

INSTRUCTION MANUAL

EDX—3000A/B

(FOR CONTROL COMMAND)

Thank you for purchasing KYOWA's product EDX-3000A/B Memory Recorder./Analyzer.

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.

In addition, this Manual only describes Control Command of the EDX-3000A/B.

For hardware, refer to the "Instruction Manual of the EDX-3000A/B Memory Recorder /Analyzer (For Hardware)" and "Instruction Manual of the EDX-3000A/B Memory Recorder/Analyzer (For Software)", for software operation, refer to the "Instruction Manual of the DCS-100A Dynamic Recording Software (For EDX-3000A/B Operation)."

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NOTATIONS USED IN THE INSTRUCTION MANUAL

This Instruction Manual is written based on the assumption that customers fully understand basic knowledge and terms related to method for creating software including the PC, TCP/IP communication, program language, etc. For details of programming, refer to commercially available textbooks, etc.

Informational Notes

- Related and reference items are enclosed with bracket quotation marks “ ”. In addition, header No. and header character string may be adopted.

(“EDX-3000A/B MEMORY RECORDER/ANALYZER INSTRUCTION MANUAL for Hardware,” “6. CONTROL COMMAND,” etc.)

- Personal Computer is denoted as the PC and EDX-3000A/B, as the EDX.
- Conditioner cards may be described with Model names.

Strain/voltage measurement card:	CDV-40B/A, CDV-40B/A-F
Strain/voltage/acceleration measurement card:	CVM-40A, CVM-41A
Dynamic strain measurement card:	DPM-42B/A, DPM-42B/A-F DPM-42B-I, DPM-42B-I-F
Thermocouple card:	CTA-40A
F/V converter card:	CFV-40A
Charge amplifier card:	CCA-40A, CCA-40A-F
Strain/voltage measurement insulation card:	CDV-44AS
Direct rated current expansion card (120 ohm):	CDA-44AS
Direct rated current expansion card (350 ohm):	CDA-45AS
A/D converter card:	AD-40AS, AD-40AS-F
CAN card (1 port, maximum 128 channels):	CAN-40A
CAN card (2 port, maximum 256 channels):	CAN-41A

[Note] Can mount one CAN-40A or CAN-41A to the final slot.

- Conditioner card may be simply denoted as the “Conditioner.”
In addition, CAN-40A and CAN-41A may be denoted as “CAN card,” and conditioner cards other than CAN card, as “Analog conditioner (card).”
- Input CH of the analog conditioner may be denoted as “Analog CH.”
- CH Nos. of the analog conditioner is denoted as “CH1, CH2, , CH32.”
- Low pass filter may be simply denoted as “LPF,” and High pass filter, as “HPF.”
- When the EDX is solely used (with ID No. set to F), it is described as “Stand-alone.”
- The EDX with ID NO. set to ‘0’ in synchronous operation is described as a “Master” or “Synchronous master.”
- The EDX unit (s) with ID Nos. set to ‘1 to 9’ in synchronous operation is described as “Slave (s)” or “Synchronous slave (s).”
- Unless otherwise specified, prefix that is expressing the size is described as follows.
“K” (Kilo) = 1024, “M” (Mega) = 1024², and “G” (Giga) = 1024³.
(1 KB = 1,024, 1 MB = 1,048,576, and 1 GB = 1,073,741,824 bytes)

Precautions

The following messages are provided for reference purpose as necessary to attract your attention to information that requires special care when handling the EDX-3000A/B MEMORY RECORDER ANALYZER (hereinafter referred to as the EDX).

Examples of Notations

NOTE

Essential precautions required when handling the EDX-3000A/B.

MEMO

Reference items required when handling the EDX-3000A/B.

1 OUTLINE

This Instruction Manual is to define Communication Command through LAN interface between the EDX and the PC. The EDX and the PC is connected via LAN, thereby enabling the PC to control the EDX with the Communication Command.

This Instruction Manual is written based on the assumption that customers fully understand basic knowledge of the LAN including programming using the TCP/IP or socket. For details, refer to commercially available textbooks, etc.

In addition, for how to connect the EDX and the PC, how to prepare the EDX for every communication interface, and for details of conditioners, refer to the “EDX-3000A/B MEMORY RECORDER ANALYZER INSTRUCTION MANUAL for Hardware” when required.

When control command data (hereinafter referred to as the Command packet) is sent to the EDX from the PC, the EDX conducts the specified operation and processing and then, returns the response data (hereinafter referred to as the Response packet) to the PC.

The PC communicates with the EDX using API (Application Program Interface) called socket. The socket is a communication API using the TCP/IP protocol and normally it is provided as OS or middleware package. The PC sends the Command packet to the EDX using data transfer function of the socket and receives the Response packet from the EDX using data receiving function.

2 TYPES OF VARIABLES

This Chapter is to define various types of variables used in Command packet and Response packet. Assignment of variables with more than 2 bytes is in little endian format.

MEMO

- Notation “0x*****” on and after then denotes a hexadecimal value.

Types of Variables	The Number of Bytes	Notation	Supplement
signed char	1	char	8-bit variable with sign
unsigned char	1	BYTE	8-bit variable without sign
signed short	2	short	16-bit variable with sign
unsigned short	2	WORD	16-bit variable without sign
signed long	4	long	32-bit variable with sign
unsigned long	4	DWORD	32-bit variable without sign
signed int64	8	INT64	64-bit variable with sign
unsigned int64	8	UINT64	64-bit variable without sign
Float	4	float	Single precision floating decimal point variable
Double	8	double	Double precision floating decimal point variable

3 COMMUNICATION VIA LAN INTERFACE

When controlling the EDX through LAN (TCP/IP), the PC is a TCP client and the EDX is the TCP server. The PC sends various requests such as connect, disconnect, data transfer, and data receive to the EDX and the EDX returns response to the above requests to the PC.

When LAN connection is successfully established with the PC, a LCD indicator of the EDX indicates that the EDX is in remote operating status through LAN (IP address of the PC is displayed on the “LAN Connection” area.) .

3-1 SETTING THE EDX-3000A/B

Since the TCP/IP is used, it is required to set enabled IP address, subnet mask, gateway address, etc. on the EDX side. When using a network that is closed only between the PC and EDX, users can freely set each of the addresses. However, when using the EDX by connection to the existing network, consult the Network Administrator in advance.

3-2 SETTING THE PC

Create a control program using socket API on user's side.

The EDX uses the port No. 34410, 34381, 34385 of the TCP/IP.

NOTE

- When setting firewall, etc. on the PC side, the LAN communication may be suspended.
Set an appropriate setting that enables communication with the EDX.
- To control the EDX from the PC, it is required to set the EDX to the “Online control mode.”
(For details, refer to the Instruction Manual of the EDX-3000A/B Memory Recorder/Analyzer [For software].)

3-3 OUTLINE OF COMMUNICATION PROCEDURES

Socket API (function) provided on the PC side is used for sending and receiving Command and Response packets. For details, refer to the relevant API materials, etc. In addition, for format of the Command or Response packets, see “4. CONTROL COMMAND SEND/RECEIVE PROTOCOL.”

Outline of LAN communication procedures is described in the following.

- 1) Prepare a socket corresponding to port Nos. and set necessary optional, etc.
- 2) Send connection request to the EDX (“connect”).
- 3) Send Command packet to the EDX through the socket (“send”).
- 4) Receive Response packet to the EDX through the socket (“recv”).
- 5) Repeat procedures in items 3) and 4) when necessary.
- 6) Send shutdown request to the EDX (“shutdown”).
- 7) Release the socket.

4. CONTROL COMMAND SEND/RECEIVE PROTOCOL

4-1 COMMAND PACKET (PC → EDX)

This section describes format used for sending Command packet to the EDX from the PC.

The Command packet is composed of fixed length header section, fixed length command identifier, and variable length parameter section. According to the respective control commands, after constructing an appropriate Command packet, the Command packet is sent to the EDX from the PC.

Header section (128 bytes fixed)	Command identifier (3 bytes fixed)	Parameter section (Variable length)
-------------------------------------	---------------------------------------	--

Description of Items

●Header: Always add the following format header at the head of the control command.

No.	Item Name	Types of Variables	The number of Bytes	Contents
1	Model name	char	20	Fixed character string of the “EDX-3000A” (“ “ is not included) ^(*)
2	The number of transferred bytes	DWORD	4	Command identifier + The number of parameter bytes
3	Monitor data point	DWORD	4	Enabled only for synchronous operation. Used when obtaining monitor data. See “6-3-11 Obtaining Monitor Data (GMD).”
3	Reserved	char	100	
Total			128	

●Command identifier: Character string of ASCII code (3 uppercase characters)

●Parameter: When parameters are required for the command, additionally mention it just after the command.

(*) Even if an instrument’s model is EDX-3000B, the fixed character string of model name is “EDX-3000A”.

NOTE

- When defining the structure variable, take care to the data packing.
- When constructing a header section by the PC, after initializing the entire header section with “0x00,” set the required items.

4-2 RESPONSE PACKET (EDX → PC)

After sending the Command packet from the PC to the EDX, since the EDX returns the Response packet to the PC, the PC must receive the Response packet from the EDX. The Response packet is composed of fixed length header and variable length response data sections. The size and format of the response data section depends on the command that is sent to the EDX from the PC just before.

Format of the Response packet is described in the following.

Header section (128 bytes fixed)	Response data section (Variable length)
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Description of Items

●Header: Always add the following format header at the head of the Response packet.

