



Operation Manual

Shodex[®] CD-200

Electric Conductivity Detector

READ this operation manual ***CAREFULLY*** before using
Shodex[®] **CD-200** Electric Conductivity Detector.



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Notice

Users of Shodex® CD-200 Electric Conductivity Detector (hereinafter Shodex CD-200) are requested to use it in strict accordance with the instructions in this manual.

Nothing contained in this manual shall be construed as giving any guarantee on Shodex CD-200 or granting or implying any license or immunity under any patent or other rights.

Shodex CD-200 must be used on the user's own responsibility and in strict compliance with all applicable laws and regulations.

The information contained in this operation manual was obtained from sources that we believe are reliable, but no warranty or representation is hereby given as to its accuracy or completeness.

This operation manual does not expect Shodex CD-200 to be used for clinical or medical purposes. Shodex CD-200 must not be used for such purposes.

The content of this operation manual is subject to change without notice.

Notice that the parts supply period for this product is 7 years from the end of production. Please be aware that replacement parts may not be available beyond the parts supply period.

Warranty


Except for a written warranty signed by its duly authorized representative and specifically issued, **SHOKO SCIENTIFIC CO.,LTD.** makes no warranty, express or implied, written or oral, statutory or otherwise, as to the quality, performance, workmanship, fitness for a particular purpose, or merchantability of Shodex CD-200.

Precautions

Thank you for your continued patronage. Observe the following precautions in order to make safe and stable use of the detector.

[Important!]


Precautions are divided into three groups in this operation manual, depending on the degree of danger. The three groups are


 **Warning** : This sign is used where failure to follow strictly the instructions and procedures indicated by this sign may cause injury or damage to health.


Caution : This sign is used where failure to follow strictly the instructions and procedures indicated by this sign may cause this detector and the peripheral apparatus to deteriorate or break down.


Note : This sign is used wherever information is given to ensure optimal performance of the detector.


Precautions listed below are those of particular importance extracted from this operation manual :

 **Warning** Do not use the detector in places where combustible gas or any source of fire or spark exists or might exist.

 **Warning** Prior to connection, make sure that the voltage of the power socket into which the detector power cable is plugged is the same as the power supply voltage indicated on the detector.

 **Warning** The power socket into which the detector power cable is plugged should be of a 3P type with a grounding terminal. Other types of power sockets should not be used.

 **Warning** When using organic solvent, wear safety goggles. It is recommended that a sink or equipment for washing the eyes be installed nearby in case the organic solvent in use comes into contact with the eye(s) or skin.

 **Warning** When any abnormality, such as liquid leakage, is observed, immediately turn off the power and unplug the detector from the main power source.



Warning

Do not use the detector with the cover open; always unplug the detector from the main power source before opening the cover.



Warning

If the detector is used in a manner not specified by this operation manual, the protection provided by the detector may be impaired.



Warning

When using flammable organic solvent as mobile phase, be sure to make necessary arrangement to prevent accidental ignition (fire) by static electricity.



Warning

If the fuse blows after being replaced, power off the detector immediately and disconnect the power cord. Please consult our local representative in your area or SHOKO SCIENTIFIC.

Caution

As this detector is readily affected by the ambient temperature, use it in places where there is little wind or change in the ambient temperature. Do not use the detector near any source of vibration, electrical noise, or in places where corrosive gas and a lot of dust are present.

Caution

External input/output terminals are for contact closure. Never apply voltage to them.

Caution

Do not connect any tube other than the provided "OUT tube" to the eluent outlet joint of the detector. Put the exit end of the "OUT tube" in the waste liquid bottle and do not apply back pressure.

Caution

When connecting this detector to other detectors in series, put it at the end.

Caution

Make sure that no back pressure is applied to the outlet of the detector. Connect the tip of the Teflon tube on the cell outlet of the detector to a receptacle for waste liquid.

Caution

If eluent freezes inside the detector, the flow line might break, damaging the detector. If there is any chance of eluent freezing during stoppage or storage of the detector, withdraw the eluent completely from the flow line of the detector.

Caution

When using any eluent containing a salt at high concentration, make sure that the flow line is washed with water thoroughly after use. Failure to do so may result in plugging of the line, causing the detector to cease operation.

Caution

If the detector is not to be used for more than one week, prior to storage, wash the flow line with pure water or acetone, and dry the line by allowing nitrogen gas to flow through it.

Caution

Do not use any eluent which might corrode the material, such as stainless steel, that it comes into contact with. Use of such eluent might cause a base line drift and damage the detector.

- Note** Use a thoroughly degassed eluent. It is recommended that a degassing device be used to degas the eluent, as it is easy to use and permits continuous degassing.
- Note** If an eluent is replaced with another eluent, replace all channels of the ion chromatograph with new eluent. When eluent replacement is not sufficient, it may become the cause of an unstabilized baseline.
- Note** When high voltage caused by static electricity is applied to the instrument, some incorrect actions may be observed. Please take note of static electricity.
- Note** Please do not set other equipment on this detector, in order to avoid enlarging the baseline drift and losing control of the temperature.
-

