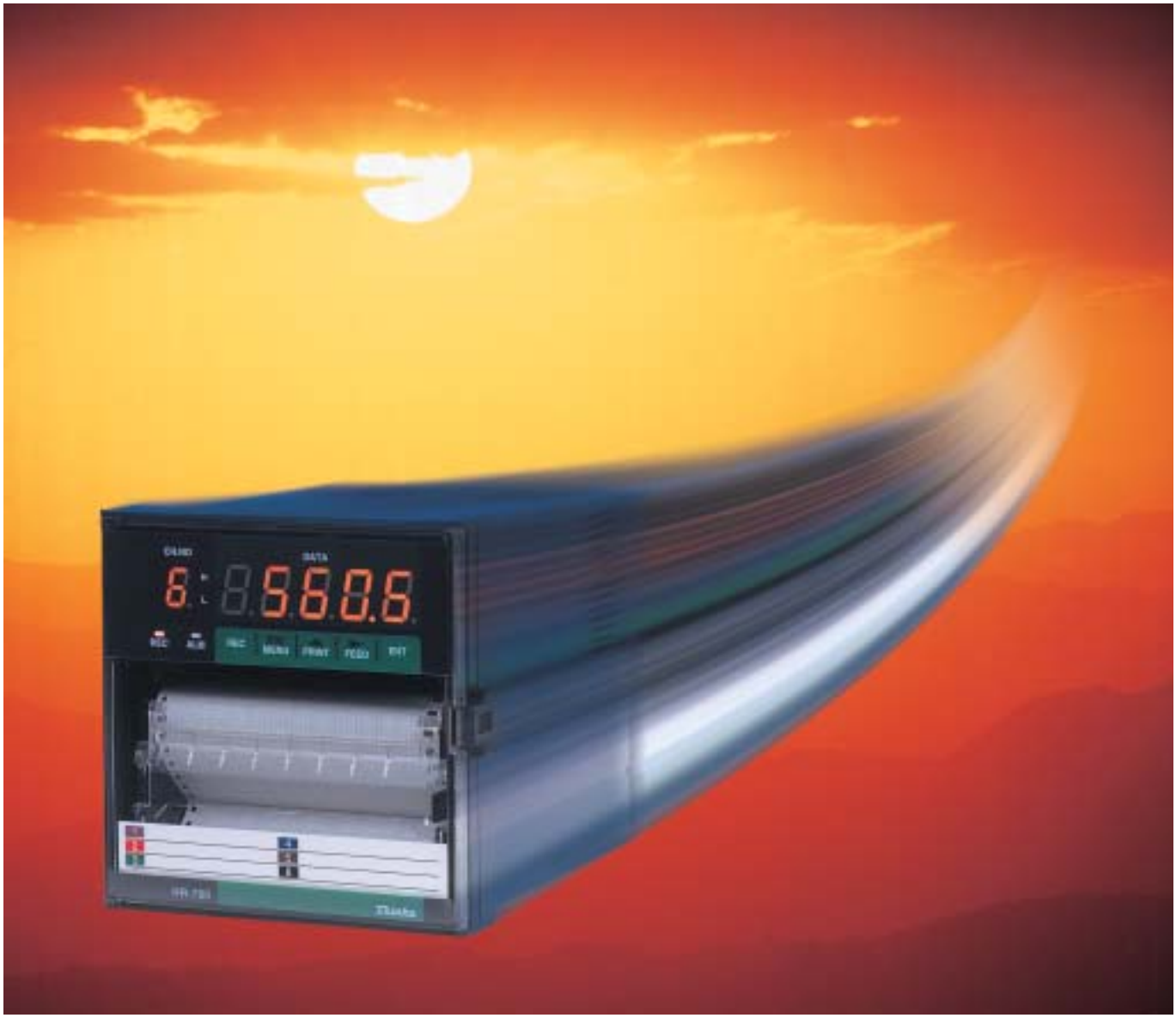
Hybrid Recorder

ISO 9001
KEMA
CERT. No.60033
DUTCH COUNCIL FOR ACCREDITATION

CE

c UL us

HR-700 Series



A smaller, lighter recorder
with RS-232C provided as standard.

