Instruction manual

DCM－4B
DCM－4B-C
Conductivity meter

FUJI SEIMITSU DENKI Co., Ltd.

Head Office　Address: 15－14, Meguro 2－chome,Meguro－ku,Tokyo 153-0063
Phone:　03－3716－3441
Facsimile:　03－3716－3820
URL　http://www.fsd.co.jp/

Shizuoka Office　Addles: 1049－16,Washizu,Kosai,Shizuoka 431－0431
Phone:　053－576－0093
Facsimile:　053－576－4722

* Introduction

– Before using, be sure to read this manual. Even after reading it, keep this manual near the device in an easy– to– find place.

– Changes are sometimes made without notice in order to improve the product's specifications, appearance, or performance. Also, be aware that changes in the content of this manual are sometimes made without notice.

* Scope of warranty and responsibility

– The warranty on this device is in effect for one year from its date of purchase.

– Be aware that in the following cases a charge will be imposed for repairs, even during the term of the warranty.

  – breakdown or damage due to mis operation
  – breakdown or damage due to a fire, earthquake, lightning, or other natural disaster
  – breakdown or damage to due use in an inappropriate environment
  – if improved or remodeled by anyone other than us.

– Although the content of this manual has been carefully scrutinized, please forgive any inaccuracies that may have crept in.

– Please be aware that we cannot accept responsibility for any damage resulting from noncompliance with the precautions and operation methods set forth in this manual.

Contents

1. GENERAL

This apparatus is an 4–AC electrode, digital display–employed liquid conductivity meter conforming to the DIN96 Standards.

This meter is designed for use in the continuous control of water and drainage. Incorporating an alarm circuit, it can accomplish automatic valve and chemical injection control. Thus, this device is ideal for use in various industrial plants. It is also provided with an insulated 4–20 mA transmission output.

2. SPECIFICATIONS

(1) Measurement principle For 4 AC electrodes

(2) Measurement system Direct immersion, continuous indication

(3) Measurement range 0 to 1,999 μ S /cm

(4) Display 3 1/2–digit LED display(DCM-4B)
3 1/2–digit LCD display(DCM-4B-C)

(5) Transmission output 4 to 20 mA DC, insulated; load resistance: 500 Ω maximum

(6) Reproducibility ± 2% of full scale

(7) Power requirements 220 VAC, 50/60 Hz; power consumption: 10 VA

(8) Alarm Contact system 1ab (for both the upper and lower limits)
Contact rating 250 VAC, 5 A (Resistive load)

(9) Main unit construction Indoor panel mount type (DIN96)
96 x 96 x 154 mm

(10) Electrodes CP–4 type electrodes
Main unit PVC
Electrodes Titanium
SCP–4A type electrodes
Main unit P.P.
Electrodes Titanium

