



THERMOCOUPLE CARD for EDX-2000A

CTA-40A

INSTRUCTION MANUAL

Thank you for purchasing KYOWA's product CTA-40A, Thermocouple Card for EDX-2000A Memory Recorder/Analyzer.

Read this manual carefully to ensure the long life and reliability of the product.

The product should not be used in any manners other than as described in this Instruction Manual.

This product is a copyrighted work of KYOWA ELECTRONIC INSTRUMENTS CO., LTD. All rights reserved.

Copying or reproduction of this product, whether in part or whole, is strictly prohibited without permission. The contents of this Manual are subject to change without prior notice.

CONTENTS

STANDARD ACCESSORIES	1
SAFETY PRECAUTIONS	2
PRIOR TO USE	2
SAFETY SYMBOLS	2
NOTATIONS USED IN THE INSTRUCTION MANUAL	3
1. OUTLINE OF THE PRODUCT	4
1-1 OUTLINE	4
1-2 CTA CARD HANDLING PRECAUTIONS	4
1-3 CONTROLS AND INDICATORS	5
1-4 PIN ASSIGNMENT AND CONNECTION OF CONNECTORS	6
1-5 INSTALLATION OF CTA CARD BOARD	11
2. HOW TO SET CTA-40A	12
3. SPECIFICATIONS	19
3-1 HARDWARE SPECIFICATIONS	19
3-2 OUTSIDE DRAWING	20
4. OPTIONALS	21

STANDARD ACCESSORIES

The following accessories are packed with the CTA card. When unpacking, check the contents to ensure that all accessories are enclosed.

CTA-40A

Term and Conditions of Product Warranty	1
Instruction Manual	1
Cross-recessed Binding Screw M3×6	2
CTA Input Cable U-104.....	1
Temperature Sensing Adaptor CT-2A.....	8

SAFETY PRECAUTIONS

Do not forget to read the “Safety Precautions” prior to use.

The CTA card is designed to be used according to “3. Specifications.” Do NOT use the CTA card in an environment exceeding the range of the above specifications of the EDX-2000A. Or, system failure may result in.

PRIOR TO USE

For safe use of the CTA card, be sure to read the following precautions.

KYOWA ELECTRONIC INSTRUMENTS CO., LTD. assumes no liability for any damages resulting from the user’s failure to comply with the safety precautions.

SAFETY SYMBOLS

For safety operation of the CTA card, the following “WARNING” and “CAUTION” symbols are used in “Safety Precautions” of this manual and indicated on the product.

 WARNING	Improper operation of the system may result in severe injury or death of the operator.
 CAUTION	Improper operation of the system may result in injury to the operator and physical damage to the system.

 WARNING
• WARNING Take special notice of warning items described in the “EDX-2000A Memory Recorder/Analyzer Instruction Manual for Hardware.”

 CAUTION
• CAUTION Take special notice of caution items described in the “EDX-2000A Memory Recorder/Analyzer Instruction Manual for Hardware.” When installing or removing the CTA card in/from the EDX-2000A, do not touch any component parts of the CTA card.or, system failure or damage may result in.

NOTATIONS USED IN THE INSTRUCTION MANUAL

Informational Notes

Certain notations are used as necessary to attract your attention to information that requires special care when handling the CTA card, and to information provided for reference purposes.

Examples of Notations

NOTE

Essential precautions required when handling the CTA card.

MEMO

Reference items required when handling the CTA card.

1. OUTLINE OF THE PRODUCT

1-1 OUTLINE

- The CTA card is designed to measure temperature with 2 types of thermocouple; K(CA) and T(CC).
- Capable of measuring data of up to 8 channels is available with 1 card.
- Monitor output voltage is 5 V with range + full scale.
- The CTA card is insulated between input and output and between channels.

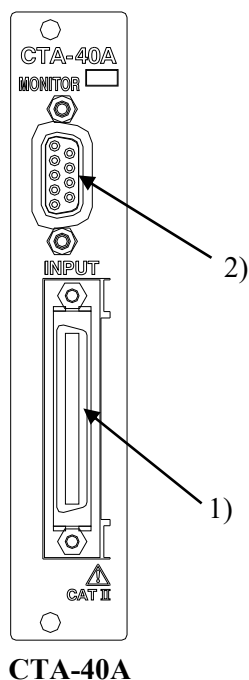
1-2 CTA CARD HANDLING PRECAUTIONS

- Although the CTA card is properly installed in the EDX-2000A, if “DISABLE” or “UNKNOWN” is displayed as the “Card Type” on the system menu screen, it is required to update the EDX-2000A hardware. Contact our representative for updating the EDX-2000A hardware.
- After installing the CTA card in the EDX-2000A, it requires a certain time to become stable. To conduct a stable measurement, preheat more than 30 minutes.

NOTE

When installing the CTA card together with F/V converter card CFV-40A, the number of cards is limited. For details, refer to CFV-40A Instruction Manual.

1-3 CONTROLS AND INDICATORS



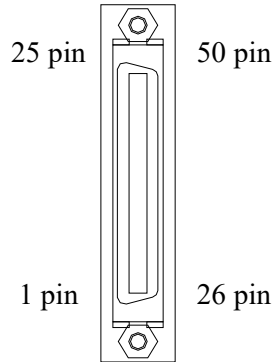
- 1) Input connector.....8-channel input connector.
Connect CTA input cable U-104 (Accessory)
- 2) Monitor output connector.....8-channel monitor output connector.
Monitor output voltage is 5 V with each range + full scale.
Connects centralized output cable U-62 (Optional).

