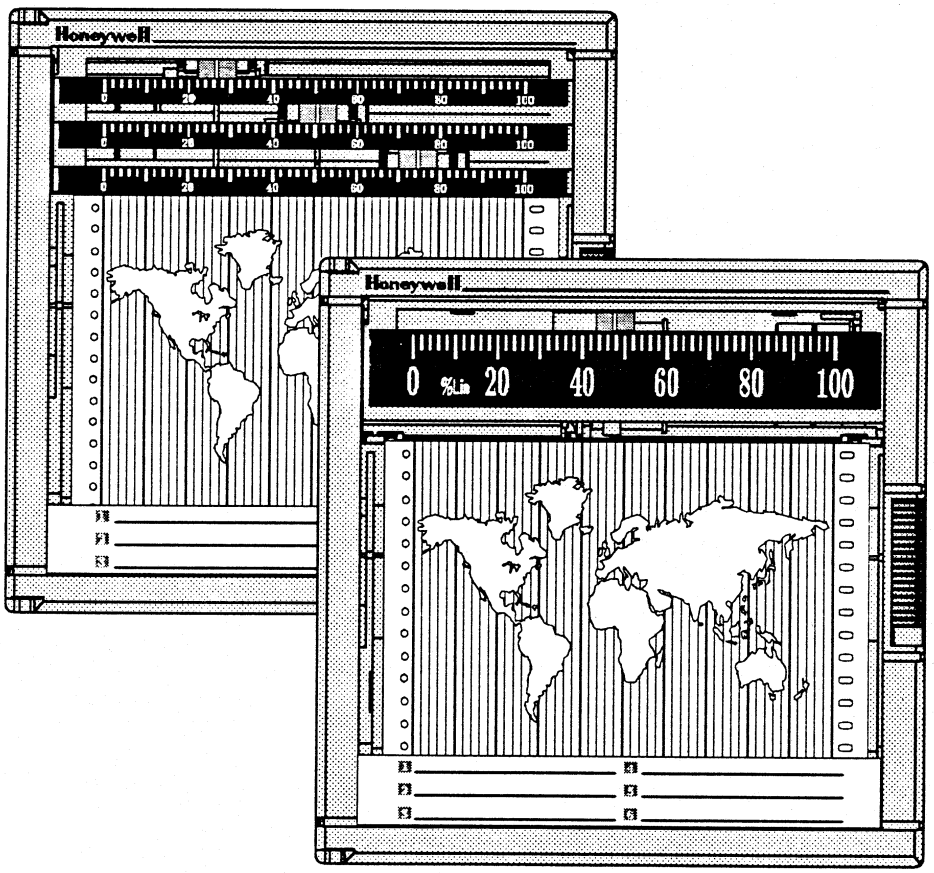
Honeywell

DPR 100 A - DPR 100 B

DIGITAL STRIP CHART RECORDER

PRODUCT MANUAL



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Better Record Your World

DPR 100 A - DPR 100 B

DIGITAL STRIP CHART RECORDER

PRODUCT MANUAL

Ref. : US1I-6126

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This document was prepared using Information Mapping methodologies and formatting principles.

About This Document

Abstract

This manual describes the installation, configuration, operation, and maintenance of the Recorder.

Warranty

WARRANTY. THE FOLLOWING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE.

a) Goods/Hardware

Except as otherwise hereinafter provided, Honeywell warrants goods of its manufacture to be free of defective materials and faulty workmanship and as conforming to applicable specifications and/or drawings. Commencing with date of shipment, Honeywell's warranty shall run for the period specified on the face hereof or, if none be mentioned, 18 months. If warranted goods are returned to Honeywell during this period of coverage, Honeywell will repair or replace without charge those items it finds defective.

Experimental devices (designated by the letter "X" or "E" within their part-number identification) are prototype, pre-production items that have yet to complete all phases of product-release testing; these items are sold "AS IS" WITH NO WARRANTY.

b) Software

Software, if listed on the face hereof and used within hardware and/or a system warranted by Honeywell, will be furnished on a medium that's free of defect in materials or workmanship under normal use for so long as the hardware and/or system is under warranty. During this period, Honeywell will replace without charge any such medium it finds defective. As for the quality or performance of any software or data, they are supplied "AS IS" WITH NO WARRANTY.

c) Services

Where hardware and/or a system is installed by Honeywell, such services are warranted against faulty workmanship for the same period (if any) as applies to the installed items. During this concurrently running period, Honeywell will correct without charge any workmanship it finds to be faulty.

Contacts

If you encounter any problem with your recorder, please contact your nearest Sales Office. (See the address list at the end of this manual).

An engineer will discuss your problem with you. **Please have your complete model number and serial number available.** Model number and serial number are located on the chassis nameplate.

If it is determined that a hardware problem exists, a replacement instrument or part will be shipped with instructions for returning the defective unit. Do not return your instrument without authorization from your Sales Office or until the replacement has been received.

Symbol Meanings

Symbol	What it means
	Protective ground terminal. Provided for connection of the protective earth green (green or green/yellow) supply system conductor.
	Functional ground terminal. Used for non-safety purposes such as noise immunity improvement.
	WARNING. Risk of electric shock. This symbol warns the user of a potential shock hazard where voltages greater than 30 Vrms, 42.4 Vpeak, or 60 Vdc may be accessible.
	CAUTION. When this symbol appears on the product, see the user manual for more information. This symbol appears next to the required information in the manual.

CE conformity

This product conforms with the protection requirements of the following European Council Directives: 89/336/EEC, the EMC directive, and 73/23/EEC, the low voltage directive. Do not assume this product conforms with any other “CE Mark” Directive(s).

Attention

The emission limits of EN 50081-2 are designed to provide reasonable protection against harmful interference when this equipment is operated in an industrial environment. Operation of this equipment in a residential area may cause harmful interference. This equipment generates, uses, and can radiate radio frequency energy and may cause interference to radio and television reception when the equipment is used closer than 30 meters to the antenna(e). In special cases, when highly susceptible apparatus is used in close proximity, the user may have to employ additional mitigating measures to further reduce the electromagnetic emissions of this equipment.

Product model number:	
Serial number:	
Date code:	
Service department telephone number:	

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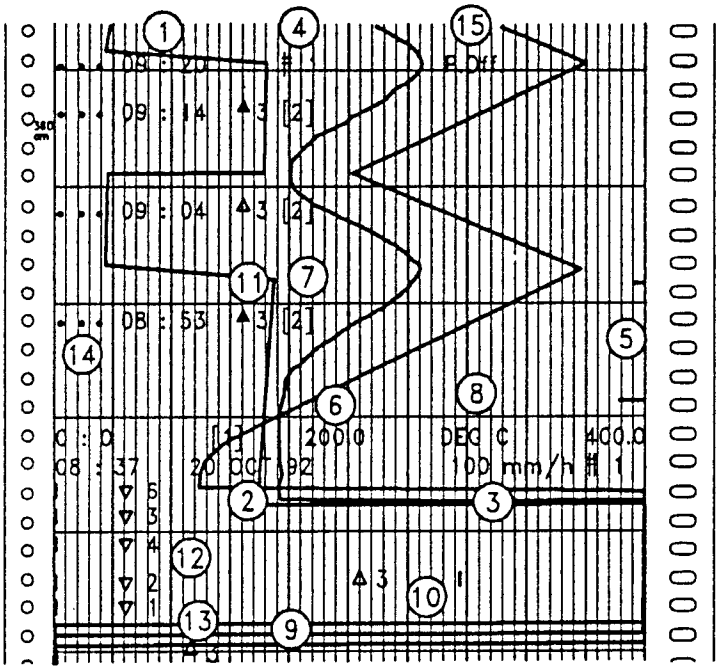
1.1 CLEAR AND FULLY DOCUMENTED CHART OF PEN RECORDER

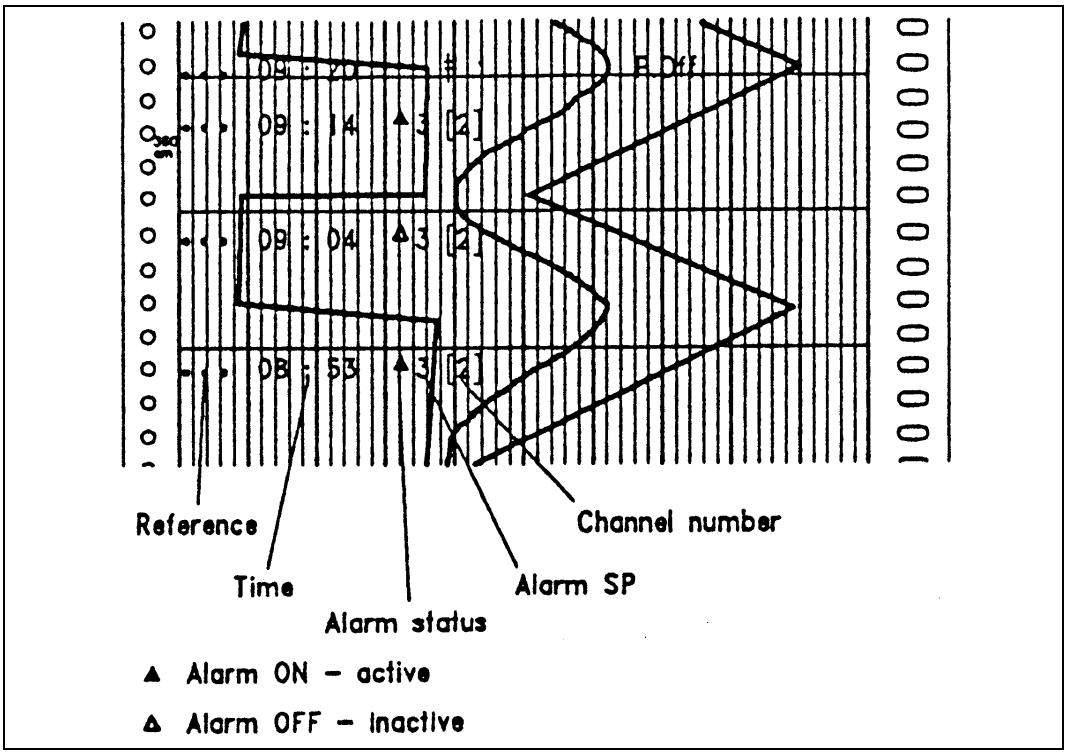
Color traces :

Pen 1 = blue
Pen 2 = red
Pen 3 = green



1. Time
2. Date
3. Chart speed
4. Identification number
5. Event mark
   small line = off
   longer line = on
6. Range
7. Channel number
8. Engineering unit
9. Chart certification
10. Alarms setpoints
11. Alarm high – active
12. Alarm low status
13. Alarm high status
14. Time reference
15. Pen offset configuration

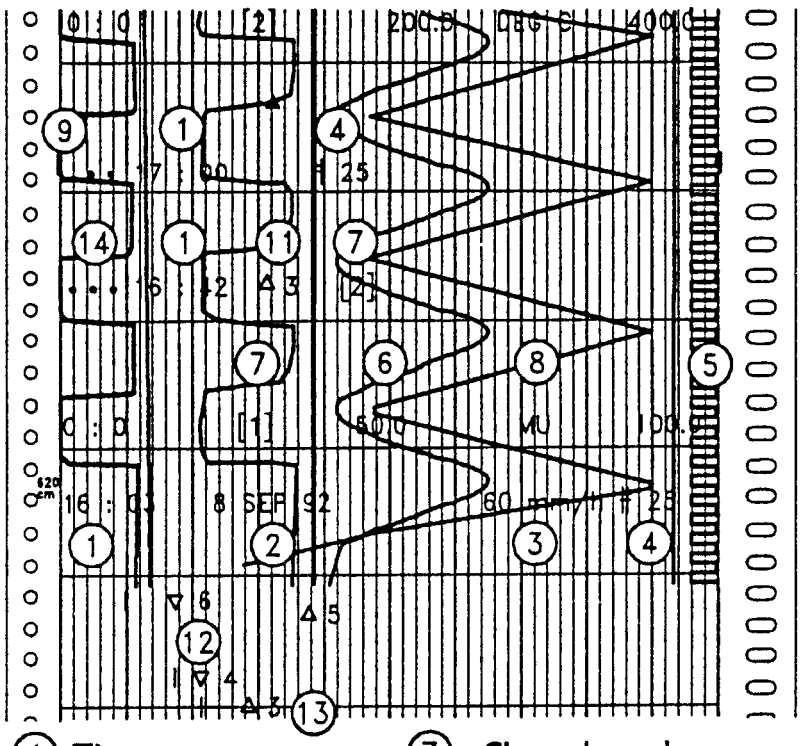
1.1.1 Alarms are indicated clearly



1.2 CLEAR AND FULLY DOCUMENTED CHART FOR MULTIPOINT RECORDER

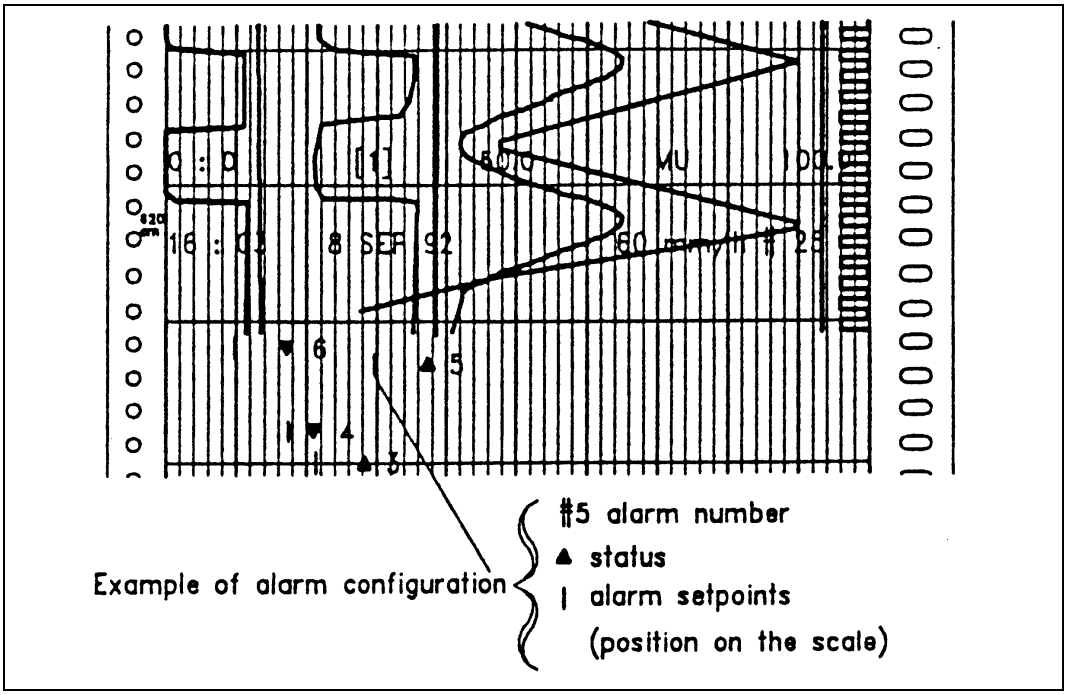
Color traces

Channel 1 = purple
Channel 2 = red
Channel 3 = black
Channel 4 = green
Channel 5 = blue
Channel 6 = brown



1. Time
2. Date
3. Chart speed
4. Identification number
5. 2 Events markers
   Event 1 = purple
   Event 2 = red
6. Range
7. Channel number
8. Engineering unit
9. Chart certification
11. ▲Active alarm
    (△ Inactive alarm)
12. Low alarm status
13. High alarm status
14. Time reference

1.2.1 Alarms are indicated clearly



2.1 WARNING

IMPROPER INSTALLATION

	To avoid the risk of electrical shock which could cause personal injury, follow all safety notices in this documentation.
	Protective earth terminal. Provided for connection of the protective earth supply system conductor.

Failure to comply with these instructions could result in death or serious injury

☑ **POWER SUPPLY**
Ensure the source voltage matches the voltage of the power supply before turning on the power.

☑ **PROTECTIVE GROUNDING**
Make sure to connect the protective grounding to prevent an electric shock before turning on the power.

☑ **NECESSITY OF PROTECTIVE GROUNDING**
To avoid a potential shock hazard, never cut off the internal or external protective grounding wire or disconnect the wiring of protective grounding terminal.

☑ **DEFECT OF PROTECTIVE GROUNDING AND FUSE**
Do not operate the instrument when protective grounding or fuse might be defective.

☑ **FUSE**
To prevent a fire, make sure to use the fuse with specified standard (current voltage, type). Before replacing the fuse, turn off the power and disconnect the power source. Do not use a different fuse or short-circuit the fuseholder.

☑ **DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE**
Do not operate the instrument in the presence of flammable liquids or vapors. Operation of any electrical instrument in such an environment constitutes a safety hazard.

☑ **NEVER TOUCH THE INTERIOR OF THE INSTRUMENT**
Inside this instrument there are areas of high voltage; therefore, never touch the interior if the power supply is connected. This instrument has an internal changeable system; however, internal inspection and adjustments should be done by qualified personnel only.

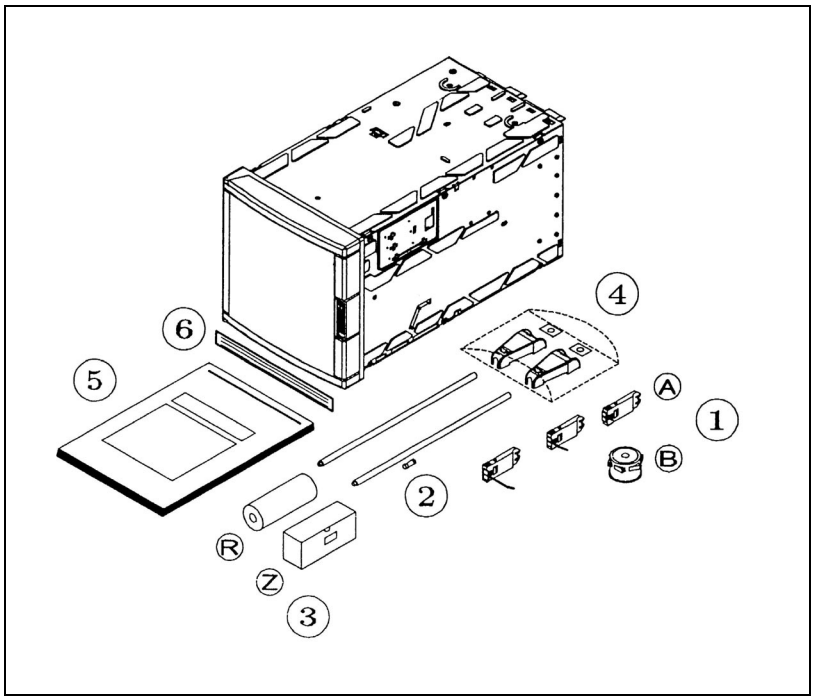
☑ **EXTERNAL CONNECTION**
To ground securely, connect the protective grounding before connecting to measurement or control unit.

☑ If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

☑ Do not replace any component (or part) not explicitly specified as replaceable by your supplier.

2.2 UNPACKING

Remove the accessories and check them against the figure below.



1. Ink cartridge(s) (A) or ink wheel (B)
2. Fuse (Spare) (Use only 1 A T. fuses)
3. Roll (R) or fanfold (Z) chart
4. Mounting brackets with nuts
5. Operator manual
6. Front label

NOTE: In case of missing item, please contact your nearest sales office.

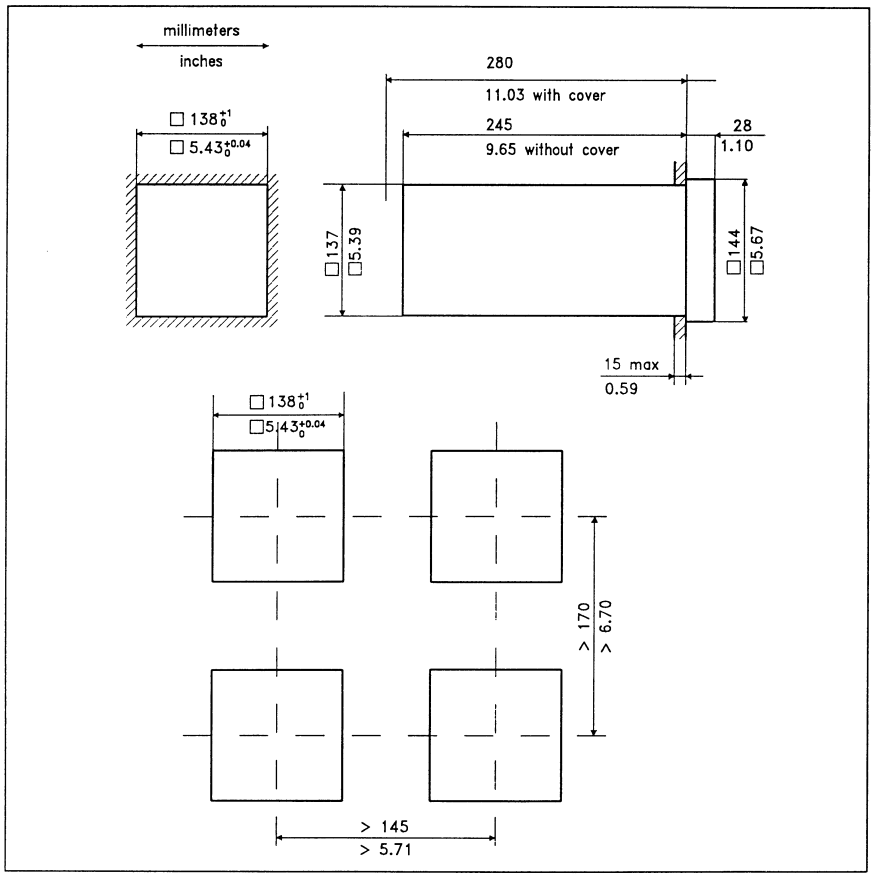
2.3 PANEL MOUNTING THE RECORDER

2.3.1 Recommendations

This recorder is designed to operate under specific conditions. If you need more information, refer to the product specification sheet.

