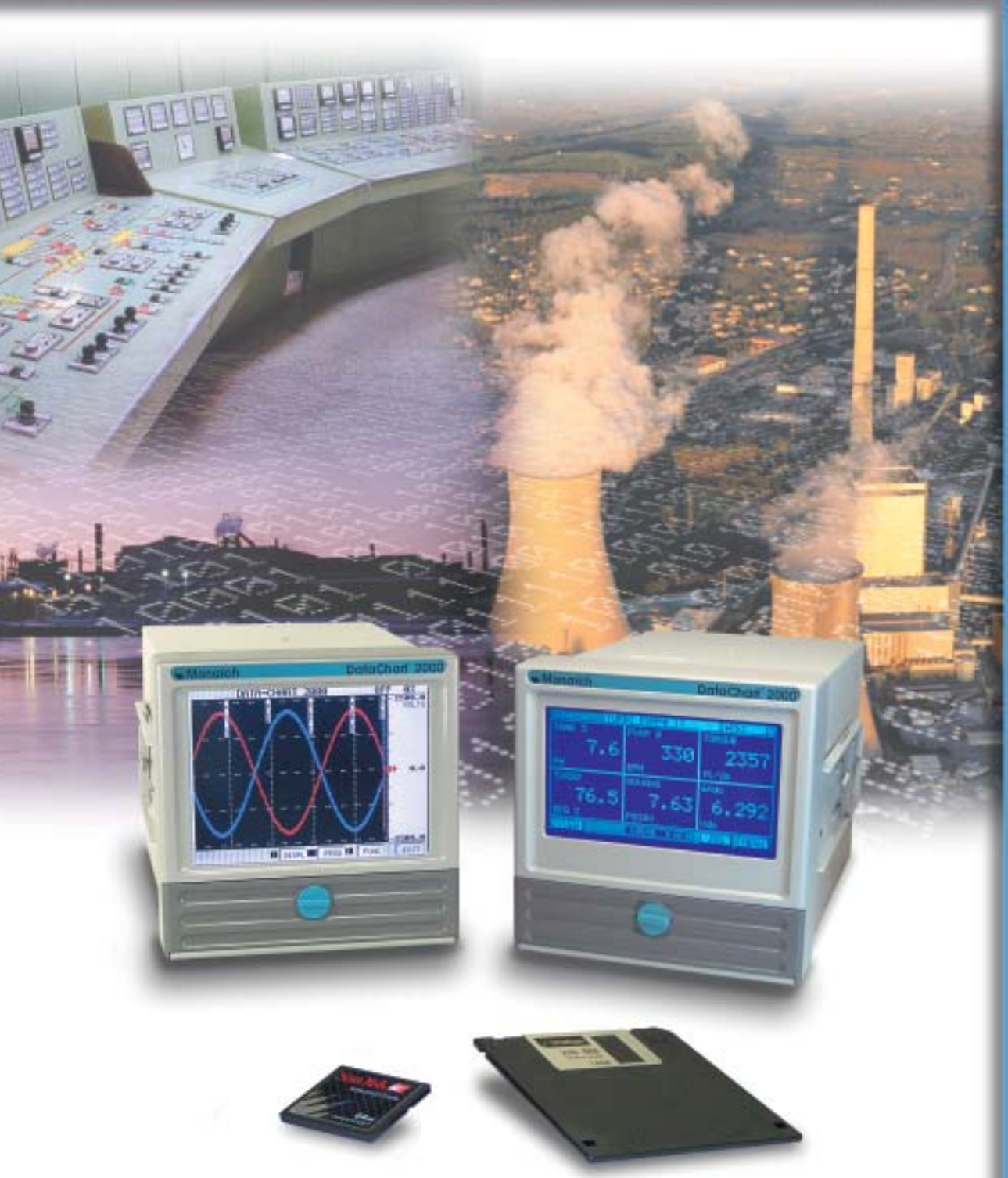
DataChart 2000 Series
Paperless Recorders
Technical information



MONARCH INSTRUMENT

DATA-CHART 2000 SERIES

Paperless Recording Systems

Industry demands a higher level of reliability, better efficiency, more flexibility and lower costs. These industry requirements were kept clearly in focus when we designed our fourth generation of Paperless Recording Systems:

The Data-Chart 2000 Series

Because your data is so important Data Chart recorders were designed to be ultra-reliable. We chose the finest components available and combined them with a robust modular mechanical structure. Our optimized design means fewer components are needed. Fewer components means fewer failures.

