100 mm and 180 mm Programmable Chart Recorders

2 YEAR WARRANTY | CE | CSA | OMEGACARE Extended Warranty Program

*Optional

RD101A

$1465

Basic Unit

- Digital and Bargraph Display
- 1, 2, 3, 4 Continuous Pens or 6 Point Dot Printing Models (RD1800 Also 12, 18, 24 Dot Printing)
- Universal Inputs Thermocouple, RTD, Voltage
- Programmable Input Types, Full Scale Ranges, Alarms, Chart Speed
- Powerful but Easy to Use
- Interactive Displays for Easy Setup
- Large, Bright Dot-Matrix Display for Data and Units
- Compact—Only 220 mm (8.6") Deep
- Splash Resistant Door
- Fast Dot Printing (6 Channels in as Little as 10 Seconds)
- Removable Terminal Blocks for Easy Wiring
- Optional Alarms with Remote Control
- Optional RS-422A Communications
- Optional CE Approval With English, French, German Display Prompts
- Portable Units (RD100A Only)
- Pen Offset Compensation Standard

KTSS-18G-12, $19 thermocouple sold separately. See page A-83.

The RD100A 100 mm (4") and RD1800 180 mm (7") Series programmable chart recorders provide continuous monitoring of your essential processes. These recorders are designed for ease of use, featuring universal inputs of thermocouple, RTD or voltage inputs. The front panel of each unit features an analog bar graph and digital display for easy monitoring.

The simplified operation of these powerful recorders allows for universal inputs that are fully programmable from the front panel. Universal inputs allow you to select inputs freely on-site without setting DIP switches. Simple front panel keypad operations program each input individually for thermocouple, RTD, DC voltage (mV or V) or contact input for operation recording.

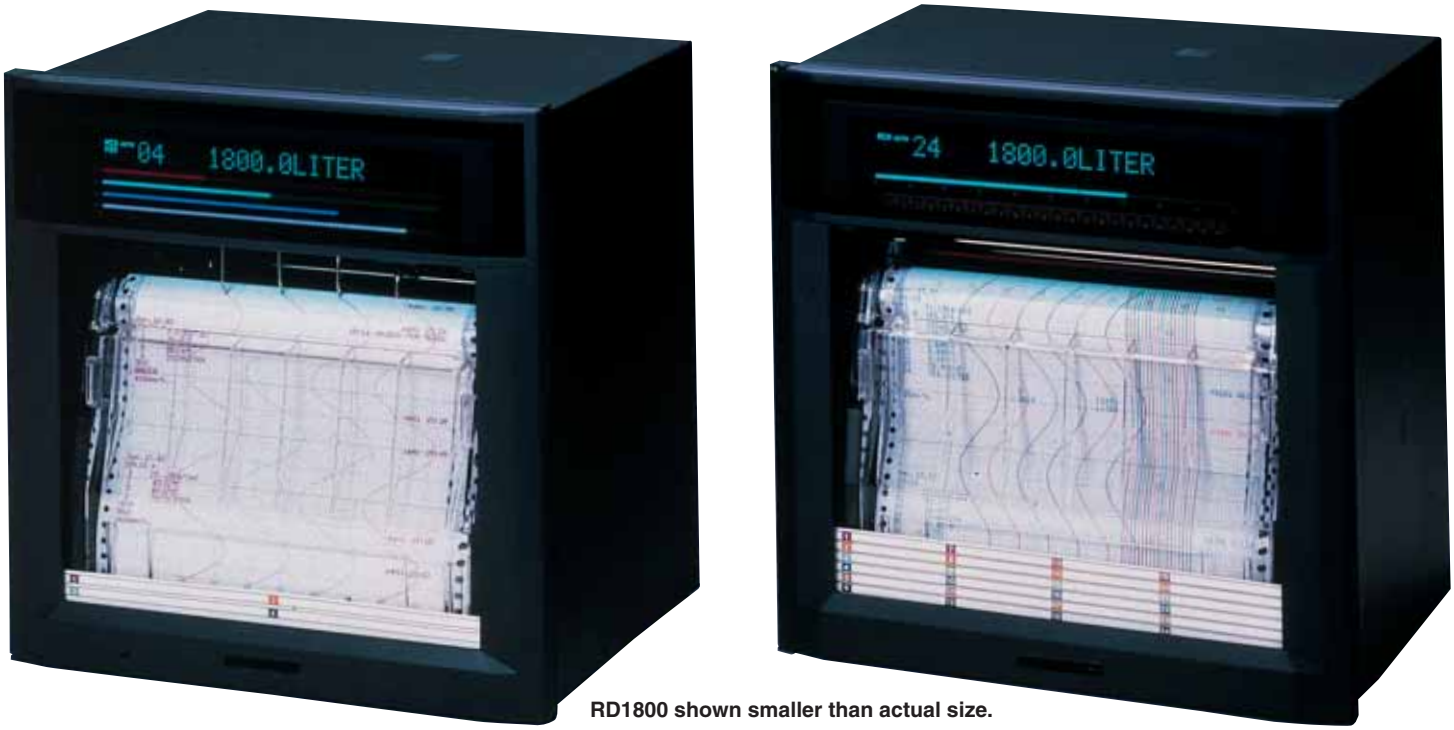
The recorders are designed for ease of use. In addition to the clear, easy-to-read analog chart, each recorder prints out on the chart paper the date and time, channel number, scale marking, tag number, proper engineering units, chart speed, alarm value and complete program list at programmed intervals or on demand.

