

EH SERIES ELECTRONIC RECORDER



MODEL EH□00-□□ (Recorder)

■ MODELS

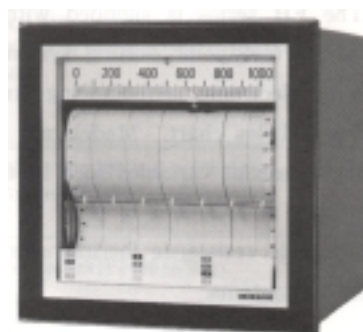
EH□00-□□

NO. OF MEASURING POINT

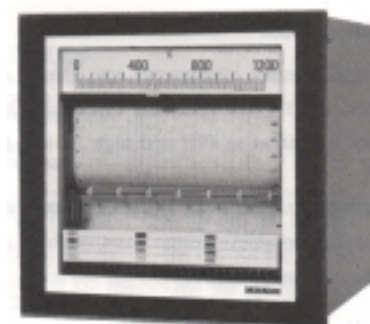
- 01 : 1 pen continuous writing
- 01D : 1 point dotting
- 02 : 2 points dotting
- 03 : 3 points dotting
- 04 : 4 points dotting
- 06 : 6 points dotting
- 12 : 12 points dotting
- 24 : 24 points dotting

INPUT

- 8 : DC voltage
- 1 : Thermocouple
- 2 : Resistance thermometer
- 3 : Thermistor
- 5 : Temperature/humidity (for Model R220 or R320)
- 6 : For molten metal (for immersion thermocouple)



MODEL EH100-06

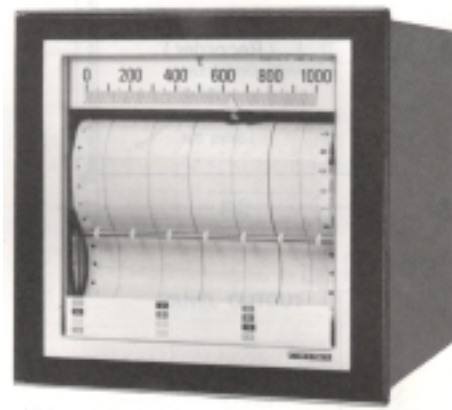


MODEL EH100-24S

RECORDER

MODEL EH □ OO- □ □

The EH series is supplied with either continuous writing or multipoint dotting systems. This versatile series of electronic selfbalancing strip chart recorders features a 180mm chart. Models are available to record various industrial variables such as temperature. mV or DC voltage at 1, 2, 3, 4, 6, 12 or 24 points. Select mV, thermocouple, resistance thermometer or thermistor type measuring systems.



MODEL EH100-06

■ FEATURES

- **Wide selection**

The EH series instruments are widely adoptable to various needs by combining various options, such as 1-pen, 2-pen, 3-pen, 1 to 24 point recording types, mV, thermocouple, resistance thermometer and thermistor input signals, control types from 2-position to PID and high or low limit alarm and high/low limits alarm, plus automatically selectable dual-scale.

- **Accuracy $\pm 0.25\%$ as industrial recorders**

The high-reliability design have realized the highest indicating accuracy of $\pm 0.25\%$ of input span (DC voltage input) as industrial recorders.

- **Highly reliable instruments**

Highly reliable instruments have been established by searching for the durability and high reliability of parts and circuits, such as balancing slide resistors using conductive plastic, input selectors using a reed switch, servoamplifier with an overshoot preventive circuit and others.

- **Clear recording with critical damping**

Sensitive recording with a differential antecedent velocity type damping circuit servoamplifier, dot recording by a precision forming dotter and continuous recording with an ink pen and a cartridge pen (option) ensure clear recording on all phenomena.

- **Conformance to international standards**

These instruments are international products conforming to DIN standards of 288mm X 288mm and ANSI standards as performance specifications.

- **Units structure with easy maintenance and check**

The range unit, servoamplifier, chart forwarding mechanism and other key components are designed as modular units for easy maintenance and checking.

