

## PAPERLESS RECORDING SYSTEMS



### Features

- 6 or 12 direct universal inputs plus math channels: DC voltage, current thermocouples and RTD's
- Storage media options: 3 1/2" 1.44Mb disk or ATA Flash PCMCIA card up to 200Mb.
- Powerful math package: +, -, x, /, square root, logarithms, totalization, powers, averages, timers, plus more.
- 5.6" Brilliant TFT active matrix color display.
- Intuitive Touchscreen Control with anti-glare coating.
- Standard DIN enclosure: 144mm x 144mm bezel
- IP65 front Bezel
- 3 or 6 form C relay contact outputs / 3 digital control inputs.
- Serial output options: RS232 or RS485.
- 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.

*Packed with features and economically priced.*

*The Data-Chart 5000 series sets the benchmark by which other paperless recorders are measured.*

The Data-Chart 5000 has 6 or 12 direct universal inputs that are menu selectable for DC voltage, DC current, thermocouples and RTD's. A powerful math package includes: +, -, x, /, square root, logarithms, totalization, powers, averages, timers, plus more. Any of the direct input channels not being used can be set up as a calculated channel. In addition, 3 channels have been set aside as dedicated math channels for a total of 15 channels.

Independent storage rates can be selected for each point ranging from 8 samples per second (125mSec) to one every 10 minutes.

Data is automatically downloaded to removable storage media. Standard removable storage is a 3.5" 1.44Mb disk or for large amounts of data, you can choose 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. The IP65 rated front bezel is ideal for mounting the 5000 series in wet or dusty environments.

Communication options offer great flexibility in accessing data or controlling the DC5000. Data can be accessed and downloaded over standard phone line using the RS232C option and a modem. The RS485 Modbus option will allow the DC5000 to be installed into an existing Modbus network or you can connect up to thirty one recorders in series.

