

STRAIN/VOLTAGE MEASUREMENT CARD

For EDX-2000A/EDX-100A

<u>CDV-40B/CDV-40B-F</u> <u>CDV-40A/CDV-40A-F</u>

INSTRUCTION MANUAL

Thank you for purchasing KYOWA's product CDV-40A/CDV-40A-F and CDV-40B/CDV-40B-F STRAIN/VOLTAGE MEASUREMENT CARD for EDX-2000A/EDX-100A.

Read this Instruction Manual carefully in order to make full use of the high performance capabilities of the product.

Do not use the product in methods other than described in this Manual.

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This Instruction Manual describes details of CDV-40A/CDV-40B/CDV-40A-F/CDV-40B-F Strain/Voltage Measurement Card for EDX-2000A/EDX-100A (hereinafter referred to as the CDV card).

Difference between cards with or without '-F' is described in the following.

Model Name	Anti-aliasing Filter Function
CDV-40A/B	Without
CDV-40A/B-F	With

STANDARD ACCESSORIES

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

Inspection Report & Warranty	1	
Cross- recessed head binding screw M3×8)

SAFETY PRECAUTIONS

The CDV card is designed according to detailed specifications in "9. SPECIFICATIONS." Do not use the CDV card in environment not conforming to specifications when using the EDX-2000A Memory/Recorder Analyzer (hereinafter referred as the EDX-2000A) and EDX-100A Universal Recorder (hereinafter referred to as the EDX-100A). Or, damage of the product may result.

PRIOR TO USE

For safe use of the CDV-40A/B-F, do not forget to read the "Safety Precautions" prior to use.

Kyowa Electronic Instruments Co., Ltd. assumes no liability for any damages resulting from user's failure to comply with the safety precautions.

SAFETY SYMBOLS

For safety operation of the CDV card, the following "WARNING" and "CAUTION" symbols are used in "Safety Precautions" of this Instruction Manual.

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

A WARNING

• WARING

Always take special care for Warning Precautions stated in "EDX-2000A Memory/Recorder Analyzer Instruction Manual for Hardware" and EDX-100A Universal Recorder Instruction Manual for Hardware."

A CAUTION

• CAUTION

Always take special care for Warning Precautions stated in "EDX-2000A Memory/Recorder Analyzer Instruction Manual for Hardwar" and "EDX-100A Universal Recorder Instruction Manual for Hardware."

• When installing or removing the CDV card to/from the EDX-2000A/EDX-100A, do not contact any component parts on the CDV card. Or, performance of the CDV card may deteriorate and failure of the product may result.

NOTATIONS USED IN THE INSTRUCTION MANUAL

Informational Notes

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

Examples of Notations



1. PRODUCT OUTLINE

1-1 OUTLINE OF CDV-40A/B

- CDV card is a conditioner card for strain gages, strain gage transducers, and voltage output sensors.
- Measurement of up to 8 CHs per CDV card is available
- The CDV card is capable of reading TEDS (Transducer Electronic Data Sheet) built-in sensor information items. In addition, based on the read information, the CDV card automatically sets appropriate channel conditions. When using the TEDS built-in sensors, refer to separate volume of "TEDS Sensor Information Instruction Manual" and "EDX-2000A Instruction Manual for Hardware/Software."
 When using the EDX-100A, refer to "EDX-100A Instruction Manual" and DCS-100A Instruction Manual for EDX-100A Operation."

1-2 PRECAUTIONS FOR USING THE CDV-40A/B

• When mixedly using voltage input and strain sensor input in the same CDV card, signal crosstalk may generate and waveform different from sensor input waveform may appear on the CH connected with strain sensor.

[Worst Value] The worst signal crosstalk of 120 µcp-p generates on the strain sensor input CH.

(Condition)		•)	Mode:	Voltage
	Voltage input CH]•	Range:	10 V
)•	LPF:	FLAT
		ι.	Input:	Rectangular waveform of 20 Vp-p
		(•	Mode:	Strain
	Strain sensor input CH]•	Range:	500 με
)•	LPF:	FLAT
		l.	Input:	Arbitrary

At this time, set the LPF of the strain sensor input CH to 10 kHz or less to solve the above crosstalk problem.

