EH 3000 series is a dot printing type analog recorder sized 288x288mm with 180mm width chart. Recording points are 5 kinds, 1 point to 12 points and records clearly temperature, pressure, flow, level, etc. at regular interval.

**FEATURES**

- **High accuracy ±0.25%**
  By large scale plate and sharp pointer location, it is easy to see the indication and high accuracy of ±0.25% (DC voltage input).
- **Universal power supply**
  Universal power supply with voltage range of 100 to 240 V AC (50/60Hz) is applied.
- **Linearized temperature scale prepared**
  Temperature scale of thermocouple and resistance thermometer input is a linear scale that is excellent in reading value.
- **6 chart speeds**
  6 chart speeds (12.5, 25, 50, 75, 100, 150mm/h) are switchable as standard. 5 chart speed and hour/minute change are prepared as option.
- **Alarm setting as standard**
  High and low limit alarm can easily programmed by pointer location. Also you can check the alarm by front LED.
- **Easy operation and robust structure**
  Operation switch and setting switch are separate arranged for easy operation and robust structure that adopted steel casing and die-cast door.
- **Chart paper illumination**
  White LED illumination is adopted for to read the indication in the dark places. You can also adjust the brightness.
- **Flat front chart chassis**
  Front chart feeding part is flat so easy to read the recorded result and also to take note.
- **Unit structure and light-weight**
  Light-weight (60% of the previous unit weight) is realized by easy maintenance structure.
- **CE approval**

**MODELS**

<table>
<thead>
<tr>
<th>Input point</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1 : 1 points</td>
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<tr>
<td>D2 : 2 points</td>
</tr>
<tr>
<td>D3 : 3 points</td>
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<tr>
<td>D6 : 6 points</td>
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<tr>
<td>12 : 12 points</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input signals</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 : Thermocouple/DC voltage</td>
</tr>
<tr>
<td>7 : Resistance thermometer</td>
</tr>
<tr>
<td>Thermocouple with burnout/DC voltage</td>
</tr>
<tr>
<td>Built-in voltage divider input (option)*1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input and scale plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 : Standard input</td>
</tr>
<tr>
<td>+ standard scale plate</td>
</tr>
<tr>
<td>1 : Non-standard input*2</td>
</tr>
<tr>
<td>+ Non-standard scale plate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alarm output</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 : None</td>
</tr>
<tr>
<td>2 : 2 alarm outputs*3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chart speed and burnout</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 : Standard 6-speed+ burnout disabled</td>
</tr>
<tr>
<td>1 : Standard 6-speed + up-scale burnout*4</td>
</tr>
<tr>
<td>2 : Standard 6-speed + down-scale burnout*4</td>
</tr>
<tr>
<td>A : Standard 5-speed hour/minute change + burnout disabled*3</td>
</tr>
<tr>
<td>B : Standard 5-speed hour/minute change + up-scale burnout*4</td>
</tr>
<tr>
<td>C : Standard 5-speed hour/minute change + down-scale burnout*4</td>
</tr>
</tbody>
</table>

*1: Optional built-in voltage divider and thermocouple/resistance thermometer burnout input is only type "7".
*2: Built-in voltage divider input included. Triple scale is available. (Input and scale selection are needed for non-standard input and non-standard scale plate.)
*3: Option
*4: Burnout on all channels is programmed together for thermocouple/resistance thermometer input.
**INPUT SPECIFICATIONS**

**Input types:**
- DC voltage: ±13.6mV, ±27.6mV, ±69mV, ±200mV, ±500mV, ±2V, ±5V
- Built-in voltage divider (option): ±10V, ±20V, ±50V
- DC current: External shunt resistor (250Ω) required (option)
- Thermocouple: K, E, J, T, R (option B, S, N, U, L)
- Resistance Thermometer: Pt100, JPt100 (option)