■ GENERAL SPECIFICATIONS

CASING	: Front door — Diecast aluminum Rear case — Steel plate
COATING	: Door — Munsell N 1.5 (black) Case — Metallic silver
MOUNTING	: Flush panelmount
WEIGHT	: About 13.5kg (EH500-LIILII, EH600-LILL15kg)
INPUT SIGNAL	: mV — 3mV to 500mV DC span 1 mV to 3mVDC span* 500 mV to 100VDC span* Thermocouple — K, E, J, T ... 100°C span or more R 450°C span or more B 1000°C span or more S 500°C span or more Resistance thermometer — 30°C span (Pt 100) or more Thermistor — Lower than 250°C ... 30°C span or more 250 to 300°C 40°C span or more
SCALE LENGTH	: 180mm
INDICATING ACCURACY	: mV input — $\pm 0.25\%$ of input span Thermocouple, resistance thermometer, thermistor $\pm 0.5\%$ of input span
DEAD BAND	: 0.1% of input span
BALANCING SPEED	: About 2.0 sec. (50Hz) or about 1.6 sec. (60Hz) for traveling F. S.
CHART	: Fanfold chart Effective recording width 180mm (Total width 200 mm) Total length 20m (A 30m chart is also available)
RECORDING POINTS	: 1, 2, 3, 4, 6 or 12 points
RECORDING SYSTEM	: Pen-writing type — One-point continuous recording Dotting type — 2, 3, 4, 6, or 12 points; ink pad dotting using a different color at each point Dotting colors 1 point — Red 2 points — 1 Red, 2 Black 3 points — 1 Red, 2 Black, 3 Sky blue 4 points — 1 Red, 2 Black, 3 Sky blue, 4 Green 6 points — 1 Red, 2 Black, 3 Sky blue, 4 Green, 5 Brown, 6 Purple 12 points — 1 Red, 2 Black, 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, 100mm/h and FAST
DOTTING INTERVAL	: 6 sec. (50Hz) or 5 sec. (60Hz)
POWER SUPPLY	: 100, 110, 120, 130, 200, 220, 230, 240VAC, 50Hz or 60Hz
ALLOWABLE VOLTAGE FLUCTUATION	: 10% to (-)10% of rated value
AMBIENT TEMPERATURE	: (-) 10°C to 50°C
AMBIENT HUMIDITY	: 30 to 90%RH
EXTERNAL RESISTANCE (Potentiometer type only):	Connectable up to about 10k Ω
INPUT IMPEDANCE (Potentiometer type only) :	About 100k Ω
INSULATION RESISTANCE	: 500VDC, 20M Ω or more between measuring terminals and ground terminal 1000V DC, 20M Ω or more between power terminals and ground terminal 1000V AC, 20M Ω or more between measuring terminals and power terminals
WITHSTAND VOLTAGE	: 500VAC, 1 mm. between measuring terminals and ground terminal 1000VAC (100V power system), 1 mm. between power terminals and ground terminal 1500V AC (200V power system), 1 mm. between power terminals and ground terminal 1000VAC (100V power system), 1 mm. between measuring terminals and power terminals 1500VAC (200V power system), 1 mm. between measuring terminals and power terminals
ILLUMINATION	: Fluorescent lamp
POWER CONSUMPTION	: About 24VA

24-POINT RECORDER

MODEL EH □□□-24S

(24-POINT RECORDER WITH SELECT-OFF FUNCTION)

EH □□□-24N

(24-POINT RECORDER WITHOUT SELECT-OFF FUNCTION)

EH □□□-24

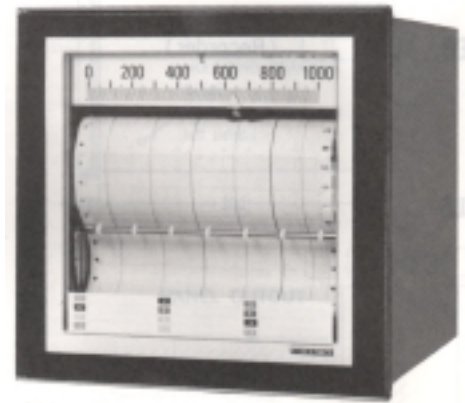
(24-POINT RECORDER WITH 12-POINT REPETITIVE PRINTING)

These instruments are designed as EH series electronic self-balancing recorders with a 180mm chart for measuring data at 24 points.

