

- ◆ The basic PC software is supplied free with the recorder. There is an additional charge for the extensive Data Acquisition Software supplied with communication of RS-232/422/485 or Ethernet.
- ◆ The Ordering Code for various standard model Recorders with an AC supply and without any additional options are as follows:

PR1003- 0A001000  
 PR2003- 0A001000  
 PR3006- 000A001000

## 1.8 Specifications

### Power:

#### PR10 and PR20:

90-250VAC, 47-63Hz, 52VA, 26W maximum  
 11-36VDC, 26VA, 26W maximum

#### PR30:

90-250VAC, 47-63Hz, 110VA, 62W maximum  
 11-36VDC, 62VA, 62W maximum

### Display:

PR10: LCD, 480 x 272 pixel resolution, 65K color  
 PR20: LCD, 640 x 480 pixel resolution, 65K color  
 PR30: LCD, 1024 x 768 pixel resolution, 65K color

### Memory:

256MB storage memory on board.

### Analog Input Cards (AI20X):

**Channels:** AI203 ~ 3 channels, AI206 ~ 6 channels

**Resolution:** 24 bits

**Sampling Rate:** 10 times/ second

**Maximum Rating:** RTD input  $\pm 20V$   
 T/C and Voltage input  $\pm 65V$   
 mA input  $\pm 10V$

**Temperature Effect:**  $\pm 0.1\mu V \pm 15PPM$  of reading for all inputs except mA,  $\pm 30PPM$  of reading for mA input

#### Sensor Lead Resistance Effect:

T/C: 0.32PPM of reading/ohm     3-wire RTD: 2.6 °C /ohm of resistance difference of two leads (Based on °C measurement temperature for PT100)

2-wire RTD: 2.6 °C /ohm of resistance sum of two leads (Based on °C measurement temperature for PT100)

**Burn-out Current:** 10uA

**Common Mode Rejection Ratio (CMRR):** 120dB

**Normal Mode Rejection Ratio (NMRR):** 55dB

**Isolation Breakdown Voltage between channels:** 1500VAC min.

**Sensor Break Detection:**

Sensor opened for TC, RTD and mV inputs, below 1 mA for 4-20mA input, below 0.25V for 1-5V inputs, unavailable for other inputs

Sensor Break Responding Time: Within 1 seconds for TC, RTD and mV inputs, 0.1 second for 4-20 mA and 1-5V inputs

**Characteristics:**

Type	Range	Accuracy at 25 °C	Input Impedance
J	-120 ~ 1000 °C (-184 ~ 1832 °F)	±1 °C	3.12MΩ
K	-200 ~ 1370 °C (-328 ~ 2498 °F)	±1 °C	3.12MΩ
T	-250 ~ 400 °C (-418 ~ 752 °F)	±1 °C	3.12MΩ
E	-100 ~ 900 °C (-148 ~ 1652 °F)	±1 °C	3.12MΩ
B	0 ~ 1820 °C (32 ~ 3308 °F)	±2 °C (200 ~ 1820 °C)	3.12MΩ
R	0 ~ 1768 °C (32 ~ 3214 °F)	±2 °C	3.12MΩ
S	0 ~ 1768 °C (32 ~ 3214 °F)	±2 °C	3.12MΩ
N	-250 ~ 1300 °C (-418 ~ 2372 °F)	±1 °C	3.12MΩ
L	-200 ~ 900 °C (-328 ~ 1652 °F)	±1 °C	3.12MΩ
U	-200 ~ 600 °C (-328 ~ 1112 °F)	±1 °C	3.12MΩ
P	0 ~ 1395 °C (32~2543 °F)	±1 °C	3.12MΩ
W5	0 ~ 2315 °C (32 ~ 4199 °F)	±1 °C	3.12MΩ
W3	0 ~ 2315 °C (32 ~ 4199 °F)	±1 °C	3.12MΩ
LR	-200 ~ 800 °C (-328 ~ 1472 °F)	±1 °C	3.12MΩ
A1	0 ~ 2500 °C (-32 ~ 4532 °F)	±1 °C	3.12MΩ
A2	0 ~ 1800 °C (-32 ~ 3272 °F)	±1 °C	3.12MΩ
A3	0 ~ 1800 °C (-32 ~ 3272 °F)	±1 °C	3.12MΩ
M	-200 ~ 100 °C (-328 ~ 212 °F)	±1 °C	3.12MΩ
PT50 (α = 0.00385)	-200 ~ 850 °C (-328 ~ 1562 °F)	±0.4 °C	2.0KΩ