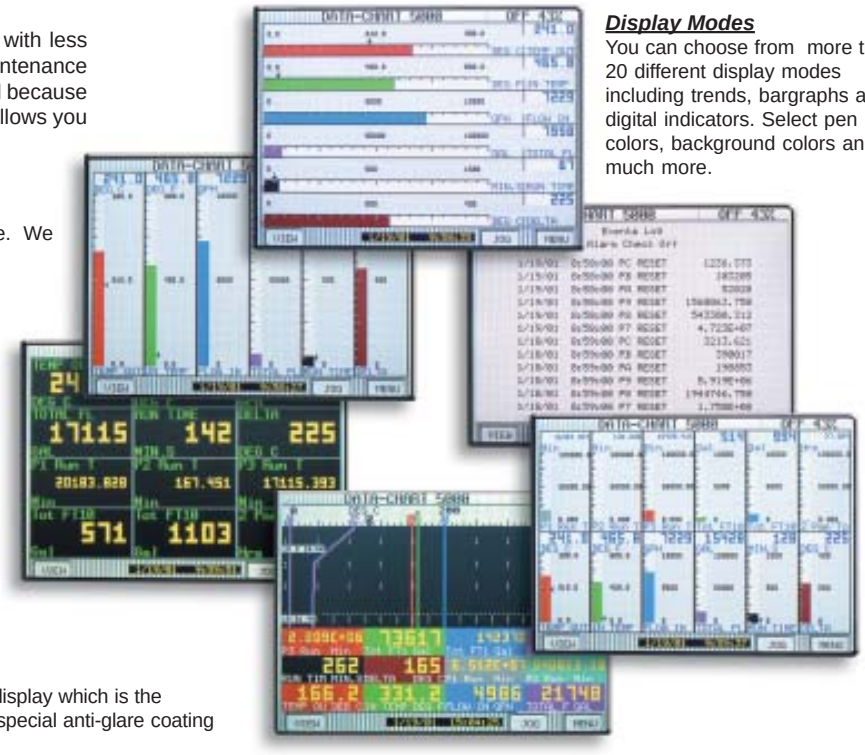
Up to 2 Megabytes of non-volatile memory keeps your data safe. You will never lose recorded data, even during a power outage. Data is downloaded automatically to your choice of removable media: 3.5" 1.44 Meg disk or CompactFlash™ card (up to 2 Gig in size).

Time is Money! Corporate down-sizing and cost cutting leaves you with less time to accomplish your goals. Data-Chart recorders are virtually maintenance free. No paper or pens to replace, no mechanical parts to wear out and because they are digital instruments, they requires less time to calibrate. This allows you to use your time more efficiently.

We're Flexible. Data Chart recorders are unparalleled in providing the highest level of flexibility of any paperless recorder made in the world. Universal inputs, networking capability, powerful math packages and a multitude of display choices allow you to display, record and communicate your data the way you want.

Simple Setup
Our intuitive touchscreen control makes configuring the DC2000 a breeze. We make full use of our screen with a large, easy to follow menu system.

Display Modes
You can choose from more than 20 different display modes including trends, bargraphs and digital indicators. Select pen colors, background colors and much more.



Outstanding Viewability
The DC2000 has a brilliant 5.6" TFT active matrix color LCD display which is the largest of any 144mm square recorder. We've even added a special anti-glare coating to optimize viewability under any conditions.

Companion Software is a powerful and intuitive Windows based application that allows you to monitor real time data or review previously recorded data in graphic or tabular format, search files for specific events, link alarm and event files to trended data, print graphic or tabular files and export files to spreadsheet applications such as Excel.

Recorder configurations are easily generated using Companion Software and can be downloaded to your recorders storage media and transferred to the recorder or transferred directly over ethernet or serial line communications. Monitor, configure and control up to 32 units with the RS485 Modbus option or control from remote locations using a modem connection. Whatever the application, Companion Software puts you in complete control.

Guardian Software allows you to create a complete single station data supervisory and storage system. If you need to monitor data in real time or if you require redundant data storage to a PC, Guardian Software is the solution.

Multiple Data-Chart 2000's can be placed on a standard ethernet or Modbus network along with your other plant instruments and monitored in real time. In addition, data can be stored on your local PC greatly improving data management and security!