**Input designation:**
- Single scale (standard), double / triple scale (option)

**Accuracy ratings:**
- DC voltage input: -0.25% of input span
- Thermocouple and resistance thermometer: -0.5% of input span (except for some inputs)

**Indicating dead band:** ±0.2% of input span

**Reference junction compensation accuracy:**
- K, E, J, T: ±1.0°C or below
- Other: ±2.0°C or below

**Temperature drift:** ±0.02%FS / °C (Converted into accuracy ranges)

**Indicating resolution:** Approximately 1/3,600

**Allowable signal source resistance:**
- DC voltage inputs, thermocouple inputs: 1kΩ or less
- Resistance thermometer inputs: per wire 100Ω or less
- DC voltage inputs (voltage divider built-in): approximately 8MΩ
- DC voltage inputs (voltage divider built-in): approximately 1MΩ

**Maximum input voltage:**
- DC voltage inputs, thermocouple inputs: ±10V DC or less
- DC voltage inputs (voltage divider built-in): ±60V DC or less
- Resistance thermometer inputs: ±5V DC or less

**Maximum common mode voltage:**
- 30V AC

**Common mode rejection ratio:**
- 120dB or more

**Normal mode rejection ratio:**
- 50dB or more

**RECORDING SPECIFICATIONS**

**Chart paper:** Fan-fold type
- effective chart width 180mm (total width 200mm), total length of 20m

**Recording points:**
- 1, 2, 3, 6, 12 points

**Dotting interval:** 6 seconds/point

**Recording system:** Inkpad dotting
- 1: red, 2: blue, 3: sky blue, 4: green, 5: brown, 6: purple,
- 7: orange, 8: gray, 9: blue, 10: greenish brown, 11: scarlet,
- 12: violet

**Chart speed:**
- 12.5, 25, 50, 75, 100, 150mm/h

**Chart speed accuracy:**
- ±0.1% (based on chart paper scale)

**GENERAL SPECIFICATIONS**

**Rated power voltage:**
- 100 to 240V AC, 50/60Hz

**Power consumption:**
- Maximum 20VA (100V AC), 25VA (240V AC)

**Environmental conditions:**
- Reference operation condition: ---
  - Ambient temperature range: 21 to 25°C
  - Ambient humidity range: 45 to 85%RH
  - Power voltage: 100V AC ±1%
  - Power frequency: 50/60Hz ±0.5%
  - Altitude: left/right 0°C, forward tilting 0°C, backward tilting 0°C
  - Warm-up time: longer than 30 minutes

**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%
- Altitude: 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 range: -20 to 60°C
  - Ambient humidity range: 5 to 90%RH (No dew condensation)
  - Vibration: 10 to 60Hz, 4.9m/s² (0.5G) or less
  - Impact: 362m/s² (40G) or less

**Storage condition:**
- Ambient temperature and humidity range: -20 to 40°C: 5 to 90%RH, 40 to 60°C: 5 to 85%RH

**Insulation resistance:**
- Primary terminals and protective conductor terminals --- 20MΩ or more at 500V DC
- Secondary terminals and protective conductor terminals --- 20MΩ or more at 500V DC
- Primary and secondary terminals --- 20MΩ or more at 500V DC

**Dielectric strength:**
- Primary terminals and protective conductor terminals --- 1 minute at 1500V AC
- Secondary terminals and protective conductor terminals --- 1 minute at 500V AC
- Primary and secondary terminals --- 1 minute at 1500V AC

**Illumination:**
- White LED lamp, 3 levels of brightness, and lights can be OFF.

**Case:**
- Door frame — aluminum die-cast,
  - Door window — glass,
  - Back case — steel
- Color: door frame — Gray (equivalent to Mussel N3)
  - Back case — Gray (equivalent to Mussel N7)
- Door window — transparent

**Mounting:**
- Panel mounting

**Weight:**
- Approximately 8.0Kg

**Terminal screws:**
- Power terminals / protective conductor terminals / alarm terminals — M4.0, measuring terminal — M4.0

