Model 1492

Circular Chart Recorder

Specification DataFile

■■ **1 to 3 pen versions**
  – for all your recording requirements

■■ **Dedicated Flow version**
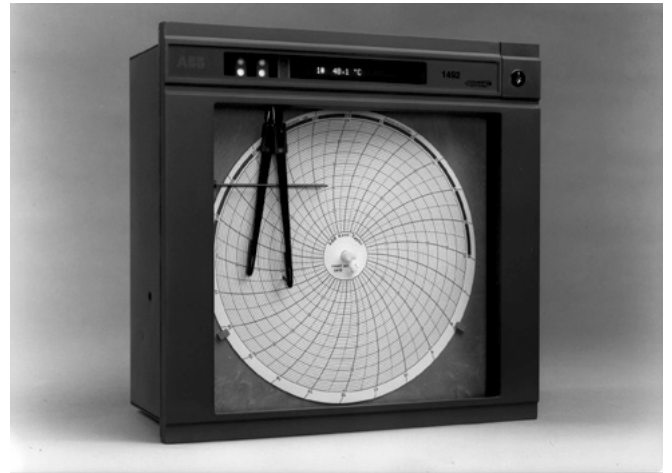 – to record and totalize; one batched and one secure totalizer per channel

■■ **Universal process inputs**
  – THC, RTD, V, mV, and mA

■■ **0.25% measurement accuracy**
  – reliable recording

■■ **Clear vacuum fluorescent display**
  – with units of measure and channel identifier

■■ **Up to 6 alarm relays**
  – high/low process, 3-state or latching

■■ **2-wire transmitter power supply**
  – power for all inputs

1492…the ideal solution for your recording needs

ABB Instrumentation   FISCHER & PORTER   ABB

Model 1492 Circular Chart Recorder

The **1492** is available as a one-, two-, or three-channel recorder, offering up to 6 output relays, allocated to **six set points**, which can be used on any channel or channels.

24V d.c. power supply modules can be fitted for use with two-wire field transmitters.

Also available are **isolated retransmission output** modules which can be added to any channel without change of software.

The 1492 can be supplied for **flow indication** and recording with **totalization** available on all channels.
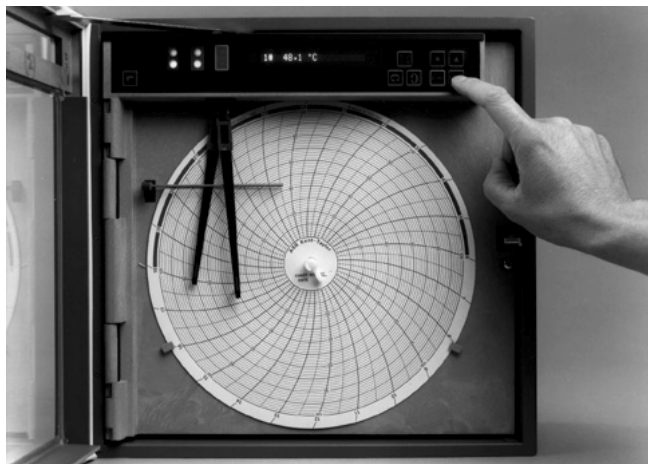
Displays and Controls

Displays and Controls

The display is a blue-filtered, 20-character, single-line 5 x 7 dot matrix, vacuum fluorescent type. In general use the input value and units of measurement are displayed sequentially for each channel.

During programming of the instrument the display provides easily read prompts, together with program variables. The clarity of these prompts reduces dependency on the instruction manual.

Alarm state is indicated by a red/green l.e.d. for each set point. These l.e.d.s are visible through the window in the door and can be programmed to indicate the required color when the input signal is above or below the set point.

All output relays can be programmed to be either energized or de-energized in the alarm condition in an on/off, latch or 3-state mode.

Units of Measure

In addition to the 156 standard units of measurement programmed into the recorder (e.g. °C, °F, l/h, pH), further units, up to six characters in length, may be entered into the program by the user.

Programming the instrument is carried out by the operation of a sequence of tactile membrane switches: three 'Scroll' switches in conjunction with 'Up', 'Down', 'Decimal Point' and 'Enter' switches. A further switch is used to raise & lower the pens for pen and chart replacement.