PT100 ( $\alpha = 0.00385$ )	-200 ~ 850 °C (-328 ~ 1562 °F)	±0.4 °C	2.0K $\Omega$
PT200 ( $\alpha = 0.00385$ )	-200 ~ 850 °C (-328 ~ 1562 °F)	±0.4 °C	2.0K $\Omega$
PT500 ( $\alpha = 0.00385$ )	-200 ~ 850 °C (-328 ~ 1562 °F)	±0.4 °C	2.0K $\Omega$
PT1000 ( $\alpha = 0.00385$ )	-200 ~ 350 °C (-328 ~ 662 °F)	±0.4 °C	2.0K $\Omega$
PT50 ( $\alpha = 0.00391$ )	-200 ~ 850 °C (-328 ~ 1562 °F)	±0.4 °C	2.0K $\Omega$
PT100 ( $\alpha = 0.00391$ )	-200 ~ 850 °C (-328 ~ 1562 °F)	±0.4 °C	2.0K $\Omega$
JPT50 ( $\alpha = 0.003916$ )	-200 ~ 600 °C (-328 ~ 1112 °F)	±0.4 °C	2.0K $\Omega$
JPT100 ( $\alpha = 0.003916$ )	-200 ~ 600 °C (-328 ~ 1112 °F)	±0.4 °C	2.0K $\Omega$
JPT200 ( $\alpha = 0.003916$ )	-200 ~ 600 °C (-328 ~ 1112 °F)	±0.4 °C	2.0K $\Omega$
JPT500 ( $\alpha = 0.003916$ )	-200 ~ 600 °C (-328 ~ 1112 °F)	±0.4 °C	2.0K $\Omega$
JPT1000 ( $\alpha = 0.003916$ )	-200 ~ 350 °C (-328 ~ 662 °F)	±0.4 °C	2.0K $\Omega$
Cu50 ( $\alpha = 0.00426$ )	-50 ~ 200 °C (-58 ~ 392 °F)	±0.4 °C	2.0K $\Omega$
Cu100 ( $\alpha = 0.00426$ )	-50 ~ 200 °C (-58 ~ 392 °F)	±0.4 °C	2.0K $\Omega$
Cu50 ( $\alpha = 0.00428$ )	-180 ~ 200 °C (-292 ~ 392 °F)	±0.4 °C	2.0K $\Omega$
Cu100 ( $\alpha = 0.00428$ )	-180 ~ 200 °C (-292 ~ 392 °F)	±0.4 °C	2.0K $\Omega$
Ni100 ( $\alpha = 0.00617$ )	-60 ~ 180 °C (-76 ~ 356 °F)	±0.4 °C	2.0K $\Omega$
Ni200 ( $\alpha = 0.00617$ )	-60 ~ 180 °C (-76 ~ 356 °F)	±0.4 °C	2.0K $\Omega$
Ni500 ( $\alpha = 0.00617$ )	-60 ~ 180 °C (-76 ~ 356 °F)	±0.4 °C	2.0K $\Omega$
Ni1000 ( $\alpha = 0.00617$ )	-60 ~ 180 °C (-76 ~ 356 °F)	±0.4 °C	2.0K $\Omega$
Cu10 ( $\alpha = 0.00427$ )	-200 ~ 260 °C (-328 ~ 500 °F)	±0.1 °C	2.0K $\Omega$
±20mA	-26 ~ 26mA	±0.05%	75 $\Omega$
±60mV	-122 ~ 122mV	±0.05%	3.12M $\Omega$
±200mV	-243 ~ 243mV	±0.05%	3.12M $\Omega$
±1V	-1.58 ~ 1.58mV	±0.05%	3.12M $\Omega$
±2V	-3.16 ~ 3.16mV	±0.05%	3.12M $\Omega$
±6V	-6.32 ~ 6.32V	±0.05%	3.12M $\Omega$
±20V	-25.3 ~ 25.3V	±0.05%	3.12M $\Omega$
±50V	-50.6 ~ 50.6V	±0.05%	3.12M $\Omega$
0.4 ~ 2V	-3.16 ~ 3.16V	±0.05%	3.12M $\Omega$
1 ~ 5V	-6.32 ~ 6.32V	±0.05%	3.12M $\Omega$