MEMO

- + Full scale
 - When K1230 range : 1230°C is indicated
 - When K480 range : 480°C is indicated
 - When K240 range : 240°C is indicated
 - When T400 range : 400°C is indicated
 - When T210 range : 210°C is indicated

1-4 PIN ASSIGNMENT AND CONNECTION OF CONNECTORS

1) Input connector



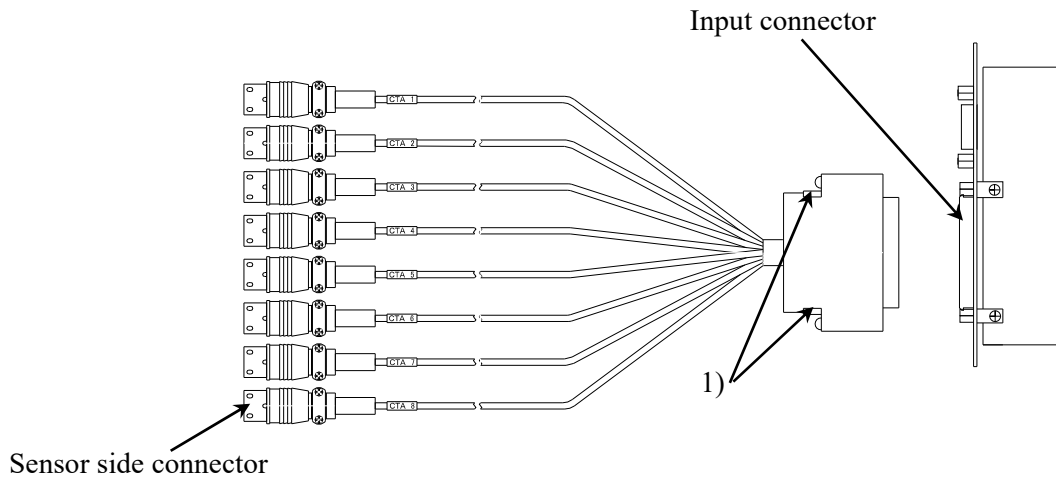
Pin assignment of the input connector is described in the following table.

Pin No.	Connection	Pin No.	Connection
25	CH1 A Temperature sensing pin	50	NC
24	CH1 F Temperature sensing pin	49	CH1 C Temperature sensing pin
23	CH1 B -Input	48	CH1 D +Input
22	CH2 A Temperature sensing pin	47	NC
21	CH2 F Temperature sensing pin	46	CH2 C Temperature sensing pin
20	CH2 B -Input	45	CH2 D +Input
19	CH3 A Temperature sensing pin	44	NC
18	CH3 F Temperature sensing pin	43	CH3 C Temperature sensing pin
17	CH3 B -Input	42	CH3 D +Input
16	CH4 A Temperature sensing pin	41	NC
15	CH4 F Temperature sensing pin	40	CH4 C Temperature sensing pin
14	CH4 B -Input	39	CH4 D +Input
13	GND	38	GND
12	CH5 A Temperature sensing pin	37	NC
11	CH5 F Temperature sensing pin	36	CH5 C Temperature sensing pin
10	CH5 B -Input	35	CH5 D +Input
9	CH6 A Temperature sensing pin	34	NC
8	CH6 F Temperature sensing pin	33	CH6 C Temperature sensing pin
7	CH6 B -Input	32	CH6 D +Input
6	CH7 A Temperature sensing pin	31	NC
5	CH7 F Temperature sensing pin	30	CH7 C Temperature sensing pin
4	CH7 B -Input	29	CH7 D +Input
3	CH8 A Temperature sensing pin	28	NC
2	CH8 F Temperature sensing pin	27	CH8 C Temperature sensing pin
1	CH8 B -Input	26	CH8 D +Input

* NC: No Connection

<Connection Method>

CTA input cable U-104 (Accessory)



To connect, hold the plug case and push it in and fasten with screws.

To disconnect, unfasten the screws, press the above portion in item 1) and pull out front the plug case.

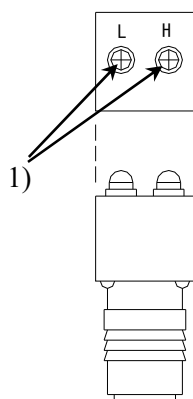
Input connector : Model PCR-E50LMD-SL [HONDA TSUSHIN made]

CTA input cable U-104 : Model PCR-S50FS (Connector) [HONDA TSUSHIN made]
Model PCR-LS50LA (Plug case) [HONDA TSUSHIN made]

Sensor side connector : Model PRC03-32A10-7F10.5 [TAJIMI ELECTRONICS made]

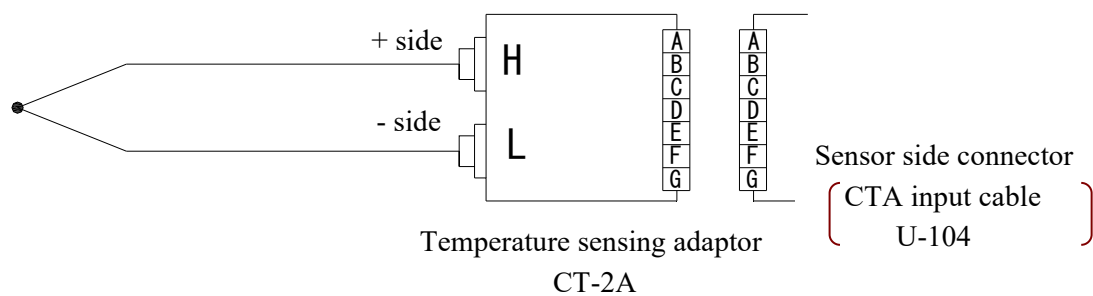
By connecting a temperature sensing adaptor CT-2A (Accessory) to the sensor side connector of the CTA input cable (Accessory), temperature is measured with a thermocouple. (See the following figure.)
Connect K or T type thermocouple.

Temperature sensing adaptor CT-2A (Accessory)

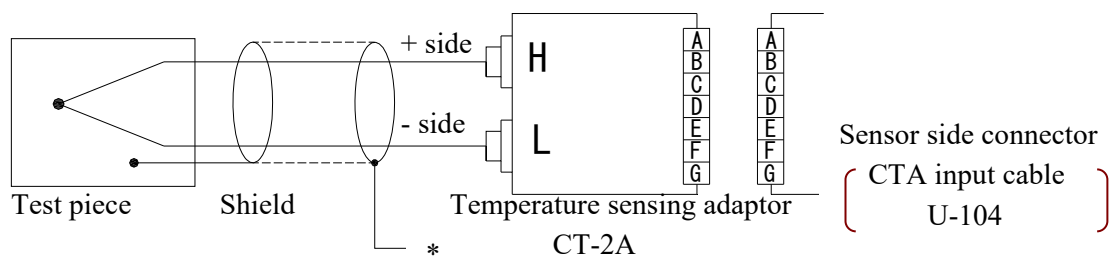


Install thermocouples to portions in item 1).
Set '-' side of the thermocouple to L and '+' side to H.
This adaptor has reference junction built-in.