2.3.2 External dimensions and cut-out

Prepare panel cut-out as detailed below:



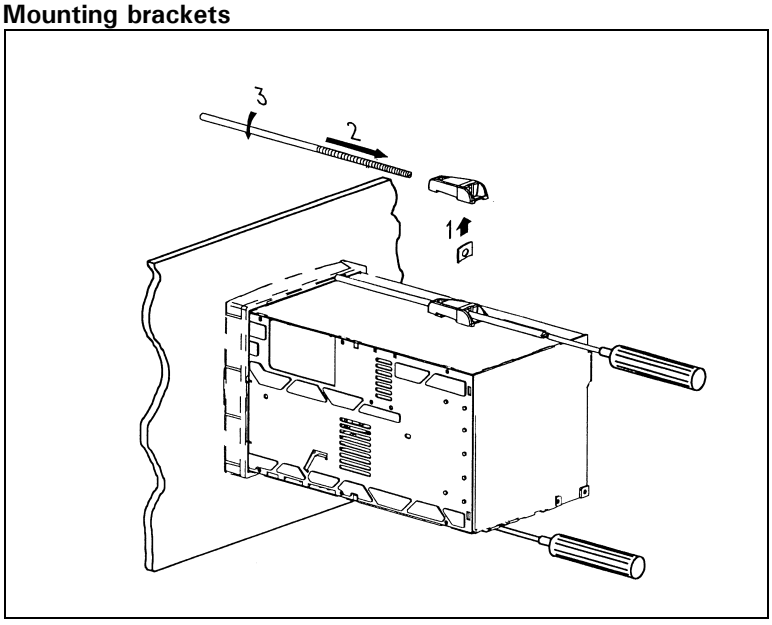
Note: Maximum panel thickness 15 mm

> **CAUTION**
>
> The maximum temperature inside the cabinet should not exceed the ambient conditions specific to the recorders. The recorder must be mounted into a panel to limit operator access to the rear terminals.
> **Failure to comply with these instructions may result in product damage**

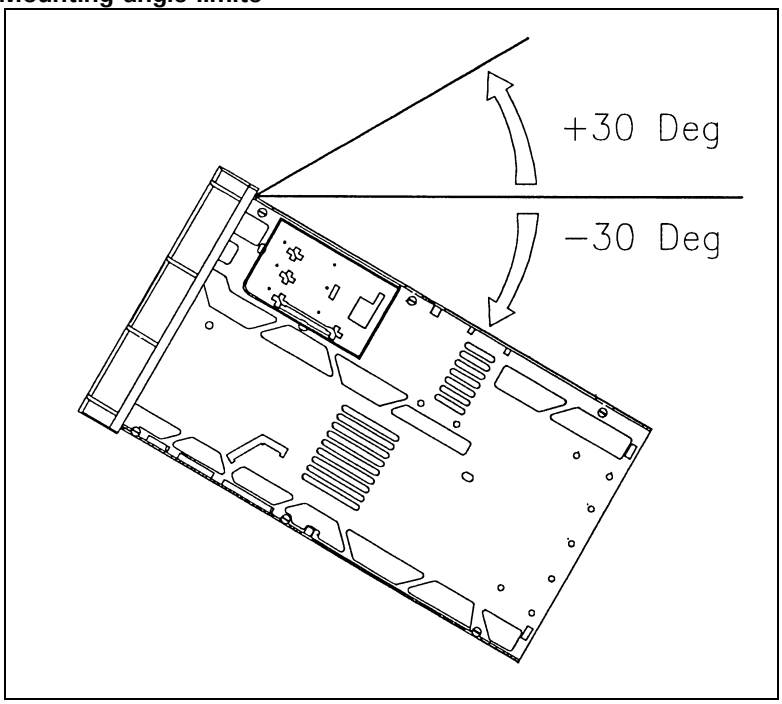
2.3.3 Installing the recorder

To install the recorder, follow the figures below:

Mounting brackets



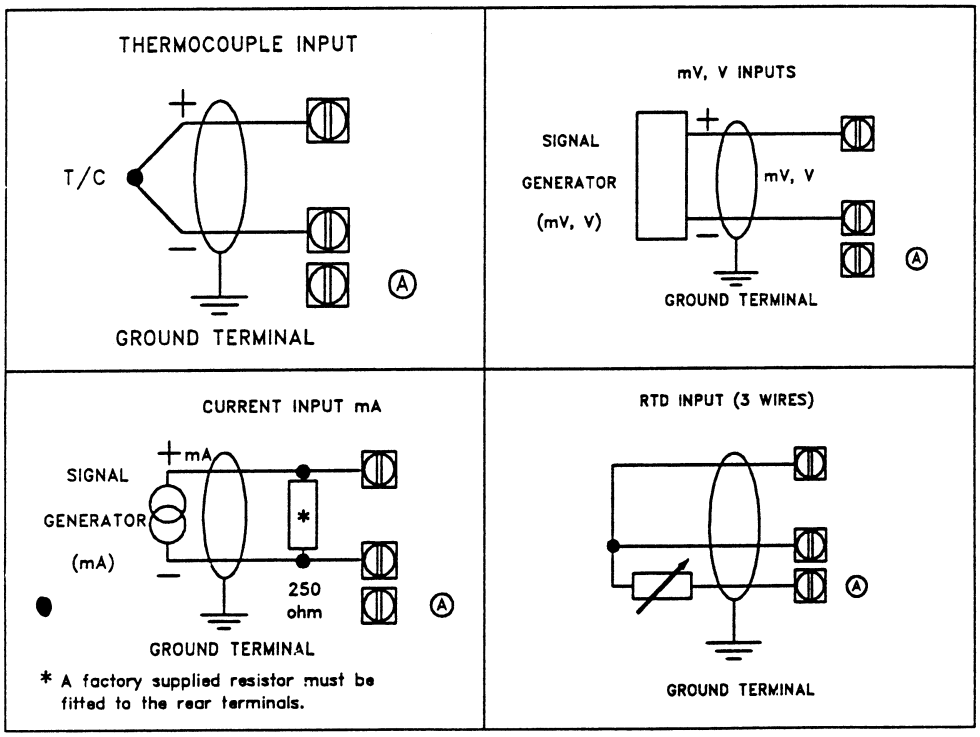
Mounting angle limits



2.4 WIRING THE RECORDER

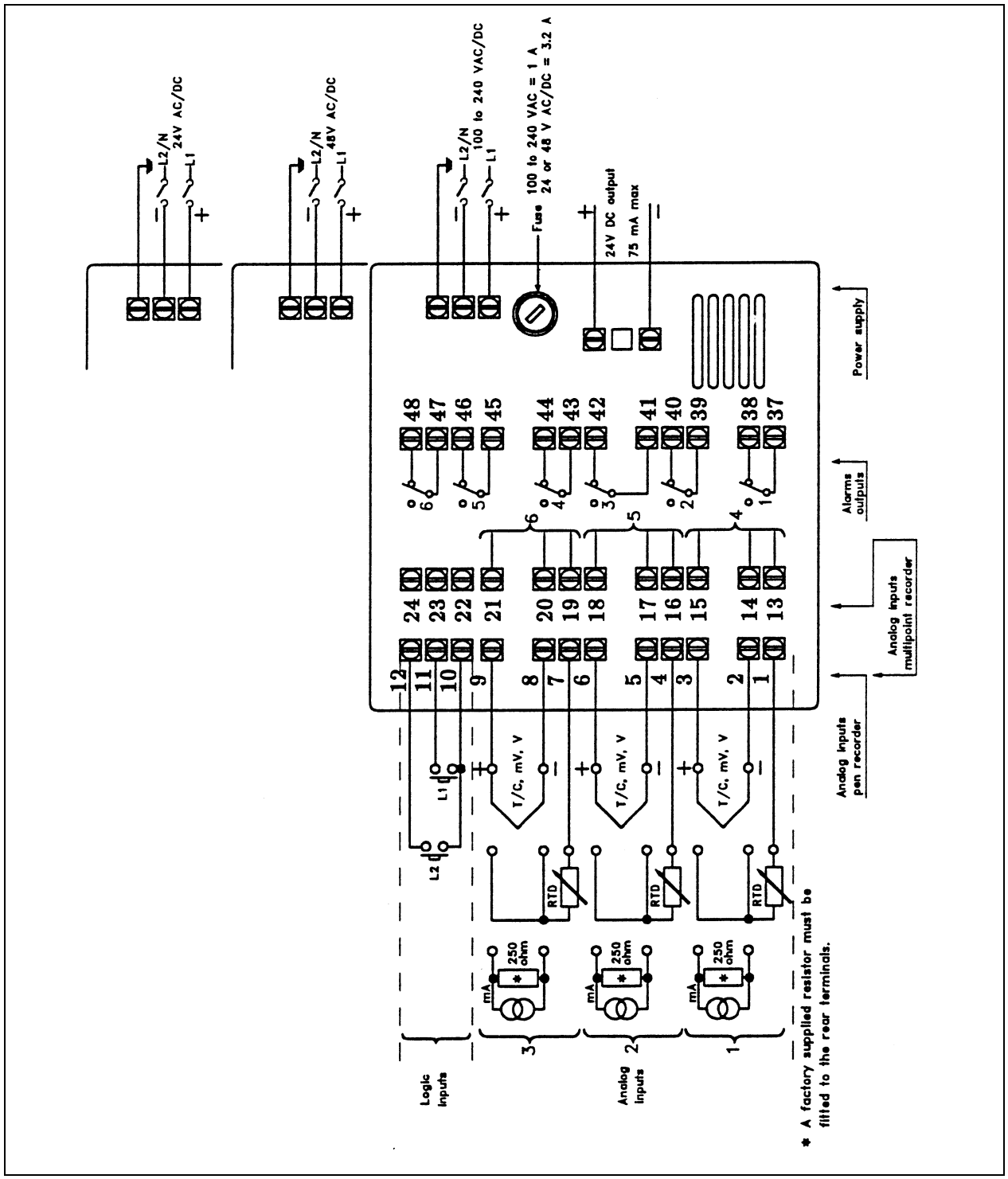
2.4.1 Recommendations

- All wiring must be in accordance with local norms and carried out by authorized experienced personnel.
- **The ground terminal must be connected before any other wiring (and disconnected last).**
- **A switch in the main power supply wiring is required near the equipment.**
- **If an external fuse is used to protect the line supply to the recorder, the fuse should match the recorder fuse rating (fuse type) as well as for the fuseholder.**
- Sensor wiring should be run as far as possible from power wiring.
- To reduce stray pick-up, we recommend the use of twisted pair sensor wiring.
- **EMI effects can be further reduced by the use of shielded cable sensor wiring. The shield must be connected to the ground terminal:**



Note: Terminal (A) is only used for RTD. (See diagrams above.)

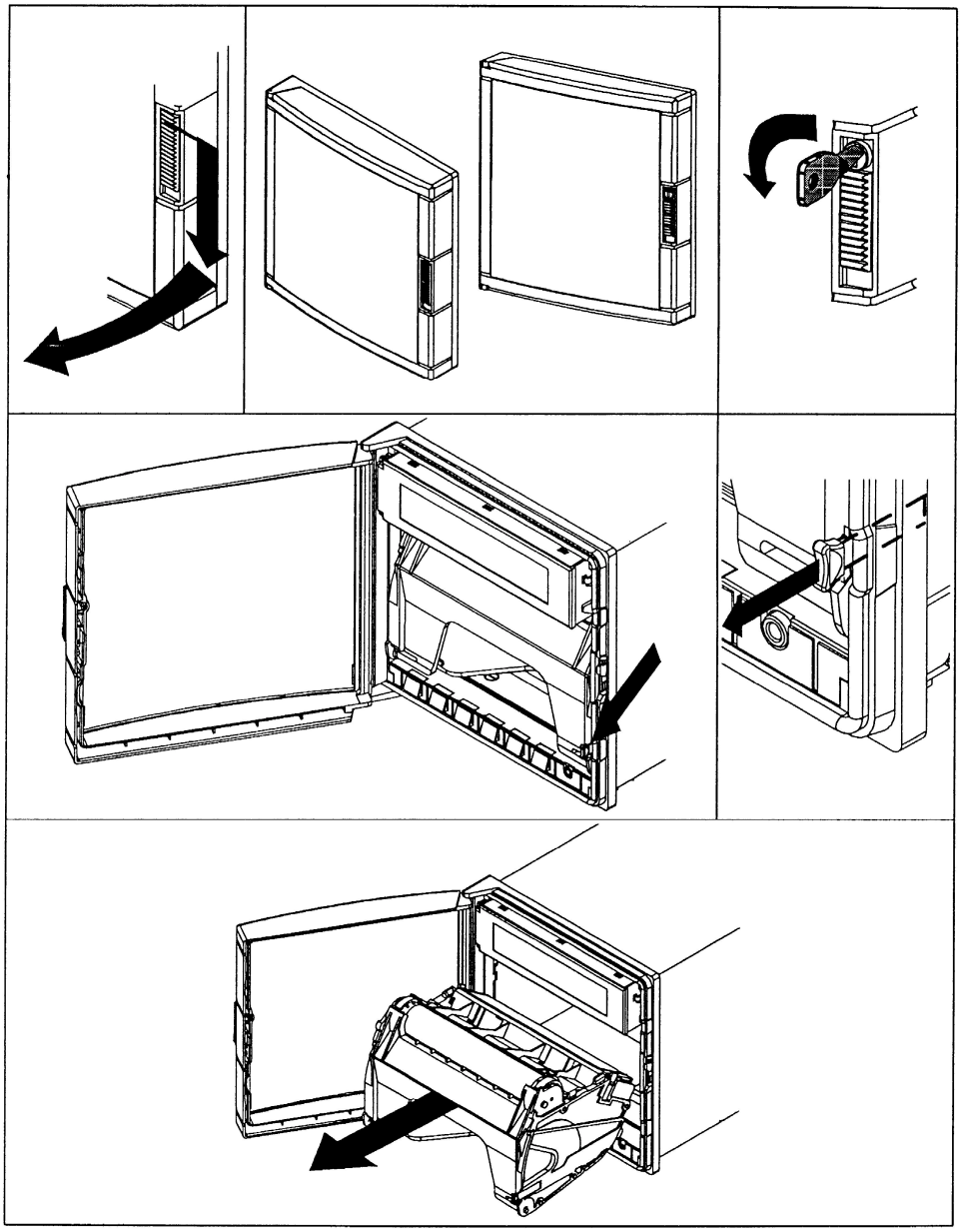
2.4.2 Terminal connections



2.5 PREPARING POWER-UP

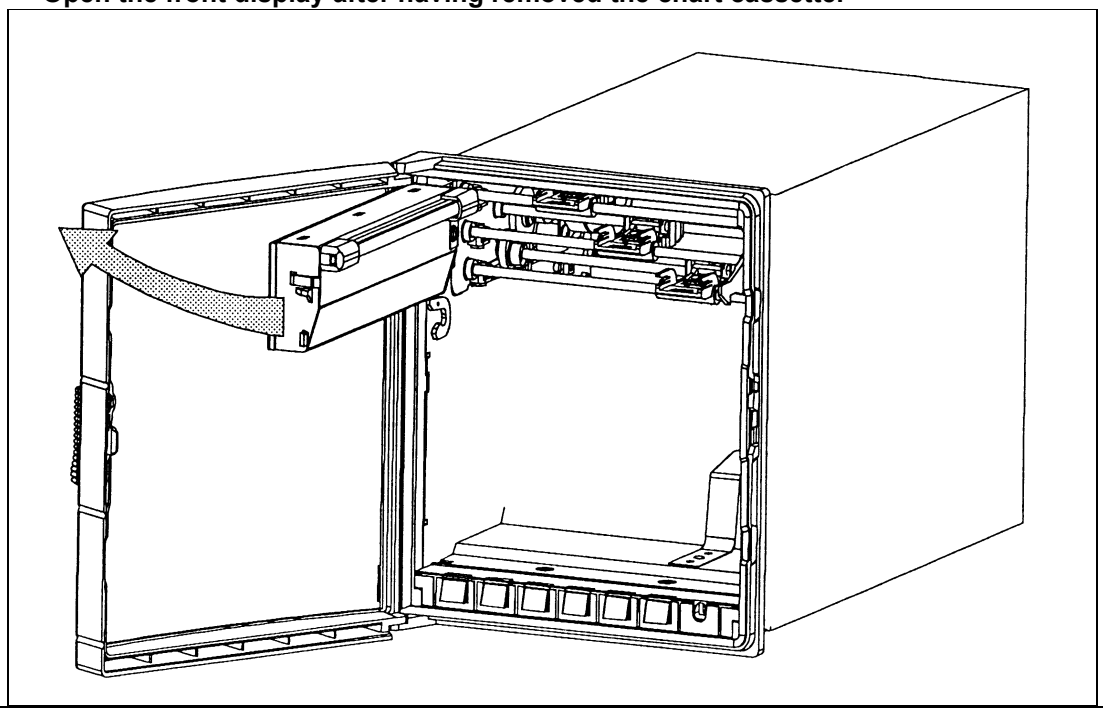
2.5.1 Installing the printing system

Remove the chart cassette from the chassis as shown below:

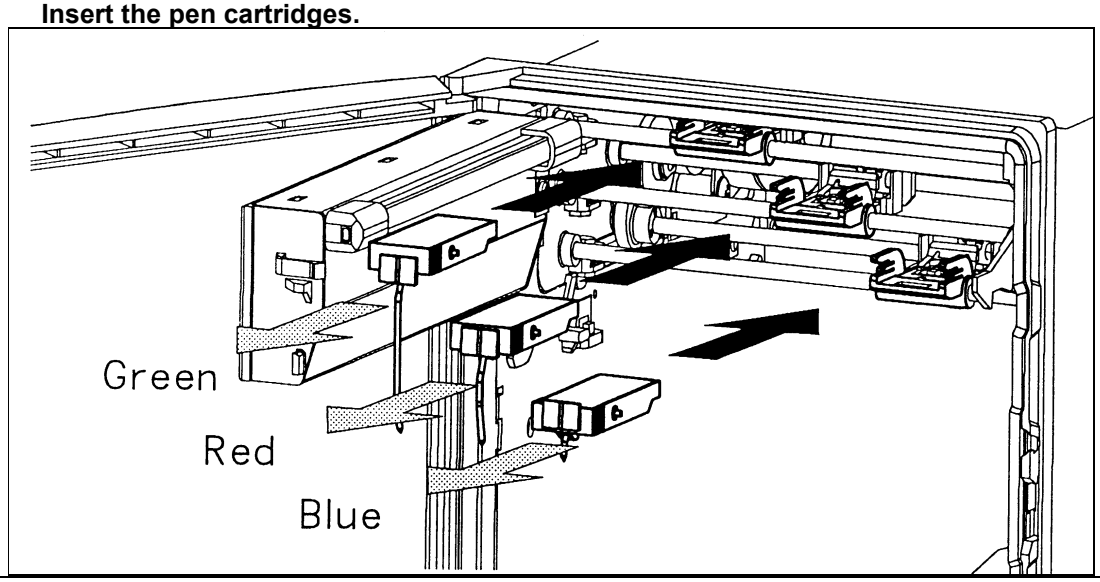


If you have a pen recorder, proceed as shown below:

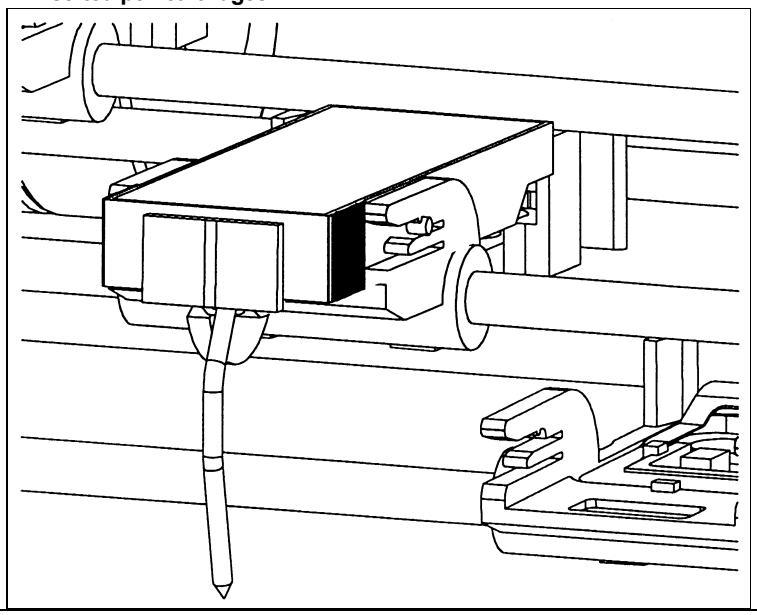
Open the front display after having removed the chart cassette.

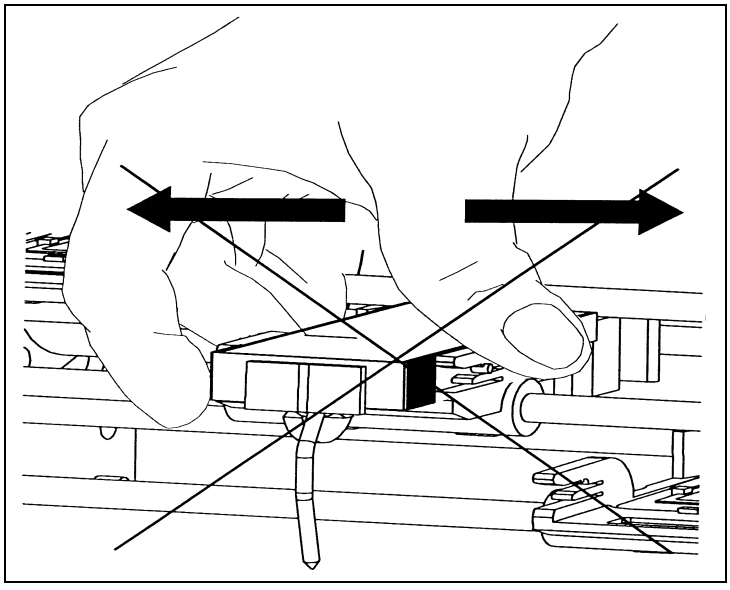


Insert the pen cartridges.



Inserted pen cartridges





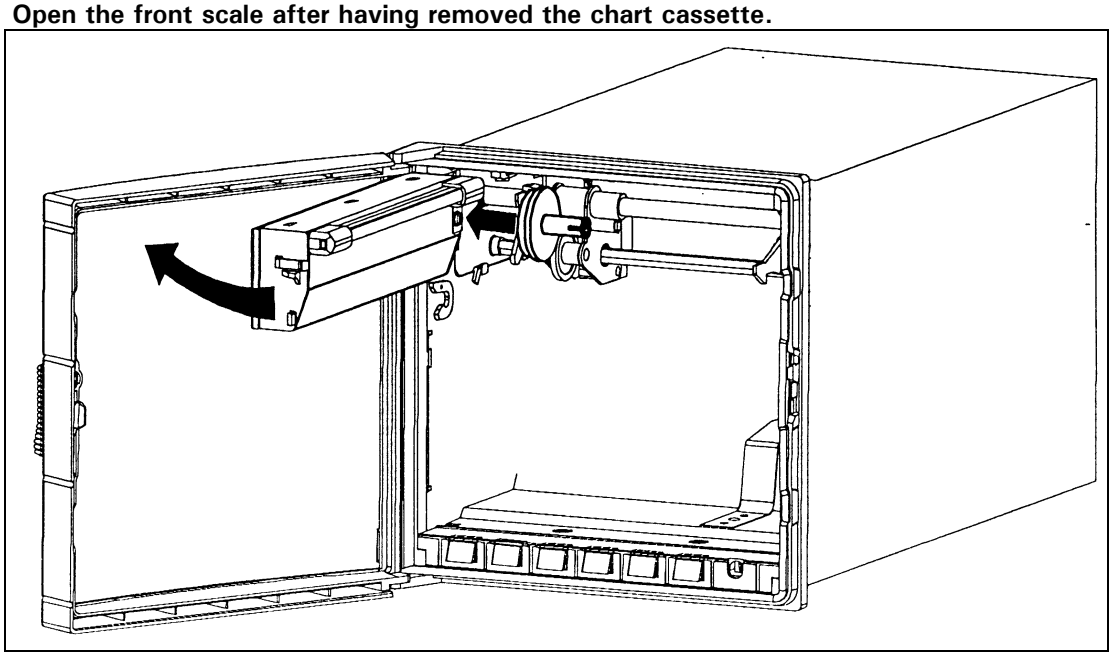
⚠ CAUTION

Do not move the print head mechanism when the recorder is working.