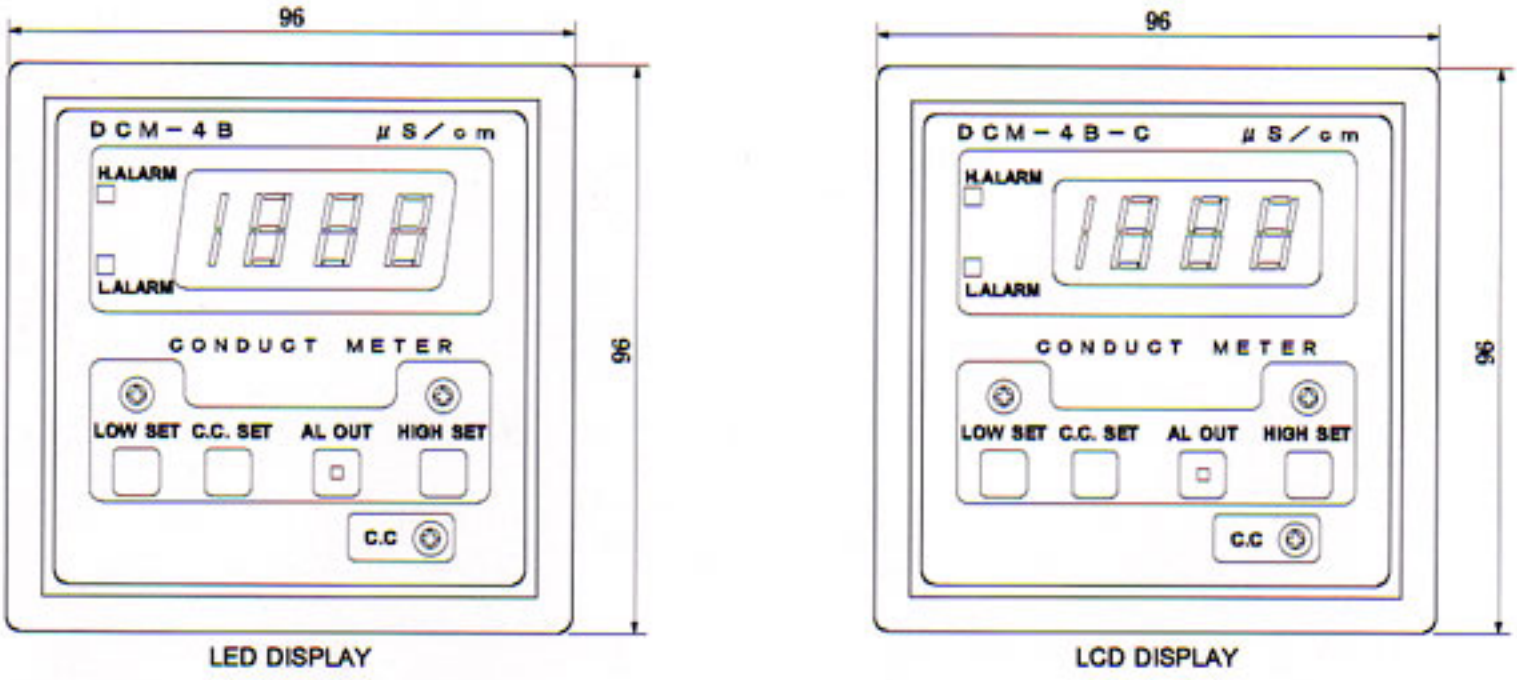
(11) Temperature compensation factor 2%/℃

(12) Temperature sensor Thermistor; 2.179 kΩ at 25℃

(13) Operating temperature Meter ambient temperature 0 to 45℃
Measured liquid temperature 5 to 45℃

