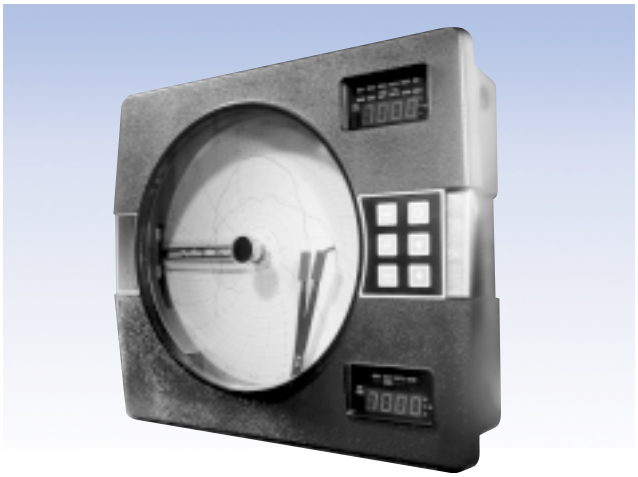
Recorders

PARTLOW™ brand

Data Sheet



MRC 7000™

Proven Recording Reliability that Became the Industry Standard!

Recorder/Controller/Profiler

DESCRIPTION

The MRC7000 Recorder/Controller is a microprocessor based circular chart instrument capable of measuring, displaying, recording and controlling up to two process variables from a variety of inputs.

Record and control functions, alarm settings and other parameters are easily configured via the keys on the front cover and self-prompting displays.

All user entered data can be protected against unauthorized changes via the MRC7000 Enable Mode security system.

APPLICATIONS:

Record, profile and security functionality for reliability in diverse industry applications

- Process Validation
- Trend Analysis
- Regulatory Compliance
- Product Safety

- Temperature
- pH Level

INDUSTRIES

Oven, chamber, furnaces, heat treating, food processing, harsh water environments

FEATURES/BENEFITS

- Micro-based recording with controller or profiler options with programming setpoint profile capability in one instrument
- Two displays allow you to see critical process values at the same time (on 2 pen units)
- Easy, straightforward programming allows you to configure your recorder with a logical step-by-step process using a simple keypad
- Optional true time based profiling capability puts you in control of your process
- Reliability—maintenance free recording for years to come

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SPECIFICATIONS

STANDARD FEATURES

Functionality: Digital; Available in four configurations: Record only, High/Low limit optional, Controlling Recorder, Profiling Controlling Recorder.

Display: One digital display (std.); 2nd display with 2 pen (optional); 0.56˝ high, red, seven segment LED; 3 button keypad; automatic and decimal point positioning. Two alarm indications possible per pen.

Status Indicators: 7 LED status indicators – Out 1, 2, Man (Ramp, Soak or Seg 1–6 for profiler option only), one green LED pen 2 indicator, ALRM1/ALRM2 with red LEDs.

Chart: 10˝ circular chart; 100 charts furnished with each instrument. Unless otherwise specified, charts shipped with instrument are 0–100 range. 24 hour rotation default setting.

Chart Drive: DC Stepper Motor.

Chart Rotation: User configurable from 0.1 and 999.9 hours per revolution.

Chart Range: Bottom and top of span –9999 to 9999 units.

Pen Type: One or two disposable fiber tip pen.

Pen Color: Pen 1 (red); Pen 2 (green).

Memory Backup: Battery; 5 year normal life.

Construction/Enclosure: Structural foam enclosure with plastic cover standard.

OPERATING CHARACTERISTICS

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

Storage Temp: –40° to 149°F (–40° to 65°C).

Humidity: 0% to 90% non-condensing R.H.

Vibration: 0.5 to 100Hz @ 0.2g.

Electro Static Discharge: No effect from 5000V static charge over the entire area.

RFI: Degradation due to RF fields to recording and output accuracy to 8% at spot frequencies in the range of 100–1000MHz.

PROCESS CONTROL
UL
LISTED
88BO

LR39885
CSA

ELECTRICAL

Power Consumption: 25VA max.

Line Voltage: 115V or 230VAC ±10%, 50–60Hz.

OUTPUTS

CONTROL OUTPUTS:

Relay: SPST/SPDT; 115VAC 5.0A Resistive, 1/8HP, 250VA; 230VAC 2.5A Resistive, 1/8HP, 250VA.

