AH4000 series is a hybrid recorder which employs bright and clear, easy to view LCD display.
Measuring value display is prepared as 1 point display, multi-points simultaneous display and digital display + bar graph display.
Various measuring and recording settings can be easily done by front key switch and confirmed by LCD digital display.

**FEATURES**

- **Corresponds to SD card**
  Equipped with SD card (sold separately) and it can record data, read and write setting value.

- **Full multi range**
  Equipped with DC voltage 10 kinds, T/C 36 kinds, RTD 12 kinds, in total 58 kinds. Easily set the range per channels.

- **Easy data management by communication interface**
  Provided with USB port and connect with PC directly. RS232C, RS422A, RS485 and Ethernet communication interface is optionally prepared. When Ethernet is selected, settings from the web and E-mail alarm notification are added.

- **Package Software attached.**
  By Data acquisition softw are, the use of application expands from recording/management to information processing.
  *Optional communication interface required.
  Data analysis softw are can replay display, wave process, editing and trend display.
  Parameter setting softw are can manage the setting information on PC.

- **Standard alarm display/ Printing function**
  Set 4 types of alarm per each input points. When alarm occurs, status display and measuring value flashes at LCD operation screen.

- **Chart end detection function available**
  Can set the alarm operation when chart end is detected.

- **Various programming function**
  Process the measured data by programming setting and displayed/recorded data of each channels are shown as programmed result data.

**MODELS**

<table>
<thead>
<tr>
<th>AH47</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>NNN</th>
</tr>
</thead>
</table>

- **Input point**
  06 : 6 points
  12 : 12 points
  24 : 24 points

- **Communication interface (option)**
  N : None
  E : Ethernet (Std. for US Spec)
  R : RS232C
  A : RS422A/RS485
  Q : RS232C+RS485
  C : RS422A/RS485+RS485
  G : Ethernet + RS422A/RS485 + RS485

- **Alarm output / remote contacts (option)**
  0 : None
  2 : Mechanical relay 2 points (‘a’ contact)
  4 : Mechanical relay 4 points
     (‘c’ contact)
     + remote contact 5 points
  A : Mechanical relay 6 points
     (‘a’ contact)
     + remote contact 5 points
  8 : Mechanical relay 8 points
     (‘c’ contact)
     + remote contact 10 points
  B : Mechanical relay 12 points
     (‘a’ contact)
     + remote contact 10 points
  F : Mechanical relay 16 points
     (‘c’ contact)
     + remote contact 20 points
  D : Mechanical relay 24 points
     (‘a’ contact)
     + remote contact 20 points

- **Power supply**
  A : 100-240V AC
1. Graphic LCD display

Display measured data by digital display and analog indication by bar graph display.

- **1 point display**
  ![46.7]

- **6 points simultaneous display**
  ![48.8 81.3 113.4 145.0 176.0 206.2]

- **24 points simultaneous display**

2. Front key switch

Setting contents can be easily registered by front key switch.

3. SD card slot

Save measured data to SD card by designated interval (Fastest 12 points: 2 sec). Also, register measuring / recording condition such as range, scale, chart speed and when required, setup the unit by registered conditions.

4. Engineering port at the front

Connect with PC by mini-USB cab le*. By attached setting software, you can set or change the parameter by PC.

*Purchase commercialized product separately.

5. White LED chart illumination

Set ON/OFF/AUTO (OFF after no operation for 3 minutes).
■ RECORDING EXAMPLE

● Periodic data printing
  Record the data with time, scale, chart speed, setting change mark and time line over trace printing by arbitrary interval.

● Data print
  When the latest data is required, trace printing will stop and recorded.

