Meteorology and Zoology Environment Monitoring System

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1. System Introduction

1.1 Computer Hardware Requirement

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Pentium 500 mHz</td>
</tr>
<tr>
<td>Memory</td>
<td>128M</td>
</tr>
<tr>
<td>Hard Disk</td>
<td>More than 300MB free space</td>
</tr>
<tr>
<td>RS232 Serial Port</td>
<td></td>
</tr>
</tbody>
</table>

1.2 Computer Software Requirement

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation System</td>
<td>Windows 2000 or higher</td>
</tr>
<tr>
<td>IE</td>
<td>Internet Explorer 5.01 or higher</td>
</tr>
</tbody>
</table>
2. Recorder Introduction

2.1 The Front Panel and Back Panel of Recorder

Illustration:
Can – Cancel
SWP – Environment Temperature & Environment Humidity
COM – Serial port
L3 – Rainfall
ZF – Evaporation
QA – Air Pressure
TBS – Direct solar radiation
1 – DC 12V
2 – Battery
## 2.2 Specifications

<table>
<thead>
<tr>
<th>Element</th>
<th>Resolution</th>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dew point</td>
<td>0.01°C</td>
<td>-50 ~ 80°C</td>
<td>±0.2°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>0.1% RH</td>
<td>0 ~ 100%RH</td>
<td>±2% RH</td>
</tr>
<tr>
<td>Temperature</td>
<td>0.1°C</td>
<td>-40 ~ 80°C</td>
<td>±0.1°C</td>
</tr>
<tr>
<td>Evaporation</td>
<td>0.1mm</td>
<td>0 ~ 100mm</td>
<td>±1.5%</td>
</tr>
<tr>
<td>Temperature</td>
<td>0.1°C</td>
<td>0 ~ 100mm</td>
<td>±0.1°C</td>
</tr>
<tr>
<td>Wind direction</td>
<td>1°</td>
<td>0 ~ 360°</td>
<td>±3°</td>
</tr>
<tr>
<td>Wind speed</td>
<td>0.1m/s</td>
<td>0 ~ 70m/s</td>
<td>±0.3m/s</td>
</tr>
<tr>
<td>Rainfall</td>
<td>0.1mm</td>
<td>0 ~ 999.9mm</td>
<td>±0.2mm</td>
</tr>
<tr>
<td>Direct solar radiation</td>
<td>1W/m²</td>
<td>0 ~ 2000 W/m²</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Air pressure</td>
<td>0.1Hpa</td>
<td>0 ~ 1200Hpa</td>
<td>±0.3Hpa</td>
</tr>
</tbody>
</table>
3. Operation Instruction

It displays Real-Time Monitoring status while the user turn on the recorder. If the time of recorder is different from local time, choose ‘Time Setting’ from ‘Recorder Setting’ menu at the computer software to modify date and time of the system to recorder.

### 3.1 Data Monitoring

After selected the item, press ‘OK’ button to start monitoring. If the first monitoring day is not current day, recorder displayed ‘Whether to continue add up accumulative value? ’, it means whether add up the accumulation value to historical data, click ‘OK’ or ‘Cancel’ button.

On monitoring status, press ‘↑’and ‘↓’button to page up and page down, got more monitoring results of transducers.

Clicked ‘cancel’ button to exit the testing status, system shows that ‘Exit real-time monitoring?’, click ‘OK’ to exit or press ‘cancel’ button.

### 3.2 Parameter Configuration
The recorder will show picture below when the item has been selected.

![Enter Password:](image)

The password is ‘168’, then press ‘OK’ button, recorder shows below.

![Cable Communication](image)

The function means that how long will the recorder stores value of transducers to memory. Press ‘cancel’ button, delete the data error inputted or exit. Setting stores in the recorder when finished modified after press ‘OK’ button.

### 3.3 Electrification Configuration

Control the battery start or stop charging. Charging time as 10 hours, can also controlled by the system software.

Note: The expression meaning of the battery symbol of the upper right corner of LCD is as follows:

- Electric consumption is insufficient
Model TRM-ZS1 Meteorology and Zoology Environment Monitoring System

b. 电量  Quantity of electricity

c. 充电  Battery charging

3.4 Data Process

The item includes ‘Examine the data storage’ and ‘clear memory’. The password of ‘Clear Recorder Data’ is ‘168’. 
4. Software Instructions

4.1 Views

4.1.1 Home
Recorder could be setting only under the view status.

4.1.2 Historical Data
To retain data by copying it from recorder storage to historical data view.

4.2 Communication

4.2.1 Check Memory
The function could check the count of records in the recorder memory and query current recorder time.

4.2.2 Import Data
To retain data by copying it from recorder storage to historical data view.
4.2.3 Clear Memory
The operation will clear memory of recorder to empty.

4.3 Battery

4.3.1 Charge
The operation takes about 10 hours for electrification. Do not halt the power of recorder during this period.

4.3.2 Cancel
Cancel charging.

4.4 Recorder Setting

4.4.1 Recorder Timer Setting
The function sets recorder time to current computer time.

4.4.2 Storage Interval
The function means that how much time interval will the recorder stores value of transducers to memory.

4.4.3 Configuration
Choose a computer serial port number connected with the recorder.

4.4.4 Calibration
Calibrate sensor’s value.

4.4.5 Sensitivity
Input direct solar radiation sensitivity.

4.4.6 Evaporation Reset
Reset accumulated value of evaporation to zero.
5. Troubles and Maintenance

1. Trouble phenomena: Recorder cannot set up an electric circuit.

Solution:
   a. Please examine carefully whether the power line has been connected successfully.

   b. Please examine the storage battery of recorder have any electric power. Please charge them through artificial charge method when A.C. power source is provided.

2. Trouble phenomena: the main computer appears the state of dead or indicates user to examine serial port when recorder is operated through computer.

Solution:
   a. Examine whether the communication cable between recorder and computer is connected successfully or the serial port of computer is damaged.

   b. Cut off the power source of computer and recorder and then turn on it again.

3. Trouble phenomena: the data and time inputted is confused.

Solution:
   a. Cut off the power source of computer and recorder and then turn on it again.

   b. Input time into recorder again.

4. Trouble phenomena: the open time of transferred data is not in accordance with the actual open time or the data is lost. The reason is that A.C. power source is cut off again when making quick charge.

Solution:
   Avoid quick charge when the A.C. power supply is cut off frequently. Start to charge after the A.C. power is stable.

5. If user encounters any trouble that you cannot solute, please do not disassemble recorder by yourself and communicate with manufacturer or maintenance worker promptly.
6. Take the shielded cable as the plug of output conducting wire and the shielded layer has to be connected with ground.
6. Structure Chart

6.1 Portable Auto Weather Station Observeing Bracket

1. Wind Speed
2. Wind Direction
3. Compass
4. Direct Solar Radiation
5. Environment Temperature and Humidity Transducer
6. Machine case 1
7. Evaporation
8. Rainfall
6.2 Evaporation Transducer Installation Chart

※ note: 1,2 is the grub screw the sensor is fixed by the chassis lower part to general.
   3,4 is the grub screw is fixed by the outer covering outside to under the sensor.
   5 is power line.
   6 is three adjustments levels place foot screw strut entire chassis.
   7 is outer covering surface level survey marking.