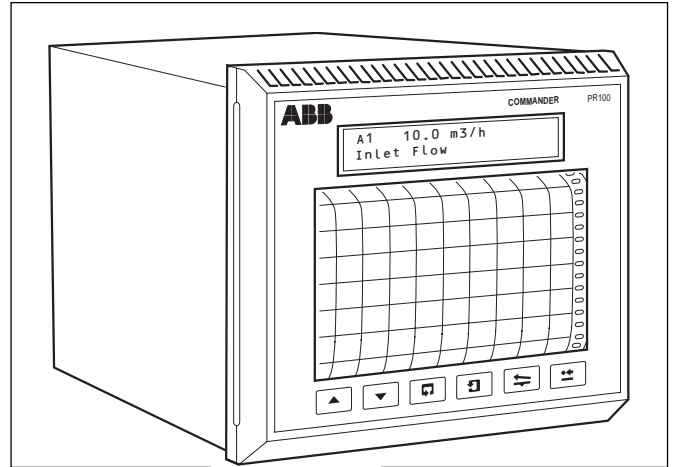


Specification DataFile

- **1 to 6 traces on a common time base**
 - instant process comparisons
- **Unique Cue and Review incident analysis**
 - historical data at the touch of a button
- **12 universal inputs**
 - total process compatibility
- **Clear message display and text prompts**
 - simple operation and setup
- **Rugged design with IP65 protection**
 - reliability in the harshest environments
- **PCMCIA Memory Card data storage**
 - full data logging and configuration backup
- **RS485 MODBUS serial communications**
 - PC, PLC and open systems integration
- **Exceptional accuracy and stability**
 - dependable information and minimal recalibration



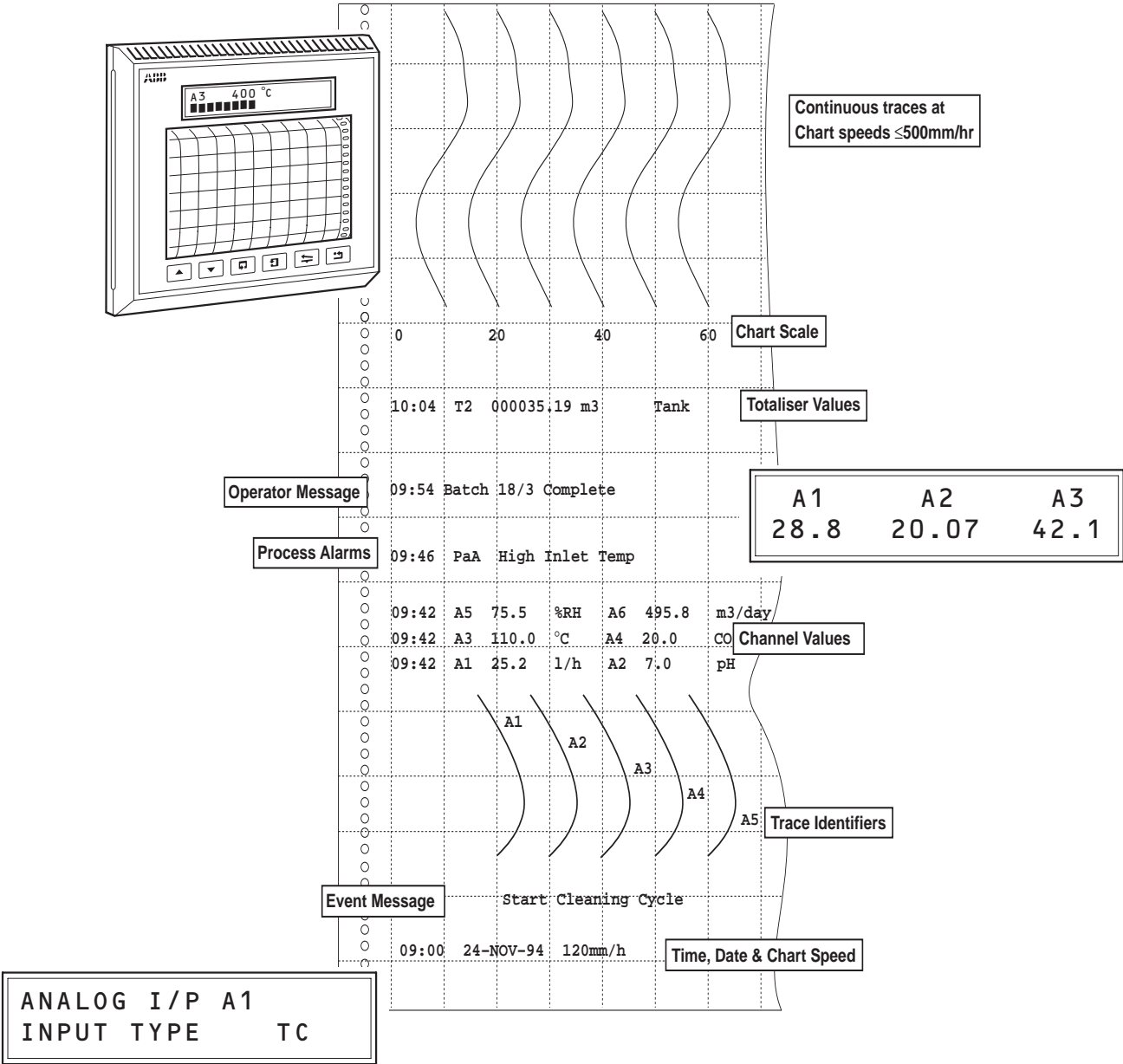
PR100 – the advanced 100mm recording system, solving the process problems of the real world.