No.	Item Name	Types of Variable	The number of Bytes	Contents
1	Model Name	char	20	Fixed character string of the “EDX-3000A” (“ “ is not included) ^(*1)
2	The number of response data bytes	DWORD	4	Size of response data section. ‘0’: Only header section with no response data.
3	Monitor data point	DWORD	4	Enabled only for synchronous operation. Used when obtaining monitor data. See “6-3-11 Obtaining Monitor Data (GMD).”
4	EDX status	DWORD	4	EDX status. See “4-3 EDX STATUS.”
5	EDX error status	DWORD	4	EDX error generating status. See “4-4 EDX ERROR STATUS.”
6	Input over status	UINT64	8	Whether input exceeded for every CH. See “4-5 INPUT OVER STATUS.”
7	The number of already recorded data	INT64	8	The number of already recorded data in the current data recording operation. To be 0 cleared when A/D conversion is stopped.
8	File name	char	22	Base file name character string of maximum 20 characters. (Extension, file No., etc. are not added.) ^(*1)
9	File No.	WORD	2	Nos. (0 to 9999) following after the file name ^(*2)
10	The number of repeat times	WORD	2	Repeated numbers (0 to 9999) of the repeated recording. ^(*1)
11	Next interval start time	WORD	2	Year (2008 to 2037) ^(*3)
12		BYTE	1	Month (1 to 12) ^(*3)
13		BYTE	1	Day (1 to 31) ^(*3)
14		BYTE	1	Hour (0 to 23) ^(*3)
15		BYTE	1	Minute (0 to 59) ^(*3)
16		BYTE	1	Second (0 to 59) ^(*3)
		char	1	Reserved

17	Response data type	BYTE	1	0: Sends only header section. No response data exists. 1: Response data to the control command. 2: Response data to monitor data obtaining command (GMD) 3: Response callback
18	EDX-ID No.	char	1	-1: Stand-alone 0: Synchronous mater 1 to 9: Synchronous slave
19	Slave EDX connected status	WORD	2	Master EDX is only enabled Slave EDX connected status is displayed with a value corresponding to bit. Ex. 1) When the EDX with ID = 3 is connected, → 0x0004 Ex. 2) When the EDX with ID = 1, 2, and 3 is connected, → 0x0007
20	Voice memo recordable period	WORD	2	0 to 1048 [sec]
21	The number of voice memo recordable times	BYTE	1	0 to 254 [times]
22	Reserved	char	3	
23	The number of recordable data	INT64	8	The number of recordable data with current measuring condition ^(*4) Enabled only when A/D conversion is operating.
24	System reserve	char	18	
25	Satellite numbers	BYTE	1	0 to ^(*5)
26	Reserved	char	5	
Total			128	

(*1) Even if an instrument's model is EDX-3000B, the fixed character string of model name is "EDX-3000A".

(*2) For how to name the data file name, see "4-6 RECORDED FILE NAME."

(*3) To be set to '0' except during conducting interval measurement and during synchronous slave.

(*4) The number of recordable data

The number of recorded data shall be set as follows according to measuring mode.

- Manual measurement (with the number of data not specified): The number of HDD save available data
- Manual measurement (with the number of data specified): The number of specified data
- Trigger measurement (Start only): The number of pre-data + The number of recorded data
- Trigger measurement (Start + End): Before the end trigger, the number of data that can be stored in the HDD.
After the end trigger, the number of data that can be stored up to the end trigger + post-trigger delay amount.
- Interval measurement: The number of specified data in interval measurement.

(*5) Enabled only when time synchronization module is being installed.

●Response data section:

The response data section is variable length data and contents and data size vary with control commands.
For details, see "6-3 DETAILED SPECIFICATIONS OF CONTROL COMMAND."

NOTE

- Size of the Response packet is maximum 4MB (4,194,304 bytes).
For folder destination for receiving the Response packet, secure sufficient size memory.

4-3 EDX STATUS

The EDX status is stored in the header section of Response packet. The EDX status is in 32-bit numeric value and can be checked by this status. Although bits are independently set, they may be set together at the same time. Depending on the EDX status, there may be a limit when conducting the command. See also “6-2 ENABLE/DISABLE OF CONTROL COMMAND.”

Bit Value	Contents
0x00000001	AD conversion available status
0x00000002	AD conversion operating (Measuring)
0x00000004	(Reserved)
0x00000008	(Reserved)
0x00000010	Manual measurement data recording
0x00000020	Manual measurement data recording temporarily stopping
0x00000040	Waiting for trigger measurement
0x00000080	Trigger measurement data recording
0x00000100	Waiting for interval measurement
0x00000200	Interval measurement data recording
0x00000400	(Reserved)
0x00000800	(Reserved)
0x00001000	Voice memo recording
0x00002000	+CAL outputting
0x00004000	-CAL outputting
0x00008000	During opening or finding the file by control command
0x00010000	Conducting command (Busy)
0x00020000	Operation status is locking
0x00040000	(Reserved)
0x00080000	(Reserved)
0x00100000	Online controlling mode (0 = Offline controlling mode)
0x00200000	Time synchronization module is installed or not. (1 = Installed)
0x00400000	Operation status of the Time Synchronization Module (0 = Not operating, 1 = Operating correctly)
0x00800000	Online controlling (1 = Connecting)
0x01000000	(Reserved)
0x02000000	(Reserved)
0x04000000	Excessive data is generated during A/D conversion
0x08000000	Monitor data becomes discontinuous
0x10000000	(Reserved)
0x20000000	(Reserved)
0x40000000	Shut down notification (1 = Received)
0x80000000	Error occurred status (1 = Error occurring, 0 = No error) (For details, see “4-4 EDX ERROR STATUS.”)

MEMO

- After sending control commands, if the EDX Status in the Header section of the Response Packet is 0x00010000, the sent commands processes are not completed. Check status bit until it becomes "0" for completing the process.
- To shut down the system, set the shut down notification (0x40000000).

MEMO

Relation between A/D conversion and EDX status is described in the following.

- A/D conversion start available status: 0x00000001 is set.
- Monitoring: 0x00000003 is set and 0x00000010 to 0x00000200 is cleared.
- Manual measurement data recording: 0x00000013 is set.
- Manual measurement data recording temporarily stopping: 0x00000023 is set.
- Waiting for trigger measurement: 0x00000043 is set.
- Trigger measurement data recording: 0x00000083 is set.
- Waiting for interval measurement: 0x00000103 is set.
- Interval measurement data recording: 0x00000203 is set.

MEMO

Operation mode of the EDX

- Offline controlling: Controlling the EDX by the EDX itself.
(The EDX cannot be controlled through commands from the PC.)
 - Online controlling: Controlling the EDX through commands from the PC.
CH conditions or measuring conditions cannot be changed from the EDX software.
However, you can perform partial operations such as "Start recording" or "Conduct balance" with keys on the EDX.
- * For online controlling mode, refer to the "Instruction Manual of the EDX-3000A/B Memory Recorder/Analyzer (For Software)."

4-4 EDX ERROR STATUS

The EDX error status is described in 32-bit numeric values. When error occurred in the EDX, the following bit is set. Details of error contents can be checked with these error statuses.

Bit Value	Contents
0x00000001	Folder capacity for storing the measured data is not enough.(*3)
0x00000002	Oscillator for DPM card is faulty. (*1)
0x00000004	External clock error (*4)
0x00000008	Write error (*3)
0x00000010	Error occurred while controlling the sub CPU board.(*2)
0x00000020	Error occurred while controlling the display board. (*2)
0x00000040	Error occurred while controlling the recording board. (*2)
0x00000080	Error occurred while controlling the voice recording and playing board. (*2)
0x00000100	File No. error (*3)
0x00000200	Other system errors (*2)
0x00000400	Requiring update of the CFV-40A and CAN-40A For details, refer to the following status (0x01000000 to 0x80000000).
0x00000800	Synchronous slave cannot be recognized.
0x00001000	Parameter error of the synchronous slave
0x00002000	(Reserved)
0x00004000	(Reserved)
0x00008000	(Reserved)
0x00010000	(Reserved)
0x00020000	(Reserved)
0x00040000	(Reserved)
0x00080000	(Reserved)
0x00100000	(Reserved)
0x00200000	(Reserved)
0x00400000	(Reserved)
0x00800000	(Reserved)
0x01000000	Slot 1 conditioner card error
0x02000000	Slot 2 conditioner card error
0x04000000	Slot 3 conditioner card error
0x08000000	Slot 4 conditioner card error
0x10000000	Slot 5 conditioner card error
0x20000000	Slot 6 conditioner card error
0x40000000	Slot 7 conditioner card error
0x80000000	Slot 8 conditioner card error

(*1) Enabled only during A/D conversion. A/D conversion is not stopped even if error occurs.

While the A/D conversion is in stop status, the status is "0."

(*2) Error occurred at arbitrary timing. For clearing, operate command communication or button operation.

(*3) Enabled only during A/D conversion.

(*4) Enabled only during A/D conversion. If error occurs, the A/D conversion is stopped. Conditions to be set are described in the following.

- When the inputting external clock signal level is not within the specifications while using the external-clock-input function.(For details, see " INSTRUCTION MANUAL EDX-3000A/B MEMORY RECORDER/ANALYZER [FOR HARDWARE].")
- When the synchronous cable is not properly connected during the synchronous operation.

4-5 INPUT OVER STATUS

64-bit value indicates input over status of each CH. The most significant bit is corresponding to CH 64 and the least significant bit, to CH 1. When the input signal exceeds the preset range during A/D conversion, the relevant bit is set.

(For example, when CH 1 and CH 31 detected the excessive input during A/D conversion, 0x0000000040000001 is set.)