Control Panel Details
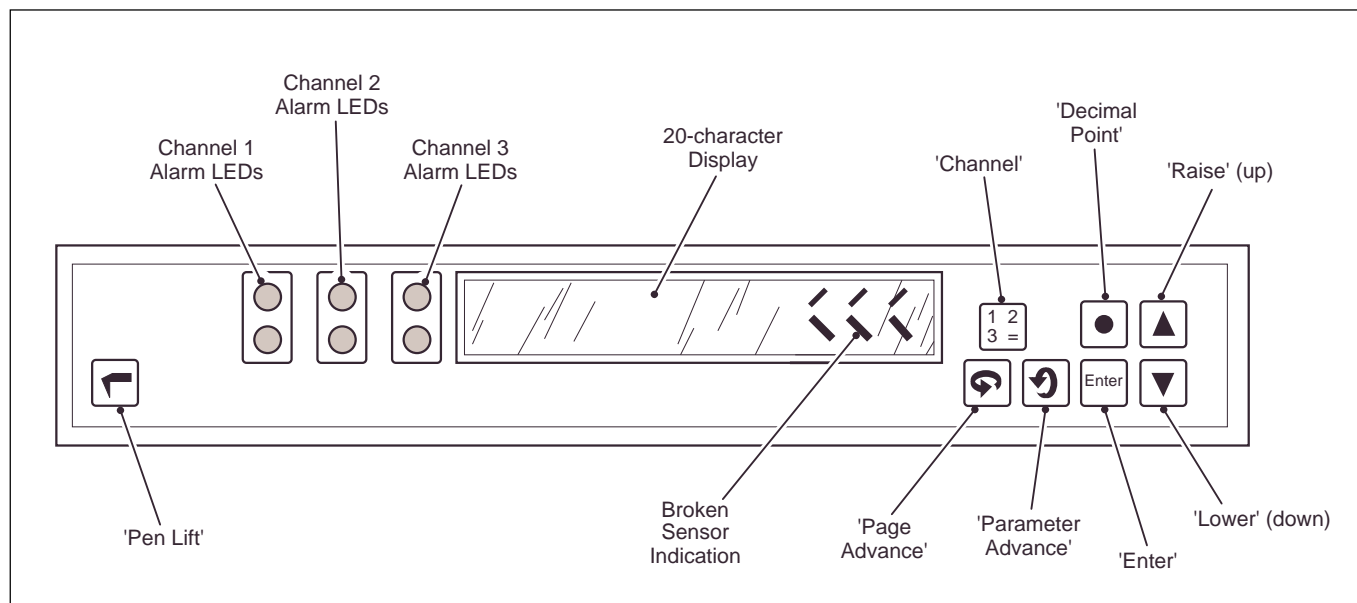
Flow Options

The 1492 is available for flow indication and recording with totalization on all channels. Input signals can be linear or square law analog.

$x^{3/2}$ or $x^{5/2}$ linearization is included in the standard software package. Any analog flow input channel may be changed from a totalizer to a standard version accepting analog signals for other measurements simply by programming the flow total to off.

Secure Totals

Each flow channel has two totalizers, one of which can be used for a batch total, resetable from the front panel and displayed in sequence with flow rate. The other is used for display of a secure total, accessible only by operating the appropriate channel select buttons.

Both totals are protected in the memory for up to ten years in the event of power failure.

For applications requiring a remote counter, a relay module with volt-free contacts can be fitted.

The totalizers can be programmed to count either up or down. A 'wrap around' feature enables the totalizer to count to a predetermined value and then reset to a preset value. A relay, or relays, can be allocated to the 'wrap' feature, energizing for 1 second at the predetermined value.

Specification

Accuracy

Intrinsic error
±0.25% span max. for all zero-based ranges within reference conditions 68°F and 115V or 230V supply

Linearizer accuracy
±0.18°F typical

Electrical Limits

Input Type (Electrical Inputs)	Min. Start Value	Min. Span	Max. Span and Range Value
Millivolts	−999	5.00	1000
Volts	−20.0	0.50	20.0
Milliamps	−99.9	0.50	100.0
Resistance	−20.0	20.0	2000

Resolution

Measurement – mV, V, mA, THC
≥0.1% span for all zero-based ranges within permitted limits

RTD
0.06Ω

Pen
≤0.1% full scale travel

Display
±1 digit (in −999 to 3300)