[When no shield wire is used]

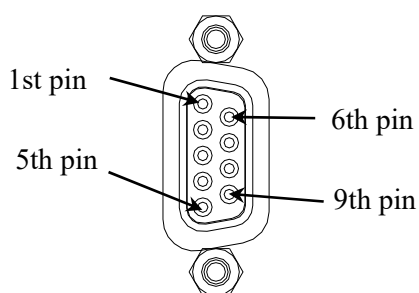


[When shield wire is used]



* Connect the shield wire to GND terminal.

2) Monitor output connector



Pin Assignment of Monitor Output Connector

Pin	Signal Name
1	Monitor output of CH1
2	Monitor output of CH2
3	Monitor output of CH3
4	Monitor output of CH4
5	Monitor output of CH5
6	Monitor output of CH6
7	Monitor output of CH7
8	Monitor output of CH8
9	Monitor output COM

When the CTA card is installed in each slot, pin assignment of the monitor output connector shall be as described in the following table.

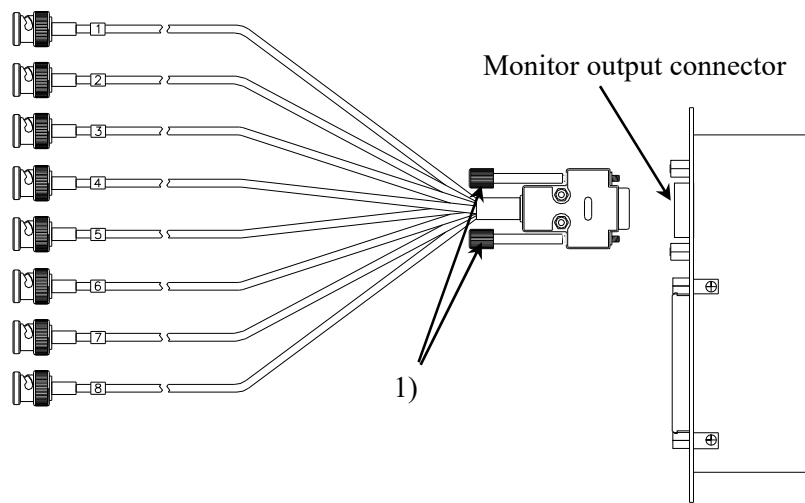
Slot Pin	1	2	3	4	5	6	7	8
1	CH1	CH9	CH17	CH25	CH33	CH41	CH49	CH57
2	CH2	CH10	CH18	CH26	CH34	CH42	CH50	CH58
3	CH3	CH11	CH19	CH27	CH35	CH43	CH51	CH59
4	CH4	CH12	CH20	CH28	CH36	CH44	CH52	CH60
5	CH5	CH13	CH21	CH29	CH37	CH45	CH53	CH61
6	CH6	CH14	CH22	CH30	CH38	CH46	CH54	CH62
7	CH7	CH15	CH23	CH31	CH39	CH47	CH55	CH63
8	CH8	CH16	CH24	CH32	CH40	CH48	CH56	CH64

* Slot 1 : EDX-2000A power supply connector side.

* Slots 5 to 8 : Specified only for EDX-2000A-64.

<Connection Method>

Centralized output cable U-62 (Optional)



To connect, hold the plug case and push it in.
Fasten screws portions in item 1) to fix the cable.

To disconnect, unfasten the screws and pull out front the plug case.

Monitor output connector : Model XM3B-0942-132L [OMRON made]

Centralized output cable U-62 : Model HDEB-9P (Connector) [HIROSE ELECTRIC made]
Model HDE-CTH1 (Plug case) [HIROSE ELECTRIC made]

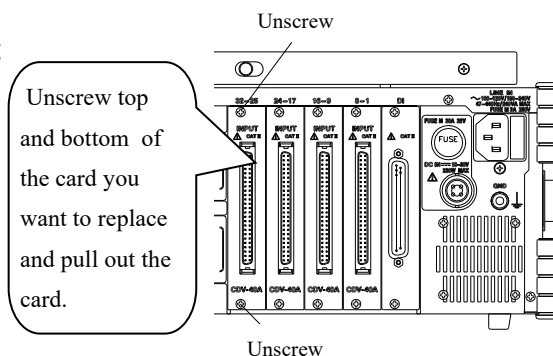
MEMO

Centralized output cable U-62(Optional) connected to the monitor output connector is optional.
See “4. OPTIONALS.”

1-5 INSTALLATION OF CTA CARD BOARD

Note that the power supply should be turned OFF before installing the CTA card board.

- 1) Unscrew the top and bottom of the already existing conditioner card or dummy panel.
- 2) Pull out the conditioner card or dummy panel already existing in the slot.
- 3) Slowly install the CTA card along the guide rail in the EDX-2000A and then, tighten the screws at the top and bottom of the conditioner card.
- 4) After replacing the conditioner card, power ON the EDX-2000A and check the system menu screen. If the “Card Type” CTA-40A is displayed on the “Slot No.” column, it means that the conditioner card is properly replaced. If “DISABLE” or “UNKNOWN” is displayed as the “Card Type” on the system menu screen, it is required to update the EDX-2000A hardware.
Contact our representative for updating the EDX-2000A hardware.



CTA-40As are installed in slots 1 and 2.

Slot No. Card Type

1	CTA-40A
2	CTA-40A
3	* * *

NOTE

When installing the CTA card in the EDX-2000A, do not touch any component parts of the CTA card. Or, performance failure or damage of the card may result in.

2. HOW TO SET CTA-40A

How to set the CTA card is conducted entirely from the EDX-2000A screen.

Settings and measurement of the CTA card are conducted in due order as described in the following table.