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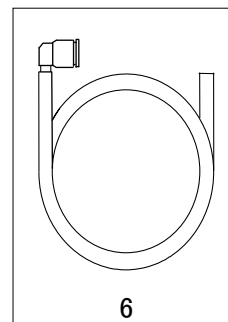
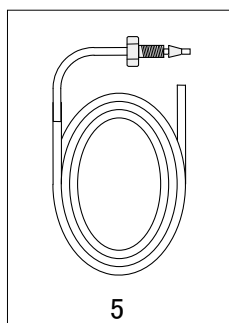
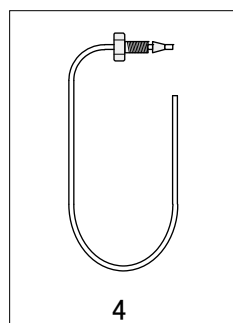
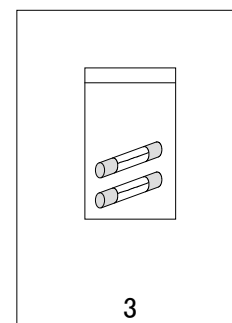
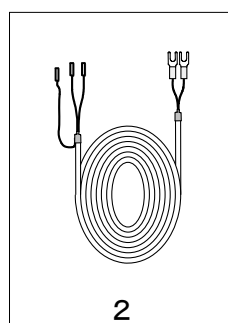
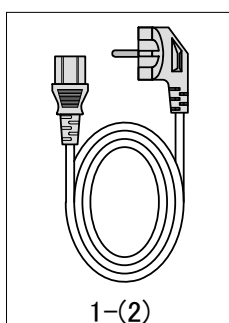
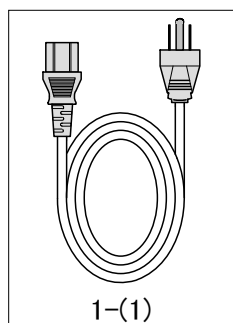
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1. Standard accessories

When unpacking, please verify that all the following accessories are included:

【 Details of Accessories 】

No.	Name	Specification	Quantity
1	Power cable	3-core cord with a grounding electrode (100V) (1) For voltage of 100 or 120 VAC Power supply cable set (125 V) (2) For voltage of 220 or 240 VAC Power supply cable set (250 V)	1*
2	Signal cable	2-core shield cable (approx. 2 m)	1
3	Fuse	Time-lag type 500 mA (T500 mA L/250 V)	
4	IN tube set	Teflon tube of 1.6 mm outer dia. x 0.25 mm inner dia. x 1000 mm length (PEEK setscrew with ferrule attached)	1
5	OUT tube set	Teflon tube of 2.5 mm outer dia. x 1.5 mm inner dia. x 2000 mm length (connecting tube, setscrew, and ferrule attached)	1
6	Discharge tube set	Silicone rubber tube of 10 mm outer dia. x 7 mm inner dia. x 2000 mm length (connection joint attached)	1
7	Operation manual		1



* : Either 1-(1) or 1-(2) is attached according to the power supply voltage at the first destination.
When unpacking, please verify that all the following accessories are included:

2. Features

Shodex CD-200 is an Electric Conductivity Detector for HPLC and has the following features:

1) Stability

The **double temperature control system** provides for a very fast start up time and excellent stable baseline performance.

2) Safety

Solvent leak sensor generates an output signal that stops pump flow in case of an eluent leak within the detector.

3) Integration

Well-organized Output signal terminals and USB communication port guarantee high-level integration and automation in conjunction with your HPLC system.

3. Specifications

1)	Measuring method	: Two-electrode system
2)	Measuring limits	: 0–600 mS/m
3)	Measuring range	: 0.0025–5.12/0.025–51.2/0.25–512 mS/m (12 steps)
4)	Linearity range	: 0–600 mS/m
5)	Noise	: < 0.0005 mS/m (response; 1 sec) or less (2.5 mM phthalic acid ; pH 4.0 ; 1.5 ml/min.)
6)	Response	: 0.1, 0.25, 0.5, 1.0, 1.5, 2, 3, 6 seconds
7)	Zero adjustment	: Automatic zeroing
8)	Base line shift	: Limit; 0–2 mS/m, Resolution; 0.01mS/m
9)	Integrator output	: 0–1 V (Sensitivity; 2/20/200 mV/mS/m)
10)	Recorder output	: 0–10 mV (for each range)
11)	External contact input	: ZERO IN/MARKER IN
	External contact output	: <ul style="list-style-type: none">•READY (Temperature control stabilized)/LEAK/•ERROR (ROM/RAM/PARAMETER/LEAKAGE/ SENSOR ERROR/OVER HEAT/ZERO OVER/ COMUNICATION)/•MARKER OUT (Contact capacity : 24 VDC, 0.1 A)
12)		
13)	Temperature control	: OFF, 30–50°C in increments of 1°C (with a 77°C thermal fuse) (Note) External cylinder is adjusted to a temperature that is 5°C lower than setting temperature.
14)	External communication	: USB
15)	Cell volume	: approx. 2.5 μ l
16)	Pressure rating	: 1 MPa
17)	Wetted part material	SUS316, PTFE, PEEK
18)	Dead volume	: Inlet \rightarrow Cell ; approx. 75 μ l Cell \rightarrow Outlet ; approx. 25 μ l Total dead volume ; approx. 103 μ l
19)	Power supply	: 100–240 VAC \pm 10% , 50/60 Hz
20)	Demand	: approx. 50 VA
21)	Outside dimensions	: approx. 260 ^W x 400 ^D x 150 ^H mm (excluding rubber footing)
22)	Weight	: 8 kg

4. Measuring mechanism

4-1 Detecting system

This detector has adopted a two-electrode system, and the detection cell and flow line are as shown in Fig. 4-1.

In Fig. 4-1, a current proportional to the electrical conductivity of eluent is output from electrode I when an ac voltage is applied to electrode II. This current signal is output as the electrical conductivity signal through an I/V converter, a synchronous rectifier, and a signal processing circuit. In addition, the temperature dependence of eluent is large, and in order for the electric conductivity of eluent to minimize this effect, the detection cell is contained in an inner cylinder which is adjusted to the setting temperature, and the inner cylinder is contained in an outer cylinder which is adjusted to a temperature that is 5°C lower than the setting temperature.

In addition, two heat exchangers are prepared in the inner cylinder and the outer cylinder, respectively, so that the temperature of eluent may attain the setting temperature.