The RD100A/RD1800 recorders utilize a non-contact ultrasonic pen position transducer for higher accuracy when compared to standard pen mechanisms. The wear-free, brushless DC servo-motor completely eliminates motor brushes, lead wire and connectors, and is directly mounted to the printed circuit board. These two features contribute to the long, trouble-free life of these recorders.

Optional Communication Output
The optional RS-422A interface lets you connect up to 16 units on a multidrop line to a single host computer for datalogging or input/output of any setup parameter.

Versatile Alarm and Remote Control Functions, Optional
Versatile alarm functions are included to select up to four of the following six alarm types: high/low limit, deviation high/low limit, rate of change high/low. Each can be

To order -CE option, please see page S-36.



RD1800 shown smaller than actual size.

programmed for each individual channel. Optional alarm relay contact outputs are available with versatile front panel selectable feature.

The remote control feature comes with the alarm relays and lets you select any five of the following remote control functions on site through the front keypad: recording start/stop; chart speed change; manual printout start; message printout start (up to five user-defined messages).

Specifications

Input	Type*	Measurement Range	Measurement Accuracy	Resolution
TC	J	-200 to 1100°C (-328 to 2012°F)	±0.15% rdg +0.5°C (0.9°F); -200 to -100°C (-328 to-148°F): ±0.15% rdg +0.7°C (1.3°F)	0.1°C
	T	-200 to 400°C (-328 to 752°F)	±0.15% rdg +0.5°C (0.9°F)	0.1°C
	K	-200 to 1370°C (-328 to 2498°F)	±0.15% rdg +0.7°C (1.3°F); -200 to -100°C (-328 to-148°F): ±0.15% rdg +1.0°C (1.8°F)	0.1°C
	E	-200 to 800°C (-328 to 1472°F)	±0.15% rdg +0.5°C (0.9°F)	0.1°C
	N	0 to 1300°C (32 to 2372°F)	±0.15% rdg +0.7°C (1.3°F)	0.1°C
	R/S	0 to 1760°C (32 to 3200°F)	±0.15% rdg +0.1°C (0.2°F), however, 0 to 100˚C (32 to 212°F) ±3.7˚C (6.7°F) and 100 to 300˚C (212 to 572°F) ± 1.5˚C (2.7°F)	0.1°C
	B	0 to 1820°C (32 to 3308°F)	±0.15% rdg +0.1°C above 600˚C (0.18°F above 1112°F) 400 to 600°C (752 to 1112°F): ±2.0°C (3.6°F), not specified below 400˚C (752°F)	0.1°C
	C(W)	0 to 2315°C (32 to 4199°F)	± 0.15% of rdg + 1.0°C (1.8°F)	0.1°C
	J DIN(L)	-200 to 900°C (-328 to 1652°F)	±0.15% rdg +0.5°C (0.9°F); -200 to -100°C (-328 ro -148°F): ±0.15% rdg +0.7°C (1.3°F)	0.1°C
	T DIN(U)	-200 to 400°C (-328 to 752°F)	±0.15% rdg +0.5°C (0.9°F)	0.1°C
Vdc	20mV	-20.00 to 20.00 mV	± 0.2% of rdg +3 digits	10 µV
	60mV	-60.00 to 60.00 mV	± 0.2% of rdg +2 digits	10 µV
	200mV	-200.0 to 200.0 mV	± 0.2% of rdg +2 digits	100 µV
	2 V	-2.000 to 2.000 V	± 0.1% of rdg +3 digits	1 mV
	6 V	-6.000 to 6.000 V	± 0.3% of rdg +3 digits	1 mV
	20 V	-20.00 to 20.00 V	± 0.3% of rdg +2 digits	10 mV
RTD	Pt100	-200 to 600°C (-328 to 1112°F)	±0.15% rdg +0.3°C (0.5°F)	0.1°C
	JPt100	-200 to 550°C (-328 to 1022°F)	±0.15% rdg +0.3°C (0.5°F)	0.1°C

