



Process Recorders

Model RD1401
\$1500
Basic Unit



- ✓ 100 mm (4") Chart
- ✓ 1 to 6 Traces on a Common Time Base
- ✓ Unique Cue and Review Incident Analysis
- ✓ Clear Message Display and Text Prompts
- ✓ Rugged Design with IP65 Protection
- ✓ Transmitter Power Supply Standard
- ✓ English, French or German Displays
- ✓ Up to 12 Universal Inputs Optional
- ✓ Optional PCMCIA Memory Card Data Storage and RS-485 Modbus Serial Communications

The RD1401 is a microprocessor-based high speed, high resolution strip chart recorder. It records and displays parameters such as temperature, pressure, level and flow, including event and alarm status. Up-to-the-minute recording can be clearly examined by means of the easy view function that will automatically return the chart to its original position. Cue and review allows the user to rapidly search any part of the chart for event or alarm occurrence. Set-up and configuration are easy from the front keys and can be password protected.

User configurable math functions include: flow calculations, RH tables, totalization and user defined linearization tables. Optional PCMCIA memory card provides full datalogging capabilities. DOS format files allow direct transfer using DOS or Windows file management commands. RS-485 serial communications is an option that allows a real-time link to a host computer.

Specifications Recording

Traces: 1 through 6 multi-color or digital data recording

Colors:

- 1 to 3 Trace Units: Red, Green, Blue
- 4 to 6 Trace Units: Magenta, Red, Black, Green, Blue, Brown
- Pen Life: 4 months (typical)



Chart: 25 m roll; quick-load cassette; cue and review feature standard with roll chart; standard chart graduation: 50 divisions; 30, 40, 60, 70, 75 divisions also available
Chart Speed: Configuration in 1 mm steps between 1 mm and 1500 mm/hr. Logic or switch selectable at three configured speeds

Trace Response: 800 ms for update of six traces

Operation

Display: Alphanumeric and bargraph, 2 x 20-character long-life back-lit LCD, 100 segment bargraph

Languages: English, French, German – user selectable

Configuration: User defined via front panel or loaded from "Memory Card"

Advanced Processing Functions

Totalizers: Six independent, with configurable wraparound, digital/manual reset and stop/start

Text Messages: 14 configurable messages, assignable to any digital or alarm function, 12 analog input channel tags, 4 maths result tags, 6 totalizer descriptions, 1 operator message for batch identification (all 20 character)

Alarms: 12 user-defined, system events and diagnostic alarms, 2 real time events

Math Functions: Four user-configurable functions, each with three inputs, for standard calculations for mass flow, %RH, etc.

Logic Functions: 10 logic equations, user defined up to 15 elements per equation (AND, OR, etc.)

Analog Inputs

Number: 1, 2, 3, 4, 5 or 6 standard

2, 3 or 6 isolated (optional), 3 or 6 additional channels available (optional)

Input Sampling Rate: 180 ms per channel

Type: Universally Configurable to provide: Thermocouple (TC), Resistance thermometer (RTD)*, Millivolt, Current, dc Voltage*, Resistance, (*RTD, Resistance and Volts (>2V) inputs not available on isolated analog inputs)

Linearizer Functions: Programmable for all inputs including: $\sqrt{\quad}$, x^2 , $x^{\sqrt{2}}$, T/C types B, E, J, K, R, S, T, L, N or Pt100, 20-point custom linearizer

Broken Sensor Detection: Programmable UP/DOWN scale or NONE. RTD short/open circuit detection

Cold Junction Compensation: Automatic CJC incorporated as standard

Input Impedance: Current: 10 Ω ; dc Voltage: 500 k Ω ; mV and T/C: >10 M Ω

Transmitter Power Supply: 70 mA max. powers three loops, fitted as standard

Input Isolation

Standard Analog Inputs

Analog ch. to ch. isolation:

12 V (0 V with RTD's)

Input to Ground: 700 Vdc

Common Mode: >140 dB at 50/60 Hz

with 500 Ω imbalance resistance

Series Mode: >60 dB at 50/60 Hz

Filtering: 0 to 60 s 'Smart' digital filter

Isolated Analog Inputs

Analog ch.-ch. isolation: 600 Vdc

Input to Ground: 700 Vdc

Common Mode: >140 dB at 50/60 Hz

with 500 Ω imbalance

Series Mode: >60 dB at 50/60 Hz

Filtering: 0 to 60 s 'Smart' digital filter

Accuracy

Pen: Resolution: 0.2% of span

Display: Intrinsic error for reference conditions, 20°C/36°F

mV, mA, V inputs: $\pm 0.1\%$ of reading

T/C inputs: As mV equivalent plus

linearizer error 0.1% typical

CJC: <0.05°C/°C (0.09°F/°F) change in ambient

RTD Inputs: $\pm 0.1\%$ of reading

Linearizer: $\pm 0.1^\circ\text{C}$ typical

Channel-to-channel Offset:

$< 20 \mu\text{V}$ or $< 0.025 \Omega$ without using individual channel offset correction

Display Range: -9999 to 9999

Display Resolution: For spans > 4000 :

± 2 digits; for spans < 4000 : ± 1 digit

Long Term Drift: $< 0.01\%$ reading, or $\pm 5 \mu\text{V}$ annually

Physical

Size: 144 x 144 x 230 mm

(5.67 x 5.67 x 9.05") (depth behind panel)

Weight: 3.3 kg (7 1/4 lb) approx.

Panel Cut-Out:

138 x 138 mm (5.43 x 5.43")

Case Material: Stainless Steel

Door Material: Glass-filled polycarbonate

Window Material: Polycarbonate

Electrical

Power Supply: 85 to 265 Vac 50/60 Hz

line frequency or 10 V to 30 Vdc (optional)

Power Consumption:

25 VA max; 20 Wdc (typical)

Electrical Safety:

IEC 348, CE, CSA (optional)

Electrical Connections:

Screw terminals

Environmental

Operating Limits: 0 to 50°C (32 to 122°F), 95% RH non-condensing; 80% RH for chart

Temperature Stability: 0.02% of reading/ $^\circ\text{C}$, or 2 $\mu\text{V}/^\circ\text{C}$, whichever is greater

Protection: Front face IP65/NEMA-3, IP66/NEMA-4x with optional fascia cover, rear of instrument IP20

Line Interruption: < 80 ms loss, no effect, > 80 ms loss, auto-reset and restart, IEC Part IV level 3

RF Interference: Interference protection (based on 30 mV range). Radiated RF $< \pm 3\%$ over range 27 to 1000 MHz at a field strength of 3 V/m. Meets IEC 801 Pt. III, Level 2

Option Modules

Up to six modules can be fitted from the following:

Additional Analog Input Module:

Three or six inputs on the module universally configurable for all input types. 12 V channel-to-channel isolation

Digital Module: Three digital inputs plus three digital outputs per module.

Fully isolated, 500 Vdc; Input: Volt-free contact or 5 Vdc level triggered; Output: True TTL (15 k Ω load), 5 V or 24 Vdc (20 mA per output)

Relay Output Module: Three relays per module. Type: single pole changeover.

Rating: 250 Vac 5 A (non-inductive load), 250 Vdc 25 W max., Total load (all relays): 36 A max.

Hybrid Module: Two relay outputs (specification as above). One isolated analog output (specification as follows)

Analog Output Module: Three isolated retransmission channels per module (configurable in range 0 to 20 mA, 1000 Ω). Isolation: 500 Vdc. Each channel can be programmed to retransmit any analog value or result of math block calculation.

Accuracy: $\pm 0.25\%$ of span

Serial Communication Module: RS-422/485 protocol programmable 1200 to 9600 baud. MODBUS rtu (slave) protocol. Instrumentation protocol

Memory Card

PCMCIA/SRAM 'credit card' type.