3. CONSTRUCTION

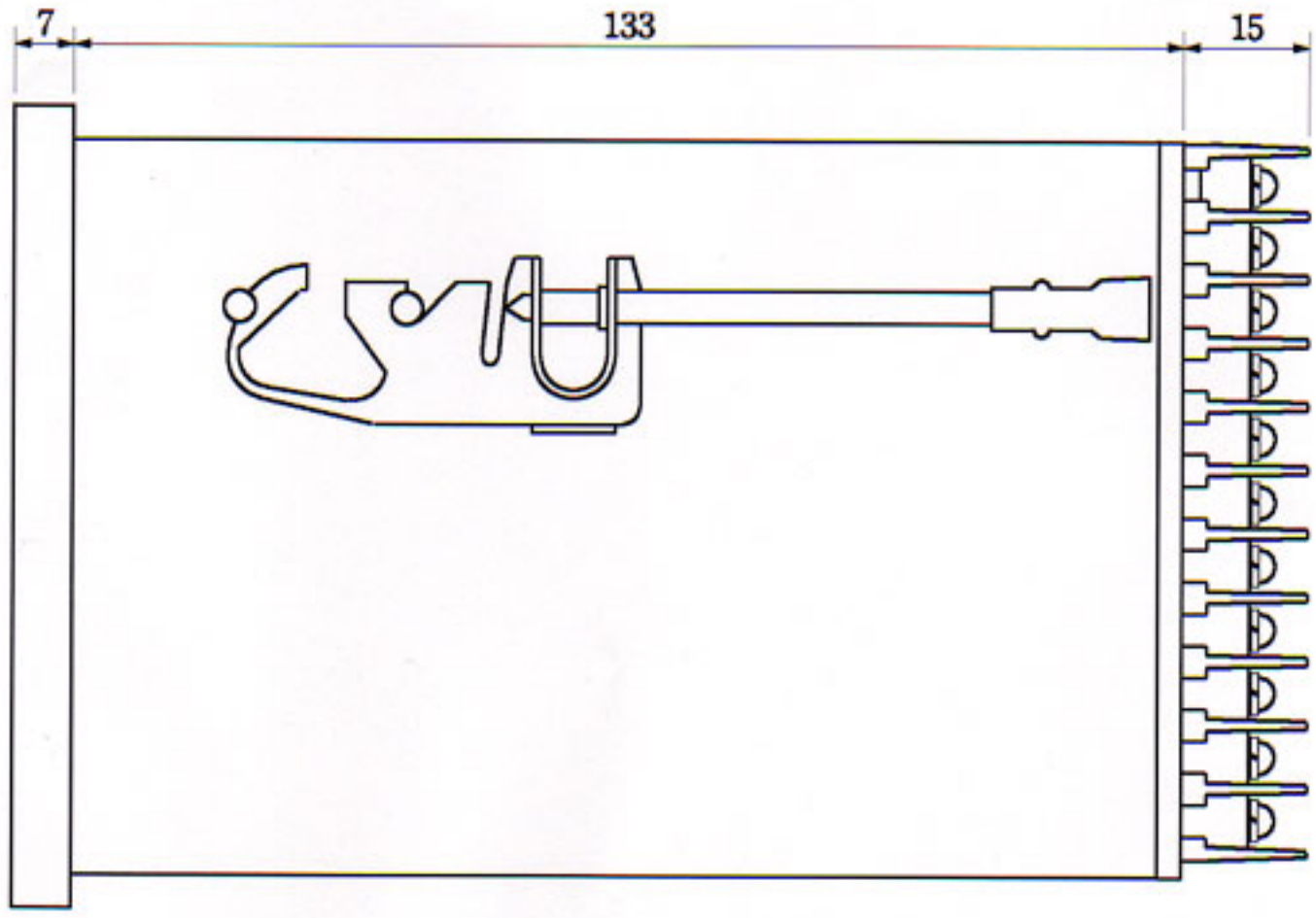
3– 1. External Views



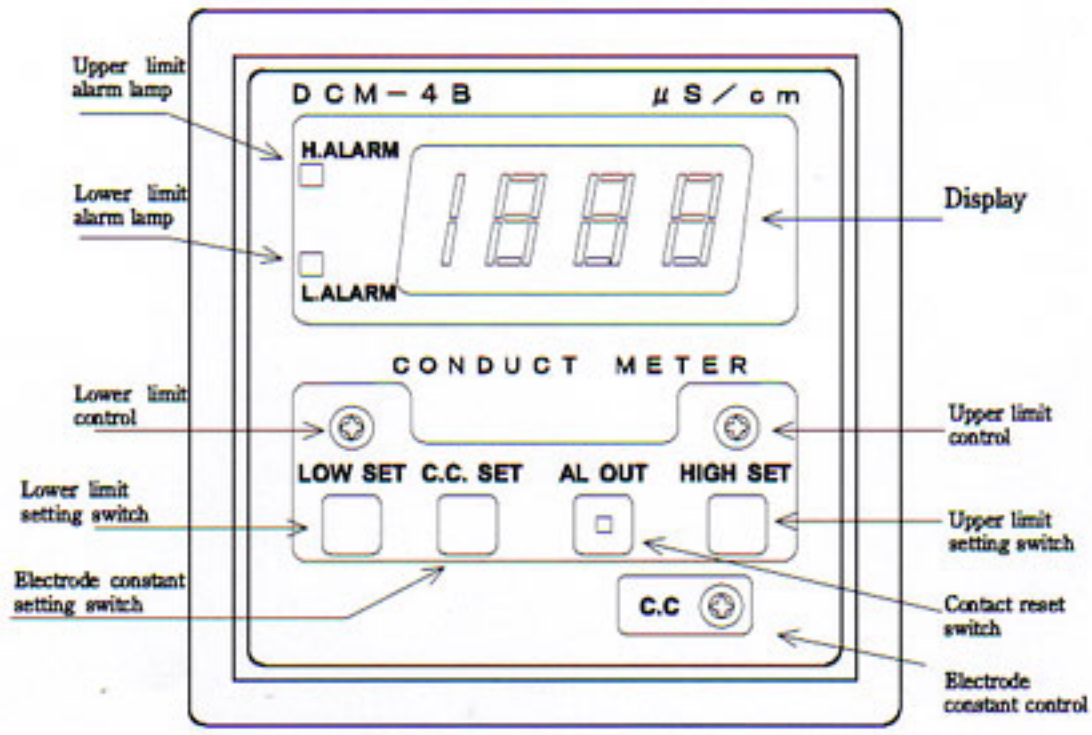
LED DISPLAY

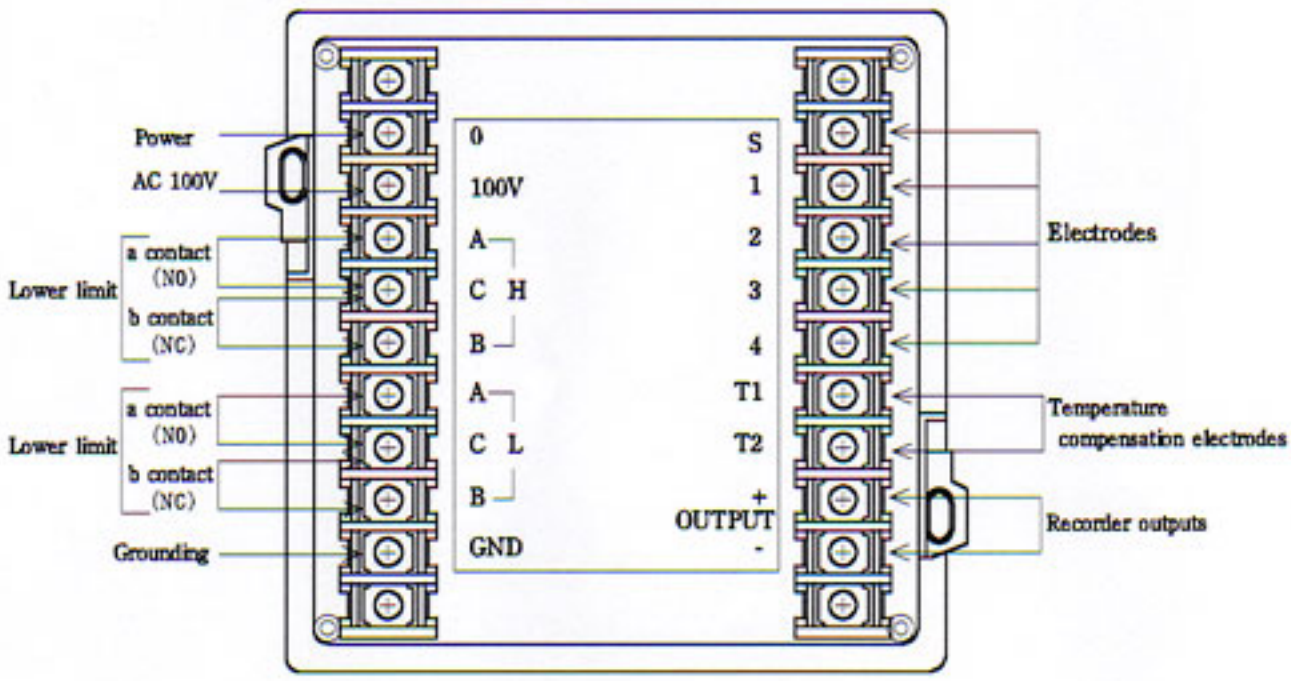
LCD DISPLAY

3– 1. External Views



3– 2.Controls and Indicators





3−3. Control and Indicator Functions

Display

Normally, this display shows measured data.
If the HIGH SET or LOW SET switch is depressed, the upper or lower setting limit is displayed, respectively.
Pressing C.C. SET causes the display to show the electrode constant.