Input	Range	Measurement	Limit
Contact Input (Operation recording)	DI 1 voltage input	less than 2.4 V: off; 2.4 or more: ON (TTL)	DI 3 contact inputs Contact ON/OFF

***Note:** Thermocouple type J, K, T, E R, S, B: ANSI, IEC 584, DIN IEC 584, JIS C 1602-1981; Type N: Nicrosil-Nisil, IEC 584, DIN IEC 584; Type C W5%-R/W-26%; J DIN, T DIN: DIN 43760*

Pt100: JIS C 1604-1989, JIS C 1606-1989, IEC 751, DIN IEC 751

JPt100 JIS C 1604-1981, JIS C 1606-1989

GENERAL SPECIFICATIONS

Dimensions: RD1800: 288 W x 288 H x 220 mm D (11.4 x 11.4 x 8.66"); RD100A: 144 W x 144 H x 220 mm D (5.67 x 5.67 x 8.66")

Weight: RD1800: 4 pen 9.4 kg (20.5 lb); 6 dot 9.1 kg (20 lb); 24 dot 9.6 kg (21.1 lb) approx.; RD100A 1 pen 3.2 kg (7 lb), 2 pen 3.4 kg (7.5 lb), 3 pen 3.6 kg (7.9 lb), 4 pen 3.8 kg (8.4 lb), 6 dot 3.5 kg (7.7 lb) approx.

Case: Drawn steel

Front Door: Aluminum die casting

Panel Thickness: 2 to 26 mm (0.078 x 1.02")

Power: 90 to 132, 180 to 250 Vac 50/60 Hz standard; Optional 24 Vdc (-24 V)

Maximum Power Consumption: 70 VA approximately

Ambient Temperature and Humidity: 0 to 50°C (32 to 122°F), 20 to 80% RH at 5 to 40°C (41 to 104°F)

Memory Backup: Lithium battery to preserve setup parameters

INPUT

Reference Junction Accuracy: Type J, K, T, E, N, J DIN, T DIN: ±0.5°C; Type R, S, B, C, ±1°C

Temperature Coefficients: Effect of ambient temperature of 10°C (50°F)

Digital Display: Within ±0.1% of rdg + 1 digit

Recording: Within digital display ±0.2% of recording span (excluding reference junction)

Measurement Accuracy: ±0.3% of recording span

Performance Under Reference Operating Conditions:

Temperature: 23°C ±2°C (73°F ±3.6°F)

Humidity: 55% ±10%

Usable Power Voltage: 90 to 132, 180 to 250 Vac 50/60 Hz

Warm Up-time: 30 minutes

Measurement Intervals:

Pen Models: 125 ms/channel

Dot-Models: RD100A: 2.5 sec/6 channels; RD1800: 2.5 sec/24 channels

Input Resistance: DC voltage 2 V and lower ranges, TC ranges: 10 MΩ min.; DC voltage 6 V and higher ranges: Approx. 1 MΩ

Input Bias Current: 10 nA max. (approx. 100 nA on a TC input if burnout detection selected)

Thermocouple Burnout Detection: On/off programmable for each channel or more detected as open circuit

Maximum Input Voltage: 2 Vdc or lower and TC ranges: ±10 Vdc continuous; 6 to 20 Vdc ±30 Vdc continuous

RECORDING SYSTEM

Recording Span: RD100A 100 mm; RD1800 180 mm

Pen-writing: Disposal felt pens (analog recording), plotter pens (digital recorder)

Dot Printing: 6-color wire dot recording

Recording Paper: RD1800 20 m Z-fold chart; RD100A: 16 m Z-fold chart

Step Response Time: RD1800 1.5 sec.; RD100A 1 sec. max.

Deadband: Pen Model 0.2% of recording span max.

Maximum Recording Resolution: Dot printing models 0.1 mm

Recording Format: Normal, zone and partial recording

Chart Speed: Pen models: 5 to 12,000 mm/h (82 increments) Dot printing models 1 to 1,500 mm/h (1 mm steps)

Analog Recording Cycles: Pen Models: Continuous Dot Printing Models: 6 dots/10 sec.; 12 dots/15 sec; 18 dots/20 sec, 24 dots/30 sec max.