1-3 OUTLINE OF CDV-40A/B-F (CDV-40A/B WITH ANTI-ALIASING FILTER)

- The CDV-40A-F card is a CDV-40A/B conditioner card mounted with anti-aliasing filter function. The anti-aliasing filter function is designed to prevent A/D converter from aliasing.
- The anti-aliasing filter function of the CDV card is composed of 8th order Butterworth and attenuation obtained by entering 1/2 of sampling frequency is -48 dB ±5 dB.
- Since ON/OFF selection is available for using the anti-aliasing filter, the CDV card can be used without the anti-aliasing filter
 In addition, since the ON/OFF selection is available for every channel, you can set whether or not using the anti-aliasing filter to channels in the same card.
- Cutoff frequency of the anti-aliasing filter automatically changes at the same time when setting the sampling frequency of the EDX-2000A/EDX-100A. Therefore, it is not required to set the cutoff frequency. In addition, for the EDX-2000A, when entering the external clock signal, the same can be mentioned and it is also not required to set the cutoff frequency.

MEMO

ALIASING is a phenomenon of a waveform not available to correctly monitor or reproduce the waveform when frequency of the input signal becomes more than 1/2 of the sampling frequency. The anti-aliasing filter is used to prevent from aliasing.

1-4 PRECAUTIONS FOR USING THE CDV-40A/B-F

- Cutoff frequency of the anti-aliasing filter is set to have <u>1/4 of the sampling frequency</u>. It is recommended to set the sampling frequency to be more than 4 times as large as the predicted input frequency.
- Sampling frequency range applicable for the anti-aliasing filter shall be more than 100 Hz. You cannot set the sampling frequency to less than 100 Hz.

(Measurement with anti-aliasing filter set to OFF is available.)

NOTE

This section describes mainly anti-aliasing filter function.

For details except for the anti-aliasing filter function, precautions are in common with the CDV card. For other precautions, connection methods, etc., refer to CDV-40A/B related description in EDX-2000A or EDX-100A Instruction Manual.

1-5 PARTS NAMES AND FUNCTIONS



CDV-40B

List of Input Cables

Product	Model	Cable Length	Heat-shrinkable	Product	Model	Cable Length	Heat-shrinkable
Name	Name	(Fig. 1)	Tube Color	Name	Name	(Fig. 1)	Tube Color
			(Fig. 2)				(Fig. 2)
Input	U-40		Without tube	Input	U-46		Blue
cable	U-41		Brown	cable	U-47	50 cm	Purple
	U-42	50 cm	Red		U-48		Gray
	U-43		Orange				
	U-44		Yellow		U-38	1.5 m	Without tube
	U-45]	Green		U-39	1.0 m	Without tube



2. INSTALLING TO EDX-2000A

Always turn OFF the power before installing the CDV card to the EDX-2000A.

- 1) Unscrew upper and lower portions of the already installed conditioner card or dummy panel
- Remove the already installed conditioner card or dummy panel.
- Slowly insert the CDV card along the guide rail in the EDX-2000A and tightly fasten the upper and lower screws.
- 4) After replacing the CDV card, turn ON the EDX-2000A and check the startup window. If the "Card Type" is displayed on the "Slot No." column, the CDV card is properly replaced.
- 5) If "DISABLE" or "UNKNOWN" is displayed as the "Card Type," it is required to update the EDX-2000A hardware. At this time, contact KYOWA or our representative for updating the EDX-2000A hardware.





NOTE

- When installing the CDV card into the EDX-2000A, do not touch any component parts of the CDV card. Or, system failure or damage of the product may result.
- When installing the CDV card into the EDX-100A, refer to the EDX-100A Instruction Manual.

3. CONNECTING SENSORS

The CDV card is capable of measuring strain and voltage. This section explains how to connect sensors to the CDV card from input cables.

3-1 WHEN USING STRAIN GAGE OR STRAIN GAGE TRANSDUCER

When measuring the output of the strain gage or strain gage transducer, connect the bridge box or strain gage transducer as shown in the right figure.

Before recording data, select the strain mode monitor the noise. If excessive noise is detected, ground the ground terminal of the bridge box or connect it to the GND terminal of the EDX-2000A, and use whichever results in less noise.



MEMO

When using other measuring cards, read carefully the instruction manuals of the other measuring cards.

