

# 1-4 Channel Flatbed Pen Recorders

Accept DC Voltage, Thermocouple  
and RTD Inputs

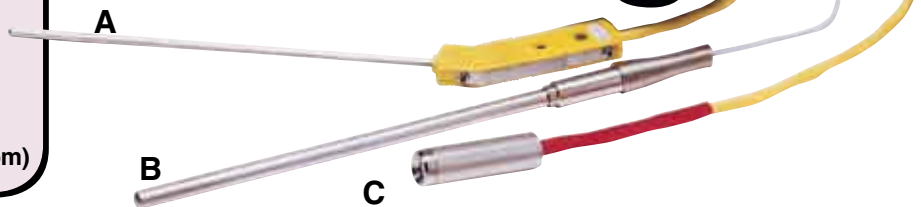
RD3700 Series



Shown with:

- A) GKMSS-125G-6 low-noise thermocouple with 30° connector (see [omega.com](http://omega.com))
- B) PR-11-2-100-1/4-6-E RTD probe (see [omega.com](http://omega.com))
- C) OS36-K-240F infrared thermocouple (see [omega.com](http://omega.com))

RD3722-42



- ✓ Accepts DC Voltage, 12 Types of Thermocouples and RTD Inputs
- ✓ Choice of Measured Data, Bar Graph or Range Data Display Modes

- ✓ Model RD3721 Has Printer and Electronic Pen Lift
- ✓ Alarm Outputs of up to Four Points (Optional)

- ✓ Optional GPIB or RS232C Interface
- ✓ 250 mm (10") Chart
- ✓ 115/230 Vac Powered

The easy-to-operate OMEGA® RD3721 and RD3722 flatbed pen recorders are sophisticated, high performance units which accept a wide range of input types. Features include a choice of measured data, bar graph or range data display modes. Versatile optional capabilities include GPIB or RS232C interface to handle data output and panel setting data, a memory card with a capacity of 256 K, mathematical functions, remote controls, alarms, outputs up to four points and °F range data display. The RD3721 comes with an electronic pen lift and printer. The RD3722 comes with a manual pen lift. Both units provide high speed recording (1600 m/sec max), an auto span shift mode and partially expanded-scale recording, whereby any portion within full scale can be expanded or reduced for each pen.

**Remember to Order Extra Pens and Paper!**



**Specifications Measurements**

**Drive System:** Automatic null-balancing digital servo mechanism with brushless DC servomotor

**Type of Input:** dc V, 1 mV to 200V FS; T/C Types J, K, E, T, N, C, J DIN, T DIN, R, S, B, Kp vs Au7Fe; RTD Pt100, Pt50, Ni100

**Reference Junction Compensating Accuracy (T/C):** ±0.5°C (10.9°F) for K, E, J, T, N, C, J DIN, T DIN (and KP vs Au7Fe); 1°C for R, S and B

**Filter:** 0.1, 1 Hz or OFF (selectable)

**Zero Set:** Adjustable

**Measuring Cycle:** 135 Hz

**Standard Pen Offset Compensation:** Average, max/min recording selectable, resolution on time axis: 0.05 mm, automatic sweep function for pen offset, data selectable pen offset compensation reference pen

**Input Impedance:** Approx 1Ω (Vdc and thermocouple)

**Allowable Source Resistance:** <1 KΩ (Vdc and thermocouple)

**Temperature Coefficient:**  
**Zero Drift:** 0.05 μV/°C +0.01% of range/°C  
**Full Scale:** 0.01% of range/°C

**Maximum Allowable Input Voltage:** 250 Vdc

**Maximum Common Mode Voltage:** 250 Vrms AC

**Common Mode Rejection:** More than 150 dB at AC

**Normal Mode Rejection:** More than 50 dB at 50 or 60 Hz

**Recording And Printing**

**Pens:** Disposable felt-tip pen cartridges (analog data)

**Printing System:** Wire-dot printer using ribbon cassette (digital data)

**Effective Recording Span:** 250 mm (analog data)

**Pen Offset Between Channels:** Approx 4 mm on the time axis

**Number of Channels:** 1, 2, 3, or 4

**Recording Colors:** First pen is red, second pen is green, third pen is blue, fourth pen is brown

**Recording Accuracy:** Measurement accuracy plus ±0.2% of effective recording span (including non-linearity, deadband and error between ranges)

