

Hybrid Chart Recorder

250 mm (10")

RD5100 Series



- ✓ 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



RD5110

CH	INPUT	DATA	AC	CHI	IN HI	DATA	UNIT
001	MV	262.6	*001	007	MV	326.5	100V
002	MV	272.2	*002	008	MV	336.6	*008
003	MV	283.0	*003	009	MV	346.3	*009
004	MV	297.6	+004	010	MV	356.3	*010
005	MV	305.0	+005	011	MV	366.5	*011
006	MV	315.6	+006	012	MV	376.6	*012

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, Platel II: $\pm 0.5^\circ\text{C}$ (33°F) or less [0°C (32°F) or more when measuring]

R, S, WRe5-WRe26, NiMo-Ni, U, L: $\pm 1.0^\circ\text{C}$ (34°F) or less [only when the ambient temperature is 23°C (73°F) $\pm 5^\circ\text{C}$ (41°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 Ω or less (without burnout)

DC Voltage Input (Except 10 mV): 100 Ω or less

Resistance Thermometer Inputs: 10 Ω or less/ line, three lines are common, Pt100, JPt100

Input Resistance:

Thermocouple Input, DC Voltage Input: Approx. 1M Ω

Maximum Input Applied Voltage: ± 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

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:

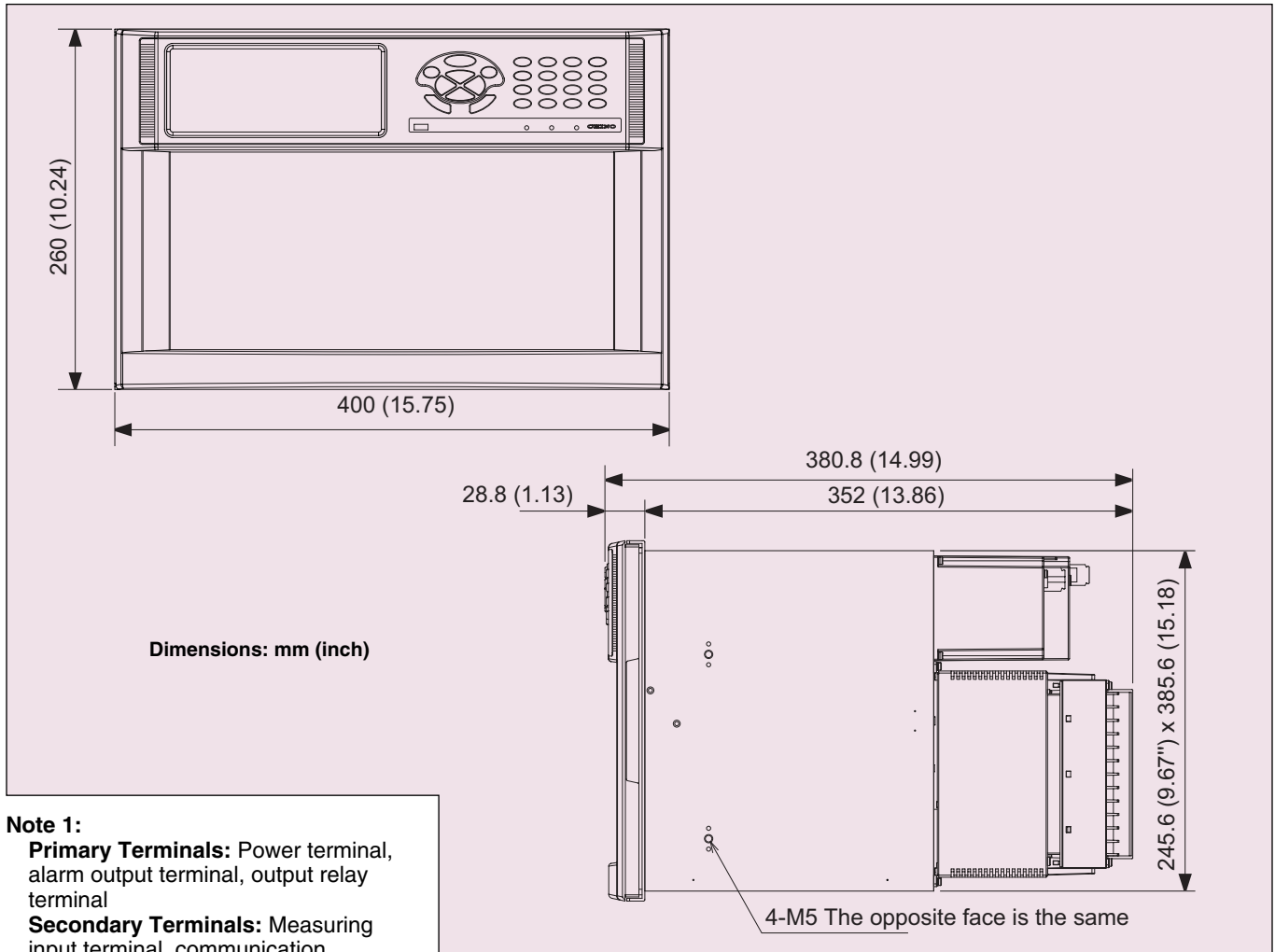
1 minute at 500 Vac

Between Primary Terminals and Secondary Terminals:

1 minute at 1500 Vac

Option Specifications

Options	Comments
External Drive	Chart 3-speed, chart stop, data printing, list printing, message printing 5 types, operation recording
Alarm Output	Mechanical relay: 12, 24, 36 points output, max contact capacity of 100 to 240 Vac, 3 A resistance load
External Drive	Chart 3-speed, chart stop, data printing, list printing, message printing 5 types, operation recording
Comm Interface	RS422A or RS485 + Ethernet + 1a contact output (1a contact output is contact output of mecha relay)
Chart End Output	Chart End relay output when chart paper ended (communication interface is required)
Fail Output	Fail relay output when abnormality (communication interface is required)
Receiving Resistance for Current Input	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	—
RS422A RS485	Specification	RS422A, RS485, 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