EDX-2000A System menu Screen

↓

2) Condition

↓

1) Channel Cond

Item	(1) MEAS Channel	(2) Mode	(3) Range	(4) CAL ON/OFF	(5) CAL Range
Selections	Measure Not measure	K(ON) K(OFF)	240°C 480°C 1230°C OFF	ON OFF	100% 50% CHECK
		T(ON) T(OFF)	210°C 400°C OFF		

↓

EDX-2000A System menu Screen

↓

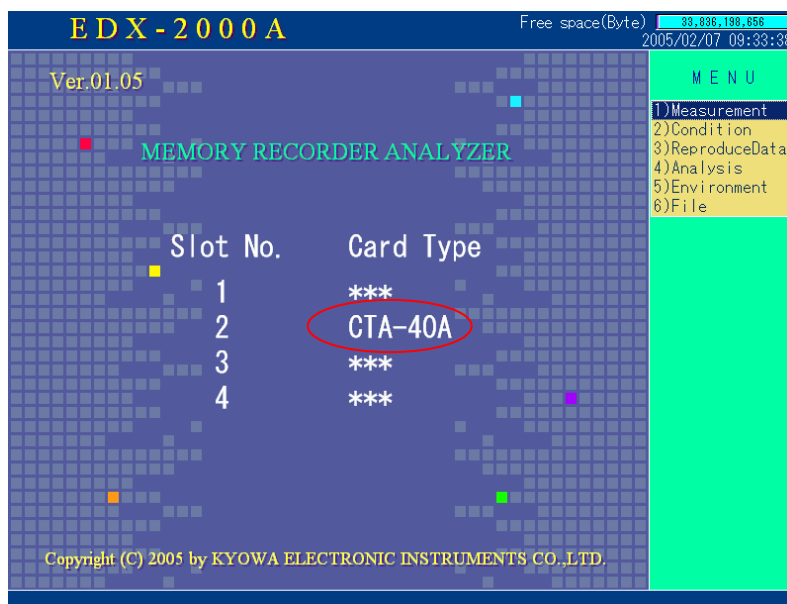
1) Measurement

<CTA-40A Setting Procedures>

EDX-2000A System menu Screen

When the CTA-40A is properly installed in the EDX-2000A, CTA-40A appears as the “Card Type” in the “Slot No.2 column. (The screen at the right shows that ‘1’ CTA-40A is installed in the slot No. 2.)

Here, select item 2) <Condition> from the system menu and press the **ENTER** key.



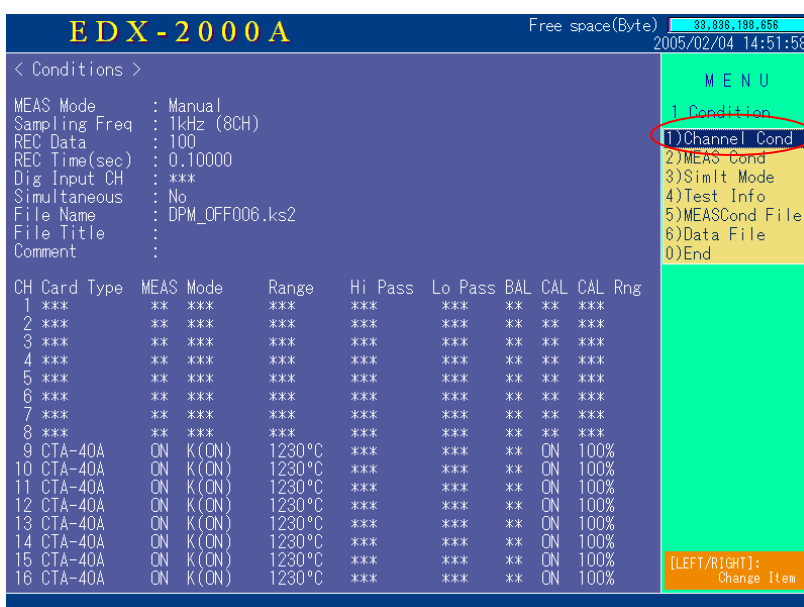
NOTE

If no conditioner card is installed, “Card Type” in the “Slot No.” column is indicated with “***.”

Condition Setting Screen

Select item 2) <Condition> from the system menu to display the screen at the right.

Here, select item 1) <Channel Cond> on the <Condition> main menu and press the **ENTER** key.



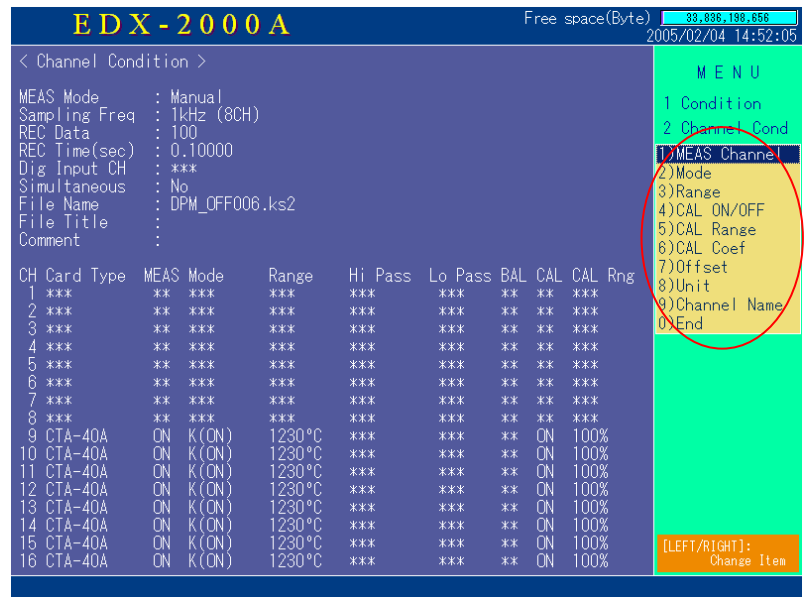
NOTE

If no conditioner card is installed, CH column and items that are not available for setting conditions are indicated with “*.”

Channel Cond

Select item 1) <Channel Cond> from <Condition> main menu to display the screen at the right.