### **Digital Input Card (DI206):**

Channels: 6 per card  
Logic Low: -5V minimum, 0.8V maximum  
Logic High: 3.5V minimum, 24V maximum  
External pull-down Resistance: 1K $\Omega$  maximum  
External pull-up Resistance: 1.5M $\Omega$  minimum

### **Relay Output Card (RO206):**

Channels: 6 per card  
Contact Form: N.O. & N.C. (form C)  
Relay Rating: 5A/240 VAC, life cycles 200,000 for resistive load

### **Analog Output Card (AO206):**

Channels: 6 per card  
Output signal: 4-20mA, 0-20mA, 0-5V, 1-5V, 0-10V  
Resolution: 16 bits  
Accuracy:  $\pm 0.05\%$  of Span  $\pm 0.0025\%$  / $^{\circ}$ C  
Load Resistance: 0-500 ohms (current), 10K ohms minimum (voltage)  
Output Regulation: 0.01% for full load change  
Output Setting Time: 0.1 second (stable to 99.9%)  
Isolation Breakdown Voltage: 1500VAC at 50/60Hz for 1 minute  
Integral Linearity Error:  $\pm 0.005\%$  of Span  
Temperature Effect:  $\pm 0.0025\%$  of Span / $^{\circ}$ C

### **COMM Module (IF232 and IF485):**

Interface: RS-232 (1 unit), RS-485 or RS-422 (up to 247 units)  
Protocol: Modbus Protocol RTU mode  
Address: 1-247  
Baud Rate: 9.6 ~ 115.2 Kbits/sec.  
Measured data Bits: 7 or 8 bits  
Parity Bit: None, Even or Odd  
Stop Bit: 1 or 2 bits

### **Standard Ethernet Communication:**

Protocol: Modbus TCP/IP, 10/100 Base T  
Ports: AUI (Attachment Unit Interface) and RJ-45, Auto- detect capability

### **Real time clock accuracy vs. temperature inside of housing**

Temperature inside housing	typical error per month
10 ~ 40 $^{\circ}$ C	18 seconds
0 $^{\circ}$ C or 50 $^{\circ}$ C	52 seconds
-10 $^{\circ}$ C or 60 $^{\circ}$ C	107 seconds

## **Environmental & Physical:**

Operating Temperature: 0 ~ 50 °C

Storage Temperature: -30 ~ 70 °C

Humidity: 20 to 90% RH (non-condensing), maximum relative humidity 90% is for ambient temperature up to 38°C decreasing linearly to 50% relative humidity at 50°C

Altitude: 2000 M maximum

Insulation Resistance: 20 M ohms min. (at 500 VDC)

Dielectric Strength: 2300VAC, 50/60 Hz for 1 minute between power terminal and earth

Vibration Resistance: 10-55 Hz, 10m/ s<sup>2</sup> for 2 hours

Shock Resistance: 30m/ s<sup>2</sup> (3g) for operation, 20g for transportation

Operation Position: no inclined restriction

Dimensions: Panel Mount style: 144(W) x 144(H) x 193mm (D) (for PR10/PR20)  
288(W) x 288(H) x 194mm (D) (for PR30)

Standard Panel Cutout: 137 x 137mm (for PR10/PR20)  
281 x 281mm (for PR30)

## **Approval Standards:**

Safety: UL61010C-1, CSA C22.2 No. 24-93

CE: EN61010-1 (IEC1010-1) over voltage category II, Pollution degree 2

Protective Class: IP 65 front panel for indoor use,  
IP 20 housing and terminals

EMC:

Emission: EN61326-1 (EN55022 class A, EN61000-3-2, EN61000-3-3)

Immunity: EN61326-1 (EN61000-4-2, EN61000-4-3, EN61000-4-4,  
EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11)