● Alarm activation and reset printing
  When alarm activates/reset, prints time, channel no., alarm type and alarm no.
**INPUT SPECIFICATIONS**

Measuring points: 6, 12, 24

Input types:
- DC voltage: ±13.8mV, ±27.6mV, ±69.0mV, ±200mV, ±500mV, ±1V, ±5V, ±10V, ±20V, ±50V
- DC current: Max 50mA by external shunt resistor

Thermocouple:

Resistance thermometer:
- Pt100, old Pt100, Pt50, Pt-Co

Accuracy ratings:
- Refer to the table of measuring range/accuracy ratings/display resolution

Measuring interval:
- 1 second/6 points, 2 seconds/12 points, 2 seconds/24 points

Input resolution:
- About 1/40,000 or better (converted to reference range)

Reference junction compensation accuracy:
- At ambient temperature: 23°C ±10°C
- ±0.5°C or EMF 20µV, whichever greater
- Other than above: ±1.0°C or EMF 40µV, whichever greater

Burnout:
- Burnout detection function for thermocouple input and RTD input. Upper burnout, lower burnout or burnout disabled is selectable for each input.

Maximum common mode voltage:
- 30V AC/60V DC

Common mode rejection ratio:
- 130dB or more (50/60Hz)

Normal mode rejection ratio:
- 50dB or more (50/60Hz)

Terminal board:
- Removable when wiring.

**DISPLAY SPECIFICATIONS**

Analog display:
- LCD bar graph 180mm

Digital display:
- Monographic type LCD (Backlight: AUTO / Always ON settable)
- Dots: 264 x 48 dots
- Display area: 184 x 22mm

Display item:
- All channels simultaneous display, year/month/day, hour/minute, alarm activate channel, chart speed display of measuring value.

Status display:
- REC, CARD, ALM

**ALARM DISPLAY**

Alarm display:
- Status display “ALM” flash, measuring value flash at operation screen

Alarm types:
- Absolute alarm, differential alarm, rate-of-change alarm, FAIL, calendar timer, chart end.

Alarm settings:
- Individual settings: Max 4 levels/channel

Alarm output:
- Mechanical relay 2, 6, 12, 24 points (’a’ contact)
- Mechanical relay 4, 8, 16 points (’c’ contact)

**STANDARDS (CONFORMITY PENDING)**

CE marking:
- EN61326-1
- EN61010-1

UL:
- UL61010-1 2nd edition

CSA (C-UL):
- CAN/CSA C22.2 No.61010-1-04

Protection:
- IEC 60529 IP54

**RECORDING SPECIFICATIONS**

Dotting interval:
- 5 seconds/point, 2.5 seconds/point

Interlock to chart speed

Recording method:
- Wire-dot type 6-color ribbon

Record/Printed color:

<table>
<thead>
<tr>
<th>Channel no.</th>
<th>1, 7</th>
<th>2, 8</th>
<th>3, 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Red</td>
<td>Black</td>
<td>Blue</td>
</tr>
</tbody>
</table>

Digital recording:

<table>
<thead>
<tr>
<th>Channel no.</th>
<th>1, 7</th>
<th>2, 8</th>
<th>3, 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Green</td>
<td>Brown</td>
<td>Purple</td>
</tr>
</tbody>
</table>

**DISPLAY SPECIFICATIONS**

Chart paper:
- Fan-fold type
  - Total width 200mm, total length 20m, effective chart width 180mm

Chart speed:
- 1 to 1500mm / h, in 1mm/h increments (12.5mm / h can be set exceptionally)

Periodic data printing:
- Digital printing is added to trace printing at month / day, time, channel no., data, unit Interval (hour/time) arbitrary setting.

Data printing:
- When required, interrupt trace printing and digital print time and measuring value.

Alarm printing:
- Alarm activated --- Time, channel no., alarm type and level
- Alarm reset --- Time, channel no., alarm level

Memory capacity --- Max. 48 data

List printing:
- When required, interrupt trace printing and print date, chart speed and setting information of each channel.

Message printing:
- Print when required
  - Up to 15 characters/message, register up to 20 characters.

ON/OFF of display and recording:
- Select ON / OFF of display per each channel, trace recording to chart, digital recording to chart, recording to SD card

Subtract printing:
- Record difference between reference channel and measuring value or between reference value (set value) and measuring value.