**Maximum Pen Speed:** Approx 1600 mm/s (63 in/s)

**Maximum Pen Acceleration:** Approx 8G

**Printing Rate:** Approx 1.5 sec/line (for RD3721 only)

**Chart:** Z-fold chart, 270 mm x 20 m (10.6" x 65'); optional roll chart, 270 mm x 20 m (10.6" x 65')

**Chart Speeds:** 10 to 1200 mm/min and mm/h (1 mm steps), and 0.5 to 45.0 in/min and in/hr (0.1" steps)

**Change of Chart Speed (Optional):** Changes chart speed with remote control signals

**Record ON/OFF Selectors:** Independently provided for each channel on front panel (ON: measurement/recording, OFF: measurement)

**Pen Lift:** All pens are lifted and lowered simultaneously (for RD3721 only)

**Chart Drive:** Pulse motor drive

**Chart Speed Accuracy:** ±0.1% (at recording of longer than 1 m)

**Digital Data Printout:** Time, chart speed, channel number (tag number), measured data and engineering unit are printed out at the following intervals:

Chart Speed (1 mm = 0.03937)		
mm/min	mm/h	Printing Intervals
1200 to 300	—	1 min
299 to 30	—	10 min
29 to 10	1200 to 120	1 h
—	199 to 60	2 h
—	59 to 40	3 h
—	39 to 20	4 h
—	19 to 10	12 h

**Tag Number Printout:** Tag number can be printed out in place of channel number, up to 7 alphanumeric (for RD3721 only)

**Alarm Printout:** Channel number, alarm type and the time of alarm ON/ OFF are printed (for RD3721 only)

**Scale Markings Printout:** 0% and 100% scale values can be printed out at the same interval as digital printout (for RD3721 only)

**Program List Printout:** Contents of entire setting memory can be listed on the chart (for RD3721 only)

**Manual Printout:** Time and measured data for all channels can be printed out in a single line by depressing the MANUAL PRINT key (for RD3721 only)

**Message Printout:** Message of up to 70 characters can be printed by depressing the MANUAL MESSAGE key (message 0), or by external contact signal (message 1 to 4; optional, up to 4 channels), for RD3721 only

**Change of Chart Speed Printout:** Chart speed and time can be printed out at the change of chart speed (for RD3721 only)

**Pen Offset Compensation:** ON/OFF Printout: ON/OFF mark and time can be printed out (for RD3721 only)

**Change of Range Printout:** Changed contents and time can be printed at the change of range, on auto span shift mode (for RD3721 only)

**Partially Expanded-Scale Recording:** Any portion within full scale can be expanded or reduced for each channel

**Auto Span Shift Mode:** Automatically shifts to ±50% of span, and recording continues when the input exceeds the measuring span

**External Input Span:** Small error of external converter can be corrected by setting the span with actual input voltage (zero is span left, full is span right)

**Display**

**Type of Display:** Vacuum fluorescent display (5 x 7" dot matrix, blue), 20 characters for each channel



**Display Modes:** 3 display modes can be selected by depressing the DISPLAY SELECT key

**Digital Data Display:** Measured data (7 digits), date, time and chart speed;

**Bar Graph Display:** (2.5% resolution)

**Range Data Display:**

Same as input Table

## Alarms

**Number of Alarm Set Levels:**

Up to 2 levels/channel

**Alarm Types:** High (H), low (L), delta high (dH), and delta low (dL)

**Alarm Outputs (Optional):** Up to 4 points (internal, contact rating: 24 Vdc and AC 1 A)

## Computing Functions

**Standard Functions:** Scaling (ranges: -22000 to +22000), and  $\Delta T$

**Standard Memory Card:** For storing and setting data (memory capacity of 8 K), comes with lithium battery (with life of about 5 years)

**Battery Back-Up Memory:** Maintains all settings for about 10 years (at room temperature) when power is removed

**Chart END Alarm:** Automatic pen lift (for RD3721 only) at out-of-chart condition (alarm output, optional)

**Mounting:** Horizontal (can be tilted up to 10%)

**Operating Range:** 0 to 40°C (32 to 104°F); 0 to 80% RH

**Insulation Resistance:** More than 100 M $\Omega$  at 500 Vdc between power line and case, and between input terminals and case

**Dielectric Strength:** 1500 Vac for 1 minute between power line and case, and between input terminals and case

**Power Requirements:**

90 to 250 Vac, for both 50 and 60 Hz

**Power Consumption:** 1-channel model, 85 VA max, 45 VA balanced; 2-channel model, 100 VA max 50 VA balanced; 3-channel model, 115 VA max, 55 VA balanced; 4-channel model, 130 VA max, 60 VA balanced

