

# TRANSCAT

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**MONARCH INSTRUMENT**

*Innovation in Instrumentation*





# 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:

Type	Accuracy
J*	0.1%
K**	0.1%
T**	0.2%
E**	0.11%
R	0.16%
S	0.17%
B	0.22%
C	0.13%
N**	0.10%

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

J	-101 to 1200°C	+/-1.5°C	-150 to 2190°F	+/-3.0°F
K	-101 to 1372°C	+/-1.5°C	-150 to 2500°F	+/-3.0°F
T	-101 to 400°C	+/-1.5°C	-150 to 750°F	+/-3.0°F
E	-101 to 1000°C	+/-1.5°C	-150 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	-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	-60 to 209°C	-76 to 408°F
(DIN 43760)		

#### 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, or 6 direct

#### 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
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Removable	3.5" Disk	700,000	1.44Mb
	CompactFlash Card	496million	(Up to 2 GB in size).

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

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 PCMCA drive or ZIP™ 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.

#### Solid State Relays

3 or 6, 0.5 amp @ 30Vdc.

#### 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

### Display

<b>C</b>	TFT Active Matrix Display
<b>M</b>	Monochrome Display

### Power

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

### Isolation Input Modules

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

### Data Storage-Removable

<b>0</b>	3.5" Disk Drive
<b>1</b>	Compact Flash Card Drive

### Output Options

<b>0</b>	No Alarm Outputs
<b>1</b>	6 Form C Relays 3A@250 Vac, 3 Ctrl Inputs
<b>2</b>	3 Form C Relays 3A@250 Vac, 3 Ctrl Inputs
<b>3</b>	6 SS Relays 0.5A@30Vdc, 3 Ctrl Inputs
<b>4</b>	3 SS Relays 0.5A@30Vdc, 3 Ctrl Inputs

### Communications

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

### Data Storage - Internal

<b>0</b>	1 Mbyte
<b>1</b>	2 Mbyte

### Printer Port

<b>0</b>	None
<b>1</b>	Parallel Printer Port (25 Pin D Shell)

DC2

### Accessories

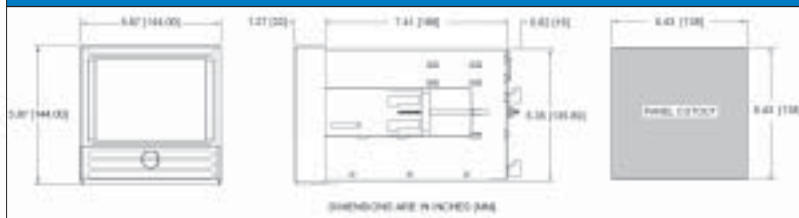
50 ohm precision external shunt resistor for current inputs (+/-0.05%).	MAS50R	
External USB port card reader. Includes cable and SW-3T Software.	CR-3	
Companion Software for Windows 95, 98, NT, XP and 2000.	SW-3T	
Guardian Software for Windows 95, 98, NT, XP and 2000.	GUARDIAN	
Portable maintenance kit. Includes: folding legs and carry handle. (factory installed)	PMK-2	
Nylon padded carrying case with shoulder strap. Will hold recorder, power cable and diskettes.	CC-8	
64MB, 128MB or 256 MB Industrial Grade CompactFlash™ memory cards.	64MBCF 128MBCF 256MBCF	
DIN rail mount pulse conversion module converts 5 volt TTL or 3-12 volt pulse signals into a linear 0-10 volt proportional signal.	P1-EXT	
The ROS-W (Remote Optical Sensor) generates a TTL pulse that can be directly input into the P1-EXT module.	ROS-P	

Example Model Numbers:

DC - 2C1 - U4 - 11200

DC - 2M1 - U12 - 00000

### DC-2000 Installation Dimensions



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