KONICS

KM-9617

KA-100P

100mmWidth Recorder

Instruction Manual

KONICS CO.,LTD.

KA-100P

100mmWidth Recorder

Instruction Manual

1. Certification of products

This machine has been fully inspected at the factory. Check if there is any inferior parts or damages by confirming the parts, external appearance and operation check.

If there is any uncertain matter, contact at the purchase store or this company.

1-1. Parts

This machine has the followings parts

* 1Pen specification	
1. Attached metal ····· 1	5. Record card ····· 1
2. Instruction manual 1	6. Pen(red) ····· 1
3. Record paper ····· 2	
4. Fuse ····· 1	
* 2Pen Specification	
1. Attached metal ····· 1	5. Record card ····· 1
2. Instruction manual 1	6. Pen(red) ····· 1
3. Record paper ····· 2	7. Pen(green) ····· 1
4. Fuse ····· 1	
* 3Pem Specification	
1. Attached metal ····· 1	5. Record Card ····· 1
2. Instruction manual 1	6. Pen(red) ····· 1
3. Record paper ····· 2	7. Pen(green) ····· 1
4. Fuse ····· 1	8. Pen(blue) ····· 1

Table 1.1

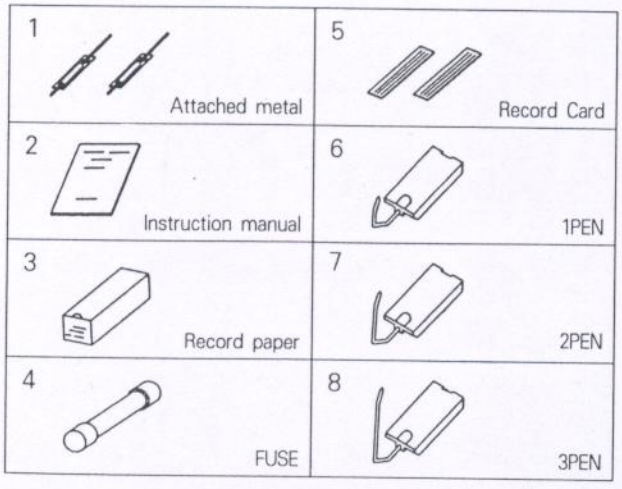


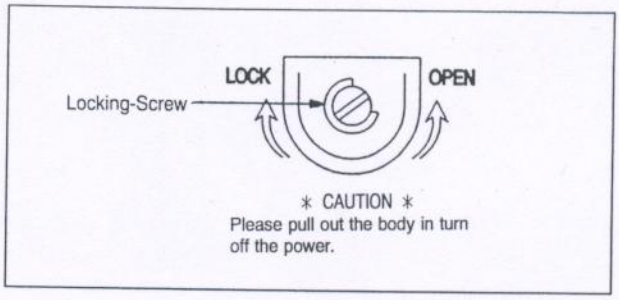
Fig 1.1

1-2 Handling of Locking Screw

This machine is fixed by locking screw, its vibration during transport is protected, so do not loosen the locking screw.

The locking screw is in the cassette of this machine. Shift it by driver.

Fig 1.2



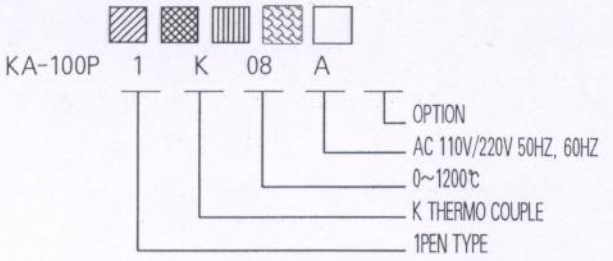
1-3 Certification of specification

The form and name are listed on the rated plate (See the bottom-side drawing 1.3 after ejecting the cassette). Confirm if it is made according to the ordered specification. For any inquiry in form the model, in form us the mfg. no.

■ MODEL NUMBER CODE

Model		CODE	KA-100P
Type		1 2 3	1 Pen 2 Pen 3 Pen
Input	Current	A F	4~20mA DC 0~20mA DC
	Voltage	G H I L M	0~10mV 0~100mV 0~1V 0~5V 1~5V
	Thermo Couple	R S B K E J T X P Z	01 : 0~1400 02 : 0~1600 08 : 800~1600 01 : 0~1400 02 : 0~1600 11 : 500~1800 12 : 600~1800 03 : 0~400 05 : 0~600 06 : 0~800 08 : 0~1200 01 : 0~150 02 : 0~300 03 : 0~200 06 : 0~400 09 : 0~800 02 : 0~200 03 : 0~300 15 : 50~150 (WRe5-26) 05 : 0~2000 06 : 0~2300 (Pt100Ω)00 : 0~50 01 : 0~100 03 : 0~150 04 : 0~200 06 : 0~300 07 : 0~400 41 : 50~50 42 : 50~100 Other
Power		A Z	AC110V/220V/60HZ/50HZ
Option		1 2 3	1Pen Hi/Low ALARM 2Pen Hi/Low ALARM 3Pen Hi/Low ALARM

■ ORDERING CODE EXAMPLE



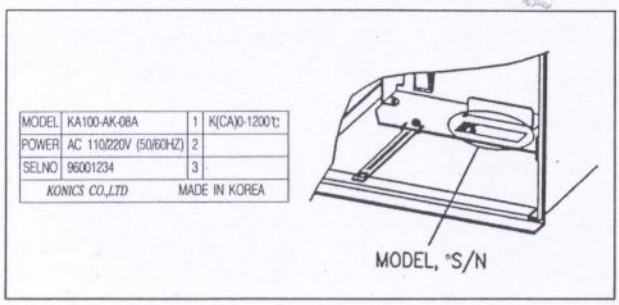


Fig 1.3

2. OUTLINE

KA-100P recorder is a panel mount type of automatic balance recorder with 100mm width of DIN size, being compact, light-weighted and easy to handle.
The kinds of it are 1,2,3pen. As it is possible to fit for user's specification, so it is available to any field.