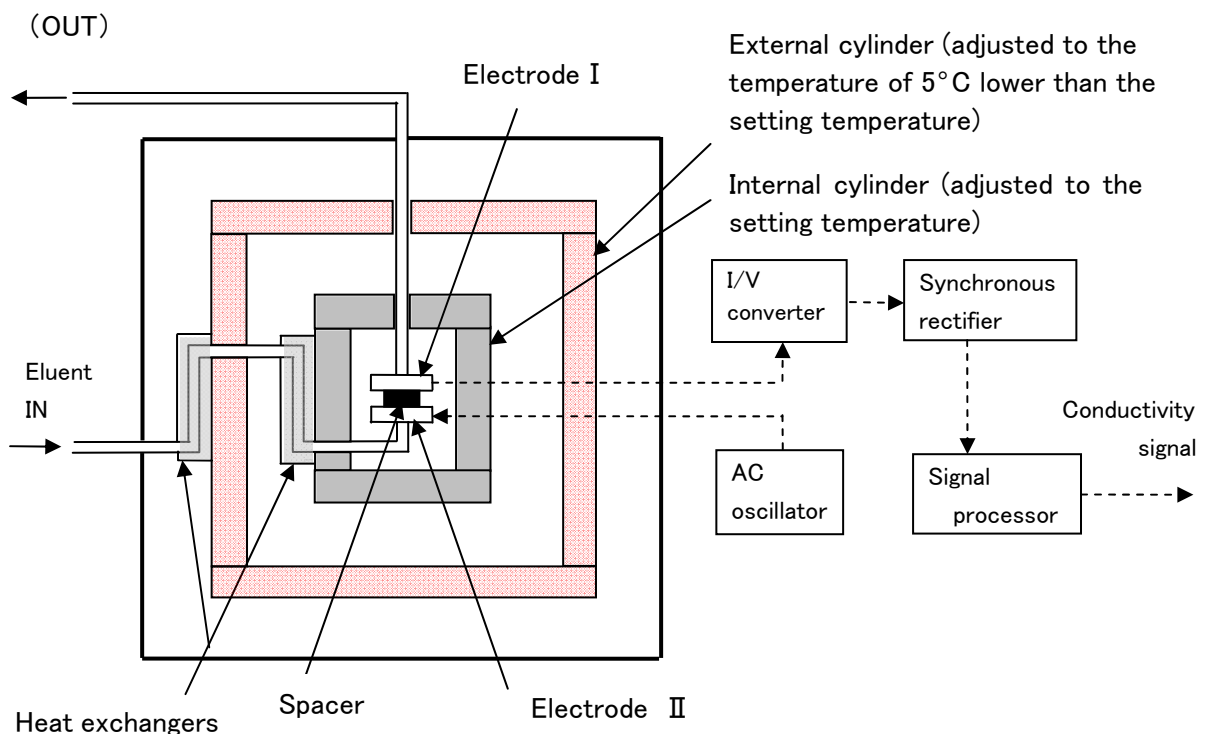


Fig. 4-1 Measuring system

4-2 Electric system

The electric system of Shodex CD-200 consists of an oscillator (generating AC voltage), a signal processing circuit, a display/keyboard circuit, and two temperature control circuits. Fig 4-2 shows a block diagram of the electric system.

The oscillator applies AC voltage to the cell, generating an electric AC current proportional to the electrical conductivity of the eluent, in the cell electrode. The current is converted into a voltage signal by the I/V converter. Then the voltage signals are converted by the synchronous rectifier into DC voltage signals which depend on electrical conductivity of the eluent.

This DC voltage signal is displayed as electrical conductivity of eluent, and converted to a precision digital signal after passing through the coarse zeroing circuit and the integrator range setting circuit. This precision digital signal is transferred to the digital signal processing circuit.

This precision digital signal is processed for response setting, automatic zeroing, polarity setting, base line shift, marker summation, and output for Integrator output, recorder output, and communication port output as a differential electrical conductivity voltage signal.

The temperature control circuit for the internal cylinder is kept at a private temperature, and the temperature control circuit for external cylinder is kept at a temperature which is 5 degrees lower than private temperature.