**Dimensions:** 185 H x 448 W x 455 D mm (7 $\frac{1}{4}$  x 17 $\frac{3}{8}$  x 17 $\frac{7}{8}$ "

**Weight:** from 14 kg (25.4) to 13.5 kg (29.8 lb) depending on configuration

## Alarm Option (-AK04)

**Number of Outputs:** 4 points

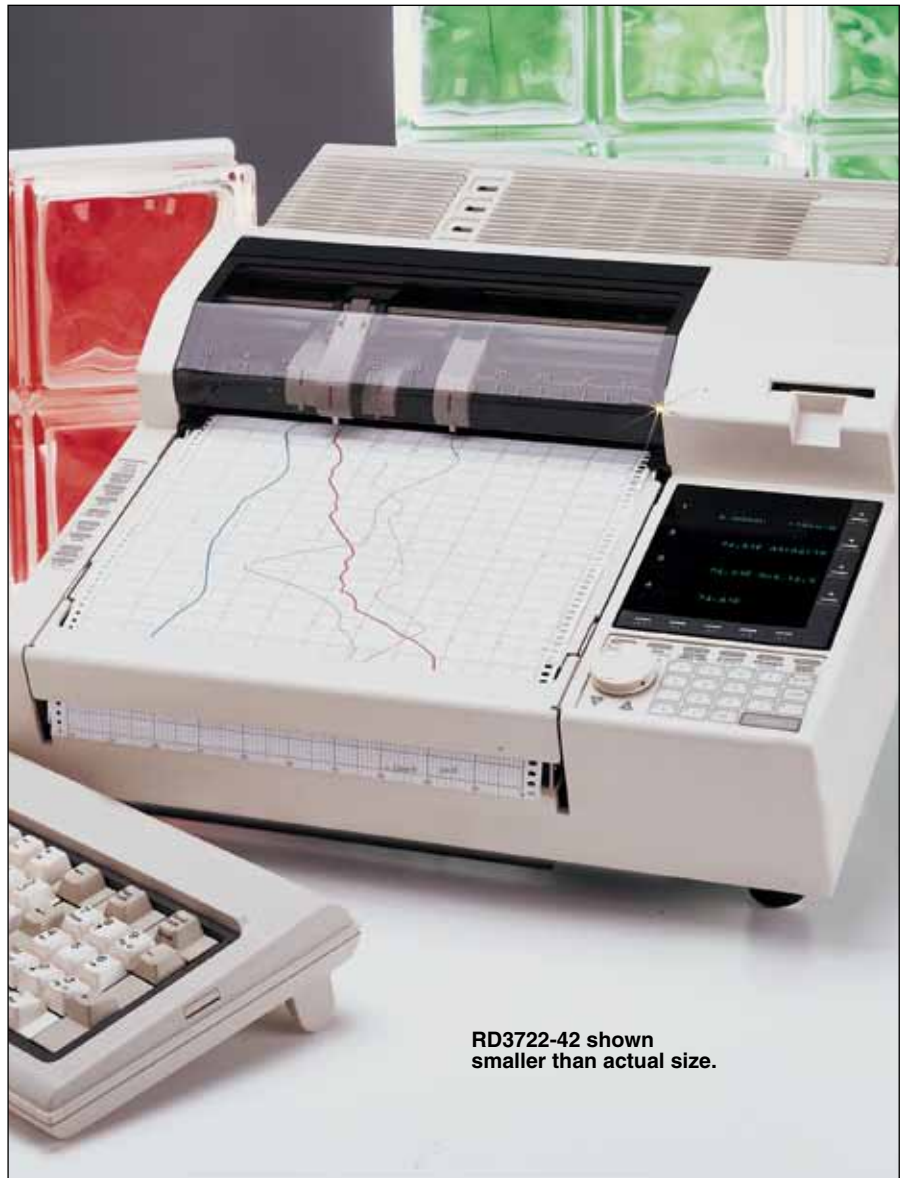
**Contact Rating:** 24 Vdc and AC 1 A

**Outputs:** Alarm, FAIL alarm and chart END alarm outputs

## GPIB Interface (-GPIB)

**Functional, Electrical and Mechanical Specifications:** Meets the IEEE Standard of 488-1978

**Talker Functions:** Input of measured data (ASCII), output of measured data (ASCII and binary), input/output of setting data (ASCII), output of memory data (ASCII and binary)



RD3722-42 shown smaller than actual size.

