

# Paperless Recorder

## with Standard Ethernet and USB Communications Interface

### RD9900 Series



- ✓ Employing Clear 144 mm (5.67") TFT Color LCD
- ✓ Large Capacity of Data Memory and Various Recording Method
- ✓ Multi-Points Recording with High-Speed/Accuracy
- ✓ Easy Operating and Programming Without Manuals
- ✓ LAN Network Capability
- ✓ Safety System and Reliability
- ✓ Analyzing/Data Acquisition Application Software

RD9900 Series are network-compatible paperless recorders with high performance and high operating function employed high visibility 5.6" TFT color LCD. High speed of sampling rate 100 ms for 12 points and high accuracy of  $\pm 0.1\%$  were realized, and measured data is stored into internal memory and maximum 2 GB compact flash card. As it can be monitored by a web browser display on several computers on intranet or internet, FTP transfer of data file and e-mail notification are also available. The recorder can be used for various applications such as data management, research, development, remote and wide range monitoring by utilizing internet environment.

### Specifications

#### Input Specifications

**Number of Measuring Points:**

- RD9906: 6 points
- RD9912: 12 points

**Input Types:** Universal (refer to the table of inputs for RD200/2800)

**Accuracy Rating:** Refer to the table of inputs for RD200/RD2800 at [omega.com/rd200 rd2800](http://www.rometec.com/rd200_rd2800)



RD9912 shown smaller than actual size.

#### Reference Junction Compensation

**Accuracy:** Type K, E, J, T, N, Platine II;  $\pm 0.5^\circ\text{C}$  or less; R, S, NiMo-Ni, CR-AuFe, WRe5-WRe26, W-Wre, U, L;  $\pm 1.0^\circ\text{C}$  or less

**Sampling Rate:** Approximately 100 ms for all points

**Burnout:** Disconnection of input signal is detected on thermocouple and resistance thermometer input; UP/DOWN disable is selectable for each input

**Scaling:** Range/scale is selectable when DC voltage/current is programmed

**Digital Filter:** Programming FIR filter for each point (common to all points)

#### Allowable Signal Source Resistance:

**Thermocouple Input (Burnout Disable)/DC Voltage Input**

( $\pm 2\text{V}$  or less): 1 k $\Omega$  or less

**DC Voltage Input ( $\pm 5$  to  $\pm 50\text{V}$ ):** 100  $\Omega$  or less

**Resistance Thermometer:** Per wire 10  $\Omega$  or less (same resistance for 3 wires)

**Input Resistance:** DC voltage, thermocouple input; approximately 1 M $\Omega$

**Maximum Input Voltage:** DC voltage input ( $\pm 2\text{V}$  or less)/thermocouple input (burnout disable),  $\pm 10\text{ Vdc}$

**DC Voltage Input ( $\pm 5$  to  $\pm 50\text{V}$ ):**  $\pm 60\text{ Vdc}$

**Dielectric Strength Between Channels:** 1000 Vac or more between each channel (high strength semiconductor relay used)

#### Display Specifications

**Display:** 144 mm (5.67") TFT color LCD

#### Display Types:

**Measured Data Display:** Trend screen, data screen, bar-graph screen

#### Historical Trend Display:

Simultaneous display with real-time trend is available

**Information Display:** Alarm display, marker list, file list

**Setting Screen:** Alarm, computation, memory, system, maintenance, communication, etc.

**Trend Screen:** 12 colors selectable

**Display Screen:** 5 screens (5 groups)

**Display Points:** Maximum 44 points/screen/

**Time Axis Direction:** Vertical or horizontal

**Line Width:** 1/3/5 dot selectable

**Scale Display:** 4 scales

**Tag/Data Display (Show/hide selectable)**

**Display Points:** Maximum 44 points/screen  
**Display Contents:** Measured value, channel/tag, unit, alarm status

**Bargraph Screen:** 12 colors selectable  
**Display Screen:** 5 screens (5 groups)  
**Display Points:** Maximum 44 points/screen  
**Display Direction:** Vertical or horizontal  
**Scale Display:** 1 scale

**Information Display:**  
**Alarm Display** (Alarm activation/released history display)  
**Marker List**  
**File List** (Group data file list display)

**LCD Back Light:** Auto/manual OFF function  
**LCD Brightness:** 4 levels adjustment

### Recording Specifications

**Internal Memory:** Flash memory, 4 MB capacity  
**External Memory:** CF card, 32 MB to 2 GB capacity; 128 MB CF card is included as standard  
**Recording Cycle:** 100, 200, 500 ms; 1, 2, 3, 5, 10, 15, 20, 30 s; 1, 2, 3, 5, 10, 15, 20, 30, 60 min  
**Numbers of Logging Files:** 250/numbers of used groups  
**Logging Data:** Measured data; file name (group name), time of day, month and year of recording start, tag, measured data, alarm status/types  
**Storing Types:** Binary/CSV type  
**Storing Methods:**