Shinko

Hybrid Recorder

Compact: 150mm in depth, 1.5kg in weight

Available for small panel mounting

Communication interface is provided

Corresponds to FA (factory automation) system by communication interface, RS-232C (standard) or RS-485 (option)

Larger LED display

LED size: 18mm in height

Dust-proof · Drip-proof (IEC529 IP65)

Stands up to even harsh environments such as food related plants and [illegible]

Conformity standard

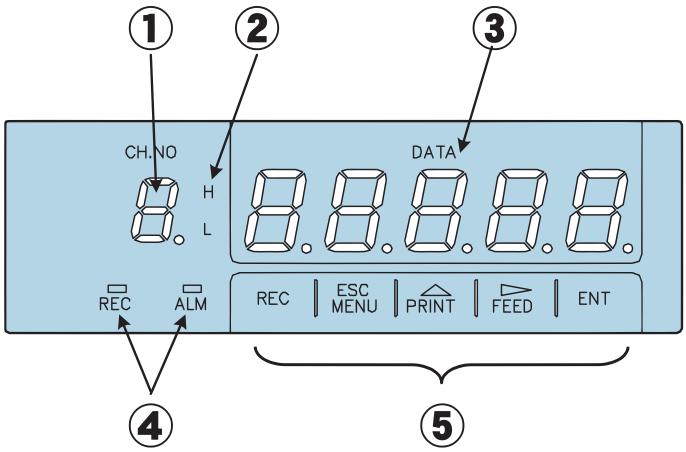
UL, CSA and CE marking

Model name

[illegible]		[illegible] (W144 × H144 × D150mm)	
Input point	1	1 point (Pen writing type only)	Multi-range system (Pen writing type only)
	3	3 point (Pen writing type only)	
	6	6 point (Dot printing type only)	
Option	CS	Communication function (RS-485)	
	RE1	D1 function (Pen writing type)	
	RE6	D1 function (Dot printing type)	
	EL	Paper empty detection function	
	L-13	Alarm output function (Pen writing type)	
	L-16	Alarm output function (Dot printing type)	

• When ordering, select the appropriate [illegible] from the table above [illegible]. When adding options, select the code using "[illegible]".

Display and operation keys



1. Channel number indicator
   Orange LED indicates Channel number 1 to 6.
2. Alarm indicator
   Red LED indicates the type of the alarm. [H] is it when the alarm is High, and [L] is it when the alarm is Low. Neither of them is it when there is no alarm.
3. Data indicator
   Indicates the process variable, time, setting value and setting item by orange indicator.
4. Status indicators
   The [REC] (orange) is it when recording. The [ALM] (red) is it when the alarm is being activated.
5. Operation keys
   Use these keys for setting and other operations.