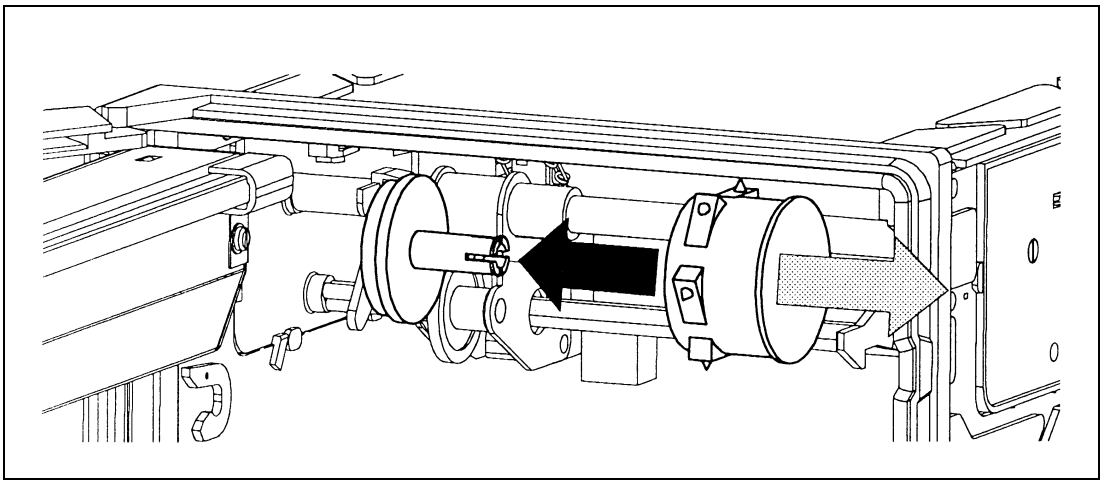
Failure to comply with these instructions may result in product damage

If you have a multipoint recorder, proceed as shown below:

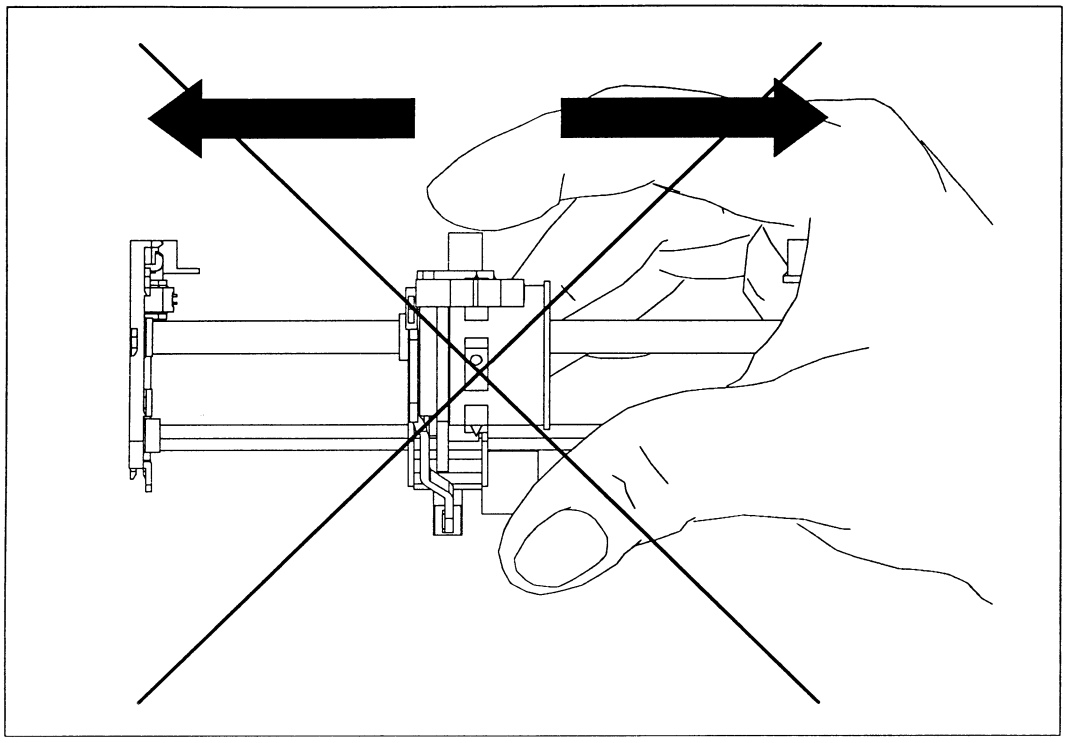
Open the front scale after having removed the chart cassette.



Insert the ink wheel.



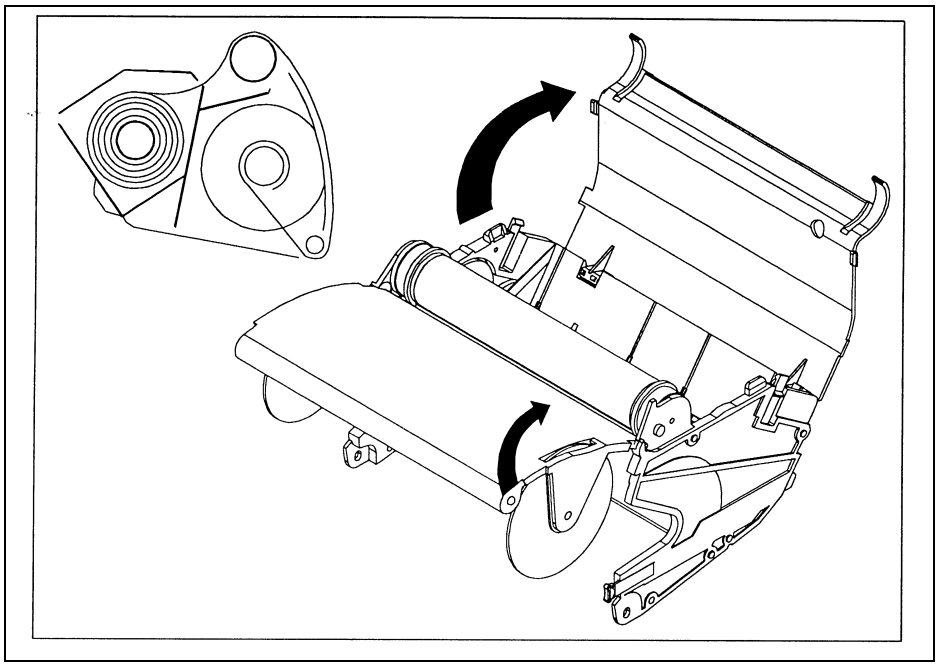
Note: The ink wheel should be inserted and rotated counter-clockwise until ratchet engages.



⚠ CAUTION
Do not move the print head mechanism when the recorder is working. **Failure to comply with these instructions may result in product damage**

2.5.2 Fitting the roll chart

Open the chart cassette as shown below and install the chart using the figure on the cassette.



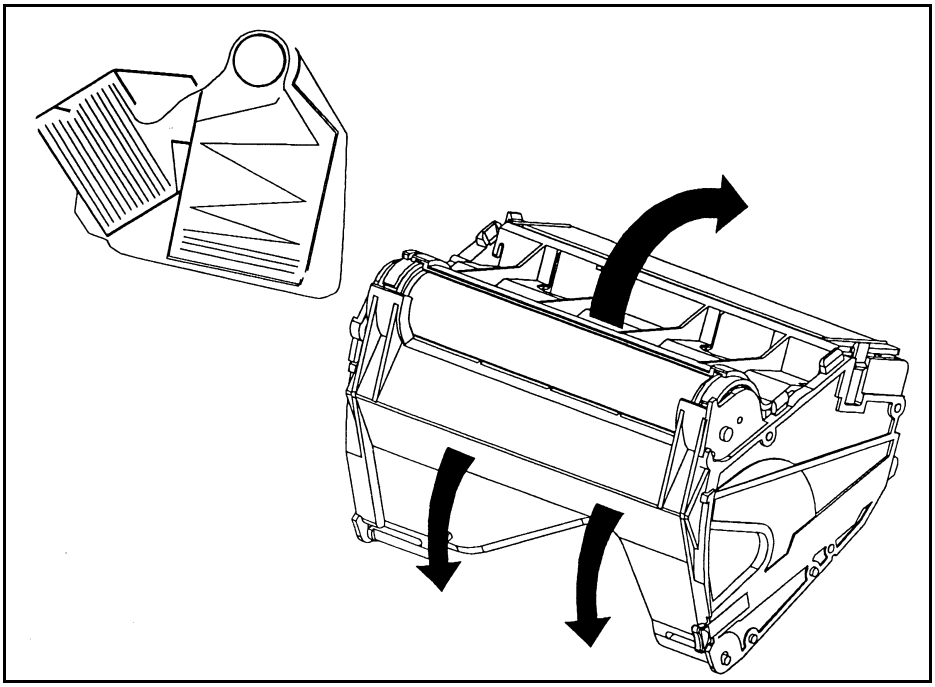
Note 1: To maintain print quality, the print carriage guide rods should be cleaned at six-monthly intervals with a dry cotton cloth. Lubricant should NOT be used.
If required, the chart cassette can be cleaned with a damp cotton cloth.

Note 2: On completion, close the front scale(s) before reinserting the chart cassette in the printing position.

Note 3: After a change of paper it is recommended to check the chart with calibration and to adjust it if necessary (Refer to section 2.7 CARRIAGE CALIBRATION).

2.5.3 Fitting the fanfold chart

- Open the chart cassette as shown below and install the chart using the figure on the cassette.
- Place the fanfold chart in the upper compartment with the folds in the vertical plane and the slots on the right hand side.
- Pull out 4 folds of paper and then close the rear metal cover.



Note 1: To maintain print quality, the print carriage guide rods should be cleaned at six-monthly intervals with a dry cotton cloth. Lubricant should NOT be used.
If required, the chart cassette can be cleaned with a damp cotton cloth.

Note 2: On completion, close the front scale(s) before reinserting the chart cassette in the printing position.

Note 3: After a change of paper it is recommended to check the chart with calibration and to adjust it if necessary (Refer to section 2.7 CARRIAGE CALIBRATION).

2.6 CLEANING THE PANE

It is recommended to clean the recorder pane with a soft cloth and the following products:

- Light soapy water
- Methylated spirit

2.7 CARRIAGE CALIBRATION

2.7.1 Chart certification

ON PEN RECORDER

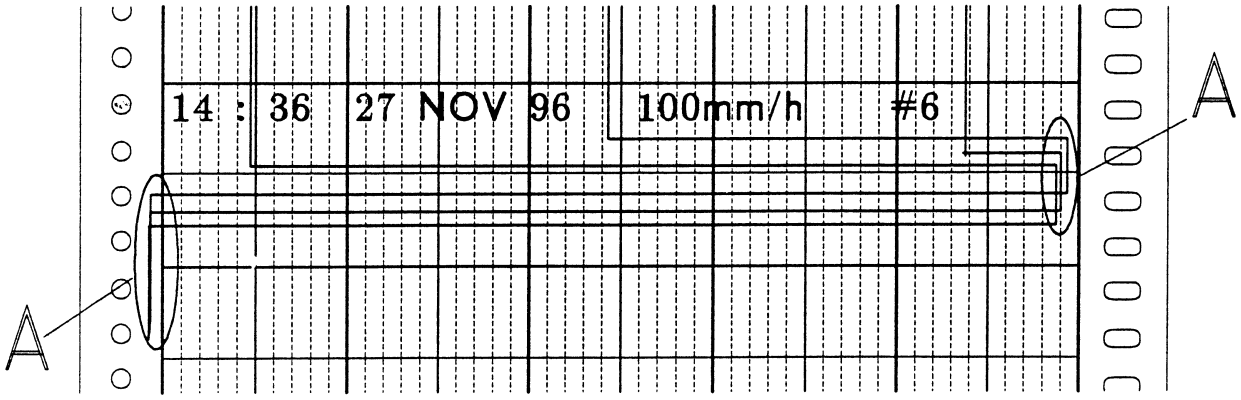


Figure 2-1

If the trace of one or several pens are not correctly on 0 % or 100 % (see ref. A, fig. 2-1) of the chart, make a carriage calibration.

ON MULTIPOINT RECORDER

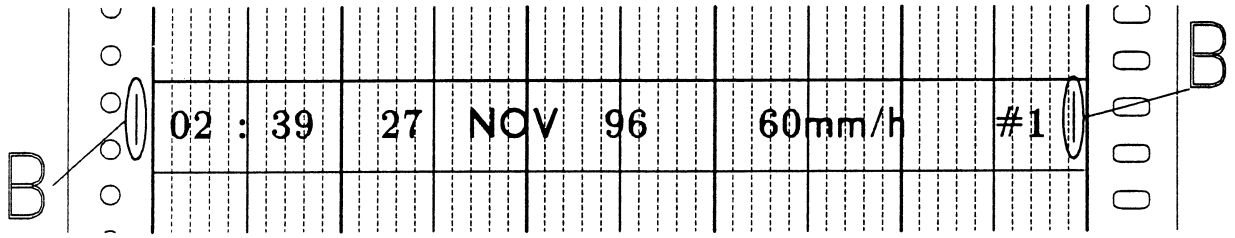


Figure 2-2

If the trace is not correctly on 0 % or 100 % (see ref. B, fig. 2-2) of the chart, make a carriage calibration.

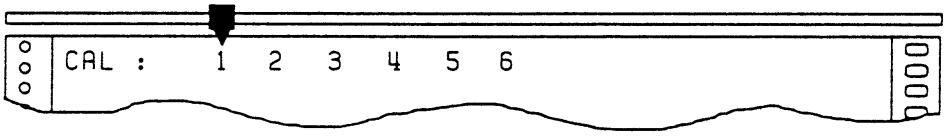
2.7.2 Carriage calibration (or chart calibration)

This operation allows the 0 % and 100 % calibration of the traces on the paper.

- The CALIBRATION mode is "hidden" and can only be accessed by a special combination of Function Keys when in the RUN mode.

- To enter the CALIBRATION mode, press both ▶ **and** ◀ **FOR 10 SECONDS** and the recorder will print the channel numbers.

For a one-pen recorder: available channel number is 1 only.
For a two-pen recorder: available channel numbers are 1 and 2.
For a three-pen recorder: available channel numbers are 1, 2 and 3.

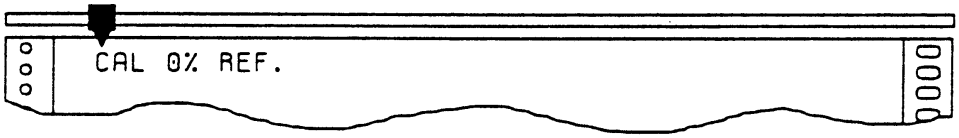


For a multipoint recorder: available channel numbers are 1, 2, 3, 4, 5 and 6.

When printing completed, the pointer will be positioned on channel 1.
On a multipoint recorder, the chart calibration is made once for all channels, whatever the channel you choose.

- **Press** ENTER to confirm your choice (your choice will be highlighted).

Now the recorder prints a message indicating that it will calibrate the 0 % of the chart on the chosen channel.



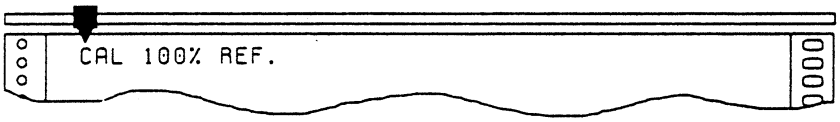
NOTICE
The sensor MUST either be disconnected, or the input voltage shall not change of more than 25 % of the span during the whole operation.

Then press ENTER to start the 0 % calibration.

Now the pointer will take up the current 0 % calibration position. If necessary, the ▶ and ◀ keys can be used to position the pen to 0 %. The chart will advance by one line each time the ▶ or ◀ keys are pressed and the recorder will reprint its mechanical references and be positioned on its new value.

- **Press** [ENTER] to confirm the new 0 % carriage calibration.

Now the recorder prints a message indicating that the 100 % of the span will be calibrated:



- To adjust the carriage calibration keep the input terminals open or keep the sensor connected, but be sure that the voltage given by this sensor have not changed from more than 25 % of the span since the 0 % calibration.

- **Then press** [ENTER] to start the 100 % calibration.

Now the pointer will take up the current 100 % calibration position. If necessary, the ▶ and ◀ keys can be used to position the pen to 100 %. The chart will advance each time the ▶ or ◀ keys are pressed.

- Press [ENTER] to confirm the new 100 % calibration.

Calibration is now complete and the recorder will reprint the calibration menu.

- At this point, if necessary, the recorder will print again the channel numbers to allow you to select another channel to calibrate.

- To return to RUN mode, the [SETUP] key should be pressed for a few seconds.

Note: If the difference between the 100 % and 0 % reference signals is under 25 %, then only the carriage calibration is made; otherwise the operation will be considered as a full "field calibration". In case of faulty operation, you would have to provide again a complete field calibration (note that, if you have a PC LOADER, you can find back the factory calibration only by changing the configured range and coming back to the previous one).

2.8 CHECK LIST

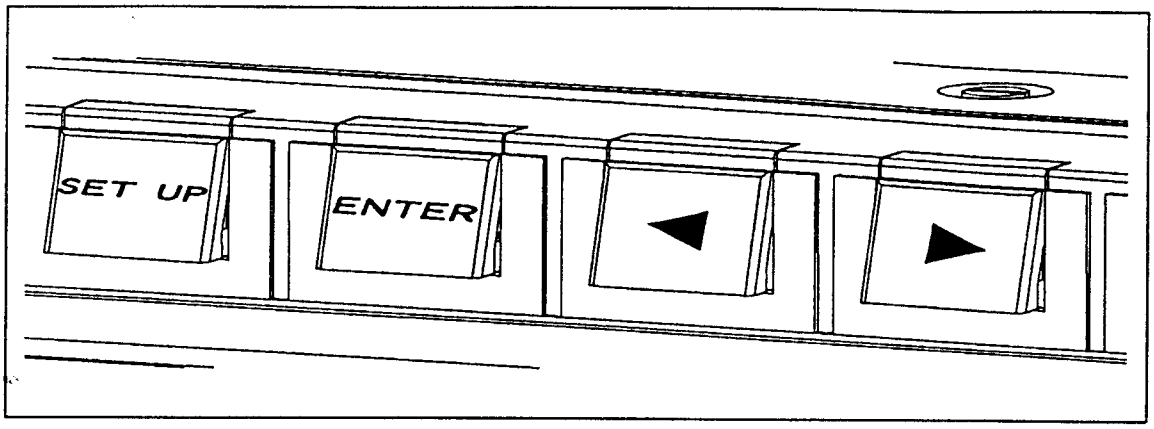
1	**Have you connected the ground terminal?**
2	Have you connected the sensor(s) correctly? (Wire type, polarity, etc.)
3	Have you tightened all terminal screws?
4	Have you installed the ink cartridge(s) or wheel? (See figures on pages 2-8 to 2-13.)
5	Have you installed the chart correctly? (See figures on pages 2-14 and 2-15.)
6	Have you closed the front scale?
7	Have you fitted the chart cassette in the recorder?
8	Have you programmed the right scale with your PC Loader?

2.9 REPLACING THE INK CARTRIDGES

- Remove the chart cassette. The print carriage stops to allow you to replace the ink cartridges.
- Open the front scale.
- For the pen recorders:
  - Pull the ink cartridge forward and remove from its housing.
  - The new ink cartridge must be fully pushed home.
- For the multipoint recorder:
  - Hold the print carriage with the left hand and pull the ink wheel to the right and remove from its support.
  - The new ink wheel should be inserted and rotated counter-clockwise until ratchet engages.
- Close the front scale.
- Reinsert the chart cassette in printing position.

Note: When pen recorders are not used for long periods of time, it is recommended that the ink cartridges be removed and capped.

3.1 FUNCTION KEYS



3.1.1 SETUP

The [SETUP] key has three functions.

- Entering CONFIGURATION main menu from the RUN mode.
- Exiting CONFIGURATION main menu to normal RUN mode.
- Exiting CONFIGURATION sub-menus (ALARMS, SPEED, ID, TIME, DATE) to return to the main menu.

3.1.2 ENTER

The [ENTER] key allows confirmation of your choice of a sub-menu or a parameter.

3.1.3 INCREMENT

The [▶] key has 2 functions:

- Advancing chart in run mode. The chart advances until the key is released.
- Moving the pointer in configuration mode.

The [▶] key moves the pointer to the right and places it at the sub-menu or parameter to be changed.

Note: When the pointer is placed either on the last sub-menu or on the last parameter to the right, this key has no effect. If you want to move the pointer to the left, use the [◀] key.

3.1.4 DECREMENT

The ◀ key moves the pointer to the left and places it at the sub-menu or parameter to be changed.

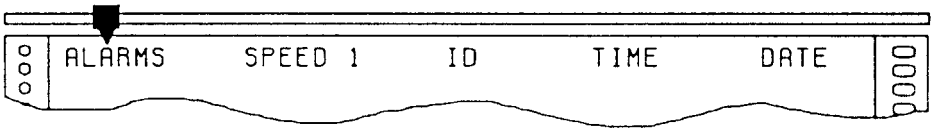
Note: When the pointer is placed either on the first sub-menu or on the first parameter to the left, this key has no effect. If you want to move the pointer to the right, use the ▶ key.

3.2 MAIN MENU

The recorder automatically prints any modification to the configuration.

- **To access the main menu, press SETUP for a few seconds.**

The recorder will print the main menu:

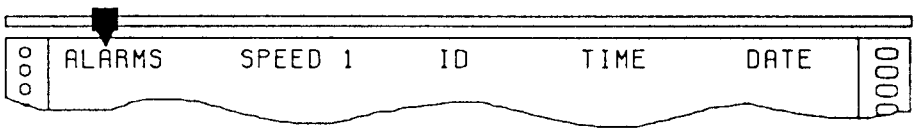


When printing completed, the pointer will be positioned at the ALARMS sub-menu. If there is no action, the recorder returns to the RUN mode after a few minutes.

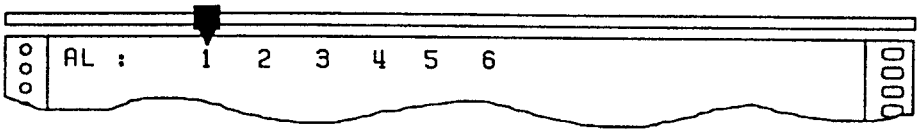
- **Press ▶ to move the pointer to the right and place on the desired sub-menu or parameter you wish to modify.**
- **Note 1**: To return to the normal RUN mode, press the SETUP key for a few seconds.
- **Note 2**: When existing configuration mode, the recorder will reprint its mechanical references and return to RUN mode.

3.3 ALARMS

- When the pointer is positioned at ALARMS:



- Press ENTER to confirm your choice and the recorder prints the ALARMS sub-menu:



The printed numbers refer to ALARMS numbers. For example, the digit 1 represents alarm number 1.

- **Press ▶ or ◀** to point to the desired alarm number.
- **Press ENTER** to confirm your choice. (Your choice will be highlighted)

The pen carriage moves to indicate the position of the alarm setpoint on the scale.

- **Pressing ▶ or ◀** modifies the pen position from initial position to the new required position.
- **Press ENTER** to confirm the new value. The content of ALARMS sub-menu will be reprinted.

IMPORTANT: Unless modified by PC and configuration software, the standard alarm configuration is shown below.

- **For a One-pen recorder**: Alarm numbers are 1 and 2.
- **For a Two-pen recorder**: Alarm numbers are 1, 2, 3 and 4.
- **For a Three-pen recorder**: Alarm numbers are 1 to 6.
- **For a Multipoint recorder**: Alarm numbers are 1 to 6.

Note:

- The alarm type (High or Low) is pre-configured but may be modified via PC and configuration software.

PEN RECORDER		
ALARM NUMBER	**TYPE**	**PEN**
1	Low	Pen 1
2	High	Pen 1
3	Low	Pen 2
4	High	Pen 2
5	Low	Pen 3
6	High	Pen 3

MULTIPOINT RECORDER		
ALARM NUMBER	**TYPE**	**CHANNEL**
1	High	Channel 1
2	High	Channel 2
3	High	Channel 3
4	High	Channel 4
5	High	Channel 5
6	High	Channel 6

Alarm type and set point are printed each time the recorder is powered.

High Alarm ON	▲	**Low Alarm ON**	▼
High Alarm OFF	△	**Low Alarm OFF**	▽

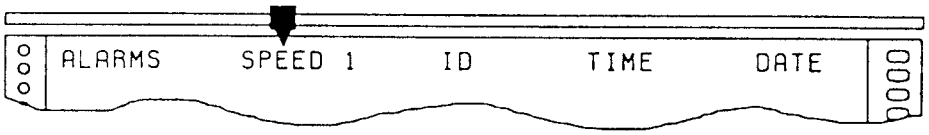
- The operation can be repeated for other ALARMS or the ALARMS sub-menu can be left by pressing the [SETUP] key for a few seconds, so that you will return to the main menu.

3.4 SPEED

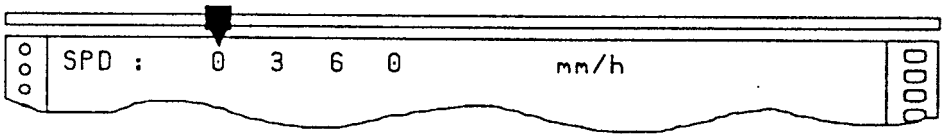
This menu permits configuration of chart speed #1. Selection of units (mm/ or inches per hour) and chart speed #2 are pre-configured as defined in your order.

3.4.1 SPEED (mm/hour)

- When the pointer is positioned at SPEED 1:



- **Press** [ENTER] and the recorder prints current speed #1:

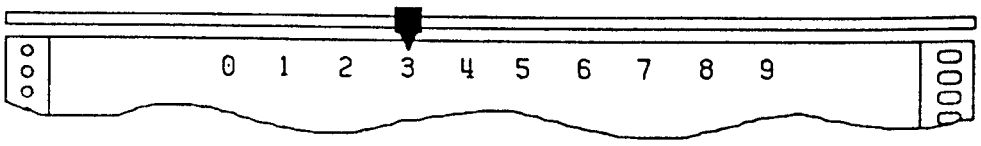


When printing completed, the pointer will be positioned at the leading digit, in this case 0.