In addition, this bit indicates the history of the excessive inputs and it is not cleared even if the excessive input status is cancelled. Conditions to be cleared are described in the following.

- When A/D conversion is started.
- When conducting start recording operation (REC).
- When conducting balance and internal sensitivity compensation.
- When conducting Over Reset command (CAL).

4-6 RECORDED FILE NAME

Data file name recorded in the EDX is named as follows according to file No. and the number of repeat times.

○○○** ***_Δ□□□□◇.KS2

○○○: Arbitrary file name (Maximum 20 characters)

** ***: File No. (0000 to 9999)

Automatically incremented when recording ends.

Δ: Measuring mode at the set number of repeat times

M: Manual measurement (The number of repeat times is other than 1.)

I: Interval measurement

A: Analog trigger measurement

D: Digital trigger measurement

E: External trigger measurement

C: Complex trigger measurement

□□□□: The number of repeat times (0000 to 9999)

Automatically incremented every time one recording ends.

◇: EDX-ID No. (0 to 9) for synchronous operation

KS2: File extension is KS2 fixed.

Ex. 1) Manual measurement of stand-alone operation (File No. = 0)

TEST0000.KS2

Ex. 2) Manual measurement (File No. = 0) of synchronous master (ID = 0)

TEST0000_0.KS2

Ex. 3) Interval measurement of stand-alone operation (File No. = 0, The number of repeat times = 0)

TEST0000_I0000.KS2

Ex. 4) Interval measurement of synchronous slave (ID = 1) (File No. = 0, The number of repeat times = 0)

TEST0000_I0000_1.KS2

5 ERROR CODE

Error code is indicated with 1 byte of the char type. If it is states as “**Standard type**” in Response data of control commands, the Response data is considered as the error code. In addition, if error occurred during control command process, this error code is returned without returning the Response data stated in the control commands.

Error codes are listed in the following table.

Error Code No.	Error Contents
0	Normally ended.
-1	Unknown command
-2	Parameter error
-3	Context error (Cannot conduct in the current EDX status.)
-4	Undefined (System reserved)
-5	Remaining capacity of the HDD is not enough.
-6	No file.
-7	Read error.
-8	Write error.
-9	No operation target exists.
-10	Cannot conduct because the file is operating by control command.
-11	Undefined (System reserved)
-12	Hardware error Setting/Reading unavailable
-13	Interval measurement is finished.
-14	A/D conversion stopped because the file No. is the maximum value.
-15	A/D conversion stopped because the number of repeat times is the maximum value. (File numbers are incremented.)
-16	The command cannot be performed because the EDX is being online controlled.
-17	The command cannot be performed because the EDX is being offline controlled. (Inside of the EDX-3000A/B is locked.).
-18	Undefined (System reserved)
-19	Hardware configuration is incorrect. (The number of setting slave EDX units cannot be recognized.)
-20	TEDS information is unreadable or error occurred while accessing.
-21	Requiring update of the CFV-40A and CAN-40A For control commands of measuring condition and execute only. (STA, MES1, etc.)
-22	The command cannot be performed because of slave EDX's setting error.
-23	The command cannot be performed because of external clock error.

6 CONTROL COMMAND

6-1 LIST OF CONTROL COMMANDS

EDX control available commands are listed in the following table.

Type	Contents	Command Name	Ref. Page
Measuring Condition	Obtain data file name	DFN	21
	Set/read monitor data output condition	SMD	22
	Set/read measuring condition	MES	24
	Initialize measuring condition	INI	27
Conduct	Start A/D conversion	STA	28
	Start recording	REC	29
	Stop A/D conversion/recording	STP	30
	Pause recording operation	PAU	31
	Conduct and stop CAL/Over Reset	CAL	32
	Conduct balance/Read balance results	BAL	33
	Obtain monitor data	GMD	35
Environment	Setting key lock status/Reading	LOC	37
	Set/read time	TIM	38
	Read system information	SYS	40
	Read card information	CAD	42
	Setting synchronous operation mode/Reading	SYN	44
	Device/SLOT checking	EDX	46
File	Obtaining remaining capacity of data drive	FFR	47
	Open file	FOF	48
	Read file data	FRF	49
	Seek file	FSF	50
	Close file	FCF	51
	Delete file	FDF	52
	Start finding file	FFF	53
	Continue finding file	FFN	55
	End finding file	FFC	56
	Deleting the recorded data file	FDK	57
Others	Reading TEDS information/Writing/Copying	TED	58
	Reading EDX status	———	66
	Measure/obtain average value	AVG	69

6-2 WHETHER CONTROL COMMAND IS ENABLED OR DISABLED

Depending on the EDX status or synchronous connection status, usable control commands may be restricted in some cases. Whether conducting control commands is enabled or disabled are listed in the following table.

For EDX status, see “4-3 EDX STATUS.”

1) For stand-alone EDX and synchronous master EDX (A/D conversion is in stop status)

Command	Stopping A/D conversion					
	A/D Disable status	A/D Enable status	Finding file	Opening file	Conducting BAL and AVG (*1)	Internal lock status (*2)
DFN		✓				✓
SMD	✓	✓				✓
MES	✓	✓				△
INI	✓	✓				
STA		✓				
REC						
STP						✓
PAU						
CAL		✓				
BAL		✓				△
GMD						✓
LOC	✓	✓				△
TIM	✓	✓				✓
SYS	✓	✓				✓
CAD	✓	✓				✓
SYN	✓	✓				△
EDX	✓	✓				✓
FFR	✓	✓				✓
FOF	✓	✓				
FRF	✓(*3)	✓(*3)		✓		
FSF	✓(*3)	✓(*3)		✓		
FCF	✓(*3)	✓(*3)		✓		
FDF	✓	✓				
FFF	✓	✓				✓
FFN	✓(*4)	✓(*4)	✓			✓
FFC	✓(*4)	✓(*4)	✓			✓
FDK		✓(*5)				
TED	✓	✓				✓
———	✓	✓	✓	✓	✓	✓
AVG		✓				

✓: Enabled, : Disabled, △: Only reading is enabled

(*1) EDX status while conducting balance, internal sensitivity compensation, or measuring average value.

(*2) Displaying **Environment Setting** dialog box with the EDX software.

(*3) Enabled only during opening file.

(*4) Enabled only during searching file.

(*5) Valid from immediately after recording (A/D conversion is in stop state) to before starting the A/D conversion only.

2) For stand-alone EDX and synchronous master EDX (A/D conversion operating status)

Command	Monitoring	Manual measurement		Trigger measurement		Interval measurement	
		Recording	Recording temporarily stopping	Waiting	Recording	Waiting	Recording
DFN	✓	✓	✓	✓	✓	✓	✓
SMD	✓	✓	✓	✓	✓	✓	✓
MES	Δ	Δ	Δ	Δ	Δ	Δ	Δ
INI							
STA							
REC	✓		✓				
STP	✓	✓	✓	✓	✓	✓	✓
PAU		✓(*1)					
CAL	✓	✓	✓	✓	✓	✓	✓
BAL	✓		✓				
GMD	✓	✓	✓	✓	✓	✓	✓
LOC	✓	✓	✓	✓	✓	✓	✓
TIM	Δ	Δ	Δ	Δ	Δ	Δ	Δ
SYS	✓	✓	✓	✓	✓	✓	✓
CAD	✓	✓	✓	✓	✓	✓	✓
SYN	Δ	Δ	Δ	Δ	Δ	Δ	Δ
EDX							
FFR							
FOF							
FRF							
FSF							
FCF							
FDF							
FFF							
FFN							
FFC							
FDK							
TED							
———	✓	✓	✓	✓	✓	✓	✓
AVG							

✓: Enabled, : Disabled, and Δ: Only reading is enabled

(*1) Enabled only during recording data in the manual measurement.

3) Synchronous slave EDX (A/D conversion is in stopped status)

Command	During stopping A/D conversion					
	A/D disable status	A/D Enable status	Finding file	Opening file	Conducting BAL, VG (*1)	Internal lock status (*2)
DFN		✓				✓
SMD	✓	✓				✓
MES	✓	✓				Δ
INI	✓	✓				
STA						
REC						
STP						
PAU						
CAL						
BAL						
GMD						✓
LOC	✓	✓				Δ
TIM	✓	✓				✓
SYS	✓	✓				✓
CAD	✓	✓				✓
SYN	✓	✓				Δ
EDX	✓	✓				✓
FFR	✓	✓				✓
FOF	✓	✓				
FRF	✓(*3)	✓(*3)		✓		
FSF	✓(*3)	✓(*3)		✓		
FCF	✓(*3)	✓(*3)		✓		
FDF	✓	✓				
FFF	✓	✓				✓
FFN	✓(*4)	✓(*4)	✓			✓
FFC	✓(*4)	✓(*4)	✓			✓
FDK						
TED	✓	✓				✓
——	✓	✓	✓	✓	✓	✓
AVG						

✓: Enabled, : Disabled, and Δ: Only reading is enabled

(*1) EDX status while conducting balance, internal sensitivity compensation, or measuring average value.

(*2) Displaying **Environment Setting** dialog box with the EDX software.

(*3) Enabled only during opening file.

(*4) Enabled only during finding file.

