Customer's name: 
Address: 
Phone No.: 
Dealer's name: 
Address: 
Phone No.: 

Provisions for Free Repair
1. If the unit does not operate normally, please check the items specified below and try to use it throughly by using the User’s Manual. If the problem remains, please contact your dealer.
2. If the consumer requests free repair because of the warranty period in which the unit was purchased, bring the unit along with the warranty to the dealer. A service charge may be added if a repaired part has been lost or the unit has been damaged under conditions other than the conditions for which the warranty is applicable.
3. When repairs are required, contact your dealer, who will arrange to have the warranty repaired by competent professionals.
4. Free repair is not available in the following cases even though it is within the warranty period.
- A trouble or damage was caused by careless operation, natural disaster, fire, public pollution, or use of a power source other than specified.
- A repair, adjustment, or repairing of the main unit has been carried out without the approval of the manufacturer.
- A trouble or damage was caused by transportation, movement or designing of the unit after purchase.
- A trouble or damage was caused by any action other than use for the purpose for which the unit was designed.
- The battery was not recharged according to the User’s Manual.

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

About Voltage Recorder RVR-52A
Our RVR-52A not only measures and records voltage, pulse, and event, and soil moisture data, but enables you to send this data via wireless radio communication to an RTR-57 Data Collector whether you do it can be downloaded, processed and analyzed. Beyond the gathering of data, the RTR-57 gives you the power to start and stop recording, check data, and monitor current readings from a distance. Besides wireless communication, optical communication is also possible.

Specifications
| Measurement Channels | 1 Channel (measured from Voltage / Pulse / Event / Time / Soil Moisture) |
| Measurement Resistance | 1.0 MΩ (±5%)  (at 41°C) |
| Input Impedance | Approx. 1 MΩ |
| Voltage Range | 0 to 30 V |
| Current Detection | Lo below 0.001 A |
| Temperature Range | -20°C to +80°C |
| Input Connector | Hi (i.e., 30 V) or Lo (i.e., 0.001 A) |
| Outdoor Temperature Range | 0°C to 50°C |
| Outdoor Humidity | < 90% RH |
| Recording Range | 3.2, 15, 16, 120, 120, 3.2, 15, 16, 120, 120 min. |
| Recording Capacity | Voltage / Pulse / Memory: 9,999,999 readings / 166,000 readings |
| Water Resistant | IPX8 (IP67) (for cables of cap 6) |
| Power | Lithium Battery (5VDC/3.5Ah) + 1 x 10V Adapter (soil conductivity)

Battery Life
- Approx. 1 year (Power: 1 EV Battery / 1 EV Battery / 1 EV Battery)
- Lithium battery life is dependent on measurement environment, recording interval, and recording conditions.

Input Impedance
- 100 kΩ
- 100 kΩ
- 100 kΩ

USB Port Interface
- USB 2.0 Compliant
- USB 2.0 Compliant
- USB 2.0 Compliant

Power Source
- Lithium Battery (5VDC/3.5Ah) + 1 x 10V Adapter (soil conductivity)
- Lithium Battery (5VDC/3.5Ah) + 1 x 10V Adapter (soil conductivity)
- Lithium Battery (5VDC/3.5Ah) + 1 x 10V Adapter (soil conductivity)

Environmental Conditions
- Storage Temperature: -20°C to +50°C
- Operating Temperature: 0°C to +40°C
- Storage Humidity: 0% to 90% (non-condensation)
- Operating Humidity: 0% to 80% (non-condensation)

Radio, EMC and Safety Regulations
- RTR-5 Series complies with technical specifications required by EN 301 489-1 (with battery and Adaptor), EN 300 220-3 and EN 60950-2000.
- AUS.NZ

About the Lithium Battery, LS 14092 for long periods at temperatures exceeding 10°C
- The battery life may be significantly decreased.

Cracks may develop in the unit casing if it comes into contact with hazardous substances such as oil products.
- The battery life may be significantly decreased.
- The battery life may be significantly decreased.
- The battery life may be significantly decreased.