NOTE

- The F terminal of each channel input of the CDV card is intended for sensor ID signals. If any other signals are connected to this F terminal, the EDX-2000A may not be able to recognize all the conditioner cards installed in the system. At this time, the startup window will display "UNKNOWN" where it should have the name of the conditioner card name (e.g. CDV-40A) in the normal state, resulting to unable the measurement.
- <u>Strain generator: CAB-120D, 350D and WDS-10 are not available because F and A terminals</u> <u>are short-circuited.</u>
- It should be noted that when using a transducer with a remote sensing function, always connect by locating the connection cable (N-81 to N-85) between the CDV card input cable and the transducer..
- When using an extension cable between the input cable and bridge box or strain gage transducer, use connection cables N81 to N85.

3-2 WHEN APPLYING VOLTAGE



When measuring the voltage, connect the FV-1A input conversion adapter (optional) to a quick mating connector using the BNC connector. Select the voltage mode to conduct monitoring. If excessive noise is detected, connect the negative side of the voltage signal source to the GND terminal of the EDX-2000A.



4. CENTRALIZED CONNECTOR PIN ASSIGNMENT

Pin No.	СН	Name	Pin No.	СН	Name
1		+BV	26		-IN
2	1	-BV	27	1	+IN
3		COM	28		ID
4		+BV	29		-IN
5	2	-BV	30	2	+IN
6		COM	31		ID
7		+BV	32		-IN
8	3	-BV	33	3	+IN
9		COM	34		ID
10		+BV	35		-IN
11	4	-BV	36	4	+IN
12		COM	37		ID
13		+BV	38		-IN
14	5	-BV	39	5	+IN
15		COM	40		ID
16		+BV	41		-IN
17	6	-BV	42	6	+IN
18		COM	43		ID
19		+BV	44		-IN
20	7	-BV	45	7	+IN
21		COM	46		ID
22		+BV	47		-IN
23	8	-BV	48	8	+IN
24		COM	49		ID
25	-	Shield	50	-	Shield

This section describes pin assignment of the centralized connector pins.



5. HOW TO SET CDV-40A/B

If the CDV card is already installed in the EDX-2000A, settings of all the required conditions are conducted from the EDX-2000A.

	EDX-2000	A Initial Wir	ndow						
-									
4	2) Setting	Conditions							
	1								
]) CH Co	ndition	1	1					1
	Items	1) Meas CH	2) Mode	3) Range	4) HPF	5) LPF	6) Balance	7) CAL	8) CAL Range
				500 μ					
				1 kµ					
				2 kµ					
			Strain	5 kµ			ON		
				10 kµ		FLAT	OFF		
				20 kµ		10 kHz			
				50 kµ		3 kHz			
	Selection	Measure		OFF	OFF	1 kHz		ON	100 %
		Not measure		0.1 V	0.2 Hz	300 kHz	/	OFF	50 %
				0.2 V	1.0 Hz	100 kHz			Shunt
				0.5 V		30 Hz			
			Voltage	1.0 V		10 Hz			
				2.0 V					
				5.0 V					
				10.0 V					
				OFF			\vee		
	ļ								
]	EDX-2000	A Initial Wir	<u>ndow</u>						
	1	Ļ							
1	<u>)</u> Measur	rement							

<Setting Order of the CDV Card>

Set required conditions to the CDV card in due order in the above table.

MEMO

When installing the CDV card to the EDX-100A, see Instruction Manuals of the EDX-100A and DCS-100A.

EDX-2000A Initial Window

When the CDV card is properly installed in the EDX-2000A, CDV-40A or CDV-40B appears on the initial window.

(The window at the right shows that CDV-40B is installed in the 1st to 4th slots.)

Here, set the cursor to the item 2) Condition and press the ENTER key.

Card Type of Slot No. with no conditioner card is displayed



Free space(Byte

008/05/26 11:10:20

E D X - 2 0 0 0 A

Condition Setting Window

MEMO

with "***."

Select the item 2) Condition on the initial window to display the right window.

Here, set the cursor to 1) CH Condition and press the ENTER key.

MEMO CH column with no conditioner card and setting not available column are displayed with "*."

Meas CH

Select the item 1) Meas CH is selected on the CH Condition window to display the right window.

Set the cursor to either 0) Measure or 1) Not Measure for every CH and press the ENTER key.