4) Synchronous slave EDX (A/D conversion operating status)

Command	Monitoring	Manual measurement		Trigger measurement		Interval measurement	
		Recording	Recording temporarily stopping	Waiting	Recording	Waiting	Recording
DFN	✓	✓	✓	✓	✓	✓	✓
SMD	✓	✓	✓	✓	✓	✓	✓
MES	Δ	Δ	Δ	Δ	Δ	Δ	Δ
INI							
STA							
REC							
STP							
PAU							
CAL							
BAL							
GMD	✓	✓	✓	✓	✓	✓	✓
LOC	✓	✓	✓	✓	✓	✓	✓
TIM	Δ	Δ	Δ	Δ	Δ	Δ	Δ
SYS	✓	✓	✓	✓	✓	✓	✓
CAD	✓	✓	✓	✓	✓	✓	✓
SYN	Δ	Δ	Δ	Δ	Δ	Δ	Δ
EDX							
FFR							
FOF							
FRF							
FSF							
FCF							
FDF							
FFF							
FFN							
FFC							
FDK							
TED							
———	✓	✓	✓	✓	✓	✓	✓
AVG							

✓: Enabled, : Disabled, and Δ: Only reading is enabled

6-3 DETAILED SPECIFICATIONS OF CONTROL COMMAND

This section describes detailed information for every control command.

When sending the control command from the PC to the EDX, construct a Command packet with header (128-byte fixed length), command identifier (3-byte fixed length), and parameter (variable length). The number of transferred bytes in the header section includes the total number of bytes of the command identifier and parameter.

The PC receives the response data of Response packet added with header section (128-byte fixed length) at the head from the EDX. Since the size of response data succeeding the header section is written with the number of response data bytes in the header, the PC can receive the entire Response packet from the EDX.

For details of Command packet and Response packet, see “4. CONTROL COMMAND SEND/RECEIVE PROTOCOL.”

MEMO

- Although the number of Response data bytes is originally more than 2, only 1 byte is returned in some cases. At this time, error occurred and the EDX is returning error codes different from the original response data. For error codes, see “5. ERROR CODE.”

6-3-1 Obtaining Data File Name (DFN)

Obtains data file name of recording.

- Command: DFN
- Target EDX: Stand-alone, synchronous master, and synchronous slave
- The number of transferred bytes: 3 bytes
- Parameter: None

No.	Name	Contents	Types of Variable	The number of Bytes
1	Command	DFN	char	3
Total number of transferred bytes				3

- Response data: 48 bytes

No.	Name	Contents	Types of Variable	The Number of Bytes
1	Response data 1	Data file name with extension Ex.)TEST0000 I0000 0.KS2	char	48
Total number of response data bytes				48

When A/D conversion is not available, all the Response data 1 shall be '0x00.'

NOTE

- For synchronous operation, when the A/D conversion is started, the final file information is set from the synchronous master to synchronous slave EDX. Therefore, for synchronous slave EDX, results of this command may differ before and after the start of A/D conversion.
- To obtain the correct data file name, conduct this command during A/D conversion.

6-3-2 Setting/Reading Monitor Data Output Condition (SMD)

Sets and reads monitor data output condition.

- Command: SMD
- Target EDX: Stand-alone, synchronous master, and synchronous slave

◆◆◆◆ When setting ◆◆◆◆

- The number of transferred bytes: 12 bytes
- Parameter: See the table below.

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command	SMD	char	3
2	Parameter 1	Parameter mode (0x00: Read, 0x01: Set) Set 0x01.	BYTE	1
3	Parameter 2	Monitor data output mode (*1) -1: No monitor data output 0: Continuous monitor data output mode 1: Intermittent monitor data output mode (Arbitrary master EDX for monitor data) 2: Intermittent monitor data output mode (Arbitrary slave EDX for monitor data)	char	1
4	Parameter 3	Reserved	char	7
Total number of transferred bytes				12

(*1) Monitor output mode

- When no monitor data is output (Monitor data output mode = -1)
Not outputting monitor data.
Even if monitor data obtaining command (GMD) is sent, the number of monitor data is always '0.'
When the EDX is in off-line status, this mode is automatically set.
- For continuous monitor data output mode (Monitor data output mode = 0)
Monitor data of all the connected EDX units is continuously obtained.
Depending on the number of connected EDX units and PC's performance, all the monitor data may not be obtained.
- For intermittent monitor data output mode (Monitor data output mode = 1 or 2)
Monitor data is intermittently obtained.
- Although the preset number of monitor data output data is continuous monitor data, it lacks in continuity with data of the monitor data obtained the next time.

MEMO

- "Master EDX for monitor data" is arbitrary EDX for outputting monitor data.
There is no relation between the "Monitor data output mode = 1 (Arbitrary master EDX for monitor data)" and the "Master EDX"/"Slave EDX" in synchronous operation.

The following shows examples of obtaining monitor data of four EDX units (ID = 0, 1, 2, and 3) in synchronous operation by setting the mode to intermittent monitor data output mode.

Ex. 1) Monitor data output mode when obtaining monitor data of all the EDX units.

Set '1' to ID = 0 and '2' to ID = 1, 2, and 3.

Ex. 2) Monitor data output mode when obtaining monitor data of EDX of only ID = 0 and ID = 3.

Set '1' to ID = 0, '2' to ID = 3, and '-1' to ID = 1 and 2.

Ex. 3) Monitor data output mode when obtaining monitor data of EDX of only ID = 1 and ID = 3.

Set '1' to ID = 1, '2' to ID = 3 and '-1' to ID = 0 and 2.

●Response data: Standard type (1 byte)

◆◆◆◆When reading◆◆◆◆

●The number of transferred bytes: 4 bytes

●Parameter: See the table below.

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command	SMD	char	3
2	Parameter 1	Parameter mode (0x00: Read, 0x01: Set) Set 0x00.	BYTE	1
Total number of transferred bytes				4

●Response data: 8 bytes

No.	Name	Contents	Types of Variables	The number of Bytes
1	Response data 1	Monitor data output mode -1: No monitor data output 0: Continuous monitor data output mode 1: Intermittent monitor data output mode (Master EDX) 2: Intermittent monitor data output mode (Slave EDX)	char	1
2	Response data 2	Reserved	char	3
3	Response data 3	The number of monitor output data per CH Enabled only when monitor output mode is 1 or 2.	DWORD	4
Total number of response data bytes				8

MEMO

- For obtaining monitor data, see “6-3-11 Obtaining Monitor Data (GMD).”

6-3-3 Setting/Reading Measuring Condition (MES)

Sets and reads measuring conditions.

When setting the measuring condition, check parameters for starting the A/D conversion with STA command.

●Command: MES

●Target EDX: Stand-alone, synchronous master, synchronous slave

◆◆◆When setting◆◆◆

●The number of transferred bytes: 46008 bytes

●Parameter: See the table below.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	MES	char	3
2	Parameter 1	Parameter mode (0x00: Read, 0x01: Set) Set 0x01.	BYTE	1
3	Parameter 2	System reserved (Be sure to set '0.')	char	4
4	Parameter 3	Measuring condition to be set in the EDX.	----	46000
Total number of transferred bytes				46008

MEMO

- For details of the parameter 3, refer to “7-1 MEASURING CONDITION FORMAT.”

●Response data

Measuring condition check results

Measuring condition check results is defined with 32-bit numeric values as shown in the following table.

If the check results are other than '0x00000000,' starting the A/D conversion is not available.

Results (Bit)	Contents
0x00000000	Check results are good and starting the A/D conversion is available.
0x00000001	CH condition error
0x00000002	CAN condition error
0x00000004	Data file name or file No. error
0x00000008	Interval measurement condition error
0x00000010	Analog trigger measurement condition error
0x00000020	Digital trigger measurement condition error
0x00000040	External trigger measurement condition error
0x00000080	CAN trigger condition error
0x00000100	Complex trigger condition error
0x00000200	Sampling frequency error
0x00000400	HDD has insufficient remaining capacity.
0x00000800	Monitor data output condition error
0x00001000	DPM card error (Different type of DPM card is mixedly installed.)
0x00002000	Four arithmetic operations condition setting error
0x00004000	Undefined (system reserved)
0x00008000	No measurement target exists.
0x00010000	Manual measurement condition error
0x00020000	Arithmetic processing condition setting error
0x00040000	Overall information error
0x00080000	Measuring condition (common condition) error
0x00100000	Undefined (system reserved)
0x00200000	Undefined (system reserved)
0x00400000	Undefined (system reserved)
0x00800000	Undefined (system reserved)
0x01000000	Undefined (system reserved)
0x02000000	Undefined (system reserved)
0x04000000	Undefined (system reserved)
0x08000000	Undefined (system reserved)
0x10000000	Undefined (system reserved)
0x20000000	Undefined (system reserved)
0x40000000	Undefined (system reserved)
0x80000000	Undefined (system reserved)

* '0' is set to Undefined (system reserved) places.

◆◆◆◆When reading◆◆◆◆

- The number of transferred bytes: 8 bytes
- Parameter: See the table below.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	MES	char	3
2	Parameter 1	Parameter mode (0x00: Read, 0x01: Set) Set '0x00.'	BYTE	1
3	Parameter 2	System reserved	char	4
Total number of transferred bytes				8

- Response data: 46000 bytes

No.	Name	Contents	Types of Variables	The number of Bytes
1	Response data 1	Measuring condition to be set in the EDX.	----	46000
Total number of response data bytes				46000

MEMO

- For details of the response data 1, “7-1 MEASURING CONDITION FORMAT.”

6-3-4 Initializing Measuring Condition (INI)

Initialize previously set measuring conditions (parameters) in the EDX.

●Command: INI

●Target EDX: Stand-alone, synchronous master, and synchronous slave

●The number of transferred bytes: 4 bytes

●Parameter: See the table below.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	INI	char	3
2	Parameter 1	Initialization mode 0: Initializes measuring condition, user's unit, etc.	BYTE	1
Total number of transferred bytes				4

●Response data: Standard type (1 byte)

●Remarks: After sending the INI command, the EDX is in the following status.