Zone printing:
- 2 / 3 / 4 divisions

Compressed/Expanded printing:
- Range limit is made non-linear and specific chart recording lower/upper limit is shrunk or expanded.

Automatic range shift printing:
- Recording range is shifted automatically to another set range when measured value exceeds the current range. Overlap function available.

Skip function:
- No display or printing of channels of which ranges are not set.
**GENERAL SPECIFICATIONS**

- **Rated power voltage:** 100 to 240VAC, 50/60Hz
- **Maximum power consumption:**
  - Max 65VA
  - 100V AC balanced: 22VA,
  - 240V AC balanced: 31VA
- **Normal operation condition:**
  - Ambient temperature range: 0 to 50°C (20 to 65%)  
  - Ambient humidity range: 20 to 80%RH (5 to 40°C)
  - Power voltage: 90 to 264V AC
  - Power frequency: 50/60Hz ±2%
  - Attitude: forward tilting 0°, backward tilting 0 to 30°, left/right 0 to 10°
- **Case material:**
  - Door --- Aluminum die-casting
  - Front panel --- Glass
  - Case --- Cold-rolled steel plate
- **Case color:**
  - Door --- Black (equivalent of MunSELL N3.0)
  - Glass --- Clear and colorless
  - Case --- Gray (equivalent of MunSELL N7.0)
- **Mounting:**
  - Panel mounting
- **Weight:** About 7.6kg
- **Terminal screw:**
  - Power terminal,
  - Protective conductor terminal --- M4.0
  - Measuring input terminal, alarm output terminal
  - Remote contact terminal --- M3.5
  - Communication terminal --- M3.0

**OPTIONS**

- **Remote contact:** By external relay contact signal (digital contact: short or open), you can select chart speed or data printing
- **Input points:** 5 points, 10 points, 20 points
- **Input signal:** Digital contact signal or open collector signal
- **Exterior output:** 5V DC/2mA
- **Function:**
  - 1. Record start/stop
  - 2. Chart speed 3-speed switch
  - 3. Data printing
  - 4. List printing
  - 5. Message printing
  - 6. Operation record
    - (Record ON/OFF condition to the designate location by bar line)
    - 7. Integration/F value reset
    - 8. Memory card (record start/stop)
    - 9. Alarm output rest
    - 10. Time correction
- **Alarm output:**
  - Mechanical relay (‘a’ contact) 2 points, 6 points, 12 points, 24 points
  - Max. load 100 to 240VAC 0.2A
  - 30V DC 0.2A
  - Min. load 5V DC 10mA
  - Mechanical relay (‘c’ contact) 4 points, 8 points, 16 points
  - Max. load 100 to 240VAC 0.2A
  - 30V DC 0.2A
  - Min. load 5V DC 10mA
- **Communication interface:** RS232C, RS422A, RS485, Ethernet

**ACCESSORIES**

| SD Card | 512MB | Model: RZ-SMC512 |
| 1GB    | Model: RZ-SMC1G |
| 2GB    | Model: RZ-SMC2G |