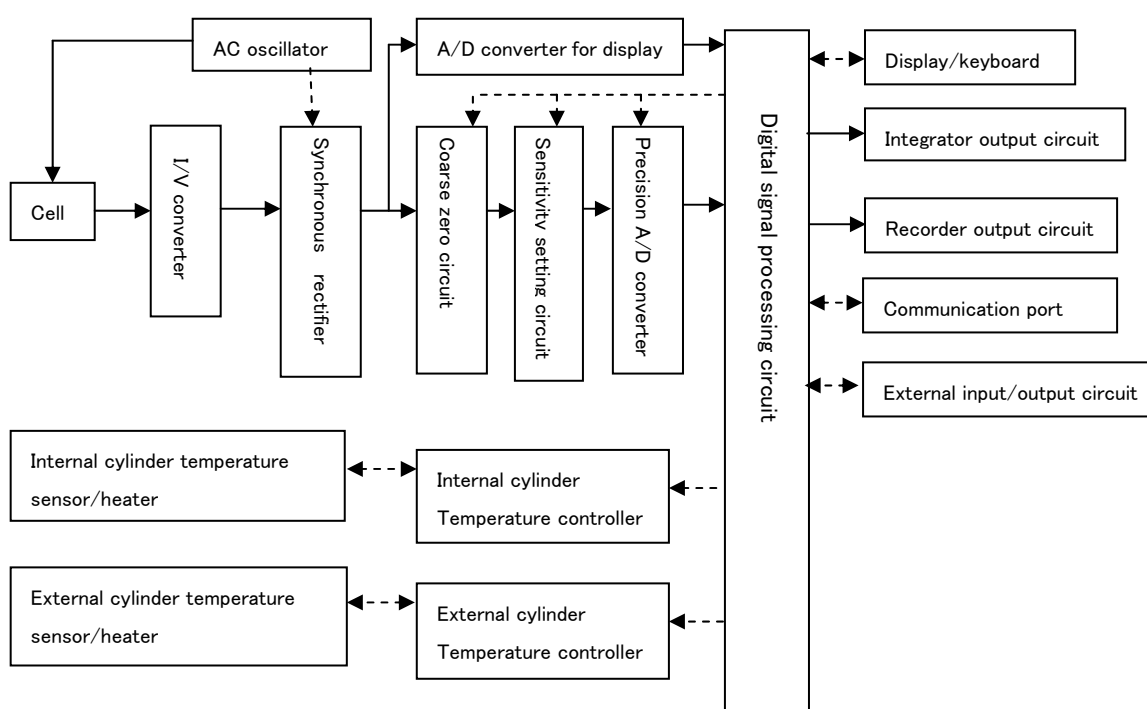


Fig. 4-2 Electrical System

5. Names and functions of parts

5-1 Front Panel

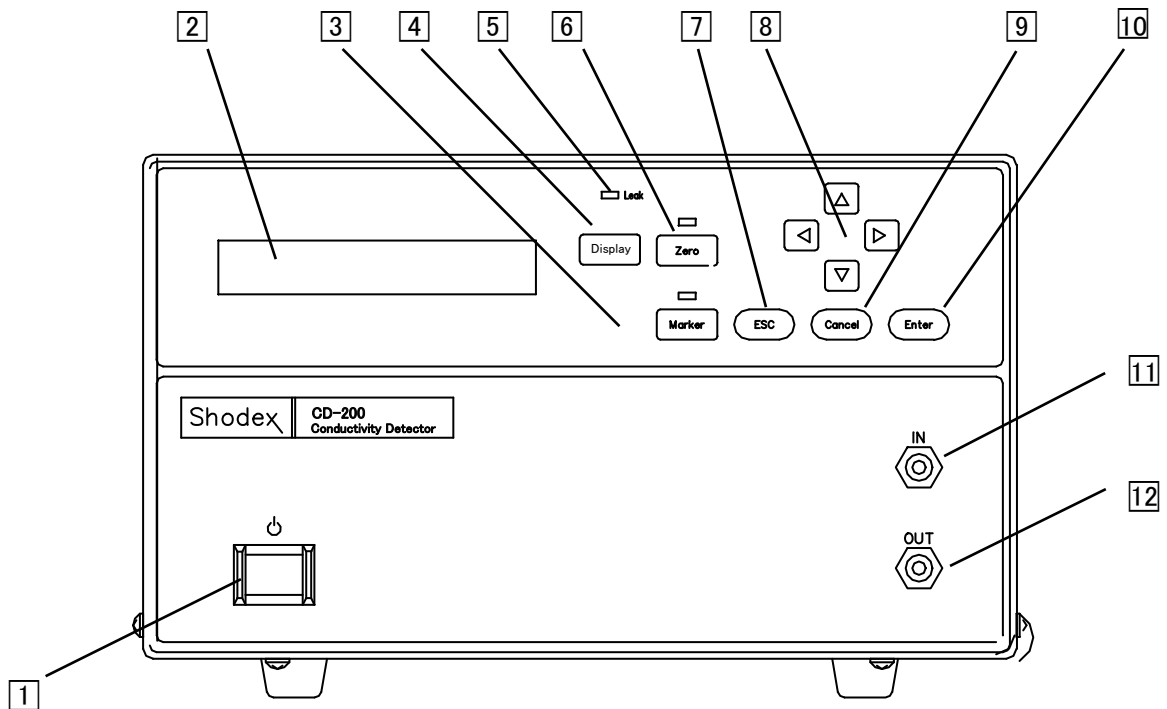


Fig. 5-1 Front Panel of Shodex CD-200

No.	Name of part	Function
1	Power Switch	Press this key once to turn the unit on or off.
2	LCD Display	A 24-digit 2-row character display panel. This is used for displaying or setting various parameters.
3	Marker key [Marker]	Press the Marker key to generate an event marker signal and add it to the recorder output. While this function is active, the LED above the key will be lit.
4	Display change key [Display]	Press the Display key to toggle between S display and Δ S.
5	Leak LED [Leak]	Illuminated when solvent leak is detected.
6	Auto Zero Key [Zero]	Press the Zero key to activate "Auto-Zero". While this Function is active, the LED above the key will be lit.
7	ESC Key [ESC]	Press the ESC key to cancel an operation and return to the normal screen.
8	Arrow Keys [▲▼◀▶]	Press the Arrow keys to move cursor or to edit values.

No.	Name of part	Function
9	Cancel Key [Cancel]	Press the Cancel key to cancel change and to stop beeping.
10	Enter Key [Enter]	Press the Enter key to finalize operations or settings.
11	Inlet Port [IN]	Connects tubing from separation column outlet.
12	Outlet Port [OUT]	Eluent passing through the flow path is discharged from this port.

5-2 Side Panel

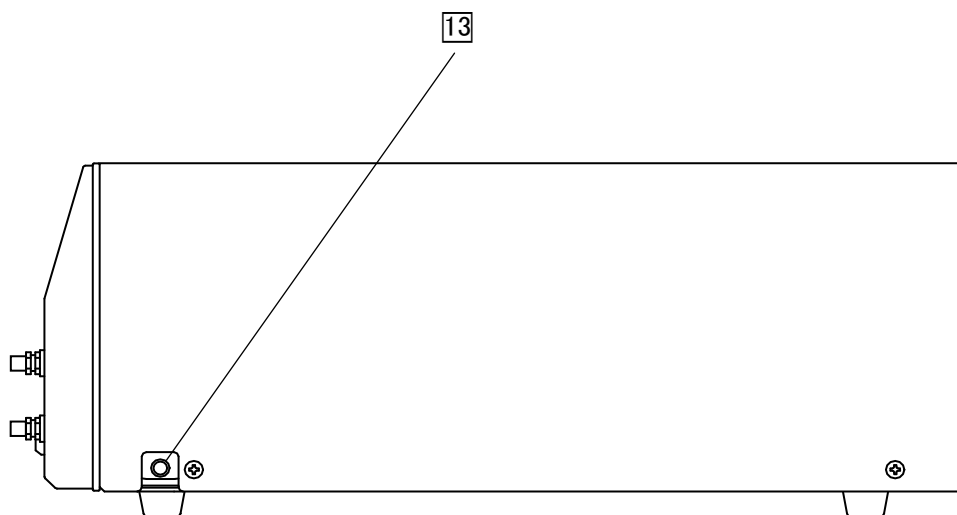


Fig. 5.2 Side panel of Shodex CD-200

No.	Name of part	Function
13	Drain Port	In case of internal eluent leak, the eluent will be discharged from this port. Connect the attached tubing as necessary.

