PR Series

Paperless Recorders & Process Controllers
### Outstanding Specifications & Features

<table>
<thead>
<tr>
<th>PR10</th>
<th>PR20</th>
<th>PR30</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Description</strong></td>
<td>low-cost 4.3” touch screen recorder supports 1, 2, 3 or 6 universal analog inputs</td>
<td>intermediate 5.6” touch screen up to 24 analog inputs</td>
</tr>
<tr>
<td><strong>Input numbers</strong></td>
<td>3, 6 channels</td>
<td>3, 6, 12, 18, 24 channels</td>
</tr>
<tr>
<td><strong>True universal inputs</strong></td>
<td>Thermocouples: J, K, T, E, B, R, S, N, L, U, P, W, W3, L, R, A1, A2, A3, M</td>
<td>RTD: P500, P1000, P5100, P5000, Pt1000, Pt500, Pt1000 (( \alpha = 0.00385 )), Cu10 (( \alpha = 0.00427 )), Cu50, Cu100 (( \alpha = 0.00426 )), Ni100, Ni500, Ni1000 (( \alpha = 0.00617 ))</td>
</tr>
<tr>
<td><strong>Scan Rate / Data Log Interval</strong></td>
<td>analog inputs scanned every 100ms / Data log interval configurable, 100ms, 1, 2, 3, 5, 10, 20, 30 seconds, 1 or 2 minutes.</td>
<td>100ms, 1, 2, 5, 10, 20, 30 seconds, 1 or 2 minutes.</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>Math functions, including Counters &amp; Totalizers, are standard with other listed functions in Plus Version Firmware</td>
<td>4.3” TFT wide touch screen</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>480 x 272</td>
<td>640 x 480</td>
</tr>
<tr>
<td><strong>MTBF backlight at 25°C</strong></td>
<td>30,000 hrs</td>
<td>30,000 hrs</td>
</tr>
<tr>
<td><strong>Backlight</strong></td>
<td>LED</td>
<td>LED</td>
</tr>
<tr>
<td><strong>CPU Speed</strong></td>
<td>ARM Cortex-A8, 1Ghz</td>
<td>ARM Cortex-A8, 1Ghz</td>
</tr>
<tr>
<td><strong>RAM</strong></td>
<td>256 MB</td>
<td>256 MB</td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>Modbus TCP/IP</td>
<td>optional RS-232 or RS-422/485 Modbus RTU</td>
</tr>
<tr>
<td><strong>SD card slot / USB ports / Printer Output</strong></td>
<td>1 SD Card Slot / 2 USB ports one front with 2nd back / Printer output via USB ports</td>
<td>or LAN</td>
</tr>
<tr>
<td><strong>Process control</strong></td>
<td>PID ramp &amp; dwell</td>
<td>PID ramp &amp; dwell</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>90-250VAC or 11-36VDC</td>
<td>90-250VAC or 11-36VDC</td>
</tr>
<tr>
<td><strong>Outer dimensions (W x H x L)</strong></td>
<td>144mm x 144mm x 189mm / 5.67” x 5.67” x 7.44”</td>
<td>144 x 144 x 189mm / 5.67” x 5.67” x 7.44”</td>
</tr>
<tr>
<td><strong>Mounting depth</strong></td>
<td>171mm / 6.74”</td>
<td>171mm / 6.74”</td>
</tr>
<tr>
<td><strong>DIH Panel cutout (W x H)</strong></td>
<td>137mm x 137mm / 5.4” x 5.4”</td>
<td>137mm x 137mm / 5.4” x 5.4”</td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>IP65 front, IP20 rear</td>
<td>IP65 front, IP20 rear</td>
</tr>
<tr>
<td><strong>Agency Approvals</strong></td>
<td>UL, cUL, CE, RoHS</td>
<td>UL, cUL, CE, RoHS</td>
</tr>
</tbody>
</table>

**Overview**

The PR Series includes the low-cost 4.3” PR10, intermediate 5.6” PR20 and the high-end 12.1” PR30 each offering a host of standard and optional features. These features include easy to use touch screen interface, 100msec sampling rate, monitor external channels (via TCP/IP or serial modbus), normal & high frequency pulse inputs, batch recording, write free-hand messages directly on the display, supports field calibration, multilevel security, customizable display, Web Server, email, 20-languages, TCP/IP SD slot, two USB ports and can meet the requirements for CFR21 part 11, AMS2750E*, JCAHO, typical HACCP protocols and other standards.

