part Names and Functions

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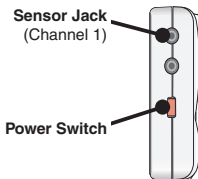
## ■ Part Names and Functions

### FRONT

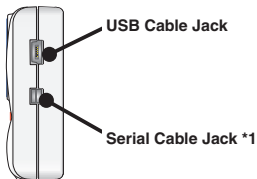


- DISPLAY : Pressing this button will change the LCD Display Mode.  
INTERVAL : Pressing this button will display the currently set recording interval.  
REC/STOP : Pressing this button will start or stop recording.

### LEFT SIDE



### RIGHT SIDE

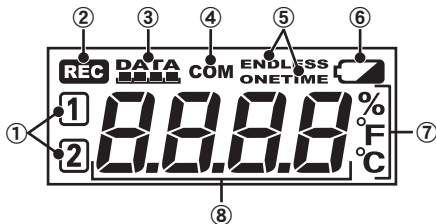


**\*1: Not supported in TR-73U.**

※ 1 : Serial Communication Cable is an Optional Accessory.



## ■ LCD Display



### ① Channel Mark

The channel number of the measurement being displayed will appear.

### ② Recording Mark

The recording condition will appear.

ON: Recording in progress. BLINKING: Waiting for programmed start.

### ③ Data Capacity Scale

After every 2000 readings the scale will be marked from left to right.

### ④ COM Mark

This will appear when data is being sent or received.


ON: USB cable is connected. BLINKING: In communication with computer.

### ⑤ Recording Mode

One-time Mode : When the number of recorded readings reaches 8000, [FULL] will appear in the unit's LCD display and recording will automatically stop.

Endless Mode : When the number of recorded readings reaches 8000, the oldest data readings will be overwritten and recording will continue.

### ⑥ Battery Life Warning Signal

When the battery power becomes low, this will appear in the LCD display. If the battery power becomes even lower, SLP will appear and normal operations will stop. If the  signal appears, please change the battery as soon as possible.

### ⑦ Unit of Measurement

The unit of measurement ( °C, °F, % ) for the display will appear.

### ⑧ Measurements and Messages Area

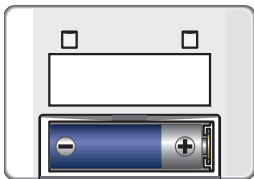
Current measurements or operational messages such as FULL or SLP will appear.

# Installing the Battery

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1. Remove the battery cover from the back of the unit.
2. Insert 1 AA alkaline battery, making sure that the + and – are in the correct direction.

***\*Always use a new battery.***



3. Replace and close the battery cover.

## [Changing the Battery]

1. When battery power becomes low, a battery life warning signal will appear in the unit's LCD display.

If, at this time you change the battery, recording will continue uninterrupted and all data will be saved for downloading.

2. If the battery is not changed and power becomes even lower, [SLP] will appear in the LCD display.

The unit will automatically go into sleep mode in order to protect the data and all normal operations will stop.

If you change the battery at this point, it is still possible to download all saved recorded data.

3. If the battery is further left unchanged, the display will automatically shut off.

If all battery power is lost, all data will be lost as well.

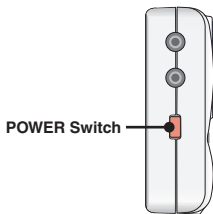
### **NOTE:**

- If a unit is left without a battery for more than 2 minutes, all data will be lost, so please work quickly when changing the battery.

## Turning ON the Power

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1. By holding in the POWER switch at the left side, the unit will turn on.



### [Turning OFF the Power]

By holding in the POWER switch, the unit will turn off.

- During recording, the power cannot be turned off. Please stop recording first and then turn off the power.
- Even if the power has been turned off, the recorded data will be saved. However, if the battery power is totally lost, all data will be lost, so please download data as soon as possible to avoid losing any necessary data.

# Connecting the Sensor

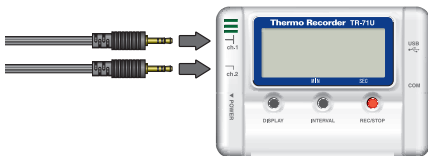
## ■ Connecting the Sensor.

### Note

- If a sensor extension cable is being used with the data logger connected by USB to your computer, electromagnetic waves may cause large errors in measurements.
- To avoid poor connections, be sure to push the sensor connector securely into the jack.

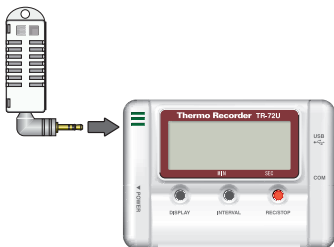
### [TR-71U]

- If a temperature sensor is connected to only the ch. 2 jack, the internal sensor will be used to measure for ch. 1.