Measuring condition

Measuring mode:	Manual measurement
Sampling frequency:	1 kHz
The number of recorded data:	0 (Data is recorded until stopped.)
The number of recording CHs:	Measure all the recording available CH.
CH condition:	Default value (*1) for every card
File name:	TEST
File No.	0
User's unit:	"" (Clear)
Beep alarm sound when data exceeded:	OFF
Operation (Beep) sound:	ON (High pitch sound)
File overwrite check:	0 (Yes)
Re-start A/D conversion after recording is finished:	0 (Yes)
Option button:	0 (No)
Built-in speaker:	0 (Use)
Oscillator switching:	0 (Internal)
Total length of synchronous cable:	0 (within 50 m)
Balance standard value:	50 (within $\pm 5.0\%$)
Balance value	0
Internal sensitivity value	0

NOTE

- The INI command initializes contents described in "7-1 MEASURING CONDITION FORMAT."
Following setting items are not changed.
 - Date and time
 - Synchronous operation setting (synchronous operation mode and the number of connecting units)
 - Control mode setting (Online/Offline)
- A file No. may change according to a destination of a data file.
- Current setting values of the mounting conditioner cards are also initialized. For details, refer to "7-5 SET VALUE OF CONDITIONER CARD."

6-3-5 Starting A/D Conversion (STA)

Starts A/D conversion and moves to monitoring status.

●Command: STA

●Target EDX: Stand-alone and synchronous master

●The number of transferred bytes: 3 bytes

●Parameter: None

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	STA	char	3
Total number of transferred bytes				3

●Response data: Standard type (1 byte)

MEMO

- To conduct this command, A/D conversion available status is required.

6-3-6 Starting Recording (REC)

Starts data recording.

For manual measurement mode: If it is during monitoring, the first recording operation starts.
If recording is temporarily stopping, recording operation re-starts.

Trigger measurement mode: Waiting for the first trigger.

Interval measurement mode: Waiting for the first interval measurement.

●Command: REC

●Target EDX: Stand-alone and synchronous master

●The number of transferred bytes: 3 bytes

●Parameter: None.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	REC	char	3
Total number of transferred bytes				3

●Response data: Standard type (1 byte)

MEMO

- This command is only enabled during monitoring or during temporarily stopping the recording.

6-3-7 Stopping A/D Conversion & Recording (STP)

Stops A/D conversion or data recording.

Depending on the EDX operating status, EDX status varies after sending the STP command.

- When the EDX is recording data or temporarily stopping the data recording:
The recording ends and becomes in monitoring status. (See the below MEMO.)
- When the EDX is during monitoring data: Stops A/D conversion.

●Command: STP

●Target EDX: Stand-alone and synchronous master

●The number of transferred bytes: 3 bytes

●Parameter: None

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	STP	char	3
Total number of transferred bytes				3

●Response data: Standard type (1 byte)

MEMO

- When “After recording, restart the A/D conversion,” in ‘Overall information’ of Measuring condition is set to 1 (No), the EDX is not moved to the monitoring status and A/D conversion is in stopped status. For measuring condition, see “7-1 MEASURING CONDITION FILE FORMAT.”

6-3-8 Temporarily Stopping Data Recording (PAU)

Temporarily stops data recording in manual measurement mode.

●Command: PAU

●Target EDX: Stand-alone and synchronous master

●The number of transferred bytes: 3 bytes

●Parameter: None

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	PAU	char	3
Total number of transferred bytes				3

●Response data: Standard type (1 byte)

MEMO

- This command is only enabled during data recording in manual measurement mode.

6-3-9 Conducting and Stopping CAL/Over Reset (CAL)

Conducts and stops outputting CAL value and clears the exceeding status that happened during A/D conversion.

●Command: CAL

●Target EDX: Stand-alone and synchronous master

●The number of transferred bytes: 4 bytes

●Parameter: See the following table.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	CAL	char	3
2	Parameter 1	CAL conducting status (0: OFF, 1: +CAL, 2: -CAL, 3: Over reset)	BYTE	1
Total number of transferred bytes				4

●Response data: Standard type (1 byte)

MEMO

- It is required to set CAL value output target CH and CAL value in advance with the MES commands.
 - The over reset have no relation with target CHs of CAL output. Over reset function is performed all channels at the same time.
- In addition, since the function have relation with the over beep function, the over beep sound temporarily stops.

6-3-10 Conducting Balance and Reading Balance Result (BAL)

Conduct balance, internal sensitivity compensation, initializes internal sensitivity compensation results and obtains the results of the said operations.

To conduct this command, it is required to set a target CH in advance.

To set the balance target CH and internal sensitivity compensation, use the MES command.

●Command: BAL

●Target EDX: Stand-alone and synchronous master

◆◆◆When conducting◆◆◆

●The number of transferred bytes: 5 bytes

●Parameter: See the following table.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	BAL	char	3
2	Parameter 1	Balance conducting mode (0x00: Read BAL results, 0x01: Conduct) Set 0x01.	BYTE	1
3	Parameter 2	Balance conducting mode 0: Conducting balance 1: Conducting internal sensitivity compensation 2: Initializing internal sensitivity compensation results	BYTE	1
Total number of transferred bytes				5

●Response data: Standard type (1 type)

●Remarks: After conducting the BAL command, use the status read command to check the EDX status and after checking that the EDX status is not BUSY, read the checked results.

◆◆◆When reading the results◆◆◆

●The number of transferred bytes: 4 bytes

●Parameters: See the following table.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	BAL	char	3
2	Parameter 1	Balance conducting mode (0x00: Read BAL results, 0x01: Conduct) Set 0x00.	BYTE	1
Total number of transferred bytes				4

●Response data: 64 bytes × The number of connecting units = 64 to 640 bytes

No.	Name	Contents	Types of Variables	The number of Bytes
1	Response data 1	Balance/internal sensitivity compensation results 1 byte × 64 CHs × The number of connecting units = 64 to 640 bytes -1: No card or no function 0: OK 1: Error 2: OFF 3: ENG(EEPROM access error)	char	64 × The number of connecting units
Total number of response data bytes				

NOTE

- While conducting balance/internal sensitivity compensation, no commands are enabled other than status read command.

6-3-11 Obtaining Monitor Data (GMD)

Obtains monitor data.

For obtaining the monitor data, it is required to set the SMD command in advance.

●Command: GMD

●Target EDX: Stand-alone, synchronous master, and synchronous slave

◆◆◆When conducting◆◆◆

●The number of transferred bytes: 7 bytes

●Parameter: See the following table.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	GMD	char	3
2	Parameter 1	The number of monitor data per CH Note that set value varies with monitor data output mode of the SMD command. • Continuous monitor data output mode Set '0' to the master EDX. For the slave EDX, set the number of data/CH obtained from the master EDX. • Intermittent monitor data output mode. Set the number of data/CH.	DWORD	4
Total number of transferred bytes				7

●Response data: Monitor data (The number of bytes varies with setting of SMD command, the number of measuring CHs, and command conducting timing.)

MEMO

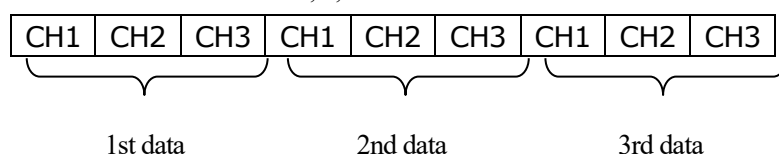
- For how to obtain the monitor data, see also “6-3-2 Setting/Reading Monitor Data Output Condition (SMD).”

● Monitor data assignment

For analog CH, monitor data is 2 bytes/CH.

The monitor data of one sampling is assigned in due order from analog CH1, CH2, and CH3.

Ex.) When monitor data of CHs 1, 2, and 3 are measured 3 times.



- When monitor data output mode of the SMD command is 0 to 2 in synchronous operation

For obtaining the monitor data in synchronous operation, firstly obtain the monitor data of the master EDX and then, obtain the monitor data of the slave EDX. For the master EDX, the general method is used for sending the GMD command. However, for the slave EDX, the GMD command is sent by the following method.

- 1) Receives response data (monitor data) after sending the GMD command to the master EDX.
- 2) When receiving the response data, monitor data point value of header information is temporarily stored.
- 3) Sets the monitor data point stored in the header information (Item 2) when the GMD command is sent to the slave EDX. If abnormal value is specified for the monitor data point, the slave EDX returns only the header (the number of Response data bytes = 0).
- 4) Receives the response data (Monitor data) of the GMD command.
The received response data (Monitor data) is synchronized with that of the master EDX.

- When monitor data output mode of the SMD command is -1.
If GMD command is conducted in the above status, only header section (The number of response data bytes: 0) is returned.
- If A/D conversion is not available.
If GMD command is conducted in the above status, only header section (The number of response data bytes: 0) is returned.
- When monitor data is received, if the EDX status is in “Monitor data becomes discontinuous” status.
If the GMD command is conducted in the above status, only header section (The number of response data bytes: 0) is returned.
After sending the “Monitor data becomes discontinuous” status to the PC, the “Monitor data becomes discontinuous” status is cleared.