**Listener Functions:** Controls except for power ON/OFF key lock ON/OFF and chart drive

## RS232C Interface (-RS232)

**Functional, Electrical and Mechanical Specifications:**

Meets the EIA RS232C

**Controller Interface Functions:**

Input of measured data (ASCII), output of measured data (ASCII and binary), input/output of setting data (ASCII), output of memory data (ASCII and binary)

**Data Transfer Rates:** 75, 150, 300, 600, 1200, 2400, 4800, 9600 bps

## Remote Controls (-REM)

**Remote Control Signals:**

External contact, open collector of TTL-level signal

**Chart Drive Control:** Start, L logic level or closed contact; stop, H logic level or open contact

**Message Printout:** Start, L logic level or closed contact (for RD3731 only)

**Change of Chart Speed:** Chart speed 2, L logic level or closed contact, chart speed 1, H logic level or open contact

**Pen Lift:** All recording pens lowered, L logic level or closed contact; all recording pens lifted, H logic level or open contact (for RD3721 only)

**Record On/Off Selection:**

OFF (Measurement), L logic level or closed contact; OFF (measurement/recording), H logic level or open contact

**External Trigger:** Data memory write, L logic level or closed contact

**Math Option (-MATH):** +, -, x,  $\div$ , square root, absolute value, logarithm, exponential function (up to 4 channels); not available for 1-pen model





Convenient side panel inputs.

Input Type	Range	Accuracy
DC V	1 mV to 200V FS	±(0.05% of rdg + 0.03% of range and 0.5% μV
T/C	R	±(0.05% of rdg. + 1°C)
	S	±(0.05% of rdg. + 1°C)
	B	±(0.05% of rdg. + 1°C)
	K	±(0.05% of rdg. + 0.5°C)
	E	±(0.05% of rdg. + 0.5°C)
	J	±(0.05% of rdg. + 0.5°C)
	T	±(0.05% of rdg. + 0.5°C)
	N	±(0.1% of rdg. + 0.5°C)
	C	±(0.1% of rdg. + 1°C)
	J DIN (L)	±(0.05% of rdg. + 0.5°C)
T DIN (U)	±(0.05% of rdg. + 0.5°C)	
KP vs. Au7/Fe	±(0.05% of rdg. + 0.5°C)	
RTD	Pt 100 (1 mA)	±(0.05% of rdg. + 0.2°C)
	Pt 50 (1 mA)	±(0.05% of rdg. + 0.3°C)
	Ni 100	±(0.05% of rdg. + 0.2°C)



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

### To Order

Model No.	No. of Pens	Inputs	Printer
RD3722-12	1	Thermocouple, V	No
RD3722-15	1	Thermocouple, RTD, V	No
RD3722-22	2	Thermocouple, V	No
RD3722-25	2	Thermocouple, RTD, V	No
RD3722-32	3	Thermocouple, V	No
RD3722-35	3	Thermocouple, RTD, V	No
RD3722-42	4	Thermocouple, V	No
RD3722-45	4	Thermocouple, RTD, V	No
RD3721-12	1	Thermocouple, 1 mV	Yes
RD3721-15	1	Thermocouple, RTD, V	Yes
RD3721-22	2	Thermocouple, V	Yes
RD3721-25	2	Thermocouple, RTD, V	Yes
RD3721-32	3	Thermocouple, V	Yes
RD3721-35	3	Thermocouple, RTD, V	Yes
RD3721-42	4	Thermocouple, V	Yes
RD3721-45	4	Thermocouple, RTD, V	Yes

Comes complete with power cord, paper, 1 pen per channel, ribbon for printer version, an 8 K memory card for storing setup parameters only, Lithium battery and operator's manual.

**Ordering Example:** RD3721-25, 2-pen recorder with printer, accepts thermocouple, RTD and voltage inputs, plus RD3720-RC, black ribbon cassette, RD3720-01 and RD3720-02, red and green pens, and RD3720-ZFP, Z-fold charts.

OCW-3, OMEGACARE<sup>SM</sup> extends standard 2-year warranty to a total of 5 years.

### Options

Ordering Suffix	Description
-GPIB	GPIB communications*
-RS232	RS232 communications*
-MATH	Math option
-REM	Remote controls
-AK04	Alarm option
-ROL	Roll chart drive
-REROL	Chart reroll

\* Mutually exclusive.

**To order options:** Add suffix to model number for an additional cost.

**Ordering Example:** RD3722-12-GPIB.

### Accessories

Model No.	Description
RD3720-ZFP	1 each, Z-fold charts, 250 mm x 20 m (10" x 65'), standard
RD3720-RP	1 each, roll charts, 250 mm x 20 m each* (10" x 65')
RD3720-01	3 red pens, channel-1
RD3720-02	3 green pens, channel-2
RD3720-03	3 blue pens, channel-3
RD3720-04	3 brown pens, channel-4
RD3720-RC	Black ribbon cassette

\* Roll paper requires "-ROL" option on recorder.

