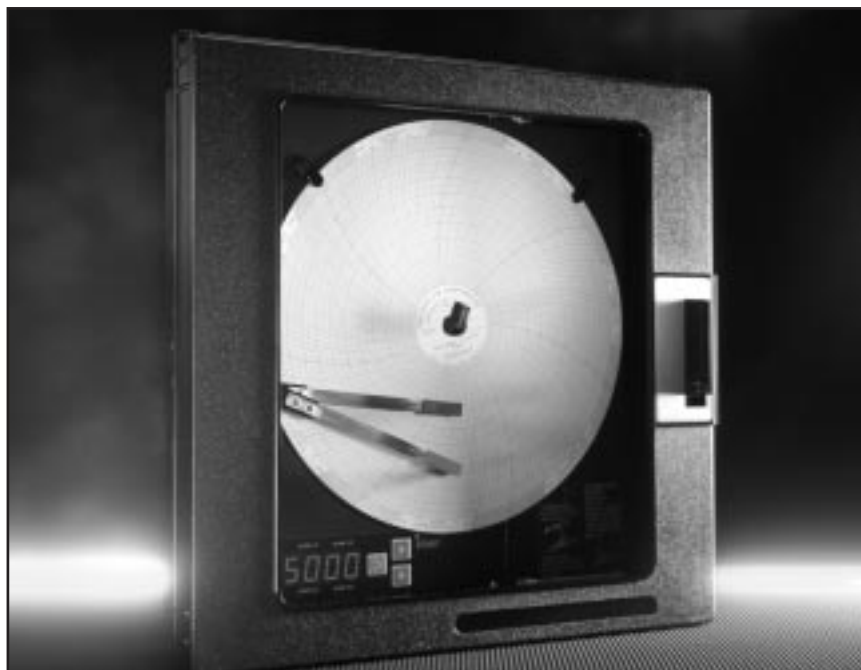


5000

Innovative Design

*for
simplicity
and
functionality.*

MRC



The MRC 5000 – incorporating the latest innovations in recording technology.

The MRC 5000 was designed with simplicity and functionality in mind. Its operation is so easy that all of its instructions fit on one 4" X 6" card. It comes in two basic versions for trend recording—one or two pens.

The straightforwardness of the MRC 5000 is immediately evident just by looking at the unit's face. The operator interface, a four-digit display with three-button keypad, is made for simple daily operation and easy configuration. A clear prompting scheme provides rapid access to all configuration and operation data. The operator interface also provides access to test and calibration facilities with a convenient dual function MODE switch. As if configuring the MRC 5000 wasn't easy enough already, there's also an optional Configurator port for ultimate programming ease. Using the optional PC program, parameters can be modified, saved, and downloaded in seconds.

A quick look inside the casing and at the chart itself also speaks to the straightforward, functional design of the MRC 5000. You will find just one jumper to configure each port! The two pens, each with configurable spans, are positioned smoothly without any slidewire feedback; this simplifies design and improves reliability. In addition, the 10" chart rotates at the speeds you select.

Finding a place to install this recorder is easy, with its compact 2.5" panel depth and short 1.3" protrusion from the front panel. And, don't worry about harsh environments—the MRC 5000 comes standard with a NEMA 3 rating.

If you're still not convinced that the MRC 5000 is one of the best recorder values available today, take a look at the list of features and benefits on page 24.

MRC 5000 Specifications

INPUT

Input Types/Range

	Type	Range C	Range F
T/C	J	0°C to 760°C	0°F to 1400°F
	K	0°C to 1360°C	0°F to 2500°F
	T	-200°C to 400°C	-330°F to 750°F
	R	200°C to 1650°C	400°F to 3000°F
	S	200°C to 1650°C	400°F to 3000°F

RTD 100Ω Platinum -140°C to 400°C -220°F to 750°F
.00385 ohms/ohm/°C

Current DC: 0 to 20mA, 4 to 20mA. Internal 4.7Ω Shunt Resistor

Voltage DC: 0 to 25mV, 0 to 50mV, 10 to 50mV, 0 to 5V, 1 to 5V

Impedance: > 100MΩ for TC and mV inputs.