< Conditions >	>						MENU
MEAS Mode Sampling Freq REC Data REC Time(sec) Dig Input CH Simultaneous File Name File Title Comment	: Manual : 100Hz (320 : (484,061,8 : (56day 00: : Measure : No : TEST000.ks	:H+DI) 09) 36:59) :2				<	1 Condition ()Channel Cond 2)TEUS 3)MEAS Cond 4)Simit Mode 5)Test Info 6)Comp IntSense 7)Acti Load CAL 0)MEGOO
CH Card Type 1 CDV-408 2 CDV-408 3 CDV-408 4 CDV-408 5 CDV-408 6 CDV-408 7 CDV-408 8 CDV-408 9 CDV-408 10 CDV-408 11 CDV-408 11 CDV-408 13 CDV-408	MEAS Mode ON Strain ON Strain	Range 1kµm/m 1kµm/m 1kµm/m 1kµm/m 1kµm/m 1kµm/m 1kµm/m 1kµm/m 1kµm/m 1kµm/m 1kµm/m	Hi Pass OFF OFF OFF OFF OFF OFF OFF OFF OFF O	Lo Pass FLAT FLAT FLAT FLAT FLAT FLAT FLAT FLAT	AL 82555555555555555555555555555555555555	CAL Rng 100% 100% 100% 100% 100% 100% 100% 100	8)MLASCond File 9)Data File A)Next Page B)Prev Page 0)End
15 CDV-40B 16 CDV-40B	ON Strain ON Strain	1kµm/m 1kµm/m	OFF OFF	FLAT FLAT	ON ON ON ON	100% 100%	[SPACE]:Change CH [LEFT/RIGHT]: Change Item



Mode

Select the item 2) Mode on the CH Condition window to display the right window.

Set the cursor to either Strain or Voltage for every CH and press the ENTER key.



Range

Select the item 3) Range on the CH Condition window to display the right window.

Set the cursor to the desired Meas Range for every CH and press the ENTER key.

High Pass Filter

Select the item 4) High Pass Filter on the CH Condition window to display the right window.

When using High Pass Filter for every CH (Input AC coupling), set the cursor to "0.2Hz" or "1Hz" and if not, (Input DC coupling), set the cursor to "OFF" and press the ENTER key.

Low Pass Filter

Select the item 5) Low Pass Filter on the CH Condition window to display the right window.

Set the cursor to appropriate frequency for every CH and press the ENTER key.







BAL ON/OFF

Select the item 6) BAL ON/OFF on the CH Condition window to display the right window.

REC Time(sec) Dig Input CH Simultaneous File Name File Title Comment	: (56day 00:36:59) : Measure : No : TEST000.ks2 :	Balance 0N/0FF 0)0N 1)0FF	3 BAL ON/OFF
CH Card Type 1 CDV-40B 2 CDV-40B 3 CDV-40B 4 CDV-40B	MEAS Mode Range ON Strain 1kµm/m ON Strain 1kµm/m ON Strain 1kµm/m	Hi Pass Lo Pass BAL CAL CAL OFF FLAT ON 0N 1000 OFF FLAT ON 0N 1000 OFF FLAT ON 0N 1000	Rng K

BAL ON/OFF is selected to set whether or not to conduct strain bridge initial adjustment (balance) of the measuring CH. Set the cursor to "ON" or "OFF" for every CH and press the ENTER key.

Here, a CH set to balance "ON" shall be a target for balancing when selecting menus in due order Measure \rightarrow Balance.



CAL ON/OFF

Select the item 7) CAL ON/OFF on the CH Condition window to display the right window.



Set CAL value output target of the conditioner card for every CH.

Set the cursor to "ON" or "OFF" for every CH and press the ENTER key.

Here, a CH set to CAL "ON" shall be a target for CAL output when selecting menus in due order Measure \rightarrow CAL ON/OFF.

CAL Range

Select the item 8) CAL Range on the CH Condition window to display the right window.



Cal range (CAL output value) of the conditioner card is set for every CH. When it is desired to 100 % output the CAL value for every CH, set the cursor to "100%," for 50% output, to "50%," and for outputting CAL value equal to SHUNT resistance ([Note]) that is connected to Meas CH bridge, to "SHUNT" and press the ENTER key.

NOTE

SHUNT

Insert a fixed resistance between '+BV' and '+IN' of the strain gage bridge and output a value obtained by adding the bridge output value at that time to the current output value. Irrespective or measuring range or CAL output range, it is determined by the bridge resistance of the strain sensor.

