AL3000 series conforming to CE, UL and CSA are 100mm pen type hybrid recorders with a simultaneous display of multi-channel data, bargraph display, alarm display/printing and other unique features. Software packages of "KIDS" for data processing of measured values and “PASS” for programming parameters are available.

FEATURES

- **Simultaneous digital display/bargraph display up to 4 channels**
  - Simultaneous 5-digit digital displays and analog bargraphs for full scale of 4 channels allow measured data to be viewed at a glance.

- **Universal input**
  - The recorders accept total 56 ranges of 10 DC voltage ranges, 35 thermocouple ranges and 11 resistance thermometer ranges, and these ranges can be programmed for each channel.

- **Pen-lift function built-in**
  - Pens are automatically lifted when the printing is OFF.

- **Pen offset correction function built-in**
  - By correcting the mechanical position difference between each pen, the time gap on a chart paper is corrected.

- **Data acquisition software package "KIDS"**
  - The data acquisition software package "KIDS" is available for data processing by a personal computer.

- **Engineering software package "PASS"**
  - The engineering software package "PASS" is available for programming parameters by using an engineering port.

- **CE, UL and CSA**
  - The recorder conforms to the rules of safety standards of CE, UL and CSA (C-UL). (UL and CSA: approval pending)
  - The front panel is the structure with water-proof and dust-proof (IP54).

- **Communications interface**
  - The communications interface of RS-232C, RS-422A or RS-485 with MODBUS protocol is available as an optional specification.

- **Alarm display/printing function built-in**
  - Up to 4 kinds of alarm can be set in each input independently. The digital display blinks for alarm activation, and the information of alarm activation/reset is printed on a chart paper.

- **Other features**
  - The pen speed is 100mm/second.
  - The illumination is built-in for easy confirmation of printed data in night or dark places.
  - Universal power supply
  - Detachable terminal board for easy wirings
  - The transmitter power supply unit (separate purchase required) attached to the rear side of the recorder is prepared.
MODELS

AL37    P -         -      A

Input point
1: 1 point,   2: 2 points,   3: 3 points,   4: 4 points

Communications interface (option)

Alarm output/remote contacts (option)
0: None
1: 6 (MOS relay) alarm outputs + remote contacts
2: 6 (mechanical relay “c” contact) outputs + remote contact (*see note)
A: 6 (mechanical relay “a” contact) outputs + remote contacts

Others (option)
0: None,   1: Printing format

Math function (Option)
0: None,   1: Basic,   2: Totalizing/flow correction,   3: Basic + Totalizing/flow correction

Door/case (option)
0: Standard,   1: With handle and rubber stands (*see note),   2: Die-case door,
3: With handle and rubber stands + Die-case door (*see note)

Note: Not conforming to CE, UL and CSA

INPUT SPECIFICATIONS

Number of measuring points: 1 to 4 points

Input signals:
Universal input
DC voltage, thermocouple, resistance thermometer
DC current (by adding shunt resistors)
Contacts input [remote contacts input (option – up to 4 points) for operation printing for inputs]

Range setup:
Programming of input types and ranges by keys

Scale setup:
Programming of maximum values, minimum values and engineering units by keys

Accuracy rating: Refer to the table of inputs.

Temperature drift:
±0.01% of full scale/°C (converted into reference ranges)

Measuring cycle: About 100msec

Reference junction compensation accuracy:
K, E, J, T, N, Platinel II ............ ±0.5°C or less
R, S, NiMo-Ni, CR-AuFe, W-Wre26, WRe5-WRe26
U, L ........................................ ±1.0°C or less
(At the measurement higher than 0°C, the above errors are added to the accuracy ratings for an internal reference junction compensation.)

Input resolution:
About 1/56000 (converted into reference ranges)

Burnout:
For thermocouple inputs and resistance thermometer inputs
Up-scale burnout, down-scale burnout or burnout disabled is selectable for each input.

Allowable signal source resistance:
Thermocouple inputs, DC voltage inputs ...
1kΩ (burnout disabled) or less
Resistance thermometer inputs ...
10Ω or less (per wire)
(same resistance for 3 wires)

Input resistance:
Thermocouple inputs, DC voltage inputs ... about 8MΩ
DC voltage more than ±5 V ... about 1MΩ

Maximum input voltage:
Thermocouple inputs, DC voltage inputs (for ±2VDC range or lower) ... ±10VDC or less
DC voltage inputs (for ±5VDC range or higher) ... ±60VDC or less
Resistance thermometer inputs ... ±6VDC or less

Input correction:
Zero/span correction and shift correction for each channel

Input first-order lag filter:
Time constant of 0 and 1 to 10 seconds can be set in each channel.

