10, 20 or 30 Input Hybrid Recorders

DR231-12-1, $5555, shown smaller than actual size.

DR231 and DR241 Series Starts at

$4935

2 YEAR WARRANTY

CE

*Optional

- **High-Speed Scanning and Recording on 250 mm (10") Chart**
- **10-Color Recording**
- **Thermocouple, RTD, Voltage Inputs**
- **Optional Floppy Drive for Data Storage**
- **Easy-to-Carry, Lightweight Design**
- **Benchtop in DR231**
- **Panel Mount in DR241**

*** See page S-44 to order.*

The OMEGA® DR231 and DR241 portable hybrid recorders offer high-speed scanning of up to 30 channels in 2 seconds. They have a wide variety of recording functions including analog trend in 10 colors on an effective width of 250 mm. Digital measured values, various messages, zone recording, and partially compressed and expanded recording are documented to support clear interpretation of data. The DR231 and DR241 Series incorporate a large 3-line vacuum fluorescent display which can be used as a process monitor, enabling you to readily view data or check alarm status, even from a remote location. The units are also interactively configured using the easily read display.

Specifications

Number of Inputs: Up to 10, 20 or 30 points

A/D Resolution: ±20,000

Reference Junction Compensation Error: ±1°C/1.8°F (R, S, B, C, W), ±0.5°C/0.9°F (K, J, T, E, N, U, L, CHROMEGA® vs. Au7% Fe)

Scan Cycle Time: 2 to 60 sec selectable (2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 sec)

A/D Integration Time: 20 msec (50 Hz), 16.7 msec (60 Hz), and 100 msec (10 Hz) (50/60 Hz) selectable

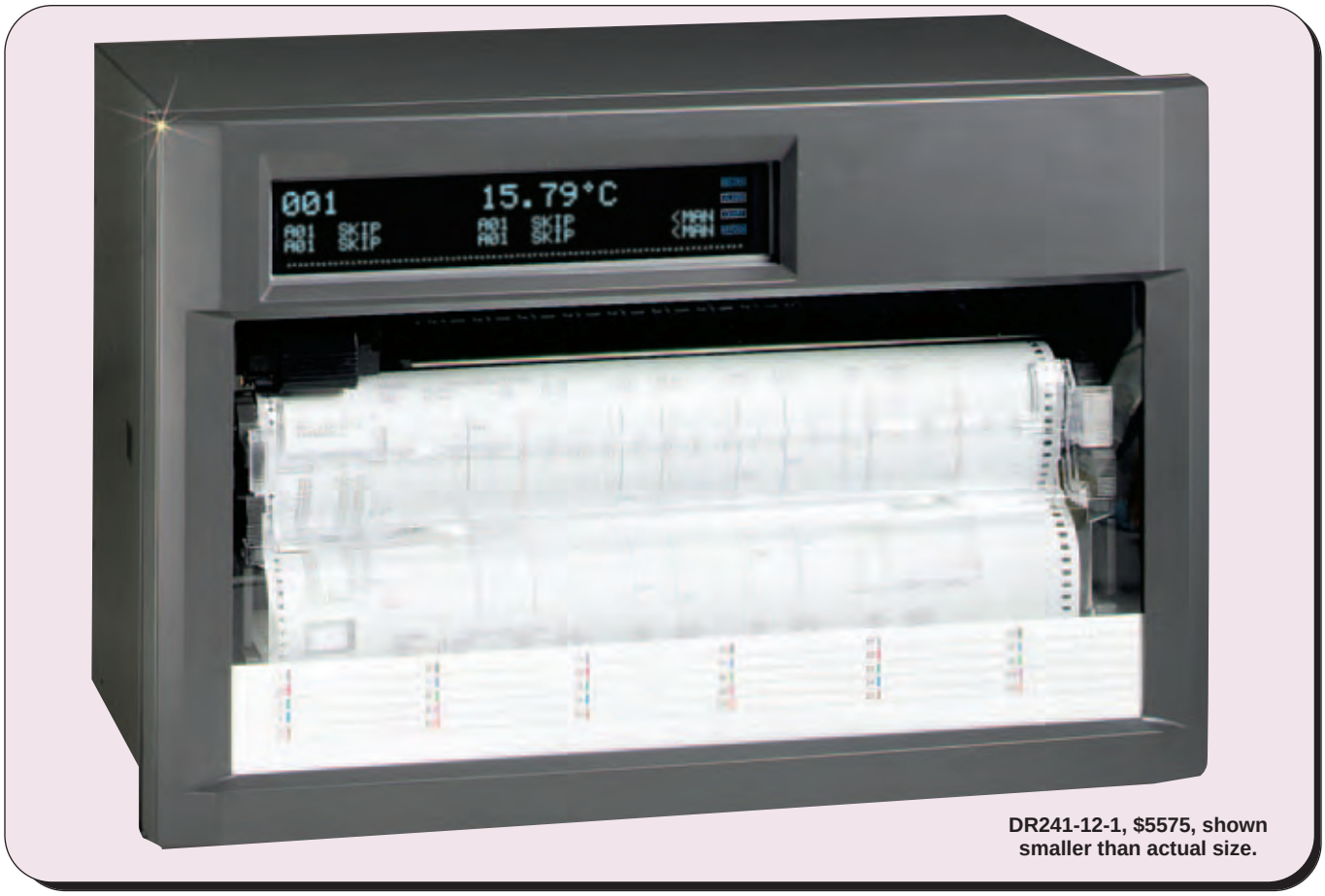
Input Impedance: >10 MΩ on 2V or lower ranges and T/C; approx 1 mΩ on 6V or higher ranges