Output value of each bridge resistance is described in the following table.

Bridge Resistance $[\Omega]$	Output [µm/m] *
120	Approx. 80
240	Approx. 176
350	Approx. 257
700	Approx. 515
1000	Approx. 735

Expression

Output value =
$$\frac{\text{Bridge resistance}}{1360 \times 10^3} \times 10^6$$

*: +CAL and -CAL is same output. Accuracy is approximately ±5%.

Measurement

After the entire settings are complete, select 0) Exit on the CH Condition window to return to the EDX-2000A initial window.

Here, select 1) Measurement to start the measurement with determined CH conditions.

NOTE

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

MEMO

Window examples are taken from the EDX-2000A windows. When using the CDV card by installing to the EDX-100A, refer to DCS-100A Dynamic Data Recording Software Instruction Manual for EDX-100A Operation.

6. HOW TO SET ANTI-ALIASING FILTER (CDV-40A/B-F)

Set anti-aliasing filter in due order as described in Figure 1.

If you cannot set the anti-aliasing filter even if in due orders according the following procedures, see "7. PRECAUTIONS FOR SETTING ANTI-ALIASING FILTER."



1) After starting up the EDX-2000A, check whether or not the CDV-40A-F or CDV-40B-F is installed in the



Figure 2. EDX-2000A Initial Window

2) Select 2) Condition on the initial window to display the following window as shown in Figure 3.

E D X - 2000	A	rree :	space(byte) 2	005/02/28 19:47:55
< Conditions >				MENU
MEAS Mode : Manual Sampling Freq : 50Hz (16CH+ REC Data : (842,136,59) REC Time(sec) : (194day 22) Dig Input CH : Measure Simultaneous : No File Name : TEST000.ks2 File Title : Comment :	DI) 8) 32:11)			1 Condition 1)Channel Cond 2)MEAS Cond 3)Simit Mode 4)Test Info 5)Acti Load CAL 6)MEASCond File 7)Data File
CH Card Type MEAS Mode I 1 CDV-40A ON Voltage 2 CDV-40A ON Voltage 3 CDV-40A ON Voltage 3 CDV-40A ON Voltage 5 CDV-40A ON Voltage 5 CDV-40A ON Voltage 6 CDV-40A ON Voltage 7 CDV-40A ON Voltage 8 CDV-40A ON Voltage 9 CDV-40A ON Voltage 9 CDV-40A ON Voltage 10 CDV-40A-F ON Voltage 12 CDV-40A-F ON Voltage 12 CDV-40A-F ON Voltage 13 CDV-40A-F ON Voltage 13 CDV-40A-F ON Voltage 14 CDV-40A-F ON Voltage 16 CDV-40A-F ON Voltage 16 CDV-40A-F ON Voltage	Range Hi Pass 0.1V OFF 0.1V OFF	Lo Pass BAL CAL 10kHz *** ON 10kHz *** ON	CAL Rng 100% 100% 100% 100% 100% 100% 100% 100	UJENa [LEFT/RIGHT]: Change Item

Figure 3. Set Condition Window

3) Select 1) CH Condition on the Condition Window to display the following window as shown in Figure 4.

E D X - 2 0 0 0 A Free space(Byte)	28,632,705,792 005/02/28 19:20:45
< Channel Condition >	MENU
MEAS Mode : Manual Sampling Freq : 100Hz (16CH+DI) REC Data : (842,136,598)	1 Condition 2 Channel Cond
REC lime(sec) : (9/day 11:16:05) Dig Input CH : Measure Simultaneous : No File Name : TESTO00.ks2	1)MEAS Channel 2)Mode 3)Range 4)Hi Pass
File litle : Comment :	5)Lo Pass
CH Card Type MEAS Mode Range Hi Pass Lo Pass BAL CAL Rng 1 CDV-40A ON Voltage 0.1V OFF 10kHz *** ON 100% 2 CDV-40A ON Voltage 0.1V OFF 10kHz *** ON 100% 3 CDV-40A ON Voltage 0.1V OFF 10kHz *** ON 100% 4 CDV-40A ON Voltage 0.1V OFF 10kHz *** ON 100% 5 CDV-40A ON Voltage 0.1V OFF 10kHz ** ON 100% 6 CDV-40A ON Voltage 0.1V OFF 10kHz ** ON 100%	7)CAL Range 8)CAL Coef 9)Offset A)Unit B)Channel Name C)Digital Input 0)End
7 CDV-40A ON Voltage 0.1V OFF 10kHz ** ON 100% 8 CDV-40A ON Voltage 0.1V OFF 10kHz ** ON 100% 9 CDV-40A-F ON Voltage 0.1V OFF 10kHz ** ON 100% 10 CDV-40A-F ON Voltage 0.1V OFF 10kHz ** ON 100% 11 CDV-40A-F ON Voltage 0.1V OFF 10kHz ** ON 100% 12 CDV-40A-F ON Voltage 0.1V OFF 10kHz ** ON 100% 13 CDV-40A-F ON Voltage 0.1V OFF 10kHz ** ON 100% 14 CDV-40A-F ON Voltage 0.1V OFF 10kHz ** ON 100%	
15 CDV-40A-F ON Voltage 0.1V OFF 10kHz ** ON 100% 16 CDV-40A-F ON Voltage 0.1V OFF 10kHz ** ON 100%	[LEFT/RIGHT]: Change Item