COMMANDER PR100

The Kent-Taylor COMMANDER PR100 is a microprocessor-based 144 x 144mm (6 x 6in) strip chart recorder. It records and displays parameters such as temperature, pressure, level and flow, including event and alarm status, related to industrial processes. High speed, high resolution recording is performed in up to six DIN standard colors.

Comprehensive Process Information

Up-to-the-minute recording can be clearly examined by means of the **Easy View** function. This one-touch facility brings the latest portion of the chart to the front of the viewing window for easy inspection, then automatically returns the chart to its original position and completes the process record.



Instrument Setup and Configuration

PR100 is simple to set up and configure. Guided by prompts on the display, data is entered and confirmed via the front panel tactile keys. Configuration menus are logically structured to enable rapid setup of the basic recording and alarm functions. All configuration data is stored in nonvolatile memory and secured by a user configurable password.

Flexibility to Solve Problems

User configurable math functions, mass flow calculations, RH tables, totalization and user defined linearization tables are all fully supported; F_0 calculation and rolling average functions are optionally available.

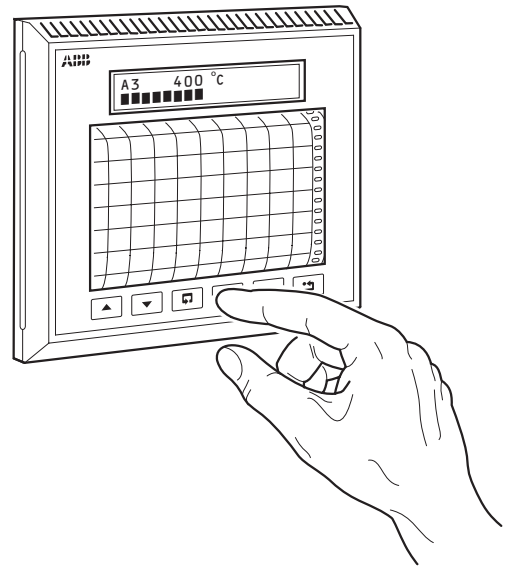
Unique Post-Incident Analysis (Cue and Review)

COMMANDER PR100 allows the user to rapidly search to any part of the roll chart, process event or alarm occurrence – enabling rapid and accurate analysis of process records.

The PR100 can be configured to monitor up to 12 user defined process alarms and two real time clock alarms.