Pen response time
6s for 0 to 100% typical

Temperature Limits

Input (Temperature Inputs)	Type	Degrees Fahrenheit			Degrees Centigrade		
		Min. Start Temp.	Min. Span	Max. Temp.	Min. Start Temp.	Min. Span	Max. Temp.
Thermocouples							
Fe/Con and IEC 584	J	−148	180	1652	−100	100	900
Fe/Con DIN 43710	L	−148	180	1652	−100	100	900
NiCr/NiAl and IEC 584	K	−148	270	2372	−100	150	1300
Pt/PtRh and IEC 584	R & S	0	1080	3092	−18	600	1700
Cu/CuNi and IEC 584	T	−418	216(+ve) 306(−ve)	570	−250	120(+ve) 170(−ve)	300
NiCr/CuNi and IEC 584	E	−148	180	1650	−100	100	900
Pt30%Rh and IEC 584	B	0	1980	3272	−18	1100	1800
NiCrSi/NiSi	N	−328	324(+ve)	2372	−200	180(+ve)	1300
Resistance Thermometer	Pt100	−328	90	1112	−200	50	600

…Specification

Analog Inputs

No. of inputs
1, 2 or 3

Broken sensor detection
Programmable, upscale or downscale drive or none

Linearization
Programmable for all inputs – linear, square root, power $^3/_2$, $^5/_2$ law, or type of thermocouple, or resistance thermometer

Filter Time
Programmable from 0 to 60s in 1s steps

Change of input mode
By repositioning plug-in link

Change of input range/span
Programmable via front panel

Program modification
By user-operated switches above chart

Floating inputs isolation
12.5V max. between channels
(upon removal of terminal block links)

Insulation inputs to earth
500V d.c.

Input Resistance
Millivolt inputs   >10MΩ
Voltage inputs   500kΩ min.
Current inputs   10Ω

Displays and Records

Display
20-character, alpha-numeric dot matrix vacuum fluorescent with blue filter (0.196 in. characters)

Programming
Up, down and 'scroll' switches above chart

Chart – 10 inch
Circular with linear graduations. Specify the chart rotation time, graduations and chart number if known.

Chart speed
1 rev. per hour up to 1 rev. per week (168h) programmable in 1 hour steps

Pens
Red, channel 1. Green, channel 2. Blue, channel 3

Environmental Data

Operating temperature limits
32 to 131°F

Operating humidity limits
0 to 80% RH (paper and ink system)
0 to 95% RH (electronics)

Error due to ambient temperature variation
±0.01% span/°F typical (unsuppressed ranges)

Protection rating
NEMA 3

EMC and Safety

Emissions
Meets requirements of EN 50081-2

Immunity
Meets requirements of EN 50082-2

Design and Manufacturing Standard
CE mark
CSA optional
UL optional

Electrical Safety
EN 61010-1

Power Supplies

Voltage requirement
110V a.c. (min. 93V max. 127V) 50/60Hz
230V a.c. (min. 195V max. 265V) 50/60Hz
Alternatively, 10 to 30V d.c.

Power requirement
<28VA

Error due to power supply voltage variation
±0.1% span for ± 15% variation in supply

Line interruption
< 110ms loss, no effect,
> 110ms loss, instrument returns to operation after automatic reset

Common mode
< 1% span error max. for 250V r.m.s. 50Hz

Series mode
< 1% span error for 200% span, 50Hz

Transmitter Power Supply

Output voltage
25V ±0.5V at 0 or 60mA (loaded with 3 transmitters)

Output ripple
100mV peak to peak max.

Regulation
±0.1V for output change 4 to 20mA

Output voltage variation with supply voltage
<0.1V for ±15% supply voltage

…Specification

Retransmission and Alarms

Alarms

No. of set points
Up to 2 per channel

Trip point adjustment
Programmable

No. of relays
Up to 2 per channel

Relay contacts
Single pole changeover

Rating
250V a.c. 5A (non-inductive)   1250VA
250V d.c. 5A (non-inductive)   50W

Retransmission

Outputs
Output modules are isolated. The maximum isolation voltage is 1000V between input and output

Programmable min. (zero) and max. (full scale) values from 0 to 20.0mA in 0.1mA steps. Max. load 1kΩ

Mechanical Data

Mounting
Wall or panel by 3 brackets, supplied as standard kit

Optional accessories	Part No.
Door seal moisture shield	PX105/0111
Carrying stand assembly (complete with cover)	P105M/0340

Overall dimensions
14.56 in. wide x 14.17 in. high x 6.7 in. deep

Panel cutout

13.7 $^{+0.04}_{-0}$ in. x 13.46 $^{+0.04}_{-0}$ in.

Panel space requirement
16.14 in. wide x 15.74 in. high,
5.90 in. deep from panel face

Case and door
Sheet steel case with hinged chart plate. Foam-moulded door with glass window (or polycarbonate to special order)

Weight
23lb approx.