The recording system is divided into two

- (1) Dotting/digital printing system which prints dots at 24 points by combining 12-color coded dots with 2 kinds of dotting shapes and also performs digital printing of 0 to 24.
- (2) Dotting system which divides 24 points into 2 groups and identifies these groups from each other using indicator lamps with 12-color coded dot repetition.

The dotting/digital printing system is provided or not provided with the select-off function which permits the selective printing of desired measuring points only, while skipping undesired points, according to the instrument types.



MODEL EH100-24S

FEATURES

● INSTRUMENT WITH SELECT-OFF FUNCTION

This instrument permits the selective recording of optional points out of 24 points as desired, simply by manipulating the front switch, while skipping undesired measuring points in about 0.5 sec. Thus, it can reduce the dotting intervals with easy identification.

● INSTRUMENT WITHOUT SELECT-OFF FUNCTION

The instrument identifies 24 measuring points according to 12-color coded dots and dotting shapes and also records digital printing of it to 24. Thus, it can be easily read recording results.

The digital printing intervals can be changed by simple lever operation.

● INSTRUMENT WITH 12-POINT REPETITIVE PRINTING

Repetitive 12-color coded dotting is executed by dividing 24 points into two groups consisting of it to 12 points. and 13 to 24 points, which are identified with each other by the indicator lamps.

MODEL

EH □□□-24 □

RECORDING FUNCTION

- S : Select-off function is provided.
- N : Select-off function is not provided.
- Blank : 12-point repetition

ALARM

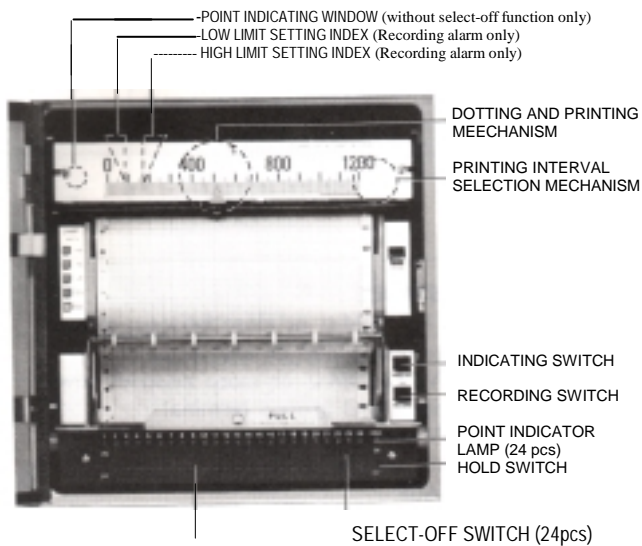
- 00 : No alarm function
- 26 : High or low limit alarm
- 36 : High and low limits alarms

MEASUREMENT

- 8: mV type
- 1: Thermocouple type
- 2 : Resistance thermometer type
- 3 : Thermistor type