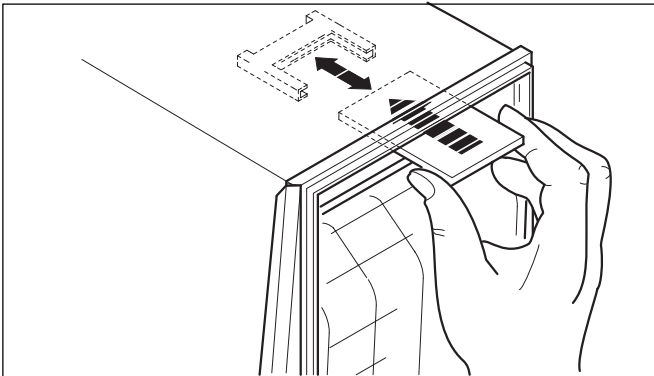
The 10 most recent alarms are held in a buffer, allowing the user to examine the order of process incidents and to review that part of the chart for analysis and evaluation.

EXAMINE ALARM
BUFFER - 



Data Storage on Memory Card

The optional memory card facility provides full data logging capability and enhanced configuration security on the COMMANDER PR100.



Process and configuration data can be electronically stored on removable PCMCIA SRAM memory cards of up to 4Mb capacity. Data held in the memory card is transferred to a PC via an external card reader or via a built-in PCMCIA slot. Stored information is held in DOS format files allowing direct transfer to/from a PC disk using DOS or Windows file management commands.

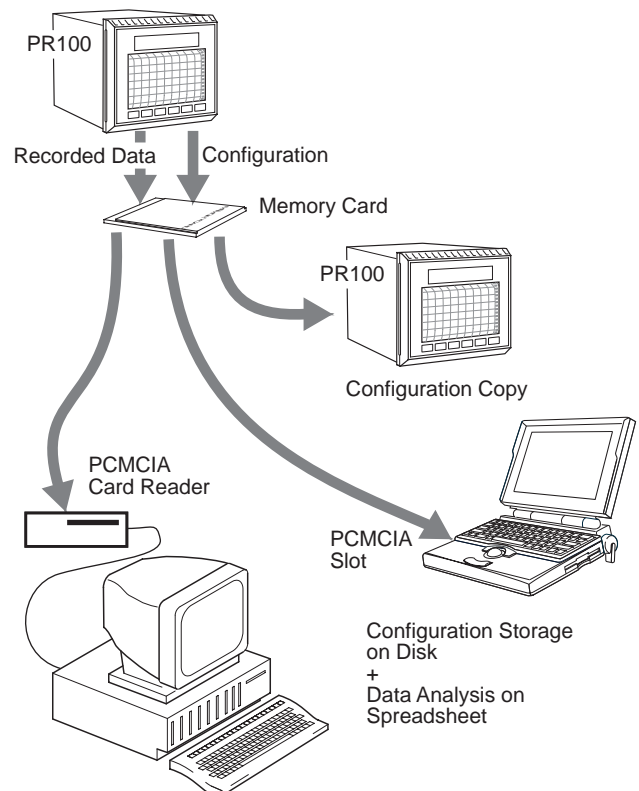
Data Logging

The PR100 can serve as a fully-fledged 12-channel data logger, providing a simple method of channelling analog measurements to a PC.

Up to 12 process signals or maths channels can be logged to the memory card, along with associated time stamp, tag information and process alarms. Data can be directly imported to spreadsheet packages for detailed analysis, or copied onto disk for later use.

Configuration Storage

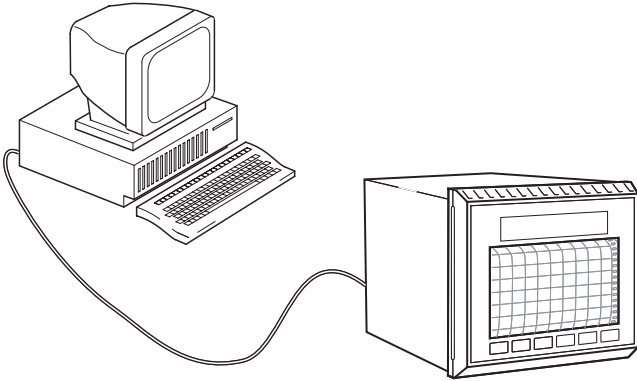
Instrument configuration is saved on the memory card as a named file which can be backed-up onto computer disk or directly loaded into another PR100.