Specification for Flow Input Versions

General

Flow total
Programmable ON or OFF

Count rate zero
Programmable from 0 to 0.999 in 0.001 pps steps then 1.00 to 9.99 in 0.01pps steps

Count rate full scale
Programmable from 0.001 to 0.999 then 1.00 to 10.00 pps

Count rate cut off
Totalization can be stopped if flow rate falls below preset value. Preset value adjustable over full span, programmable in 1% steps

Count
Increase or decrease

Wrap
Programmable predetermined and preset values

Analog Inputs

Mathematical linearizer accuracy

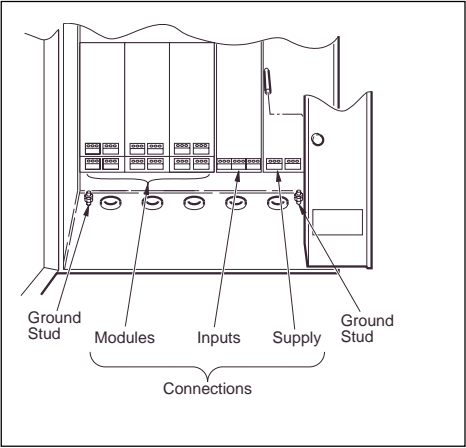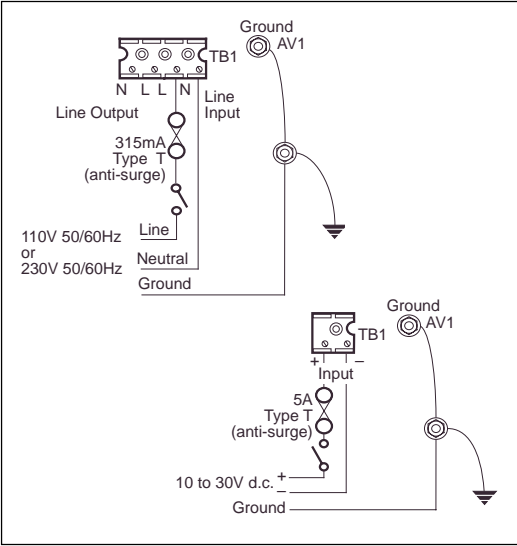|		
$\sqrt{x}$ –	0 to 100%	0.1% of reading
$x^{3/2}$ –	7 to 100%	0.2% of reading
$x^{5/2}$ –	18 to 100%	0.3% of reading

Below these values the error increases asymptotically as the input approaches zero.
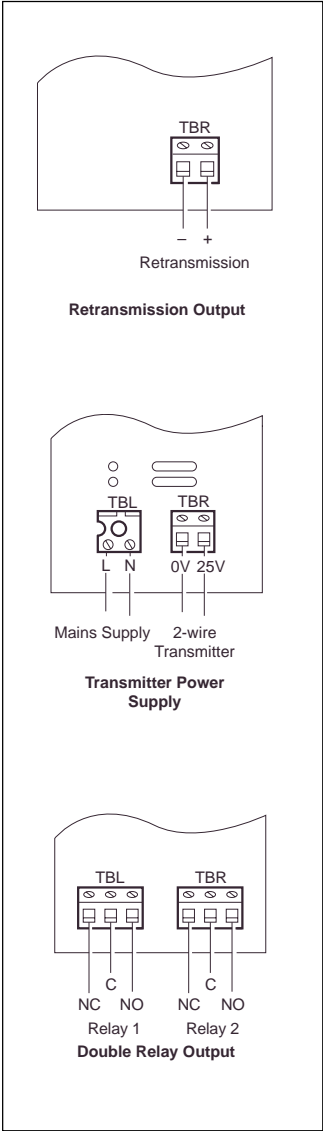
Electrical Connections