2-1 Features

1) It is compact and light, so easy to be installed at the calculating equipment.
2) Fiber tip pen is available, so ink is exchangeable without being dirty.
3) Chart cassette type makes possible to easily confirm the recording condition during record.
4) Input kinds are various, so it can be easily fit for user's specification
5) Chart speed range is wide. (8 kinds)
6) It is possible to stably use for a long time.
7) Alarms are various.

2-2 Specification

Recording type : Automatic balance type consecutive pen recording 1,2,3 pen specification

Standard input :

Direct current ····· 4~20mA, 0~20mA
(Load resistance 250Ω)
Direct voltage over ····· 10mV, within 10V
Ther moelectrical zones.
Thermoelectrical zones ····· R ····· over 800℃
S ····· over 1000℃
B ····· over 1200℃
K ····· over 300℃
E ····· over 150℃
J ····· over 200℃
T ····· over 100℃
Wre5-26 ····· over 2000℃
RTD ····· Pt 100Ω
····· over 0~50℃

Standard Scale : Table 2.1

Input		Scale
Direct current, Voltage		10, 100, 100%, 14pH, 40, 50, 60, 70, 75
Thermocouple	R	0-1400, 0-1600, 800-1600℃
	S	0-1400, 0-1600℃
	B	500-1800, 600-1800℃
	K	300, 400, 500, 600, 800, 1000, 1200℃
		500-1200℃
	E	0-150, 0-300℃
	J	200, 300, 400, 600, 800℃
	T	200, 300, 50-150℃
Thermocouple Wre5-26		2000, 2300
RTD Pt 100Ω		50, 100, 150, 200, 300, 400, 500
		-100-100, -100-50, -50-50, 20-80℃

Table 2.1

Synthetic indication precision :
±0.5%F.S within(23 ±2C, 55 ±10%RH)
Temperature drift : ±0.3% 10deg F.S within
Humidity drift : ±0.1%F.S within
Input resistance : 1MΩ over
Tolerant signal source resistance :
Direct voltage ····· 10kΩ below
Thermocouple ····· 10kΩ below(No Burnout)
200Ω below(Burnout)

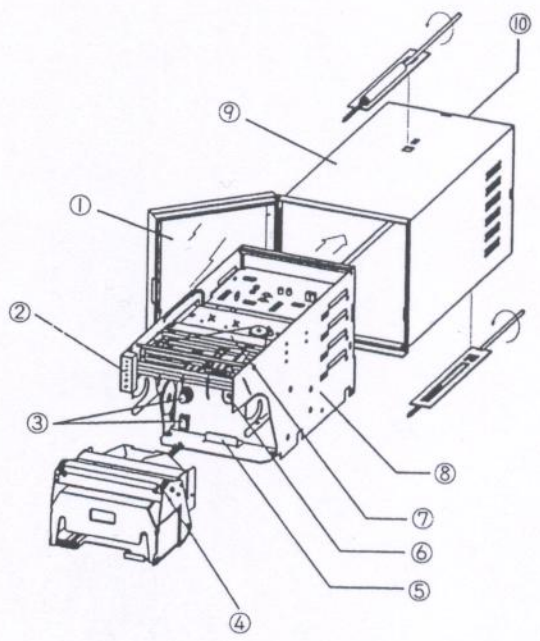
Resistance Temperature Detetor
..... below 10Ω per one line
Removal rate of Common mode : 140dB
(CMRR)
Removal rate of Normal mode : 50dB
(NMRR)
Balance time : Full Scale 1Sec within
Recording paper : Valid recording width 100mm
Full length 9mX2
Folding Pitch 40mm
Recording score : 3kinds of 1, 2, 3, Pen
Recording Pen : 1Pen ..... red
2Pen ..... green
3Pen ..... blue
Recording paper transmitting speed :
10, 20, 40, 80, 160, 320, 640, 1280, mm/Hr
Recording paper transmitting speed :
±0.3% precision
Power voltage : AC 110V, 220V
(Tolerant voltage change should be within ±10% of nominal voltage)
Power source frequency : 50 or 60HZ
Consumed power : 1Pen ..... appr 6VA
2Pen ..... appr 9VA
3Pen ..... appr 15VA
Insulation resistance :
Measuring terminal : between grounding terminals over DC250V 50MΩ
Power source terminal : between grounding terminals over DC500V 100MΩ
Anti-voltage :
Measuring terminal ..... : between grounding terminals for 1 minute a 1000V
Measuring terminal ..... : between grounding terminals for 1 minute at AC1500V
Used temperature ..... : 0~50℃
Used humidity ..... : 35~85%RH
Storage temperature .. : -30~70℃
Storage humidity ..... : 30~90%RH
External dimension ..... : 144W×144H×200D mm
External coating ..... : Black case

Weight : 1Pen ..... 3.0Kg appr
2Pen ..... 3.3Kg appr
3Pen ..... 3.8Kg appr
Installation type : Panel purchase type
Panel Cut 138×138mm
Option : See table 2.2

ALARM	
1Pen	Hi/Low
2Pen	Hi/Low
3Pen	Hi/Low
Setting precision	±0.5%max.
Contacting point capacity :	AC 110V 1A (resistive load)

Table 2.2

2-4 Name of each part



①DOOR	⑥FIXED BODY BOLT
②KEY AND DISPLAY	⑦PRINT HEAD
③POWER SWICH AND FUSE	⑧BODY
④CHART CARTRIGE	⑨CASE
⑤PULL LEVER	⑩TERMINAL PLATE