[Explanation of Warning Symbols]

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<tbody>
<tr>
<td>🟢</td>
<td>DANGER These entries are actions that absolutely under no circumstance must not be taken. The taking of such an action may cause serious physical injury or death.</td>
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<tr>
<td>⚠️</td>
<td>CAUTION These entries are actions that may lead to physical injury or damage to persons or things.</td>
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[Explanation of Picture Symbols]

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[Explanation of Measurement Symbols]

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</table>

[Explanation of Dangers]

1. If any smoke or strange smells are emitted from the unit, immediately cease using it. Contact your dealer for inspection or damage.
2. Do not use any batteries other than those that are recommended. If you use batteries other than those recommended, it may cause fire or damage.
3. Do not use the input cable if it has water droplets or if its hands are wet.
4. Do not touch the input jack during or after recording.
5. If water or a foreign body enters the case, immediately cease using it.
6. Store all batteries, sensors and Data Collectors out of the reach of children.
7. Be careful when you are using in overly hot or cold environments, touching the units may cause burns or frostbite.
8. RVR-52A has been designed to measure voltage and pulse. Do not use it for any other purpose than to measure pulse and voltage.

[Explanation of Wireless Communication]

1. This product is designed to measure voltage up to +6.5V at a voltage input of ±5V.
2. This product has been designed to interface with computers using RS-232C or IEEE 488 standards.
3. Please use the latest version of our software, which can be downloaded free of charge from our website.
4. We are not responsible for any malfunction or trouble caused by the use of non-standard software.
5. We are not responsible for any malfunction or trouble caused by the use of other manufacturers’ products or T&D Corporation to carry out any repairs.
6. Pay attention to water leakage or foreign objects entering into the unit.
7. Remove battery from any unit that is not to be used for a long period of time.
8. Battery life depends on the measurement environment, recording conditions, and recording conditions, etc.
9. Battery terminals may provide insufficient contact due to age or vibration. Please check and make sure that the battery terminals are clean and unoxidized.
10. The main unit when connected to the input jack is splash proof. Without the input cable connected, the unit is not water resistant, so please do not expose it to water.
11. The input jack is designed for products such as AC1010, the signal production element and/or the product may be damaged.

[Explanation of Battery Life]

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Before Using

**Insert the batteries**
- Make sure to carefully read Changing Batteries.
- Make sure no water gets inside the case.

1. Remove the screws and take off the back case.
2. Insert the battery in its tube and place in unit as in diagram.
3. Check the rubber packing for any cuts or scratches and replace the cover as it was opened.

**Check the Input Cable**
Confirm that the sensor is properly connected by inserting it until you hear a clicking sound.

**Upon insertion of the batteries, measuring and recording will automatically begin at the factory settings.**
If, after changing the battery, you wish to start recording again, make sure to carefully read Changing Batteries.

**Low Battery Life Warning Indicator**
- Displayed on the main unit display may not soon disappear, even if you have used a new battery. This is due to the nature of the battery and the time it will take for the indicator to disappear will increase with the time that the battery has been in storage. If a battery has been in storage for about one year, it will take about 10 minutes for the indicator to disappear. During this time, if you try to collect Remote Unit Info via the RTR-57U it will respond that the battery level is too low.

**Display will blink if measurement is below 5 or above 35 (only for Voltage Measurement)**
- This will be displayed when transmitting data to an RTR-57U.

**When measuring pulse there is no unit above 000.**
- This is not a malfunction.

**Connect the Input Cable**
Connect the Moisture Sensor jack to the VR-10C.

**About the LCD Display**
- This is displayed under the following conditions: after purchasing and using the instrument.
- This is displayed when transmitting data to an RTR-57U instrument.
- This will be displayed when transmitting data to an RTR-57U instrument.
- Only displayed when measuring soil moisture.

**Wireless Transmission**
This will be displayed when transmitting data to an RTR-57U instrument.

- Over Measurement Range (only for Voltage Measurement)
  - Display will blink if measurement is below 0 or above 0.5 V
- Over 10,000 Pulse Count Readings Display
  - On-screen display will be displayed with a +10.

**Note**
- Use in cold environments may cause the display to be difficult to read; this is not a malfunction.
- Make sure that + and - are correct.
- Be sure to fasten the cover tightly.
- If nothing appears on the LCD Display, please follow the above instructions again.
- If you do not change, recording settings, or if replacing the batteries the settings will return to the most recent recording settings.

**About the Pulse Measurement Display**
- The reading shown on the pulse measurement display shows the number of total pulse counts for the recording interval set at the recording start and changes every one sixtieth of the time of the set recording interval.
- For example: If the recording interval is set at 30 minutes, the display will show the total number of pulse counts for the previous thirty minutes changing at a rate of every thirty seconds. (If the interval is set at 1 minute or less, the measurement count and the display will change every second.)
- Signal Level at time of Event Recording
  - If the current signal level is high, Hi will be displayed.
- Signal Level at time of Event Recording
  - If the current signal level is low, Lo will be displayed.