- **Press [▶] or [◀]** to select the position of digit to be changed.

For example, position the pointer on the digit 3. The minimum speed is 10 mm/h and maximum speeds are 6000 mm/h for pen recorders and 1500 mm/h for the multipoint.

- Press [ENTER] to confirm your choice of position and the recorder will print the choice of values which can be selected. (Your choice will be highlighted).

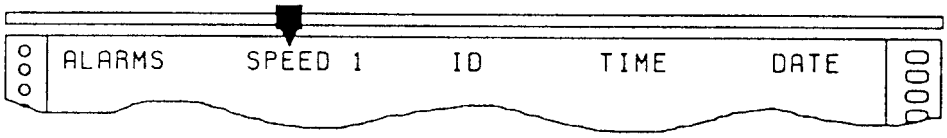


In this example, the pointer will be positioned at the current value, in this case 3.

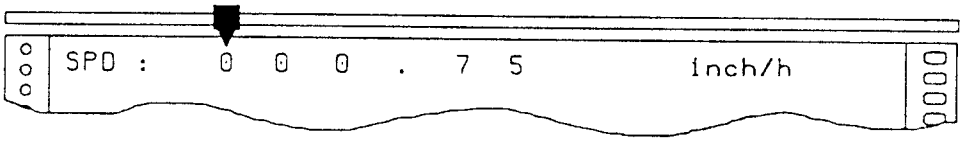
- **Press** ▶ **or** ◀ to move the pointer to the desired value, for example 1.
- **Press** ENTER to confirm the change and the new speed of 160 mm/h will be printed.
- At this point, if necessary, the position of the next digit to be changed can be made and followed by selection of value.
- To return to the main menu, the SETUP key should be pressed for a few seconds.

3.4.2 SPEED (inches/hour)

- When the pointer is positioned at SPEED 1:

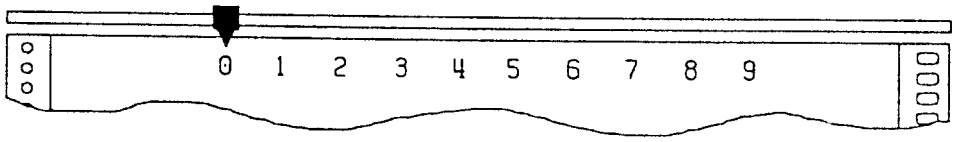


- **Press** ENTER and the recorder prints current speed #1:



When printing completed, the pointer will be positioned at the leading digit, in this case 0.

- **Press** ▶ **or** ◀ to select the position of digit to be changed, for example 0. The minimum speed is 0.5 inch/h and the maximum speeds are 240 inch/h for the pen recorders and 60 inch/h for the multipoint.
- **Press** ENTER to confirm your choice and the recorder prints choice of value which can be selected. (Your choice will be highlighted)



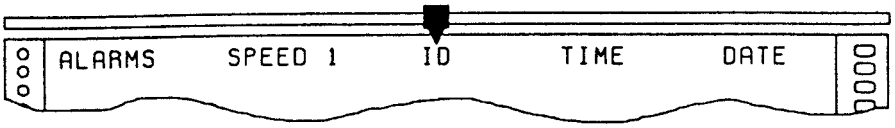
- **Press** ▶ **or** ◀ to move the pointer to the desired value, for example 2.
- **Press** ENTER to confirm your choice and the new speed of 20.75 inch/h will be printed.
- At this point, if necessary, the position of the next digit to be changed can be made and followed by selection of value.
- To return to the main menu, the SETUP key should be pressed for a few seconds.

Note: Choices available for least significant digit are 0 or 5 only.

3.5 IDENTIFICATION

This menu permits configuration of a specific ID (1 to 99) for the recorder.

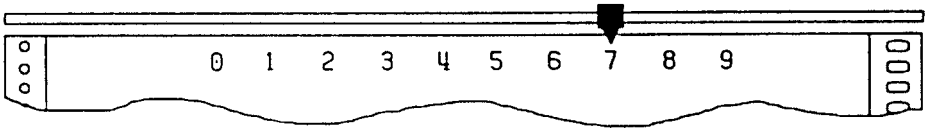
- When the pointer is positioned at ID (IDENTIFICATION OR ADDRESS NUMBER):



- **Press** ENTER and the recorder prints the current identification number:

When printing completed, the pointer will be positioned at the leading digit, in this case 1.

- Select the digit to be changed by pressing ▶ **or** ◀ , for example 7.
- **Press** ENTER to confirm your selection (Your choice will be highlighted) and the recorder prints choice of values which may be selected.

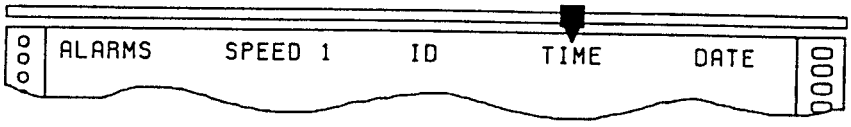


When printing completed, the pointer will be positioned to the current value, in this case 7.

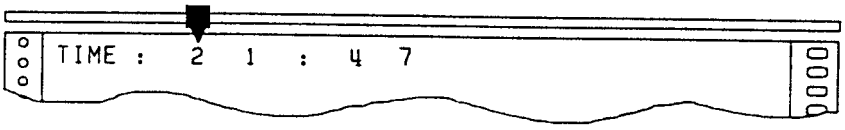
- Press ▶ **or** ◀ to position the pointer to the desired value, for example 4.
- Press ENTER to confirm your choice and the new identification 14 will be printed.
- At this point, the selection of the next digit requiring modification can be made.
- To return to the main menu, the SETUP key should be pressed for a few seconds.

3.6 TIME

- When the pointer is positioned at TIME:



Press ENTER to confirm your choice and the recorder prints the current time:

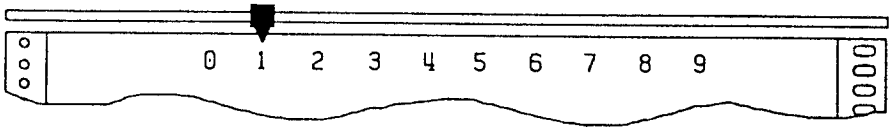


When printing completed, the pointer will be positioned at the leading digit, in this case 2.

- **Press** ▶ **or** ◀ to choose the position you wish to modify, for example 1.

Note: It is recommended that the least significant position in minute units be set last to ensure a precise time configuration.

- **Press** ENTER to confirm your choice (Your choice will be highlighted) and the recorder prints choice of values which may be selected.



When printing completed, the pointer will be positioned at the current value, in this case 1.

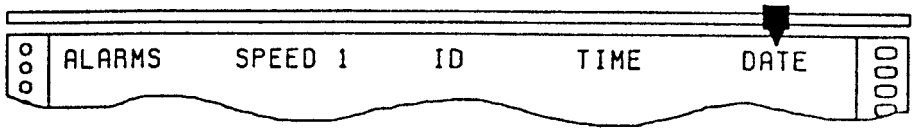
- **Press** ▶ **or** ◀ to choose another value, for example 2.
- **Press** ENTER to confirm your choice and the new time of 22:47 will be printed.

Note: The internal recorder clock is corrected/modified when ENTER is pressed.

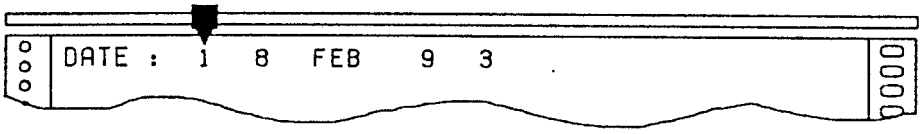
- A this point, if necessary, the position of the next digit to be changed can be made, followed by selection of value.
- To return to the main menu, the SETUP key should be pressed for a few seconds.

3.7 DATE

- When the pointer is positioned at DATE:



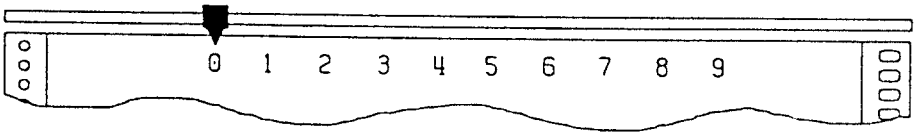
- Press [ENTER] to confirm your choice and the recorder prints the current date:



When printing completed, the pointer will be positioned at the leading position, in this case 1.

- **Press ▶ or ◀** to choose the position you wish to modify, in this example 8.
- **Press [ENTER]** to confirm your choice. (Your choice will be highlighted)

The recorder prints the range of values which may be selected.



When printing completed, the pointer will be positioned at the current value, in this case 8.

- **Press ▶ or ◀** to choose another value, for example 9.
- **Press [ENTER]** to confirm your choice and the new date will be printed: 19 FEB 93.
- At this point, if necessary, the position of the next digit to be changed can be made and followed by selection of value.
- To return to the main menu, the [SETUP] key should be pressed for a few seconds.

4.1 PRODUCT IDENTIFICATION

Instructions

- Select the desired Key Number. The arrow to the right marks the selections available.
- Make one selection each from Tables I through IX.
- A complete Model Number must have the designated number of digits in each table.

Key Numbers ____ I ____ ___II___ ___III___ ___ IV___ ___ V___ ___VI___ ____ VII ___

_____ - _____ - ___ - _ - _ - _ - _ - _____ -

___VIII___ ____ IX ____

___ __

KEY NUMBER Description			Selection	Availability									
1 Pen Recorder	Deg. C	1 Scale to Input 1	DA101	↓									
	Deg. F		DA111		↓								
2 Pen Recorder	Deg. C	2 Scales to Inputs 1 and 2	DA102			↓							
	Deg. F		DA112				↓						
3 Pen Recorder	Deg. C	3 Scales to Inputs 1, 2, and 3	DA103					↓					
	Deg. F		DA113						↓				
3 Channel Recorder	Deg. C	1 Scale 0 to 100 Linear	DB103							↓			
	Deg. F		DB113								↓		
6 Channel Recorder	Deg. C	1 Scale 0 to 100 Linear	DB106									↓	
	Deg. F		DB116										↓

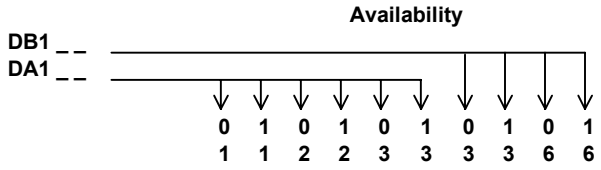


TABLE I RANGE/SCALE

Table 1 Format	Specify 6 digits ↑ ↑ ↑ ↑ ↑ ↑ 1 per Input												
None				0			•	•	•	•	•	•	•	•
	T/C	**Deg. C**	**Deg. F**											
	J	-50 to 150	-100 to 300	A	•	•	•	•	•	•	•	•	•	•
	J	0 to 400	0 to 800	B	•	•	•	•	•	•	•	•	•	•
	J	0 to 800	0 to 1500	C	•	•	•	•	•	•	•	•	•	•
	K	0 to 400	0 to 800	D	•	•	•	•	•	•	•	•	•	•
	K	0 to 800	0 to 1500	E	•	•	•	•	•	•	•	•	•	•
	K	0 to 1200	0 to 2400	F	•	•	•	•	•	•	•	•	•	•
Upscale	K	0 to 1400	0 to 2500	X	•	•	•	•	•	•	•	•	•	•
Burnout	N	0 to 400	0 to 800	G	•	•	•	•	•	•	•	•	•	•
	N	0 to 800	0 to 1500	H	•	•	•	•	•	•	•	•	•	•
	N	0 to 1200	0 to 2400	I	•	•	•	•	•	•	•	•	•	•
	N	0 to 1400	0 to 2500	Y	•	•	•	•	•	•	•	•	•	•
	S	0 to 1600	0 to 3000	J	•	•	•	•	•	•	•	•	•	•
	R	0 to 1600	0 to 3000	Q	•	•	•	•	•	•	•	•	•	•
	T	-100 to 200	-150 to 400	K	•	•	•	•	•	•	•	•	•	•
	T	0 to 150	0 to 300	L	•	•	•	•	•	•	•	•	•	•
	T	50 to 150	100 to 300	M	•	•	•	•	•	•	•	•	•	•
		-50 to 50	-60 to 140	7	•	•	•	•	•	•	•	•	•	•
RTD	Pt	-50 to 150	-100 to 300	N	•	•	•	•	•	•	•	•	•	•
Burnout	100	0 to 100	0 to 200	P	•	•	•	•	•	•	•	•	•	•
Fixed		-200 to 200	-300 to 400	R	•	•	•	•	•	•	•	•	•	•
Upscale		0 to 400	0 to 800	S	•	•	•	•	•	•	•	•	•	•

TABLE I RANGE/SCALE, continued

	Linear												
	mV	0 to 10	0 to 10	T	•	•	•	•	•	•	•	•	•	•
		0 to 20	0 to 20	U	•	•	•	•	•	•	•	•	•	•
0 to 100		0 to 50	0 to 50	V	•	•	•	•	•	•	•	•	•	•
Linear	Upscale	10 to 50	10 to 50	W	•	•	•	•	•	•	•	•	•	•
Scale	Burnout	0 to 100	0 to 100	Z	•	•	•	•	•	•	•	•	•	•
Only	V	0 to 1	0 to 1	1	•	•	•	•	•	•	•	•	•	•
	Upscale	0 to 5	0 to 5	2	•	•	•	•	•	•	•	•	•	•
	Burnout	1 to 5	1 to 5	3	•	•	•	•	•	•	•	•	•	•
	V Burnout Fixed Down	0 to 10	0 to 10	4	•	•	•	•	•	•	•	•	•	•
	mA Burnout	0 to 20	0 to 20	5	•	•	•	•	•	•	•	•	•	•
(Note 4, 6)	Fixed	4 to 20	4 to 20	6	•	•	•	•	•	•	•	•	•	•
	Downscale	4 to 20 SQRT	4 to 20 SQRT	8	•	•	•	•	•	•	•	•	•	•
Special Range				9	•	•	•	•	•	•	•	•	•	•

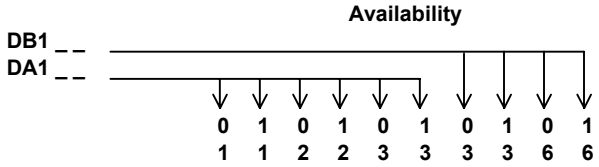


TABLE II CHART SPEED **Selection**

			Chart Speed										
Units Frequency	Multivoltage 50 Hz (85 to 264 V)		mm/hr	A _ _	•	•	•	•	•	•	•	•	•	•
	Multivoltage 50 Hz (85 to 264 V)		inch/hr	B _ _	•	•	•	•	•	•	•	•	•	•
	Multivoltage 60 Hz (85 to 250 V)		mm/hr	C _ _	•	•	•	•	•	•	•	•	•	•
	Multivoltage 60 Hz (85 to 250 V)		inch/hr	D _ _	•	•	•	•	•	•	•	•	•	•
	24 Vac/dc 50 Hz		mm/hr	E _ _	•	•	•	•	•	•	•	•	•	•
	24 Vac/dc 60 Hz		inch/hr	F _ _	•	•	•	•	•	•	•	•	•	•
	48 Vac/dc 50 Hz		mm/hr	G _ _	•	•	•	•	•	•	•	•	•	•
	48 Vac/dc 60 Hz		inch/hr	H _ _	•	•	•	•	•	•	•	•	•	•
	mm/hr	**Inch/hr**												
Preset Speed 1 **(Note 5)**	10	0.5		_ A _	•	•	•	•	•	•	•	•	•	•
	20	0.75		_ B _	•	•	•	•	•	•	•	•	•	•
	30	1		_ C _	•	•	•	•	•	•	•	•	•	•
	50	2		_ D _	•	•	•	•	•	•	•	•	•	•
	60	3		_ E _	•	•	•	•	•	•	•	•	•	•
	100	4		_ F _	•	•	•	•	•	•	•	•	•	•
	120	5		_ G _	•	•	•	•	•	•	•	•	•	•
	150	6		_ H _	•	•	•	•	•	•	•	•	•	•
	180	7		_ I _	•	•	•	•	•	•	•	•	•	•
	200	8		_ J _	•	•	•	•	•	•	•	•	•	•
	240	10		_ K _	•	•	•	•	•	•	•	•	•	•
	300	15		_ L _	•	•	•	•	•	•	•	•	•	•
	360	20		_ M _	•	•	•	•	•	•	•	•	•	•
	600	25		_ N _	•	•	•	•	•	•	•	•	•	•
	720	30		_ P _	•	•	•	•	•	•	•	•	•	•
	1200	40		_ Q _	•	•	•	•	•	•	•	•	•	•
	1500	60		_ R _	•	•	•	•	•	•	•	•	•	•
	1800	90		_ S _	•	•	•	•	•	•				
	3600	120		_ T _	•	•	•	•	•	•				
	4800	180		_ U _	•	•	•	•	•	•				
	6000	240		_ V _	•	•	•	•	•	•				
Preset Speed 2	5	0.2		_ _ 0	•	•	•	•	•	•	•	•	•	•
	10	0.5		_ _ A	•	•	•	•	•	•	•	•	•	•
	20	0.75		_ _ B	•	•	•	•	•	•	•	•	•	•
	30	1		_ _ C	•	•	•	•	•	•	•	•	•	•
	50	2		_ _ D	•	•	•	•	•	•	•	•	•	•
	60	3		_ _ E	•	•	•	•	•	•	•	•	•	•
	100	4		_ _ F	•	•	•	•	•	•	•	•	•	•
	120	5		_ _ G	•	•	•	•	•	•	•	•	•	•
	150	6		_ _ H	•	•	•	•	•	•	•	•	•	•
	180	7		_ _ I	•	•	•	•	•	•	•	•	•	•
	200	8		_ _ J	•	•	•	•	•	•	•	•	•	•
	240	10		_ _ K	•	•	•	•	•	•	•	•	•	•

DB1 _ _ Availability
DA1 _ _

			Selection	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1
TABLE II CHART SPEED, continued				**1**	**1**	**2**	**2**	**3**	**3**	**3**	**3**	**6**	**6**
	mm/hr	**Inch/hr**											
	300	15	_ _L	•	•	•	•	•	•	•	•	•	•
	360	20	_ _M	•	•	•	•	•	•	•	•	•	•
Preset	600	25	_ _N	•	•	•	•	•	•	•	•	•	•
Speed 2	720	30	_ _P	•	•	•	•	•	•	•	•	•	•
	1200	40	_ _Q	•	•	•	•	•	•	•	•	•	•
	1500	60	_ _R	•	•	•	•	•	•	•	•	•	•

TABLE III ALARMS (Note 1)

None	0	•	•	•	•	•	•	•	•	•	•
6 Relays - 2 Configured (Channel #1)	1	•	•								
2 Relays - 2 Configured (Channel #1)	2	•	•	•	•	•	•	•	•	•	•
6 Relays - 4 Configured (Channels #1 and #2)	4			•	•						
6 Relays - 6 Configured (2 on Each Channel)	5					•	•	•	•		
6 Relays - (One High Alarm SP on Each Channel)	6									•	•

TABLE IV LOGIC INPUT

None	0	•	•	•	•	•	•	•	•	•	•
2 Remote Contacts L1: Print Inhibit Switch L2: Change Speed 1 to Speed 2	A	•	•	•	•	•	•	•	•	•	•
2 Remote Contacts L1: Print Inhibit Switch L2: Event Marks	B	•	•	•	•	•	•				
2 Remote Contacts L1: Print Inhibit Switch L2: Event Trace	C							•	•	•	•
2 Remote Contacts L1: Event Trace 1 L2: Event Trace 2	D							•	•	•	•

TABLE V CHART CASSETTE

Standard Chart: 0-100 Linear	Roll	R	•	•	•	•	•	•	•	•	•	•
(50 divisions)	Fan Fold	Z	**d**	**d**	**d**	**d**	**d**	**d**	**d**	**d**	**d**	**d**

TABLE VI DOOR AND CASE

Dark Gray Door with Latch, Plastic Window	1	•	•	•	•	•	•	•	•	•	•
Dark Gray Door Key Lock, Plastic Window	2	•	•	•	•	•	•	•	•	•	•
Portable Case **(Note 2)**	5	**c**	**c**	**c**	**c**	**c**	**c**	**c**	**c**	**c**	**c**

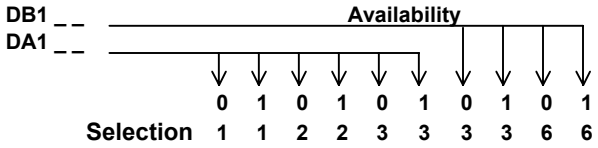


TABLE VII OPTIONS

None	0 _ _ _ _	•	•	•	•	•	•	•	•	•	•
Pen Offset	A _ _ _ _			•	•	•	•				
Rear Cover	G _ _ _ _	•	•	•	•	•	•	•	•	•	•
Pen Offset and Rear Cover	P _ _ _ _			•	•	•	•				
UL/CSA Approval	R _ _ _ _	•	•	•	•	•	•	•	•	•	•
UL/CSA Approval and Rear Cover	S _ _ _ _	•	•	•	•	•	•	•	•	•	•
UL/CSA Approval and Pen Offset	T _ _ _ _			•	•	•	•				
UL/CSA Approval, Pen Offset and Rear Cover	U _ _ _ _			•	•	•	•				
None	_ 0 _ _ _	•	•	•	•	•	•	•	•	•	•
Power Supply for Transmitter 24 Vdc (50 mA max)	_ B _ _ _	•	•	•	•	•	•	•	•	•	•
None	_ _ 0 _ _	•	•	•	•	•	•	•	•	•	•
Chart Illumination	_ _ C _ _	•	•	•	•	•	•	•	•	•	•
Certificate of Conformance (F2474)	_ _ D _ _	•	•	•	•	•	•	•	•	•	•
Certificate of Calibration	_ _ E _ _	•	•	•	•	•	•	•	•	•	•
Certificate of Conformance & Chart Illumination	_ _ F _ _	•	•	•	•	•	•	•	•	•	•
Certificate of Calibration & Chart Illumination	_ _ G _ _	•	•	•	•	•	•	•	•	•	•

TABLE VII OPTIONS (Continued)	**Selection**	**1**	**1**	**2**	**2**	**3**	**3**	**3**	**3**	**6**	**6**
None	_ _ _ 0 0	•	•	•	•	•	•	•	•	•	•
Remote Compensation Box Input (60 deg C All Inputs)	_ _ _ 0 E	•	•	•	•	•	•	•	•	•	•
Mounting of Scale Ordered Separately **(Note 4)**	_ _ _ H 0	•	•	•	•	•	•	•	•	•	•
Mounting of Scale Ordered Separately **(Note 4)** Plus Remote Compensation Box Input (60 deg C All Inputs)	_ _ _ H E	•	•	•	•	•	•	•	•	•	•

TABLE VIII Specials

None	0 0 0	•	•	•	•	•	•	•	•	•	•
ST Number (Consult Honeywell IM&C Representative)	X X X	•	•	•	•	•	•	•	•	•	•

TABLE IX Manuals

English	EN	•	•	•	•	•	•	•	•	•	•
French	FR	•	•	•	•	•	•	•	•	•	•
German	GE	•	•	•	•	•	•	•	•	•	•
Italian	IT	•	•	•	•	•	•	•	•	•	•
Spanish	SP	•	•	•	•	•	•	•	•	•	•
Swedish	SW	•	•	•	•	•	•	•	•	•	•
Dutch	DU	•	•	•	•	•	•	•	•	•	•
English: U.S. Format	US	•	•	•	•	•	•	•	•	•	•

Note 1: Alarm output: "N.C." contact. Can be changed to "N.O." Alarms are configured 1 High and 1 Low on each channel except for Selection 6 which is configured as High Alarm on each channel. The Alarm Setpoint Value can be changed from the front key panel.

Note 2: Portable case with dark gray door, plastic window, latch, rear main switch. IEC main plug connector and rear cover. (Not available with UL/CSA Approval.)