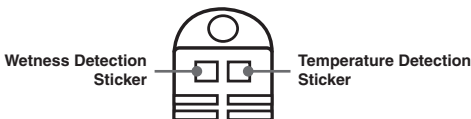
### [TR-72U]

- \* When using the temperature/humidity sensor in environments where the temperature is 0 to 15 and humidity under 30 RH, there may occur changes in measurement readings. This is not a malfunction.*



## [Handling the temperature/humidity sensor]

- The temperature/humidity sensor should probably be changed after a period of about one year. After removing the sensor from its package, please change the temperature/humidity sensor after one year's usage. During use the temperature/humidity sensor will accumulate impurities (dirt) on the surface of the sensor is being used in a bad environment (smoky or dusty places) it may be necessary to change the sensor sooner.
- When the temperature/humidity sensor is not being used, please place it in the attached vinyl bag with the drying agent included and store it in a cool dark place with a temperature of between 5 to 25°C and a humidity of below 30%RH.
- Attached to the temperature/humidity sensor are two stickers: a wetness detection sticker and a temperature detection sticker. If either of the stickers shows abnormality, you should change the old sensor to a new one immediately.



### -Wetness Detection Sticker

Informs you that the sensor has been wet.



#### Normal

Under normal conditions, black dots will appear on a white



#### Abnormal

Under abnormal conditions, it will turn to red.

### -Temperature Detection Sticker

Informs you that the sensor measured a temperature measurement over 60°C .



#### Normal

Under normal conditions, the number 60 will lightly appear on a pinkish white background.



#### Abnormal

Under abnormal conditions, the number 60 will clearly appear on a red background.

## Starting Recording from Main Unit Button

By pressing the <REC/STOP> button on the main unit you can start a recording session immediately.

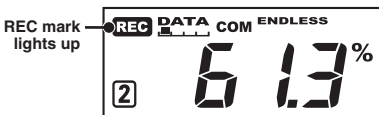
*\* If you wish to make changes to the device name, channel name, recording mode or to any other recording conditions, you must make those settings by connecting the device to your computer.*



<REC / STOP>  
button

### ■ Start Recording

Press in the <REC/STOP> button on the front of the unit until the [REC] mark appears in the display. When displayed, recording has begun.

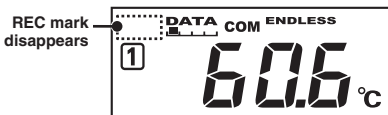


#### NOTE:

- By starting a new recording session, all data currently saved in the unit will be erased.
- Even if the unit is waiting for a programmed recording to start via the provided software, by pressing the <REC/ STOP> button until the [REC] mark appears, you can start a new recording session immediately.

### ■ Stop Recording

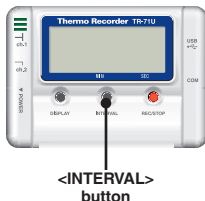
You can stop a recording session by pressing the <REC/STOP> button until the [REC] mark disappears from the display. When it has disappeared, recording has stopped.



## Setting Recording Interval from Main Unit Button

You can make or change recording interval settings from the <INTERVAL> button on the front of the TR-71U/72U main unit.

**\* During recording or while waiting for a programmed recording to start via the provided software, there are not settings to be made.**



1. Press in the <INTERVAL> button on the front of the device until the recording interval appears in the display.
2. With each pressing of the <INTERVAL> button the recording interval time will change.

Press until the desired setting appears.

\*Recording Interval : 1,2,5,10,15,20,30 seconds 1,2,5,10,15,20,30,60 minutes



15 seconds



15 minutes

3. When the desired recording interval appears, stop pressing the <INTERVAL> button.

Within a few seconds, the current measurement readings will return to the display and the setting will be finished.

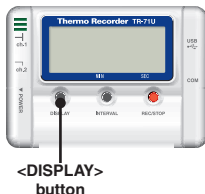
**\* By pressing the <INTERVAL> button during recording or while waiting for a programmed recording to start via the provided software, the currently set recording interval will be displayed.**

## Changing the LCD Display Mode from Main Unit Button

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You can make or change the LCD display settings from the <DISPLAY> button on the front of the TR-71U/72U main unit.

1. By pressing the <DISPLAY> button on the front of the unit, you can change the screen display.



2. If the LCD display shows three channels' readings alternatively, it will show one channel as a fixed display by pressing the button. By pressing the button again, the LCD display pattern will be set for displaying three channels alternatively. If the display has been set for a fixed channel, with each pressing of the button the channel display will change.



