

# 250 mm (10") Hybrid Chart Recorder



RD5100 Series  
Starts at  
**\$6100**



- ✓ High Speed Scanning at 36 Points/Sec and High-Speed Recording
- ✓ High Accuracy of 0.05%
- ✓ Various Industrial Values Can be Measured at the Same Time with Selectable Ranges
- ✓ Superior Ease of Operation
- ✓ Engineering Port is Provided (USB)
- ✓ Anti-Noise Countermeasures
- ✓ Communication Interfaces are Available
- ✓ Recording and Calculation of Data Communication Input

RD5100 series chart recorders are 250 mm (10") hybrid recorders with multi-range input. Innovative design high performance recorder provides high accuracy,  $\pm 0.05\%$ ; high speed scanning, 0.1 second for 36 points and high speed recording, 1 line in 3 seconds. Simple operational keys and PC setting functions drastically improved usability of recording system.

## Specifications Input

**Number of Measuring Points:**

12, 24 and 36 points

**Input Types:** Universal (refer to the table of inputs)

**Range Setting:** Input type and range are set with front keys

**Scale Setting:** The minimum and maximum values and unit are set for each point with front keys

**Setting Range:** -30,000 to 30,000

**Decimal Points:** Optional setting

**Indication Accuracy:** Refer to the table of inputs on page S-35d

**Temperature Drift:** 0.1% FS/ 10°C

**Measuring Period:** 0.1 sec/channel

**Reference Junction Compensation Accuracy:**

**K, E, J, T, N, Platine II:**  $\pm 0.5^\circ\text{C}$  ( $33^\circ\text{F}$ ) or less [ $0^\circ\text{C}$  ( $32^\circ\text{F}$ ) or more when measuring]

**R, S, WRe5-WRe26, NiMo-Ni, U, L:**  $\pm 1.0^\circ\text{C}$  ( $34^\circ\text{F}$ ) or less [only when the ambient temperature is  $23^\circ\text{C}$  ( $73^\circ\text{F}$ )  $\pm 5^\circ\text{C}$  ( $41^\circ\text{F}$ )]

**Input Resolution:** Approx. 1/40,000 (standard range conversion)

**Burnout:** Select with/without burnout for each input

**Allowable Signal Source Resistance:**

**Thermocouple Inputs, DC Voltage Input (10 mV):** 500 $\Omega$  or less (without burnout)

**DC Voltage Input (Except 10 mV):** 100 $\Omega$  or less

**Resistance Thermometer Inputs:** 10 $\Omega$  or less/ line, three lines are common, Pt100, JPt100

**Input Resistance:**

**Thermocouple Input, DC Voltage Input:** Approx. 1M $\Omega$

**Maximum Input Applied Voltage:**  $\pm 20$  Vdc

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

**Maximum Common Mode Voltage:** 30 Vac (support LVD)

**Common Mode Rejection Ratio:** 130dB

RD5112, \$7200, shown smaller than actual size.

**Series Mode Rejection Ratio:** 50dB (only when the peak value of noise is below standard range)

**Terminal Board:** Detachable type, removable for wire connection

## Recording Specifications

**Recording System:** Raster scan system, 10-color wire dot printing

**Recording and Recording Color:**

**Analog Recording:** Color can be specified for each channel as required 10 colors (red, purple-red, orange, brown, green, yellow-green, blue-green, purple, purple-blue, black)

**Digital Recording and Logging Recording:** Black

**Message Printing:** Black

**List Printing:** Black

**Chart Paper:** Fan-fold type; overall width 318 mm (12.5"), total length 20 m (65.6'); effective recording width 250 mm (10") (analog recording)