Fig 2.1

Display Name

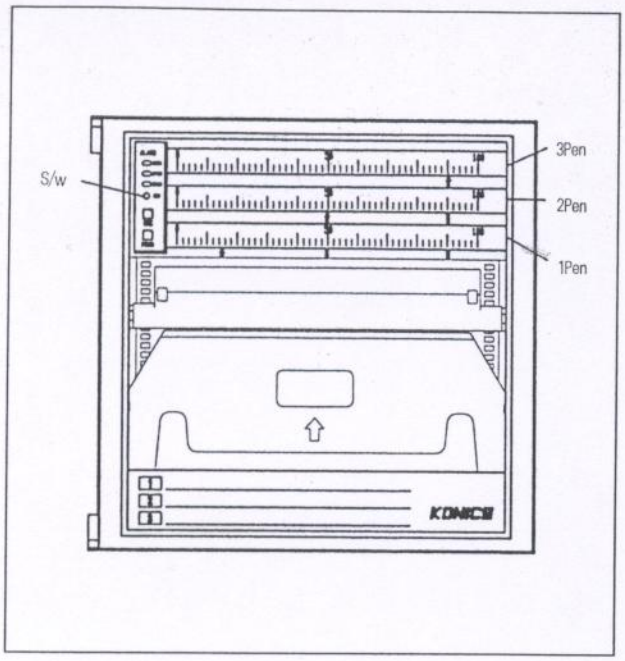


Fig 2.2

Chart-speed

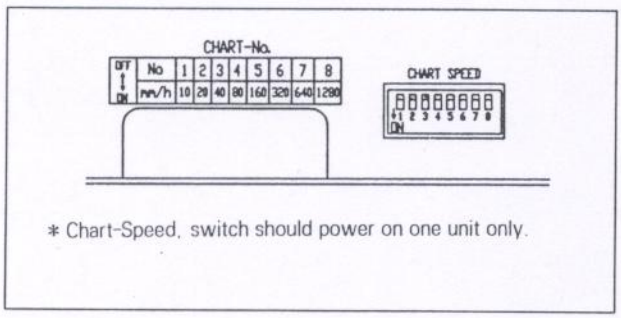


Fig 2.3

3. Installation

3-1 Panel cutting method of external dimension

External diagram specification

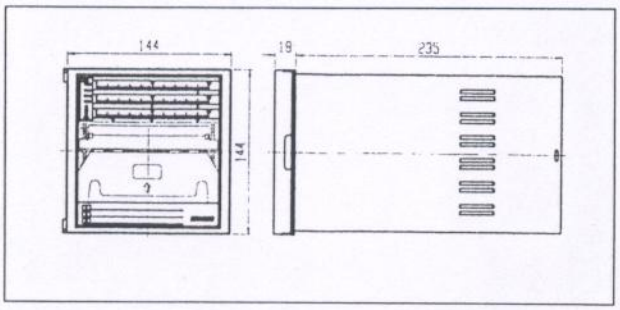


Fig 3.1

Panel Cut

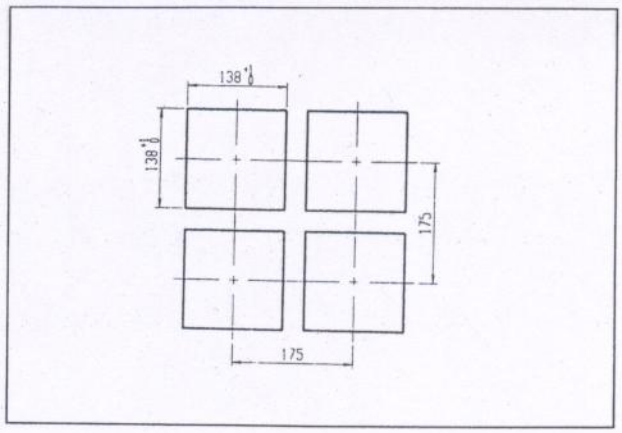


Fig 3.2

3-2 Handling place

Please install this machine at the following place.

1) Place with little changeable or constant temperature
2) Place not receiving a high radiant heat
3) Place without mechanical vibration
4) Place without erosive gas
5) Place without oiliness
6) Place within the range of humidity 35 to 85%
7) Place without electrical noise

3-3 Installation method

1) Use over 2-mm iron plate as a panel
2) Put this machine in the front side of panel
3) In sert the metal parts at the holes of bottom or left, right side of the body, tighten them with screw.

See the following figure 3.3

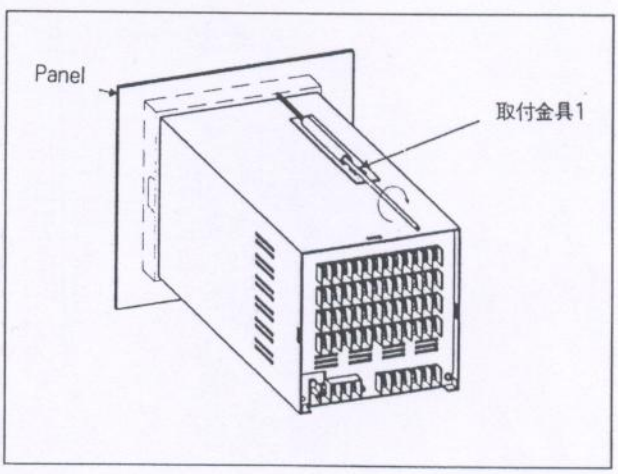


Fig 3.3

4. Wiring

4-1 Caution in wiring

1) Check if the power source switch of this machine is off
2) At the electrical wiring, use JIS C3307 600V viny insulated electrical wire or the wire with the capacity over it.
3) In connecting it a terminal, use a compressed terminal.
4) In case of thermocouple input, use an extension wire for each thermocouple.
5) Remove the wire of input terminal from the power source and grounding source.

4-2 Terminal Board

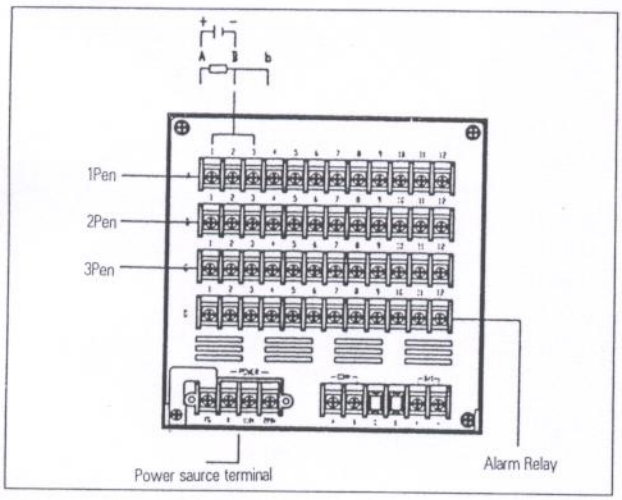


Fig 4.1

4-3 Wiring of input terminal

Wire after checking the polarity of input terminal.

1) Thermocouple voltage, Current in put.