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



**MONARCH INSTRUMENT**

*Innovation in Instrumentation*

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www.monarchinstrument.com

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## Specifications

<b>Operating</b>																																																																																		
<b>Input Signals</b>	<p><b>DC Voltage:</b> Linear, Industrial square root, logarithmic Full Scale ranges: +/- 200mV, +/-1V, +/-2.5, +/- 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>																																																																																	
	<p><b>Dry Contact:</b> Open = 0, Closed = 1</p> <p><b>External:</b> Signals can be input via serial port (Modbus).</p>																																																																																	
<b>Thermocouple:</b>	<p>Resolution: 0.1°C Thermocouple burnout detection.</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Accuracy</th> <th>Resolution</th> <th>Temp Range (°C)</th> <th>Temp Range (°F)</th> <th>Accuracy (°C)</th> </tr> </thead> <tbody> <tr> <td>J</td> <td>0.1%</td> <td>0.1°C</td> <td>-210 to 1200°C</td> <td>-340 to 2190°F</td> <td>+/-3.0°F</td> </tr> <tr> <td>K</td> <td>0.1%</td> <td>0.1°C</td> <td>-270 to 1372°C</td> <td>-450 to 2500°F</td> <td>+/-3.0°F</td> </tr> <tr> <td>T</td> <td>0.2%</td> <td>0.2°C</td> <td>-270 to 400°C</td> <td>-450 to 750°F</td> <td>+/-3.0°F</td> </tr> <tr> <td>E</td> <td>0.11%</td> <td>0.11°C</td> <td>-270 to 1000°C</td> <td>-450 to 1832°F</td> <td>+/-3.0°F</td> </tr> <tr> <td>R</td> <td>0.16%</td> <td>0.16°C</td> <td>-50 to 1768°C</td> <td>-58 to 3200°F</td> <td>+/-6.0°F</td> </tr> <tr> <td>S</td> <td>0.17%</td> <td>0.17°C</td> <td>-50 to 1768°C</td> <td>-58 to 3200°F</td> <td>+/-6.0°F</td> </tr> <tr> <td>B</td> <td>0.22%</td> <td>0.22°C</td> <td>0 to 1820°C</td> <td>32 to 3300°F</td> <td>+/-7.0°F</td> </tr> <tr> <td>C</td> <td>0.13%</td> <td>0.13°C</td> <td>0 to 2400°C</td> <td>32 to 4350°F</td> <td>+/-6.0°F</td> </tr> <tr> <td>N</td> <td>0.10%</td> <td>0.10°C</td> <td>-270 to 1300°C</td> <td>-450 to 2372°F</td> <td>+/-3.0°F</td> </tr> </tbody> </table> <p><b>RTD: Base accuracy 0.2% or 0.5°C (1°F).</b> Resolution 0.1°C 2 or 3 wire connection. Cable compensation to +/- 50 ohm open and short circuit detection.</p> <table border="1"> <thead> <tr> <th>RTD Type</th> <th>Temp Range (°C)</th> <th>Temp Range (°F)</th> </tr> </thead> <tbody> <tr> <td>10 ohm Cu</td> <td>-70 to 170°C</td> <td>-94 to 338°F</td> </tr> <tr> <td>100 ohm Pt 385</td> <td>-220 to 850°C</td> <td>-364 to 1560°F</td> </tr> <tr> <td>100 ohm Pt 392</td> <td>-180 to 820°C</td> <td>-292 to 1500°F</td> </tr> <tr> <td>200 ohm Pt 385</td> <td>-220 to 400°C</td> <td>-364 to 750°F</td> </tr> <tr> <td>200 ohm Pt 392</td> <td>-180 to 400°C</td> <td>-292 to 750°F</td> </tr> <tr> <td>120 ohm Ni</td> <td>-70 to 300°C</td> <td>-94 to 570°F</td> </tr> </tbody> </table>	Type	Accuracy	Resolution	Temp Range (°C)	Temp Range (°F)	Accuracy (°C)	J	0.1%	0.1°C	-210 to 1200°C	-340 to 2190°F	+/-3.0°F	K	0.1%	0.1°C	-270 to 1372°C	-450 to 2500°F	+/-3.0°F	T	0.2%	0.2°C	-270 to 400°C	-450 to 750°F	+/-3.0°F	E	0.11%	0.11°C	-270 to 1000°C	-450 to 1832°F	+/-3.0°F	R	0.16%	0.16°C	-50 to 1768°C	-58 to 3200°F	+/-6.0°F	S	0.17%	0.17°C	-50 to 1768°C	-58 to 3200°F	+/-6.0°F	B	0.22%	0.22°C	0 to 1820°C	32 to 3300°F	+/-7.0°F	C	0.13%	0.13°C	0 to 2400°C	32 to 4350°F	+/-6.0°F	N	0.10%	0.10°C	-270 to 1300°C	-450 to 2372°F	+/-3.0°F	RTD Type	Temp Range (°C)	Temp Range (°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>	0.006% of full scale, 16 bit																																																																																	
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<b>Input Impedance</b>	>10 megohms on 100mV, 1V ranges, ~50k on 10 Volt range.																																																																																	
<b>Input Channels</b>	Standard: 6 direct; 9 math - 15 total, Optional 12 direct; 3 math -15 total																																																																																	
<b>Isolation</b>	250 Vdc or peak AC channel to channel, 300 Vdc or peak AC channel to ground																																																																																	
<b>Measurement Rate</b>	Measures all direct input channels every 125 milliseconds																																																																																	
<b>Math Functions</b>	+, -, x, /, logarithms, totalization, powers, averages, timers, plus more.																																																																																	
<b>EMC Compliance</b>	Meets or exceeds the requirements of CE for EMC 89/336/EEC																																																																																	
<b>Recording</b>																																																																																		
<b>Recording Rates</b>	User programmable from 8 samples per second to 1 sample every 600 seconds. Channels independently programmable																																																																																	
<b>Data Format</b>	Proprietary binary format for data security.																																																																																	
<b>Data Storage</b>	Data stored in non-volatile RAM and recorded automatically, or on demand, to on board removable media. Full media format and verify capability.																																																																																	
<b>Removable</b>	<table border="1"> <thead> <tr> <th>Media</th> <th>Measurements</th> <th>Capacity</th> </tr> </thead> <tbody> <tr> <td>3.5" Disk</td> <td>700,000</td> <td>1.44Mb</td> </tr> <tr> <td>PCMCIA</td> <td>100 million</td> <td>Up to 200Mb</td> </tr> </tbody> </table>	Media	Measurements	Capacity	3.5" Disk	700,000	1.44Mb	PCMCIA	100 million	Up to 200Mb																																																																								
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<b>File Types</b>	Up to 15 channel (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</b>	CCFL backlit Active Matrix TFT Liquid Crystal Display (5.6 inch) with touchscreen control.																																																																																	
<b>Resolution</b>	320 x 240 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>	90 to 132, 180 to 250Vac, 50/60Hz or 125 to 300Vdc, 17 Watts 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 PCMCIA 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, 2 amp @ 30Vdc.																																																																																	
<b>Remote Inputs</b>	3 isolated inputs, user selectable as dry contact or 5 to 12 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 RT or MODBUS ASCII.																																																																																	