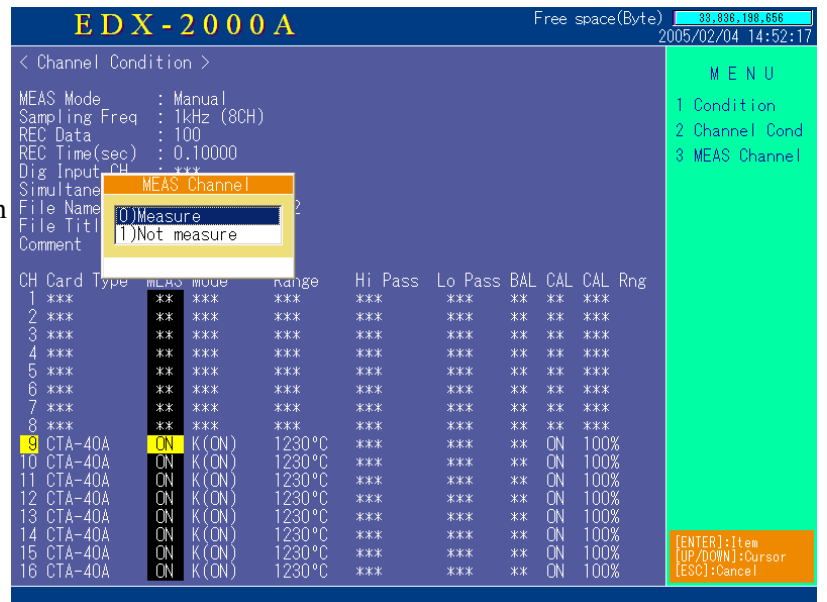
Here, select the cursor to the desired item and press the **ENTER** key.



MEAS Channel

Select item 1) <MEAS Channel> from the <Channel Cond> menu to display the screen at the right with "MEAS Channel" setting window.

Select the cursor to either 0) Measure or 1) Not measure for every channel and press the **ENTER** key.

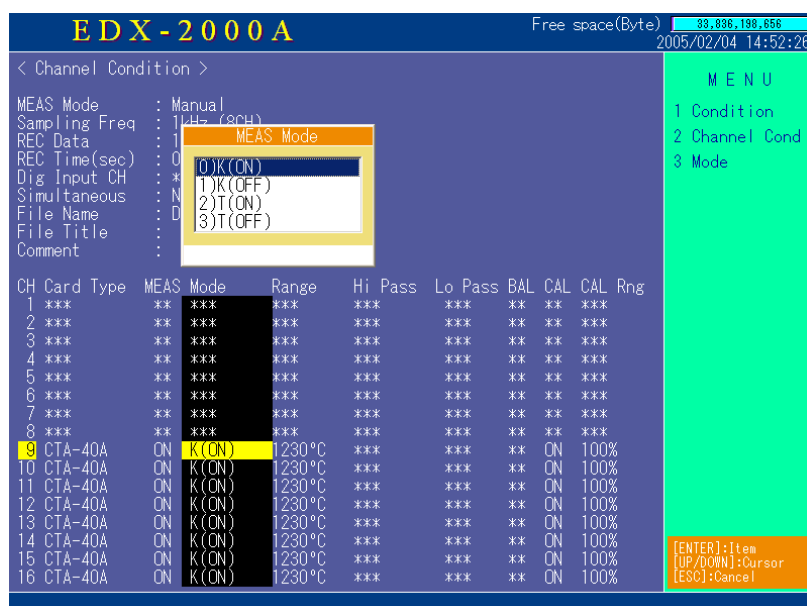


Mode

Select item 2) <Mode> from the <Channel Cond> menu to display the screen at the right with “MEAS Mode” setting window.

Here, select an applicable thermocouple and set ON/OFF of burnout function.
(See the following table.)

MEAS Mode	Applicable Thermocouple	Burnout Function
K(ON)	K	ON
K(OFF)	K	OFF
T(ON)	T	ON
T(OFF)	T	OFF



MEMO

In case thermocouple resistance is higher than 200 Ω , set OFF to the burnout function (See thermocouple resistance in “3-1 HARDWARE SPECIFICATIONS”). However, if the thermocouple is disconnected, the burnout function would not work.

NOTE

If the “MEAS Mode” is set to K(OFF) or T(OFF) and no thermocouple is connected to the input connector, “Burnout” may be displayed. The normal display can be obtained by connecting the thermocouple once again.

When burnout function is activated, “Burnout” appears on CH11 and CH13 rows as shown in the right window.

Note that the “Burnout” is displayed only on “Numeric (Phy Val)” display screen.



Measurement screen when measurement “Mode” is set to T(ON) and “Range” to 210 °C.

Range

Select item 3) <Range> from the <Channel Cond> menu to display the screen at the right with “Range” setting window.

Here, set temperature measuring range.

- If K type thermocouple is set in “Mode” setting window, select any of the following temperature ranges.
240 °C, 480°C, 1230°C, or OFF

EDX-2000A Free space(Byte) 33,836,198,656 2005/02/04 14:52:34

< Channel Condition >

MEAS Mode : Manual
Sampling Freq : 1kHz (8CH)
REC Data : 100
REC Time(sec) : 0.10000
Dig Input CH : ***
Simultaneous : No
File Name : DPM_OFF006.ks2
File Title :
Comment :

Range

0) 240°C
1) 480°C
2) 1230°C
3) OFF

M E N U

1 Condition
2 Channel Cond
3 Range

CH	Card Type	MEAS Mode	Range	Hi Pass	Lo Pass	BAL	CAL	CAL Rng
1	***	** ***	***	***	***	**	**	***
2	***	** ***	***	***	***	**	**	***
3	***	** ***	***	***	***	**	**	***
4	***	** ***	***	***	***	**	**	***
5	***	** ***	***	***	***	**	**	***
6	***	** ***	***	***	***	**	**	***
7	***	** ***	***	***	***	**	**	***
8	***	** ***	***	***	***	**	**	***
9	CTA-40A	ON K(ON)	1230°C	***	***	**	ON	100%
10	CTA-40A	ON K(ON)	1230°C	***	***	**	ON	100%
11	CTA-40A	ON K(ON)	1230°C	***	***	**	ON	100%
12	CTA-40A	ON K(ON)	1230°C	***	***	**	ON	100%
13	CTA-40A	ON K(ON)	1230°C	***	***	**	ON	100%
14	CTA-40A	ON K(ON)	1230°C	***	***	**	ON	100%
15	CTA-40A	ON K(ON)	1230°C	***	***	**	ON	100%
16	CTA-40A	ON K(ON)	1230°C	***	***	**	ON	100%

[ENTER]:Item
[UP/DOWN]:Cursor
[ESC]:Cancel

- If T type mode of thermocouple is set in “Mode” setting window, select any of the following temperature range.
210 °C, 400°C, or OFF