100KΩ for 5V inputs.

4.7Ω for mA inputs.

RTD Excitation Current: 150 microamps, typical

Input Scan Rate: 1 scan per second for non-RTD inputs,

1 scan per 1.2 seconds for RTD inputs.

Input Correction: Offset adjustment, -999 to 999 units

Sensor Fault Detection: Display goes to "Hi" 10% above span,
"Lo" 10% below span.

Display goes to "SnSr" if a sensor break is detected. No sensor
break can be detected for zero-based Volt & Milliamp ranges.

PERFORMANCE

Performance Under Reference Condition:

Measurement Error:

Type J, K, T, R, S, and RTD: ±0.25% of span ±1 degree.
mA, mV, and VDC: ±0.25% of scaled span plus 1 least significant
digit.

Cold Junction Compensation Error: ±0.2°C @ 25°C

Cold Junction Compensation Rejection: 0.04°/°C deviation from 25°C

Linearization Error:

TCs: ±0.25°C typical, ±0.5°C worst case with exceptions.

RTDs: ±0.1°C typical, ±0.3°C worst case.

Ambient Temperature Error: ±0.01% of span per °C deviation from
25°C

Common Mode Rejection: > 120 dB at 50/60 Hz, 260V AC

Normal Mode rejection: 85 dB min. @ 60 Hz

Isolation: 500V DC/350V AC, inputs to AC ground. Inputs share a
common signal ground.

Reference Conditions:

Ambient Temperature: 25°C

Relative Humidity: 60 - 70%

Supply Voltage: 115V AC, 60 Hz

Source Resistance: < 10Ω for TC input

Lead Resistance: < 0.1Ω/lead balanced (Pt100)

OPERATOR INTERFACE

Display: Four digit, 0.56" high, red, seven segment, LED display.

Status Indicators: Five red LED alarm status indicators, one green
LED Pen 2 indicator.

Keypad: Three keys for programming and unit operation.

Display Modes: Normal: Process value (s) or blank.

RECORDING

Pen Type: Disposable fiber-tip.

Pen Color: Pen 1-Red, Pen 2-Green

Chart Size: 10"

Chart Drive: Stepper motor

Chart Rotation: User-configurable: 8 hr, 12 hr, 24 hr, 48 hr, or 7 day.

Chart Span: Bottom and top of span, -9999 to 9999 units

Chart Recording Accuracy: 0.5% of chart span reference accuracy.

Chart Rotation Accuracy: ±0.5% of rotation time, assuming all back-
lash removed.

ALARMS

Number: Up to two process alarms for each of two inputs.

Type: Process high or low.

Limit Device: Optional high/low limits for each input with latching
output. Normally open output latches open.

Red reset button included to the right of the display.

Hysteresis: Fully adjustable, 0 to 200 units, single-sided.

Security: Alarm setpoint changes can be prohibited.

Sensor Fault Action: Alarms work normally in "Hi" and "Lo"
conditions. Alarm relays are de-energized in a "SnSr" sensor
break condition.

RELAY OUTPUTS

Relays: SPDT, contacts rated 5A resistive at 115V AC,
2.5A resistive at 230V AC, 1/8 HP at 230V AC (single phase),
250VA at 115/230V AC

CONSTRUCTION

Enclosure: Injection molded Noryl case and cover with acrylic
window.

NEMA Rating: NEMA 3 standard, NEMA 4X future option.

Conduit Openings: Three openings on the right side.

Mounting: Panel or wall.

Overall Dimensions: 14" W X 14" H X 3.8" D
(355.6mm X 355.6mm X 96.5mm)

Panel Cutout: 12.7" W X 12.7" H
(322.58mm X 322.58mm)

Panel Depth: 2.5" (63.5mm)

Panel Protrusion: 1.3" (33.0mm)

Weight: 15lbs max.