* PR Series T/C input types J, K, T, N, U, L, P and RTD meet AMS2750E accuracy requirements.

**PID Process Control Function for PR10 & PR20** provides a combination process controller with profiling as well as powerful paperless recorder functions.
Modular Hardware Design

**Front view, Back view**

- **PR20 Front view**
  - Touch LCD display
  - RESET/STOP
  - SD Slot
  - 1st USB host

- **PR20 Back view**
  - IO modules
  - Ethernet port (standard)
  - Power switch (option for panel mount, standard for portables)
  - 2nd USB host (standard)
  - Power terminals

**Input & Output Modules**

- **AI206**
  - 6 AI (6 analog inputs)

- **AI203**
  - 3 AI (3 analog inputs)

- **RO206**
  - 6 relay outputs

- **DI206**
  - 6 DI (6 digital inputs)

- **RD233**
  - 3 relays + 3DI

- **AO206**
  - 6 AO (6 analog outputs)

- **PC201**
  - Single loop process control

**Portable recorders and the front access door Security key**

- **Portable recorders**
  - PR10
    - (4 Slots, up to 6 AI)
  - PR20
    - (4 Slots, up to 24 AI)
  - PR30
    - (16 Slots, up to 48 AI)

- **Security key**

**IO modules**

- IO modules allow for easy for expansion
Ease of Use and Multiple Features

Configuration Menu provides easy navigation & selection

![Configuration Menu](image)

Supports free-hand messages directly on the touch screen

![Free-hand Message](image)

Circular display (PR30 only)

PR30 offers Circular Chart view allowing easy replacement for 1 to multiple legacy circular chart recorders while providing secure electronic data files. This chart view is configurable for a variety of time formats from 30 minutes to 4-weeks.

![Circular Display](image)

Standard version of Firmware

- **AI:** Analog input offers configurable log interval: 100ms, 1, 2, 5, 10, 20, 30 Sec, 1, 2 Min/Dot.
- **DI:** Digital input configurable as normal Logic or high frequency Pulse.
- **AO:** Analog Retransmission Output, mA or VDC.
- **DO:** Digital output/relay output can be enabled. Each DO card has 6 relays.
- **Display:** Configurable display speed: 100ms, 1, 2, 5, 10, 20, 30 Sec/Dot, or 1, 2, 10, 30 Min/Page, 1, 2, 4, 8, 12 Hour/Page, or 1 Day/Page.
- **Timer:** Timer functions include Countdown, Repeat Countdown, Daily, Weekly or Monthly base as well as defining a variety of jobs.
- **Clock:** Configurable Date Style (MM/dd/yy or dd/MM/yy), Daylight Savings as well as Time Synchronize via LAN.
- **Communication:** As standard Web Server and email functions are available via LAN. Alarms/events are configurable to have emails sent upon their activation.
- **Instrument:** Adjustable display brightness, Screen Saver time as well as other settings.
- **Security:** The Normal Security supports one password. With the optional CFR21 High Security system supports up to 30-users, 9 security levels, password aging, operator audit trail and auto logout.
- **Demo:** Enable or disable the demonstration mode.
- **Printer Auto-output:** An automatic output of Historical data, Report data or other preselected data may be sent to a selected printer.
- **System information:** Provides Firmware version number, Internal & External memory status, IP address and IO card status of each Slot.
- **Field Calibration:** Analog channels may be easily field calibrated.
Additional Functions

Standard version of Firmware

Standard Firmware version includes Mathematics, Counters & Totalizer

Math: It includes Math, Counter & Totalizer.