**Manual Start/Stop:** Dedicated key operation  
**Schedule:** Designation for time of day and date  
**Trigger Signal:** Alarm event pre-trigger is selectable

**Measuring Numbers of Pre-Trigger:** Maximum 950 data  
**Recording Cycle\*:** Up to 3 groups of 12 points/group can be programmed for 100, 200 and 500 ms recording; 5 groups of 44 points/group for recording with 1s or more (total of 100 points programming possible)  
**Recording Duration (CF Card):** When 6 channels recorded in sampling mode (real data)

Recording Cycle*	128 MB	256 MB	512 MB	1 GB	2 GB
0.1 sec	6.32 days	12.6 days	25.3 days	50.6 days	101 days
1 sec	63.2 days	126 days	253 days	1.4 yrs	2.8 yrs
60 sec	10 yrs	21 yrs	42 yrs	83 yrs	166 yrs

When 12 channels recorded in sampling mode (real data)

Recording Cycle	128 MB	256 MB	512 MB	1 GB	2 GB
0.1 sec	3.16 days	6.32 days	12.6 days	25.3 days	50.6 days
1 sec	31.6 days	63.2 days	126 days	253 yrs	1.4 yrs
60 sec	5.2 yrs	10 yrs	21 yrs	42 yrs	83 yrs

### Computation Specifications

**Computation Points:** Maximum 44 points  
**Computation Types:**  
**Arithmetic Operations:** Addition, subtraction, multiplication, division, remainder, exponential  
**Comparison Operations:** Equality, inequality, great, less, equality/great, equality/less  
**Logical Operations:** AND, OR, XOR, NOT  
**General Functions:** Round-up, round-down, absolute value, square root, exponent of e, natural logarithm, common logarithm  
**Integration Operations:** Analog integration, digital integration  
**Channel Data Operations:** Measured data computation, calculated data computation

### Alarm Specifications

**Setup:** Up to 7 alarms can be programmed per channel  
**Alarm Types:** Upper limit, lower limit, differential higher limit, differential lower limit (deadband is selectable), abnormal data  
**Delay Function:** Setup range of alarm delay, 1 to 3600 sec  
**Alarm Settings:** AND/OR selectable

### Communication Functions Network

**FTP Server:** Data file can be read from the network computer  
**Web Server:** Conformed to HTTP1.0; displays the alarm, information of maintenance by browser software (Internet Explorer 5.0 or later, Net Scape 6.0 or later, Opera 7 or later) User's ID and password registration available  
**E-Mail:** E-Mail notification at specified time for alarm activation; report data at specified time is selectable from all registered

### USB Communications\*\*

**USB:** Communication type, USB1.1  
**Transfer Systems:** Bulk transfer, control transfer  
**Communication Contents:** File transfer by virtual drive connection

### General Specifications

**Rated Power Voltage:** 100 to 240 Vac (universal power supply); 50/60 Hz  
**Maximum Power Consumption:** 50 VA (DO: all points ON, 240 Vac)  
**Reference Operating Condition:**

**Ambient Temperature/Humidity Range:** 21 to 25°C, 45 to 65% RH  
**Power Voltage:** 100 Vac, ±1.0%  
**Power Frequency:** 50/60 Hz ±0.5%  
**Attitude:** Left/right 0°, forward/backward 0°  
**Warm-Up Time:** Longer than 30 minutes

### Normal Operating Condition:

**Ambient Temperature/Humidity Range:** 0 to 50°C, 20 to 80% RH  
**Power Voltage:** 90 to 264 Vac  
**Power Frequency:** 50/60 Hz ±2%  
**Attitude:** Left/right 0°, forward tilting 0°, backward tilting 0° to 20°

### Transportation Condition (At the Packed Condition on Shipment from Our Factory):

**Ambient Temperature/Humidity Range:** -20 to 60°C, 5 to 90% RH (note: no dew condensation)  
**Vibration:** 10 to 60 Hz, 0.5 G (4.9 m/S<sup>2</sup>) or less  
**Impact:** 40 G (392 m/S<sup>2</sup>) or less

### Storage Condition:

Ambient temperature/humidity range -20 to 60°C, 5 to 90%RH (note: no dew condensation)

### Power Failure Protection:

Setups and data are backed up by flash memory

### Insulation Resistance:

**Secondary Terminals and Protective Conductor Terminals:** 20 MΩ or more at 500 Vdc  
**Primary Terminals and Protective**

### Conductor Terminals:

20 MΩ or more at 500 Vdc  
**Primary and Secondary Terminals:** 20 MΩ or more at 500 Vdc

### Dielectric Strength:

**Secondary Terminals and Protective Conductor Terminals:** 1 minute at 500 Vac  
**Primary Terminals and Protective Conductor Terminals:** 1 minute at 1500 Vac  
**Primary and Secondary Terminals:** 1 minute at 2300 Vac

\*\* See next page for additional information.