DATA-CHART 2000 SERIES

Specifications

Operating

Input Signals

DC Voltage: Linear, Industrial square root, logarithmic
+/- 150mV, +/-1.25V, +/- 2.5V **Accuracy:** 0.06%
+/- 12.5V and +/- 25V **Accuracy:** 0.1%

DC Current: 4-20mA, 0 to 20mA and 10 to 50 mA.
Accuracy: 0.15% using external 50 ohm 0.1% shunt.

Dry Contact: Open = 0, Closed = 1

External: Signals can be input via serial port (Modbus).

Thermocouple: Resolution: 0.1°C, CJR accuracy: 0.5°C (0 to 50°C)
Thermocouple burnout detection.

Type	Accuracy					
J*	0.1%	J	-101 to 1200°C	+/-1.5°C	-150 to 2190°F	+/-3.0°F
K**	0.1%	K	-101 to 1372°C	+/-1.5°C	-150 to 2500°F	+/-3.0°F
T**	0.2%	T	-101 to 400°C	+/-1.5°C	-150 to 750°F	+/-3.0°F
E**	0.11%	E	-101 to 1000°C	+/-1.5°C	-150 to 1832°F	+/-3.0°F
R	0.16%	R	-50 to 1768°C	+/-3.0°C	-58 to 3200°F	+/-6.0°F
S	0.17%	S	-50 to 1768°C	+/-3.0°C	-58 to 3200°F	+/-6.0°F
B	0.22%	B	0 to 1820°C	+/-4.0°C	32 to 3300°F	+/-7.0°F
C	0.13%	C	0 to 2400°C	+/-3.0°C	32 to 4350°F	+/-6.0°F
N**	0.10%	N	-101 to 1300°C	+/-1.5°C	-150 to 2372°F	+/-3.0°F

* (+/-2.5°C -210 to -100°C) **(+/-2.5°C -270 to -100°C)

RTD: Base accuracy 0.2% or 0.5°C (1°F). Resolution 0.1°C 2 or 3 wire connection. Cable compensation to +/- 50 ohm open and short circuit detection.

10 ohm Cu	-70 to 170°C	-94 to 338°F
100 ohm Pt 385	-220 to 850°C	-364 to 1560°F
100 ohm Pt 392	-180 to 820°C	-292 to 1500°F
200 ohm Pt 385	-220 to 400°C	-364 to 750°F
200 ohm Pt 392	-180 to 400°C	-292 to 750°F
120 ohm Ni	-70 to 300°C	-94 to 570°F
1000 ohm Ni (DIN 43760)	-60 to 209°C	-76 to 408°F

Input Resolution 0.0015% of full scale, 16 bit unless otherwise stated
Input Impedance > 10 Meg on 150mV, 1.25V and 2.5V ranges, >100 K on 5, 12.5, 25 Volt ranges.
Input Channels 2, 4, 6 or 12
Max Input 50 Vdc
CMNR >100db, 50/60 Hz
Measurement Rate Measures all direct input channels every 125 milliseconds (each channel 8 times/second independent of no. of channels).
Math Functions +, -, x, /, logarithms, totalization, powers, averages, timers, and custom equations.
EMC Compliance Meets or exceeds the requirements of EMC 89/336/EEC

Recording

Recording Rates Selectable from 8/sec. to 10 minutes
Data Format Proprietary binary format for data security.
Data Storage Data stored in non-volatile RAM and recorded automatically, or on demand, to on board removable media.
Full media format and verify capability.

	Media	Measurements	Capacity
Removable	3.5" Disk	700,000	1.44Mb
	CompactFlash Card	950 Million	(Up to 2 GB in size).

Internal 1 Mb RAM (Non-Volatile) Standard
2 Mb RAM (Non-Volatile) Optional

File Types Data files, Alarm and Event files, Configuration files, Language files.
Multiple files of different names on a single disk.