Note 3: Consult Factory.

Note 4: For chart range and scale configuration different than what is specified in Table I, specify Table VII option _ _ _ H0 and complete the following table. For mV, V, and mA the input signal can be selected within the range actuation limits (minimum range is 20%). For T/C and RTD ranges the chart range and scale can be selected within the range actuation limits (minimum chart range is 20%). Refer to the DPR 100 A/B scales list for available scales. The information in the table is to be entered in the free form section of the order. Multipoint units come with a single scale.

Note 5: Speed 1 can be changed from the front key panel.

Note 6: The units are built with Universal input and are delivered with 250 ohm resistors to convert input current signal 4-20 mA into 1-5 volts dc.***

Table for Table VII Option _ _ _ H0

Pen # (DA1XX)	Multipoint Channel # (DB1XX)	Input* Signal	Burnout**	Chart		Scale	
				Range	Eng. Unit**	Range	Item #
1	1						
2	2						
3	3						
	4						
	5						
	6						

* For mV, V, and mA, the input signal can be scaled within the actuation limits (minimum input scaling is 20%).

** Burnout is factory set as indicated in Table I. Burnout on 4-20 mA and the 0-10 volt range is fixed at downscale burnout. All other ranges burnout can be set per customer request except RTD's which is fixed at upscale burnout.

*** Engineering Units is 5 characters maximum.

RESTRICTIONS

Restriction Letter	Available Only With		Not Available With	
	Table	Selection	Table	Selection
c			VII	R _ _ _ _ , S _ _ _ _ T _ _ _ _ , U _ _ _ _ G _ _ _ _ , P _ _ _ _
d	50 deg C maximun temperature limit			

5.1 TECHNICAL DATA

Technical data	
Analog inputs	
Pen recorder	1, 2 or 3 continuous traces. Pen 1 also prints all chart documentation.
Multipoint recorder	1 up 6 channels. Inputs are scanned by relays, galvanically isolated and individually configurable to any listed actuation.
Signal source	Thermocouple with individual cold junction compensation. Line resistance up to 1000 ohms T/C, mV, mA, Volt RTD Pt 100 3-wire connections, lead resistance per wire 40 Ω balanced.
Field calibration	A channel field calibration - 0% and 100% span - may be made to certify input sensor loop.
Burnout	T/C, mV, Volt, factory set to upscale (configurable to downscale or none). RTD: inherent upscale. mA: inherent downscale
Scanning time	mV, V, mA : 330 ms Pen: 2 seconds at 10-60 mm/h (T/C or RTD) 1 second at 60-300 mm/h (T/C or RTD) 0.33 second at > 330 mm/h or if one linear input is selected Multipoint: 5 seconds for 6 channels
Input impedance	10 Mohm for T/C, mV inputs, > 1 Mohm for volt inputs.
Stray rejection	Series mode ≥ 60 dB. Common mode at 250 Vac ≥ 130 db.
Logic inputs (option)	Up to 2-dry contact inputs (1.5 mA – 12Vdc)
Actions	Change chart speed 1 to speed 2 Print inhibit Event marking : - Pen : pen 1 used as operation marker on the right side of the chart – Mpt : 2 traces maximum on the right side of the chart. (L_1 = purple, L_2 = red)
Scales	
Pen Mpt	1 analog scale per pen in accordance with the input range 1 analog scale, 0 to 100 linear.
Recording span	
Scaling	Per input, an analog scale is printed on the chart with the engineering unit. Each input can be configured differently.
Pen offset	Distance between pens: 2 mm Chart definition: 1 step = 0.2 mm
Pen carriage speed	1 second full scale

Technical data

Chart length	Fanfold 18 m (as DIN 16230) Roll 24 m
Pen trace	
Pen	1400 m per pen
Multipoint	250 m per color
Chart speed	1 or 2 chart speeds, fully configurable, selected by a logic input. Speed 1: fully adjustable per step of 1 mm/h, within limit Speed 2: choice as per the model selection guide
Speed setting	Pen: 10 to 6000 mm/h (.5 to 240"/h). Mpt: 10 to 1500 mm/h (.5 to 60"/h)).
Stepping chart motor	Resolution 0.12 mm
Alarms (Option)	
Pen 1, 2, 3 or Mpt 3 CH	2 alarm setpoints per channel, (factory set* 1 low, 1 high)
Mpt (6CH)	1 alarm setpoint per channel, (factory set* high)
Hysteresis	0.5 % to 99 % of scale (factory set at 0.5 %)
Outputs	Up to 6 alarm relays output contacts 1 SPST normally closed contact (may be configured into normally open contact)
Rating contact	2 A, 250 VAC on resistive loads * Other selections configured by PC
Power supply	
To transmitters	85 to 264 Vac, 50/60 Hz or 24 or 48 Vac/dc (+10 –15 % nominal) 24 Vdc, 50 mA max. (optional) (75 mA available from 100V)
Power consumption	3 pens: 30 VA max. Mpt: 30 VA max.
Clock timer	
Format	Year, month, hour, minute can be set
Power interruption	Battery back-up time of 10 years with 3 years off power
Accuracy	$\pm 10^{-5}$
Packaging	
Weight	Pen: 3.5 kg Mpt: 3.5 kg
Front face	144 x 144 mm according to DIN 43718
Depth	245 mm/9.7" behind panel, including terminals and line protection cover.
Front window	Polycarbonate
Front protection	IP54 (IEC 529) – optionally IP55
Lock	Latch or key (DIN 43832-N)
Cut out	DIN 138 x 138 mm
Construction	Silicon - free
Optional	Chart illumination Rear terminal cover
Mounting	Panel mounting ± 30° from horizontal.
Wiring	Rear screw terminals. Terminal modules are plugged on the instrument.

Technical data

Writing	
Pen	1 cartridge per pen, fibre tip, 1400 m of trace per color (blue, red, green).
Multipoint	1 print wheel, 6 colors, 250 m of trace per color (purple, red, black, green, blue, brown).
Noise immunity	This product is in conformity with the protection requirements of the following European council directives: • 73/23/EEC – Low Voltage directive • 89/336/EEC – EMC Directive Conformity of this product with any other "CE Mark" Directive(s) shall not be assumed. EMC Classification: • EN 50081-2-1993 Electromagnetic Compatibility – General Emission Standard, Part 2: Industrial Environment. EN 50082-2-1995 Electromagnetic Compatibility – General Immunity Standard, Part 2: Industrial Environment
Safety protection	Complies with IEC 414, 348 and 1010-1 installation category 2 for personal protection. Designed to meet UL and CSA C22.2, N142 standard (CSA approved)
Electrical insulation	
Input to input	Test voltage 280 Vac for 1 min (except for RTD input).
Input to ground	Test voltage 2.1 kVdc for 1 min.
Input to line voltage	Test voltage 2.1 kVdc for 1 min.
Line voltage to ground	Test voltage 2.1 kVdc for 1 min.
Alarm relay to ground	Test voltage 2.1 kVdc for 1 min.
Logic input to ground	Test voltage 500 Vdc for 1 min.
Temperature	
Ambient	0 to 50° C (32 to 122°C) with fan fold paper. 0 to 60° C (32 to 140°C) with roll paper. Optionally 0 to 60° C (32 to 140° F)
Storage	-40 to 70° C (32 to 158° F) 10 to 90 % RH non condensing
Humidity	
Roll	10 to 90 % RH non-condensing
Fan fold	15 to 80 % RH non condensing
Vibrations	Frequency: 10 to 60 Hz – amplitude 0.07 mm 60 to 150 Hz- acceleration 1g

5.2 ACCURACY

Accuracy

Reference conditions	
Temperature	23° C ±2° C (73° F ±3° F)
Humidity	65 % ±5 % RH
Line voltage nominal	±1 %
Source resistance	0 Ω
Series mode	0 V
Common mode	0 V
Frequency nominal	±1 %
Accuracy	A/D converter accuracy: 0.25 % of selected input range * (IEC873). For a 4/20 mA input, you must add the resistor accuracy. Cold junction accuracy: 0.5° C Chart resolution: 0.2 mm

Rated limits and associated drifts

Parameter	Rated limits	Influence on accuracy
Temperature	0 to 50° C (32 to 122° F)	0.1 % per 10° C of change Cold junction 0.3° C/10° C
Supply voltage	85 to 264 V	No influence
Source resistance	T/C, mV	6 µV per 100 Ω of line resistance, 1000 Ω max.
	RTD	0.1° C per Ω in each wire balanced leads, 40 Ω max.
Humidity	10 to 90 % RH at 25° C	0.1 % max.
Long-term stability		0.1 % per year
Vibrations	1.25 mm at 0 t 14 Hz 1 g at 14 to 250 Hz	

Extreme conditions	
Operating	
Temperature	0 to 60° C (32 to 140° F)
Humidity	10 to 90 % RH non-condensing
Storage	
Temperature	-40 to 70° C (-40 to 158° F)
Humidity	5 to 95 % RH non-condensing

* Refer to "Available ranges" table for exceptions

5.3 AVAILABLE RANGES

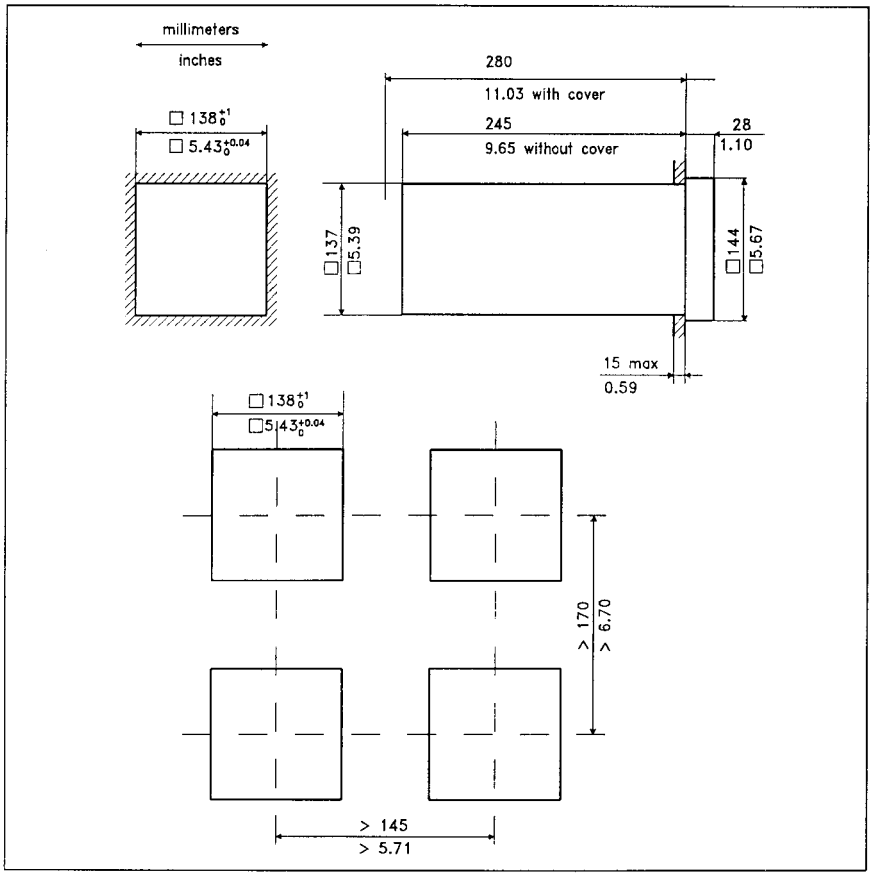
Available ranges

Thermocouples		**° C**	**° F**
	J	-50 to 150	-100 to 300
		0 to 400	0 to 800
		0 to 800	0 to 1500
	K	0 to 400	0 to 800
		0 to 800	0 to 1500
		0 to 1200	0 to 2400
		0 to 1400	0 to 2500
	N (Nicrosil Nisil)	0 to 400	0 to 800
		0 to 800	0 to 1500
		0 to 1200	0 to 2400
		0 to 1400	0 to 2500
	R	0 to 1600	0 to 3000
	S	0 to 1600	0 to 3000
	T	-100 to 200	-150 to 400
		0 to 150	0 to 300
		50 to 150	100 to 300
	Note: Provision to accept T/C input for remote compensation box at fixed temperature of 50° C or 60° C.		
RTD's	Pt100	-50 to 50*	-60 to 140*
		-50 to 150*	-100 to 300*
	(Alpha = 0.00385)	0 to 100*	0 to 200*
		-200 to 200	-300 to 400
		0 to 400	0 to 800
MV and Volt	0 to 10 mV		0 to 1 V
	0 to 20 mV		0 to 5 V
	0 to 50 mV		1 to 5 V
	10 to 50 mV		0 to 10 V
	0 to 100 mV		
mA	0 to 20 mA or 4 to 20 mA linear 4 to 20 mA SQRT Input resistor 250 ohms required		

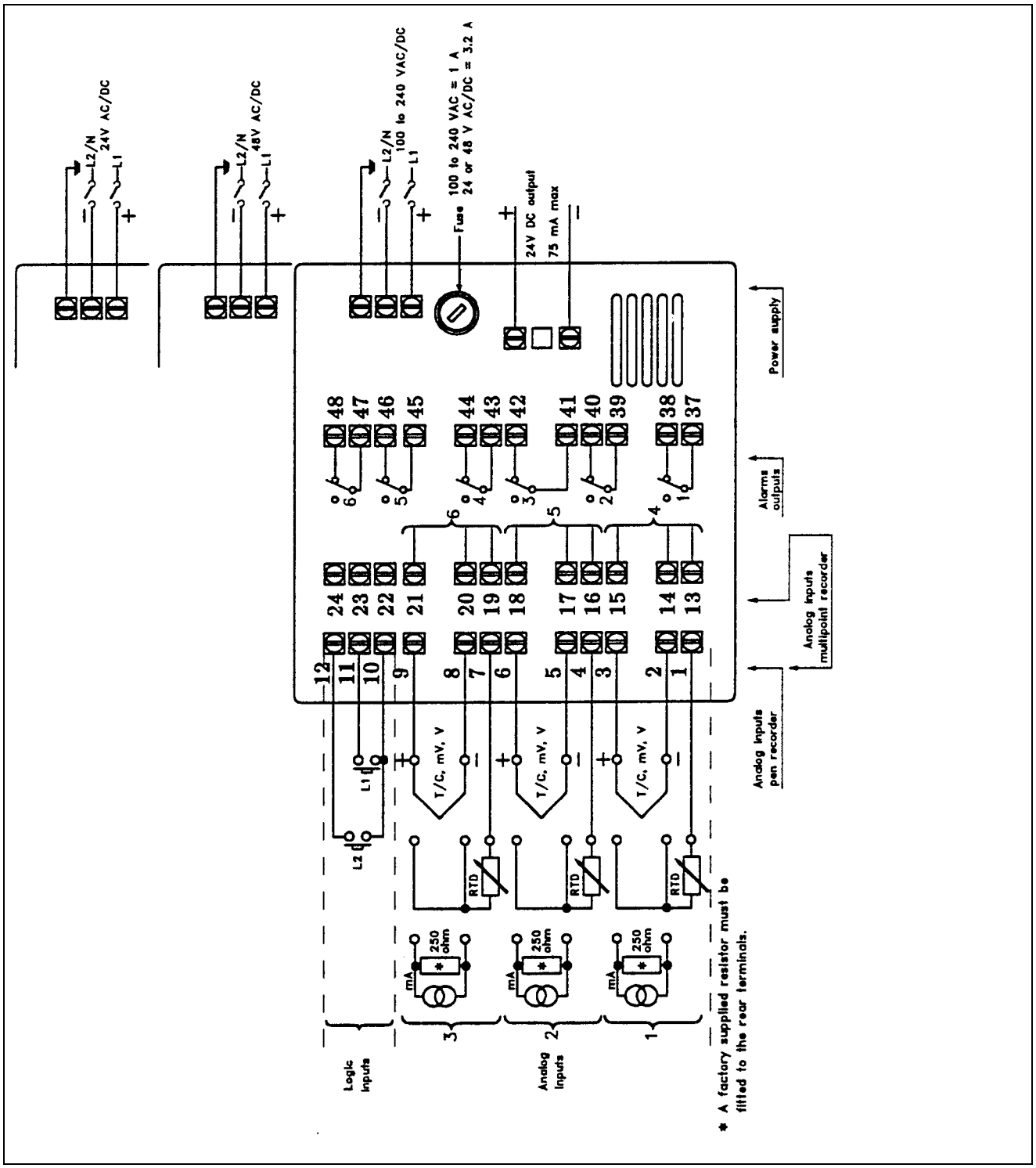
* Accuracy = 1° C or 1.8° F

5.4 DIMENSIONS

DIMENSIONS



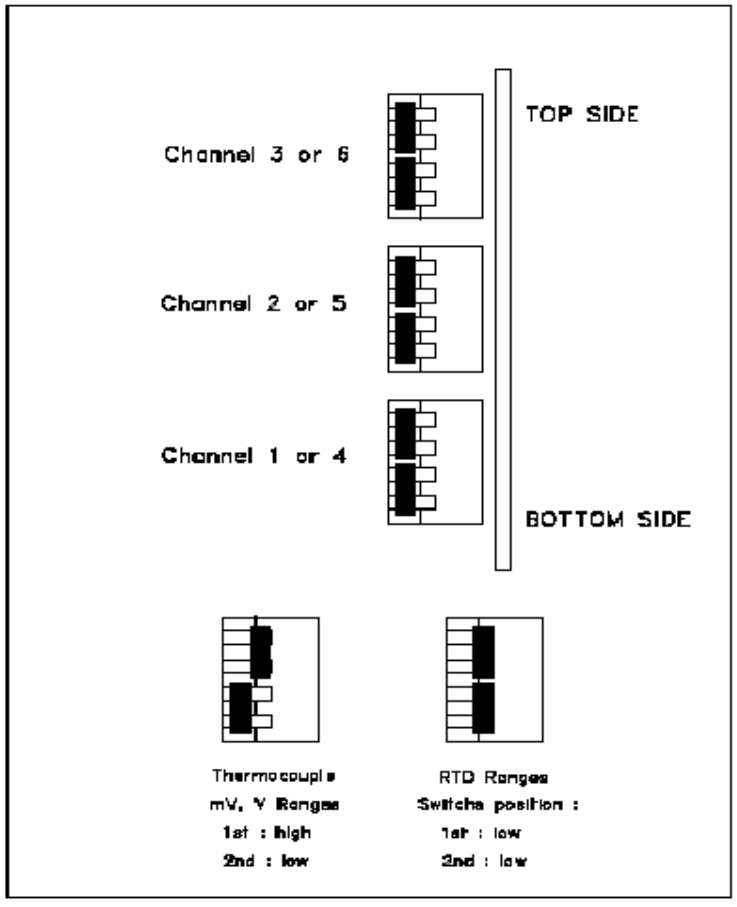
5.5 TERMINAL CONNECTIONS



6.1 ANALOG INPUTS CONFIGURATION

The analog input boards are hardware configured at the factory to match the specified actuation type. This hardware configuration only requires change if a major change in actuation type is required via the configuration jack connector.

- Configure the range(s) via the jack connector
  (See section 9 : PC Configuration, paragraph 9.5 "Read and modify parameters")
- Check if the new range(s) need a hardware change on the analog input board (See figure below)
- If so, remove power from the recorder.
- Remove the analog input terminal block.
- Change the switch position(s) with a small screw driver. (See figure below)
  Push the switch completely on the high or low position.
- During the initialisation of the recorder, the relays will be in the de-energized state. (Alarm state)



Analog input hardware configuration

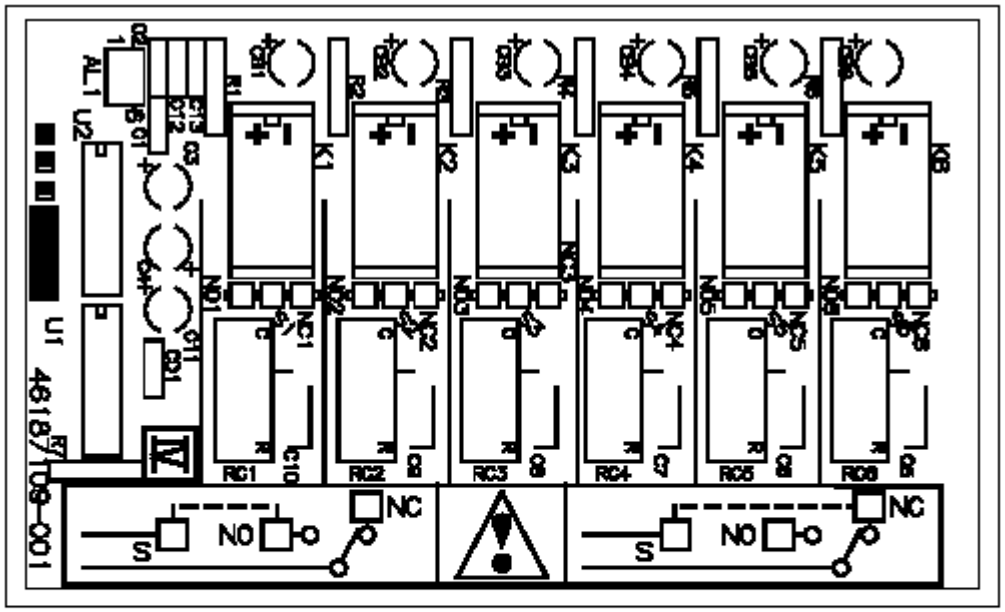
6.2 Analog input hardware configuration RELAY OUTPUT CONFIGURATION

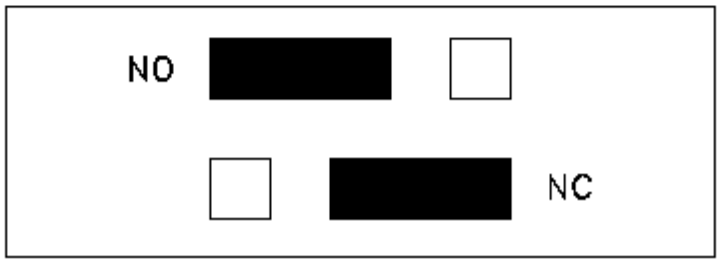
All the relays are factory configured to be de-energized under alarm conditions.

Each relay is factory set for NC (normally closed) operation by a jumper on the alarm board.

If you need to reverse this operation. (See figure below)

- 5 Remove the alarm relay board. (See CK 110)
- 5 Move the jumper from the NC location (normally closed) to the NO location (normally open).





Jumpers configuration

7.1 FIELD CALIBRATION

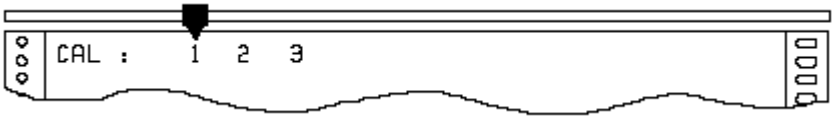
This menu allows the 0% and 100% calibration of each input.

> ⚠ CAUTION
>
> The recorder should have been powered for at least 15 minutes and requires provision of accurate signal source to match actuation/range.
> **Failure to comply with these instructions may result in product damage**

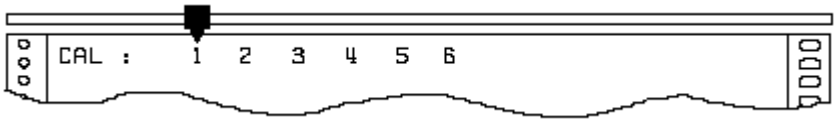
- Verify the alignment of the 0% actuation range limit with the 0% on the chart. If wrong alignment, undo the securing screws of the scale, reposition the scale and tighten the screws.
- The CALIBRATION menu is "hidden" and can only be accessed by a special combination of Function Keys while in the RUN mode.

To enter the CALIBRATION mode, **press both** ▶ and ◀ **FOR 10 SECONDS** and the

- recorder will print the channel numbers :



For a one-pen recorder : available channel number is 1 only.
For a two-pen recorder : available channel numbers are 1 and 2.
For a three-pen recorder : available channel numbers are 1, 2 and 3.