Print Cycle Time: Dot Printing

Models: AUTO mode chart speed determines analog recording cycle rate; FIX mode recording is done at fastest analog recording interval

Chart Speed Accuracy: Less than ±0.1% (chart running more than 1000 mm continuously and related to grid of the paper)

Message Print Out: 5 messages, 16 characters

Periodic Printout: Engineering units (up to 6 alphanumeric), tag marker (up to 7 alphanumeric), scale marker (0/100%), the measured data print

List Printout: Prints listing of range settings, alarm settings, and other parameters

Manual Printout: Provides a digital printout of measured results

DISPLAY SYSTEM

Display: VFD 5 x 7" dot matrix, 11 character (RD100A) 20 characters (RD1800)

Display and Status Indicator Items: Channel number, or tag name, alarm type, measured value, engineering units, time, date

Bar Graph Display: Measured Value: 1% resolution, left-reference or center-zero bar graph display (individually programmable for each channel)

Alarm Display: (with optional alarm feature) Alarm setting level indicator channel number of channel in alarm (Dot-matrix models only)

Alarm: Number of Alarm Levels: Four levels/channel

Types: High, low, high-rate of change, low rate of change, delta high, delta low (rate of change alarm time interval: Measurement interval x 1 to 15)

Alarm Indications: Shared alarm indicator flashes. In case of dot-printing model, alarm status of channel in alarm is also displayed

Alarm Recording: Prints channel number, alarm type, and time ON or OFF on right side of chart

OPTIONAL ALARM RELAY CONTACT OUTPUT AND REMOTE CONTROL

Alarm Relays: 4, 6 (all units), 12 and 24 points (RD 1800 only); AND or OR output programmable. Energize or de-energize on alarm (shared by all relays). Hold or non-hold

Remote Control: Enables any mix of the following to be assigned to five contact inputs: output programmable, recording start/stop; chart speed change; manual printout start; message printout start (up to five)

Input Signal: TTL, open collector, contact

Input Signal Width: 1 sec. minimum

Contact Capacity: 3 A @250 Vac; 0.1 A @250 Vdc resistive load

OPTIONAL COMMUNICATION OUTPUT

RS-422A Interface: Conforms to EIA RS-422A. Can be used to output measured values, input and output setup parameters

Addresses: 1 to 16

Asynchronous: Start-stop synchronization

Communication System: Half duplex

Wiring: 4- or 5-wire

Data Length: 7- or 8-bit

Parity: odd, even or none

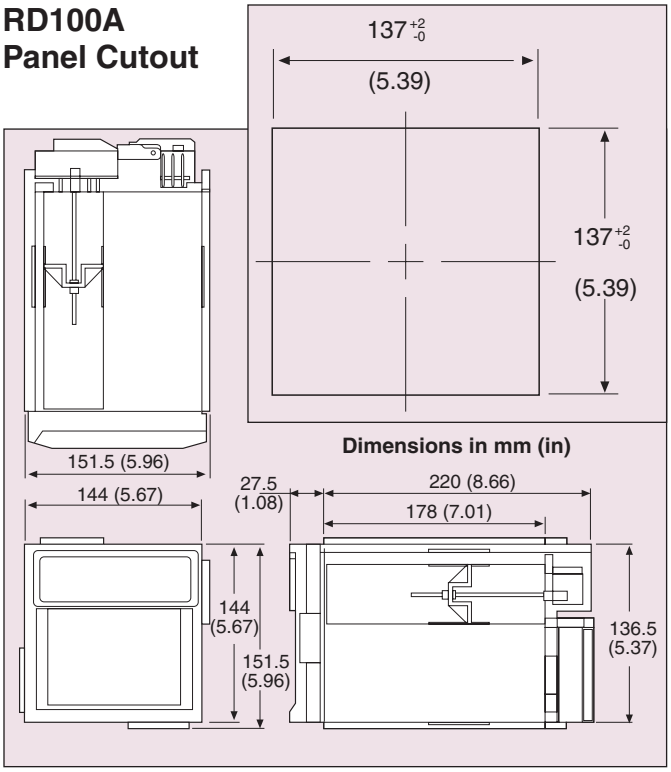
Communication Rate: 75, 150, 300, 600,1200, 2400, 4800, 9600 bps

Communication Mode: ASCII or binary (measured data only)

Communication Distance: 500 m

CE Option: Meets European standards for EMI interference. Includes programming prompts in French, German and English, see ordering block for pricing.