Common mode rejection ratio:
140dB or more (50/60Hz)

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

Terminal board:
Detachable type, removable for wirings
**PRINTING SPECIFICATIONS**

- **Printing deadband:** 0.2% (of printing span)
- **Printing system:**
  - Analog tracing: Disposal cartridge pen
  - Digital printing: Plotter pen
- **Step response:** 1 second or shorter (90% response)
- **Printing color:**
  - Analog tracing: 1st pen red, 2nd pen green, 3rd pen blue, 4th pen brown
  - Digital printing: purple (Printing are limited by chart speed.)
- **Periodic printing:** Digital data printing (analog tracing continuance/interruption), Date and time printing (at power on, every hour), Chart speed printing, Scale, unit and tag printing, Alarm activation/reset printing, Programming change mark, POC (pen offset correction) mark, List printing
- **Printing ON/OFF function:** ON or OFF programming can be set in the following printings.
- **Chart:** Fan-fold type, effective width 100mm, total width 114mm, total length 10m
- **Chart speed:** 1 to 600 mm/hr, 1 to 200 mm/min (Default: 20 mm/hr)
- **Chart speed accuracy:** ±0.1% or less (to the reference of time line of chart-feeding longer than 1000mm)
- **Skip function:** No display or printing of channels of which ranges are not programmed.
- **Printing correction:**
  - Zero and span correction of analog tracing
- **Phase synchronizing correction:**
  - Time axis pen offset correction (POC)
- **Subtract printing:**
  - Printing of difference between two channels or between a channel and a referenced value (programmed value)
- **Message printing:**
  - Letters pre-programmed are printed by a key or a remote contacts (option).
  - 5 kinds of message (time + message of maximum 15 letters)
- **Pen-lift function:**
  - By RECORD OFF key, all pens are lifted up simultaneously.
  - At the power OFF, the pen status just before the power OFF is kept.

**DISPLAY SPECIFICATIONS**

- **Analog indication:**
  - 100mm bargraph per each input point (51 segments, Same color as analog tracing is indicated at each 5 segments.)
- **Digital display:**
  - 16 segments LCD 1 digit, character height 7.5mm, orange
  - 7 segments LCD 20 digits, character height 6.5mm, white
  - -9999 to 99999 [optional decimal place, with cursor (by each analog tracing color)]
- **Display items:** Simultaneous display of 4-channel measured values, hour/minute, chart speed and alarm activated channel
- **Status display:**
  - Printing status, key lock, alarm-activation, chart end, fail and pen offset correction

**ALARM SPECIFICATIONS**

- **Alarm display:**
  - "ALARM" illumination, flashing of measured value at an alarm-activated channel and alarm type
- **Alarm types:**
  - Absolute value alarm, differential alarm, rate-of-change alarm, absolute value/standby alarm and differential/standby alarm, each 2 levels
- **Alarm programming:**
  - Individual programming for each channel
  - Maximum 4 levels/channel
- **Alarm deadband:**
  - 0.1 to 9.9% of scale programming range (Default: 0.1%)
- **Alarm output:** Option (Refer to the list of options.)

**PROGRAMMING/OPERATION**

- **Programming parameters:**
  - Time, chart speed, periodic data printing, ranges, scales, engineering units, tags, alarms, burnout, subtract printing, ºC/ºF, password
  - (Options: Communications, printing format, message printing, math function)
- **Printing operation:**
  - RECORD ON/OFF.. Printing on/off
  - FEED ............... Fast-feeding of chart
  - LIST ............... List printing
  - DATA PRINT ........ Digital data printing
- **Pen replacement:**
  - Pens are replaced by moving them in the pen replacement mode.
- **Engineering port:**
  - By using the engineering software package (PASS), all parameters can be programmed by a personal computer.
GENERAL SPECIFICATIONS

Rated power voltage:
100 to 240VAC, 50/60Hz

Power consumption: Maximum 60VA

Environmental conditions:

- Reference operating condition ...
  Ambient temperature/humidity range:
  21 to 25°C, 45 to 65%RH
  Power voltage: 100VAC ± 1%
  Power frequency: 50/60Hz ± 0.5%
  Attitude: Left/right 0°, Forward tilting 0°,
  Backward tilting 0°
  Warm-up time: More than 30 minutes

- Normal operating condition ...
  Ambient temperature/humidity range:
  0 to 50°C, 20 to 80%RH
  Power voltage: 90 to 264VAC
  Power frequency: 50/60Hz ± 2%
  Attitude: Left/right 0 to 10°, Forward tilting 0°,
  Backward tilting 0 to 30°