5-3 Back Panel

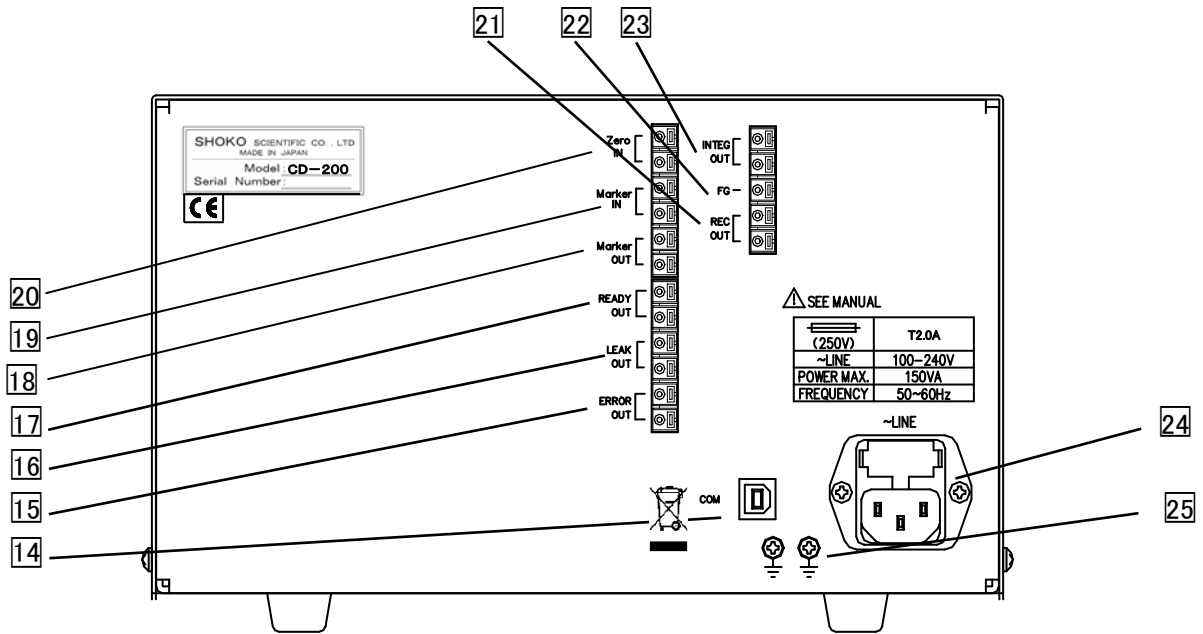


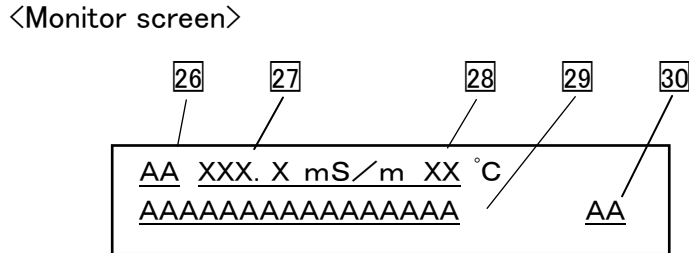
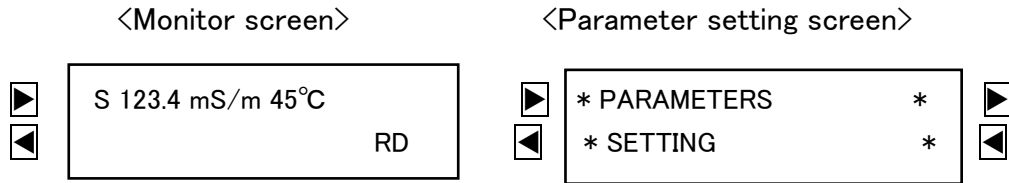
Fig. 5.3 Back panel of Shodex CD-200

No.	Name of part	Function
14	Communication port [COM]	USB communication port
15	Error out terminals [ERROR OUT]	A contact signal is sent out through these terminals when an error occurs.
16	Leak out terminals [LEAK OUT]	A contact signal is sent out through these terminals when an eluent leak is detected.
17	Ready out terminals [READY OUT]	A contact signal is sent out through these terminals when 10 minutes have passed since the temperature of the cell has reached the designated value.
18	Marker output terminals (MARKER OUT)	A contact signal (approx. a quarter second in duration) is sent out through these terminals when marker is in operation.
19	Marker input terminals (MARKER IN)	Shortcircuiting these terminals gives the same effect as pushing the marker switch (3).
20	Zero terminals (ZERO)	Shortcircuiting these terminals gives the same effect as pushing the zero switch (6).
21	Recorder terminals [REC. OUT]	Signals to the recorder are sent out through these terminals. The sensitivity of the output signal is 10 mV/FS.
22	Ground terminal for the signal cable [FG]	The shield terminal of the signal cable should be connected to this terminal.

No.	Name of part	Function
23	Integrator terminals [INTEG. OUT]	Signals to the data processing unit are sent out through these terminals. The sensitivity of the output signal is 200, 20, or 2 mV/(mS/m) with the integrator range of 5.12, 51.2, or 512 mS/m/FS .
24	Power connector [~LINE]	The included power cable should be plugged into this connector.
25	Ground terminals [⏏]	These are the terminals to ground the main body of the detector.