# Specifications

Device Type	TR-71U	TR-72U	
No. of Measurement Channels	2 Channels (Select from ch1. internal / ch.2 external)	2 Channels (1 Temperature / 1 Humidity)	
Measurement Items	Temperature	Temperature	Humidity
Internal Temperature Sensor	-10 to 60°C	-10 to 60°C	—
Attached Sensor	-40 to 110°C	0 to 50°C	10 to 95% RH
Optional Temp. Sensor	-60 to 155°C ※ 1	-40 to 110°C	—
Measuring Accuracy (with Attached Sensor)	Average $\pm 0.3^{\circ}\text{C}$ (-20 to 80°C) Average $\pm 0.5^{\circ}\text{C}$ (-40 to -20 / 80 to 110°C)		$\pm 5\%$ RH (at 25°C 50% RH)
Measuring / Display Resolution	0.1°C		1% RH
Sensor	Thermistor		Macromolecular Humidity Sensor
Recording Interval	Select from 15 choices: 1 · 2 · 5 · 10 · 15 · 20 · 30 seconds 1 · 2 · 5 · 10 · 15 · 20 · 30 · 60 minutes		
Recording Capacity	8000 readings × 2 channels		
Recording Modes	Endless Mode / One-time Mode		
LCD display	(Ch1 only, Ch2 only, alternating display)Measurements, Recording Status, Battery Life Warning, Amount of Recorded Data, Unit of Measurement		
Power	AA alkaline battery (LR6)		
Battery Life	About 1 year ※ 2		
Data Backup	Activated when battery power is low or when switch is off (About 1 year)		
Interface	USB Communication Cable (option: RS-232C)		
USB Communication Time	When downloading (1 unit of full data-about 8 seconds)		
Dimensions / Weight of Main Unit	H55 × W78 × D18 mm / about 62 g (including one AA battery)		
Working Environment for Main Unit	Temperature: -10 to 60°C Humidity: under 90%RH (without condensation)		
Attached Sensors	TR-0106 × 2	TR-3100 × 1	
Accessories included in package	AA alkaline battery (LR6) × 1 / User's Manual (Warranty) × 1 USB cable × 1 (US-15C ; length 1.5 m) Software set × 1 / User's Manual (Warranty) × 1		

\*1: There are two types of temperature sensor for TR-71U depending on measurement range. For details see Optional Accessories on p.14.

\*2: Battery life depends upon the measuring environment, recording interval, and quality of the battery being used.

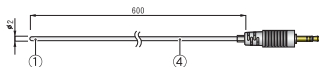
## Optional Accessories

### ■ Temperature Sensors (For TR-71U)

unit : millimeters

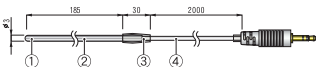
#### TR-1106 Teflon-Shielded Sensor

Cable Length : 0.6m  
Thermal-Constant Time :  
In the air : Approx. 15 Sec.  
In agitated water : Approx. 2 Sec.



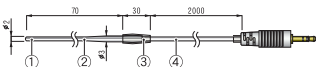
#### TR-1220 Stainless Protection Sensor

Cable Length : 2.0m  
Thermal-Constant Time :  
In the air : Approx. 36 Sec.  
In agitated water : Approx. 7 Sec.



#### TR-1320 Stainless Protection Sensor

Cable Length : 2.0m  
Thermal-Constant Time :  
In the air : Approx. 12 Sec.  
In agitated water : Approx. 2 Sec.



Materials: ① Thermistor ② Stainless pipe(SUS316) ③ Teflon Compaction Tube  
④ Teflon Resin(FEP) Shielded

Possible Measurement Range : -60 to 155°C      Sensor Temperature Durability : -70 to 180°C

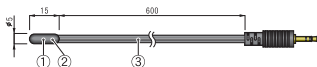
Water Resistance : Splash Proof (Sensor and Cable)

Measurement Accuracy : Average  $\pm 0.5^{\circ}\text{C}$  (-40 to 80°C), Average  $\pm 1.0^{\circ}\text{C}$  (-60 to -40°C / 80 to 100°C)  
Average  $\pm 2.0^{\circ}\text{C}$  (100 to 155°C)

unit : millimeters

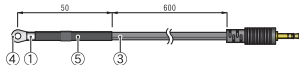
## TR-0106 TPE resin-Shielded Sensor

Cable Length: 0.6m  
Thermal-Constant Time :  
In the air : Approx. 75 Sec.



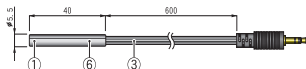
## TR-0206 Stainless Protection Sensor

Cable Length : 0.6m  
Thermal-Constant Time :  
In the air : Approx. 75 Sec.



## TR-0306 Stainless Protection Sensor

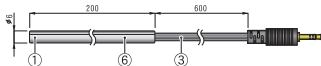
Cable Length : 0.6m  
Thermal-Constant Time:  
In agitated water : Approx 18 Sec.