**OPERATION / PROGRAMMING SPECIFICATIONS**

**Analog indication:**
- Scale plate and pointer

**Scale plate:**
- Max. triple scale (option) (minimum scale division:150)

**ALARMSPECIFICATIONS**

**Alarm display:**
- Pointer and alarm-point seal pasted on scale.
  - Alarm LED lamp lightens for alarming. (All channels common display)

**Alarm types:**
- Higher and lower limit alarm
  - Alarm dead band: 0.4% of input span

**STANDARD**

**CE approval:**
- EMC directive, low voltage directive conformity, EN61326-1, EN61010-1
  - Under EMC directive test condition, indication equivalent to maximum 500μV might fluctuate.

**INDICATING SPECIFICATIONS**

**Analog indication:**
- Scale plate and pointer

**Scale plate:**
- Max. triple scale (option) (minimum scale division:150)

**KEY LOCK — Setting key locked

**Mode:**
- Select setting mode
  - Select setting / adjusted parameter, move pointer

**ENTRY — Parameter / Adjusted value confirmed

**CAL — User indication adjustment, shift adjustment

**Indication:**
- LED (green) — Power ON monitor
  - LED (red) — Alarm monitor (All channels common OR output monitor)
  - LED (white) — Chart speed

**Swatches:**
- POWER — ON/OFF the recorder power supply
  - AUTO CH — Switching automatic channels change (recording mode) and fixed channel
    - Chart feed stops when 1 point indication mode selected
  - RECORD — Indication / Recording start/stop
  - FEED — Feed chart paper
  - MODE — Select setting mode
    - Select setting / adjusted parameter, move pointer
  - ENTRY — Parameter / Adjusted value confirmed
  - CAL — User indication adjustment, shift adjustment
  - Key LOCK — Setting key locked
  - Scale plate and pointer

**Alarm display:**
- Pointer and alarm-point seal pasted on scale.
  - Alarm LED lamp lightens for alarming. (All channels common display)

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- Higher and lower limit alarm
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- DC voltage: ±13.6mV, ±27.6mV, ±69mV, ±200mV, ±500mV, ±2V, ±5V
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**Indicating resolution:** Approximately 1/3,600

**Allowable signal source resistance:**
- DC voltage inputs, thermocouple inputs: 1kΩ or less (no burnout)
- Resistance thermometer inputs: per wire 100Ω or less (same resistance for 3 wires)

**Input resistance:**
- DC voltage inputs (±5V or less), thermocouple inputs: approximately 8MΩ
- DC voltage inputs (voltage divider built-in): approximately 1MΩ

**Maximum input voltage:**
- DC voltage inputs, thermocouple inputs: ±10V DC or less
- DC voltage inputs (voltage divider built-in): ±60V DC or less
- Resistance thermometer inputs: ±5V DC or less

**Maximum common mode voltage:**
- 30V AC

**Common mode rejection ratio:**
- 120dB or more

**Normal mode rejection ratio:**
- 50dB or more

**Chart paper:** Fan-fold type
- effective chart width 180mm (total width 200mm), total length of 20m

**Recording points:**
- 1, 2, 3, 6, 12 points

**Dotting interval:** 6 seconds/point

**Recording system:** Inkpad dotting
- 1: red, 2: blue, 3: sky blue, 4: green, 5: brown, 6: purple,
- 7: orange, 8: gray, 9: blue, 10: greenish brown, 11: scarlet,
- 12: violet

**Chart speed:**
- 12.5, 25, 50, 75, 100, 150mm/h

**Chart speed accuracy:**
- ±0.1% (based on chart paper scale)
**OPTION SPECIFICATIONS**

**Alarm output:** Alarm contact output is available

**Alarm relay:** Mechanical relay 1 N.O. (form A) and relay 2 N.C. (form B) contact, 2 outputs (high and low), all channels common

**Maximum contact rating:** 250V AC 2A, 30V DC 2A (resistive load)

**Non-standard input:**
- **Minimum width of scale:**
  - DC voltage: 10mV DC width or more
  - DC current: 10mA DC width or more
  - Thermocouple: K, 200°C width or more
  - E, J, T: 150°C width or more
  - R: 600°C width or more

**Resistance thermometer:** 
- 100°C width or more

**Non-standard:** Scale plate will be standard plate of 0 to 100 equally divided (no unit). Please specify for other range.