Figure 4. CH Condition Window

4) Select 5) Low Pass Filter on the CH Condition window to display the following window in Figure 5.

	E D X - 2 0 0 0 A			Free	space(Byte) 2	28,832,754,944 005/03/04 09:10:08
<pre>< Chai MEAS I Sampl REC D: REC T Dig Ii Simul File I File I</pre>	nnel Condit Mode : ing Freq : ime(sec) : ime(sec) : taneous : Name : Title :	ion > Manual 100Hz ((842,13 (97day Measure No TEST000) 100Hz 1100Hz (1100Hz (1100Hz 4)300Hz 5)100Hz 6)30Hz 7)10Hz	s Filter		2	M E N U 1 Condition 2 Channel Cond 3 Lo Pass
Comment CH Ca 1 CD 2 CD 3 CD 4 CD 5 CD 6 CD 7 CD 10 CD 11 CD 12 CD 13 CD 14 CD 14 CD 16 CD	nt : rd Type ME, V=40A 00 V=40A 00 V=40A 00 V=40A 00 V=40A 00 V=40A 00 V=40A 00 V=40A 00 V=40A-F 00 V=4	AS Mode N Voltage 0.1V N Voltage 0.1V	OFF OFF OFF OFF OFF OFF OFF OFF OFF OFF	Lo Pass BAL CAL 10kHz *** ON 10kHz *** ON	CAL Rng 100% 100% 100% 100% 100% 100% 100% 100	[ENTER]: I tem [UF/DOTN]: Cursor [ESC]: Cancel

Figure 5. Set Low Pass Filter Window

In the above Figure 5, Low Pass Filter of the 9th CH is changed from 10 kHz to AUTO. By setting the Low Pass Filter to AUTO, the anti-aliasing filter is set to ON.

MEMO

- Window examples are taken from EDX-2000A windows. When using the EDX-100A, refer to "DCS-100A Dynamic Data Recording Instruction Manual for Software (For EDX-100A Operation)."
- For details except for setting the anti-aliasing filter function, setting methods are in common with the CDV card. Refer to CDV-40A/B related description in EDX-2000A or EDX-100A Instruction Manual.

7. PRECAUTIONS FOR SETTING ANTI-ALIASING FILTER

• When AUTO is not indicated on the Low Pass Filter menu items

Allowable sampling frequency range of the anti-aliasing filter is 100 Hz or more. If the sampling frequency is set to less than 100 Hz as shown in the Figure 6, AUTO does not appear on the Low Pass Filter menu items.



Figure 6. When AUTO is not displayed

To use the anti-aliasing filter, select menus in due order and set the sampling frequency to 100 Hz or more. Initial Window \rightarrow 2) Condition \rightarrow 2) Meas Condition \rightarrow 2) Sampling



Figure 7. Set Sampling Frequency Window

• When it is required to set sampling frequency to 100 Hz or less

When setting the sampling frequency to 100 Hz or less, in some cases, it is not available to set the sampling frequency to the required 100 Hz. If AUTO is set to any CH on the Low Pass filter menu items, sampling frequencies of less than 100 Hz are not displayed.