Rated scale and accuracy

Input	Range	Measuring (Digital display)		Recording (analog)
		Measuring accuracy	Resolution	Recording accuracy
Thermocouple	K1 200.0 to 1300.0 t K2 200.0 to 600.0 t K3 200.0 to 300.0 t	K1: ± (0.1% of rdg + 0.1 t) K2: ± (0.1% of rdg + 0.4 t) K3: ± (0.1% of rdg + 0.3 t) However, Range: 200 to 100, ± (0.1% of rdg + 1 t)	0.1 t	Measuring accuracy ± (0.3% of recording span)
	E1 200.0 to 800.0 t	± (0.1% of rdg + 0.5 t)		
	E3 200.0 to 150.0 t	± (0.1% of rdg + 0.3 t)		
	J1 200.0 to 1100.0 t J2 200.0 to 400.0 t J3 200.0 to 200.0 t	J1, J1: ± (0.1% of rdg + 0.5 t) J2, J2: ± (0.1% of rdg + 0.4 t) J3: ± (0.1% of rdg + 0.3 t) However, Range: 200 to 100 t, ± (0.1% of rdg + 0.1 t)		
	R1 0.0 to 1600.0 t R2 0.0 to 1200.0 t S 0.0 to 1600.0 t R 0.0 to 1820.0 t	R1, S, R: ± (0.1% of rdg + 1 t) R2: ± (0.1% of rdg + 0.8 t) However, R1, R2, S: Range 0 to 100 t, ± 3.1 t Range 100 to 300 t, ± 1.5 t R: Range 400 to 600 t, ± 2 t (Accuracy is not guaranteed below 400 t)		
	N 0.0 to 1300.0 t	± (0.1% of rdg + 0.1 t)		
	E2 200.0 to 300.0 t	± (0.1% of rdg + 0.4 t)		
	C 0.0 to 2320.0 t	± (0.1% of rdg + 1 t)		
	PR40-20 0 to 1880 t	± (0.1% of rdg + 1 t) However, Range 0 to 300 t, ± 4.0 t Range 300 to 800 t, ± 3.0 t		
	Au-Fe 0 to 300 K	± (0.1% of rdg + 1 K)	0.1 K	
	PL-II 100.0 to 1390.0 t	± (0.1% of rdg + 0.1 t)	0.1 t	
	J1 200.0 to 400.0 t L 200.0 to 400.0 t T1 200.0 to 400.0 t T2 200.0 to 200.0 t	± (0.1% of rdg + 0.5 t) However, Range: 200 to 100 t, ± (0.1% of rdg + 0.1 t)		
RTD	Pt100-1 200.0 to 650.0 t	± (0.1% of rdg + 0.3 t)	0.1 t	Measuring accuracy ± (0.3% of recording span)
	Pt100-2 200.0 to 200.0 t	± (0.1% of rdg + 0.2 t)		
	JPt100-1 200.0 to 630.0 t	± (0.1% of rdg + 0.3 t)		
	JPt100-2 200.0 to 200.0 t	± (0.1% of rdg + 0.2 t)		
DC voltage	10 to 10mV	± (0.2% of rdg + 3 digits)	10 mV	
	0 to 20mV	± (0.2% of rdg + 3 digits)		
	0 to 50mV	± (0.2% of rdg + 2 digits)	100 mV	
	200 to 200mV	± (0.2% of rdg + 3 digits)		
	1 to 1V	± (0.1% of rdg + 3 digits)	1mV	
	10 to 10V	± (0.3% of rdg + 3 digits)	10mV	
	0 to 5V	± (0.2% of rdg + 2 digits)	1mV	

• In the case of DC current input, shunt resistor (sold separately) is needed.