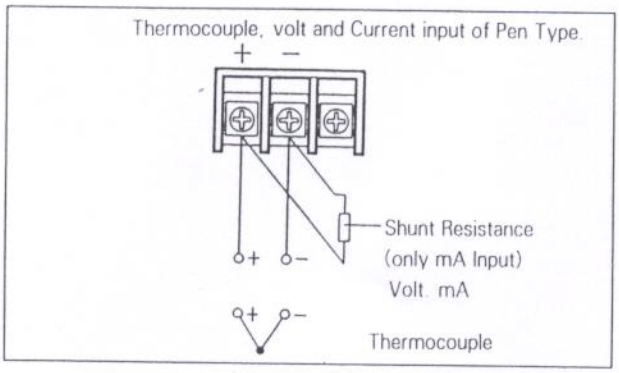
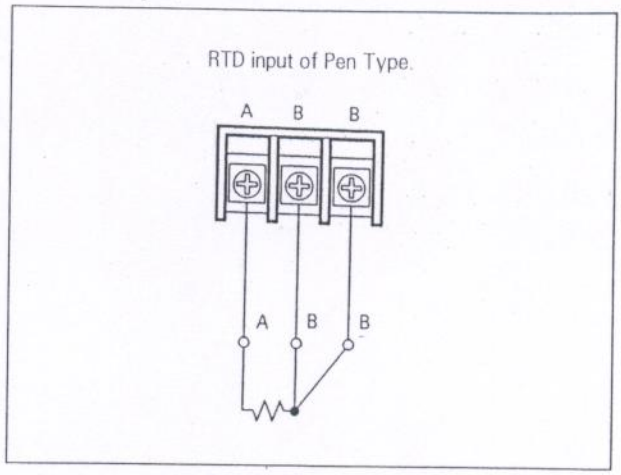


Fig 4.1

2) R.T.D In put



Note : In inputing current, attach shunt resistance 250Ω.

Fig 4.2

4-4 Wiring of power terminal

Wire after checking the power source voltage.

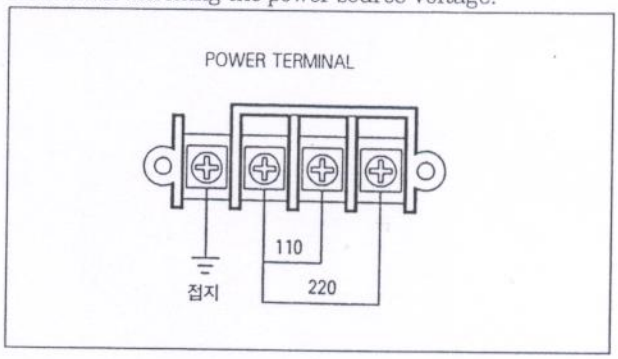


Fig 4.3

5. Operation · Working

5-1 Before working

1) Check if there is any wrong point in wiring.
2) Check the power voltage.
3) prepare it according to the following matters.

5-2 Pulling method of Cassette

1) Open the door by hanging a finger on the central grove at the right side of the door and pulling
2) Push and pull forward the output lever at the left bottom part of cassette referring to fig 5.1.

Refer to the following figure.

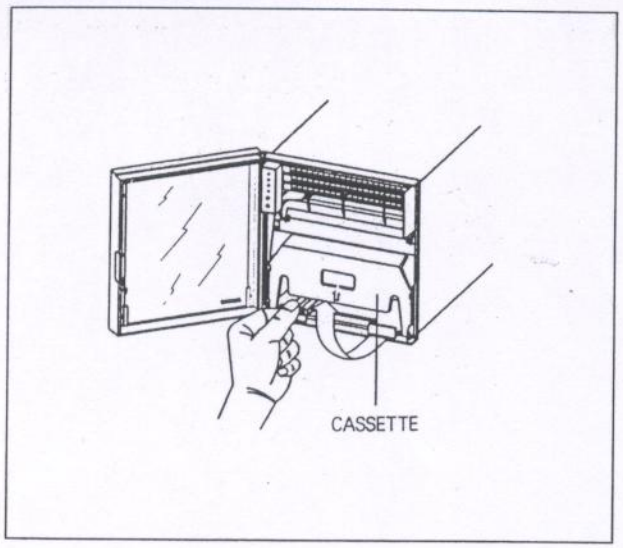


Fig 5.1

5-3 Inserting method of recording paper (exchanging)

5-3-1 Cassette names

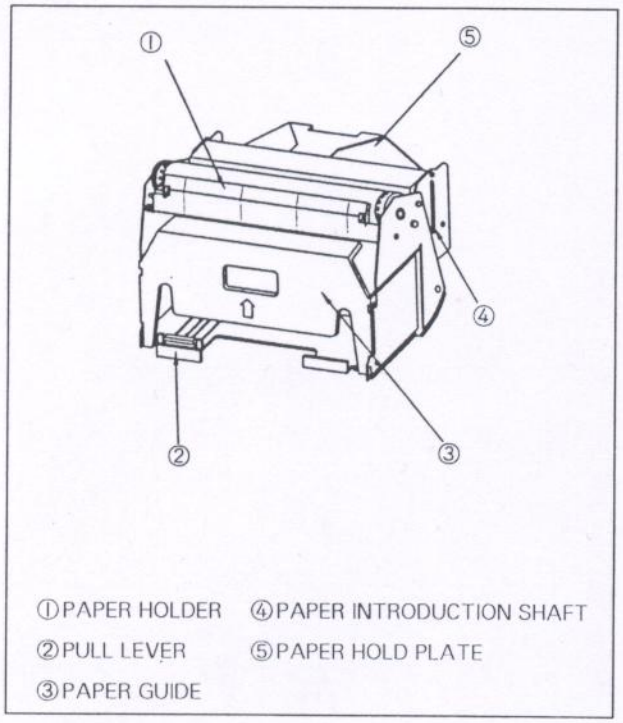


Fig 5.3

5-3-2 Exchanging method of recording paper.

Open the paper guide as fig. 5.4 take out the used recording paper.