Display

Display Type Color CCFL backlit Active Matrix TFT Liquid Crystal Display (5.6 inch) with touchscreen control.
Resolution 320 x 240 pixels.
Display Type Mono CCFL backlit STN Liquid Crystal Display (5.0 inch) with touchscreen control.
Resolution 240 x 128 pixels.
Display Modes Graphics (Trending vertical or horizontal), Bar Graphs (vertical or horizontal), Digital Meters, Alphanumeric Alarm and Event Data or combinations on a split screen. Review trended data. Search by time, date or signal value.
Virtual Chart Speed Programmable from 0.5in/hr to 600in/hr or 10mm.hr to 15,000mm/hr. Chart speed is independent of storage rate.
Display Windows Time/Date, Graphics (Bars, Large Digital, Trends), Disk Status, Systems Status, Menu Button Bar, Unit Identification, Alarms/Events.
Power Requirements 100 to 240Vac, 50/60Hz or 125 to 300Vdc, 35VA max.
Optional 24Vdc +/-15%.
Power Fail Protection Programmed parameters stored in non-volatile memory. Clock battery backed. Data retention time without power >12 months.
Chart and alarm browse buffers stored in non-volatile memory.
Safety UL (3111-1) cUL (IEC1010-1) CE low voltage directive 73/23/EEC. Complies with EN 61010-1.

Operating Environment

Temperature 5°C to 40°C per UL3111-1/IEC1010-1 with disk drive. -10°C to 50°C with Compact Flash Drive.
Humidity 10% to 80% RH per UL3111-1/IEC1010-1.
Wash Down IP65 Front panel only.

Options

Alarm Contacts 3 or 6 isolated Form C, 3 amp @ 250Vac or 26 Vdc.
Remote Inputs 3 isolated inputs, user selectable as dry contact or 5 to 12 Vdc (mech. relay), 12 to 24 Vdc (SS relay) activated.. Inputs share a common. Configurable for chart control, alarm acknowledge/reset, event markers, totalizer reset or logic input.
Communications ESD protected RS232 with full hand shaking. Supports modem or isolated RS485 port.
Protocol: MODBUS RTU, MODBUS ASCII or serial printer port. Ethernet: 10BaseT. Unit may be remotely configured.
Printer Port Parallel printer port (25 pin D shell connector).

DATA-CHART 2000 SERIES

Ordering Information

DC2 – [ ] [ ] – [ ] – [ ] [ ] [ ] [ ] [ ]

Display

C	TFT Active Matrix Display
M	Monochrome Display

Power

1	90-127, 194-264 Vac
2	18-30 Vdc
1st	90-264 Vac w/screw terminal connectors

Isolation Input Modules

Module	Channels	Description
U2	2	Universal DC V/I T/C and RTD
U4	4	Universal DC V/I T/C and RTD
U6	6	Universal DC V/I T/C and RTD
U12	12	Universal DC V/I T/C and RTD

Data Storage-Removable

0	3.5” Disk Drive
1	Compact Flash Card Drive

Output Options

0	No Alarm Outputs
1	6 Form C Relays 3A@250 Vac, 3 Ctrl inpt.
2	3 Form C Relays 3A@250 Vac, 3 Ctrl inpt.

Communications

0	None
1	RS485 / RS232 - Isolated
2	Ethernet - 10BaseT

Data Storage - Internal

0	1 Mbyte
1	2 Mbyte

Printer Port

0	None
1	Parallel Printer Port (25 Pin D Shell)

Example Model Numbers:

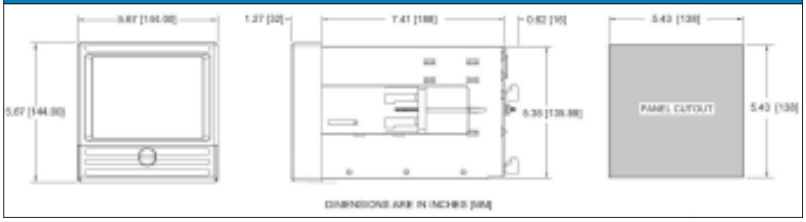
DC - 2C1 - U4 - 11200

DC - 2M1 - U12 - 00000

Accessories

50 ohm precision external shunt resistor for current inputs (+/-0.05%).	MAS50R	
External USB port card reader.	CFCR	
Companion Software for Windows 95, 98,NT, XP and 2000.	SW-3T	
Guardian Software for Windows 95, 98, NT, XP and 2000.	GUARDIAN	
Portable maintenance kit. Includes: Rubber feet and carry handle. (factory installed)	PMK-2	
Nylon padded carrying case with shoulder strap. Will hold recorder, power cable and diskettes.	CC-8	
256MB, 512MB, 1 Gig or 2 Gig CompactFlash™ memory cards.	MC256MB MC512MB MC1024MB MC2048MB	

DC-2000 Installation Dimensions



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