**Double / Triple scale:**
- Measures input with 2 or 3 types of scales (each scale is serial channel only), minimum division; divided into 150 equal parts
- Chart speed: 5-speed change, 12.5, 25, 50, 100, 200mm/minute, hour change
- Dotting interval: 3 seconds/point
- DC current input: 250Ω of shunt resistor is applied to measure voltage input (max 20mA)

**Built-in voltage divider:**
- Built-in voltage divider (1/1000) measures DC voltage input of ±10V, ±25V, ±50V, input type "7" only

**Burnout:** Function for detecting disconnection for sensor with thermocouple or resistance thermometer input. Upper and lower scale burnout on all channels can be programmed, parallel operation is unavailable, Input type "7" only

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**Standard input and chart paper Nos.**

<table>
<thead>
<tr>
<th>Input type</th>
<th>Scales</th>
<th>Minimum scale</th>
<th>Chart paper Nos.</th>
<th>Input code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC voltage</strong></td>
<td>0 to 10mV</td>
<td>1</td>
<td>EH01001</td>
<td>M1</td>
</tr>
<tr>
<td></td>
<td>0 to 20mV</td>
<td>1</td>
<td>EH05043</td>
<td>E2</td>
</tr>
<tr>
<td></td>
<td>0 to 50mV</td>
<td>1</td>
<td>EH05043</td>
<td>E2</td>
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<tr>
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<td>-5 to 5mV</td>
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<td>E2</td>
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<td>1 to 5V</td>
<td>1</td>
<td>EH05043</td>
<td>E2</td>
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<tr>
<td><strong>T/C</strong></td>
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<td>2C</td>
<td>EH05043</td>
<td>E2</td>
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<tr>
<td></td>
<td>0 to 250°C</td>
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<tr>
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<td>0 to 300°C</td>
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<td>2C</td>
<td>EH05043</td>
<td>E2</td>
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<td><strong>E</strong></td>
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</table>

**Exception of accuracy ratings**

<table>
<thead>
<tr>
<th>Input types</th>
<th>Measuring range</th>
<th>Accuracy ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>K</strong></td>
<td>-200 to -50°C</td>
<td>±1.0%</td>
</tr>
<tr>
<td><strong>E, J, T, L</strong></td>
<td>-200 to -50°C</td>
<td>±1.0%</td>
</tr>
<tr>
<td><strong>R, S</strong></td>
<td>0 to 100°C</td>
<td>±1.5%</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>0 to 400°C</td>
<td>None</td>
</tr>
<tr>
<td><strong>U, L</strong></td>
<td>-200 to -50°C</td>
<td>±1.5%</td>
</tr>
</tbody>
</table>

Note: The accuracy ratings are converted into the measuring range.

K, E, J, T, R: IEC584, JIS C1602-1995
K:100 : IEC751, JIS C1604-1997

*Scale plate will be standard plate of 0 to 100 equally divided (no unit). Please specify for other range.*
**Easy operation**

**EH3000 Series**

*Flat front chart chassis enables easy memo writing.*

*All operations and settings adjustable.*

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**TERMINAL BOARD**

- Power/protective conductor terminals (M4)
- Alarm output conductor terminals (M4) (option)
- N.O terminals
- COM terminals
- N.C terminals
- Measurement input terminals (M4)
  - TC.mV(+) RTD(A) terminals
  - TC.mV(-) RTD(B) terminals
  - RTD(b) terminals

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**DIMENSIONS**

- **Panel cutout**
- **Minimum clearance for plural installation**

Unit: mm

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