The order is 1⇒2⇒3⇒4

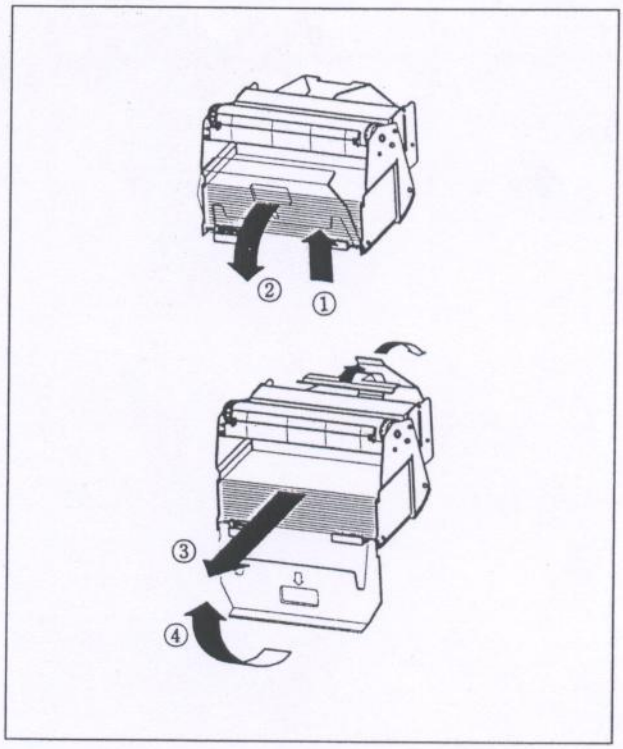


Fig 5.4

5-3-3 Inserting method of recording paper

1) As fig 5.5, completely pull "2" Paper support plate back, put "3" paper guide shaft over, then insert it at the receipt part of "1".

* Before inserting, shake off the paper tens of times, insert it

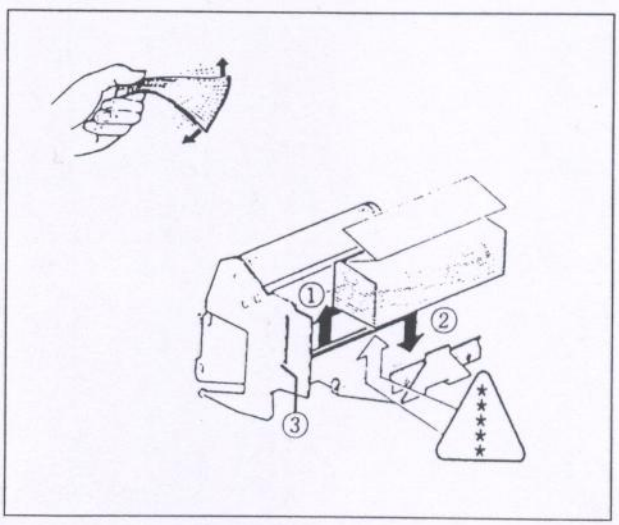
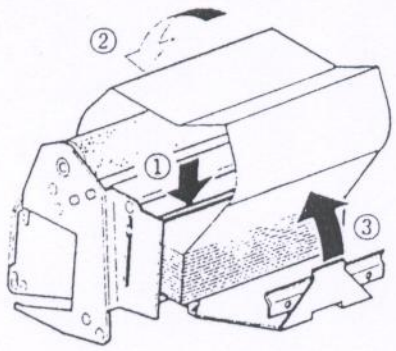


Fig 5.5

2) Pull forward the recording paper 20cm as figure 5.6, hang it on paper holder and roller hole as "2" and insert the recording paper.
Return "3" paper support plate to the original place.



* Insert to direction of recording paper

Fig 5.6

3) Lightly pull paper guide to the recording paper as fig 5.7 check if the recording paper is being folded by 2-3 time rotating drum.

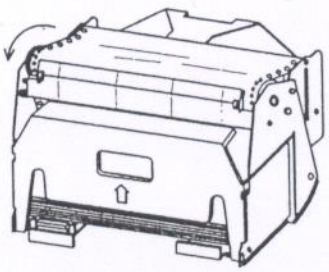


Fig 5.7

4) Put in chart cassette fit for the body groove hole as fig 5.8

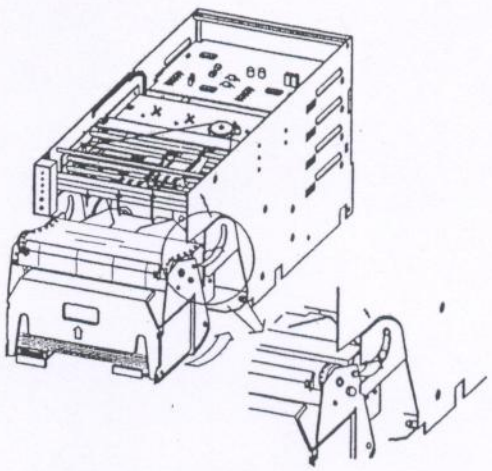
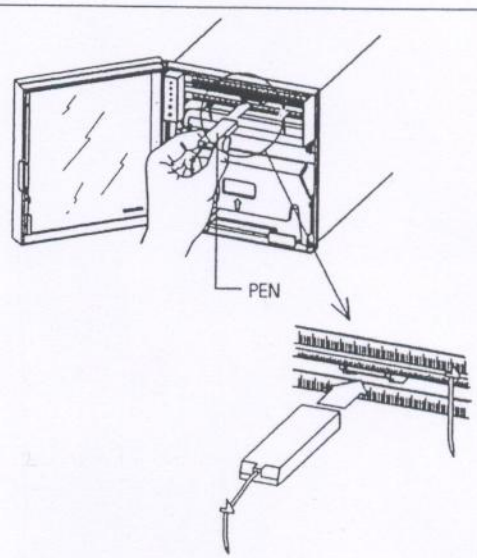


Fig 5.8

5-4 Inserting method of pen

1) Remove pen cap, equip it to pen carriage by slightly lifting character plate.

* In removing pen, lift character plate, pull forward pen.



* When it does not use, cover the cap to protect drying of pen tip.