**Chart Speed:** 1 to 1500 mm/H [in 1 mm/H steps]

**Skip Function:** Analog recording, digital recording and digital display can be set independently from recording slip

**Recording Compensation:** Independent setting of zero spans are available

## Display Specifications

**Digital Display:** Color LCD panel RGB (640 x 240 dot)

**Display Size:** 149.8 W x 57.4 mm H (5.8 W x 2.25" H)



**Setting Display:** Common to digital display\*

**Display Contents:** Digital display

**Channel Display:** One-point/multiple points continuous/sequential indication change

**Display Measuring Value of Each Channel:** One-point/multiple points continuous/sequential indication change

**Clock Display:** Hour/Minute/Second/Tag/Unit

**Chart Speed Display**

**Status Display:**

**Record On:** Lights during recording; LED

**Key Lock:** Lights during key lock

**Alarm:** Lights during alarm activated; LED

**Chart End:** Lights just before record ending

**Fail:** Lights during unit abnormal time

\* Sharing LED and setting display

## Alarm Specifications

**Alarm Display:** Occurrence CH No, data is displayed in red when alarm occurs

**Alarm Types:** High limit, low limit

**Alarm Setting Method:** Individual setting for each point four levels/channels

**Alarm Output:** See option specification

## Setting and Operational Specifications

**Key Types, Operation:**

**Func1:** Switching each function

**Func2:** Switching each function

**Enter:** Setting a change of parameter for each mode

**Menu:** Specifying each setting function

**Esc:** Used to escape in the middle of setting

**▲:** Used to switch channels when specifying the parameter on cursor

**▼:** Used to switch channels when specifying the parameter on cursor

**▶:** Used to move cursor to the right

**◀:** Used to move cursor to the left

**Rec:** Analog recording, digital recording, printing, switching chart ON/OFF

**DataP:** Digital recording of latest data

**Feed:** Fast-forwarding chart paper

**Shift:** Specifying key

**. \_ =:** Setting characters of ". \_ ="

**@ + -:** Setting characters of "@ + -"

**0 \* /:** Setting parameter value 0 and character of "\*" / "

**1ABC:** Setting parameter value 1 and character of "ABC "

**2DEF:** Setting parameter value 2 and character of "DEF"

**3GHI:** Setting parameter value 3 and character of "GHI"

**4JKL:** Setting parameter value 4 and character of "JKL"

**5MNO:** Setting parameter value 5 and character of "MNO"

**6PQR:** Setting parameter value 6 and character of "PQR"

**7STU:** Setting parameter value 7 and character of "STU"

**8VWX:** Setting parameter value 8 and character of "VWX"

**9YZ:** Setting parameter value 9 and character of "YZ"

**Recording Operation:**

**Record On/Off:** Recording operation ON/OFF\*

**Data Print:** Printing measuring data\*

**Feed:** Fast-forwarding chart paper

\* Two actions are taken to operate

## General Specifications

**Rated Power Voltage:** 100 to 240 Vac (universal power supply) 50/60Hz

**Maximum Power Consumption:** 100V A

**Reference Operating Condition:**

**Ambient Temperature/Humidity Range:** 21 to 25°C (70 to 77°F), 45 to 65% RH

**Power Voltage:** 90 to 264V

**Power Frequency:** 50/60Hz ±2%

**Attitude:** Forward/Backward/left/right within 3°

**Warm-Up Time:** 1 hour or longer

**Normal Operating Condition:**

**Ambient Temperature/Humidity Range:** 0 to 40°C (32 to 104°F), 20 to 80% RH

**Power Voltage:** 90 to 264V

**Power Frequency:** 50/60Hz ±2%

**Attitude:** Forward/backward/left/right within 3°

**Transportation Condition:** At the packed condition on shipment from our factory

**Ambient Temperature/Humidity**

**Range:** -20 to 60°C (-4 to 140°F), 5 to 90%RH (no dew condensation)

**Vibration:** 10 to 60 Hz, 4.9 m (16")/S2 (0.5G or less)

**Impact:** 392 m (1.3')/S2 (approx. 40G or less)

**Storage Condition:**

**Ambient Temperature:** -20 to 60°C (-4 to 140°F), 5 to 90% RH (no dew condensation)

**Working Condition:**

**Working Temperature Range:**

0 to 40°C (32 to 104°F)

**Working Humidity Range:**

20 to 80% RH

**Power Failure Protection:**

Programmed parameters stored into EEPROM memory clock circuit sustained for 5 years or longer by a lithium battery (at the operation of 8 hours or longer per day)

