

## PAPERLESS RECORDING SYSTEMS

### Industry demands:

- Higher reliability
- Increased flexibility
- Optimum efficiency
- Lower costs

### The Data Chart 2000 Series Paperless Recorders meet the demands.

The Data-Chart 2000 has 2, 4 or 6 direct universal isolated inputs that are menu selectable for DC voltage, DC current, thermocouples and RTD's. The intuitive Touchscreen control provides easy, fast set up and operation.

A measurement rate of 8 samples per second makes the DC2000 ideal for recording process signals that change quickly such as pressure. Or, if you require information less frequently, you can select to record between 8 samples per second and ten minutes.

Data is automatically downloaded to removable media. Standard removable storage is a 3.5" 1.44Mb disk or, for large amounts of data, you can choose the 100 Mb ZIP™ drive, or the PCMCIA card drive option which will store up to 200 Mb of Data!

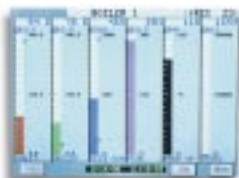
Our brilliant 5.6" (142mm) active matrix TFT color display is the largest in it's class and with a special anti-glare coated Touchscreen the viewability is second to none. If you need a more economical solution, the DC2000 can also be ordered with a super bright blue monochromatic display. The IP65 rated front bezel is ideal for mounting the 2000 series in wet or dusty environments.

Communication options offer great flexibility in accessing data or controlling the DC2000. Data can be accessed and downloaded over standard phone line using the RS232C option and a modem. The RS485 Modbus option will allow the DC2000 to be installed into an existing Modbus network or you can connect up to thirty one recorders in series. The 10BaseT Ethernet port option allows direct connection to LAN's or WAN's and the standard TCP/IP protocol means that you can transfer data over the Internet.

There are more than 20 display modes to choose from. This gives you unparalleled flexibility to view only the data you need to see in virtually any format. Grouping of channels maximizes efficiency.

### Display Modes

Bargraph



Horizontal Trend



Alarm/Events



Digital Indicators



### Features

- 2, 4 or 6 direct universal inputs: DC voltage, current, RTD and thermocouples.
- High speed storage capability: up to 8 samples per second for each channel.
- Multiple storage media options: 3 1/2" 1.44Mb disk, 100Mb ZIP™ disk or ATA Flash PCMCIA card up to 200Mb.
- 5.6" Brilliant TFT active matrix color display or 5" monochrome display.
- Intuitive Touchscreen Control with anti-glare coating.
- IP65 rated front panel.
- Standard DIN enclosure: 144mm x 144mm bezel
- 6 relay contact or solid state relay outputs/3 digital control inputs.
- Parallel printer output.
- Serial output options: RS232 or RS485.
- 10BaseT Ethernet connection.
- Companion Software for unit configuration, communication, data analysis, print and export to standard spreadsheet/database applications.

### Benefits

- Eliminate costly paper and pens.
- No maintenance.
- Optimize management of critical process data.



**MONARCH INSTRUMENT**

Innovation in Instrumentation

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Distributed by:

## Specifications

<b>Operating</b>																																																																															
<b>Input Signals</b>	<p><b>DC Voltage:</b> Linear, Industrial square root, logarithmic Full Scale ranges: +/- 100mV, +/-1V, +5V, +10V and +25V <b>Accuracy:</b> 0.05%</p> <p><b>DC Current:</b> 4-20mA, 0 to 20mA and 10 to 50 mA. <b>Accuracy:</b> +/-0.1% using external 50 ohm shunt.</p>																																																																														
<b>Thermocouple:</b>	<p>Resolution: 0.1°C Thermocouple burnout detection.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%;">J</td> <td style="width: 10%;">-210 to 1200°C</td> <td style="width: 10%;">+/-1.5°C</td> <td style="width: 10%;">-340 to 2190°F</td> <td style="width: 10%;">+/-3.0°F</td> </tr> <tr> <td></td> <td>K</td> <td>-270 to 1372°C</td> <td>+/-1.5°C</td> <td>-450 to 2500°F</td> <td>+/-3.0°F</td> </tr> <tr> <td></td> <td>T</td> <td>-270 to 400°C</td> <td>+/-1.5°C</td> <td>-450 to 750°F</td> <td>+/-3.0°F</td> </tr> <tr> <td></td> <td>E</td> <td>-270 to 1000°C</td> <td>+/-1.5°C</td> <td>-450 to 1832°F</td> <td>+/-3.0°F</td> </tr> <tr> <td></td> <td>R</td> <td>-50 to 1768°C</td> <td>+/-3.0°C</td> <td>-58 to 3200°F</td> <td>+/-6.0°F</td> </tr> <tr> <td></td> <td>S</td> <td>-50 to 1768°C</td> <td>+/-3.0°C</td> <td>-58 to 3200°F</td> <td>+/-6.0°F</td> </tr> <tr> <td></td> <td>B</td> <td>0 to 1820°C</td> <td>+/-4.0°C</td> <td>32 to 3300°F</td> <td>+/-7.0°F</td> </tr> <tr> <td></td> <td>C</td> <td>0 to 2400°C</td> <td>+/-3.0°C</td> <td>32 to 4350°F</td> <td>+/-6.0°F</td> </tr> <tr> <td></td> <td>N</td> <td>-270 to 1300°C</td> <td>+/-1.5°C</td> <td>-450 to 2372°F</td> <td>+/-3.0°F</td> </tr> </table> <p><b>RTD: Base accuracy 0.2% or 0.5°C (1°F).</b> Resolution 0.1°C 2, 3 or 4 wire connection. Cable compensation to +/- 50 ohm open and short circuit detection.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%;">10 ohm Cu</td> <td style="width: 10%;">-70 to 170°C</td> <td style="width: 10%;">-94 to 338°F</td> </tr> <tr> <td></td> <td>100 ohm Pt 385</td> <td>-220 to 850°C</td> <td>-364 to 1560°F</td> </tr> <tr> <td></td> <td>100 ohm Pt 392</td> <td>-180 to 820°C</td> <td>-292 to 1500°F</td> </tr> <tr> <td></td> <td>200 ohm Pt 385</td> <td>-220 to 400°C</td> <td>-364 to 750°F</td> </tr> <tr> <td></td> <td>200 ohm Pt 392</td> <td>-180 to 400°C</td> <td>-292 to 750°F</td> </tr> <tr> <td></td> <td>120 ohm Ni</td> <td>-70 to 300°C</td> <td>-94 to 570°F</td> </tr> </table>		J	-210 to 1200°C	+/-1.5°C	-340 to 2190°F	+/-3.0°F		K	-270 to 1372°C	+/-1.5°C	-450 to 2500°F	+/-3.0°F		T	-270 to 400°C	+/-1.5°C	-450 to 750°F	+/-3.0°F		E	-270 to 1000°C	+/-1.5°C	-450 to 1832°F	+/-3.0°F		R	-50 to 1768°C	+/-3.0°C	-58 to 3200°F	+/-6.0°F		S	-50 to 1768°C	+/-3.0°C	-58 to 3200°F	+/-6.0°F		B	0 to 1820°C	+/-4.0°C	32 to 3300°F	+/-7.0°F		C	0 to 2400°C	+/-3.0°C	32 to 4350°F	+/-6.0°F		N	-270 to 1300°C	+/-1.5°C	-450 to 2372°F	+/-3.0°F		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
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<b>Input Resolution</b>	0.0015% of full scale, 16 bit unless otherwise stated																																																																														
<b>Input Impedance</b>	>10 Megaohms on 100mV, 1V ranges, >100 K on 5, 10, 25 Volt ranges.																																																																														
<b>Input Channels</b>	2, 4, or 6 direct																																																																														
<b>Max Input</b>	50 Vdc																																																																														
<b>Common mode noise rejection</b>	>100db, 50/60 Hz																																																																														
<b>Measurement Rate</b>	Measures all direct input channels every 125 milliseconds (each channel 8 times/second independent of no. of channels).																																																																														
<b>Math Functions</b>	+, -, x, /, logarithms, totalization, powers, averages, timers, plus more.																																																																														
<b>EMC Compliance</b>	Meets or exceeds the requirements of EMC 89/336/EEC																																																																														
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<b>Recording Rates</b>	Selectable from 8/sec. to 10 minutes																																																																														
<b>Data Format</b>	Proprietary binary format for data security.																																																																														