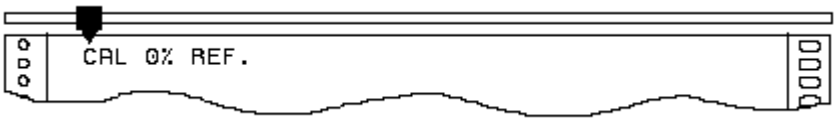


For a multipoint recorder : available channel numbers are 1, 2, 3, 4, 5 and 6.

When printing completed, the pointer will be positioned on channel 1.

- Press ▶ or ◀ to select the channel number you wish to calibrate.
- Press ENTER to confirm your choice. (Your choice will be highlighted)

Now the recorder prints a message indicating that a reference source corresponding to the 0 % of the range on the chosen channel should be connected :



NOTICE
The source MUST correspond to the 0 and 100 % actuation input limits (total input range) for the channel and take into account the effect of cold junction temperature and thermocouple actuations.

- If you need to adjust the carriage calibration and analog calibration, connect your 0 % reference signal.
  Then press ENTER to start the 0 % calibration.
  Now the pointer will take up the current 0 % calibration position. If necessary, the ▶ and ◀ keys can be used to position the pen to 0 %. Chart will advance by one line each time the ▶ or ◀ keys are pressed. Each time the ▶ or ◀ keys are pressed, the recorder will reprint its mechanical references and be positioned on its new value.

- **Press** ENTER to confirm the new 0 % calibration.

  It can take some seconds for the A/D converter to be calibrated.

  Now the recorder prints a message indicating that a reference source corresponding to 100 % of the range on the chosen channel should be connected :

- If you need to adjust the carriage calibration and analog calibration, connect your 100 % reference signal.

  Then press ENTER to start the 100 % calibration.
  Now the pointer will take up the current 100 % calibration position. If necessary, the ▶ and ◀ keys can be used to position the pen to 100 %. Chart will advance by one line each time the ▶ or ◀ keys are pressed.

- **Press** ENTER to confirm the new 100 % calibration.
  Calibration is now complete and the recorder will reprint the calibration menu.

- At this point, if necessary, the position of the next channel to be changed can be made and followed by selection of value.

- To return to RUN mode, the SETUP key should be pressed for a few seconds.

Note: If the difference between the 100 % and 0 % reference signals is under 25 % of the full span, then the analog calibration is canceled, only a carriage calibration has been made during this operation.

Extended values for thermocouple K and N are :
K 1400 oC = 55.824 mV
N 1400 oC = 51.067 mV
N 2500 oF = 50.026 mV

8.1 OVERVIEW

You have just received your application software package. This tool has been designed to modify, upload/download and store the recorder configuration.

8.2 PRODUCT FEATURES

The main functions of this software are :

- Reading the configuration of your recorder.
- Preparing or modifying the configuration from your PC.
- Downloading configuration from your PC to the recorder.
- Retrieving configuration stored on hard disk.
- Saving configuration on hard disk.
- Diagnostics.

8.3 INSTALLATION

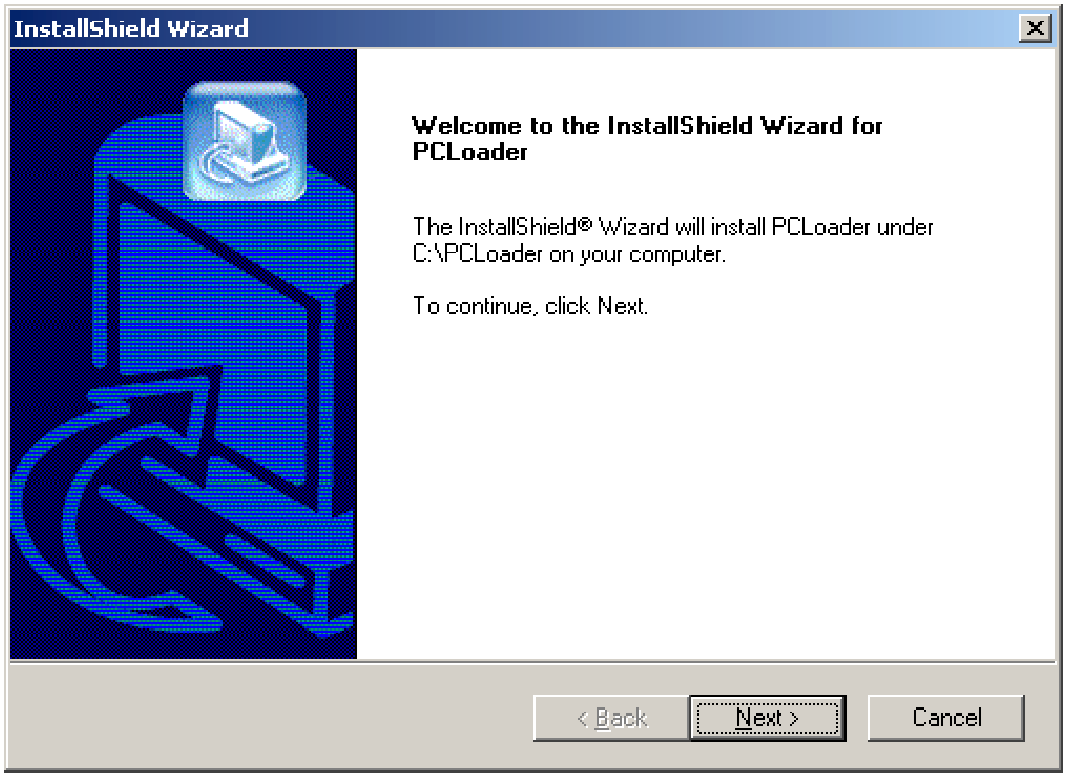
8.3.1 System Requirements

A PC AT Compatible personal computer with

- A Serial Communication card: RS232 as serial port 1
- A hard disk
- A color or B/W monitor
- A mouse optional
- Upto 625 KB RAM Free

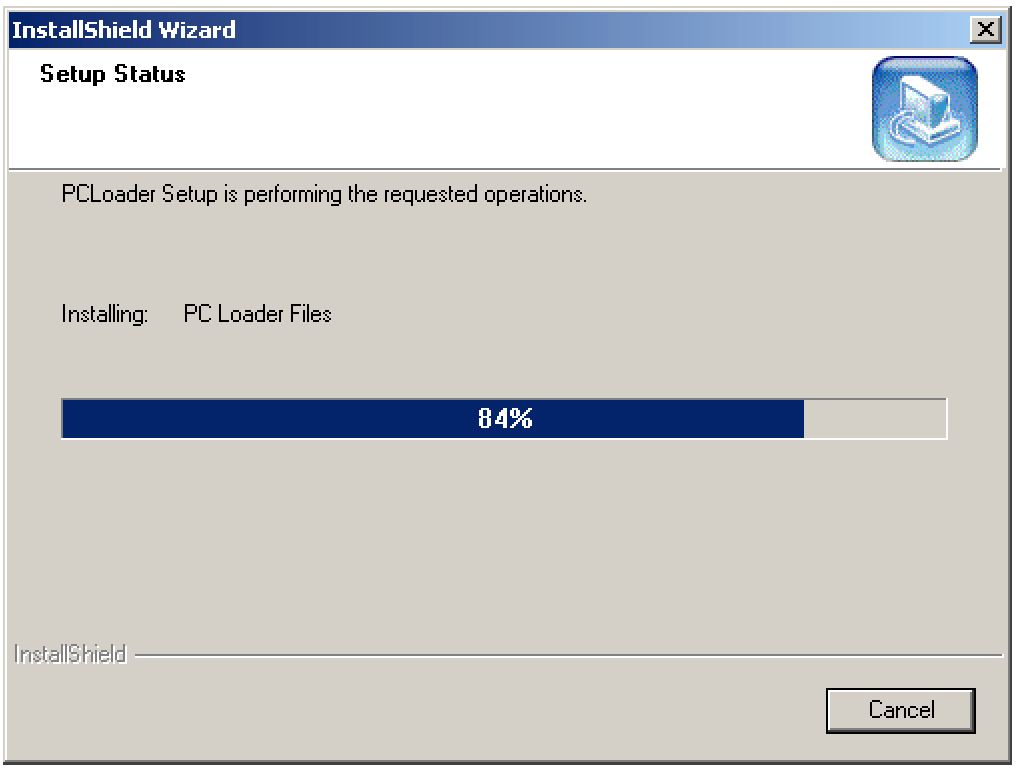
8.3.2 New Installation

Insert the PC Loader CD into the CD drive. The setup is launched automatically. Run ***Setup.exe*** in case the setup does not launch automatically. If you don't have Administrator privilege, the setup will prompt to select Administrator user or enter the Administrator Password. Otherwise it will give "Kernel.error".(This is necessary to update the Registry Settings properly).

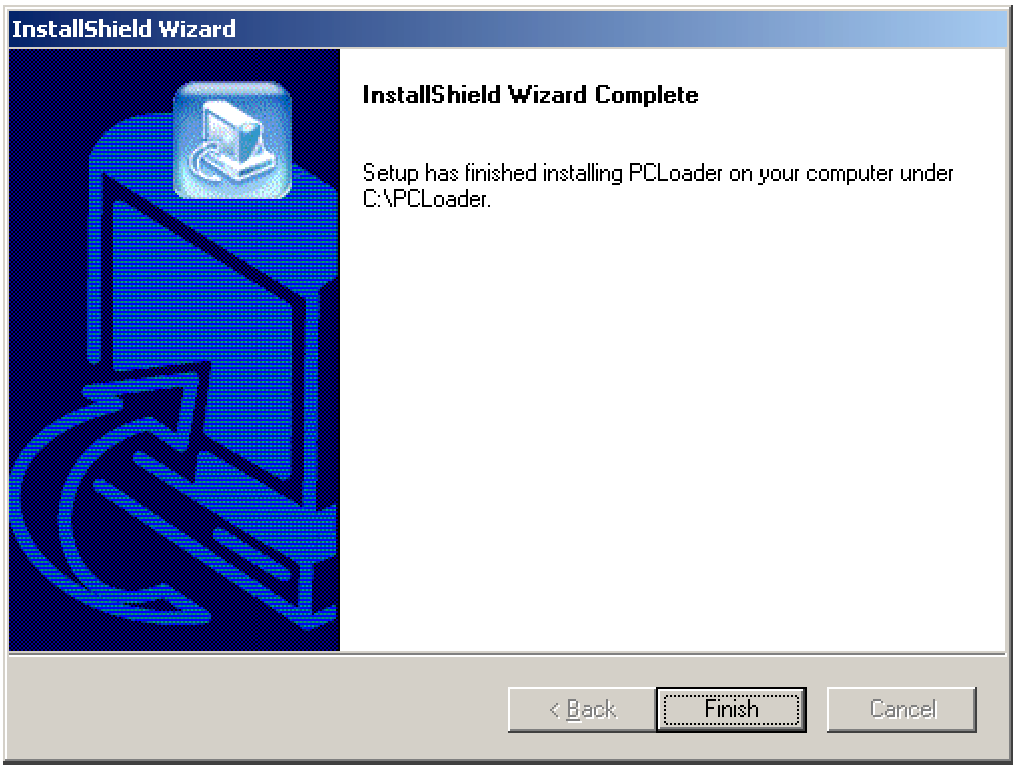


Please ensure you have adequate disk space on **C:**\ and click Next> to proceed with the installation. Please note that PCLoader can only be installed in **C:**\ .

The progress of the installation is displayed.



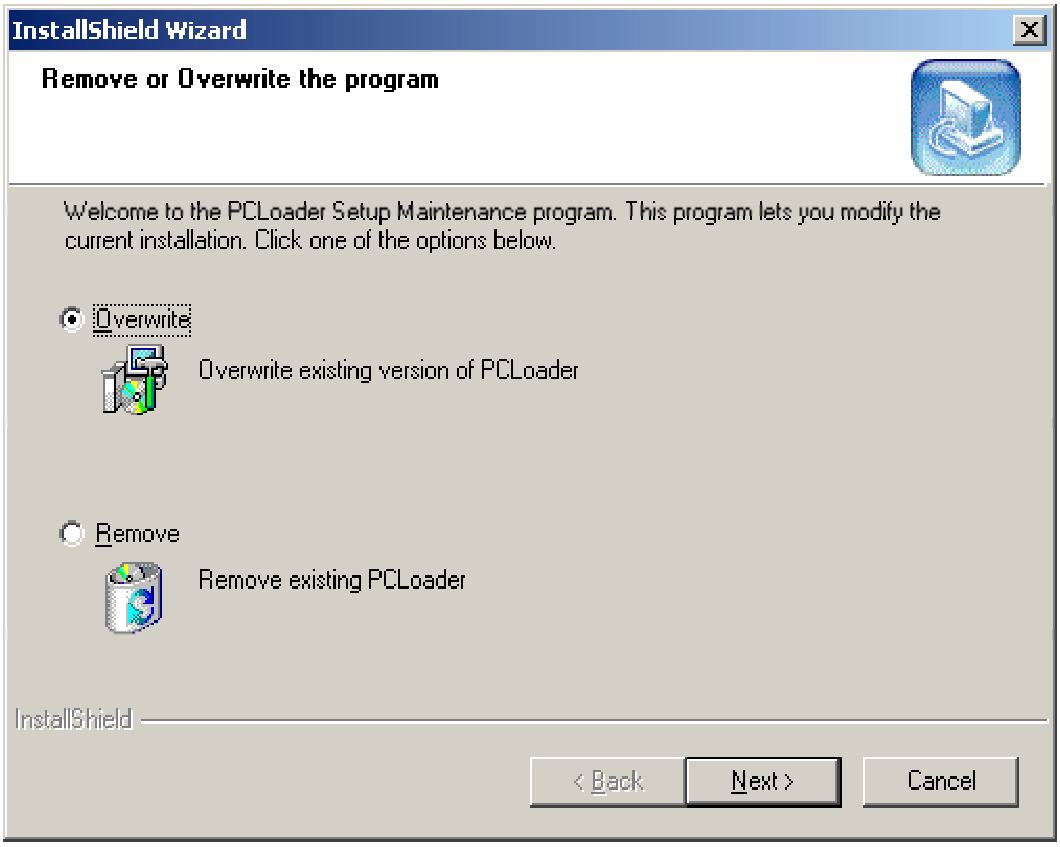
Click **Finish** to complete the installation



8.3.3 Upgrade old installation

Insert the PC Loader CD into the CD drive. The setup is launched automatically. Run ***Setup.exe*** in case the setup does not launch automatically. If you don't have Administrator privilege, the setup will prompt to select Administrator user or enter the Administrator Password. Otherwise it will give "Kernel.error".(This is necessary to update the Registry Settings properly).

If an older/similar version of PCLoader is already installed, the installation wizard will prompt you with the following options.



Select Overwrite to directly overwrite the older version and upgrade to the new version without running the set up twice.

Note: If any recorder configuration files are saved in the older PCLoader version you will be prompted

"Setup has found .cnf file. Do you want to retain them?"

Select **"Yes"** to retain the configuration files in their respective directories inside **C:\PCLoader** directory and to continue installation.
Select **"No"** to delete the configuration files along with the other files and to continue installation.

8.3.4 Uninstall

Select **Start > Settings > ControlParel\Add & Remove Programs, then select PCLoader**
or
Insert the PC Loader CD into the CD drive. The setup is launched automatically. Run ***Setup.exe*** in case the setup does not launch automatically.

Select Remove to uninstall the older version of PCLoader. You will be asked to confirm you want to delete the old files.

Note: If any recorder configuration files are saved in the older PCLoader version you will be prompted

"Setup has found .cnf file. Do you want to retain them?"

Select **"Yes"** to retain the configuration files in their respective directories inside **C:\PCLoader** directory and to delete non-configuration files.
Select **"No"** to delete the configuration files along with the other files.

To install the new version see New Installation.

If you don't have Administrator privilege, the setup will prompt to select Administrator user or enter the Administrator Password. Otherwise it will give "Kernel.error".(This is necessary to update the Registry Settings properly).

8.4 USE

8.4.1 Startup

To launch PCLoader, double-click the **PCLoader** icon  on your Desktop or alternately, select **Start > Programs > PCLoader > DPR100**.

8.4.2 Menus

The software is based on the use of menu bars. To confirm a menu, you have three methods :

- Placing the cursor on the chosen menu, then press ENTER
- Pressing the highlighted key letter of the menu's name.
- Using the mouse.

8.4.3 Modifying fields of parameters

Some menus may allow the modification of parameter's values. There are two kinds of modifications
according to the type of parameters.

- Selective modification : When placing the index on the chosen parameter, you can modify it by pressing the ▲ or ▼ keys to scroll through allowed values. Most modifications are of this type.
- Modifying with the alphanumeric keyboard : in this case, position the cursor on the chosen parameter and type the required value.

8.4.4 Going from a parameter field to another one

- Press ▶ or ENTER to access to the next field.
- Press ◀ to access to the previous field.

Each time the cursor points to a field, a "help" message is displayed on the bottom line of the screen.

8.4.5 Leaving a menu

To leave a menu, you have two options :

- To leave the present menu and validate your screen modifications in the PC memory (RAM), press F10 key.
- To leave the present menu without saving modifications, press ESC key.

8.4.6 Saving modifications on a file

Use the corresponding menu to save your modification on a file

NOTICE
After powering up or if the set-up key has been pressed, the recorder cannot communicate during the initialization.

8.5 "READ AND MODIFY" PARAMETERS

ANALOG INPUTS

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
SENSOR	Defines the sensor type for the selected channel.	Select the desired type by the ▲ or ▼ keys. The transition of RTD or NO Input in another sensor type requires a new calibration of cold junction, and is only possible for the users who have the access code which authorize it. The cold junction calibration will be made in the diagnostic mode.
ACTUATION	Defines the actuation (and range) for the selected channel. Provides selection of actuation, range and engineering units for all directly connected temperature sensors and non-linear temperature transmitters. The actuations offered will depend on the sensor selected. Provides selection of input range for linear transmitters.	Select the desired actuation by the ▲ or ▼ keys. For SQUARE ROOT extraction, the formula is : **PV** = [(S-Smin)(HV2 -LV2)/(Smax-Smin) +LV2]1/2 **HV** = range max **LV** = range min **Smin** = min sensor input value **Smax** = max sensor input value **S** = current sensor input value
BURN OUT	Defines the type of burnout per channel.	Select the desired type by the [or] keys. For RTD, the type is fixed at UPSCALE. For 0-20 mA and 4-20 mA ranges, the type is fixed at DOWNSCALE.
ENG. LIST	Represents the engineering units of the input channel. Modification is possible for linear and special inputs.	Type the desired units and then press ENTER
RANGE MIN*	Establishes in absolute units the value corresponding to 0 % of the selected linear input.	Type the desired value and then press ENTER
RANGE MAX*	Establishes in absolute units the value corresponding to 100 % of the selected linear input.	Type the desired value and then press ENTER
SCALE MIN*	Defines the 0 % of the paper scale. Defines in engineering units the value corresponding to the range min for linear inputs.	Type the desired value and then press ENTER

ANALOG INPUTS		
SCALE MAX*	Defines the 100 % of the paper scale. Defines in engineering units the value corresponding to the range max for linear inputs.	Type the desired value and then press ENTER
FILTER	Defines the filter (in seconds) to be applied on the inputs.	Type the desired value (from 0 to 99) and then press ENTER
*** NOTE :** (Range max - range min) must correspond at least to 20 % of (actuation max-actuation min) for linear inputs. (Scale max - scale min) must correspond at least to 20 % of (range max-range min) for other inputs.		

ANALOG ALARMS

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
CHANNEL	Identifies the input channel to be assigned to each alarm.	Select the desired channel by the ▲ or ▼ keys.
SETPOINT	Identifies the setpoint value for each alarm.	Type the desired value and then press enter
TYPE	Identifies the alarm type, ie NONE, HIGH or LOW.	Select the desired type by the ▲ or ▼ keys.
HYSTERESIS	The value chosen will estqblish the switching hysteresis of the alarm and output relay. Alarms switch "on" at the configured setpoint vqlue. The value at which an alarm will switch "off" depends upon the hysteresis. The hysteresis value will be added to low alarm setpoints, or subtracted from high alarm setoints. Alarm hysteresis is expressed in percent of the total input range.	Type the desired value and then press ENTER

LOGIC INPUTS

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
LOGIC INPUTS 1	Specifies the action of logic input #1.	Select the desired action by the ▲ or ▼ keys.
LOGIC INPUTS 2	Specifies the action of logic input #2.	Select the desired action by the ▲ or ▼ keys.

PRINTER PARAMETERS

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
UNIT	Defines the chart speed units.	Select the desired units by the ▲ or ▼ keys.
SPEED 1	Defines the value of chart speed 1.	Select the desired speed by the ▲ or ▼ keys.
SPEED 2	Defines the value of chart speed 2.	Select the desired speed by the ▲ or ▼ keys.
DISTANCE BETWEEN TWO PRINTINGS	Defines the gap between routine printing of time, date, speed and ranges.	Select the desired gap by the ▲ or ▼ keys.
PEN OFFSET (One, two ot three pen recorder)	Enable/disable pen offset correction.	Select the desired value by the ▲ or ▼ keys.

MISCELLANEOUS

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
ADDRESS NUMBER	Identification of the recorder and/or chart.	Type the desired number and then press ENTER
POWER LINE FREQUENCY	Selects 50 or 60 Hz supply frequency.	Select the desired frequency by the ▲ or ▼ keys.

8.6 "*DIAGNOSTIC*" PARAMETERS

A/D CONVERTER RESULTS

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
MEASURE	Process value.	/
COLD JUNCTION OR THIRD WIRE VOLTAGE	Defines the cold junction temperature or the third wire voltage.	/

COLD JUNCTION CALIBRATION

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
COLD JUNCTION TEMPERATURE	- The temperature displayed is a default value proposed as the cold junction temperature - If unit is delivered in T/C from the factory, the unit does not need further C/J calibration	Type the desired value and then press ENTER

LOGIC INPUT & RELAY OUTPUT STATUS

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
LOGIC INPUT STATUS	Status of the logic input.	/
RELAY COIL STATUS	Status of the relay coil.	/

READ DATE & TIME FROM RECORDER

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
DATE	Date read from the recorder.	/
TIME	Time read from the recorder.	/

MODIFY DATE & TIME ON RECORDER

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
DATE	Date	Type the desired value and then press ENTER
TIME	Time	

DEVICE SPECIFICATIONS

	DESCRIPTION	HOW TO MODIFY THE CURRENT VALUE
RECORDER TYPE	Type of the recorder.	Select the desired type by pressing the ▲ or ▼ keys.
SOFTWARE VERSION	Software version of the recorder.	/

9.1 FAILURE SYMPTOMS AND TROUBLESHOOTING PROCEDURES

- ✓ Compare the symptoms with those listed below to identify the possible cause and take the corrective action.
- ✓ If the recorder is not restored to normal condition by the following check, please contact your nearest service office.
- ✓

> ⚠ WARNING
>
> Ensure power disconnected before removing any boards from the recorder. Avoid touching components unless you are protected against electrostatic discharge as many boards have CMOS components which may be damaged.
> **Failure to comply with these instructions could result in death or serious injury**

9.2 TROUBLESHOOTING LIST

Before any operation, for mechanical trouble execute an auto-test control. (For complete information see CK 114)

9.2.1 SELF-TEST MODE PEN RECORDER

- ✓ To access self-test mode, press the SETUP key when powering up.
- ✓ The self-test involves the DIAGNOSTIC and the RUNNING IN.
- ✓ As soon as the self-test begins, the DIAGNOSTIC starts and the RUNNING IN follows automatically. (See fig. 10-2)

1 DIAGNOSTIC :

- ✓ Duration : 5 mn approximately,
- ✓ To show the quality of mechanical adjustments and motor torque margins,
- ✓ To be significant, this operation has to be made in normal conditions :
  20 0C +/-50C, 60 %RH +/-15 %, mounted horizontally with new pen cartridge(s).

2 RUNNING IN :

- ✓ Duration : 2 hours,
- ✓ Mechanical burn-in.

NOTE : - The cassette detection is made only at the beginning of the diagnostic.
- The self-test is made with the recorder cassette with a 3 m minimum length of chart.

9.2.1.1 Diagnostic pen recorder

9.2.1.1.1 Control of the pen 1 adjustment

- ✓ The figure 10-2 ref. 1 shows the check-test for the height pen 1 adjustment.
- ✓ The scale extends from 1 to 9, a correct adjustment is between 4 and 9.