**Changing the Battery**
- Note: Once the battery indicator appears, replace the old battery with a new one as soon as possible.
- After removing the old battery, all recorded data will be lost if a new battery is not inserted within 1 minute. Make sure to complete the battery change within 1 minute.
- If the battery direction is incorrect (+) and a short occurs, all recorded data saved in the main unit will be lost.
- Please store the LS14250 batteries in a temperature of less than 20°C.
- When using an LS14520 battery, the battery indicator on the main unit display may not soon disappear, even if you have used a new battery. This is due to the nature of the battery and the time it will take for the indicator to disappear will increase with the time that the battery has been in storage. If a battery has been in storage for about one year, it will take about 10 minutes for the indicator to disappear. During this time, if you try to collect Remote Unit Info via the RTR-57U it will respond that the battery level is too low.

1. When battery power becomes low, the battery indicator will appear in the LCD display.
   - If you change the battery at this time, recording will continue uninterrupted and the downloading of recorded data is possible.
   - If you do not change, recording settings, or if replacing the batteries the settings will return to the most recent recording settings.

2. If you do not change the battery and continue using the unit, the temperature display will intermittently display [bit!]. Please change the battery at once.
   - If at this time a new battery is placed in the unit, recording will continue and downloading of saved data can be done.
   - If you do not change, recording settings, or if replacing the batteries the settings will return to the most recent recording settings.

3. Check the rubber packing for any cuts or scratches and replace the cover as it was opened.
   - If you do not change, recording settings, or if replacing the batteries the settings will return to the most recent recording settings.

4. If you do not change the battery even under conditions in 3 above, the display will go blank.
   - All of the recorded data will be erased. If at this time a new battery is placed in the unit, [CHEC] will appear on the display after which recording will begin again using the previously set recording conditions.

**Soil Moisture Measurement**
- It is possible to measure soil moisture using Decagon Devices Inc, Soil Moisture Sensor ECHO Probes (EC-10, EC-20).
- The RVR-52A has a built-in excitation voltage (2.5V) for the ECHO probe that allows for easy direct connection. The output from the ECHO probe is converted directly into moisture volume content by percentage (%) and displayed as such.
- By using the adjustment function in the software you can build built-in excitation voltage (V) for the ECHO probe that allows for easy direct connection. The output from the ECHO probe is converted directly into moisture volume content by percentage (%) and displayed as such.

**Connection Specifications**
- **Soil Moisture Measurement Mode**
  - The reading shown on the pulse measurement display shows the number of total pulse counts for the recording interval set at the recording start and changes every one sixtieth of the time of the set recording interval.
  - For example: If the recording interval is set at 30 minutes, the display will show the total number of pulse counts for the previous thirty minutes changing at a rate of every thirty seconds. (If the interval is set at 1 minute or less, the measurement count and the display will change every second.)

- **Pulse / Event Measurement Mode**
  - Connect the Input Cable (VR-2C10).
  - Connect the Moisture Sensor to the VR-2C10 terminal, making sure to insert until you hear a clicking sound.
  - Make Necessary Mode Settings and Start Recording.

- **Note**
  - Note: This is not a malfunction.
  - Note: By starting a new recording session, all previously recorded data will be erased. Make sure to download any data you need before you start a new recording session.
  - Note: All of the recorded data will be erased. If at this time a new battery is placed in the unit, [CHEC] will appear on the display after which recording will begin again using the previously set recording conditions.

**Note**
- Make sure to download any data you need before you start a new recording session.
- Note: By starting a new recording session, all previously recorded data will be erased. Make sure to download any data you need before you start a new recording session.
- Note: All of the recorded data will be erased. If at this time a new battery is placed in the unit, [CHEC] will appear on the display after which recording will begin again using the previously set recording conditions.

**Chapter Specifications**

- **Soil Moisture Measurement Mode**
  - RVR-52A
  - Measurement and recording to start
  - Measurement and recording to start
  - Measurement and recording to start
  - Measurement and recording to start
  - Measurement and recording to start
  - Measurement and recording to start

- **Pulse / Event Measurement Mode**
  - Connect the Input Cable (VR-2C10).
  - Connect the Moisture Sensor to the VR-2C10 terminal, making sure to insert until you hear a clicking sound.
  - Make Necessary Mode Settings and Start Recording.

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

- **Note**
  - Note: By starting a new recording session, all previously recorded data will be erased. Make sure to download any data you need before you start a new recording session.
  - Note: All of the recorded data will be erased. If at this time a new battery is placed in the unit, [CHEC] will appear on the display after which recording will begin again using the previously set recording conditions.