<b>Data Storage</b>	Data stored in non-volatile RAM and recorded automatically to on board removable media. Full media format and verify capability.																																																																														
<b>Removable</b>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Media</th> <th style="text-align: left;">Measurements</th> <th style="text-align: left;">Capacity</th> </tr> </thead> <tbody> <tr> <td>3.5" Disk</td> <td>700,000</td> <td>1.44Mb</td> </tr> <tr> <td>ZIP™ Disk</td> <td>50 million</td> <td>100Mb</td> </tr> <tr> <td>PCMCIA Card</td> <td>100 million</td> <td>Up to 200Mb</td> </tr> </tbody> </table>	Media	Measurements	Capacity	3.5" Disk	700,000	1.44Mb	ZIP™ Disk	50 million	100Mb	PCMCIA Card	100 million	Up to 200Mb																																																																		
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<b>Internal</b>	1 Mb RAM (Non-Volatile) 2 Mb RAM (Non-Volatile)																																																																														
<b>File Types</b>	Data files, Alarm and Event files, Configuration files, Language files. Multiple files of different names on a single disk.																																																																														
<b>Display</b>																																																																															
<b>Display Type Color Resolution</b>	CCFL backlit Active Matrix TFT Liquid Crystal Display (5.6 inch) with touchscreen control. 320 x 240 pixels.																																																																														
<b>Display Type Mono Resolution</b>	CCFL backlit STN Liquid Crystal Display (5.0 inch) with touchscreen control. 240 x 128 pixels.																																																																														
<b>Display Modes</b>	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.																																																																														
<b>Virtual Chart Speed</b>	Programmable from 0.5in/hr to 600in/hr or 10mm/hr to 15,000mm/hr. Chart speed is independent of storage rate.																																																																														
<b>Display Windows</b>	Time/Date, Graphics (Bars, Large Digital, Trends), Disk Status, Systems Status, Menu Button bar, Unit Identification, Alarms/Events.																																																																														
<b>Power Requirements</b>	100 to 240Vac, 50/60Hz or 125 to 300Vdc, 35VA max. Optional 24Vdc +/-15%.																																																																														
<b>Power Fail Protection</b>	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.																																																																														
<b>Safety</b>	UL (3111-1) cUL (IEC1010-1) CE low voltage directive 73/23/EEC. Complies with EN 61010-1.																																																																														
<b>Operating Environment</b>																																																																															
<b>Temperature</b>	5°C to 40°C per UL3111-1/IEC1010-1 with disk drive. -10°C to 50°C with PCMCA drive or Zip Drive.																																																																														
<b>Humidity</b>	10% to 80% RH per UL3111-1/IEC1010-1.																																																																														
<b>Wash Down</b>	IP65 Front panel only.																																																																														
<b>Options</b>																																																																															
<b>Alarm Contacts</b>	3 or 6 isolated Form C, 3 amp @ 250Vac or 26 Vdc.																																																																														
<b>Solid State Relays</b>	3 or 6, 0.5 amp @ 30Vdc.																																																																														
<b>Remote Inputs</b>	3 isolated inputs, user selectable as dry contact or 5 to 24 Vdc activated. Inputs share a common. Configurable for chart control, alarm acknowledge/reset, event markers, totalizer reset or logic input.																																																																														
<b>Communications</b>	ESD protected RS232 with full hand shaking. Supports Modem or isolated RS485 port. Comm Serial Protocol: MODBUS RTU or MODBUS ASCII. Ethernet: 10BaseT 10MHz. Unit may be remotely configured.																																																																														
<b>Printer Port</b>	Parallel printer port (25 pin D shell connector).																																																																														