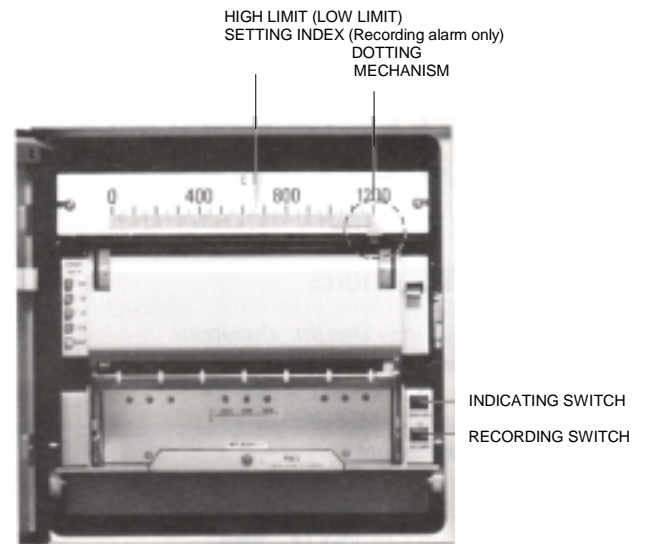
■ CONSTRUCTION

• Recorder with select-off function/without select-off function

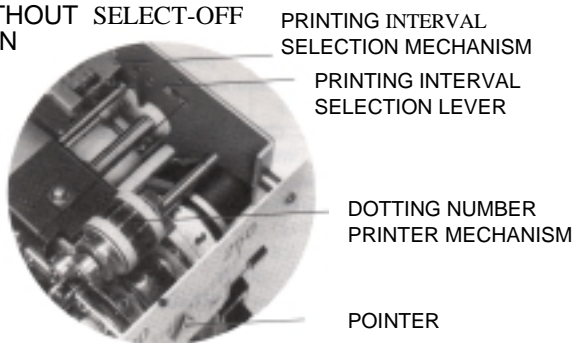


SELECT-OFF UNIT*
* Equipped for instrument with select-off function only.

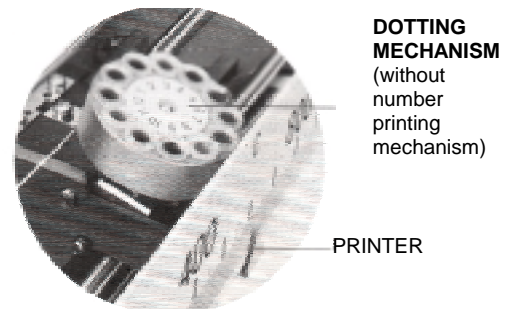
• 12P repetition



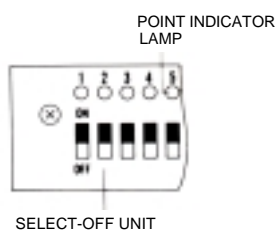
• WITH/WITHOUT SELECT-OFF FUNCTION



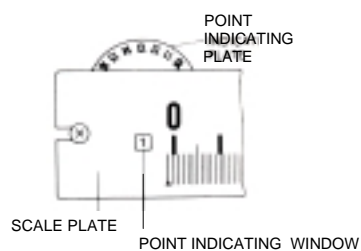
• 12P REPETITION



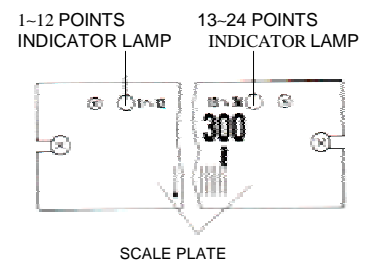
• WITH SELECT-OFF FUNCTION



• WITHOUT SELECT-OFF FUNCTION



• 12P REPETITION



RECORDING EXAMPLES

WITH/ WITHOUT SELECT- OFF FUNCTION



12P REPETITION



GENERAL SPECIFICATIONS

CASING : Front door — Diecast aluminum
Rear case — Steel plate

COATING : Door — Munsell N1.5 (black)
Rear case — Metallic silver

MOUNTING : Flush panelmount

INPUT SIGNAL:

mV — 3mV to 500mVDC span
1mV to 3mVDC span*
500mV to 100VDC span*

Thermocouple —
K, E, J, T ... 100°C span or more
R 450°C span or more
B 1000°C span or more
S 500°C span or more

Resistance thermometer —
30°C span or more (Pt 100)

Thermistor —
Lower than 250°C More than 30°C span
250~300°C More than 40°C span

SCALE LENGTH : 180mm

INDICATING ACCURACY : $\pm 0.5\%$ of input span

DEAD BAND : mV input : ± 0.25 of input span Thermocouple,
Resistance thermometer,
and thermistor input : $\pm 0.5\%$ of input span

BALANCING SPEED:
About 2.0 sec. (50Hz) or about 1.6sec. (60 Hz) for traveling F.S.

CHART : Fanfold type, Effective width 180mm
(Total width 200mm), Total length 20m

RECORDING POINTS : 24 points

RECORDING : 12-color ink pad dotting at 24 points and number print at each of 24 points

MEASURING POINT INDICATION:
1 to 24 points (Red lamp indication)

CHART SPEED : 12.5, 25, 50, 100mm/h and FAST

DOTTING INTERVAL : 6 sec. (50Hz) or 5 sec. (60Hz)

NUMBER PRINT SWITCHING PERIOD:

4-step selection ; every dot, every 25 dots,
POWER SUPPLY: 100, 110, 120, 130, 200, 220, 230
every 145 dots and no printing.