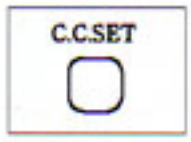
H.ALARM — This lamp lights if the measured value exceeds the upper setting limit.

L.ALARM — This lamp lights if the measured value exceeds the lower setting limit.

Pressing the HIGH SET switch causes the display to show the current upper setting limit. With this switch held down, turn the upper limit control until the desired value is reached. Then release the switch, and the meter will return to the measurement state.

Pressing the LOW SET switch causes the display to show the current lower setting limit. With this switch held down, turn the lower limit control until the desired value is reached. Then release the switch, and the meter will return to the measurement state.

When the AL OUT switch is depressed, the switch center lamp lights and the upper/lower alarm relay is inoperative. In normal use, the lamp should be kept off.



Pressing the C.C. SET switch causes the display to show the electrode constant. With this switch held down, set the desired electrode constant by turning the C.C. control.

The C.C. control is used for electrode constant setup.

4. METER INSTALLATION

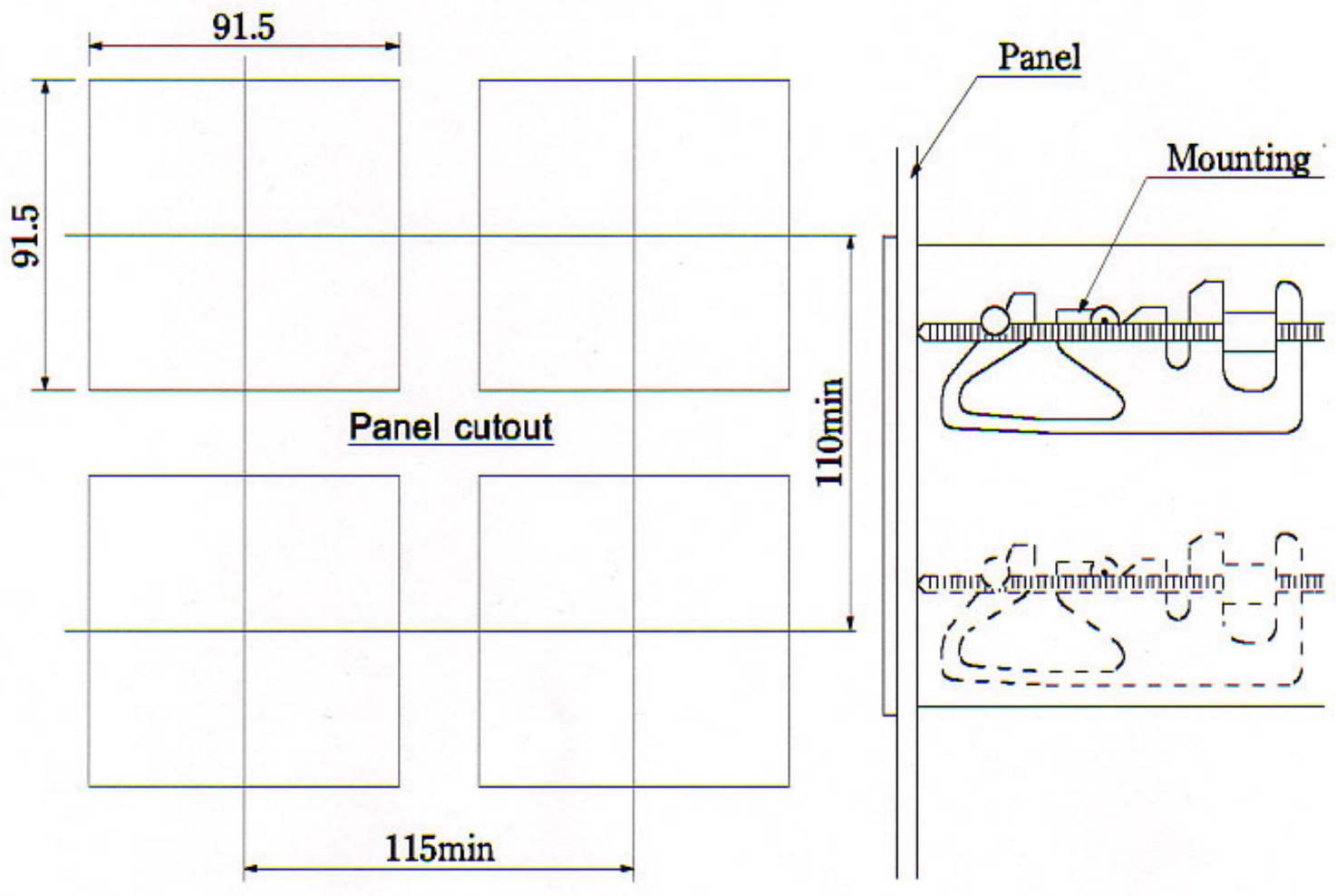
4– 1. Where to Be Installed

Select the optimum place of installation, taking the following into consideration.

(1) Place where the temperature does not vary significantly
(2) Dry place
(3) Location free of corrosive gases or excessive dust
(4) Place where the meter will not be exposed to water or chemicals
(5) Location free of vibration
(6) Place away from motors and other devices causing inductive interference
(7) Place not exposed to direct sunlight
(8) Place which allows easy access for inspection and maintenance

4– 2. Installation Procedure

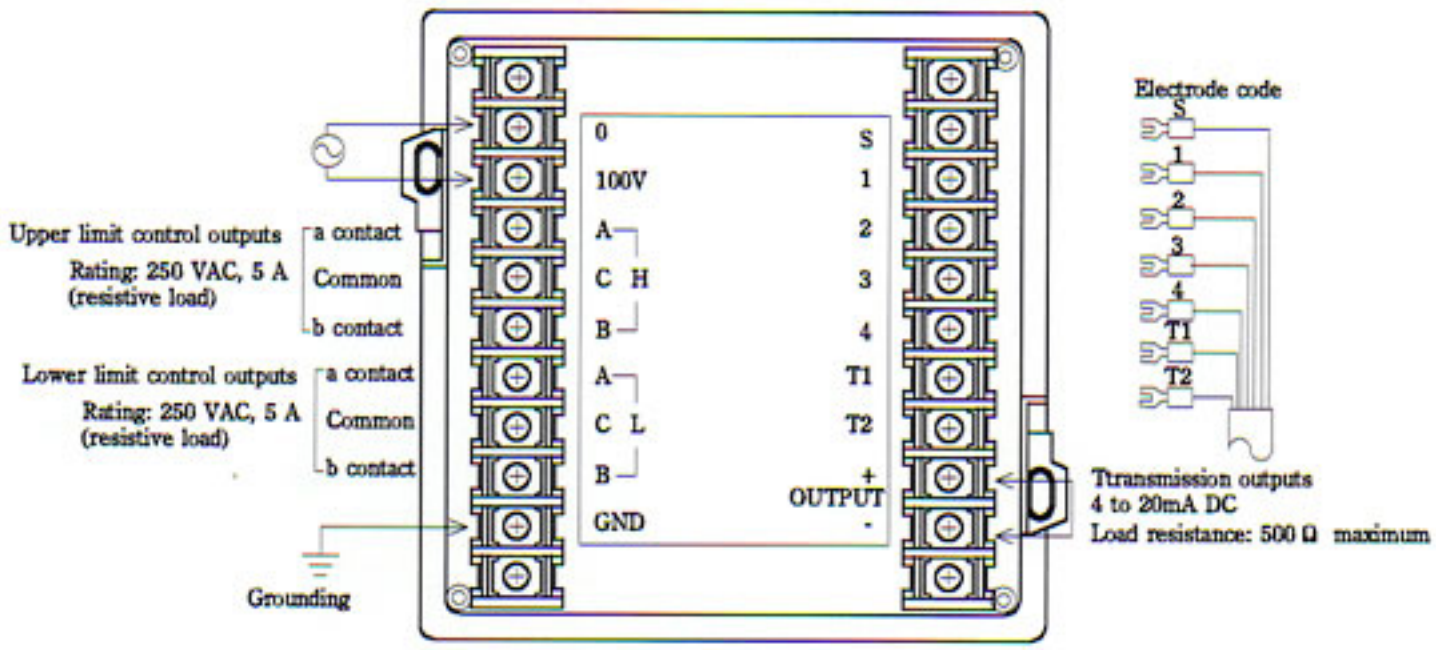
Make a cut in the mounting panel as specified (91.5 x 91.5 mm). Remove the mounting bracket from the meter, insert the meter from the front, and secure the meter to the mounting panel with the mounting bracket.