- Transportation condition (at the packed condition on shipment from our factory) ...
  Ambient temperature/humidity range:
  -20 to 20°C, 5 to 90%RH
  (No dew condensation)
  Vibration: 10 to 60Hz, 4.9m/s² or less
  Impact: Less than 392m/s² or less

- Storage condition ...
  Ambient temperature/humidity range:
  -20 to 60°C, 5 to 90%RH
  (No dew condensation)

Insulation resistance:

- Between secondary terminals and protective conductor terminal ...
  More than 20MΩ at 500VDC
- Between primary terminals and protective conductor terminal ...
  More than 20MΩ at 500VDC
- Between primary terminals and secondary terminals ...
  More than 20MΩ at 500VDC
- Between alarm terminals (mechanical relay contact “c”) and other secondary terminals ...
  More than 20MΩ at 500VDC

Note: Primary terminals:
  Power (L, N), Alarm (MOS relay, mechanical relay contact “a”)

Secondary terminals:
  Input, Alarm (mechanical relay contact “c”), Remote contacts, Communications

Dielectric strength:

- Between secondary terminals and protective conductor terminal .......... 1 minute at 500VAC
- Between primary terminals and protective conductor terminal .......... 1 minute at 1500VAC
- Between primary terminals and secondary terminals .................... 1 minute at 2300VAC
- Between alarm terminals (mechanical relay contact “c”) and other secondary terminals ... 1 minute at 1000VAC

Note: Primary terminals:
  Power (L, N), Alarm (MOS relay, mechanical relay contact “a”)

Secondary terminals:
  Input, Alarm (mechanical relay contact “c”), Remote contacts, Communications

Power failure protection:

- Programmed parameters stored into EEPROM memory
- Clock circuit and POC data sustained for minimum 8 years by a lithium battery (at the operation more than 8 hours/day)

Case assembly material:
- Door ... ABS resin (frame) with glass
- Enclosure ... Steel

Color: Door ... Black (frame - equivalent to Munsell N3.0)
- Enclosure ..... Gray (equivalent to Munsell N7.0)

Mounting: Panel mounting
Weight: About 4.0kg (full options)

Clock accuracy:

- Within ±2 minutes per 30-day (under reference operating conditions, except errors by turning power supply on or off

Power voltage fluctuation:

- Indication fluctuation 0.1% or less (converted into reference ranges) at 90 to 264VAC

Display startup characteristics: Indication difference between 30 minutes and 4 hours after power on is 0.1% or less. (converted into reference ranges except resistance thermometer input)

Terminal screws:
- Power terminals .................. M4.0
- Protective conductor terminals.. M4.0
- Measuring input terminals ........ M3.5
- Alarm terminals ................ M3.5
- Remote contact terminals ........ M3.5
- Communications terminals ....... M3.5

Chart illumination: By CFL

STANDARDS

CE:  EN61326  A1  Class A
  EN61010-1  A2
UL:  UL3111-1 (approval pending)
CSA (C-UL):  C22.2, No.1010 (approval pending)
Front protection:  Conforming to IEC529 IP54
  NEMA250 type 13 (approval pending)
## INPUT