**Insulation Resistance:**

**Between Primary Terminals and Protective Conductor Terminals:**

20MΩ or more at 500 Vdc

**Between Secondary Terminals and Protective Conductor Terminals:**

20MΩ or more at 500 Vdc

**Between Primary Terminals and Secondary Terminals:**

20MΩ or more at 500 Vdc

**Dielectric Strength:**

**Between Primary Terminals and Protective Conductor Terminals:**

1 minute at 1500 Vac

**Between Secondary Terminals and Protective Conductor Terminals:**

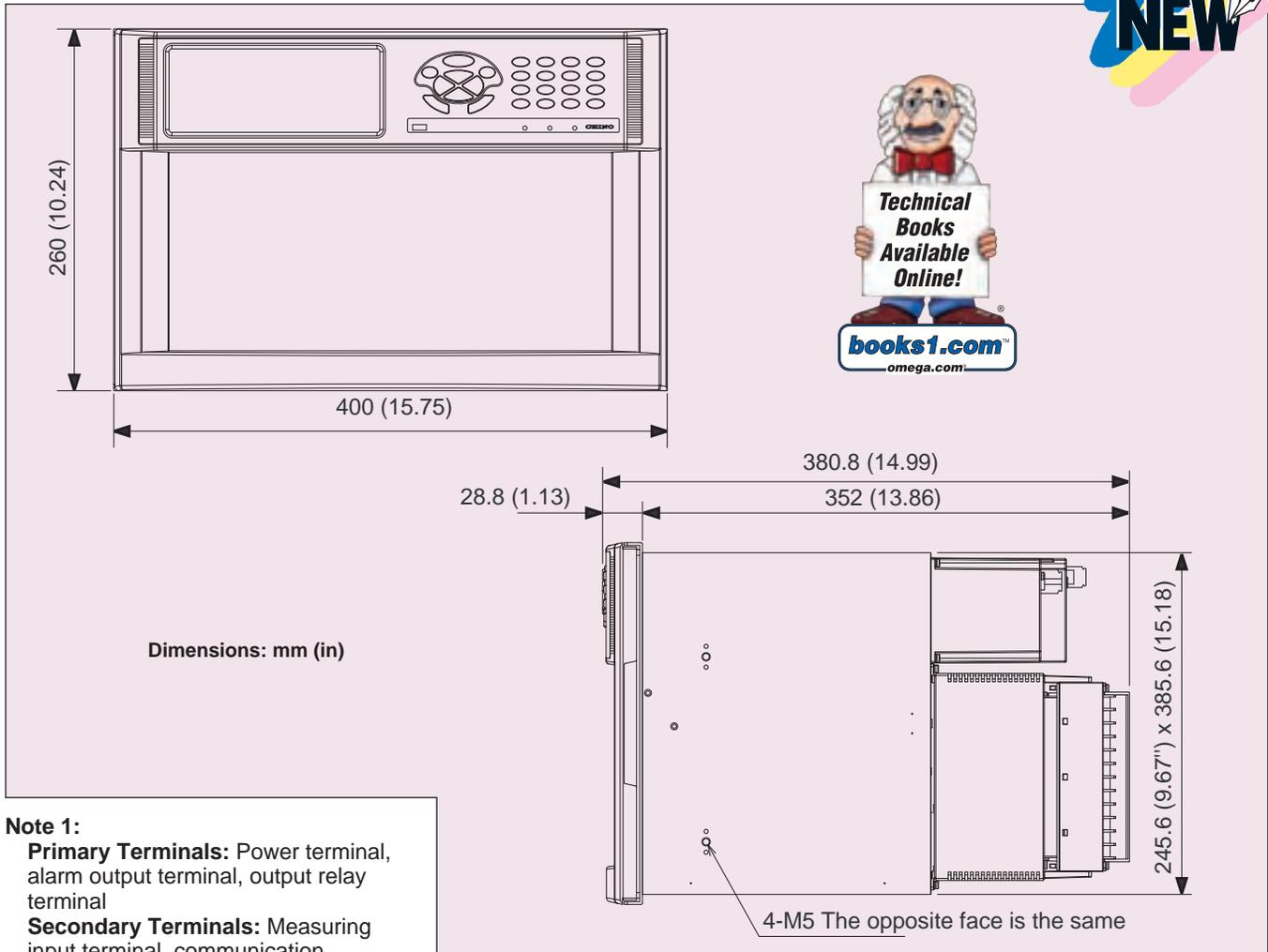
1 minute at 500 Vac

**Between Primary Terminals and Secondary Terminals:**

1 minute at 1500 Vac

## Option Specifications

Options	Comments
<b>External Drive</b>	Chart 3-speed, chart stop, data printing, list printing, message printing 5 types, operation recording
<b>Alarm Output</b>	Mechanical relay: 12, 24, 36 points output, max contact capacity of 100 to 240 Vac, 3 A resistance load
<b>External Drive</b>	Chart 3-speed, chart stop, data printing, list printing, message printing 5 types, operation recording
<b>Comm Interface</b>	RS-422A or RS-485 + Ethernet + 1a contact output (1a contact output is contact output of mecha relay)
<b>Chart End Output</b>	Chart End relay output when chart paper ended (communication interface is required)
<b>Fail Output</b>	Fail relay output when abnormality (communication interface is required)
<b>Receiving Resistance for Current Input</b>	250Ω (for 20 mA) or 100Ω (for 50 mA) are externally mounted to measure current