Math Expression is entered directly

Plus version of Firmware

Plus versions of Firmware offer additional features: External Channels, Custom Display, Batch, High Frequency Pulse input and FDA CFR21 part 11.

External Channels: In addition to the AI & DI inputs the PR recorders may accept additional inputs through serial or Ethernet TCP communication referenced as External Channels. The PR10, PR20 & PR30 may accept up to 24, 48 & 96 External Channels respectively.

Custom Edited Display: The Plus Version firmware 2 & 3 includes PC software Panel Studio allowing users to create/edit custom display views that can include animation and then download to PR recorders.

Batch: Data Log files may be created by Batch allowing a custom batch and lot number name for the file, typically desired for food, pharmaceutical processing as well as other applications.

Functions in PC Software

Standard PC Software

The standard software consists of two parts, Configuration and Historical Viewer.

I. Configuration

The PC Software allows an easy method to create, edit and save recorder configuration. Configuration files may be easily imported/exported to PR recorder.

II. Historical Viewer

Display, print and export (.csv) historical data, chart trends, alarms and events. Search data by time, time period, tag, alarm, events and operator remarks.

Extensive software Data Acquisition Studio

III. RealTime Viewer

In addition to the Configuration & Historical Viewer, the Data Acquisition Studio software includes RealTime Viewer to provide real-time monitoring of multiple PR recorders via serial or Ethernet TCP as well as offering additional features.

IV. Panel Studio

With Plus version 2 or 3 Firmware, Panel Studio PC software is provided to allow the creation/editing of custom display views that may include animation. When completed on a PC the custom views are downloaded to the recorder. The custom display views are in addition to the standard views.

Edit it on PC

Download it onto recorders
**Installation**

**Dimensions in mm (in.)**

**PR10**

**PR20**

**PR30**

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**Ordering Code**

**PR10 Ordering Code**

**PR1003**

(3 analog inputs)

- Other inputs & outputs:
  0: none
  1: 6 relays
  2: 6 DI
  3: 6 relays + 3 DI

**PR1006**

(6 analog inputs)

- Other inputs & outputs:
  0: none
  1: 6 relays
  2: 6 DI
  3: 6 relays + 3 DI
  4: 6 relays + 6 DI

**Power**

A: 85-265VAC, 50/60 Hz
D: 110-480VDC

**Communication**

D: standard Ethernet
E: Ethernet + RJ45

**Firmware**

D: standard version includes Mathematics, Counter & Totalizer
E: Ethernet version 1.0, with custom edited display, an editing software PanelStudio to be supplied
F: Ethernet version 1.0, with custom edited display, an editing software PanelStudio to be supplied

**PC software**

1: free basic software of Historical Viewer & Configuration
2: extends software Data Acquisition Units (History Viewer + Historical Viewer + Configuration)

**Mounting types, power cord & switch**

- Panel mount, no power cord, no power switch
- Panel mount, no power cord, power switch
- Panel mount, UL & CSA power cord, power switch
- Panel mount, UL & CSA power cord, power switch
- Panel mount, UL & CSA power cord, power switch
- Panel mount, UL & CSA power cord, power switch
- Panel mount, UL & CSA power cord, power switch
- Panel mount, UL & CSA power cord, power switch
- Panel mount, UL & CSA power cord, power switch
- Panel mount, UL & CSA power cord, power switch
- Panel mount, UL & CSA power cord, power switch

**Special options**

- 0: none
- 1: 100-500 SC card
- 2: 500-1000 SC card
- 3: 1000-500 SC card
- 4: 500-1000 SC card
- 5: 1000-500 SC card

**Notes:** DI - digital inputs

Process control card ordering code needs to be chosen after Special options 10, 11, 12 been selected.

When Process control card is specified PR10 is not UL, cUL.