5-4 Display

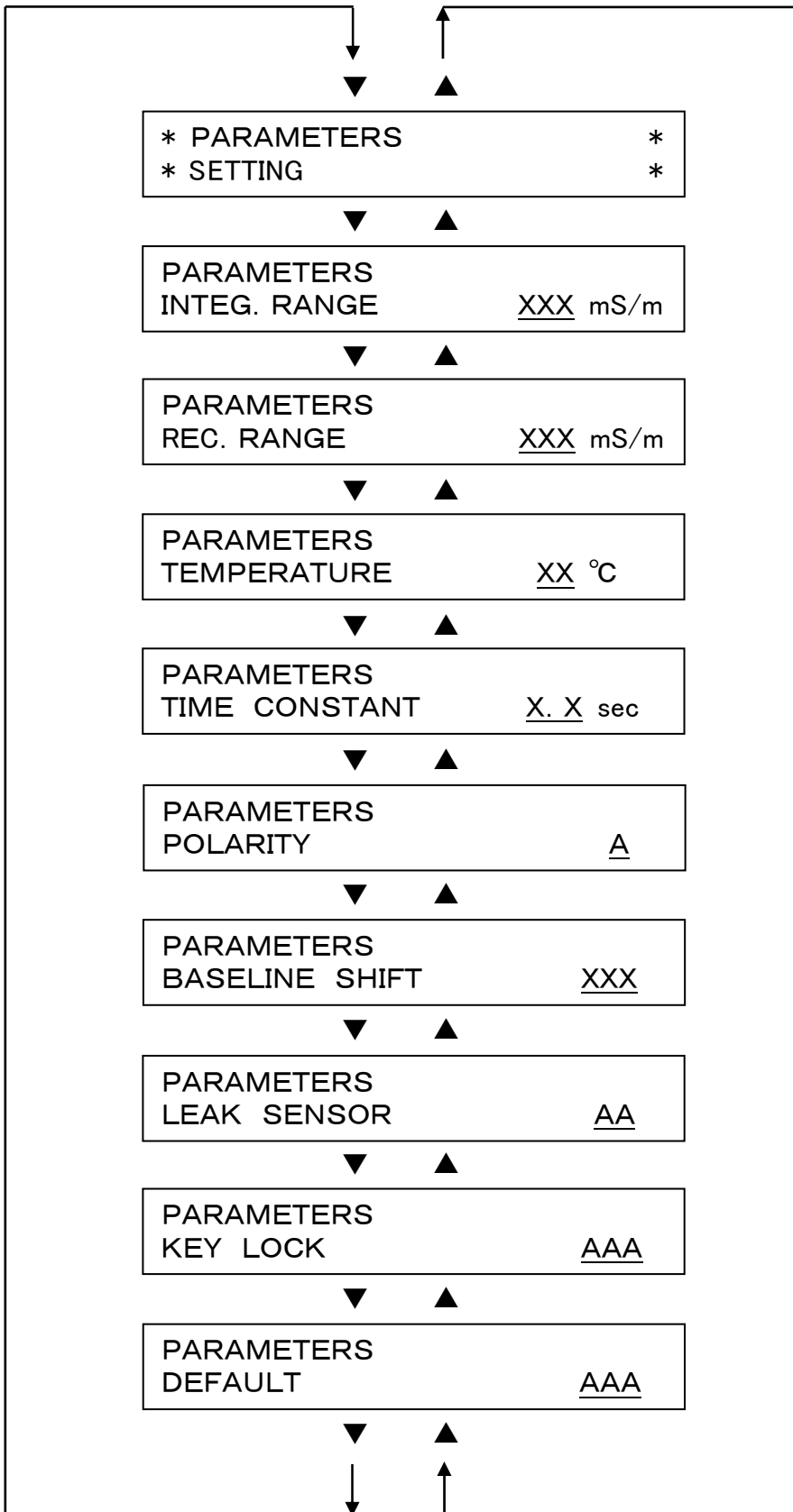
The display shows a “Monitor screen” when the detector is started and can be switched to a “Parameter setting screen” when the ◀ key or the ▶ key is pressed.



No.	Function
26	When the nominal value of conductivity displayed in 27 is the electrical conductivity of a background, “S” is displayed, and when the displayed value is differential conductivity, “ΔS” is displayed.
27	This indicates whether the displayed value is electrical conductivity of a background or differential conductivity.
28	This indicates the temperature of the cell.
29	<p>This indicates error or operation status.</p> <p>If there are multiple messages to be displayed, the priority message is displayed.</p> <p>(1) ROM: Is displayed when a ROM error has occurred.</p> <p>(2) RAM: Is displayed when a RAM error has occurred.</p> <p>(3) PARAMETER: Is displayed when a parameter memory error has occurred.</p> <p>(4) LEAKAGE: Is displayed when eluent leakage has occurred.</p> <p>(5) SENSOR ERROR: Is displayed when the temperature sensor has a problem.</p> <p>(6) OVER HEAT: Is displayed when the temperature is excessively high.</p> <p>(7) ZERO OVER: Is displayed when Auto Zero does not function correctly.</p> <p>(8) COMMUNICATION : Is displayed when a communication error has occurred.</p> <p>(9) TEMP. UNSTABLE: After the detector is started, this remains displayed until the temperature remains within ± 1°C of the set temperature for 10 minutes.</p>
30	<p>One of the following is displayed in response to the detector status.</p> <p>(1) LK: Key Lock status</p> <p>(2) ER: Error status</p> <p>(3) RD: Stable temperature status</p>

<Parameter setting screen>

To show the currently set parameters in order, press the  key or the  key while the parameter setting screen is displayed.



To change parameters, perform the following procedures:

- (1) Display the relevant parameter.
- (2) Press the **Enter** key. The underlined digits will flash and the parameter can be changed.
- (3) Press the **▼** key or the **▲** key to change the parameter with reference to Table 5-1.
- (4) Press the **ENTER** key to finalize the parameter.
- (5) Press the **ESC** key to return to the monitor screen.