Input Bias Current: <10 nA

Thermocouple Burnout Protection: ON or OFF selectable for each channel

Temperature Coefficient:
Zero Drift: 0.01% of range/°C,
Full Span: 0.01% of range/°C

Max Input Voltage: ±10 Vdc (50V on 6V or greater ranges)



DR241-12-1, $5575, shown smaller than actual size.

Common Mode Voltage: 250 Vrms AC (50 or 60 Hz)
Common Mode Rejection: 120 dB (50 or 60 Hz ±0.1%)
Normal Mode Rejection: 40 dB (50 or 60 Hz ±0.1%)
Max between Chan: 150 Vrms ac, (50 or 60 Hz except RTD)

Printout

Printing Technique: Raster scan using a wire-dot printer and 10-color ribbon
Recording Colors
Analog Trend Mode:
Trend Recording: Purple, red, green, blue, brown, black, navy blue, yellowish green, red-purple, orange (can be specified for each channel)
Digital printout: Black
Alarm printout: Red (alarm release mark is blue)
Logging Mode: Purple
Effective Recording Span: 250 mm (9.9") for trend
Chart: Z-fold chart, 342.5 mm W x 30 m L (13.5 x 98')
Recording Resolution: ±0.1 mm
Recording Accuracy: Measurement accuracy plus (±0.1% of effective recording span)
Printout Format: Analog trend/analog trend plus digital datalogging
Chart Speed: 1 to 1500 mm/hr
Chart Drive: Pulse motor drive
Chart Speed Accuracy: ±0.1%
Recording Modes: Normal, print on alarm, chart speed/interval changes set by event/action function
Standard Printing Functions: engineering units (up to 6 alphanumerics), tag number (up to 7 alphanumerics), alarms (channel number, alarm types, and the time of alarm On/Off), scale markings (0/100%, 0/50/100%, or 20% steps), program list, manual, message (max 16 characters), and header (60 characters x 5 lines)
Recording Interval for Digital Printout and Chart Speed:
When the recording interval is SINGLE: [Chart speed (mm/hour)] x trend recording interval must not exceed 3000)
When the recording interval is MULTIPLE: Set by timer**Manual Printout:** One scan's worth of data can be digitally printed by a key operation or event/action function

Chart Speed	No. of Digital Print Rows			
	1 Row	2 Row	3 Row	4 Row
10 to 24 mm/h	12	6	4	3
25 to 49 mm/h	4	2	2	1
50 to 99 mm/h	2	1	1	1
100 to 1500 mm/h	1	1	1	1

Zone Recording: Recording width and recording positions (0% and 100% positions) can be set in mm units for each channel in case of trend recording