MEMO

- Monitor data of the EDX is sent to the PC through internal FIFO memory.
While setting the continuous monitor output mode, to obtain the continuous data by the PC, before the FIFO memory becomes full, it is required to continuously obtain the monitor data by using the GMD command. If the FIFO memory becomes full, the EDX status “Monitor data becomes discontinuous” is set to have the monitor data in discontinuous state.
- With “Monitor data becomes discontinuous” state set in the EDX, no new monitor data is stored in the FIFO memory. If the “Monitor data becomes discontinuous” state is cleared, data in the FIFO memory is also cleared to newly store the monitor data.
- Maximum storage time of the FIFO memory can be roughly calculated by the following expression.

$$\text{FIFO storage available time [sec]} = \frac{8388608}{([\text{Number of Measurement ON CHs}] \times \text{Sampling frequency [Hz]})}$$

Ex.) Assume that the number of measuring CHs is 32 and sampling frequency is 200 kHz.

$$8388608 / (32 \times 200000) = \text{Approx. } 1.31[\text{sec}].$$

6-3-12 Setting/Reading Keylock Status (LOC)

Locks operation keys and reads the key status on the front panel.

●Command: LOC

●Target EDX: Stand-alone, synchronous master, and synchronous slave

◆◆◆◆When setting◆◆◆◆

●The number of transferred bytes: 8 bytes

●Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	LOC	char	3
2	Parameter 1	Parameter mode (0x00: Read, 0x01: Set) Set 0x01.	BYTE	1
3	Parameter 2	Keylock status (1: Enabled, 0: Disabled) (0x01:REC/PAUSE, 0x02:STOP, 0x04:BAL, 0x08:OPT)	BYTE	1
4	Parameter 3	Reserved	char	3
Total number of transferred bytes				8

●Response data: Standard type (1 byte)

◆◆◆◆When reading◆◆◆◆

●The number of transferred bytes: 4 bytes

●Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	LOC	char	3
2	Parameter 1	Parameter mode (0x00:Read, 0x01: Set) Set 0x00.	BYTE	1
Total number of transferred bytes				4

●Response data: 4 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	Keylock status (1: Enabled, 0: Disabled) (0x01:REC/PAUSE, 0x02:STOP, 0x04:BAL, 0x08:OPT)	BYTE	1
2	Response data 2	Reserved	char	3
Total number of transferred bytes				4

MEMO

- When connection with the PC is disconnected or the EDX is re-started, the current setting keylock status is cleared.
- For synchronous slaves, all keys are invalid regardless of settings of the LOC commands.

6-3-13 Setting/Reading Time (TIM)

Sets and reads date and time.

●Command: TIM

●Target EDX: Stand-alone, synchronous master, and synchronous slave

◆◆◆◆When setting◆◆◆◆

●The number of transferred bytes: 12 bytes

●Parameter: See the following table.

Parameter:

See the following table:

No.	Name	Content		Types of Variables	The number of Bytes
1	Command	TIM		char	3
2	Parameter 1	Parameter mode (0x00: Read, 0x01: Set) Set 0x01.		BYTE	1
3	Parameter 2	Date	Year (2008 to 2099)	WORD	2
			Month (1 to 12)	BYTE	1
			Day (1 to 31)	BYTE	1
			Hour (0 to 23)	BYTE	1
			Minute (0 to 59)	BYTE	1
			Second (0 to 59)	BYTE	1
4	Parameter 3	Reserved		char	1
Total number of transferred bytes					12

●Response data: Standard type (1 byte)

◆◆◆◆When reading◆◆◆◆

●The number of transferred bytes: 4 bytes

●Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	TIM	char	3
2	Parameter 1	Parameter mode (0x00: Read, 0x01:Set) Set 0x00.	BYTE	1
Total number of transferred bytes				4

●Response data: 8 bytes

No.	Name	Content		Types of Variables	The number of Bytes
1	Response data 1	Date	Year (2008 to 2099)	WORD	2
			Month (1 to 12)	BYTE	1
			Day (1 to 31)	BYTE	1
			Hour (0 to 23)	BYTE	1
			Minute (0 to 59)	BYTE	1
			Second (0 to 59)	BYTE	1
2	Response data 2	Reserved		char	1
Total number of transferred bytes					8

MEMO

- Although time can be set for synchronous slave, when starting the measurement by synchronous operation, the time can be automatically set to the time of the synchronous master.

6-3-14 Reading System Information (SYS)

Reads system information of the EDX.

●Command: SYS

●Target EDX: Stand-alone, synchronous master, and synchronous slave

●The number of transferred bytes: 4 bytes

●Parameter: See the following table.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	SYS	char	3
2	Parameter 1	Read mode 0: Device configuration 1: Card information + Hardware version	BYTE	1
Total number of transferred bytes				4

●Read mode = 0

Response data: 344 bytes

Response data:		544 Bytes			
No.	Name	Contents	Types of Variables	The number of Bytes	
1	Response data 1	Model	char	20	
2	Response data 2	Software version	char	20	
3	Response data 3	Card type	Slot 1	BYTE	1
			Slot 2	BYTE	1
			Slot 3	BYTE	1
			Slot 4	BYTE	1
			Slot 5	BYTE	1
			Slot 6	BYTE	1
			Slot 7	BYTE	1
			Slot 8	BYTE	1
4	Response data 4	Device ID No.	char	1	
5	Response data 5	Chassis size (8, 16, 32, 64)	BYTE	1	
6	Response data 6	Reserved	char	2	
7	Response data 7	PC name	char	16	
8	Response data 8	IP address (Example: 192.168.1.1)	char	16	
9	Response data 9	Data folder name	char	260	
Total number of response data bytes					344

●Read mode = 1

Response data: 1360 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	Slot 1 conditioner card information	char	68
.	.	.	char	68
8	Response data 8	Slot 8 conditioner card information	char	68
9	Response data 9	Reserved (68 bytes × 2 = 136 bytes)	char	136
10	Response data 10	Hardware information 1	char	68
.	.	.	.	.
19	Response data 19	Hardware information 10	char	68
Total number of response data bytes				1360

NOTE

- All the response data 1 to 19 in read mode = 1 is character string.
Note that display contents may be changed without prior notice.

6-3-15 Reading Card Information (CAD)

Reads property value of conditioner cards installed in the EDX.

The property value includes various information such as card type Nos., the number of available modes and available mode value, the number of available ranges and available range value, and corresponding character strings, etc.

●Command: CAD

●Target EDX: Stand-alone, synchronous master, and synchronous slave

●The number of transferred bytes: 4 bytes

●Parameter: See the following table.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	CAD	char	3
2	Parameter 1	Reserved	char	1
Total number of transferred bytes				4

●Response data:

23200 bytes

No.	Name	Content		Types of Variables	The number of Bytes	
1	Response data 1	Slot 1	Model name	char	20	
			Card type No.	BYTE	1	
			The number of modes	BYTE	1	
			The number of high pass filters	BYTE	1	
			The number of low pass filters	BYTE	1	
			The number of ranges (For 8 modes)	BYTE	8	
			The number of CALs (For 8 modes)	BYTE	8	
			Mode character string (1 item/12 bytes × 8 = 96)	char	96	
			Range character string 1 item: 12 bytes 14 items for each mode (12 × 14 = 168)	Mode No.1	char	168
				Mode No.2	char	168
				Mode No.3	char	168
				Mode No.4	char	168
				Mode No.5	char	168
				Mode No.6	char	168
				Mode No.7	char	168
				Mode No.8	char	168
			High pass filter character string (1 item/12 bytes × 3 = 36)	char	36	
			Low pass filter character string (1 item/12 bytes × 10 = 120)	char	120	
			CAL character string 1 item: 12 bytes 8 items for each mode (12 × 8 = 96)	Mode No.1	char	96
				Mode No.2	char	96
				Mode No.3	char	96
				Mode No.4	char	96
				Mode No.5	char	96
				Mode No.6	char	96
				Mode No.7	char	96
				Mode No.8	char	96
			Range value (float: 4 bytes) 14 items for each mode (4 × 14 = 56)	Mode No.1	float	56
				Mode No.2	float	56
				Mode No.3	float	56
				Mode No.4	float	56
				Mode No.5	float	56
				Mode No.6	float	56
				Mode No.7	float	56
Mode No.8	float	56				
Low pass filter value (float: 4 bytes × 10 = 40)	float	40				
Range unit No. (8)	BYTE	8				
Slot 1 Total number of bytes				2900		
.				.		
Slot 8 Total number of bytes				2900		
Total number of response data bytes					23200	

NOTE

- For the CAN-40A and CAN-41A, items in the **Card type No.** are valid only.

6-3-16 Synchronous Operation Mode (SYN)

Sets synchronous operation setting.

After changing the settings with the “SYN” command, use the “MES” command to set the measuring condition again.

- Command: SYN
- Target EDX: Stand-alone, synchronous master, and synchronous slave

◆◆◆ When conducting (Set) ◆◆◆

- The number of transferred bytes: 8 bytes
- Parameter: See the following table.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	SYN	char	3
2	Parameter 1	Synchronous operation mode (0x00: Read, 0x01: Set, 0x02: Extended read, 0x03: Extended set) Set 0x01.	BYTE	1
3	Parameter 2	Synchronous operation modes -1: Stand-alone 0: Synchronous master 1 to 9: Synchronous slave	char	1
3	Parameter 3	Total number of connecting units that include master (1 to 10).	BYTE	1
4	Parameter 4	The number of connected EDX-100A and EDX-200A units (0 to 7).	BYTE	1
5	Parameter 5	Total length of synchronous cable (0: 50 m or less 1: 500 m or less 2: 1000 m or less) (*) Only “0(50 m)” can be set when operating synchronously with EDX-100A.	char	1
Total number of transferred bytes				8

- Response data: Standard type (1 byte)

◆◆◆ When reading result (Read) ◆◆◆

●The number of transferred bytes: 4 bytes

●Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	SYN	char	3
2	Parameter 1	Synchronous operation mode (0x00: Read, 0x01: Set, 0x02: Extended read, 0x03: Extended set) Set 0x00.	BYTE	1
Total number of transferred bytes				4

●Response data: 4 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	Synchronous operation mode -1: Stand-alone 0: Synchronous master 1 to 9: Synchronous slave	char	1
2	Response data 2	Total number of connecting units that include master (1 to 10).	BYTE	1
3	Response data 3	The number of connected EDX-100A and EDX-200A units (0 to 7).	BYTE	1
4	Response data 4	Total length of synchronous cable (0: 50 m or less 1: 500 m or less 2: 1000 m or less)	char	1
Total number of response data bytes				4

◆◆◆ When conducting (Extended set) ◆◆◆

●The number of transferred bytes: 12 bytes

●Parameter: See the following table.