SSR Driver: Open collector output; short circuit protected @ 100mA max; provides 4VDC @ 20mA or 3VDC @ 40mA.

Current: 0–20mA or 4–20mA; 0–650 ohm maximum load.

ALARM/EVENT OUTPUTS (Options):

Relay: SPST/SPDT: 115VAC 5.0A resistive, 1/8HP, 250VA. 230VAC 2.5A resistive, 1/8HP, 250VA.

SSR Driver: Open collector output; short circuit protected @ 100mA max; provides 4VDC @ 20mA or 3VDC @ 40mA.

Process Alarm: Direct (High) or Reverse (Low) –9999 to 9999 units.

Deviation Alarm: Direct (Deviation above setpoint) or Reverse (Deviation below setpoint) –3000 to 3000 units.

Deviation Band Alarm: 1 to 3000 units.

Alarm Hysteresis: 0–300 units (width of hysteresis band).

INPUTS

Thermocouple: J, K, T, R, S, B, C, E, N.

RTD: 100 ohm, platinum; 0.00385 ohms/ ohm/°C.

Volts: 0–5 VDC or 1–5VDC.

DC Millivolts: 0–25mV, 0–50mV or 10–50mV.

DC Milliamps: 4–20mA or 0–20mA used with appropriate shunt resistor.

Remote Setpoint Input (optional): 0–5VDC, 1–5VAC, 0–20mA, 4–20mA (recording controller only); accommodated with an internal 249 ohm jumper selectable shunt resistor.

PERFORMANCE

GENERAL:

Input Measurement Error: Type J, K, T, E, N, C, T/C and RTD ±0.25% of reading plus 1 degree @ 25°C; Type R, S, B, C, T/C ±0.25% of span @ 25°C.

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

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

Cold Junction Compensation Rejection: ±0.04% deviation from 25°C.

Common Mode Rejection: 90dB minimum; 24VAC maximum for RTD input; 115VAC max for other inputs.

Normal Mode Rejection: 85dB minimum @ 60Hz or greater.

Chart Accuracy: Recording: 0.5% of span. Chart Rotation: ±0.5% of rotation time.

Process Value Output Error Limit: 0.5% of span.

Record Error Limit: ±0.5% of chart span or better typically; ±1.0% of chart span maximum.

CONTROL PARAMETERS (optional):

Proportional Band Output 1/Output 2: 1 to 3000 units.

Manual Reset (Integral): –1500 to 1500 units.

Auto Reset (Integral): 0.0–100.0 repeats/ minute.

Rate Derivative: 0.0–10.0 minutes.

Cycle Time Output 1/Output 2: 1 to 240 seconds.

Position Proportioning Sensitivity: 0.0–50.0%.

ON/OFF Hysteresis: 0–300 units (width of hysteresis band).

First /Second Output Position: –1000 to 1000 units.

Control Action: Direct or Reverse.

Automatic Transfer Function: User-selectable to transfer from manual to automatic control when setpoint is reached; can be disabled.

Anti-Reset Windup: Auto-reset is disabled when the process is outside of the proportional band.

Auto/Manual: Bumpless transfer.

Manual Output: 0–100%.

Output Limiting: High/Low 0–100%.

Setpoint Limiting: High/Low Limit: –9999 to 9999 units.

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SPECIFICATIONS (Continued)

PERFORMANCE (continued)

PROFILE PARAMETERS (optional):

Programmable Profiles: 8 user-programmable profiles.

Segments: 1–6 segments per profile.

Ramp and Soak: 1 ramp and soak per segment.

Profile Time Base: User-selectable; Choose from hours and tenths (HHH.T); hours and minutes (HH.MM) or minutes and seconds (MM.SS).

Profile Interruption Action: Upon return of AC power either go to OFF mode, continue profile, go to HOLD mode, or restart profile at beginning.

Profile Loop Count: 1–9999; 0 = continuous.

Profile End Control: User-selectable; hold at last setpoint; Abort (all outputs off or 0%); transfer to another profile.

Assured Soak: Deviation Hold after Ramp Up or Down; 1–3000 units; 0 = No Auto Hold.

Pen Profiling Configuration: Pen 1 only or Pen 1 and 2.

Remote Run/Hold (optional): User-selectable; override Run/Hold key; allow Run/Hold key function.

Event Output(s): Up to 3 event outputs possible; each event can be set on or off for each ramp and soak.