MODBUS Serial Communications

The RS485 serial communications link enables the PR100 to interface with SCADA systems, PLCs or plant-wide data gathering networks.

All process information can be read over the link in real time by a host computer using MODBUS rtu communications protocol.



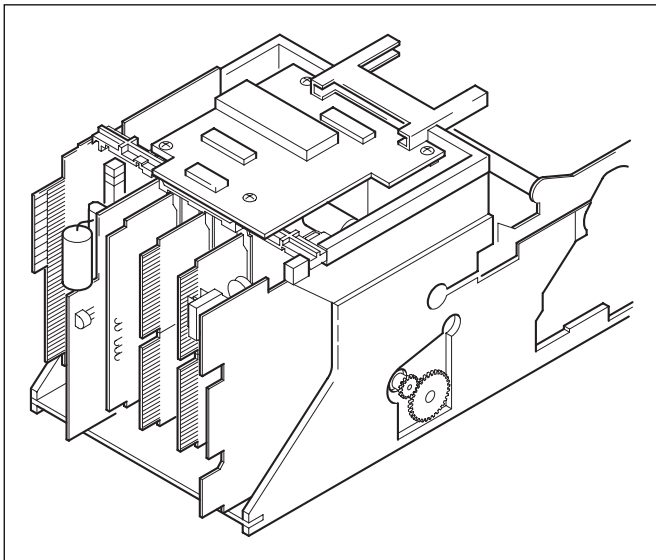
Expandability

To enable your investment to meet your future needs the PR100 easily expands to meet changing process requirements.

Additional recording channels and/or Input and Output functions may be field retrofitted as and when required.

Up to six plug-in modules may be used to increase the I/O capacity to a maximum of 40 points. The maximum number of each type of I/O is:

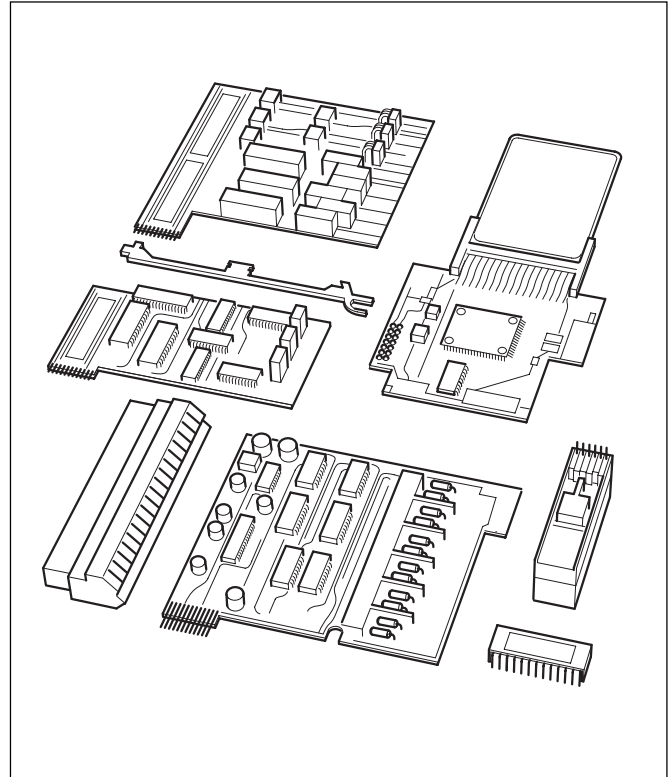
- 6 Enhanced (500V) Analog Inputs
or
- 12 Standard Analog Inputs
- 12 Analog Outputs
- 13 Digital Inputs (one provided as standard)
- 12 Digital TTL Outputs
- 12 Relay Outputs



Low Operating Costs

On-going operational costs are a concern to every user. The PR100 is designed to satisfy even the most cost-sensitive of operations.

The long life, plug-in print cartridge, 25m roll charts or 12m fan-fold charts, both with quick loading cassettes and variable speeds from 1mm/hr to 1500mm/hr, ensure minimal operating costs.