※ Only stainless section is water resistant

## TR-0406 Stainless Protection Sensor

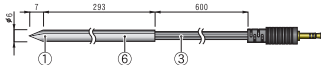
Cable Length : 0.6m  
Thermal-Constant Time :  
In agitated water : Approx 20 Sec.



※ Only stainless section is water resistant

## TR-0506 Stainless Protection Sensor

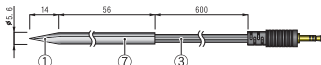
Cable Length : 0.6m  
Thermal-Constant Time :  
In agitated water : Approx 20 Sec.



※ Only stainless section is water resistant

## TR-0706 Stainless Protection Sensor

Cable Length : 0.6m  
Thermal-Constant Time :  
In agitated water : Approx 18 Sec.



※ Only stainless section is water resistant

Materials: ① Thermistor ② TPE resin-shielded sensor ③ TPE resin-shielded wire ④ M3Screw Hole  
⑤ Compacion Tube ⑥ Stainless pipe(SUS304) ⑦ Stainless pipe(SUS316)

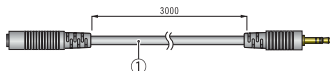
Possible Measurement Range : -40 to 110°C    Sensor Temperature Durability: -50 to 115°C  
Measurement Accuracy : Average  $\pm 0.3^{\circ}\text{C}$  (-20 to 80°C), Average  $\pm 0.5^{\circ}\text{C}$  (-40 to -20°C /80 to 110°C)

## ■ Sensor Extension Cable(Temp Sensor Only)

unit : millimeters

### TR-1C30

Cable length : 3.0m



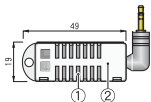
Materials: ① Vinyl Coated Electrical Wire

#### Note

- Only one cable per sensor. When using the extension cable there will be a  $+0.3^{\circ}\text{C}$  at normal temperature and at  $-50^{\circ}\text{C}$  a gap of  $+0.5^{\circ}\text{C}$  may occur.
- If a sensor extension cable is being used with the data logger connected by USB to your computer, electromagnetic waves may cause large errors in measurements.
- Do not use the Extension Cable with TR-72U.

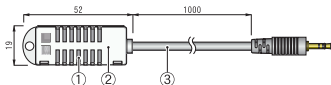
## ■ Temp / Humidity Sensors (For TR-72U)

### TR-3100 Temp / Humidity Sensor



### TR-3110 Temp / Humidity Sensor

Cable length : 1m



Materials: ① Temperature/humidity sensor ② Polypropylene resin ③ Vinyl Coated Electrical Wire

Possible temperature measurement range : 0 to  $55^{\circ}\text{C}$

Possible humidity measurement range : 10 to 95% RH

Sensor temperature resistance :  $-10$  to  $55^{\circ}\text{C}$

humidity measurement accuracy :  $\pm 5\%$  RH (At  $25^{\circ}\text{C}$  50% RH)

Service life : 1 year (under normal operational conditions)

Operational conditions : Without dew condensation, water leakage or effect from corrosive gas or organic solvents.

#### Note

- An Extension Cable cannot be used with Temperature/Humidity Sensors.

## ■ Serial Communication Cable (for TR-71U/72U)

### TR-07C Serial Communication Cable

Cable Length : about 1.0 m

Connector Type :

Specialized Connector D-sub9pin

For communication with computer



### TR-4C10 Serial Communication Cable

Cable Length: about 1.0 m

Connector Type :

Specialized Connector D-sub9pin

For communication with RTR-57C



## ■ Wall Attachment (for TR-71U/72U)

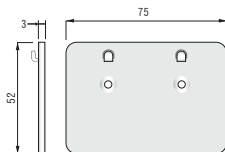
unit : millimeters

### TR-07K2 Wall Attachment

Included : screws × 2

double-sided tape × 1

Compatible Devices: TR-71U/72U



■ For product information or questions contact us at:

## **T&D CORPORATION**

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**Thermo Recorder TR-71U/TR-72U User's Manual**

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This is printed on recycled paper.

## 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 User's 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 product 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.

# Thermo Recorder **TR-71U/TR-72U** Warranty

Warranty period	1 years from date of purchase
Customer's name :	
Address :	
Phone No. :	
Date of Purchase	
Dealer's name :	
Address :	
Phone No. :	
Object of Repair	Main Unit (excluding sensors and any other options.)
Method of Repair	Send in for Repair
Free repair of the unit will be carried out according to the details laid down in this manual only if the unit has broken down under normal usage as outlined in this User's Manual and during the stated warranty period. Please contact your dealer about repair and present this document when seeking repair.	

## **T&D CORPORATION**

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