5. METER WIRING

5– 1. Electrode Wiring

Connect the electrode cable wires marked "1," "2," "3," "4," "S," "T1," and "T2" to the "1," "2," "3," "4," "S," "T1," and "T2" terminals on the meter rear terminal block, respectively.



5– 2. Power Connection

Connect the 100 VAC, 50/60 Hz power source to the "100 V" and "0" terminals on the meter rear terminal block.

WARNING

To avoid hazardous conditions, be extremely careful not to connect the 100 VAC terminal to 200 VAC.

5– 3. OUTPUT+–

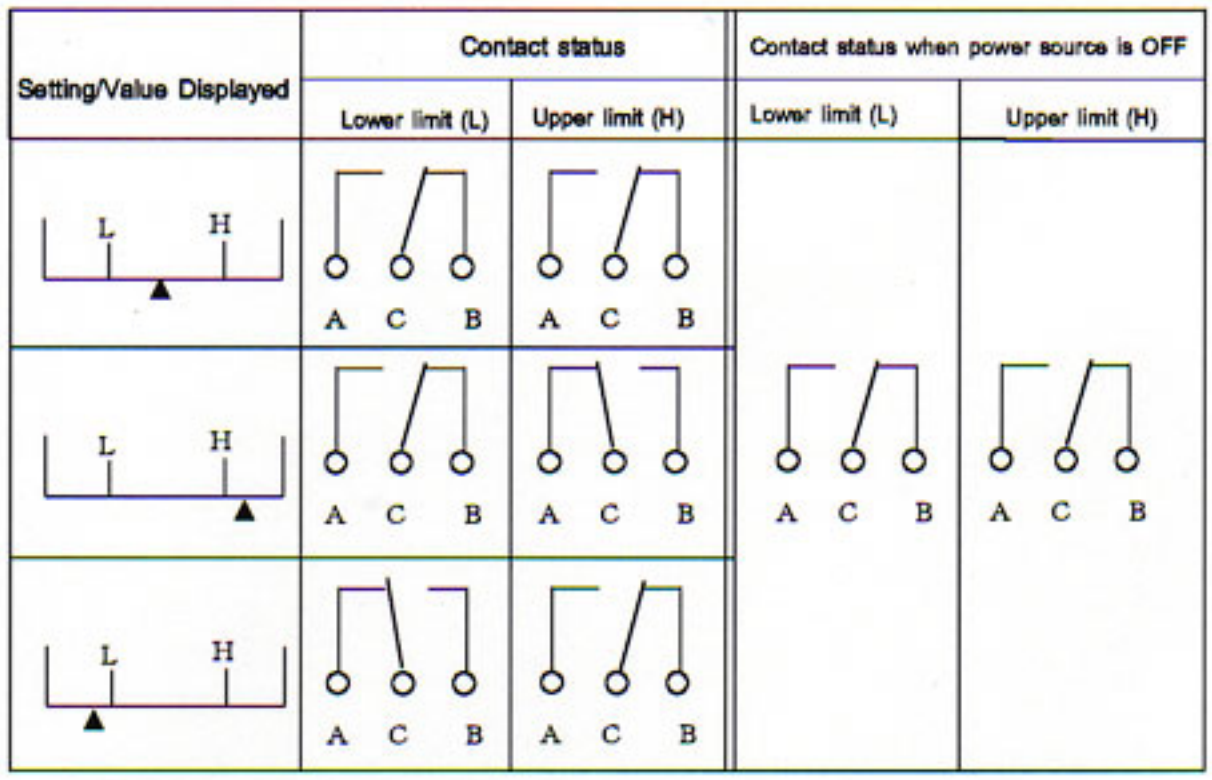
These terminals can be connected to any recorder, or converter, with an input resistance of up to 500 Ω. These insulated outputs produce 4 to 20 mA signals.