Table 5-1 Settable parameters


N	Parameter	Selectable value	Unit	Default
1	INTEG. RANGE	5.12, 51.2, 512	mS/m/1024mV	512
2	REC. RANGE	(INTEG. RANGE;5.12) 0.0025, 0.005, 0.01, 0.02, 0.04, 0.08, 0.16, 0.32, 0.64, 1.28, 2.56, 5.12 (12 Steps) (INTEG. RANGE;51.2) 0.025, 0.05, 0.1, 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, 12.8, 25.6, 51.2 (12 Steps) (INTEG. RANGE;512) 0.25, 0.5, 1, 2, 4, 8, 16, 32, 64, 128, 256, 512 (12 Steps)	mS/m/10mV	512
3	TEMPERATURE	OFF, 30-50 (1 Step)	°C	45
4	TIME CONSTANT	0.1, 0.25, 0.5, 1, 1.5, 2, 3, 6 (8 Steps)	sec	1
5	POLARITY	+, -	-	+
6	BASELINE SHIFT	0-200 (50 nRIU increment)	-	0
7	LEAK SENSOR	ON, OFF	-	ON
8	KEY LOCK	YES, NO	-	NO
9	DEFAULT DATA	YES, NO	-	NO


6. Installation and connections


6-1 Power Connection and Grounding


Connect the detector to the power source according to the following procedure:

- 1) Confirm that the power socket into which the detector power cable is plugged is of a 3P type with a grounding terminal.
- 2) Confirm that the voltage of the power socket into which the detector power cable is plugged is the same as the voltage indicated on the rear panel of the detector.
- 3) Turn off the power switch **1** of the detector.
- 4) Connect the Power connector **24** of the detector rear panel to the power source using the accessory power cable.

 **Warning** *Prior to connection, make sure that the voltage of the power socket into which the detector power cable is plugged is the same as the power supply voltage indicated on the detector.*

 **Warning** *The power socket into which the detector power cable is plugged should be of a 3P type with a grounding terminal. Other types of power sockets should not be used.*

 **Warning** *The accessory power cable should be used to connect the detector to the power socket. Other cables should not be used.*

 **Warning** *Do not use the detector in places where combustible gas or any source of fire or spark exists or might exist.*

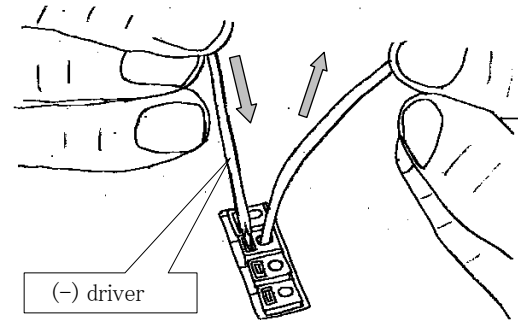
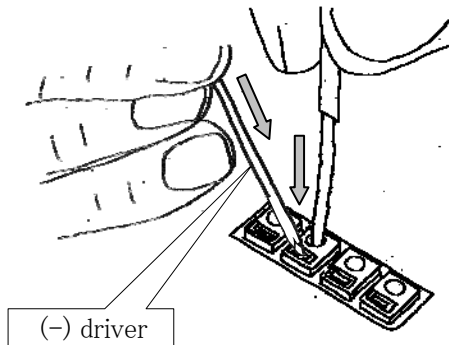
Caution *As the detector is readily affected by the ambient temperature, use it in places where there is little wind or change in ambient temperature. Do not use the detector near any source of vibration or electrical noise or in places where corrosive gas and a lot of dust are present.*

Notice Please do not set other equipment on this detector, in order to avoid enlarging the baseline drift and losing control of the temperature.

6-2 Signal cable Connections

Make correct connections using the provided signal cables in accordance with the figures below.

Connect the red wire to the “+” terminal, the white wire to the “-” terminal, and the clear wire to “FG.”



Inserts the end of the lead wire while pressing button with a flat-tip screwdriver.

Then, remove the flat-tip screwdriver to the lock the wire.

Make sure the wire is firmly connected.

<connect the wire>

<disconnect the wire>

For the contact signal out (Ready, Solvent Leak, and Error) cable connection, please use duplex lead wire.

Caution *External input/output (Auto Zero-In, Marker-In, Ready-Out, Leak-Out, and Error-Out) are for contact closure. Never apply voltage to these terminals.*

6-3 Tube Connections

When connecting this detector to a high performance liquid chromatograph through tubes, wash the chromatograph and columns thoroughly with the eluent in use and make sure that the eluent is clean before connecting the tube.

Connect the tubes in accordance with the following procedures:

- 1) Connect the eluent inlet joint **11** to the outlet of the column to be used through the provided IN TUBE. When fastening the stainless steel set screw of the IN TUBE, grip the eluent inlet joint **11** with a spanner.
- 2) Connect the supplied OUT TUBE to the eluent outlet joint **12**.


Caution *Do not connect any tube other than the provided OUT TUBE to the eluent outlet joint **12** of the detector. Put the exit end of the OUT TUBE in a waste liquid receptacle and do not apply back pressure.*


Caution *When connecting this detector to other detectors in series, connect this detector at the end.*


6-4 Operation Procedures

Use the detector in accordance with the following procedures:

- 1) Set the parameter on operating parameter-setting screen (Refer to 5-4).
- 2) Start pumping eluent at the flow rate of analytical condition.
- 3) Confirm that the detector status is “RD.”
- 4) Wait until the baseline is stabilized.
- 5) Verify that the baseline is stable, and then press the **Zero** key to perform Auto Zero before starting the analyses.