Terminal Connections

Ground Stud · Modules · Inputs · Supply · Ground Stud · Connections

Supply Connections

Module Connections

Retransmission Output

Transmitter Power Supply

Double Relay Output

Process Input Connections

Voltage and Current Input

3-Lead RTD Input

THC Input

2-Lead RTD Input
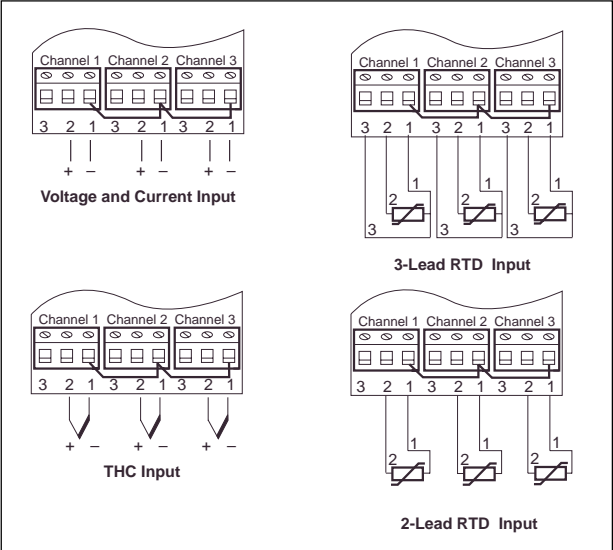
Chart Examples

24 Hour Rotation						7 Day Rotation			
Range	**Chart No.**	**Range**	**Chart No.**	**Range**	**Chart No.**	**Range**	**Chart No.**	**Range**	**Chart No.**
–100 to +100	1246	0 to 10	537	0 to 800	256	0 to 10	601	–100 to +100	1210
–50 to +50	1255	0 to 14	1361	0 to 1000	542	0 to 14	1353	–50 to +50	1258
–50 to +100	1439	0 to 15	1309	0 to 1200	355	0 to 20	1390	–50 to +150	1357
–25 to +25	604	0 to 20	1153	0 to 2000	304	0 to 25	1355	–25 to +25	1302
–15 to +15	565	0 to 25	522	0 to 2500	1484	0 to 30	357		
		0 to 30	531	0 to 3000	658	0 to 40	402		
		0 to 40	630	0 to 4000	621	0 to 50	405		
		0 to 50	514	0 to 10000	670	0 to 60	606		
		0 to 60	597	20 to 100	633	0 to 80	1461		
		0 to 80	545	20 to 120	211	0 to 100	410		
		0 to 100	510	50 to 150	262	0 to 200	620		
		0 to 120	515			0 to 250	625		
		0 to 150	564			0 to 300	1123		
		0 to 200	1145			0 to 400	434		
		0 to 250	525			0 to 600	1316		
		0 to 300	585			0 to 800	479		
		0 to 400	540			0 to 1000	1317		
		0 to 500	550			20 to 100	923		
		0 to 600	640			20 to 120	1134		

Ordering Information

Model C1492/ | X X X X X 00X X X X X 00X 0X X X

No. of Channels

One	1
Two	2
Three	3

Operating Voltage

110/120V a.c.	1
220/240V a.c.	3
24V d.c.	6

Input Type

Universal V, mV, THC, RTD, mA	1

Input Isolation

12.5V between channels	1

Output Relays

None	0
Two (1 card)	2
Four (2 cards)	4
Six (3 cards)	6

Case and Mounting

NEMA 3	000

Door Lock

(Standard)	1

Right column

Approvals

C	CSA approval
U	UL approval

Factory Configuration

0	None
1	Basic (Channel, Instrument. & Alarm menu)
2	With options

Window

00	Glass
01	Acrylic

Analog Retransmission *

000	None
001	One (1 card)
002	Two (2 cards)
003	Three (3 cards)

Totalizer Counter Outputs *

0	None
1	One (1 card)
2	Two (2 card)
3	Three (3 cards)

Totalizer (Integration) **

0	None
1	One
2	Two
3	Three

Transmitter Power Supply *

0	None
1	3 channels (1 card)
2	6 channels (2 cards)

* Max. of 3 card positions are available.
** Per channel

Coding Example

C1492 / 1 1 1 1 2 0 1 0 1 0 0 0 0 C

Single pen	
110/120V a.c. supply	
Universal input	
12.5V isolation	
Two relays	
NEMA 3	
Doorlock	
	CSA approval
	Standard configuration
	Glass window
	No retransmission
	No counter output
	Totalizer
	No transmitter power supply

7

Overall Dimensions

Dimensions in inches

14.56

6.7

0.79

25.4

13.54

6.06

0.46

4.34

4.80 Centers

13.38

4.70 Centers

4.34

Panel mounting clamp
Reverse for wall mounting

Cable entry at base
3 Holes 0.79 dia.

14.47 ± 0.08
Wall mounting centers

Panel thickness
up to 1.4 thick

Door seal moisture shield
(optional)

2.56

PX105

21.65

15.55
1492 fitted to Carrying Stand

ABB