No.	Name	Contents	Types of Variables	The number of Bytes
1	Command	SYN	char	3
2	Parameter 1	Synchronous operation mode (0x00: Read, 0x01: Set, 0x02: Extended read, 0x03: Extended set) Set 0x03.	BYTE	1
3	Parameter 2	Synchronous operation modes -1: Stand-alone 0: Synchronous master 1 to 9: Synchronous slave	char	1
3	Parameter 3	Total number of connecting units that include master (1 to 10).	BYTE	1
4	Parameter 4	The number of connected EDX-100A and EDX-200A units (0 to 7).	BYTE	1
5	Parameter 5	Total length of synchronous cable (0: 50 m or less 1: 500 m or less 2: 1000 m or less) (*) Only “0(50 m)” can be set when operating synchronously with EDX-100A.	char	1
6	Parameter 6	Type of synchronous unit other than EDX-3000A/B (0: EDX-100A, 1: EDX-200A). (*) Set 0 when the parameter 4 is set 0.	BYTE	1
7	Parameter 7	Reserved	char	3
Total number of transferred bytes				12

●Response data: Standard type (1 byte)

◆◆◆ When reading result (Extended read) ◆◆◆

●The number of transferred bytes: 4 bytes

●Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	SYN	char	3
2	Parameter 1	Synchronous operation mode (0x00: Read, 0x01: Set, 0x02: Extended read, 0x03: Extended set) Set 0x02.	BYTE	1
Total number of transferred bytes				4

●Response data: 8 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	Synchronous operation mode -1: Stand-alone 0: Synchronous master 1 to 9: Synchronous slave	char	1
2	Response data 2	Total number of connecting units that include master (1 to 10).	BYTE	1
3	Response data 3	The number of connected EDX-100A and EDX-200A units (0 to 7).	BYTE	1
4	Response data 4	Total length of synchronous cable (0: 50 m or less 1: 500 m or less 2: 1000 m or less)	char	1
5	Response data 5	Type of synchronous unit other than EDX-3000A/B (0: EDX-100A, 1: EDX-200A). (*) Response data 5 is 0 when the Response data 3 is set 0.	BYTE	1
6	Response data 6	Reserved	char	3
Total number of response data bytes				8

MEMO

- For parameters 3, 4, 5 and 6 at the setting or extended setting, same setting is required for synchronous slaves as well as the synchronous master.

NOTE

- Set parameter 1 as Extended read(0x02) or Extended set(0x03) when creating new control software or operating synchronously with EDX-200A.
- After conducting the SYN command, send the MES command to set the measuring condition.

6-3-17 Checking Device /SLOT (EDX)

Blinks channel LEDs of the target EDX units.

●Command: EDX

●Target EDX: Stand-alone, synchronous master, and synchronous slave

●The number of transferred bytes: 4 bytes

●Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	EDX	char	3
2	Parameter 1	Specify the target channel LED for blinking. 0: LEDs of all channels 1 to 8: Channel LED of the target slot	BYTE	1
Total number of transferred bytes				4

●Response data: Standard type (1 byte)

MEMO

- During A/D conversion, the EDX command is not available.
- Blinking does not depend on existence of conditioner cards.

6-3-18 Obtaining Data Drive Remaining Capacity (FFR)

Checks remaining capacity of the data drive.

●Command: FFR

●Target EDX: Stand-alone, synchronous master, synchronous slave

●The number of transferred bytes: 3 bytes

●Parameter: None

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	FFR	char	3
Total number of transferred bytes				3

●Response data: 16 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	Remaining capacity of data drive	INT64	8
1	Response data 2	Total capacity of the data drive	INT64	8
Total number of response data byte				16

MEMO

- Since remaining capacity of the data drive is a value obtained by subtracting system reserve area, it shall be smaller than a value indicated on the EDX. The system reserve area may changes according to a destination media.

Fixed disk such as HDD, SSD, etc.: 1G Bytes

Removable disk and network drive: 10M Bytes

6-3-19 Opening File (FOF)

Opens read or write file.

NOTE

- Target file is an existing file in a data folder.

- Command: FOF
- Target EDX: Stand-alone, synchronous master, and synchronous slave
- The number of transferred bytes: 52 bytes
- Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	FOF	char	3
2	Parameter 1	Open mode (0: Read)	BYTE	1
3	Parameter 2	File name Be sure to set the extension.	char	48
Total number of transferred data.				52

- Response data: 2 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	File open results (0: Normally ended, -1: Error)	short	2
Total number of response data bytes				2

MEMO

- When file open results of the response data is '0' (Normally ended), the EDX status becomes "During opening file by control command." At this time conducting available commands are only FRF, FSF, and FCF.
- To close the file, conduct the FFC command.
- For details of the EDX status, see "4-3 EDX STATUS."

6-3-20 Reading File Data (FRF)

Reads the file data opened by the FOF command.

●Command: FRF

●Target EDX: Stand-alone, synchronous master, and synchronous slave

●The number of transferred bytes: 7 bytes

●Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	FRF	char	3
2	Parameter 1	The number of read bytes (Max. 4000000 bytes)	DWORD	4
Total number of transferred bytes				7

●Response data: 6 bytes + The number of read bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	Read results (0: Normally ended, -1: Error) Only when the read results is '0' (Normally ended), values on and after the Response data 2 is enabled.	short	2
2	Response data 2	The number of actually read bytes (The number of bytes of the response data 3)	DWORD	4
3	Response data 3	The read data (0 to 4,000,000 bytes data)	---	---
Total number of response data bytes				6~

MEMO

- Data size that can be read at a time by this command is maximum 4,000,000 bytes.
When reading a file with size exceeding the 4,000,000 bytes, repeat this command for the number of required times for reading the file.

6-3-21 Seeking File (FSF)

Changes the file read start position of the file opened by the FOF command.

●Command: FSF

●Target EDX: Stand-alone, synchronous master, and synchronous slave

●The number of transferred bytes: 12 bytes

●Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	FSF	char	3
2	Parameter 1	File read standard position 0: File head 1: Current file read position 2: File end	BYTE	1
3	Parameter 2	Moving amount of file read position	INT64	8
Total number of transferred bytes				12

●Response data: 2 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	File seek results (0: Normally ended, -1: Error)	short	2
Total number of response data bytes				2

6-3-22 Closing File (FCF)

Closes the file opened by the FOF command.

●Command: FCF

●Target EDX: Stand-alone, synchronous master, and synchronous slave

●The number of transferred bytes: 3 bytes

●Parameter: None

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	FCF	char	3
Total number of transferred bytes				3

●Response data: 2 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	File close results (0: Normally ended, -1: Error)	short	2
Total number of response data bytes				2

MEMO

- When file close results of the response data is '0' (Normally ended), EDX status 'During opening file by control command' is cleared.
- For details of the EDX status, see "4-3 EDX STATUS."

6-3-23 Deleting File (FDF)

Deletes the file.

NOTE

- Target file is an existing file in a data folder.

●Command: FDF

●Target EDX: Stand-alone, synchronous master, and synchronous slave

●The number of transferred bytes: 51 bytes

●Parameter: None

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	FDF	char	3
2	Parameter 1	File name to be deleted	char	48
Total number of transferred bytes				51

●Response data: 2 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	File delete setting results (0: Normally ended, -1: Error)	short	2
Total number of response data bytes				2

6-3-24 Starting Finding File (FFF)

Starts finding the desired file.

NOTE

- Target file is an existing file in a data folder.

- Command: FFF
- Target EDX: Stand-alone, synchronous master, and synchronous slave
- The number of transferred bytes: 51 bytes
- Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	FFF	char	3
2	Parameter 1	Desired file name to be found (including extension)	char	48
Total number of transferred bytes				51

- Response data: 68 bytes

No.	Name	Content			Types of Variables	The number of Bytes
1	Response data 1	Find file results (0: Normally ended, -1: Error or no file) Only when the file find results is '0' (Normally ended), the Response data 3 is enabled.			short	2
2	Response data 2	Reserved			char	2
3	Response data 3	File information	File name (with extension)		char	48
			File size		INT64	8
			File created date	Year (2008 to)	WORD	2
				Month (1 to 12)	BYTE	1
				Day (1 to 31)	BYTE	1
				Hour (0 to 23)	BYTE	1
				Minute (0 to 59)	BYTE	1
				Second (0 to 59)	BYTE	1
				Reserved	char	1
Total number of Response data bytes					68	

MEMO

- When file find results of the response data is '0' (Normally ended), the EDX status becomes "Finding file by control command." At this time, only FFN and FFC commands are enabled.
- When ending the finding file command, conduct the FFC command.
- For details of the EDX status, see "4-3 EDX STATUS."

MEMO

- Question mark (?) or asterisk (*) can be specified to the file name that is found by the Parameter 1. Question mark '?' is an arbitrary 1-byte character and '*', an arbitrary character string.
(No need to specify ' ' in the quotation.)

Ex. 1 When finding all the files.