**Note 1:**

**Primary Terminals:** Power terminal, alarm output terminal, output relay terminal

**Secondary Terminals:** Measuring input terminal, communication terminal, external drive terminal

**Note 2:** When testing insulation resistance and dielectric strength, please short-circuit every terminals of primary and secondary terminals before the test; test without short-circuiting terminals can damage instruments

**Case Assembly Material:**

- Door (Frame):** ABS resin
- Front Panel:** Soda glass
- Back Case:** Normal steel

**Color:**

- Door (Frame):** White (equivalent to DIC546 ½)
- Front Panel:** Transparent
- Back Case:** White (equivalent to DIC546 ½)

**Mounting:** Panel mounting

**Weight:** About 15 kg (33 lb) (full option)

**Dimensions:** 400 W x 260 H x 300 mm D (15.7 W x 10.2 H x 11.8" D)

**Panel Cut Dimensions:** 388 x 248 mm (15.2 x 9.7")

**Terminal Screws:**

- Measuring Input, Alarm Terminals:** M3.5
- Power, Protective Conductor Terminal, External Drive Terminal, Communication Terminal:** M4

**Chart Paper Illumination:** White LED

**Communication Interface Specifications**

		With Communication Interface	Without Communication Interface
Ethernet	Specification	Ethernet10BASE-T/100BASE-T, automated recognition, TCP, IP, HTTP, exclusive protocol	—
	Function	Data display, parameter setting, with browser data display, parameter setting on exclusive application	—
RS-422A RS-485	Specification	RS-422A, RS-485, Communication protocol: MODBUS communication specification: 9600 bps to 19200 bps 7E1 to 8N2	—
	Function	Data display and parameter setting using exclusive application	—
USB	Specification	Inside of front door, USB1.1, full speed 12 mbps, bulk transfer, Control transfer	
	Function	Parameter setting for exclusive application	