Display and Controls

Display: 5 x 7 dot matrix, 3 row, vacuum fluorescent; 1st row 22 large, 2 and 3rd, 40 small characters
Data Display: Measured data (tag number, channel number, alarm status, measured value, engineering unit), bar graph, clock, alarm status, relay status, programming data, battery status, and recording format (trend/log)
Scaling Range: -30,000 to 30,000
Calculation: Difference between any channels or moving average for every 2 to 64 scans
Internal Memory: 10-yr lithium battery back up; 512 KB SRAM with floppy disc drive option
Optional Memory: 3.5" floppy drive; 1.4 MB or 720 K

OMEGA CARE℠ Extended Warranty Program

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

Equation to Calculate Total Data Capacity: 256 + 64 x (number of measured ch + number of computation ch) + (number of measured ch x 2 + number of computation ch x 4 + 6) x specified data length

Alarms: Up to 4-channel

Outputs: 12 max with -A4 and -R1 opt

Alarm Types: High (H), low (L), high rate of change (RH), low rate of change (RL), delta high (ΔH) and delta low (ΔL)

Recording:

Trend Mode: CH, number alarm types, and on/off times in the right margin

Logging Mode: CH, number and alarm types at the start of measured data

Alarm Acknowledgement: Pressing the ACK key stops the alarm display flashing and resets the dedicated common relay output

Alarm Reset: Hold type relay output by pressing the RESET key

Display: Flashing display can be obtained for alarm status

General

Ambient Operating Temperature: 5 to 40°C (41 to 104°F)

Humidity Range: 20 to 80%

Power Supply: 90 to 250 Vac, 50 or 60 Hz ±2%

Power Consumption: Approx 130 VA

Clock: With calendar function

Input Terminals:

DR231: Clamped input terminal block

DR241: Screw input terminal block

Mounting: Desktop or flush panel mounting; can be inclined up to 30° backward from vertical

Materials: Steel plate, aluminum plate, plastic moldings

Color:

Display: Light slate gray

DR231 Main Unit: Ice white

DR241 Main Unit: Lamp black

External Dimensions:

DR231:
Approx 291 H x 438 W x 336 mm D (11.5 x 17.25 x 13.25")

DR241:
Approx 288 H x 444 W x 343 mm D (11.35 x 17.5 x 13.5")

Cut Out Dimensions (DR241): 281 H x 425 mm W (11 x 16.7")

Weight:

DR231: Approx 13 kg (28.66 lb)

DR241: Approx 16 kg (35.30 lb)

Optional Features

Alarm Outputs (-A4 Option): 10-points, contact rating 30 Vdc or 250 Vac, 2 A resistive; AND, OR, REFLASH, or latching option type output

DR231-12-1, $5555, shown smaller than actual size.

Computation (-M1 Option): Functions: +, -, x, =, SQR (square root), ABS (absolute value), LOG (common logarithm), EXP (exponential), logic (AND, OR, NOT, XOR), CLOG & TLOG (group or channel; max, min, avg, totals, max minus min)

Remote Control (-R1 Option): Through the contact input, start/stop, chart speed/interval change, manual printout, message recording, digital recording in the trend mode, writing on the memory card, and loading trigger available; input signal; TTL-level, open collector, and contact status, plus 2 alarm outputs

GPIB Interface (-C1 Option): Conforms to IEEE standard 488-1978

RS-232C Interface (-C2 Option): Conforms to EIA RS232C up to 19.2 K baud

Software: The software package runs under the Windows 95, Windows 98, or Windows NT 4.0 operating systems; it realizes highly dependable data acquisition with high operability using a DR130, DR230, or DR240; its extensive graphical tools allow you to easily perform hardware setup, diagnostics, measurement condition setup, data acquisition, historical data display and analysis, data conversation, and more; the DR130, DR230, or DR240 units include software only when a floppy drive is installed in the unit

Software configuration:

- Datalogging software
- Data viewer software
- System setup, diagnostics
- Calibration software
- Parameter setting software

Datalogging Software: The datalogging software displays the measured values as a trend graph in real-time and saves them to hard disk at the same time

Sample Rate Logging Interval: The scan interval can be selected from 0.5, 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 seconds and multiplied by an integer of 1 to 128

Display Functions

Display formats: Analog trend waveform display, digital display

Number of Channels Displayed: 10 channels in analog waveform display; 10 channels in digital display

Number of Pages: Switches between 2 groups of channels

Time Axis Zoom-In: Can be changed during real-time trending (the zoom-in range depends on the window size)