When no recorder or converter is to be connected, the terminals should remain open.

5– 4. Wiring the Alarm Contacts

Alarm contact output H is for the upper limit, and L for the lower limit.

5– 4– 1. Contact system



CAUTION

o The power wiring, alarm contacts, and electrode wiring should be kept away from one another.

o Do not use any load exceeding the alarm contact rating.

o Noise may be induced when the alarm contacts are turned on or off. In that case, install a surge killer (250 VAC, 120 Ω , about +0.47 μ F) between the contacts.

6. OPERATION

6– 1. Checks Before Operation

After completing main unit wiring and electrode installation and wiring, make the following checks.

(1) Check for incorrect wiring.
(2) Check the supply voltage.
(3) Check to ensure that the alarm contacts are not connected with a load exceeding their rating.

After making these checks, turn on the meter, and it will become ready for operation.

6– 2. Electrode Constant Check

After power turn– on, the meter is ready for operation. At that time, the meter display shows a measured value. Press C.C. SET and check if the value is equal to that marked on the electrodes. If not, turn the C.C. control, with the switch held down, until these values coincide.

6– 3. Alarm Setup

When using the alarm circuit, perform the following steps.

(1) Press the "LOW SET" ("HIGH SET") switch on the panel, and the set point will be displayed. With the switch held down, turn the upper control until it reaches the desired value. Then release the switch, and the meter will return to the measurement state.

(2) If the alarm set value is exceeded during operation due to change in water quality, the lower (upper) limit relay actuates, and the front panel "L.ALARM" ("H.ALARM") lamp lights to indicate that the relay has actuated.

(3) When the alarm circuit is not to be actuated during operation, press the front panel "AL OUT" switch, and the switch center lamp will come on and the alarm circuit will be disabled. If the switch is depressed again, then the lamp goes off and the alarm circuit is enabled.

6– 4. Operating Precautions

(1) Air bubbles at the electrode ends will interfere with the measurement.
(2) The electrode connectors should be connected securely.
(3) Do not directly touch the metal parts of the electrodes.

7. MAINTENANCE

7– 1. Electrode Maintenance

Contamination of the electrodes may render it impossible to perform correct measurements. Clean the electrodes periodically.

(1) Have the following on hand.

- o Brush or cotton swab
- o Neutral detergent

(2) Cleaning procedure

o Apply neutral detergent to the metal parts of the electrodes, lightly rub them with the brush or cotton swab, and then wash them with clean water.

8. TROUBLESHOOTING

Phenomenon

The meter does not read zero even after disconnection of electrode cable wires 1, 2, 3, and 4

Probable cause

(1) The meter itself is defective.
(2) Electrode failure
(3) Thermistor failure (when temperature compensation is provided)

Remedy

Contact your local dealer.