240VAC, 50/60Hz

ALLOWABLE VOLTAGE FLUCTUATION:

(+)10 to (-)10% of rated value

AMBIENT TEMPERATURE : (-)10 to 50 °C

AMBIENT HUMIDITY: 30 to 90% RH

EXTERNAL RESISTANCE (potentiometer type only) :

Connectable up to about 10k Ω

INPUT IMPEDANCE (potentiometer type only) :

About 100k Ω

INSULATION RESISTANCE:

500VDC, 20M Ω or more between measuring terminals and ground terminal

1000VDC, 20M Ω or more between power terminals and ground terminal
1000V DC, 20M Ω between measuring terminals and power terminals

WITHSTAND VOLTAGE

500VAC, 1 mm. between measuring terminals and ground terminal

1000VAC (100V power system), 1 mm. between power terminals and ground terminal

1500VAC (200V power system), 1 mm. between power terminals and ground terminal

1000VAC (100V power system), 1 mm. between measuring terminals and power terminals

1500VAC (200V power system), 1 mm. between measuring terminals and power terminals

WITH SELECT-OFF FUNCTION

WEIGHT : About 16kg

SKIP-UP TIME : 0.5 to 0.6 sec.

POWER CONSUMPTION : 30VA

Note : Fluorescent lamp is not provided with this instrument.

WITHOUT SELECT-OFF FUNCTION

WEIGHT : About 15kg

MEASURING POINT INDICATION

1 to 24 points indication on small window on the left side of scale plate

POWER CONSUMPTION : About 30VA

Note : Fluorescent lamp is not provided with this instrument.

12 REPETITION

WEIGHT : About 15kg

MEASURING POINT INDICATION:

1 to 12 points indication on points indicating plate by dotting mechanism and 12/13 to 24 points switching indicator lamps on the right and left sides of scale plate

RECORDING : 12-color ink pad dotting at 24 points

POWER CONSUMPTION : About 30VA

ILLUMINATION : Fluorescent lamp

Note : The function of number print switching period is not provided.

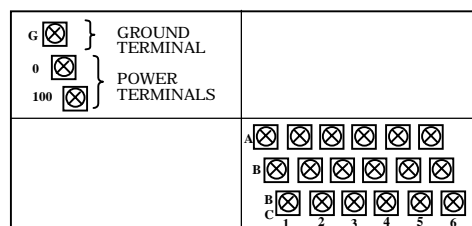
■ STANDARD SCALE

Input	Scale (°C)	Input	Scale (°C)
R	0 to 1600(20) 0 to 1400(10,20) 0 to 1200(10,20) 800 to 1600(10) 400 to 1600(10) 700 to 1400(5,10)	Pt	0 to 500(5) 0 to 400(5) 0 to 300(2,5) 0 to 250(2) 0 to 200(2) 0 to 150(1,2) 0 to 100(1) 0 to 50(0.5) 100 to 250(1) 50 to 100(0.5) (-)20 to 80(1) (-)40 to 80(1) (-)50 to 150(2) (-)50 to 100(2) H100 to 50(1)
B	0 to 1800(20)	mV	0 to 1(V) (0.01) 0 to 100(1) 0 to 10(0.1) 0 to 5(0.05) 1 to 5(V) (0.05) (-)5 to 5(0.1)
K	0 to 1200(10) 0 to 1000(10) 0 to 800(10) 0 to 600(5) 0 to 500(5) 0 to 400(5) 0 to 300(2,5) 0 to 200(2) 0 to 150(1,2) 600 to 1200(5,10) 100 to 250(1,2) (-)100 to 200(2,5)	Ter- mistor	0 to 200(2) 0 to 100(1) (-)50 to 50(1)
T	0 to 300(2,5) 0 to 200(2) 0 to 150(1,2) 0 to 100(1) (-)50 to 200(2) (-)50 to 150(2) (-)50 to 100(1,2) (-)50 to 50(1) (-)100 to 200(2)	Linear	0 to 100(1)
E	0 to 300(2,5) 0 to 200(2) 0 to 150(1,2) (-)50 to 150(2)		
J	0 to 600(5) 0 to 400(5) 0 to 300(2,5) 0 to 200(2)		

() shows 1 graduation.