COMMUNICATIONS INTERFACES

Communications Port: RS-422/485 serial, half duplex.

Protocol: Partlow ASCII

Bit Rate: User-configurable 300, 600, 1200, 2400, 4800 or 9600/sec.

Address: User-configurable for each pen 0–99.

RATINGS/AGENCY APPROVALS

Safety: UL 1092 File E67237; CSA Spec C22.2 File LR39885.

Immunity: Optional CE compliance.

Other: ISO 9002 registered.

PROTECTION

NEMA 3 enclosure optional; CE compliance optional.

Enable Mode security system option.

PHYSICAL DIMENSIONS

Width: 15.13˝ (384mm).

Depth: 3.63˝ (92mm).

Height: 13.19˝ (335mm).

Weight: 20 lbs (9.1kg).

OPTIONS/ACCESSORIES

Choice of pen, thermocouple input and SSR driver outputs (see matrix for details).

RS-485 communication option.

24V DC power supply option.

115 or 230VAC input option.

NEMA 3 protection optional; CE compliance optional.

Enable Mode security system option.

WARRANTY

3 years.

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MODELS (Recorder Only)

Code 1: Model	**Code 2:** Pen 1	**Code 3:** Pen 2	**Code 4:** Relay (SPST) Outputs*	**Code 5:** SSR Driver Outputs*	**Code 6:** 4-20mA Outputs	**Code 7:** Transmitter Power Supply	**Required Zeros**	**Code 8:** Digital Communications	**Code 9:** Enclosure Options	**Code 10:** Operating Voltage	**Code 11:** Option Suffix
7	☐	☐	☐	☐	☐	☐	0 0	☐	☐	☐	☐ ☐
MRC7000 Recorder	**1** Recorder Only **4** High or Low Limit††	**0** None **1** Recorder Only	**0** None **1** One SPST **2** Two SPST **4** Four SPST **6** Six SPST **7** One SPDT **8** Two SPDT **9** Two SPDT and Two SPST	**0** None **1** One **2** Two **4** Four **6** Six **8** Eight	**0** None **1** One Standard **2** Two Standard **3** Three Standard **4** Four Standard	**0** None **1** 24VDC Regulated /Isolated		**0** None **2** RS-485 Total Access	**2** Standard Cover (Plastic Windows) **4** Door Lock** **6** Sealed Conduit Connections **7** 4 & 6 Combined**	**1** 115VAC **2** 115/230VAC **CSA APPROVED** **4** 115VAC **5** 115/230VAC	**BLANK** - None **N3** NEMA † **AW** RTD Depression on Pen 2 **AD** 0/100 mVDC Input **AE** N3 plus AW **CE** CE Compliance

* Total quantity of SPST Relays and SSR Drivers must be less than or equal to eight. When SPDT Relays are included, the total must be less than or equal to six. With Limit, only 1 selectable Alarm is available.

** This option comes with a structural foam cover.

†N3 - NEMA type protection for wet environments.

NOTE: 4-20mA inputs are accommodated using the 1-5V input and a 250 ohm Shunt Resistor, P/N 64411701 or the 10-50mA input and a 2.5 ohm Shunt Resistor, P/N 64411702
Order as Separate Line Item.

††High/low limit device is Factory Mutual approved.

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Recorder/Controller/Profiler

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MODELS (Recording Controller/Profiler)

Code 1: Model	Code 2: Pen 1	Code 3: Pen 2	Code 4: Relay (SPST) Outputs*	Code 5: SSR Driver Outputs*	Code 6: 4-20mA Outputs	Code 7: Transmitter Power Supply	Code 8: Pen 1 Auxiliary Input	Code 9: Pen 2 Auxiliary Input	Code 10: Digital Communications	Code 11: Enclosure Options	Code 12: Operating Voltage	Code 13: Option Suffix
7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐☐
MRC7000 Recording/ Profile Controller	**2** Recording Controller **3** Recording Profile Controller	**0** None **1** Recorder Only **2** Recording Controller	**0** None **1** One SPST **2** Two SPST **4** Four SPST **6** Six SPST **7** One SPDT **8** Two SPDT **9** Two SPDT and Two SPST	**0** None **1** One **2** Two **4** Four **6** Six **8** Eight	**0** None **1** One Standard **2** Two Standard **3** Three Standard **4** Four Standard	**0** None **1** 24VDC Regulated /Isolated	**0** None **1** Position Proportioning **2** Remote Setpoint **3** Remote Run/Hold**	**0** None **1** Position Proportioning **2** Remote Setpoint	**0** None **2** RS-485 Total Access	**2** Standard Cover (Plastic Windows) **4** Door Lock*** **6** Sealed Conduit Connections **7** 4 & 6 Combined***	**1** 115VAC **2** 115/230VAC **CSA APPROVED** **4** 115VAC **5** 115/230VAC	**BLANK** - None **N3** NEMA † **AW** RTD Depression on Pen 2 **AD** 0/100 mVDC Input **AE** N3 plus AW **CE** CE Compliance