Playback Function: The real-time trend display can be paused and can display past data of up to 1800 points

Window Functions: The window can be resized; 2 groups can be displayed at the analog trend waveform display of 10-channels and digital value display of 10-channels

Data Viewer Software Historical Data Display

Display Formats: Analog trend waveform display, digital value display

Number of Channels Displayed: 10-channels in analog waveform display; 10-channels in digital display

Number of Pages: As required for the two groups of channels

Time Axis Zoom-In: The time axis can be magnified, reduced, and scrolled

Data File Display: Multiple files can be opened at the same time

Ranges

Input Type and Range	Measurement (Digital Display and Printout)	
	Accuracy	Resolution
±20.000 mVdc ±60.00 and ±200.00 mVdc ±2.0000 Vdc ±6.000 and ±20.000 Vdc ±50.00 Vdc	±(0.05% of rdg + 5 digits) ±(0.05% of rdg + 2 digits) ±(0.05% of rdg +2 digits) ±(0.05% of rdg +2 digits) ±(0.05% of rdg +2 digits)	1 µV 10 µV 100 µV 1 mV 10 mV
R 0 to 1760°C S 0 to 1760°C B 0 to 1820°C	±(0.05% of rdg + 1°C) However; R, S: 0 to 100°C ±3.7°C 100 to 300°C ± 1.5°C and B : 400 to 600°C ± 2°C	0.1°C
K -200 to 1370°C	± (0.05% of rdg + 0.7°C) however; -200 to -100°C ± (0.05% of rdg + 1°C)	0.1°C
E -200 to 800°C J -200 to 1100°C T -200 to 400°C J DIN (L) -200 to 900°C T DIN (U) -200 to 400°C	± (0.05% of rdg + 0.5°C) However; J, L DIN: -200 to -100°C ±(0.05% of rdg + 0.7°C)	
Kp vs Au7Fe 0 to 300°K	±(0.05% of rdg + 0.7K)	0.1K
N 0 to 1300°C	±(0.05% of rdg + 0.7°C)	0.1°C
C (W) 0 to 2315°C	±(0.05% of rdg + 1°C)	
PT100 -200 to 600°C	±(0.05% of rdg + 0.3°C)	0.1°C
PT100 -140 to 150°C	±(0.05% of rdg + 0.3°C)	0.01°C
Ni100/120 -60 to 180°C	±(0.05% of rdg + 0.3°C)	0.1°C
Cu10 Ω -200 to 300°C	±(0.2% of rdg + 0.7°C)	0.1°C

MOST POPULAR MODELS HIGHLIGHTED!

To Order *(Specify Model Number)*

Model Number	Price	Description
DR231-00-1	**$4935**	10-channel hybrid recorder, benchtop
DR231-12-1	**5555**	10-channel hybrid recorder, benchtop with floppy drive
DR241-00-1	**4955**	10-channel hybrid recorder, panel mount, internal illumination
DR241-12-1	**5575**	10-channel hybrid recorder, panel mount, with floppy drive, internal illumination

Recorder comes complete with print ribbon, one package of chart paper and operator's manual.

*For 20-channel and change "**-1**" to "**-2**", add **$425.***
*For 30-channel and change "**-1**" to "**-3**", add **$850.***

Each recorder comes complete with one Z fold chart, 10-color ribbon and operator's manual.

*For CE option, add "**-CE**" suffix and add **$375** to price.*

Ordering Example: DR241-12-2-A4-CE,** panel mount recorder with floppy drive, 20-channels, alarm relays, and CE, $5575 + 425 + 775 + 375 = **$7150.

OCW-3,** OMEGACARE℠ extends standard 2-year warranty to a total of 5 years ($350), $7150 + 350 = **$7500.

DR241-12-1, $5575, shown smaller than actual size.

Options

Ordering Suffix	Price	Description
-A4	**$775**	10-alarm relays
-M1	**775**	Math function
-C1	**775**	GPIB communications
-C2	**775**	RS232 communications
-R1	**775**	Remote control
-CE	**375**	CE Approval

Accessories

Ordering Suffix	Price	Description
DR200-ZFP-10	**$177**	Z-fold chart paper, 10-pack, 30 m (98')
DR200-RC	**29**	10-color print ribbon

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