<table>
<thead>
<tr>
<th>Input signals</th>
<th>Measuring Ranges</th>
<th>Reference ranges</th>
<th>Accuracy ratings</th>
<th>Display resolutions</th>
<th>Input signals</th>
<th>Measuring Ranges</th>
<th>Reference ranges</th>
<th>Accuracy ratings</th>
<th>Display resolutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC voltage</td>
<td>-13.8 to 13.8mV</td>
<td>±13.8mV</td>
<td>±0.1% ± 1 digit</td>
<td>10µV</td>
<td>W-WRe26</td>
<td>0 to 2315ºC</td>
<td>±69.0mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
</tr>
<tr>
<td></td>
<td>-27.6 to 27.6mV</td>
<td>±27.6mV</td>
<td>±0.2% ± 1 digit</td>
<td>10µV</td>
<td>W-Re5-WRe26</td>
<td>0 to 2315ºC</td>
<td>±69.0mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 200mV</td>
<td>±200mV</td>
<td>±0.1% ± 1 digit</td>
<td>100µV</td>
<td>PtRh40-PtRh20</td>
<td>0 to 1888ºC</td>
<td>±13.8mV</td>
<td>±0.2% ± 1 digit</td>
<td>1ºC</td>
</tr>
<tr>
<td></td>
<td>-500 to 500mV</td>
<td>±500mV</td>
<td>±0.1% ± 1 digit</td>
<td>100µV</td>
<td>NiMo-Ni</td>
<td>-50 to 290ºC</td>
<td>±13.8mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
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<tr>
<td></td>
<td>-2 to 2V</td>
<td>±2V</td>
<td>±0.1% ± 1 digit</td>
<td>1mV</td>
<td>NiMo-Ni</td>
<td>-50 to 600ºC</td>
<td>±27.6mV</td>
<td>±0.1% ± 1 digit</td>
<td>0.1ºC</td>
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<tr>
<td></td>
<td>-20 to 20V</td>
<td>±20V</td>
<td>±0.1% ± 1 digit</td>
<td>10mV</td>
<td>CR-AuFe</td>
<td>0 to 380K</td>
<td>±13.8mV</td>
<td>±0.1% ± 1 digit</td>
<td>0.1K</td>
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<tr>
<td></td>
<td>-50 to 50V</td>
<td>±50V</td>
<td>±0.1% ± 1 digit</td>
<td>10mV</td>
<td>Platinel II</td>
<td>0 to 650ºC</td>
<td>±27.6mV</td>
<td>±0.1% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 300ºC</td>
<td>±13.8mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>U</td>
<td>0 to 1390ºC</td>
<td>±69.0mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 600ºC</td>
<td>±27.6mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>U</td>
<td>0 to 250ºC</td>
<td>±13.8mV</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
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<td>-200 to 1370ºC</td>
<td>±69.0mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>U</td>
<td>0 to 500ºC</td>
<td>±27.6mV</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 200ºC</td>
<td>±13.8mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>U</td>
<td>0 to 600ºC</td>
<td>±69.0mV</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td>Thermocouple</td>
<td>-200 to 350ºC</td>
<td>±27.6mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>L</td>
<td>0 to 250ºC</td>
<td>±13.8mV</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 900ºC</td>
<td>±69.0mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>L</td>
<td>0 to 500ºC</td>
<td>±27.6mV</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 250ºC</td>
<td>±13.8mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>L</td>
<td>0 to 900ºC</td>
<td>±69.0mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 500ºC</td>
<td>±27.6mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>U</td>
<td>0 to 1390ºC</td>
<td>±69.0mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 1200ºC</td>
<td>±69.0mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>U</td>
<td>0 to 250ºC</td>
<td>±13.8mV</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 200ºC</td>
<td>±13.8mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>U</td>
<td>0 to 500ºC</td>
<td>±27.6mV</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 400ºC</td>
<td>±27.6mV</td>
<td>±0.1% ± 1 digit</td>
<td>1ºC</td>
<td>U</td>
<td>0 to 600ºC</td>
<td>±69.0mV</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 250ºC</td>
<td>±13.8mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>Pt100 (1)</td>
<td>0 to 150ºC</td>
<td>1600Ω</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 1200ºC</td>
<td>±69.0mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>Pt100 (1)</td>
<td>0 to 300ºC</td>
<td>220Ω</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
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<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>Pt100 (2)</td>
<td>0 to 850ºC</td>
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<td>0.1ºC</td>
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<tr>
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<td>-200 to 400ºC</td>
<td>±27.6mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>Pt100 (2)</td>
<td>0 to 150ºC</td>
<td>1600Ω</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>0 to 1200ºC</td>
<td>±13.8mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>J</td>
<td>0 to 300ºC</td>
<td>220Ω</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>0 to 1760ºC</td>
<td>±27.6mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>J</td>
<td>0 to 649ºC</td>
<td>400Ω</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>0 to 1300ºC</td>
<td>±13.8mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>J</td>
<td>0 to 150ºC</td>
<td>1600Ω</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>0 to 1760ºC</td>
<td>±27.6mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>J</td>
<td>0 to 300ºC</td>
<td>220Ω</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
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<td>0 to 1820ºC</td>
<td>±13.8mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>J</td>
<td>0 to 649ºC</td>
<td>400Ω</td>
<td>±0.15% ± 1 digit</td>
<td>0.1ºC</td>
</tr>
<tr>
<td></td>
<td>-200 to 400ºC</td>
<td>±13.8mV</td>
<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>N</td>
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<td>160Ω</td>
<td>±0.15% ± 1 digit</td>
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<td>±0.15% ± 1 digit</td>
<td>1ºC</td>
<td>Pt-Co</td>
<td>0 to 374K</td>
<td>220Ω</td>
<td>±0.15% ± 1 digit</td>
<td>0.1K</td>
</tr>
</tbody>
</table>

**Note:** Accuracy ratings are of measuring ranges at reference operation conditions. The reference junction compensation accuracy is not included with the accuracy ratings of thermocouple inputs.