Upgrade kits provide additional traces, I/O and memory card facilities.

Innovative Design

Mechanical and electrical component count is minimised for improved performance and reliability.

An advanced A/D design ensures long term stability and allows range changes to be made without the need for recalibration.

Exceptional immunity to RF interference, electric noise and line dropout (brown-out) conditions, together with the IP65 (NEMA 3) rated front face, ensure reliable operation – even in harsh industrial environments.

Built-in Quality

The COMMANDER PR100 is designed, manufactured and tested to the highest quality standards, including ISO 9001, as reflected by the 2 years parts and labor warranty.

Specification

Summary

1,2,3,4,5 or 6 traces
100mm wide roll or fan-fold chart
Fully user-programmable
IP65 protection

CHART

Traces:

1 through 6 multicolor or digital data recording.

Colors:

Single trace – Red
Two traces – Pen 1 = Red, Pen 2 = Green
Three traces – Pen 1 = Red, Pen 2 = Green, Pen 3 = Blue
Four to Six traces – per DIN standard

Pen Life:

4 months (typical)

Chart:

12m Fanfold or 25m Roll
Quick-load cassette
Cue and review feature standard with roll chart
Standard chart graduation: 50 divisions
30, 40, 60, 70, 75 divisions also available

Chart Speed:

Configurable in 1mm steps between 1mm and 1500mm/hr
Logic or switch selectable at three configured speeds

Trace Response:

800ms for update of six traces

OPERATION

Display:

Alphanumeric and bargraph, 2 x 20-character long-life back-lit L.C.D.
100 segment bargraph

Languages

English, French, German – user selectable

Configuration:

User defined via front panel or loaded from 'Memory Card'

ADVANCED PROCESSING FUNCTIONS

Totalizers:

Six independent, with configurable wraparound, digital/manual reset and stop/start

Text Messages:

14 configurable messages (20-character) assignable to any digital or alarm function
12 analog input channel tags (20-character)
4 maths result tags (20-character)
6 totalizer descriptions (8-character)
1 operator message for batch identification (20-character)

Alarms:

12 user-defined, system events and diagnostic alarms.
2 real time events

Math Functions:

Four user-configurable functions, each with three inputs, for evaluation of one of 8 standard arithmetic functions or for standard calculations for mass flow or %RH

Logic Functions:

10 logic equations, user defined up to 15 elements per equation (AND, OR, etc.)

ANALOG INPUTS

Number:

1, 2, 3, 4, 5 or 6 Standard Analog Inputs
2, 3 or 6 Isolated Analog Inputs
3 or 6 additional channels available (Option B)

Input Sampling Rate:

180ms per channel

Type:

Universally Configurable to provide:
Thermocouple (THC)
Resistance thermometer (RTD)*
Millivolt
Current
D.C. voltage*
Resistance*

*RTD, Resistance and Volts (>2V) inputs not available on Isolated Analog Inputs

Linearizer Functions:

Programmable for all inputs including: $\sqrt{\quad}$, $x^{3/2}$, $x^{5/2}$.
THC types B, E, J, K, R, S, T, L, N, or Pt100*
20-point custom linearizer

Broken Sensor Detection:

Programmable UP/DOWN scale or NONE
RTD short/open circuit detection*

Cold Junction Compensation:

Automatic CJC incorporated as standard

Input impedance

Current: 10 Ω
D.C. voltage: 500k Ω
mV & T/C: >10M Ω

Transmitter Power Supply:

70mA max. powers three loops, fitted as standard.

Temperature Limits

THC /RTD Type	°C			°F		
	Min.	Max.	Min. Span	Min.	Max.	Min. Span
Type B	-18	1800	710	0	3272	1278
Type E	-100	900	45	-148	1652	81
Type J	-100	900	50	-148	1652	90
Type K	-100	1300	65	-148	2372	117
Type L	-100	900	50	-148	1652	90
Type N	-200	1300	90	-328	2372	162
Type R & S	-18	1700	320	0	3092	576
Type T	-250	300	60	-418	572	108
RTD*	-200	600	25	-328	1112	45

Notes.