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**Process Control card Ordering Code**

**PC201**

**Output 1**

- 0: None
  1: Relay 5 to 24VAC
  2: Pulse output to drive SSR, 10V/10mA
  3: Isolated output (10V/5mA) (SMB5-1)
  4: Isolated 12V/5mA (SMB5-4)
  5: Isolated 12V/5mA (SMB5-4)
  6: Isolated output 12V/5mA (SMB5-6)
  7: Isolated output 12V/5mA (SMB5-6)

**Output 2**

- 0: None
  1: Relay 5 to 24VAC
  2: Pulse output to drive SSR, 10V/10mA
  3: Isolated output (10V/5mA) (SMB5-1)
  4: Isolated 12V/5mA (SMB5-4)
  5: Isolated 12V/5mA (SMB5-4)
  6: Isolated output 12V/5mA (SMB5-6)

**Alarm 1**

- 0: None
  1: Form C relay 5 to 24VAC

**Alarm 2**

- 0: None
  1: Form A relay 5 to 24VAC
### Order Matrix

#### PR20 Ordering Code

<table>
<thead>
<tr>
<th>Ordering Code</th>
<th>Input &amp; Output Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR2003 (3 analog inputs)</td>
<td>0: none; 1: 3 relays; 2: 3 relays + 3 DI</td>
</tr>
<tr>
<td>PR2006 (6 analog inputs)</td>
<td>0: none; 1: 3 relays; 2: 3 relays + 3 DI; 3: 3 relays + 3 AO</td>
</tr>
<tr>
<td>PR2012 (12 analog inputs)</td>
<td>0: none; 1: 6 relays; 2: 12 relays; 3: 18 relays; 4: 24 relays</td>
</tr>
<tr>
<td>PR2018 (18 analog inputs)</td>
<td>0: none; 1: 6 relays; 3: 6 DI; 4: 12 DI; 5: 6 AO</td>
</tr>
<tr>
<td>PR2024 (24 analog inputs)</td>
<td>0: none; 1: 6 relays; 2: 12 relays; 3: 18 relays; 4: 24 relays</td>
</tr>
</tbody>
</table>

#### PR30 Ordering Code

<table>
<thead>
<tr>
<th>Ordering Code</th>
<th>Input &amp; Output Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR3006 (6 analog inputs)</td>
<td>0: none; 1: 6 relays; 2: 12 relays; 3: 18 relays; 4: 24 relays</td>
</tr>
<tr>
<td>PR3012 (12 analog inputs)</td>
<td>0: none; 1: 6 relays; 3: 6 DI; 4: 12 DI; 5: 6 AO</td>
</tr>
<tr>
<td>PR3018 (18 analog inputs)</td>
<td>0: none; 1: 6 relays; 3: 6 DI; 4: 12 DI; 5: 6 AO</td>
</tr>
<tr>
<td>PR3024 (24 analog inputs)</td>
<td>0: none; 1: 6 relays; 2: 12 relays; 3: 18 relays; 4: 24 relays</td>
</tr>
</tbody>
</table>

#### Power

- A: 90-250 VAC, 50/60 Hz
- D: 11-36 VDC

#### Communication

- 0: standard Ethernet
- 1: Ethernet + RS232
- 2: Ethernet + RS-422/485

#### Firmware

- 1: Plus version 1 with external channels, batch & FDA, CFR21 part 11
- 2: Plus version 2 with custom edited display, an editing software Panel Studio to be supplied
- 3: Plus version 3 including Plus version 1+2 above

#### PC software

- 1: free basic software of Historical Viewer & Configuration
- 2: extensive software Data Acquisition Studio (RealTime Viewer + Historical Viewer + Configuration)

### Special Options

- 00: none
- S1: 16G SD card
- S2: 32G SD card
- 10: Process control card
- 11: Process control card + 16G SD card
- 12: Process control card + 32G SD card

**Notes:**

- DI - digital inputs, AO – analog retransmission output
- Plus version 1 & 2 should be selected after Special options 10, 11, 12 have been selected.
- Process control card ordering code needs to be chosen after Special options 10, 11, 12 have been selected. Please refer to page 13.