Card Sizes:

128 kb, 256 kb, 512 kb, 1 Mb, 2 Mb

Configuration Storage: DOS format

Configuration Capacity: 30 configurations on a 128 kb card

Datalogging Format: DOS files, spreadsheet compatible

Channels Logged:

Up to 12 (analog inputs or maths)

Sample Interval: 1 s to 240 s (user defined)

Card Capacity: 25 days (approx.) on a 2 Mb card, for 6 channels logged every 60 s

Electrical Limits

Input Type	Min. Value	Max. Value	Min. Span
Millivolts	-2000	2000	2.5
Volts	-20	20	0.25
Milliamps	-100	100	0.25
Resistance*	0	8000	10

*RTD, Resistance and Volts (> 2 V) inputs not available on isolated analog inputs

Notes: Performance accuracy is not guaranteed below 400°C (752°F) for types B, R and S thermocouples.

RTD, 3-wire platinum, 100 Ω per DIN 43760 standard (IEC751), with range of 0 to 400 Ω .

To Order (Specify Model Number)		
Model Number	Price	Description
RD1401	\$1500	One trace recorder
RD1402	1650	Two trace recorder
RD1403	1775	Three trace recorder
RD1404	1900	Four trace recorder
RD1406	2175	Six trace recorder

Recorder comes complete with print head, one roll of paper, and operators manual

OMEGACARESM extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order.

Ordering Example: RD1403-3R, three trace recorder with 3 relays, \$1775 + 158 = \$1933

OCW-1 OMEGACARESM extends standard 2-year warranty to a total of 3 years (\$150), \$1933 + 150 = \$2083

Accessories

Model Number	Price	Description
RD1400-128K	\$150	128 Kb Memory Card*
RD1400-256K	250	256 Kb Memory Card*
RD1400-512K	355	512 Kb Memory Card*
RD1400-1M	570	1M Memory Card*
RD1400-2M	675	2M Memory Card*
RD1400-PH3	34	3 Color Print Head
RD1400-PH6	34	6 Color Print Head
RD1400-RL	13.50	Roll Paper 100 mm x 25 m (4" x 82')
CN34-SW	150	Configuration Software

*Requires PCMCIA Driver option

Transition Joint Thermocouple Probe with Stainless Steel Overbraid, See Section A. TJ48-CASS-316G-12-SB, \$54

Temperature Limits

Input Type	Range $^\circ\text{C}$	Min. Span	Range $^\circ\text{F}$	Min. Span
B	-18 to 1800	710	0 to 3272	1278
E	-100 to 900	45	-148 to 1652	81
J	-100 to 900	50	-148 to 1652	90
K	-100 to 1300	65	-148 to 2372	117
L	-100 to 900	50	-148 to 1652	90
N	-200 to 1300	90	-328 to 2372	162
R&S	-18 to 1700	320	0 to 3092	576
T	-250 to 300	60	-418 to 572	108
RTD*	-200 to 600	25	-328 to 1112	45

Min. span below zero: Type T $70^\circ\text{C}/126^\circ\text{F}$
Type N $105^\circ\text{C}/189^\circ\text{F}$

TC standards DIN 43710/IEC 584

RTD standard DIN 43760 IEC 751

Options

Model Number	Price	Description
-D	\$250	Driver for PCMCIA memory card (card not included, see accessories)
-3R	158	3 relay outputs (12 relays maximum)*
-3X	499	Analog inputs for 3 extra channels*
-6X	893	Analog inputs for 6 extra channels*
-2IX	493	2 isolated analog inputs*
-3IX	675	3 isolated analog inputs*
-6IX	1450	6 isolated analog inputs*
-HY	168	Hybrid module (2 relays, 1 AO)*
-A	200	Analog output module (3 AO's)*
-DIO	158	Digital IN/OUT (3DI, 3DO)*
-RS	173	RS-485 or RS-422 serial communications*
-10/30V	105	10-30 Vdc power option
-NEMA4	185	NEMA-4X front option

*Max of 6 options (-6X and -6IX count as 2 options)



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