**Options Specifications**

Name	Contents
Alarm Output	Relay contact output at alarm activation and abnormal input; output points: 12; contact capacity: mechanical relay, 100 Vac 0.5 A, 240 Vac 0.2 A
Communication Interface	Communication interface for high-order instruments RS232C/RS485 switchable **Ethernet and USB equipped as standard

\*\* See previous page for additional information.

**Case Assembly Material:**

**Door Frame:** ABS resin  
**Case:** Steel

**Color:**

**Door Frame:** Black (equivalent to Mussel N3.0)  
**Case:** Painting color, gray (equivalent to Mussel N7.0)

**Weight:** 2.2 kg (4.85 lb)

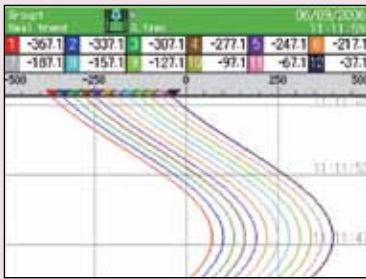
**Mounting:** Panel mounting

**Terminal Screws:**

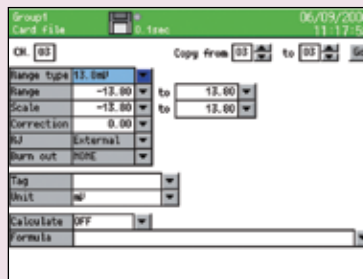
**Power Terminals/Protective Conductor Terminals/Communications Terminals:** M4.0

**Measuring Input Terminals/Alarm Output Terminals/Remote Contact Terminals:** M3.5

**RD9900 Series Screens**



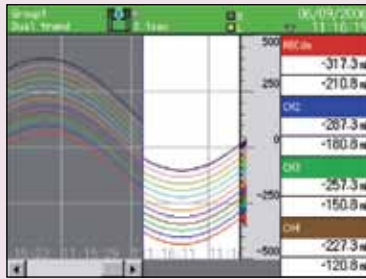
**Real Time Trend Screen**  
Display data (measured and virtual) of selected group. Vertical trend and horizontal trend.



**Input/Computation Setting**



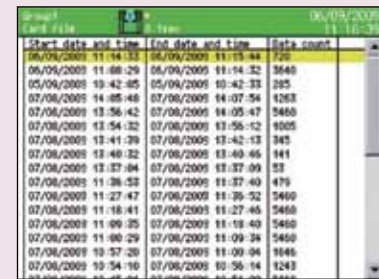
**Bar-Graph Screen**  
Display data (measured and virtual) of selected group. Combination display with real-time trend is available.



**Dual Trend Screen**  
Two split display for real-time and historical trend. Scroll available for historical trend.



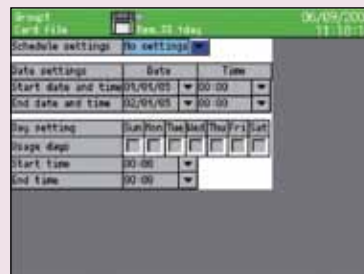
**Data Screen**  
Display data (measured and virtual) of selected group. Simultaneous display of alarm status.



**Information Setting Screen**



**Alarm Settings**



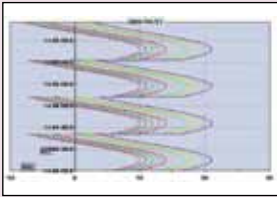
**Schedule Setting Screen**



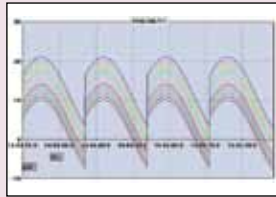
OMEGACARE<sup>SM</sup> extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE<sup>SM</sup> covers parts, labor and equivalent loaners.

## Application Software ZAILA (Sold Separately)

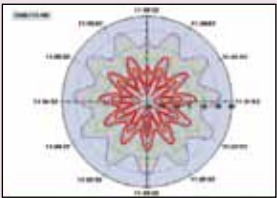
The software is applied for replay display/wave editing operation of recorded data in RD9900 series. It has replay display of vertical/horizontal trend and circular trend function, and also analyzing function such as magnify/reduce/partially magnify of graphs and message insert.



