Thank you for purchasing our product. Carefully read this instruction manual before using this unit.
Important Notices and Disclaimers

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 manual belong to T&D Corporation.
- It is prohibited to use, duplicate and/or arrange a part or whole of this manual 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 are the property of T&D Corporation or of their respective owners.
- Specifications, design and other contents outlined in this manual are subject to change without notice.
- Please follow the safety precautions outlined in this manual 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 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.
- This manual cannot be reissued, so please keep it in a safe place.
- Please read the warranty and provisions for free repair carefully.
Compliance Information

Radio, EMC and Safety Regulations
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.

FCC Statement
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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution
Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.
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Safety Precautions and Instructions

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

| WARNING | 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

<p>| ▲ | 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) |</p>
<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>!</td>
</tr>
<tr>
<td>🚫</td>
</tr>
<tr>
<td>⚠️</td>
</tr>
<tr>
<td>🚫</td>
</tr>
<tr>
<td>⚠️</td>
</tr>
<tr>
<td>🚫</td>
</tr>
<tr>
<td>⚠️</td>
</tr>
<tr>
<td><strong>CAUTION</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
</tbody>
</table>
| 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 aroung 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. |
| Batteries used under low pressure conditions may leak and cause a  
malfunction. |
| 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, duct and dirt
  This may cause damage including malfunction.
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.
Cautions about using the Sensors

[Handling the temperature-humidity sensor]
- The service life of humidity sensors can vary greatly depending on operating environment. Periodic calibration may be required. 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 background.

- 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.
About Thermo Recorder TR-73U

Outline

TR-73U Thermo Recorder is a data logger capable of measuring, displaying and recording temperature, humidity, and barometric pressure data. TR-73U has a total of three channels: one temperature, one humidity, and one barometric pressure channel. The data recorded into the TR-73U 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

- **Barometric Pressure Measuring Range : 750 to 1100 hPa**
  The TR-73U with the internal barometric pressure sensor can measure and record in a range of 750 to 1100 hPa.

- **Temperature Measuring Range: 0 to 50°C (with supplied temp-humidity sensor)**
  The TR-73U with the internal temperature sensor can measure and record in a range of -10 to 60°C, but by purchasing one of our optional temperature sensors it is possible to measure and record in the wider range of -40 to 110°C.
  Please take a look at our full range of optional sensors to find one to match your application. (T&D Website: HOME > PRODUCTS > TR-73U > Options)

- **Humidity Measuring Range : 10 to 95%RH**
  The TR-73U 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.

- **Amount of Recorded Data : 8000 readings x 3 channels**
  One channel can record and hold up to 8000 measurement readings. At the longest recording interval of 60 minutes, recording can continue consecutively for 1 year.

- **10 Months of Operation with just 1 AA Alkaline Battery**
  Our low energy consumption design gives you ten months 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 warehouse.
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.
  Also, if the recording interval is less than 10 seconds, battery life will be much shorter.

-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 readings will be overwritten and recording will continue.

-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 entering the adjustment values beforehand with the provided software, it is possible to view and record the adjusted measurement values.
There are two methods of adjustment: adjusting by one point or adjusting by two points. Adjustment for differences will be based upon the following simple equation $Y=aX+b$.
$X$ equals the measured value and $Y$ equals the value after adjustment.
Package Contents

Thermo Recorder TR-73U x 1

Temperature-Humidity Sensor TR-3100 x 1

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

User's Manual (Warranty) x 1

Software User's Manual x 1

USB Communication Cable US-15C x 1

AA Alkaline battery x 1
Important Notes about the Installation Procedure of T&D Recorder for Windows.
In order to use a USB connection to communicate between the TR-73U and a PC, it is necessary to install the software and the USB driver.

Before connecting the TR-73U to the computer with a USB cable, make sure to first install the software.
When you connect the TR-73U to the computer before installing the software, the following message may appear. In that case, click [Cancel] and disconnect the USB cable.

For details about making TR-73U Unit Settings or about Downloading Data, see the explanation in the Software User’s Manual and/or the Software “Help”.

![Cancel Button Image]
Part Names and Functions

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
Sensor Jack
Power Switch

RIGHT SIDE
USB Cable Jack
Serial Cable Jack *1

*1: Not supported in TR-73U.
LCD Display

1. Recording Mark
The recording condition will appear.
   - ON: Recording in progress.
   - BLINKING: Waiting for programmed start.

2. Data Capacity Scale
After every 2000 readings the scale will be marked from left to right.

3. COM Mark
This will appear when data is being sent or received.
   - ON: USB cable is connected.
   - BLINKING: In communication with computer.

4. 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.

5. Battery Life Warning Signal
When the battery power becomes low, a mark will appear on the LCD of the main unit. If the battery power becomes even lower, [SLP] will appear and normal operations will stop. Please change the battery as soon as the Battery Warning Mark appears.

   IMPORTANT:
   - 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.