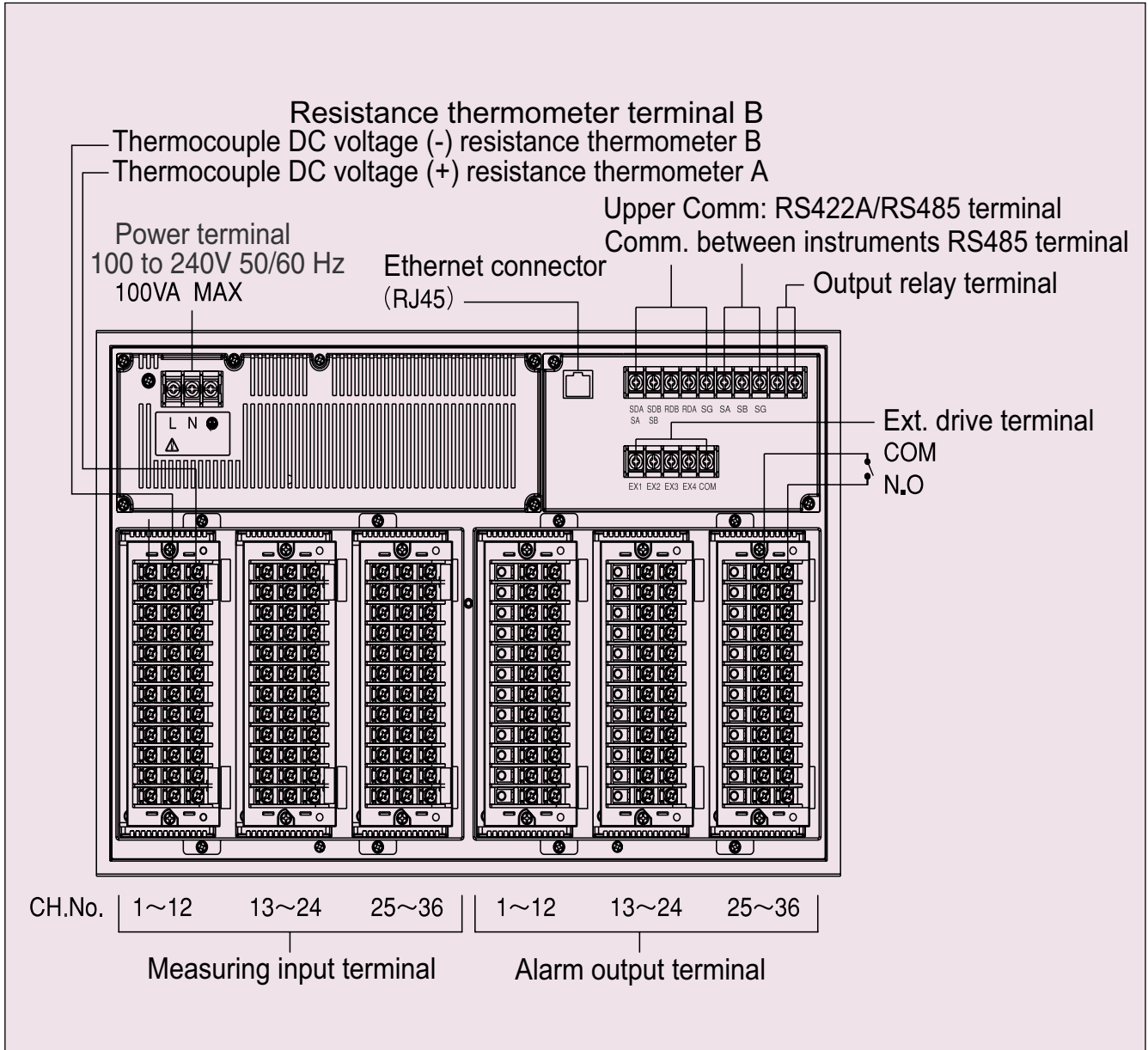
Input Signals		Measuring Ranges	Reference Ranges	Accuracy Ratings	Display Resolutions
DC Voltage		-10.0 to 10.0 mV	±10 mV	±0.05% ±1 digit	1 μV
		-20.0 to 20.0 mV	±20 mV		10 μV
		-40.0 to 40.0 mV	±40 mV		100 μV
		-80.0 to 80.0 mV	±80 mV		1 mV
		-1.25 to 1.25V	±1.25V		
		-2.5 to 2.5V	±2.5V		
		-5.0 to 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	0 to 1760°C (32 to 3200°F)	±20 mV	±0.05% ±1°C (±34°F)	
	B	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 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 previous page.



1 channel display



OMEGACARESM extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARESM covers parts, labor and equivalent loaners.



12 channels simultaneous display



Engineering and USB port



36 channels simultaneous display



Operation key pad

To Order

Model No.	Description
RD5110	250 mm (10") 12-points hybrid chart recorder
RD5120	250 mm (10") 24-points hybrid chart recorder
RD5130	250 mm (10") 36-points hybrid chart recorder
RD5111	250 mm (10") 12-points with 12 alarms hybrid chart recorder