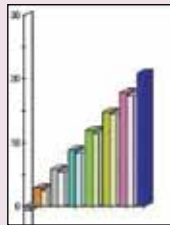
Trend Screen  
(Vertical Flow)



Trend Screen  
(Horizontal Flow)



Circular  
Chart



Bar Graph

- ✓ **Trend display:** Selectable from Trend Display Window (Vertical Flow, Horizontal Flow) and Circular Trend Display Window
- ✓ **Continuous Replay Display Window:** Trend is Scrolled Continuously (Automatically); Scroll Changes by Speed and Renewal Data Number
- ✓ **Data List Display Window:** Displays Registered Data as List Display
- ✓ **Bar-Graph:** Displays by bar; Message Can be Inserted Into Bar-Graph
- ✓ **Data Between Markers:** Displays Date/Time, Time Difference Between 2 Data, Data Difference, Maximum, Minimum, Average, Standard Deviation and Median Among all Data
- ✓ **Alarm Display:** Points for Alarm Activation at Each Level are Displayed on a Trend Graph
- ✓ **Settings:** Cursor, Trend Line, Scale Axis, Time Axis, Title Input on the Graph, Graph Assistant and Magnify/Reduce/Rotation of Graphs

### Environment

**CPU:** 1GHz or more

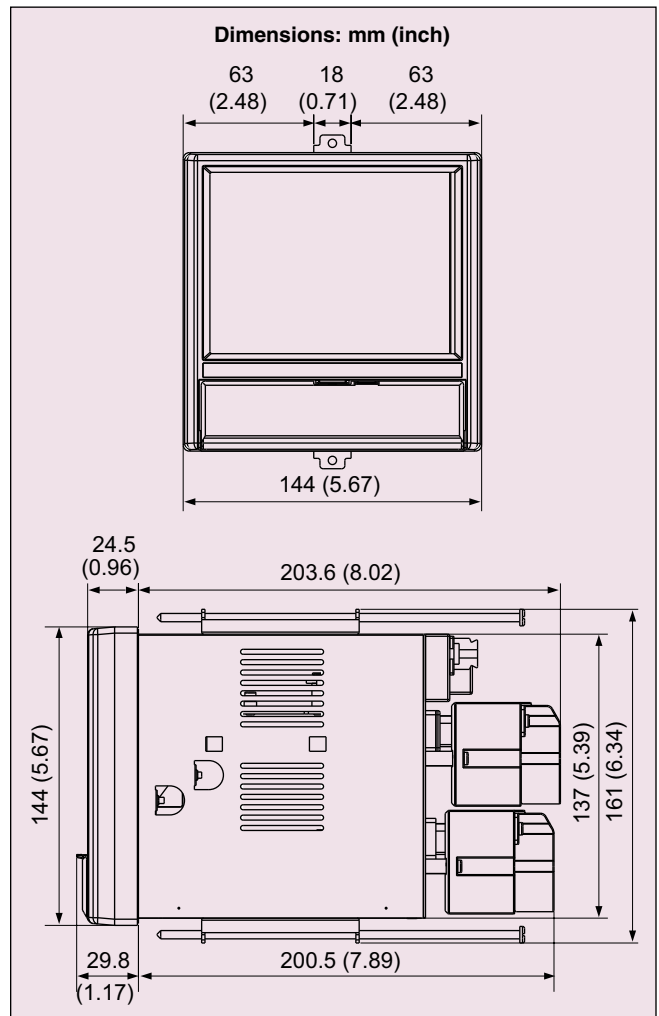
**OS:** Windows 98/Me/2000/XP Home/XP Pro

**Memory:** 256 MB or more (512 MB or more recommended)

**Disk Drive:** CD-ROM drive

**Hard Disk:** Disk space 100MB or more

**Language:** English, Japanese, Chinese (simplified and traditional characters)



### To Order

Model No.	Description
RD9906	6 points paperless recorder
RD9912	12 points paperless recorder
POWERCORD-SE	Power cord

### Option Boards

Model No.	Description
RD9900-C24	RS232C/RS485 communication interface
RD9900-AL12	12 point mechanical relay

### Option Software

Model No.	Description
RD9900-ZAILA	ZAILA data analysis software

Comes complete with operator's manual and 128 MB compact flash card.

**Ordering Examples:** RD9912, 12 points paperless recorder.

RD9906, 6 points paperless recorder and OCW-3, OMEGACARE<sup>SM</sup> extends standard 2-year warranty to a total of 5-years.