6. Unit of Measurement
The unit of the measurement for the display will appear.

7. Measurements and Messages Area
Current measurements or operational messages such as [FULL] or [SLP] will appear.
Installing the Battery

1. Remove the battery cover form 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

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 Sensors

Connect the Sensor

*To avoid poor connections, be sure to push the sensor connector securely into the jack.

*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.

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.
- For details about handling the temperature-humidity sensor, please refer to page 9 “Cautions about using the Sensors” of “Safety Precautions and Instructions”
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.

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-73U 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

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

You can make or change the LCD display settings from the <DISPLAY> button on the front of the TR-73U 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

<table>
<thead>
<tr>
<th>Device Type</th>
<th>TR-73U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor</td>
<td>TR-3100 (External) (*1)</td>
</tr>
<tr>
<td>Barometric Pressure</td>
<td>TR-3100 (Internal)</td>
</tr>
<tr>
<td>Thermistor</td>
<td>Temperature 1ch</td>
</tr>
<tr>
<td>Polymer Resistance</td>
<td>Humidity 1ch</td>
</tr>
<tr>
<td>Measurement Channels</td>
<td>Barometric Pressure 1ch</td>
</tr>
<tr>
<td>Units of Measurement</td>
<td>°C, °F, %RH</td>
</tr>
<tr>
<td>Measurement Range</td>
<td>0 to 50°C (Supplied Sensor)</td>
</tr>
<tr>
<td></td>
<td>-40 to 110°C (Optional Sensor)</td>
</tr>
<tr>
<td></td>
<td>10 to 95 %RH</td>
</tr>
<tr>
<td></td>
<td>750 to 1100 hPa</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Avg. ± 0.3°C [0 to 50°C]</td>
</tr>
<tr>
<td></td>
<td>±5 %RH [at 25 °C, 50 %RH]</td>
</tr>
<tr>
<td></td>
<td>±1.5 hPa</td>
</tr>
<tr>
<td>Measurement Resolution</td>
<td>0.1°C</td>
</tr>
<tr>
<td></td>
<td>1 %RH</td>
</tr>
<tr>
<td></td>
<td>0.1 hPa</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>Response Time (90%): Approx. 7 min.</td>
</tr>
<tr>
<td></td>
<td>4 seconds or 40 seconds if recording interval is 10 sec. or more.</td>
</tr>
<tr>
<td>Logging Capacity</td>
<td>8,000 data sets (One data set consists of readings for all channels in that type of unit.)</td>
</tr>
<tr>
<td>Recording Interval</td>
<td>Select from 15 choices: 1, 2, 5, 10, 15, 20, 30 sec. or 1, 2, 5, 10, 15, 20, 30, 60 min.</td>
</tr>
<tr>
<td>Recording Mode</td>
<td>Endless (Overwrite oldest data when capacity is full) or One Time (Stop recording when capacity is full)</td>
</tr>
<tr>
<td>Communication Interfaces</td>
<td>USB Communication, Serial Communication (RS-232C) (*2)</td>
</tr>
<tr>
<td>Power</td>
<td>AA Alkaline Battery (LR6) x 1</td>
</tr>
<tr>
<td>Battery Life (*3)</td>
<td>Approx. 10 months</td>
</tr>
<tr>
<td>Dimensions</td>
<td>H 55 mm x W 78 mm x D 18 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 40 g</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>Temperature: -10 to 60 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity: 90 %RH or less (no condensation)</td>
</tr>
<tr>
<td>Software</td>
<td>T&amp;D Recorder for Windows (TR-5, 7xU)</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Compatible OS (*4)</td>
<td>Microsoft Windows 10 32/64 bit</td>
</tr>
<tr>
<td></td>
<td>Microsoft Windows 8 32/64 bit</td>
</tr>
<tr>
<td></td>
<td>Microsoft Windows 7 32/64 bit</td>
</tr>
<tr>
<td></td>
<td>Microsoft Windows Vista 32 bit (SP1 or later)</td>
</tr>
<tr>
<td>Display Languages  (*5)</td>
<td>English</td>
</tr>
<tr>
<td>Other</td>
<td>The Microsoft .NET Framework 3.5 SP1 is required.</td>
</tr>
</tbody>
</table>

*1: It is also possible to measure temperature with the internal sensor. However, the measurement range is restricted to the operating environment for the whole device.

*2: Customers wishing to write their own software, please contact your local distributor for the serial communications protocol specifications. (Note: Optional serial communication cable TR-07C is also required.)

*3: 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 a guarantee of actual battery life.

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

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

The specifications listed above are subject to change without notice.
Optional Accessories

**TR-07K2 Wall Attachment**

Wall Attachment
Included:
screws x 2 • double-sided tape x 1

**US-15C USB Communication Cable**

Cable Length
about 1.5 m
Product Support
For support, please contact the distributor from which you purchased the product.

A list of distributors can be found at:
http://www.tandd.com/purchasing/

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

Thermo Recorder TR-73U
User's Manual

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