**MEASURING RANGES/ACCURACY RATING/DISPLAY RESOLUTION**

<table>
<thead>
<tr>
<th>Input type</th>
<th>Measuring range</th>
<th>Reference range</th>
<th>Accuracy rating</th>
<th>Display resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>mV</td>
<td>-13.8 to 13.8mV</td>
<td>±13.8mV</td>
<td>±0.1%</td>
<td>10μV</td>
</tr>
<tr>
<td></td>
<td>-27.6 to 27.6mV</td>
<td>±27.6mV</td>
<td>±0.1%</td>
<td>10μV</td>
</tr>
<tr>
<td></td>
<td>-50 to 50mV</td>
<td>±50mV</td>
<td>±0.1%</td>
<td>10μV</td>
</tr>
<tr>
<td>DC voltage</td>
<td>-1 to 1V</td>
<td>±1V</td>
<td>±0.1%</td>
<td>10mV</td>
</tr>
<tr>
<td></td>
<td>-5 to 5V</td>
<td>±5V</td>
<td>±0.1%</td>
<td>10mV</td>
</tr>
<tr>
<td></td>
<td>-10 to 10V</td>
<td>±10V</td>
<td>±0.1%</td>
<td>10mV</td>
</tr>
<tr>
<td></td>
<td>-50 to 50V</td>
<td>±50V</td>
<td>±0.1%</td>
<td>10mV</td>
</tr>
<tr>
<td>K</td>
<td>-20 to 300°C</td>
<td>±13.8°C</td>
<td>±0.1%</td>
<td>0.1°C</td>
</tr>
<tr>
<td>E</td>
<td>-20 to 600°C</td>
<td>±27.6°C</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>J</td>
<td>-20 to 500°C</td>
<td>±27.6°C</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>T</td>
<td>-20 to 400°C</td>
<td>±27.6°C</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>R</td>
<td>0 to 1200°C</td>
<td>±13.8°C</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>S</td>
<td>0 to 1760°C</td>
<td>±27.6°C</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>B</td>
<td>0 to 1820°C</td>
<td>±13.8°C</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>N</td>
<td>-20 to 400°C</td>
<td>±13.8°C</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>U</td>
<td>-20 to 500°C</td>
<td>±27.6°C</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>L</td>
<td>-20 to 900°C</td>
<td>±69.0mV</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>W-WRe26</td>
<td>0 to 2315°C</td>
<td>±69.0mV</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>WRe5-WRe26</td>
<td>0 to 2315°C</td>
<td>±69.0mV</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>NiMo-Ni</td>
<td>0 to 290°C</td>
<td>±13.8°C</td>
<td>±0.2%</td>
<td>0.1K</td>
</tr>
<tr>
<td>Platinel II</td>
<td>0 to 1310°C</td>
<td>±69.0mV</td>
<td>±0.1%</td>
<td>1°C</td>
</tr>
<tr>
<td>Pt100</td>
<td>-140 to 150°C</td>
<td>1600Ω</td>
<td>±0.1%</td>
<td>0.1Ω</td>
</tr>
<tr>
<td>Old Pt100</td>
<td>-200 to 300°C</td>
<td>2200Ω</td>
<td>±0.1%</td>
<td>0.1Ω</td>
</tr>
<tr>
<td>JP100</td>
<td>-140 to 150°C</td>
<td>1600Ω</td>
<td>±0.1%</td>
<td>0.1Ω</td>
</tr>
<tr>
<td>Pt50</td>
<td>-200 to 300°C</td>
<td>2200Ω</td>
<td>±0.1%</td>
<td>0.1Ω</td>
</tr>
<tr>
<td>Pt-Co</td>
<td>4 to 374K</td>
<td>220Ω</td>
<td>±0.15%</td>
<td>0.1Ω</td>
</tr>
</tbody>
</table>

Note: The accuracy ratings are converted into the measuring range under reference condition. Thermocouple input does not contain reference junction compensation accuracy.

W-WRe26, NiMo-Ni, Platinel II, PtRh40-PtRh20, CR-AuFe, Au/Pl: ASTM E1751
WRe5-WRe26: ASTM E598; U.L.: DIN43710-1985

5
APPLICATION SOFTWARE (standard attached)

Data Acquisition Software
You can acquire data easily to your PC.
*Optional communication interface required

Parameter Setting Software
Control the setting information at PC by using communication interface or USB port (standard equipped)

Data Analysis Software
Open the binary file recorded in the SD card, replay display and edit the trend of acquired data file.

TERMINAL ARRANGEMENT

● Alarm relay output (24 points ‘a’ contact) + remote contacts (20 points) and communication interface

Communication terminal
- RS232C and RS422A/485 are specified on purchase.

Remote contact terminals (option)
Power/protective conductive terminals

Ethernet connector (option)

● Alarm relay output (16 points ‘c’ contact) + remote contacts (20 points) and communication interface

Communication terminal
- RS232C and RS422A/485 are specified on purchase.

Remote contact terminals (option)
Power/protective conductive terminals

Ethernet connector (option)

DIMENSIONS

Panel cutout

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