EDX-2000A Free space(Byte) 33,836,198,656 2005/02/04 14:52:48

< Channel Condition >

MEAS Mode : Manual
Sampling Freq : 1kHz (8CH)
REC Data : 100
REC Time(sec) : 0.10000
Dig Input CH : ***
Simultaneous : No
File Name : DPM_OFF006.ks2
File Title :
Comment :

Range

0) 210°C
1) 400°C
2) OFF

M E N U

1 Condition
2 Channel Cond
3 Range

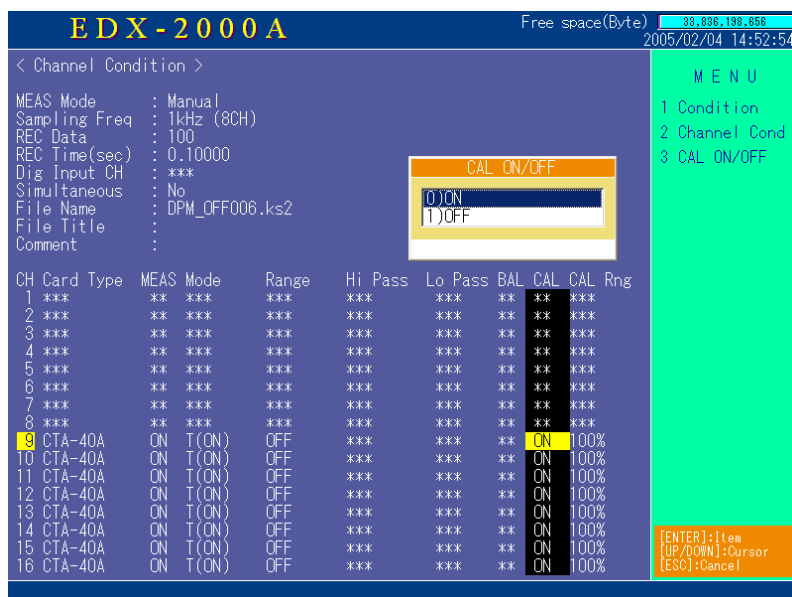
CH	Card Type	MEAS Mode	Range	Hi Pass	Lo Pass	BAL	CAL	CAL Rng
1	***	** ***	***	***	***	**	**	***
2	***	** ***	***	***	***	**	**	***
3	***	** ***	***	***	***	**	**	***
4	***	** ***	***	***	***	**	**	***
5	***	** ***	***	***	***	**	**	***
6	***	** ***	***	***	***	**	**	***
7	***	** ***	***	***	***	**	**	***
8	***	** ***	***	***	***	**	**	***
9	CTA-40A	ON T(ON)	OFF	***	***	**	ON	100%
10	CTA-40A	ON T(ON)	OFF	***	***	**	ON	100%
11	CTA-40A	ON T(ON)	OFF	***	***	**	ON	100%
12	CTA-40A	ON T(ON)	OFF	***	***	**	ON	100%
13	CTA-40A	ON T(ON)	OFF	***	***	**	ON	100%
14	CTA-40A	ON T(ON)	OFF	***	***	**	ON	100%
15	CTA-40A	ON T(ON)	OFF	***	***	**	ON	100%
16	CTA-40A	ON T(ON)	OFF	***	***	**	ON	100%

[ENTER]:Item
[UP/DOWN]:Cursor
[ESC]:Cancel

CAL ON/OFF

Select item 4) <CAL ON/OFF> from the <Channel Cond> menu to display the screen at the right with “CAL ON/OFF” setting window.

Here, to conduct CAL on the “Measurement” screen, select the cursor to “ON” and if not, to “OFF” and press the **ENTER** key.



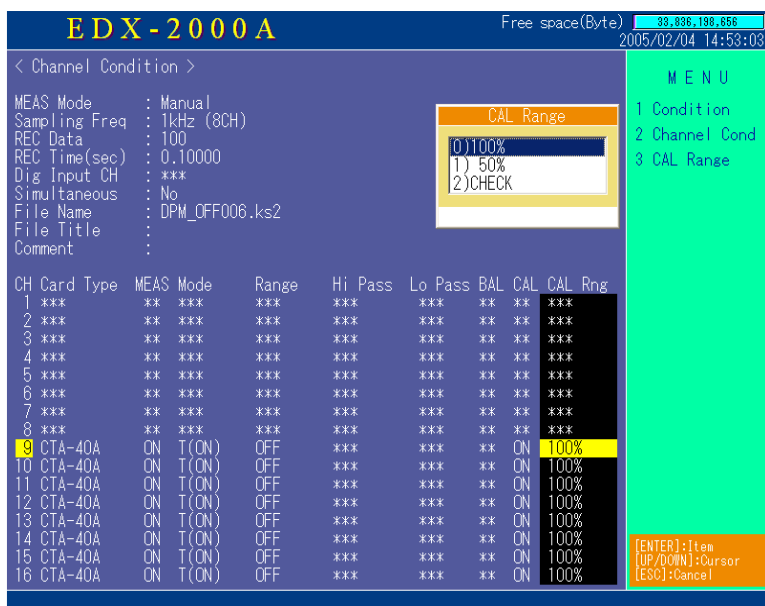
CAL Range

Select item 5) <CAL Range> from the <Channel Cond> menu to display the screen at the right with “CAL Range” setting window.

When it is desired to output 100% CAL, select the cursor to “100%” for 50% CAL, to “50%” To check the input amplifier, point the cursor to CHECK and then, press the **ENTER** key.

0°C CAL can be conducted for any of the settings.

In addition, the entire CAL outputs of the CTA card shall be absolute values.



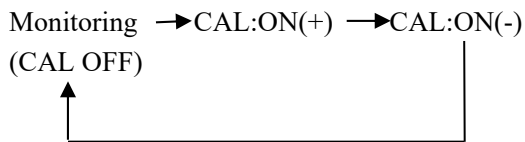
100% : Outputs CAL with + full scale of each range.

50% : Outputs CAL with + 1/2 full scale of each range.