Performance accuracy is not guaranteed below 400°C (752°F) for types B, R and S thermocouples.

RTD, 3-wire platinum, 100 Ω per DIN 43760 standard (IEC751), with range of 0 to 400 Ω .

Min. span below zero:

Type T 70°C/126°F
Type N 105°C/189°F

THC standards

DIN 43710 IEC 584

RTD standard

DIN 43760 IEC 751.

Electrical Limits

Input Type	Min. Value	Max. Value	Min. Span
Millivolts	-2000	2000	2.5
Volts	-20	20	0.25
Milliamps	-100	100	0.25
Resistance*	0	8000	10

Input Isolation:

Standard Input Module

Analog ch. to ch.	12V (0V with RTDs)
Input to ground	500V d.c. dielectric strength
Common mode	> 140dB at 50/60Hz with 500Ω imbalance resistance.
Series mode:	> 60dB at 50/60Hz
Filtering:	0 to 60s 'Smart' digital filter.

500V Input Module

Analog ch. to ch. isolation	500V d.c. dielectric strength
Input to ground	500V d.c. dielectric strength
Common mode	> 140dB at 50/60Hz with 500Ω imbalance
Series mode	> 60dB at 50/60Hz
Filtering	0 to 60s 'Smart' digital filter

Accuracy

Pen:

Resolution:	0.2% of span
-------------	--------------

Display:

Intrinsic error for reference conditions, 20°C.
mV inputs 0.1% of reading $\pm 10\mu\text{V}$
THC inputs as mV equivalent plus linearizer error
CJC < 0.05°C/°C change in ambient.
mA, V inputs 0.2% of reading or $\pm 2\mu\text{A}$
RTD inputs < $\pm 0.2\%$ of reading or $\pm 0.5^\circ\text{C}$

Channel-to-channel offset:	< 20 μV or < 0.025 Ω without using individual channel offset correction.
Display range:	-9999 to +9999.
Display resolution:	for spans > 4000 – ± 2 digits for spans < 4000 – ± 1 digit.
Long term drift:	< 0.01% reading, or < $\pm 5\mu\text{V}$ annually.

PHYSICAL

Size:

144mm (5.67in) x 144mm (5.67in)
x 230mm (9.05in) (depth behind panel)

Weight:

3.3kg (7 $\frac{1}{4}$ lbs.) approx.

Panel cut-out:

138mm (5.43in) x 138mm (5.43in)

Case material:

Stainless Steel

Door material:

Glass-filled polycarbonate

Window material:

Polycarbonate

ELECTRICAL

Power supply:

85 to 265V 50/60Hz
or 10V to 30V d.c.
24V a.c.

Power consumption:

25VA max
20W d.c. (typical)

Electrical safety:

EN61010-1
CE Marked instruments meet EU regulations
CSA (optional)

Electrical connections:

Screw terminals

ENVIRONMENTAL

Operating limits:

0 to 50°C (32° to 122°F), 95%RH non-condensing
80%RH for chart

Temperature stability:

0.02% of reading/°C, or 2 $\mu\text{V}/^\circ\text{C}$ whichever is greater

Protection:

Front face IP65/NEMA 3
IP66/NEMA 4x with optional fascia cover
Rear of instrument IP20

Line interruption:

<80ms loss, no effect
>80ms loss, auto-reset and restart
IEC Part IV level 3

RF interference:

Interference protection (based on 30mV range). Radiated RF
< $\pm 3\%$ over range 27 to 1000MHz at a field strength of 3V/m
Meets IEC 801 Pt. III Level 2.

OPTION MODULES

Up to six modules can be fitted from the following:

Additional Analog Input Module

Three or six inputs on the module (occupies slots B & C)
Universally configurable for all input types
12V Channel-to-Channel isolation

Digital Module

Three digital inputs plus three digital outputs per module.
Fully isolated, 500V d.c.
Input: Volt-free contact or 5V d.c. level triggered
Output: True TTL (15k Ω load)
5V or 24V d.c. (20mA per output)

Relay Output Module

Three relays per module
Type: single pole changeover
Rating: 250V a.c. 5A (non-inductive load)
250V d.c. 25W maximum
Total load (all relays): 36A max.