Fig 5.9

5-5 Working

1) Draw out cassette referring to 5.2 with drawing method of cassette.
2) Change it to the required chart-speed referring to fig 5.8

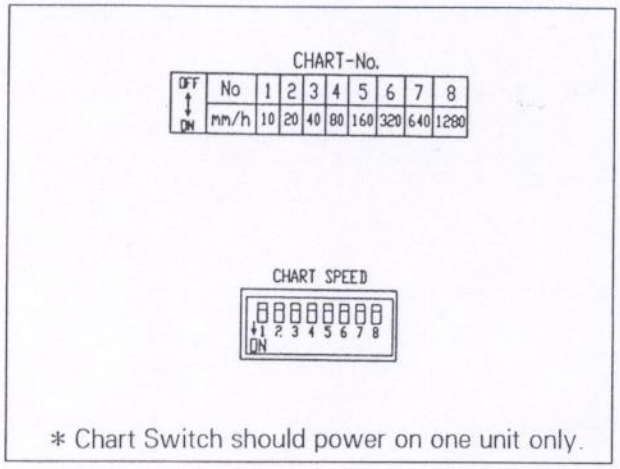


Fig 5.8

3) Turn on power switch referring to fig 5.9
(Switch on the power, then insert cassette)

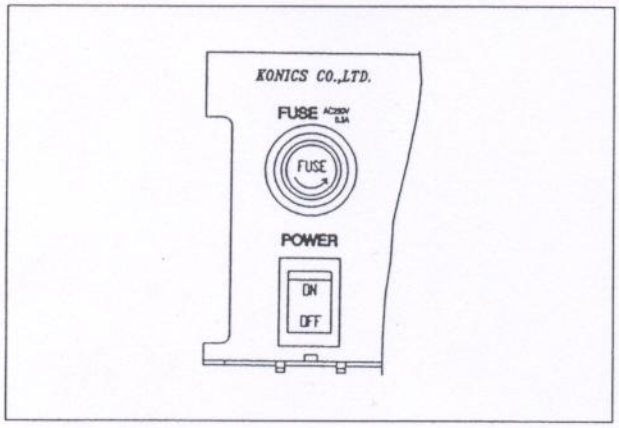
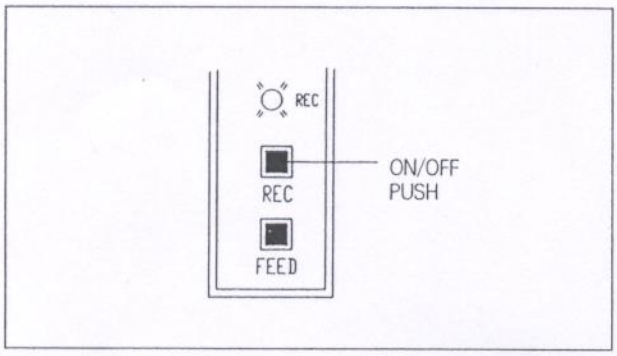


Fig 5.9

4) Turn on REC S/W referring to fig 5.10(REC-Lamp will be on).



Fing 5.10

5) Check if the recording paper is transferred by pushing Feed S/W.

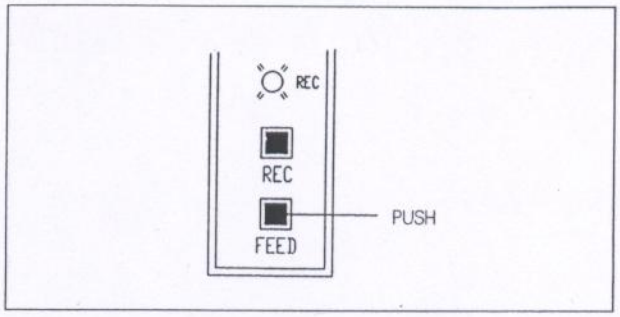


Fig 5.11

6) From that time, power is put in servo-amp.
7) In indicating, when pushing REC S/W one more, REC-Lamp is off, the transfer of recording paper is stopped.

5-6 Certification of record

It is possible to confirm the record without stop.

1) Open Chart paper guide to the front.
(When pulling paper holder, it is not possible to constantly record, so do not pull it.)

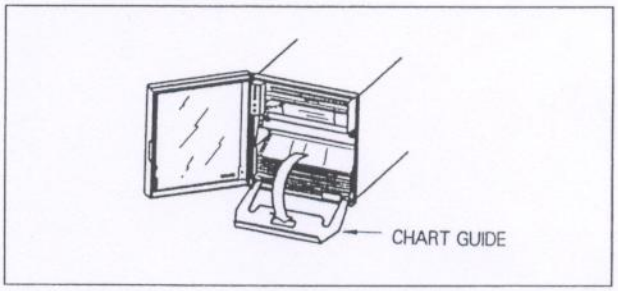


Fig 5.12

2) Remove the recording paper from chart cassette. It is possible to confirm the recorded data.
(After confirmation, fold the recording paper, return it to the original place, close chart guide.)

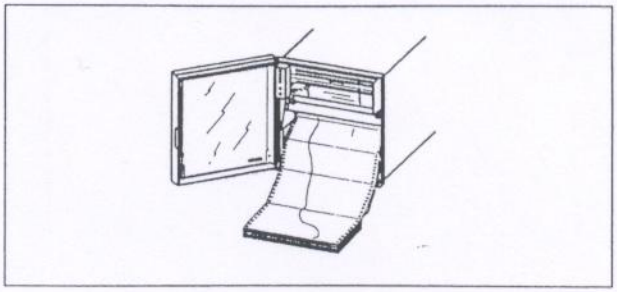


Fig 5.13

6. Maintenance · Check

6-1 Routine check

Regularly check the operation condition of this machine, use it at a good condition.

Refer to the following paragraphs, exchange the parts requiring change.

1) Are the indication and record normally operated?
2) Is the recording paper normally transferred without being pressed down?
3) Is the recording line well drawn?
   * If the problems as above happen, exchange pen. Refer to the inserting method of 5-4 as exchanging method.
4) Does the recording paper remain?
   * When the recording paper remains little, a red ending mark is indicated at the left side, so exchange a new recording paper for it.
5) Clean shaft with a small amount of oil one time a year.

7. Scale correction

Regularly annually correct and adjust the scale to maintain the precision of this machine.

7-1 Scale correction of direct current, voltage

1) Connect as fig 7.1 using direct current and voltage generator(STD generator).
2) Warm up for appr. 30 minutes with Rec-switch off (lamp-off).
3) Add the voltage, current equivalent to the scale with standard generator.
4) If the difference of indication value of added current and voltage does no exceed 0.5% of full scale, it is normal, if not, adjust the scale.