## Communication Interface Specifications

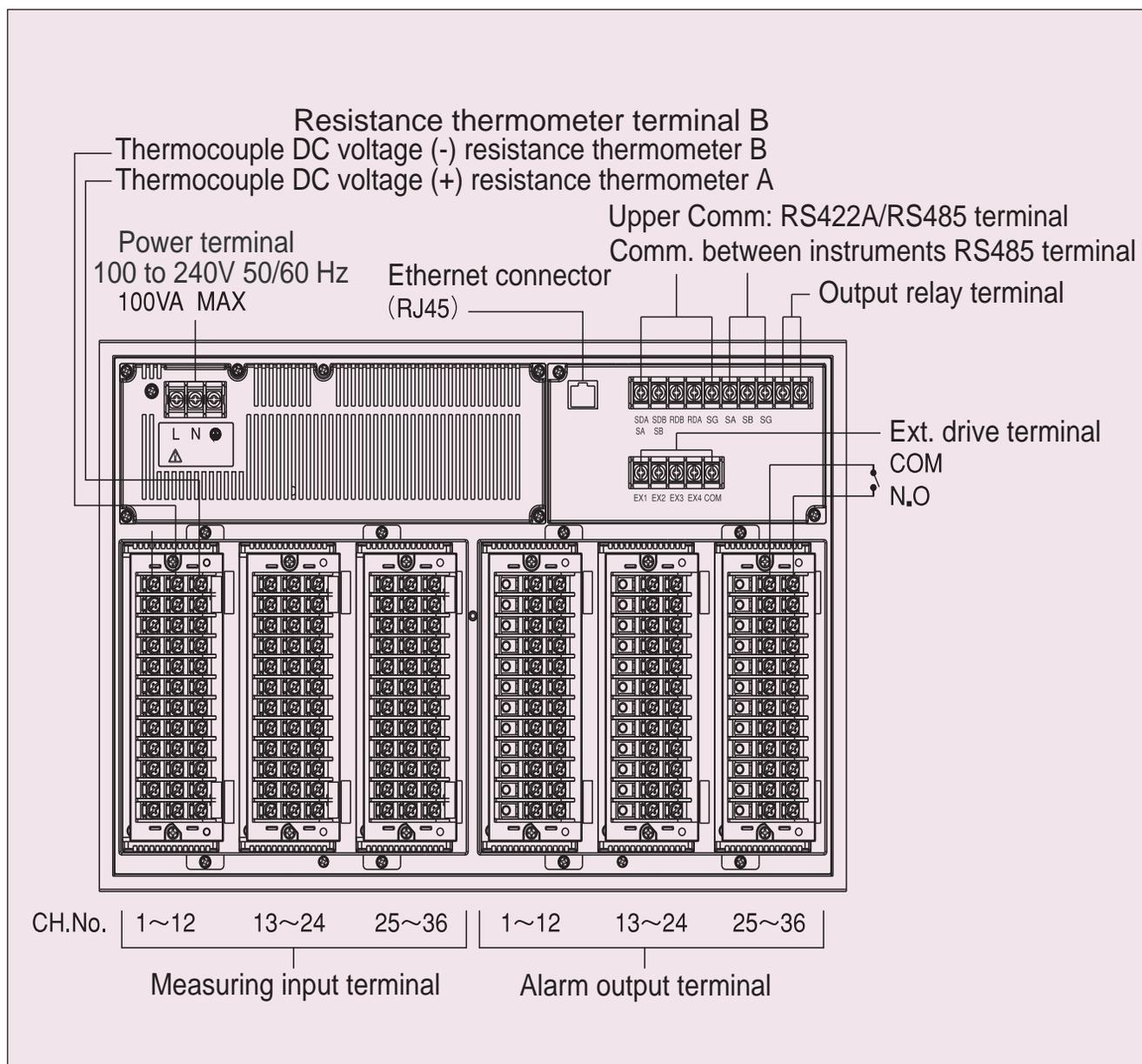
Input Signals	Measuring Ranges	Reference Ranges	Accuracy Ratings	Display Resolutions	
DC Voltage	-10.0 to 10.0 mV	±10 mV	±0.05% ±1 digit	1 µV	
	-20.0 to 20.0 mV	±20 mV			
	-40.0 to 40.0 mV	±40 mV		10 µV	
	-80.0 to 80.0 mV	±80 mV			
	-1.25 to 1.25V	±1.25V		100 µV	
	-2.5 to 2.5V	±2.5V			
	-5.0 to 5.0V	±5V			
	-10.0 to 10.0V	±10V			
Thermocouples	K	-200 to 500°C (-328 to 932°F)	±20 mV	±0.05% ±0.5°C (±33°F)	0.1°C (32°F)
		-200 to 900°C (-328 to 1652°F)	±40 mV		
		-200 to 1370°C (-328 to 2498°F)	±80 mV		
	E	-200 to 250°C (-328 to 482°F)	±20 mV	±0.05% ±0.7°C (±33.2°F)	
		-200 to 500°C (-328 to 932°F)	±40 mV		
		-200 to 900°C (-328 to 1652°F)	±80 mV		
	J	-200 to 350°C (-328 to 662°F)	±20 mV	±0.05% ±0.7°C (±33.2°F)	
		-200 to 700°C (-328 to 1292°F)	±40 mV		
		-200 to 1200°C (-328 to 2192°F)	±80 mV		
	T	-200 to 400°C (-328 to 752°F)	±20 mV	±0.05% ±0.7°C (±33.2°F)	
	R B	0 to 1760°C (32 to 3200°F)	±20 mV	±0.05% ±1°C (±34°F)	
		0 to 1300°C (32 to 2372°F)	±20 mV		
	N	0 to 600°C (32 to 1112°F)	±20 mV	±0.1% ±0.1°C (±32°F)	
		0 to 1000°C (32 to 1832°F)	±40 mV		
		0 to 1300°C (32 to 2372°F)	±80 mV		
	W-WRe26	0 to 2315°C (32 to 4199°F)	±80 mV	±0.1% ±1°C (±34°F)	
	PrRh40- PtRh20	0 to 1888°C (32 to 3430°F)	±20 mV		
	NiMo-Ni	-50 to 1310°C (-58 to 2390°F)	±80 mV		
	Platinel II	0 to 500°C (32 to 932°F)	±20 mV	±0.1% ±0.1°C (±32°F)	
		0 to 950°C (32 to 1742°F)	±80 mV	±0.1% ±1°C (±34°F)	
0 to 1395°C (32 to 2543°F)		±80 mV			
U	-200 to 350°C (-328 to 662°F)	±20 mV	±0.05% ±1°C (±34°F)		
	-200 to 600°C (-328 to 1112°F)	±40 mV			
L	-200 to 350°C (-328 to 662°F)	±20 mV	±0.05% ±1°C (±34°F)		
	-200 to 700°C (-328 to 1292°F)	±40 mV			
	-200 to 900°C (-328 to 1652°F)	±80 mV			
RTDs	Pt100	-50 to 50°C (-58 to 122°F)	50Ω	±0.05% ±0.3°C (±32.5°F)	0.1°C (32°F)
		-100 to 130°C (-148 to 266°F)	100Ω		
		-200 to 250°C (-328 to 482°F)	200Ω		
		-200 to 550°C (-328 to 1022°F)	300Ω		
	JPt100	-50 to 50°C (-58 to 122°F)	50Ω		
		-100 to 130°C (-148 to 266°F)	100Ω		
		-200 to 250°C (-328 to 482°F)	200Ω		
		-200 to 550°C (-328 to 1022°F)	300Ω		