RD100A Panel Cutout

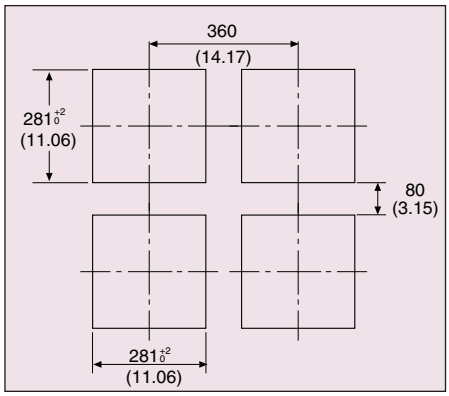


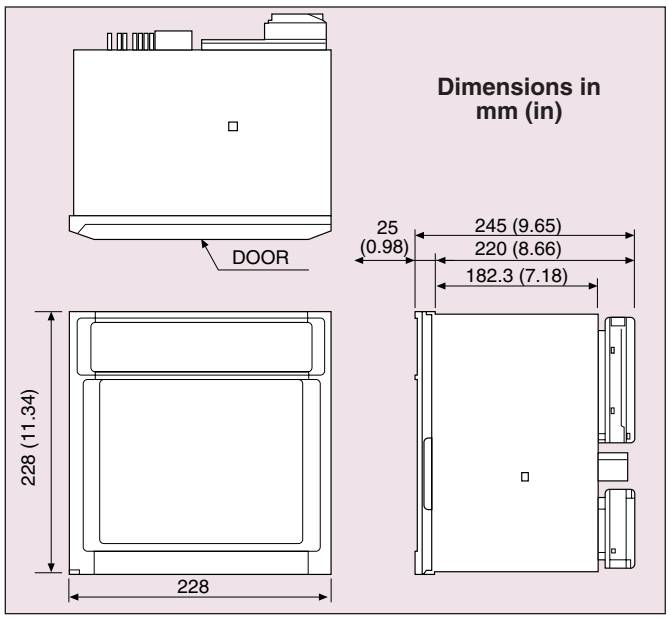
To Order *(Specify Model Number)*

Model No.	Price	Input Channels	Recording Type
RD101A	$1465	1	100 mm (4") continuous
RD102A	1815	2	100 mm (4") continuous
RD103A	2410	3	100 mm (4") continuous
RD104A	2885	4	100 mm (4") continuous
RD106A	2200	6	100 mm (4") dot
RD1801	2015	1	180 mm (7") continuous
RD1802	2730	2	180 mm (7") continuous
RD1803	3450	3	180 mm (7") continuous
RD1804	4450	4	180 mm (7") continuous
RD1806	2915	6	180 mm (7") dot
RD1812	3445	12	180 mm (7") dot
RD1818	4045	18	180 mm (7") dot
RD1824	4630	24	180 mm (7") dot

Each unit comes complete with 1 pen per channel, 1 pack of paper, mounting brackets, and complete operator's manual.
OMEGACARE℠ extended warranty program is available for models shown on this page. OMEGACARE℠ covers parts, labor, and equivalent loaners. Ask your sales representative for full details when placing an order.
Ordering Example: RD104A-AR-S4-24V,** 4-pen recorder with 4 alarm relays and remote control, RS-422A output, and 24 Vdc power supply, $2885 + 380 + 185 + 135 = **$3585.
OCW-3,** OMEGACARE℠ extends standard 2-year warranty to a total of 5 years **($350),** $3585 + 350 = **$3935.

RD1800 Panel Cutout





Options *(Not Field Installable)*

Suffix No.	Price	Description
-P	$215	Portable handle, rubber feet, power cord (for 110 Vac), RD100A series only
-AR	380	4 alarm outputs remote control (RD100A series only)
-AR6	530	6 alarm outputs remote control (RD106A and RD1800 series)
-AR12	815	12 alarm outputs, remote control (RD1806, RD1812, RD1818, RD1824 only)
-AR24	1450	24 alarm outputs, remote control (RD1824 only)
-S4	185	RS-422A communications
-24V	135	24 Vdc Power (not available on portable unit)
-CE	380	CE approved, programming prompts In French, German, or English (not available with -P or -24V options)

Accessories

Model No.	Price	Description
RD100A-01	$15	Disposable red felt pen channel 1
RD100A-02	15	Disposable green felt pen channel 2
RD100A-03	15	Disposable blue felt pen channel 3
RD100A-04	15	Disposable violet felt pen channel 4
RD100A-11	14	Plotter pen
RD100-RC	22	6-color print ribbon purple, red, green, blue, brown, black (RD106 only)
RD110-RC	40	6-color print ribbon for RD1806, RD1812, RD1818 and RD1824
RD100-ZFP-10	84	Z-fold chart paper (pkg. of 10) 100 mm x 16 m (4" x 52') RD100A series
RD110-ZFP	121	Z-fold chart paper (pkg. of 6) 180 mm x 20 m (7" x 65') RD1800 series
MS-1401	150	Reference Book: Maynard's Industrial Engineering Handbook

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