* Total quantity of SPST Relays and SSR Drivers must be less than or equal to eight. When SPDT Relays are included, the total must be less than or equal to six.

** Applies to Model 73XXXXXXXXX.

*** This option comes with a structural foam cover.

†N3 - NEMA type protection for wet environments.

NOTE: 4-20mA inputs are accommodated using the 1-5V input and a 250 ohm Shunt Resistor, P/N 64411701 or the 10-50mA input and a 2.5 ohm Shunt Resistor, P/N 64411702ea.
Order as Separate Line Item.

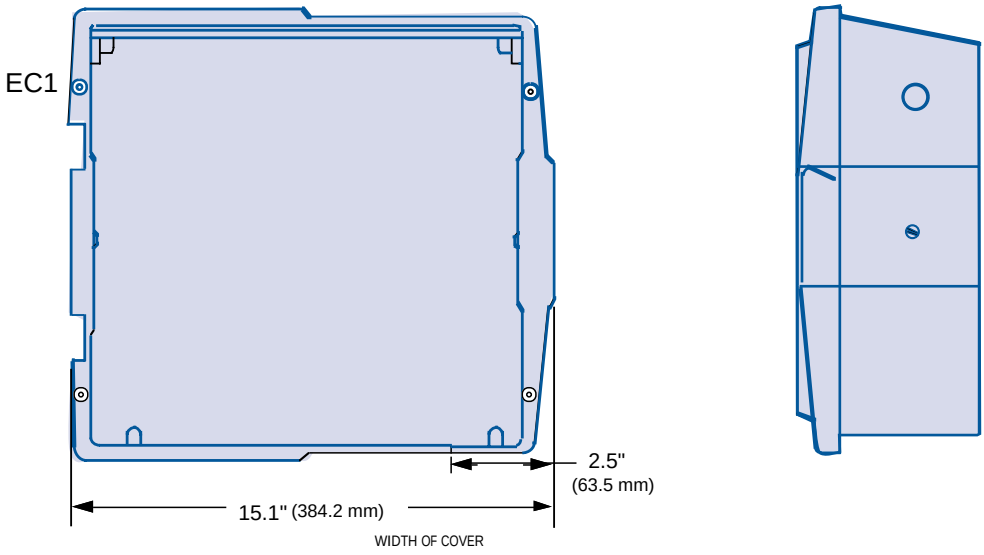
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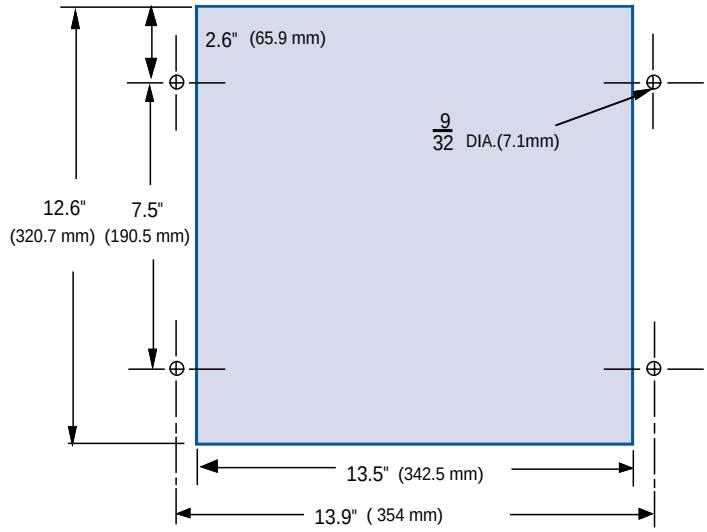
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DIMENSIONS





Panel cut-out for flush mounting

Made in USA.

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Partlow Brand MRC 7000 Data Sheet (5/05)

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