Hybrid Module

Two relay outputs (specification as above)
One isolated analog output, configurable in range 0 to 20mA
into 1000 Ω max. load, isolation 500V d.c.

Analog Output Module

Three isolated retransmission channels per module
(configurable in range 0 to 20mA, 1000 Ω).
Isolation: 500V d.c.
Each channel can be programmed to retransmit any analog
value or result of math block calculation.
Accuracy $\pm 0.25\%$ of span

Serial Communication Module

RS422/485 protocol programmable 1200 to 9600 baud.
MODBUS rtu (slave) protocol
ABB Kent-Taylor protocol

Memory Card

PCMCIA/SRAM 'credit card' type
Card sizes: 64kb, 512kb, 1Mb, 2Mb, 4Mb
Configuration storage: DOS format files
Configuration capacity: 15 configurations on a 64kb card
Data logging format: DOS files, spreadsheet compatible
Channels logged: Up to 12 (analog inputs or maths)
Sample interval: 1s to 240s (user defined)
Card capacity: 25 days (approx.) on a 2Mb card,
for 6 channels logged every 60s
Data compression option: Increases data storage capacity
by a factor of 4 (requires use of
Data Decompression software to
reformat data for use on a PC)

Ordering Guide

Advanced Process Recorder		PR100	X	/X	X	/X	X	X	X	X	X	/X	X	X	XX
Option A	Single Trace	1													
Number of Traces,	Two Trace (12V Ch. to Ch.)	2													
Input Channels and	Three Trace (12V Ch. to Ch.)	3													
Dielectric strengths	Four Trace (12V Ch. to Ch.)	4													
	Five Trace (12V Ch. to Ch.)	5													
	Six Trace (12V Ch. to Ch.)	6													
	Two Trace (500V Ch. to Ch.)	A													
	Three Trace (500V Ch. to Ch.)	B													
	Six Trace (500V Ch. to Ch.)	C													
Build Option	Standard		B												
	CSA Approved		C												
	UL Approved		U												
	Special		S												
Memory Card	Not fitted		O												
	Memory card driver fitted		D												
Option B (1)	No additional inputs or outputs					0	0								
	3 additional analog inputs					3	0								
	6 additional analog inputs					6	0								
	3 analog outputs					A									
	3 digital inputs + 3 digital outputs					B									
	1 analog output + 2 relay outputs					C									
	3 relay outputs					R									
Option C (1)	No additional inputs or outputs					0									
	3 analog outputs					A									
	3 digital inputs + 3 digital outputs					B									
	1 analog output + 2 relay outputs					C									
	3 relay outputs					R									
Option D (1)	No additional inputs or outputs						0	0							
	Additional inputs: * = A, B, C or R						*								
Option E (1)	No additional inputs or outputs						0								
	Additional inputs: * = A, B, C or R						*								
Option F (1)	No additional inputs or outputs							0	0						
	Serial Communications							S							
Option G (1)	No additional inputs or outputs								0						
	Additional inputs: * = A, B, C or R								*						
Case & Door Type	Standard case											1			
	Standard case + terminal cover											2			
	Standard case + door lock											4			
	Standard case +terminal cover & lock											5			
Chart Drive	Roll chart												1		
	Fanfold chart (2)												2		
Power Supply	115V ac													1	
	230V ac													2	
	10 to 30V dc													3	
	24V ac													4	
Special Features	Factory standard configuration														ST
	Configured to customer's details														CM
	Agreed special features														**

Accessories

Memory cards to PCMCIA 68 pin standard – see price list for options available (capacity 64k – 4MB)

Nema 4X (IP66) Front Cover – see Price List

Note 1. See page 4 for maximum number of I/O per instrument.

Note 2. Cue & Review and Easy View features only available with Roll Chart option.

Ordering Example

PR102 / BD / R000S0 / 112ST

Two traces/inputs _____ 230V a.c.
 Memory card driver _____ Roll chart
 3 relay outputs _____ Serial communications