■ TERMINAL BOARD

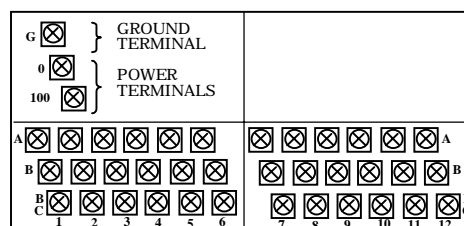
● 6-POINT RECORDER



INPUT TERMINALS

{ Thermistor input (A) (B) (C) terminals
 { Resistance thermometer input (A) (B) (B) terminals
 { Thermistor input (A) (B) (C) terminals

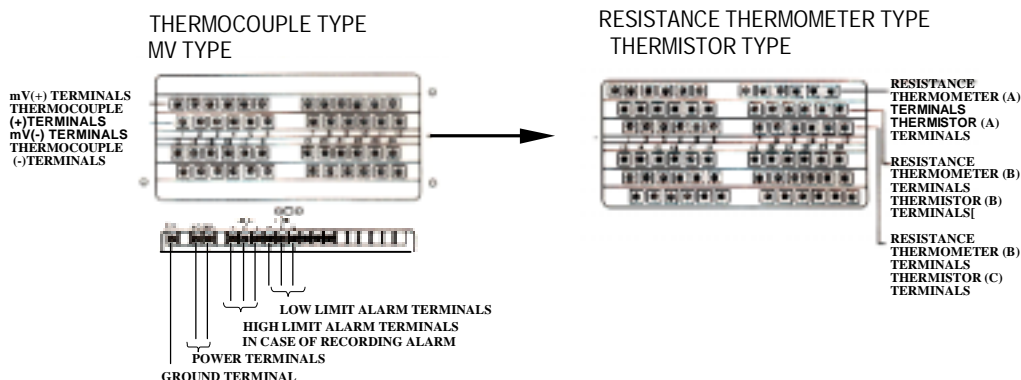
● 12-POINT RECORDER



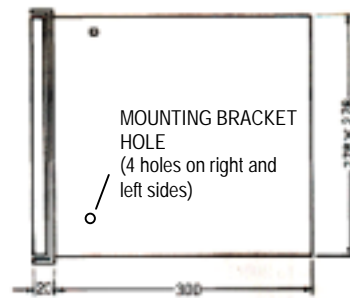
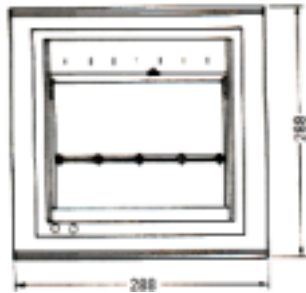
INPUT TERMINALS

{ Thermistor input (A) (B) (C) terminals
 { Resistance thermometer input (A) (B) (B) terminals
 { Thermistor input (A) (B) (C) terminals

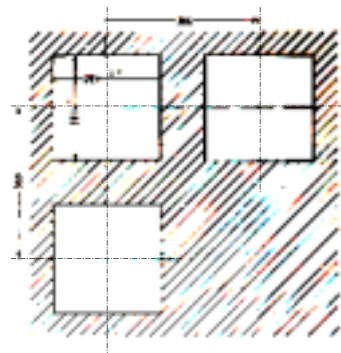
● 24-POINT RECORDER



■ EXTERNAL DIMENSIONS



PANEL CUTOUT



Unit : mm

Specifications subject to change without notice. Printed in Japan (I) 1999.

CHINO CORPORATION

32-8, KUMANO-CHO, ITABASHI-KU, TOKYO 173-8632

PHONE: +81-3-3956-2171

FAX: +81-3-3956-0915

E-mail: inter@chino.co.jp

Webside <http://www.chino.co.jp>