9.2.1.1.2 Mechanical limits

✓ The figure 10-2 ref. 2 shows the test of mechanical extremes.
The vertical line(s) on the right must be over the 100 % chart.
The vertical line(s) on the left must be under the 0 % chart.

9.2.1.1.3 Printing of the mechanical 0 % and 100 %

✓ The figure 10-2 ref. 3 shows the adjustment of the recorder. If the recorder is calibrated, the vertical lines must be written at the same place as the 0 % and the 100 % chart.

9.2.1.1.4 Chart advance and print test

✓ The figure 10-2 ref. 4 shows the test for chart advance with a diagram written every 20 mm.

9.2.1.1.5 Printing of information message

✓ The figure 10-2 ref. 5 shows the message.
✓ Time and date,
✓ Software version,
✓ Chart identification number

9.2.1.1.6 Test for motor torque margins and mechanical slacks

✓ The figure 10-2 ref. 6 is composed of 3 identical patterns for the pens 2 and 3 and the graph for pen 1 is discontinuous on the two first patterns.
✓ The first pattern for each channel is executed in subvoltage condition and the movements are accelerated.

9.2.1.1.7 Check adjustment

✓ For each channel a adjustment check is executed at the end of the diagnostic. See figure 10-1 ref. 7.

9.2.1.2 Running in pen recorder (See fig. 10-1)

✓ For 2 hours
✓ Consumption : 3 m of chart paper
✓ The recorder prints a message every 65 mm, indicating the number of remaining cycles. (Total 36 cycles)
✓ For each cycle we show the carriage check adjustment result: on the left channel one, on the middle channel two and on the right channel three.
For each channel on the right the set value (22 or 23) and on the left the relative error, values between – 3 and +3 included are correct.
✓ At the end the recorder executes a new DIAGNOSTIC, then indicates an end message with recapitulation of defective check adjustment.

9.2.1.3 APPENDIX

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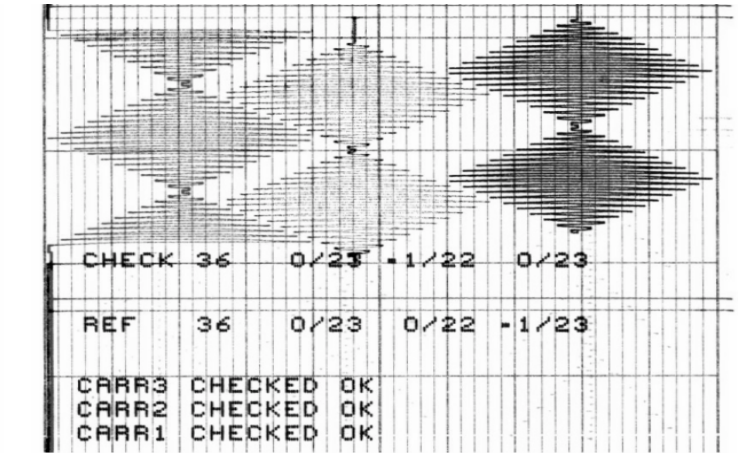
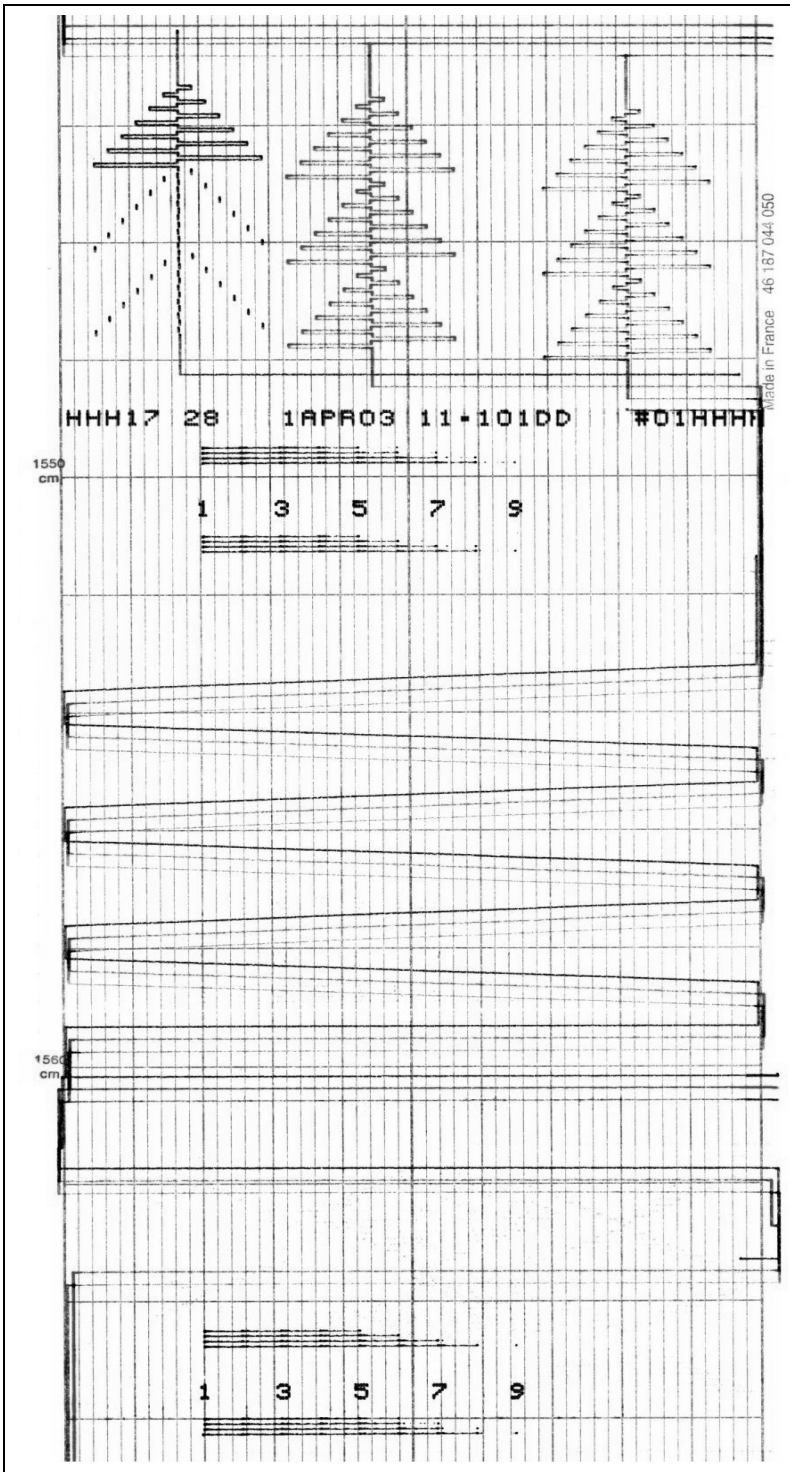
<td rowspan="2"> 
</td>
<td></td>
<td>RUNNING IN</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</table>

Figure 9-1



6

5

4

3

2

1

DIAGNOSTIC

Figure 9-2

9.2.2 SELF-TEST MODE MULTIPOINT RECORDER

- ✓ To access self-test mode, press the SETUP key when powering up.
- ✓ The self-test involves the DIAGNOSTIC and the RUNNING IN.
- ✓ As soon as the self-test begins, the DIAGNOSTIC starts and the RUNNING IN follows automatically. (See fig. 10-3)

1 DIAGNOSTIC :

- ✓ During 5 mn approximately,
- ✓ To show the quality of mechanical adjustments and motor torque margins,
- ✓ To be significant, this operation has to be made in normal conditions, 20 0C +/-50C, 60 %RH +/-15 %, mounted horizontally with new print wheel.

2 RUNNING IN :

- ✓ During 2 hours,
- ✓ Mechanical burn-in.

NOTE : - The cassette detection is made only at the beginning of the diagnostic.
- The self-test is made with the recorder cassette with a 1 m minimum length of chart.

9.2.2.1 Diagnostic multipoint recorder

9.2.2.1.1 Mechanical limits

- ✓ The figure 10-3 ref. 1 shows the test of mechanical extremes.
  The vertical lines on the right must be over the 100 % chart.
  The vertical lines on the left must be under the 0 % chart.

9.2.2.1.2 Printing of the mechanical 0 % and 100 %

- ✓ The figure 10-3 ref. 2 shows the adjustment of the recorder.
- ✓ If the recorder is calibrated, the vertical lines must be written at the same place as the 0 % and the 100 % chart.

9.2.2.1.3 Checking the colors adjustment

- ✓ The figure 10-3 ref. 3 shows the check-test for the colors adjustment.
- ✓ The scale extends from 0 to 8.
- ✓ Be careful with the writing of black and brown dashes. From a certain abscissa, the brown dash is higher than the black one.
- ✓ The adjustment is correct when the brown dash becomes higher between 2 and 4 included.

9.2.2.1.4 Printing of information message

- ✓ The figure 10-3 ref. 4 shows the message.
- ✓ Time and date,
- ✓ Software version,
- ✓ Chart identification number.

9.2.2.1.5 Checking t*h*e answer of the pen tip

- ✓ The figure 10-3 ref. 5 shows the printing test.
- ✓ See 2 horizontal lines written in 6 colors.

9.2.2.1.6 Test for motor torque margins and mechanical slacks

- ✓ The figure 10-3 ref. 6 is composed with 3 serrated parts and each of them cut with a black line in the middle.
- ✓ The first serrated part and the beginning of the black line are executed with subvoltage and movements are accelerated. (Coil included)

9.2.2.1.7 Chart advance and print test

- ✓ The figure 10-3 ref. 6 shows the test for chart advance with a diagram written every 20 mm.

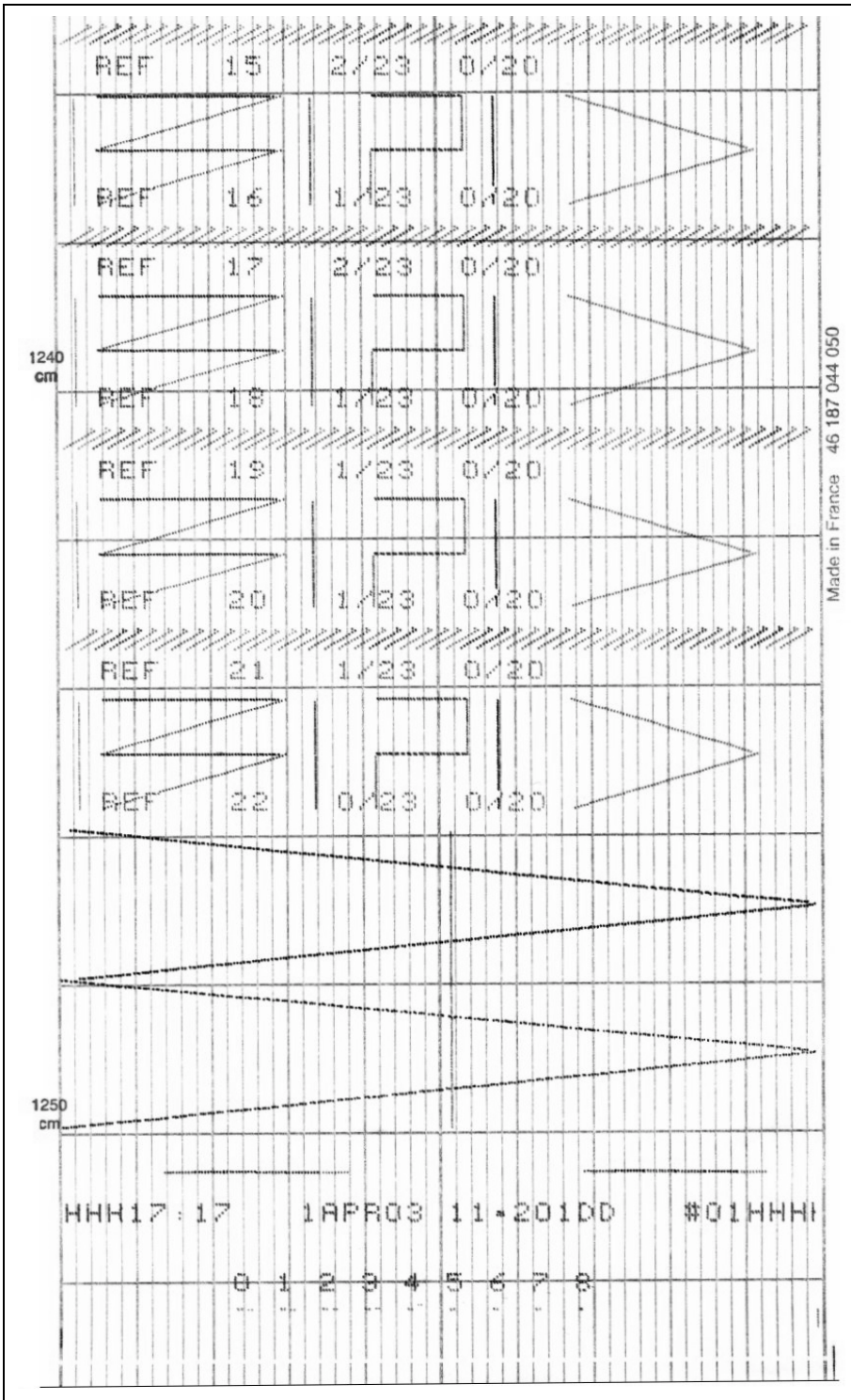
9.2.2.1.8 Check adjustment

- ✓ A adjustment check for carriage and colors is executed at the end of the diagnostic.
- ✓ For the carriage we have on the right the set value 22 or 23 and on the left the relative error, value between - 3 and +3 included are correct.
- ✓ For the color we have on the right the set value (20 or 21) and on the left the relative error, value between – 3 and +3 included are correct.

9.2.2.2 Running in multipoint recorder

- ✓ For 2 hours
- ✓ Consumption : 1 m of chart paper
- ✓ The recorder prints a message every cycle, indicating the number of remaining cycles, (22 cycles at all),
- ✓ The 2 different graphs are the following (See figure 10-3)
- ✓ For of each cycle, the adjustment is controlled for carriage and colors.
  We show the check adjustment result, on the left the carriage control and on the right the color control.
- ✓ At the end the recorder executes a new DIAGNOSTIC, then indicates an end message with recapitulation of
- ✓ defective check adjustment.

9.2.2.3 APPENDIX



8 7	RUNNING IN

Figure 9-3

9.2.3 SYMPTOM : The recorder is inoperative

POSSIBLE CAUSE	CORRECTIVE ACTION
"Switch error" is printed on the chart.	Check "sensor", "actuation" configuration and switch position on the input card.
Loss of line power	Use an AC voltmeter to check whether power is being applied to the supply terminals L1 and L2/N.
Blown line fuse	Replace line fuse. Ensure that fuse is correct for supply voltage.
The fuse connection is not correct.	Clean the fuse connection.
Check voltage on power supply.	Power supply module (Refer to CK 113) If voltage is not correct, replace power supply module.

9.2.4 SYMPTOM : The chart is inoperative

POSSIBLE CAUSE	CORRECTIVE ACTION
"Switch error" is printed on the chart.	Check "sensor", "actuation", configuration and switch position on your input card.
Print inhibit is activated by digital input.	Check the "print action" configuration in the digital input matrix and status of digital nputs.
Chart is incorrectly installed.	Install chart correctly (See figures on pages 2-14 and 2-15)
Chart is torn.	Advance chart beyond torn section.
Chart drive gear train is damaged.	Replace chart cassette assembly.
Power supply	Check voltage on power supply. (Refer to CK 113)* If voltage is not correct, replace power supply module.
Chart drive logic	If no other action is fixed, replace mother board. (Refer to CK 112)*

* CK *** refers to kit instructions

9.2.5 SYMPTOM : The print carriage is inoperative

POSSIBLE CAUSE	CORRECTIVE ACTION
Carriage drive cable tension is incorrect.	Check and adjust drive cable tension. (Refer to CK 126)
Bad connection	Check wiring connections. (Refer to pages 2-5 to 2-7)
Carriage drive cable is broken .	Replace carriage drive cable. (Refer to CK 126)
Carriage drive motor	Make an auto-test. (Refer to CK 114) Replace carriage drive motor. (Refer to CK 119)
Carriage drive motor logic	Replace mother board. (Refer to CK 112)
Power supply	Check voltage on power supply. (Refer to CK 113) If voltage is not correct, replace power supply module.

9.2.6 SYMPTOM : The print head is inoperative

POSSIBLE CAUSE	CORRECTIVE ACTION
Pen recorder	
Pen cartridge missing	Fit pen cartridge. (Refer to pages 2-9 to 2-11)
Pen cartridge wrongly fitted	Install cartridge correctly and push fully home.
Trace instead of alphanumeric printing	Check wiring connections, replace motor 2 and finally replace carriage.
One pen does not move	- Check wiring. - Check carriage drive cable. - Replace the motor corresponding to that pen. - Replace mother board.
Multipoint recorder	
Ink barrel missing	Fit ink barrel (Refer to pages 2-12 and 2-13)
Ink barrel drive motor	According to the auto-test result (Refer to CK 114), replace ink drive motor (Refer to page 1-9)
Print head logic	Replace mother board (Refer to CK 112)
Ink barrel drive motor logic	Replace mother board (Refer to CK 112)

9.2.7 SYMPTOM : Printing incorrect color (only for the multipoint recorder)

POSSIBLE CAUSE	CORRECTIVE ACTION
Ink barrel is incorrectly installed.	Check ink barrel installation. (Refer to pages 2-12 and 2-13)
Wiring is disconnected.	Check wiring connections (Refer to pages 2-5 to 2-7)
Color change motor	According to the auto-test result. (Refer to CK 114) Replace color change motor. (Refer to CK 119)
Power supply	Check voltage on power supply. (Refer to CK 113) If voltage is not correct, replace power supply module.
Color change motor logic	Replace mother board (Refer to CK 112)

9.2.8 SYMPTOM : Wrong date/time

POSSIBLE CAUSE	CORRECTIVE ACTION
Date and time are lost	Replace battery and contact your local office. (Refer to CK 112)

9.2.9 SYMPTOM : The alarm relay is inoperative or does not have the desired effect

POSSIBLE CAUSE	CORRECTIVE ACTION
Configuration is incorrect.	- Check the jumper selection on relay board - Check the "relay" parameter in the alarm matrix.
The connectors are incorrectly fitted.	Connect and refit. (Refer to pages 2-5 to 2-7)
Alarm relay board	Replace the board (Refer to CK 110)

9.2.10 SYMPTOM : Analog input records outside specified accuracy tolerance

POSSIBLE CAUSE	CORRECTIVE ACTION
Recorder configured for wrong sensor or actuation.	Check "sensor" and "actuation" configuration.
"Range" not correct.	Check "range" configuration.
"Scale" not correct.	Check "scale" configuration.
Recorder not configured for the correct supply frequency.	Check "frequency" (50/60 Hz) configuration.
The analog card is not correctly fitted.	Reconnect it.
Open circuit	Check sensor, leads and input terminals.
Bad contact or bad setting on the switches of input board	Check the switch position. Push the switches completely on the high or low position.
Environmental conditions outside rated limits.	Ensure that ambient temperature and relative humidity are within limits given in the product specification sheet.
The electromagnetic environment is disturbed.	Connect shielding cables and add the square of screening recapture. (46210075-501)
Analog input card	Calibrate each channel in case of input card replacement. Replace analog input card. (Refer to CK 110)

9.2.11 SYMPTOM : Too much space between points (Multipoint recorder only)

POSSIBLE CAUSE	CORRECTIVE ACTION
Check the chart speed It could be too high for the application.	Reconfigure chart speed.

9.2.12 SYMPTOM : No communication with PC loader

POSSIBLE CAUSE	CORRECTIVE ACTION
User error	See section 9
Ground wiring not connected.	It is mandatory to connect the ground wiring.
If you choose pen recorder instead of multipoint recorder, you have a communication error.	Select correct type of recorder.
Interface is not operative.	Replace mother board.
No response from device.	Check wiring (Connection, ...) of switched PC loader Replace PC loader box.
Incompatible version of PC Windows Operating System	Use compatible version of Windows Operating System.

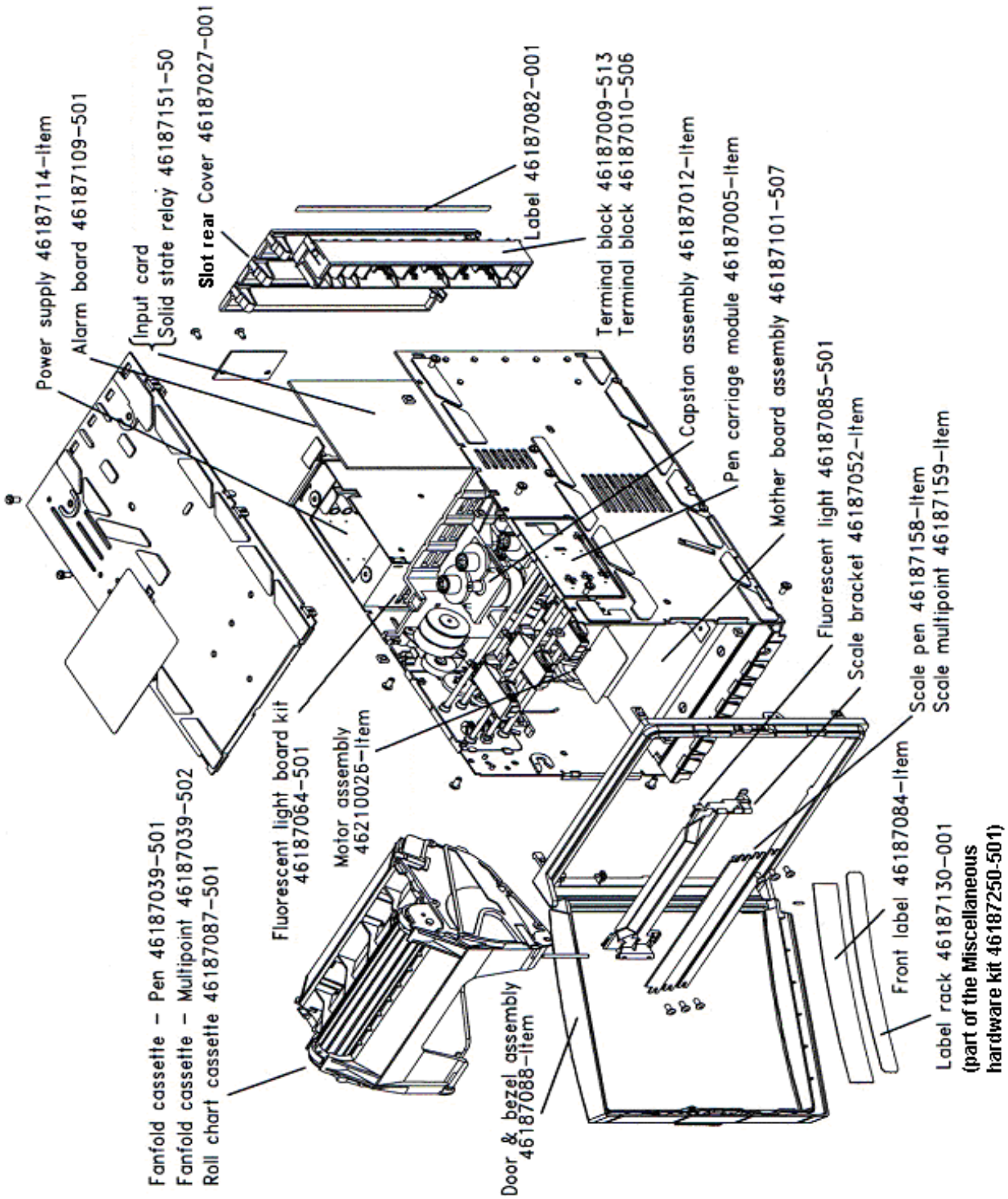
9.2.13 SYMPTOM : The printed traces are unstable

POSSIBLE CAUSE	CORRECTIVE ACTION
The chart paper is not in accordance with our specifications.	Fit correct chart.
Verify the 0 % and the 100 % printer calibration.	Reconfigure.
The printer motor is loosing steps.	Clean the bar on which the printing carriage moves with a dry piece of cloth.