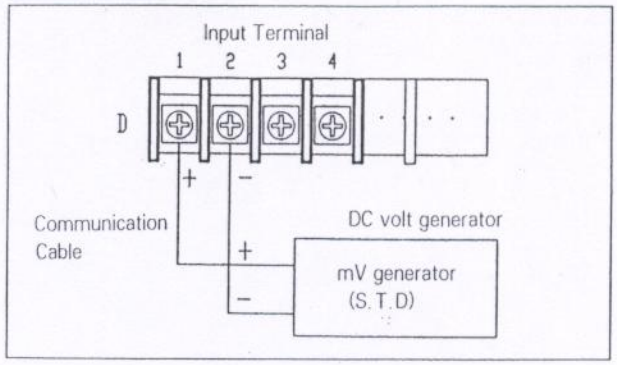


Fig 7.1

7-2 The scale correction of direct voltage, current

1) Carry it out as the method of 7-1 1)~2).
2) Adjust with trimmer referring to fig 7.2.
3) Adjust it with zero trimmer to adapt the indication to the position of left scale by adding a considerable Voltage to minimum scale value from direct voltage generator.
4) Adjust it with span trimmer to adapt the indication to the position of left scale by adding a considerable voltage to minimum scale value from direct voltage generator.
5) When adjusting span, the position of zero adjustment deviates a little, so adjust it by operating many times until the adjustment of 3.4 is within precision.

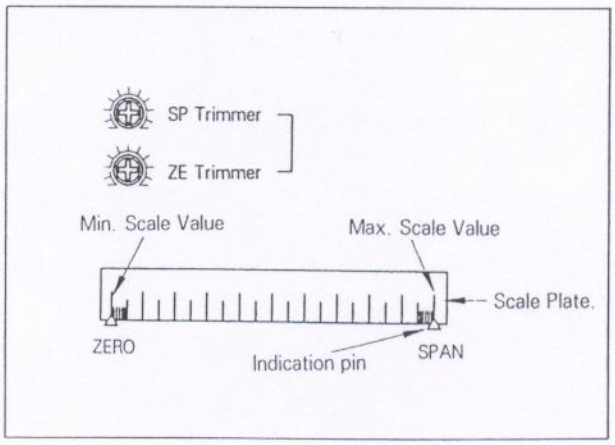


Fig 7.2

7-3 Scale correction of thermocouple input

1) Connect it as fig 7.3 using direct voltage, current generator(STD generator)
   At this time, connect it taking notice of the thermocouple for designation of standard contact point installation.
2) Warm up for appr. 30 minutes with Rec-switch off (lamp-off).
3) Add the voltage equivalent to the scale to be tested from direct voltage generator.
4) If the difference, of indication value of added current and voltage does not exceed 0.5% of full scale, it is normal, if not, adjust the scale.

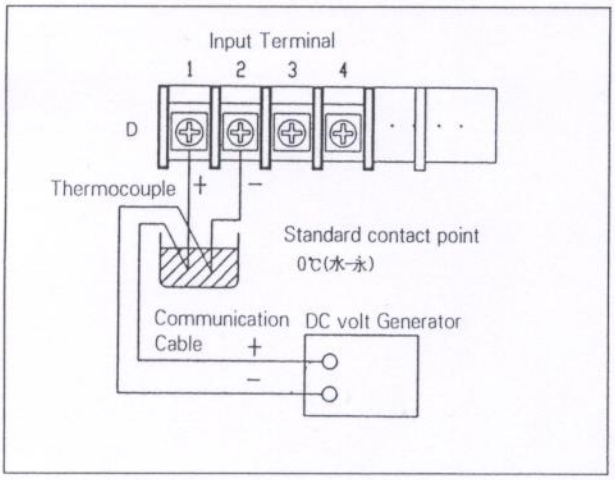


Fig 7.3

7-4 Scale adjustment of the input of thermocouple

1) Carry it out as 1,2 7-3.
2) Adjust it with trimmer referring to fig 7.4.
3) Adjust it with zero trimmer to adapt the indication to the position of left norm by adding a considerable voltage from direct voltage generator.
4) Adjust it with span trimmer to adapt the indication to the position of left scale by adding a considerable voltage from direct voltage generator.
5) When adjusting span, the position of zero adjustment deviates a little, so adjust it by operating many times until the adjustment of 3.4 is within precision

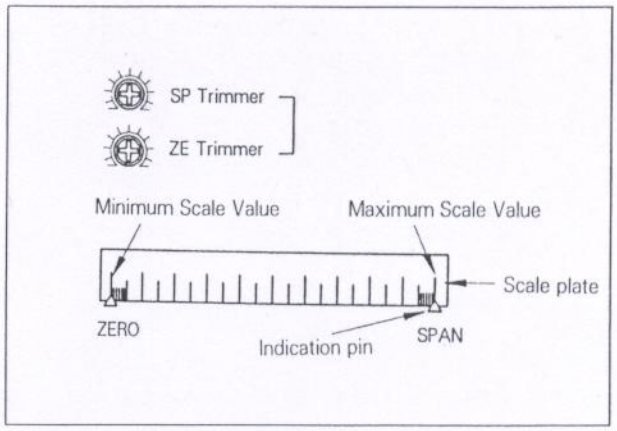


Fig 7.4

7-5 Scale correction of input of resistance Temperature Detector

1) Connect as fig 7.3 using precision-grade convertible resistor(STD generator).
2) Warm up for appr. 30minutes with Rec-switch off (lamp-off).
3) Add the resistant value equivalent to precision-grade convertible resistor.
4) When the difference between the values of added resistance and indication does not exceed 0.5% full scale, it is normal, if not, adjust the scale.