**Note 1:** Ambient temperature/humidity range: 23°C ±2°C

**Note 2:** For thermocouple input, the accuracy of reference junction compensation is not included with the accuracy ratings.

**Note 3:** Accuracy rating is the percentage of measuring range K, E, J, T, R, S, B, N: IEC584, JIS C 1602-1995; W-Wre26, Wre5-WRs26, PtRh40-PtRh20, NiMo-Ni, Platinel?: ASTM Vol.14.03; U(Cu-CuNi), L(Fe-CuNi): DIN43710; Pt100: IEC751, JIS C 1604-1997; JPt100: JIS C 1604-1981, JIS C 1606-1986

## Terminal Board



### Exceptions of Accuracy Ratings

Input Signals	Measuring Ranges	Accuracy Ratings
K, E, J, T, L	-200 to 0°C (-328 to 32°F)	±0.2% ±1 digit
R, S	0 to 400°C (32 to 752°F)	
B	0 to 400°C (32 to 752°F)	None
	400 to 800°C (752 to 1472°F)	±0.15% ±1 digit
U	-200 to 0°C (-328 to 32°F)	±0.3% ±1 digit
W-WRe26	0 to 300°C (32 to 572°F)	
PrRh40-PtRh20	0 to 300°C (32 to 572°F)	±1.5% ±1 digit
	300 to 800°C (572 to 1472°F)	±0.8% ±1 digit
NiMo-Ni	-50 to 100°C (-58 to 212°F)	±0.2% ±1 digit

**Note:** Refer to thermocouple input accuracy is calculated based on standard range, see page S-35d.



1 channel display



12 channels simultaneous display



Engineering and USB port



36 channels simultaneous display



Operation key pad

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**To Order (Specify Model Number)**

Model No.	Price	Description
RD5110	\$6100	250 mm (10") 12-points hybrid chart recorder
RD5120	7100	250 mm (10") 24-points hybrid chart recorder
RD5130	8100	250 mm (10") 36-points hybrid chart recorder
RD5111	6770	250 mm (10") 12-points with 12 alarms hybrid chart recorder
RD5112	7200	250 mm (10") 12-points with 24 alarms hybrid chart recorder
RD5121	7770	250 mm (10") 24-points with 12 alarms hybrid chart recorder
RD5122	8200	250 mm (10") 24-points with 24 alarms hybrid chart recorder
RD5131	8770	250 mm (10") 36-points with 12 alarms hybrid chart recorder
RD5132	9200	250 mm (10") 36-points with 24 alarms hybrid chart recorder
RD5133	9650	250 mm (10") 36-points with 36 alarms hybrid chart recorder
RD5110-COMM	6540	250 mm (10") 12-points hybrid chart recorder with communications
RD5120-COMM	7540	250 mm (10") 24-points hybrid chart recorder with communications
RD5130-COMM	8540	250 mm (10") 36-points hybrid chart recorder with communications

Comes with operator's manual.

Ordering Example: RD5130-COMM, 250 mm (10") hybrid chart recorder with communications output, \$8540.

**Accessories**

Model No.	Price	Description
RD5100-RC	\$220	10-color ribbon cassette, package of 5
RD5100-CP-0/100	315	Z-fold chart paper 250 mm x 20 m (9.8" x 65.6'), case of 15
RD9900-ZAILA	110	ZAILA data analysis software
RD2800-PASS	270	Parameter programming software
RD2800-KIDS	270	Data acquisition software
GE-0544	73	Reference Book: An Introduction to Fuzzy Control



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