9.2.14 SYMPTOM : The chart illumination failed

POSSIBLE CAUSE	CORRECTIVE ACTION
Wiring disconnected	Check wiring connections. (Refer to pages 2-5 to 2-7)
Fluorescent tube connectors are not properly seated.	Check fluorescent tube connectors. (Refer to CK 111)
Fluorescent tube	Replace fluorescent tube. (Refer to CK 111)
Power supply	Check voltage on power supply. (Refer to CK 113) If voltage is not correct, replace power supply module.

10. KITS LIST


Power supply 46187114-Item
Alarm board 46187109-501
Input card
Solid state relay 46187151-50
Slot rear Cover 46187027-001
Label 46187082-001
Terminal block 46187009-513
Terminal block 46187010-506
Capstan assembly 46187012-Item
Pen carriage module 46187005-Item
Mother board assembly 46187101-507
Fluorescent light 46187085-501
Scale bracket 46187052-Item
Scale pen 46187158-Item
Scale multipoint 46187159-Item
Front label 46187084-Item
Label rack 46187130-001
(part of the Miscellaneous
hardware kit 46187250-501)
Fanfold cassette - Pen 46187039-501
Fanfold cassette - Multipoint 46187039-502
Roll chart cassette 46187087-501
Fluorescent light board kit
46187064-501
Motor assembly
46210026-Item
Door & bezel assembly
46187088-Item

10.1 ELECTRONIC PARTS

K I T S L I S T	P A R T #
-UNIVERSAL INPUT CARD (3 ANALOG WITH 2 DIGITAL INPUTS) - Solid state relays - Alarm board Note : These kits do not include the rear terminal block.	 46187151-501 46187109-501
Kit to add or replace fluorescent light module	46187064-501
Mother board ass'y	46187101-507
Universal power supply with 24 VDC output : - 85 to 264 V (Europe) - 24 VAC/DC (Europe) - 48 VAC/DC (Europe) - 85 to 264 V (U.S.)	 46187114-501 46187114-502 46187114-503 46187114-504
Upgrade software kit - Pen Upgrade software kit – Multipoint	46187120-501 46187120-502

10.2 MECHANICAL PARTS

KITSLIST	PART#
Kit bezel with door ass'y (Latch) Kit bezel with door ass'y (Key lock)	46187088-501 46187088-502
Scale mounting plate - Pen Scale mounting plate – Multipoint	46187052-501 46187052-502
Print module : - 1 pen - 2 pen - 3 pen - Multipoint	 46187005-511 46187005-521 46187005-531 46187005-561
Capstan assembly with motor - Pen Capstan assembly with motor - Multipoint Drive cable - Pen Drive cable – Multipoint	46187012-501 46187012-502 46187156-501 46187156-506
Motor assembly (except color and carriage multipoint) Motor assembly (color and carriage multipoint only)	46210026-501 46210026-502
Rear cover	46187099-501
Portable case	46187074-501
Chart cassette - Roll Chart cassette - Fan fold - Pen Chart cassette - Fan fold - Multipoint	46187087-501 46187039-501 46187039-502
Reroll tube assembly	46180048-501
Color opto gear kit – Multipoint	46187041-501
Fuse cap	46182885-501
FF Cassette Front Cover	46187007-501

10.3 MISCELLANEOUS

KITSLIST	PART#
MISCELLANEOUS	
Scale - Pen Scale- Multipoint Blank scale – Pen	46187158-item 46187159-item 46187057-002
Fluorescent tube replacement	46187085-501
Terminal bloc - Analog input Terminal bloc - Alarm output	46187009-513 46187010-506
Slot cover	46187027-100
Battery	46182069-501
PC Loader – Interface	46187121-001
Fuse : - Line voltage 1 Amp (Europe) - Line voltage 1 Amp (USA) - 24/48 V AC/DC 3.2 Amp (Europe) - 24/48 V AC/Dc 3.2 Amp (USA)	 46182886-504 46182886-503 46182886-502 46182886-501
Panel mounting kit	46187086-502
Process label : - Pen 1-2-3 - Multipoint 6 pts	 46187084-503 46187084-506
Miscellaneous kit*	46187250-501

*Miscellaneous kit 46187250-501 - contents
1. European standard fuse
2. US standard fuse
3. European fuse holder
4. US fuse holder
5. Display lens
6. Ground back shield
7. Screw for ground back shield
8. Washer
9. Display metal bracket
10. Screw for display metal bracket
11. Hinge pin
12. Slot cover
13. Lable holder
14. Pen label
15. Multipoint label
16. Kit instructions
17. Plastic bags and packaging

10.4 CONSUMABLES

Use this page (or copy) to order your consumables.

Description/Part.		Reference	Quantities	Minimum Order Qty
Pen 1 Blue (See note)		46187001-001		5
Pen 2 Red		46187001-002		5
Pen 3 Green		46187001-003		5
Ink cartridge Multipoint (6 colours)		46180501-001		2
Chart Roll	40 divisions	46187044-040		25
	50 divisions	46187044-050		5
	60 divisions	46187044-060		25
	65 divisions	46187044-065		25
	70 divisions	46187044-070		25
	75 divisions	46187044-075		25
	100 divisions	46187044-100		25
	Special	on request		100
Fanfold	40 divisions	46187045-040		25
	50 divisions	46187045-050		5
	60 divisions	46187045-060		25
	65 divisions	46187045-065		25
	70 divisions	46187045-070		25
	75 divisions	46187045-075		25
	100 divisions	46187045-100		25
	Special	on request		100
Fuse-	Universal Power Supply 85 to 264 Vac	46182886-504 (Europe: 5×20) 46182886-503 (US: 6.3×32)		10 10
Fuse - Power Supply 24 Vac/dc or 48 Vac/dc		46182886-502 (Europe: 5×20) 46182886-501 (US: 6.3×32)		10 10
Front label	1-2-3 channels	46187084-503		5
	6 channels	46187084-506		
250 Ω Shunt resistor		46181080-504		6
Note: ***As pen 1 prints all messages, it will require replacement before pens 2 or 3. It is recommended to order 3 times the quality of pen 1.***				

For the best product performance Honeywell recommends the use of Honeywell charts and pens, use of other manufacturer's charts and pens may degrade product performance.

SIKKERHEDSKRAV

DA2I-6001

For at undgå elektrisk stød med mulighed for personskade, skal alle sikkerhedsbestemmelser i denne manual følges nøje.

Beskyttende jordterminal. Terminalen er forberedt for og skal forbindes til beskyttelses-jordledning i henhold til staerkstrømsbekendtgørelsen (DK).

- Hvis udstyret ikke bruges som specificeret i manualen, kan den beskyttelse udstyret yder blive nedsat eller forsvinde.
- Erstat kun komponenter som udtrykkeligt er specificeret som udskiftelige i manualen.
- Al ledningsforbindelse skal følge strækstrømsbekendtgørelsen (DK) og udføres af autoriseret erfarent personel.
- Den beskyttende jordterminal skal forbindes først af alle forbindelser (og fjernes som den sidste).
- Jvf. stærkstrømsreglementet skal der installeres en afbryder til forsyningssapændingen nær udstyret.
- Hver leder skal have ekstra beskyttelse ifølge stærkstrømsbekendtgørelsen (DK).

UDSTYRS SPECIFIKATIONER

Strømforsyning : 85 til 264 V AC
Frekvens : 50/60 Hz
Effektforbrug : 55 VA max.

OMGIVELSES SPECIFIKATIONER

Placer ikke udstyret i nærheden af brandbare væsker eller dampe.

Fugtighed	Rullepapir	10 - 90 % RH ikke kondenserende
	Foldepapir	15 - 80 % RH ikke kondenserende
Temperatur	Drift	0 til 50° C (32 til 120° F)
	Opbevaring	-40 til 70° C (-40 til 160° F)
Vibrationer	Frekvens	10 til 60 Hz, amplitude 0.07 mm
		60 til 150 Hz, acceleration 1 g

UDSTYRS INSTALLATION

Skriveren skal monteres i en tavle for at forhindre adgang til bagterminaler.
(Maksimal tavletykkelse 15 mm)

INSTRUKTION FOR RENGØRING

Brug kun en tør bomuldklud til rengøring af udstyret.

UDSKIFTNING AF SIKRING

Sikring : For at forebygge brand, vær sikker på at sikringen opfylder kravene til strøm, spænding og karakteristik. Sluk for spændingen før sikringen udskiftes. Brug ikke en sikring af anden type.

VEILIGHEIDSVEREISTEN

DU2I-6002

Ter vermindering van het gevaar van elektrische schokken die lichamelijk letsel kunnen veroorzaken, dient u alle veiligheidsaanwijzingen in dit dokument te volgen.

Beschermende aarde-aansluiting. Bestemd voor aansluiting van de aardingsdraad van de voeding.

- Indien de apparatuur wordt gebruikt anders dan door de fabrikant gespecificeerd, kan de bescherming, die de apparatuur biedt ongedaan worden gemaakt.
- Alleen die onderdelen mogen worden vervangen die door de fabrikant als uitwisselbaar zijn aangemerkt.
- Alle bedrading moet in overeenstemming zijn met plaatselijke standaards en zijn uitgevoerd door geautoriseerd ervaren personeel.
- De aardingsdraad moet worden aangesloten vóórdat alle andere bedrading wordt aangesloten (en als laatste worden verbroken).
- Een schakelaar in de netstroomtoevoer is vereist, vlakbij het instrument.
- Elke stroomdraad moet beveiligd zijn met een zekering gelijkwaardig aan zowel de recorderzekering (zekering type) als die van de zekeringhouder.

Apparatuur voorwaarden

Aansluitspanning: 85 tot 264 V AC
Frequentie: 50/60 Hz
Toegestane belasting: 55 VA max.

Omgevingscondities

Gebruik het instrument niet in de aanwezigheid van ontvlambare vloeistoffen of dampen. Het gebruik van elk elektrisch instrument in een dergelijke omgeving vormt een gevaar voor uw veiligheid.

Relatieve vochtigheid	Rol	10 tot 90 % RH niet condenserend
	Vouwkaart	15 tot 80 % RH niet condenserend
Temperatuur	Omgevingstemp.	0 tot 50° C (32 tot 120° F)
	Opslag	-40 tot 70° C (-40 tot 160° F)
Trillingen	Frequentie	10 tot 60 Hz, amplitude 0.07 mm
		60 tot 150 Hz, versnelling 1 g

Montage van de apparatuur

De recorder moet worden gemonteerd in een paneel om de toegankelijkheid tot de achterste aansluitpunten te beperken (paneeldikte maximaal 15 mm)

Schoonmaken

Alleen een droge katoenen doek gebruiken voor het schoonmaken van het instrument.

Vervanging van verbruiksmaterialen

Zekering: ter voorkoming van brand dient u de zekering met de gespecificeerde standaard te gebruiken (stroom spanning, type). Voor u de zekering vervangt moet u de netspanning uitschakelen en de stroomtoevoer onderbreken. Gebruik geen andere zekering en sluit de zekeringhouder niet kort.

TURVALLISUUSMÄÄRÄYKSET — FI2I-6002

Noudata tämän ohjeen kaikkia turvaohjeita välttääksesi sähkötapaturman vaaraa.

Suojamaaliitin. Kytke maadoitusjohdin tähän liittimeen.

- Jos laitetta käytetään olosuhteissa, joihin sitä ei ole suunniteltu, käyttöturvallisuus voi heikentyä.
- Älä vaihda mitään komponettia tai osaa, jota valmistaja ei ole määritellyt käyttäjän vaihdettavaksi.
- Johdotukset on tehtävä noudattaen paikalllisia määräyksiä ja tekijällä on oltava riittävä ammattitaito.
- Ensimmäiseksi on kytkettävä suojamaa-liitin (ja viimeiseksi irroittettava).
- Syöttöjännitekytkin on sijoitettava lähelle laitetta.
- Suojaa johtimet asianmukaisilla sulakkeilla.

LAITTEEN VAATIMUKSET

Syöttöjännite: 85 ... 264 V AC
Taajuus: 50/60 Hz
Tehonkulutus: 55 VA max.

KÄYTTÖOLOSUHTEET

Älä käytä laitetta paikassa jossa on syttyviä nesteitä tai kaasuja, koska laitteen käyttö aiheuttaa räjähdysvaaran.

Kosteus	Rulla	10 ... 90 % RH non condensing
	Laskostuva	15 ... 80 % RH non condensing
Lämpötila	Käyttö	0 ... 50 ast. C (32 ... 120 ast. F)
	Varastointi	-40 ... 70 ast. C (-40 ... 160 ast. F)
Tärinä	Taajuus	10 ... 60 Hz, amplitude 0.07 mm
		60 ... 150 Hz, kiihtyvyys 1 g

LAITTEEN ASENNUS

Piirturi on asennettava paneeliin siten, että peräliittimille jää riittävästi tilaa.
(Paneelin maksimi paksuus 15 mm)

PUHDISTUSOHJEET

Käytä vain kuivaa puuvillakangasta laitteen puhdistukseen.

KULUTUSOSIEN VAIHTAMINEN

Käytä aina oikean tyyppistä sulaketta (virta, jännite, tyyppi). Katkaise syöttöjännite laitteesta ennen sulakkeen vaihtoa. Älä käytä ohjeista poikkeavaa sulaketta tai oikosulje sulakepesää.

Instruções de segurança — PO2I-6001

⚠ Para reduzir o risco de choque eléctrico que pode causar danos corporais, seguir todas as normas de segurança contidas nesta documentação.

⏚ Terminal de protecção de terra. Fornecido para ligação do condutor do sistema da protecção de terra.

- Se este equipamento for usado de modo não especificado pelo fabricante, a protecção fornecida pelo equipamento pode não ser adequada.
- Não se deve substituir qualquer componente (ou peça) que não seja explicitamente especificado como substituível pelo nosso revendedor.
- Toda a cabelagem tem que estar de acordo com as normas locais e deve ser conduzida por pessoal autorizado com experiência.
- O terminal de terra deve ser ligado antes de ser feita qualquer outra cabelagem (e desligado em último lugar).
- Deve haver um interruptor da alimentação principal junto do equipamento.
- Cada fio deve estar protegido com um fusível equivalente ao do Registador (tipo de fusível), o mesmo se aplicando ao suporte do fusível.

Especificações do Equipamento

Voltagem: 85 a 264 Vca
Frequência: 50/60 Hz
Potência ou consumo de Corrente: 55 VA max.

Condições Ambientais

Não operar o instrumento na presença de líquidos ou vapores inflamáveis. A operação de qualquer instrumento eléctrico em tal ambiente constitui um perigo para a segurança.

Humidade	Rolo	10 a 90 % RH não condensado
	Leque	15 a 80 % RH não condensado
Temperatura	Ambiente	0 a 50º C (32 a 120º F)
	Armazenagem	-40 a 70º C (-40 a 160º F)
Vibrações	Frequência	10 a 60 Hz, amplitude de 0.07 mm
		60 a 150 Hz, 1g de aceleração

Instalação do Equipamento

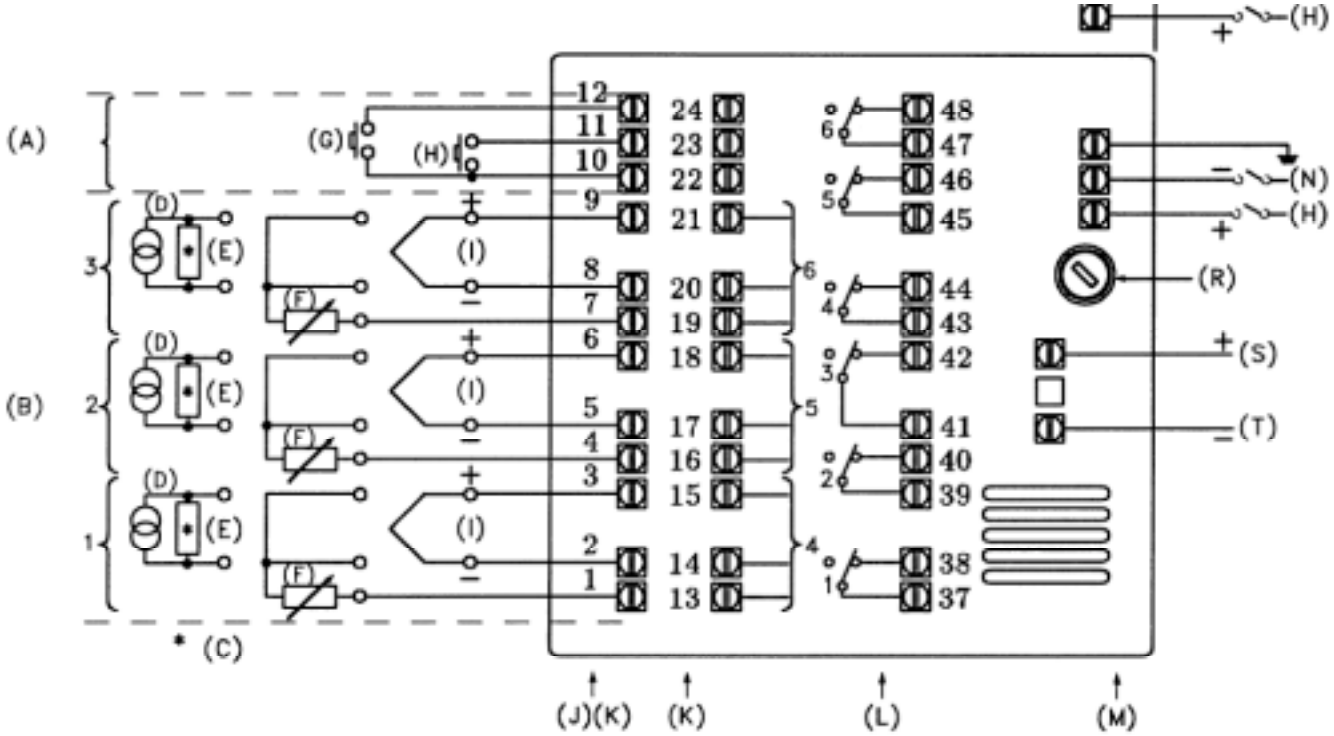
O Registador deve ser montado num painel para limitar o acesso do operador aos terminais traseiros (espessura máxima do painel 15 mm).

Instruções de Limpeza

Usar apenas um cotonete seco para limpar a unidade.

Substituição de Consumíveis

Fusível: Para evitar um incêndio certifique-se de que usa um fusível com especificações standard (voltagem, corrente, tipo). Antes de substituir o fusível, desligue a alimentação e desligue os fios da fonte de alimentação. Não usar fusíveis diferentes ou fazer curto circuito do suporte de fusível.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PO

(A) Entradas lógicas
(B) Entradas analógicas
(C) mA
(D) 250 ohms
(E) RTD
(F) L2
(G) L1
(H) T/C, mV, V
(I) Entradas analógicas para registador de caneta
(J) Entradas analógicas para registador multiponto
(K) 7 a 12 saídas de alarme
(L) 1 a 6 saídas de alarme ou 1 a 2 saídas corrente
(M) Fonte de alimentação
(N) L2/N
(O) 24 V ca/cc
(P) 48 V ca/cc
(Q) 100 a 240 V ca/cc
(R) Fusível de 100 a 240 V ca = 1 A
24 ou 48 V ca/cc = 3.2 A
(S) Saída de 24 V cc
(T) Máximo de 75 mA
(U) Gerador externo
(U1) OUT 2
(U2) 0 V
(U3) OUT 1
(U4) 24 V DC max.
(V) Gerador interno
(V1) +12 V
(W) L3
(X) L4

DU

(A) Logische ingangen
(B) Analoge ingangen
(C) mA
(D) 250 ohm
(E) RTD
(F) L2
(G) L1
(H) T/C, mV, V
(I) Analoge ingangen, pen recorder
(J) Analoge ingangen, meerpunts recorder
(K) 7 tot 12 alarm uitgangen
(L) 1 tot 6 alarm uitgangen of 1 tot 2 stroom uitgangen
(M) Netvoeding
(N) L2/N
(O) 24 V AC/DC
(P) 48 V AC/DC
(Q) 100 tot 240 V AC/DC
(R) Zekering 100 tot 240 V AC = 1 A
24 of 48 V AC/DC = 3.2 A
(S) 24 V DC uitgang
(T) 75 mA max.
(U) Externe generator
(U1) OUT 2
(U2) 0 V
(U3) OUT 1
(U4) 24 V DC max.
(V) Interne generator
(V1) +12 V
(W) L3
(X) L4

GR

(A) ΛΟΓΙΚΗ ΕΙΣΟΔΟΣ
(B) ΑΝΑΛΟΓΙΚΗ ΕΙΣΟΔΟΣ
(C) mA
(D) 250 ohms
(E) RTD
(F) L2
(G) L1
(H) T/C, mV, V
(I) ΑΝΑΛΟΓΙΚΕΣ ΕΙΣΟΔΟΙ ΚΑΤΑΓΡΑΦΙΚΗΣ ΠΕΝΝΑΣ
(J) ΑΝΑΛΟΓΙΚΕΣ ΕΙΣΟΔΟΙ ΚΑΤΑΓΡΑΦΙΚΟΥ ΠΟΛΛΑΠΛΩΝ ΕΓΓΡΑΦΩΝ
(K) 7 - 12 ΣΥΝΑΓΕΡΜΟΙ ΕΞΟΔΟΥ
(L) 1 - 6 ΣΥΝΑΓΕΡΜΟΙ ΕΞΟΔΟΥ Η' 1 - 2 ΡΕΥΜΑΤΑ ΕΞΟΔΟΥ
(M) ΤΡΟΦΟΔΟΣΙΑ
(N) L2/N
(O) 24 V AC/DC
(P) 48 V AC/DC
(Q) 100 - 240 V AC/DC
(R) ΑΣΦΑΛΕΙΑ
(S) ΕΞΟΔΟΣ ΣΥΝΕΧΗΣ ΤΑΣΗΣ
(T) ΕΞΩΤΕΡΙΚΗ / ΕΣΩΤΕΡΙΚΗ ΤΡΟΦΟΔΟΣΙΑ
(U) ΕΞΩΤΕΡΙΚΗ ΓΕΝΝΗΤΡΙΑ
(U1) OUT 2
(U2) 0 V
(U3) OUT 1
(U4) 24 V DC max.
(V) ΕΣΩΤΕΡΙΚΗ ΓΕΝΝΗΤΡΙΑ
(V1) +12 V
(W) L3
(X) L4

DA

(A) Logiske indgange
(B) Analoge indgange
(C) mA
(D) 250 Ohm
(E) RTD (PT 100)
(F) L2
(G) L1
(H) T/C, mV, V
(I) Analoge indgange linieskriver
(J) Analoge indgange multipunktskriver
(K) 7 til 12 alarm udgange
(L) 1 til 6 alarm udgange eller 1 til 2 strømudgange
(M) Strømforsyning
(N) L2/N
(O) 24 V AC/DC
(P) 48 V AC/DC
(Q) 100 - 240 V AC/DC
(R) Sikring 100 - 240 V AC = 1 A
24 eller 48 V AC/DC = 3.2 A
(S) 24 V DC udgang
(T) 75 mA max.
(U) Extern generator
(U1) OUT 2
(U2) 0 V
(U3) OUT 1
(U4) 24 V DC max.
(V) Intern generator
(V1) +12 V
(W) L3
(X) L4

FI

(A) Logiikkatulot
(B) Analogiatulot
(C) mA
(D) 250 ohms
(E) RTD
(F) L2
(G) L1
(H) T/C, mV, V
(I) Analogiatulot kynäpiirturi
(J) Analogiatulot monipistepiirturi
(K) 7 ... 12 hälytyslähdöt
(L) 1 ... 6 hälytyslähdöt tai 1 ... 2 virtalähdöt
(M) Jännitelähde
(N) L2/N
(O) 24 V AC/DC
(P) 48 V AC/DC
(Q) 100 ... 240 V AC/DC
(R) Sulake 100 ... 240 V AC = 1 A
24 tai 48 V AC/DC = 3.2 A
(S) 24 V DC lähtö
(T) 75 mA max.
(U) External generator
(U1) OUT 2
(U2) 0 V
(U3) OUT 1
(U4) 24 V DC max.
(V) Internal generator
(V1) +12 V
(W) L3
(X) L4

Sales and Service

For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below.

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