 **Warning** *When using organic solvent, wear safety goggles. It is recommended that a sink or equipment for washing eyes be installed nearby in case the organic solvent in use comes into contact with the eye(s) or skin.*

 **Warning** *When any abnormality, such as liquid leakage, is observed, immediately turn off the power. Unplug the detector from the main power source before opening the cover.*

 **Warning** *When using flammable organic solvent as mobile phase, be sure to make necessary arrangement to prevent accidental ignition (firing) by static electricity.*

Caution *If any eluent freezes inside the detector, the flow line might break, damaging the detector. If there is any chance of the eluent freezing during stoppage or storage of the detector, remove the eluent completely from the flow line of the detector.*

Caution *When using any eluent containing a salt at high concentration, make sure that the flow line is washed with water thoroughly after use. Failure to do so may result in plugging of the line, causing the detector to cease operation.*

Caution *If the detector is not to be used for more than one week, prior to storage, wash the flow line with pure water and acetone, and dry the line by allowing nitrogen gas to flow through.*

Caution *Do not use any eluent, including hydrochloric acid, which might corrode the material, such as stainless steel, that it comes into contact with. Use of such eluent might cause a base line drift and damage the detector.*

Note *Use a thoroughly degassed eluent. It is recommended that a degassing device be used to degas the eluent, as it is easy to use and permits continuous degassing.*

Note *If an eluent is replaced with another eluent, replace all channels of the ion chromatograph with new eluent. When eluent replacement is not sufficient, it may become the cause of a unstabilized baseline.*

《 alarm 》

*When an error occurs, while an alarm is displayed on lower figures of monitors, a beep sounds. The beeping stops by pressing the "CANCEL" key.
In addition, when two or more errors occur, only the alarm of highest priority is displayed.*

7. Maintenance

7-1 Flow Line Cleaning

If cell and tube fittings become dirty, base line noise and drifts may become large. In such a case, please wash the channel by the following procedures.

- 1) Please let eluent flow at 1 ml/min for 5 hours or more.
- 2) When an improvement is not found, let pure water flow at 1 ml/min for 5 hours or more.
- 3) When, despite the washing procedures of said 1) or 2) having been performed, normal operation does not return, repeat said 2) once or twice.

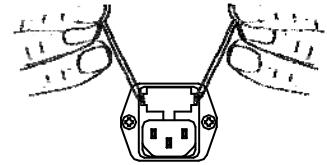
In addition, even if the above cleaning is performed, when an improvement is not found, please perform the following.

- Please perform check repair (repair request) of the detector.
- A pump etc. should be used to wash upstream side equipment.

7-2 Replacing Fuse

When the fuse is blown, replace by the following procedures:

- 1) Turn off the power of the detector.
- 2) Unplug the power cord.
- 3) Remove the blown fuse.
- 4) Replace new fuse.



Warning

Replace only with fuses of the same type and rating.



Warning

If the fuse blows again after being replaced, immediately power off the detector and disconnect the power cord.

Please consult our local representative in your area or SHOKO SCIENTIFIC CO.,LTD.

7-3 Cleaning of detector exterior

When the exterior such as the top cover of the front panel is stained or gets wet for whatever reason, please keep the detector clean and dry by wiping it off with a soft cloth or tissue paper. If stains are hard to remove, try soft cloths with a weak water solution of kitchen detergent.

Caution

Use a dry cloth to wipe the detector. Do not use water or alcohol.

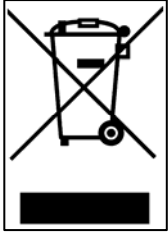
Use of such liquids may damage the detector or erase characters or color on the panel.

8. Troubleshooting

Problem	Possible cause	Solution
No power (Lamps and displays do not go on when the power button is turned on.)	<ol style="list-style-type: none"> 1. Power cable is not connected. 2. Fuse is blown. 	<ol style="list-style-type: none"> 1. Connect power cable to power socket. 2. Replace fuse. (If new fuse blows soon after replacement, contact agent for repair.)
Baseline becomes jagged.	Bubbles are present in flow cell.	Please pass thoroughly degassed eluent through at a flow rate of about 1 ml/min. If an aqueous eluent is in use and the baseline does not stabilize even after passing the degassed eluent for more than one hour, performing one passage of methanol will be effective.
Periodic noises are generated.	<ol style="list-style-type: none"> 1. Pulsation by pump is large. 2. Existence of bubbles in the flow cell amplifies the pulsation by pump. 	<ol style="list-style-type: none"> 1. Install a device, such as a damper or resistance pipe, to eliminate pulsation, close to the delivery side of the pump. 2. Pass thoroughly degassed eluent through at a flow rate of about 1 ml/min. <p>If an aqueous eluent is in use and the baseline does not stabilize even after passing the degassed eluent for more than one hour, performing one passage of methanol will be effective.</p>
No periodic noises are generated.	<ol style="list-style-type: none"> 1. Insufficient degassing 2. Flow cell is contaminated. 3. Salts separated in the tubing or flow cell. 4. Column is contaminated. 	<ol style="list-style-type: none"> 1. Pass thoroughly degassed eluent. 2. Refer to " 7-1 flow line cleaning ." 3. Refer to " 7-1 flow line cleaning ." 4. Wash the column or use a new column.
Large baseline drift	<ol style="list-style-type: none"> 1. Insufficient solvent replacement. 2. Room temperature fluctuates greatly. 3. Bubbles are present in the flow cell. 	<ol style="list-style-type: none"> 1. Replace the solvent thoroughly. (Refer to the notes in 6-4.) 2. Use the detector only in places where changes in room temperature are small. 3. Pass thoroughly degassed eluent through to purge bubbles.

9. WEEE Instructions

WEEE Mark



An instrument marked with this mark indicates that it was sold on or after August 13th 2005, and it is covered by Waste Electrical and Electronic Equipment (WEEE) Directive.

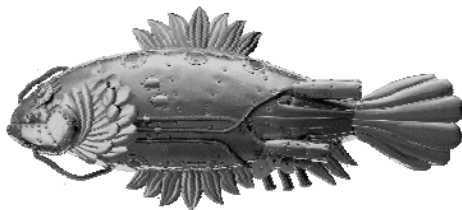
This WEEE mark means that the instrument must be collected separately from general household waste, according to the regulatory guideline in your area. Please note that our instrument is for industrial / professional use only.

Please contact your Shodex office or Shodex distributor when the instrument has reached the end of its life. They will advise you regarding disposal of the instrument.

The objective of this WEEE program is to preserve, protect, and improve the quality of the environment, protect human health, and utilize natural resources prudently and rationally. With your co-operation we are aiming to reduce contamination from waste instruments and preserve natural resources through re-use and recycling.

Please contact Shodex at the web site listed below.

<http://www.shodex.com/WEEE/>



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