RD5112	250 mm (10") 12-points with 24 alarms hybrid chart recorder
RD5121	250 mm (10") 24-points with 12 alarms hybrid chart recorder
RD5122	250 mm (10") 24-points with 24 alarms hybrid chart recorder
RD5131	250 mm (10") 36-points with 12 alarms hybrid chart recorder
RD5132	250 mm (10") 36-points with 24 alarms hybrid chart recorder
RD5133	250 mm (10") 36-points with 36 alarms hybrid chart recorder
RD5110-COMM	250 mm (10") 12-points hybrid chart recorder with communications
RD5120-COMM	250 mm (10") 24-points hybrid chart recorder with communications
RD5130-COMM	250 mm (10") 36-points hybrid chart recorder with communications

Comes complete with operator's manual.

Ordering Example: RD5110, 250 mm (10") hybrid chart recorder.

OCW-3, OMEGACARESM extends standard 2-year warranty to a total of 5 years.

Accessories

Model No.	Description
RD5100-RC	10-color ribbon cassette, package of 5
RD5100-CP-0/100	Z-fold chart paper 250 mm x 20 m (9.8" x 65.6'), case of 15
RD9900-ZAILA	ZAILA data analysis software
RD2800-PASS	Parameter programming software
RD2800-KIDS	Data acquisition software