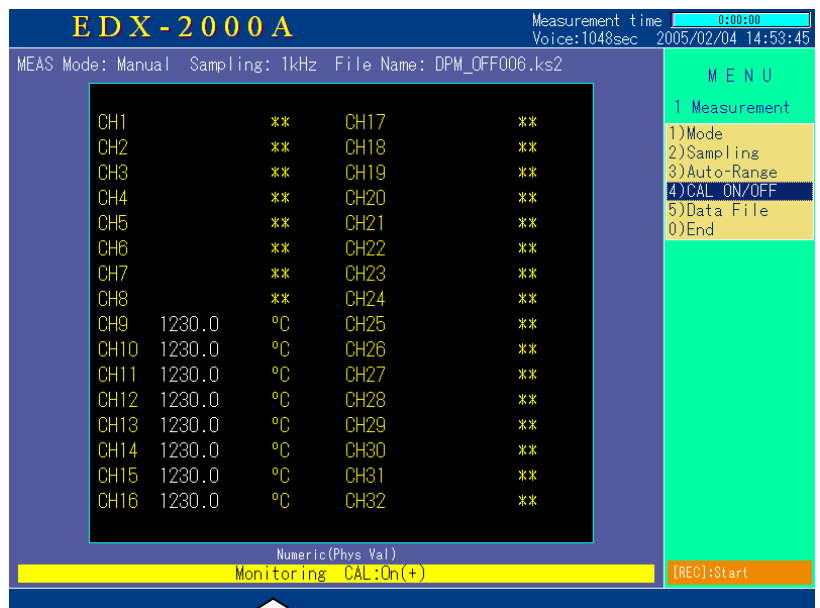
CHECK : When K(ON) or K(OFF) mode is selected : Approx. 183°C is output.

When T(ON) or T(OFF) mode is selected : Approx. 165°C is output.

To conduct CAL, select item 4) <CAL ON/OFF> on the Measurement screen. The following operations are repeated every time the **ENTER** key is pressed.



CAL Range	CAL:ON(+)	CAL:ON(-)
100%	100%	0°C CAL
50%	50%	0°C CAL
CHECK	CHECK	0°C CAL

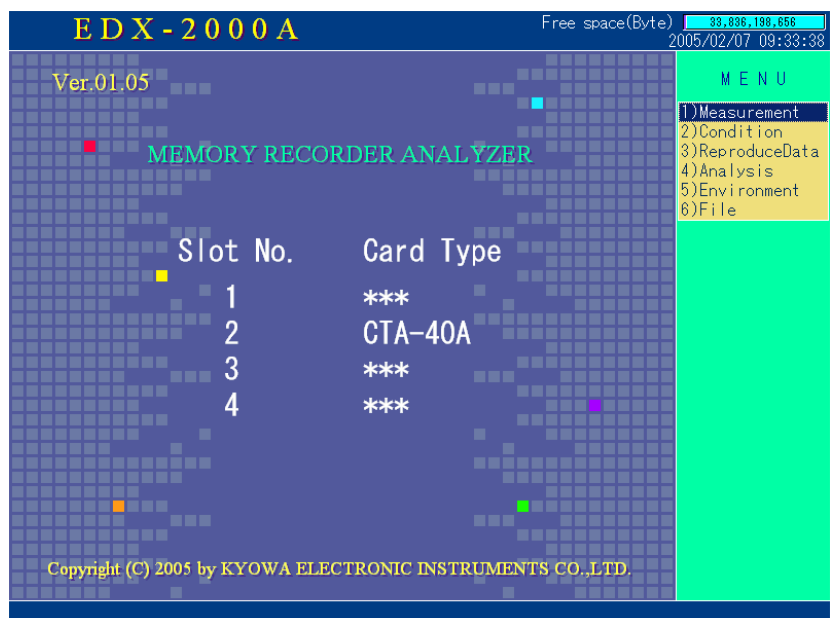


CAL:ON(+) Screen with Mode: K(ON), Range: 1230°C, CAL: ON, and CAL range: 100%

Measurement

After the entire settings are complete, select item 0) <End> on the <Channel Cond> menu to return to the EDX-2000A system menu screen shown at the right.

Here, select item 1) <Measurement> to start the measurement with determined channel conditions.



NOTE

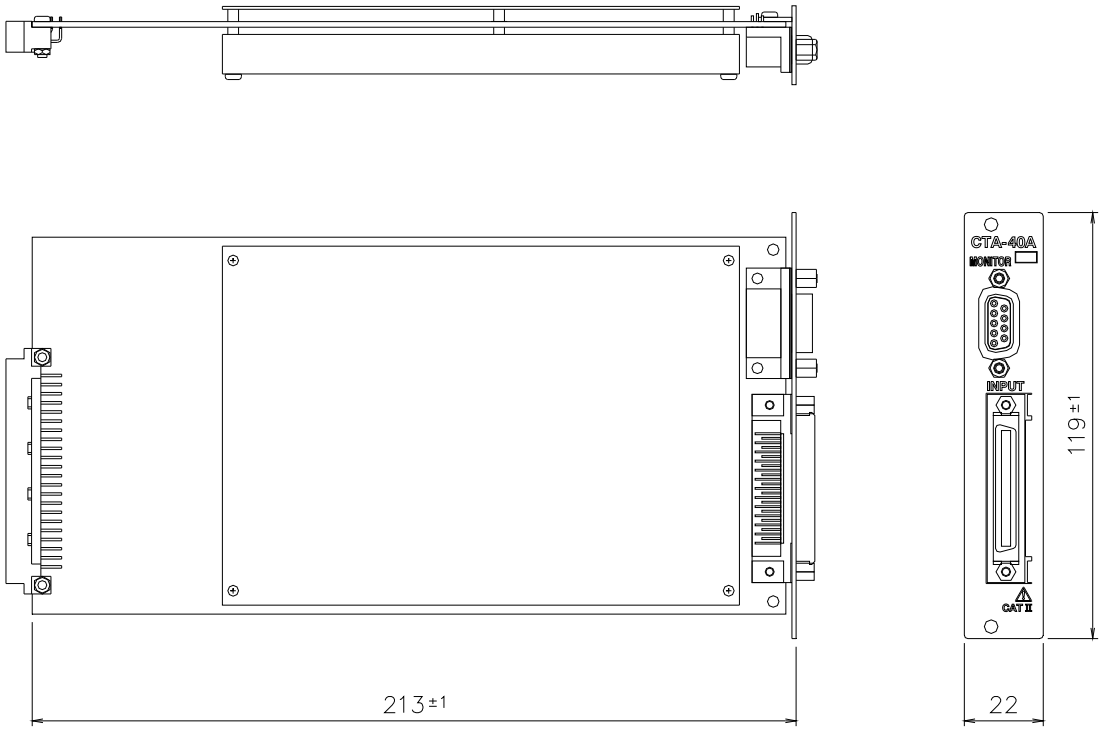
For detailed description of recording or reproduction of data, etc., refer to EDX-2000A Instruction Manual.