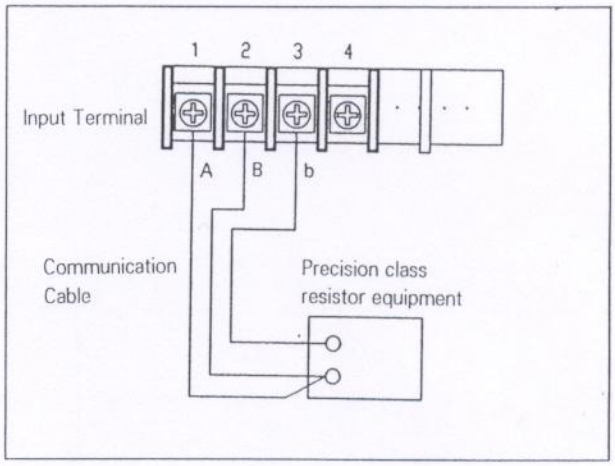


Fig 7.5

7-6 Scale adjustment of input of Resistance Temperature Detector

1) Carry it out as 1,2 7-5.
2) Adjust it with trimmer referring to fig 7.4.
3) Adjust it with zero trimmer to adjust the indication to the position of left scale by adding a considerable resistant value to maximum scale value at precision grade convertible resistor.
4) Adjust it with span trimmer to adjust the indication to the position of right scale by adding a considerable resistant value to minimum scale value of precision grade convertible resistor.
5) When adjusting span, the location of adjusted zero deviates a little , so adjust it some times until the adjustment of 3.4 is within the precision.

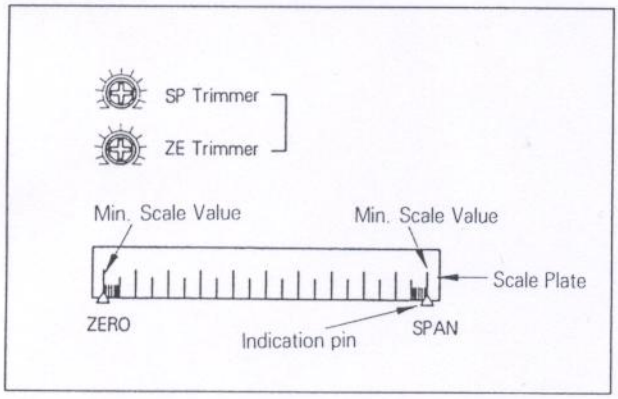


Fig 7.6

8. Alarm(Option)

8-1 Specification

Kinds : 1Pen Specification.
Max. alarm, Min alarm
: 2Pen Specification.
Max. alarm, Min alarm
: 3Pen Specification.
Max. alarm Min alarm

Established range : within scale

Established precision : within ±1.0% F.S

Hysteresis width : within ±1.0%F.S

Alarm output Contact point

(Contact point Capacity : AC250V, 5A resistance load)

Possible to use only A contact point.

8-2 Name of each part

Panel diagram

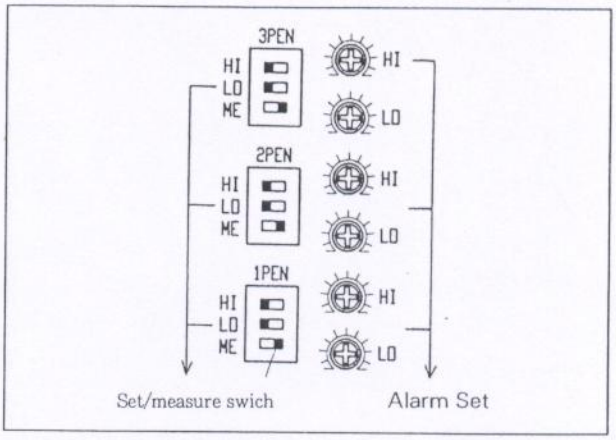


Fig 8.1

Diagram of alarm output terminal

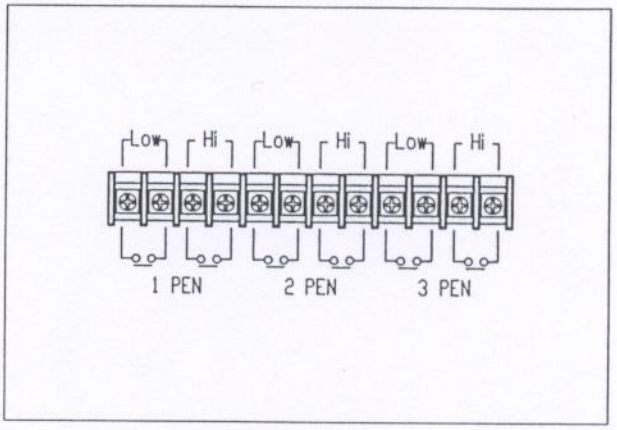


Fig 8.2

8-3 Manual for output operation

Location of establishment and	Condition of output point
Min. Alarm Set Max. Alarm Set ▲ Indication pin	Min. Alarm output Contact Max. Alarm output Contact NO C NC NO C NC
Min. Alarm Set Max. Alarm Set ▽ ▽ △ Indication pin	Min. Alarm output Contact Max. Alarm output Contact NO C NC NO C NC
Min. Alarm Set Max. Alarm Set ▽ ▽ ▲ Indication pin	Min. Alarm output Contact Max. Alarm output Contact NO C NC NO C NC

Fig 8.3

• Output operation of maximum alarm

When the indicated value is lower than the established one, the output contact point is off, the former is higer than the latter, it is on, front-side display lamp turns on.

• Output operation of minimum alarm

When the indicated value is higher than the established one, the output contact point is off, in case of converse condition, it is on, front-side display lamp tuns on.

8-4 Operation

Set 1,2,3 pens at the same method.

1) Draw out Cassette.
2) Switch "ME" (measure) off
3) Switch "HI" on.
4) Set the indication of alarm point by turning Hi-Trimmer.
5) Switch "HI" off.
6) Switch "LOW" on.
7) Set the indication of alarm point by turning LO-Trimmer.
8) Switch "LOW" off.
9) Switch "ME" (measure) on.
10) Insert Cassette.

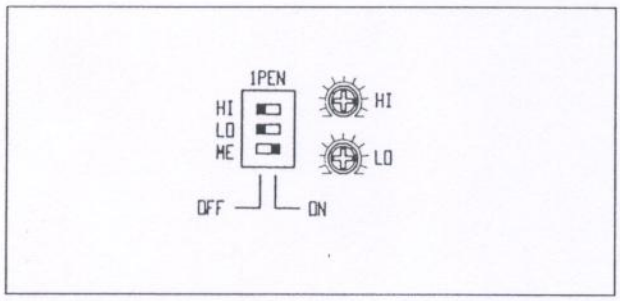


Fig 8.4