Sampling Frequency
0)200kHz 1)100kHz 2) 50kHz 3) 20kHz 4) 10kHz 5) 5kHz 6) 2kHz 7) 1kHz 8) 500Hz 9) 200Hz A) 100Hz

Figure 8. Set Sampling Frequency Window 2

When it is required to set the sampling frequency to less than 100 Hz, it is essential to cancel the setting of the anti-aliasing filter.

To cancel, change the settings of CHs that is set to AUTO in the Low Pass Filter menus to <u>other than AUTO</u>. Then, the setting of anti-aliasing filter is cancelled.

After setting the Low Pass Filter menus of all the CHs to other than AUTO, set the sampling frequency. Then you can select any sampling frequency ranges as shown in Figure 7.

	NOTE				
/.	Sampling frequen	cy range			
(For EDX-2000A)				
When the number of Meas CHs is more than 16, irrespective of the setting of the anti-aliasing					
	filter, the allowat	ble sampling frequency ran	ge is up to 100 kHz. Therefore, 200 kHz is not		
	displayed. In the	same manner, when the nur	nber of Meas CHs is more than 32, the allowable		
	sampling frequency range is up to 50 kHz and sampling frequency higher than 50 kHz is not				
	displayed	-)8			
	ansping va.				
(For EDX-100A)				
	1 Hz to 100 kHz:	Number of Meas CHs	1CH		
	1 Hz to 50 kHz:	Number of Meas CHs	Up to 3 CHs		
	1 Hz to 20 kHz:	Number of Meas CHs	Up to 8 CHs		
	1 Hz to 10 kHz:	Number of Meas CHs	Up to 16 CHs		
	1 Hz to 5 kHz:	Number of Meas CHs	32 CHs		
1 Hz to 1 kHz: When recording CAN data					
$\langle \rangle$	When setting Lov	sampling frequency shall be "100 Hz or more."			
$\overline{\ }$					

8. OUTSIDE DRAWING

CDV-40A/B



CDV-40A/B-F



9. SPECIFICATIONS

Model Name	CDV-40A/B	CDV-40A/B-F		
Items	Strain measurement	Voltage measurement		
Number of input CHs	8 (Centralized connector)			
Input format	Balance differential input	Unbalance input		
Input resistance	Approx. $(10 \text{ M}\Omega + 10 \text{ M}\Omega)$	Approx. 1 MΩ		
Coupling	DC/AC (DC cut)			
Applicable gage factor	2.00	-		
Excitation voltage	DC 2.00 $\pm 2\%$ (120 to 1 k)	-		
Balance adjustment range	Resistance $\pm 2.4\%$ ($\pm 12000~\mu m/m$)	-		
Maggyring ronga	8 steps: 500, 1k, 2k, 5k, 10k, 20k,	8 steps: 0.1 , 0.2 , 0.5 , 1 , 2 , 5 ,		
Measuring range	50k µm/m and OFF	10V and OFF		
Danga aggurgay	Each range: ±0.2% FS	Each range: ±0.2% FS		
Range accuracy	(When cable length is 1.0 m)			
CAL value	Each range: ±100%, ±50%			
Nonlinearity	±0.1%FS			
	For DC coupling: DC to 50 kHz Deviation: +1 dB, -3 dB			
Frequency response range	DC cut (For AC coupling): 0.2 or 1 Hz to 50 kHz			
	(See High Pass Filter section.)			
	Transfer characteristics 2nd order Butterworth			
Low pass filter	Cutoff frequency 8 steps: 10, 30 100, 300, 1k, 3k, 10 kHz, and FLAT			
Low pass men	Amplitude ratio of cutoff point $-3 \text{ dB} \pm 1 \text{ dB}$			
	Attenuation characteristics $-12 \text{ dB/oct} \pm 1 \text{ dB/oct}$			
	8th order Butterworth			
Anti aliasing filter (*1)	Cutoff frequency Automatically set to Sampling frequency \times 0.25			
Anti-anasing inter (*1)	Cutoff characteristics $-48 \text{ dB} \pm 5 \text{ dB}$ (When sampling frequency $\times 0.5$)			
	Note) When [AUTO] is selected in Low Pass Filter setting			
High page filter (DC out))	Cutoff frequency 2 steps: 0.2 Hz and 1 Hz			
The pass filter (DC cut))	Attenuation characteristics -6 dB/oct			
AD converter resolution	16 bits			
Additional function Read TEDS built-in sensor information				

(*1) Only for CDV-40A/B-F