3. SPECIFICATIONS

3-1 HARDWARE SPECIFICATIONS

Name	Thermocouple Card
Model Name.....	CTA-40A
Applicable Sensor	Thermocouple
Number of Input Channels	8
Applicable thermocouple	K(CA) and T(CC)
Thermocouple Resistance	200 Ω or less (When burnout function is ON) 1000 Ω or less (When burnout function is OFF)
Measuring Range	K1230, K480, K240, T400, T210, and OFF Measuring range: K1230 (-200 to 1230°C) K480 (-200 to 480°C) K240 (-200 to 240°C) T400 (-200 to 400°C) T210 (-200 to 210°C)
System Accuracy.....	When ambient temperature is 20 $\pm$ 3°C : Within $\pm$ (0.5% rdg + 1°C) When ambient temperature is 0 to 40°C : Within $\pm$ (0.5% rdg +2°C)
CAL Value (CAL).....	100% and 50%, and 0°C of each range is output in absolute value.
Frequency Response Range	DC to 10 Hz
Resolution	16 bits
Burnout.....	Built-in: When burnout occurs, “Burnout” appears. (ON/OFF selectable) Note) When thermocouple resistance is high, measurement accuracy can be obtained by setting the burnout function to OFF.
Monitor.....	Accuracy : Within 5V $\pm$ 0.5% (When +FS) Nonlinearity : Within $\pm$ 0.5% FS
Insulation	Between input and output, and between CHs : 500 VDC, 50 M Ω or more
Compliance.....	Directive 2014/30/EU (EMC) Directive 2011/65/EU,(EU)2015/863(10 restricted substances) (RoHS)

3-2 OUTSIDE DRAWING

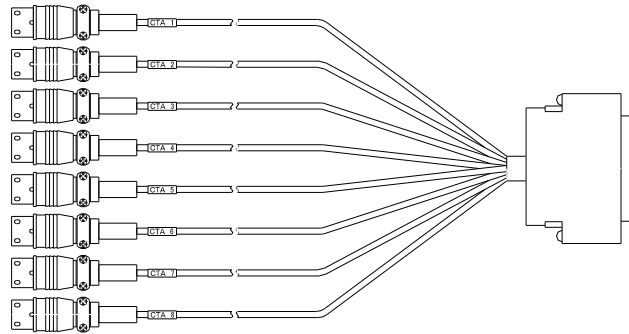


4. OPTIONALS

CTA Input Cable U-104 (Accessory)

The CTA input cable is connected to the input connector. (Length : Approx. 1.0 m)

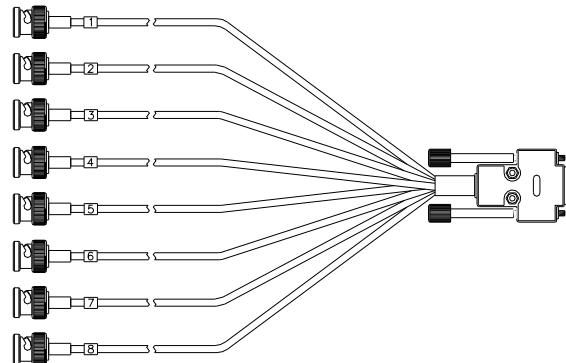
For connection, see “1-4 PIN ASSIGNMENT AND CONNECTION OF CONNECTORS.”



Centralized Output Cable U-62

The centralized output cable is connected to the monitor output connector allowing to monitor data for every channel. (Length : Approx. 1.0 m) BNC connector for monitor device.

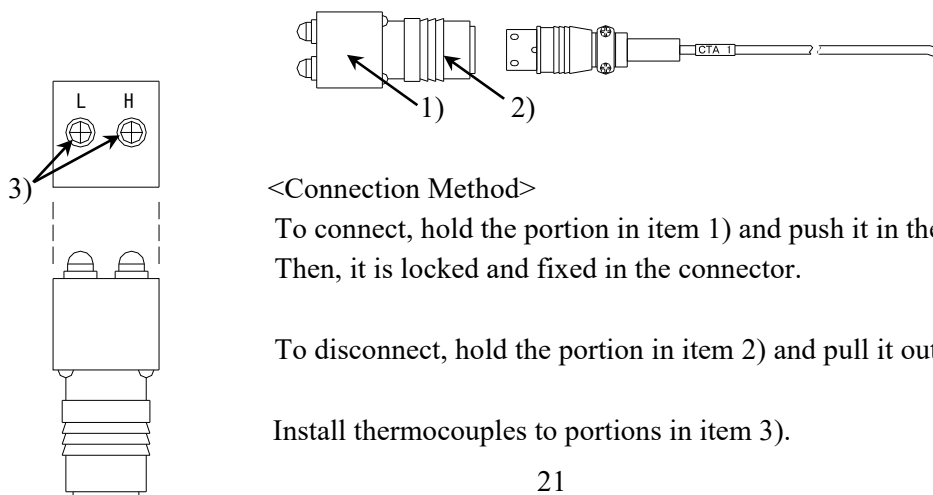
For connection, see “1-4 PIN ASSIGNMENT AND CONNECTION OF CONNECTORS.”



Temperature Sensing Adaptor CT-2A (Accessory)

The temperature sensing adaptor is connected to the CTA input cable allowing to measure temperature by thermocouple.

This adaptor has reference junction built-in.



<Connection Method>

To connect, hold the portion in item 1) and push it in the input cable connector. Then, it is locked and fixed in the connector.

To disconnect, hold the portion in item 2) and pull it out front.

Install thermocouples to portions in item 3).

Set '-' side of the thermocouple to L, and '+' side to H.