Retrofit: With adapter plate, will fit MRC 7000/ARC 4100 cutout.

POWER REQUIREMENTS

Line Voltage: 90-264V AC, 50/60 Hz

Optional: 20-50V AC, 50/60 Hz or 22-65V DC

Power Consumption: 18VA Max.

ENVIRONMENTAL/OPERATING CONDITIONS

Operating Temperature: 0°C to 50°C (32°F to 122°F)

Storage Temperature: -40°C to 65°C (-4°F to 149°F)

Humidity: 10 to 90% RH, non-condensing

Vibration: 0.3 to 100Hz @ 0.2g

Mounting Position: Up to 30° forward or backward tilt from vertical
Up to 10° side tilt from vertical.

DIGITAL COMMUNICATIONS

Configuration Port: TTL levels

Communications Port: RS-485 serial communications, Half-duplex.

Protocol: MODBUS RTU

Bit Rate: User-configurable—1200, 2400, 4800, or 9600 bits per second

Parity: Odd, even, or none.

Address: User-configurable—1 to 247

GENERAL REFERENCE DATA

Data Backup: EEPROM for configuration parameters, calibration data and alarm setpoints.

Warranty: Two years.

APPROVALS AND COMPLIANCE

Safety: UL Approved for USA - UL 1092, UL 916, and QUXY - File E67237

UL Certified for Canada - CSA Spec 142 - File E67237

CE - Complies with EN 61010-1:1993: Pending

Immunity/Susceptibility: CE - Complies with EN50082-1992: Pending

Emissions: CE - Complies with EN50081-1:1992 and EN50081-2:1994: Pending

Limit Device: FM: Pending

NOTES

1. Linearization accuracy is based on conformance to NIST Monograph 175 (based on the ITS-90) for letter-designated thermocouple types, or other industry standards for RTDs.
2. Factory calibration is defined by limits of repeatability on a manufacturing environment and $\pm 0.15^{\circ}\text{C}$ for thermocouple.

MRC 5000 Benefits:

Up to 2 process or limit alarms for each pen—normally open and normally closed contacts available; they can be high or low process or low limit/latching with manual reset

Optional low voltage AC/DC power input—available for 20-50V AC or 22-65V DC operation

Optional Digital Communications package—access process values, alarm conditions, and other data. RS-485 Com utilizing MODBUS RTU protocol allows the MRC 5000 to communicate with virtually any software package on the market.

Optional Configuration Port—use a PC to modify, save, or download for ultimate programming ease

Setup/Calibration Seal—protects from unauthorized changes

1 or 2 trend pen versions—matches your specific needs

Convenient, compact size—cutout is common 12.7"

Universal inputs and power supply—added flexibility

NEMA 3 standard (NEMA 4X future option)—protection against harsh environments

Simple operation and set-up—instructions fit on 4 x 6 notecard

Agency Approvals—UL, C-UL; CE and FM (pending)

Two-year warranty—protects you against manufacturing defects

MRC 5000 MODEL CONFIGURATION

5								
Pen 1								
1	Recorder only							
4	High/Low Limit*							
Pen 2								
0	None							
1	Recorder only							
4	High/Low limit*							
Pen 1 Outputs								
0	None							
1	One Relay							
2	Two Relays							
Pen 2 Outputs								
0	None							
1	One Relay							
2	Two Relays							
Digital Communications								
0	None							
1	Configurator Port							
2	RS-485 Coms							
3	Configurator Port & RS-485 Coms							
Case								
1	Standard- NEMA 3							
2	Door Lock							
3	NEMA 4X							
Voltage								
1	Standard (90-264V AC)							
2	Low voltage (20-50V AC or 22-65V DC)							
3	24V DC Transmitter power supply							
4	Low voltage & Transmitter power supply							
Suffix								
Blank	- None							
AA	Alarms and communications connectivity option (allows for later field installation of both options)							

* Does not include a relay. Order relays in output options.