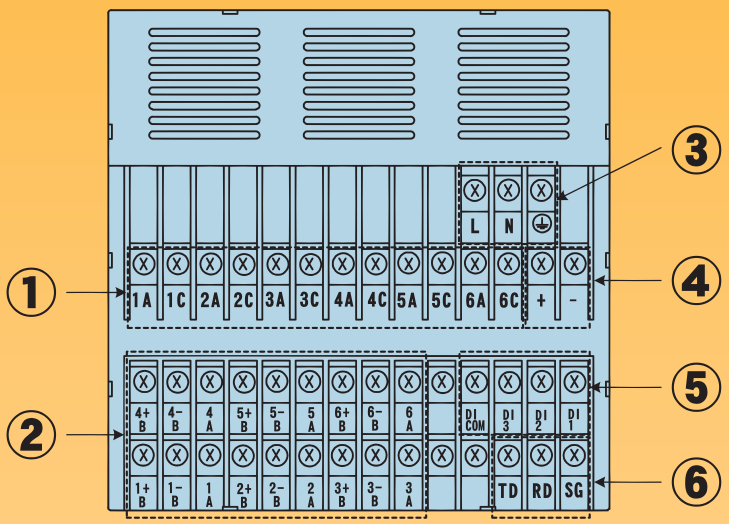
Standard specifications

Measuring point	When ordering, one type can be selected from the following. 1 point (Pen Aiming type) OR 2, 3 point (Pen Aiming type) OR 2, 3 point (Dot pointing type) OR 22
Input	Main module (Types are selectable.) • Thermocouple K, J, R, S, B, E, T, N (JIS '95/IEC 584), W, WRe3-WRe25, Au-Fe, U, L • RTD Pt100, JPt100 • DC voltage ±10mV/±20mV, 0 to 20mV/0 to 50mV, ±100mV/±1V/±2V, 1 to 5V, 0 to 10V • DC current 4 to 20mA/0 to 20mA (When it receives 250Ω of shunt resistor attached to the terminal.) Scale Refer to the next page. Input resistance When thermocouple, DC voltage (mV) range: Approx. 1MΩ or greater. When thermocouple, DC voltage (mV) range: Approx. 200kΩ or greater. When DC voltage (V): Approx. 1MΩ or greater When DC current (mA): 250Ω (External shunt resistor) Allowable input source resistance When thermocouple, DC voltage (mV) range: Approx. 1kΩ or less. When thermocouple, DC voltage (mV) range: Approx. 100Ω or less. When DC voltage (V): 1kΩ or less When RTD: 10Ω or less per wire
Display	Screen Digital indication, 4-segment display, LED 8 digits (Measured value display/Input value display, Measured value indication: 5 digits) Operation Character key, Numeric keypad, Cursor key, Clear/Reset key, Enter key, Alarm setting key Others RESET lights when resetting ALM Red LED lights when alarm function operates or when error occurs.
Performance	Digital conversion accuracy (23°C) ±0.1% of display (Thermocouple R, S and B: 0 to 100°C: ±3°C, 100 to 400°C: ±2°C) Reproducibility ±0.1% of display (Measuring accuracy ±0.1% of reproducible span) Zero drift Within 0.2% Thermocouple cold-junction compensation ±2°C (±4°F) (at 23°C (73°F)) Continuous cold-junction compensation ±1°C (±2°F) (at 23°C (73°F)) Interchange characteristics of thermocouple 2000hour at 400°C Insulation resistance 10MΩ or greater (500V DC) Dielectric strength 1kV AC for 1 minute Sampling cycle 20ms
Correcting	Offset range Within ±100mm, ±4inch, ±10°, Within ±10% of span Correcting method Pen Aiming type: Digital value correction (1 point fixed, 2 point Shift) Dot pointing type: Value set (2 points are selected) (No.1 Purpose: No.2 fixed, No.3 Shift, No.4 Gain, No.5 Broken thread, No.6 Filter) Planning method Pen Aiming type: Value set (1 point are selected) Dot pointing type: Value set (2 points are selected) Step response time Pen Aiming type: 1 second or less (63% response) Correcting period Pen Aiming type: Continuous correcting for each minute Dot pointing type: 12 seconds (Selectable from 0.5, 2.5, 10, 60) Offset speed Pen Aiming type: Selectable from 16 types of speed by time unit within the range of 0 to 1000min Dot pointing type: Selectable from 31 types of speed by time unit within the range of 0 to 500min Offset fixed accuracy Within 0.1% (Does not include expansion or shrink of paper. When it is fixed 1000min or greater.)
Alarm	Alarm output is not available. (ALM lights.) When alarm output is needed, Alarm output function (Option) is required. Setting points Maximum 4 points (2 points for High and Low limit alarm) can be set per channel. Hysteresis width 0.5% Setting accuracy The same as Digital display accuracy
Chart feed rate	10, 12.5, 15, 20, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 250, 300, 400, 500, 600, 750, 1000, 1200, 1500, 2000, 2400, 3000, 4000mm/h
Supply voltage	100 to 240V AC, ±10%, 50/60Hz (Automatic voltage switching) Max. 70VA
Power consumption	1 point: Approx. 25VA, 2 point: Approx. 28VA, 3 point: Approx. 32VA
Insulation resistance	Between each terminal and ground: 20MΩ or greater at 500V DC
Dielectric strength	1.5kV AC for 1 minute between power terminal and ground terminal 500V AC for 1 minute between input terminal and ground terminal 500V AC for 1 minute between input terminal and the other input terminal
Ambient surroundings	Temperature: 0 to 50°C, Humidity: 20 to 90% RH
Material	Cover: ABS resin coating resin (Black) Case: ABS resin coating resin (Transparent)
Color	Door panel and Body panel (DIC-GP: PG5)
Mounting method	Panel mounting (Vertical panel), Angle: Maximum inclination angle: Back side 0 to 30° or less
Weight	1/8 DIN: 1 point: Approx. 3kg, 2 point: Approx. 3.2kg, 3 point: Approx. 3.4kg
Added functions	Scaling, Square root, Span multiplication, Zero cancelling, Manual compensation measurement cancelling, Decimal point cancelling and indication, Log number setting, Copy function, Input offset setting, Operation, Operation parameter change, Security, Damper, Memory back up (Data backup is performed by the internal lithium battery. [Battery life: Approx. 10 years]) Setting (Password, Data is protected by password or key.) Alarm output point cancel, Planner start completion function
Accessories	Chart paper: 1 set/unit, Pen holder: 1 set/unit (Dot pointing type: 1, Pen Aiming type: 2), Cartridge pen (1 point type: 1, 2 point type: 2), Pen lead: 1, Mounting bracket: 1 set, Instruction manual: 1 copy