*The indication equivalent to 200µV or 5ºC may vary under the test environment requested by EMC directive.*


U(Cu-CuNi), L (Fe-CuNi): DIN43710

W-WRe26, W-Re5-WRe26, Platinel II, CR-AuFe, PtRh40-PtRh20, NiMo-Ni: ASTM Vol.14.03


### OPTIONS

<table>
<thead>
<tr>
<th>Options</th>
<th>Explanations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alarm output</strong></td>
<td>Three kinds of output (alarm, FAIL and chart-end) are possible. Output: 6 points Maximum contact rating: MOS relay output ... 240V (AC, DC), 50mA (AC, DC), resistive load &quot;a&quot; contact mechanical relay output ... 240V AC 0.2A, resistive load &quot;c&quot; contact mechanical relay output ... 240V AC 0.2A, resistive load (&quot;c&quot; contact: not conforming to CE, UL and CSA.)</td>
</tr>
<tr>
<td><strong>Remote contacts</strong></td>
<td>By 4-point contact input (2-point common) signal, the following 6 kinds of operation are selectable. Chart speed 3-speed/chart stop, digital data print, list print, 4-point operation printing (printing of contact ON/OFF status), totalizing start/stop, 5-kind of message printing</td>
</tr>
<tr>
<td><strong>Printing format</strong></td>
<td>Zone printing ... Printing area is divided into 2 zones Compressed/expanded printing ... A part of printing area of each channel is printing compressed or expanded. Automatic range-shift printing ... Printing range is automatically changed into a new printing area in the event of over-range or under-range</td>
</tr>
<tr>
<td><strong>Communications interface</strong></td>
<td>3 kinds of RS-232C, RS-422A, RS-485 (to be specified) Two kinds of protocol, MODBUS and private, are built-in.</td>
</tr>
<tr>
<td><strong>Basic mathematics</strong></td>
<td>The following math-function can be executed in time order or between channels... Arithmetic, Absolute value, Square root, Logarithm, Natural Logarithm, Exponential, Maximum, Minimum, Average, Temperature/humidity</td>
</tr>
<tr>
<td><strong>Totalizing/flow correction</strong></td>
<td>Totalizing of measured data and calculated results and correction of flow by pressure, temperature, etc.</td>
</tr>
<tr>
<td><strong>Handle and rubber stands</strong></td>
<td>Handle and rubber stands are mounted for easy carrying (not conforming to CE, UL and CSA.)</td>
</tr>
<tr>
<td><strong>Aluminum die-cast door</strong></td>
<td>Case for horizontal high-density panel installation and aluminum die-cast door</td>
</tr>
<tr>
<td><strong>18m chart</strong></td>
<td>Total length of 15.6m</td>
</tr>
</tbody>
</table>

#### ACCESSORIES (Separate purchase is required.)

<table>
<thead>
<tr>
<th>Article</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shunt resistor for current input 2500 (for 20mA) and 1000 (for 50mA)</td>
<td>Power supply unit for transmitters The unit is mounted on backside of recorder.</td>
</tr>
<tr>
<td>Transmitter power supply unit RZ-TPS01</td>
<td></td>
</tr>
</tbody>
</table>

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**Data acquisition software package "KIDS"**

The "KIDS" is a software package for storing data being measured by AL3000 and AH3000 series recorders and for replaying of the stored data.

Main function and features:
- Data processing: Up to 5 sets (max. 100 channels)
- Real-time data, real-time trend, historical data, historical trend and daily report
- Communications interfaces: RS-232C, RS-422A or RS-485
- Stored data: Can be exported to Microsoft Excel, Lotus 1-2-3 and other application software.
- OS: Windows 95/98, Windows NT4.0

**Engineering software package "PASS"**

The "PASS" is a software package, through a communications interface (optional) or a configuration port, for programming parameters of AL3000 and AH3000 series recorders by a personal computer.

Main functions and features:
- Input parameters:
  - Ranges, scales, tags, engineering units, alarms, burnout
- Printing parameters:
  - Chart speed, data interval, subtract printing, zone printing, compressed/expanded printing, automatic range-shift printing
- Operation: Message printing
- Others:
  - Clock setting, temperature units (ºC, ºF), alarm deadband, communications specification (for programming through a configuration port only)
- OS: Windows95/98, WindowsNT4.0

**DIMENSIONS**

274mm for adding alarm output of MOS relay or "c" contact mechanical relay, and communications interface
* 285mm for adding "a" contact mechanical relay

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Specifications subject to change without notice. Original 2001.5