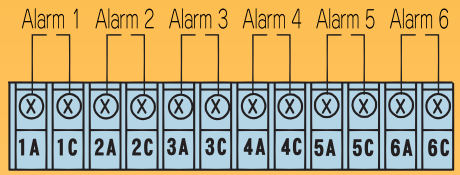
Optional specifications

Communication function [C05]	Communication baud rate: RS-232C, Data transfer rate: 1200, 2400, 4800, 9600
D/I function [D01] [D02]	Removable up to 2 points (Maximum) Chart feed Start, Stop Relay contact ON, Start: Relay OFF, Stop Changing chart speed Changing: Relay contact ON, Unit: Relay OFF Command point Point: Command: Arm contact ON (Up to 2 measurements / unit) Log point Point: Arm contact ON Date and time point Point: Date and time: Arm contact ON
Empty paper loop detection function [E1]	Detects when the paper loop is empty, stops recording, and performs the alarm output. (When ordering this option, [L03] or [L05] needs to be added.)
Alarm output function [L03] [L05]	Output function • Pen Aiming type, 2 points (Pair in option, 4 maximum) • Dot pointing type, 2 points (Pair in option, 4 maximum) Contact capacity 250VAC (Maximum) 3A (Resistance load) 30VDC (Maximum) 3A (Resistance load) 125VDC (Maximum) 0.3A (Resistance load)

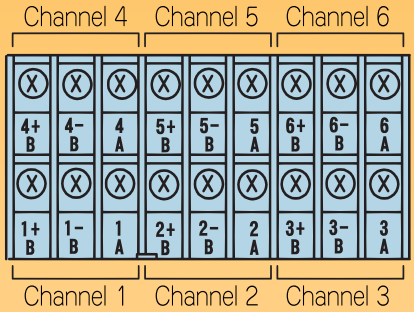
Terminal arrangement



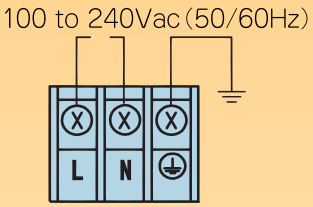
1 Alarm output terminal (Option)



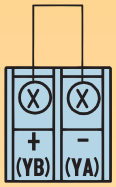
2 Input terminal



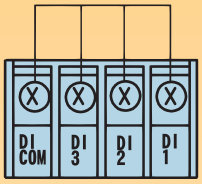
1 Power supply terminal



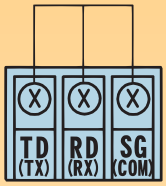
2 RS-485 Communication terminal (Option)



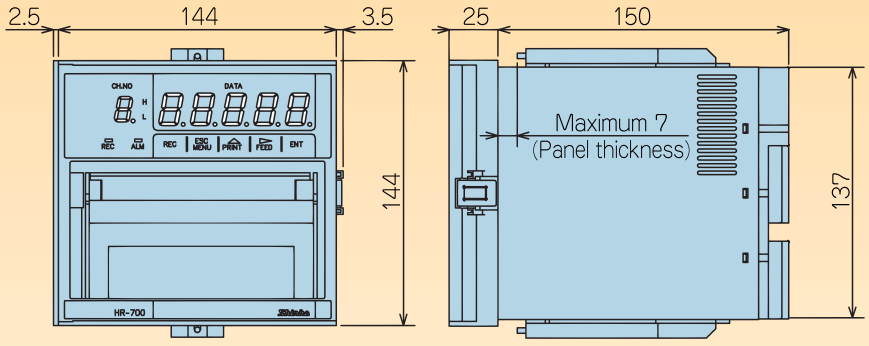
3 DI Function terminal (Option)



4 RS-232C Communication terminal

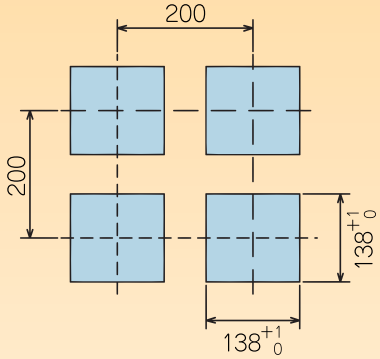


External dimension



Allowable inclination angle : Backward 0 to 30° or less

Panel cutout



• This catalog is as of December 2003, and specifications are subject to change without notice.
• When ordering, please contact our agency or the shop where you purchased the unit.

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