Specify '*' to the Parameter 1.

Ex. 2 When finding all the files with character string "TEST" at the head.

Specify "TEST*.KS2" to the Parameter 1.

Ex. 3 When finding all the files with analog trigger of synchronous operation master (ID = 0) conducted.

Specify "'*_A*_0.KS2" to Parameter 1.

Ex. 4 When start finding files with file names "TEST" and file Nos. from 20 to 29.

Specify "TEST002?.KS2" to the Parameter 1.

6-3-25 Continuing Finding File (FFN)

Continues finding the file next to the file started by the FFF command.

●Command: FFN

●Target EDX: Stand-alone, synchronous master, and synchronous slave

●The number of transferred bytes: 3 bytes

●Parameter: None

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	FFN	char	3
Total number of transferred bytes				3

●Response data: 68 bytes

Response data:						
No.	Name	Content			Types of Variables	The number of Bytes
1	Response data 1	File find results (0: Normally ended, -1: Error or no file) Only when the file find is normally ended, Response data 3 is enabled.			short	2
2	Response data 2	Reserved			char	2
3	Response data 3	File information	File name (with extension)		char	48
			File size		INT64	8
			File created date	Year (2006 to)	WORD	2
				Month (1 to 12)	BYTE	1
				Day (1 to 31)	BYTE	1
				Hour (0 to 23)	BYTE	1
				Minute (0 to 59)	BYTE	1
				Second (0 to 59)	BYTE	1
				Reserved	char	1
Total number of Response data bytes					68	

MEMO

- When file find result of the Response data is '-1' (Error or no file), the EDX status "Finding file by control command" is cleared.
- For details of the EDX status, see "4-3 EDX STATUS."

6-3-26 Ending Finding File (FFC)

Ends finding the file started by the FFF command.

●Command: FFC

●Target EDX: Stand-alone, synchronous master, and synchronous slave

●The number of transferred bytes: 3 bytes

●Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	FFC	char	3
Total number of transferred bytes				3

●Response data: 2 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	Find file end result (0: Normally ended, -1: Error)	short	2
Total number of response data bytes				2

MEMO

- When file find results of the Response data is '0' (Normally ended), the EDX status "Finding file by control command" is cleared.
- For details of the EDX status, see "4-3 EDX STATUS."

6-3-27 Deleting Recorded Data File (FDK)

Deletes the latest recorded data file.

●Command: FDK

●Target EDX: Stand-alone and synchronous master

●The number of transferred bytes: 3 bytes

●Parameter: None

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	FDK	char	3
Total number of transferred bytes				3

●Response data: 2 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	File deleted result (0: Normally Ended, -1: Error)	short	2
Total number of response data bytes				2

NOTE

- After finishing data recording, transfer commands with the A/D conversion stopped.
- You cannot use this FDK command during waiting state (waiting for interval measurement and waiting for trigger measurement) or during data recording.
- All newly created files (such as the recorded KS2, WAV, AVI, CSV, etc.) are deleted and the file numbers are decremented.
- This command is only enabled when "The number of repeat times is set to 1" in both manual measurement mode and trigger measurement mode.

6-3-28 Reading/Writing/Copying TEDS information (TED)

Read, write, and copy TEDS information of 64 CHs together at the same time.

MEMO

- For details of TEDS, refer to IEEE1451.4 standard.
- Writing target is TEDS data of the user's data area 1 only.

●Command: TED

●Target EDX: Stand-alone, synchronous master, and synchronous slave

◆◆◆Setting 1 (When writing)◆◆◆

●The number of transferred bytes: 2060 bytes

●Parameter: See the following table.

No.	Name	Content		Types of Variables	The number of Bytes
1	Command	TED		char	3
2	Parameter 1	Parameter mode (0x00: Read, 0x01: Set 1, 0x02: Set 2) Set 0x01.		BYTE	1
3	Parameter 2	Writing target CH (bit corresponding) (Example): For the writing target of CH-1, CH-2, CH-33, and CH-64, set 0x80000000100000003.		UINT64	8
4	Parameter 3	Writing character string to the User's data 1 (for 64 channels) Max. 28 characters/CH + NULL code	Writing data of CH-1	char	32
			Writing data of CH-2	char	32
			Writing data of CH-3	char	32
			.	.	.
			Writing data of CH-64	char	32
Total number of transferred bytes					2060

●Response data: 64 bytes

No.	Name	Content	Types of Variables	The number of Bytes
1	Response data 1	Result after writing 1 byte × 64 CHs = 64 bytes -1: No card or no function 0: OK 1: Error 2: OFF(not target)	char	64
Total number of response data bytes				64

◆◆◆Setting 2 (when copying)◆◆◆

●The number of transferred bytes: 2060 bytes

●Parameter: See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	TED	char	3
2	Parameter 1	Parameter mode (0x00: Read, 0x01: Set 1, 0x02: Set 2) Set 0x02.	BYTE	1
3	Parameter 2	Copy source CH No. (1 to 64)	BYTE	1
4	Parameter 3	Copy destination CH No. (1 to 64)	BYTE	1
5	Parameter 4	Reserved	char	2
Total number of transferred bytes				8

●Response data: Standard type (1 byte)

MEMO

- When the copy source and copy destination have the same CH, the EDX terminates normally with doing nothing.

◆◆◆◆When reading◆◆◆◆

●The number of transferred bytes:

4 bytes

●Parameter:

See the following table.

No.	Name	Content	Types of Variables	The number of Bytes
1	Command	TED	char	3
2	Parameter 1	Parameter mode (0x00: Read, 0x01: Set 1, 0x02: Set 2) Set 0x00.	BYTE	1
Total number of transferred bytes				4

●Response data:

42240 bytes

No.	Name	Content	Types of Variables	The number of Bytes	
1	Response data 1	Template ID No. (*1)	BYTE	1	
		Validity of Template ID No. (0: Invalid, 1: Valid) (*2)	BYTE	1	
		Reserved		char	2
		Basic information (*3)	Unique Registration Number	INT64	8
			Manufacture ID	WORD	2
			Model Number	WORD	2
			Version Letter	char	2
			Version Number	WORD	2
			Serial Number	DWORD	4
			Standard information (*4)		char
		User's data	User's data 1	char	32
			User's data 2	char	480
			Available size of the User's data 2		DWORD
		Reserved	Mode No.	BYTE	1
			Range No.	BYTE	1
			Low pass No.	BYTE	1
			Unit No.	BYTE	1
			Calibration coefficient	float	4
			Whether User's data 1 is edit (*5) (0: Not available,1: Available)	BYTE	1
			Reserved	char	11
		Total of CH1 TEDS information			660
		.			.
		Total of CH64 TEDS information			660
		Total number of response data bytes			

(*1) Template ID No.

- Template ID No. and “Sub ID” are Identification Nos. originally defined by the EDX. (See the following table).
- “Standard Template ID No.” in the following table is relevant to Template ID No. defined by IEEE1451.4 standard.

Template ID No.	Content
0	No card is installed or no information
1	Not applicable TEDS information
2	Standard Template ID = 0, Sub ID = 0
3	Standard Template ID = 24, Sub ID = 0
4	Standard Template ID = 25, Sub ID = 0
5	Standard Template ID = 25, Sub ID = 1
6	Standard Template ID = 30, Sub ID = 0
7	Standard Template ID = 30, Sub ID = 1
8	Standard Template ID = 33, Sub ID = 0
9	Standard Template ID = 36, Sub ID = 0

(*2) Validity of Template ID No.

Flag to indicate whether standard information is valid.

(*3) Basic information

Valid only when the template ID No. is more than 2.

(*4) Standard Information

Contents of the standard information and the number of bytes varies with the template ID No.

(Valid only when the template ID No. is more than 2.)

Contents of the standard information is described in the following table for every template ID No.

(Written as described in IEEE1451.4 standard.)

(*5) Whether User's data 1 is edit.

Flag to indicate whether the User's data 1 is edit.(1 = Editable)

Template ID No.	Content	Types of Variables	The number of Bytes
2	Standard Template ID	BYTE	1
	Polarity (sign) (0:Positive,1:Negative)	BYTE	1
	Sensitivity direction (0:X, 1:Y, 2:Z, 3:N/A)	BYTE	1
	Reserved	char	1
	Calibration Date (e.g. “2005/01/01”)	char	16
	Sensitivity @ reference condition [V/(m/s ²)]	float	4
	Reference frequency [Hz]	float	4
	High-pass cut-off frequency(F hp) [Hz]	float	4
	Measurement location ID (0 to 511)	WORD	2
	Reserved	char	2
	Total of Template ID No. 2		36

Template ID No.	Content	Types of Variables	The number of Bytes
3	Standard Template ID	BYTE	1
	Polarity (sign) (0: Positive,1: Negative)	BYTE	1
	Sensitivity direction (0: X, 1: Y, 2: Z, 3: N/A)	BYTE	1
	Reserved	char	1
	Sensitivity @ reference condition [V/(ms ²)]	float	4
	Reference frequency [Hz]	float	4
	High-pass cut-off frequency [Hz]	float	4
	Low-pass cut-off frequency [Hz]	float	4
	Resonance frequency (fres) [Hz]	float	4
	Quality factor at fres	float	4
	Amplitude slope (a) [%/decade]	float	4
	Temperature Coefficient (b) [%/°C]	float	4
	Reference temperature [°C]	float	4
	Calibration Date (e.g. "2005/01/01")	char	16
	Measurement location ID (0 to 2047)	WORD	2
	Reserved	char	2
	Total of Template ID No. 3		60
4	Standard Template ID	BYTE	1
	Sensitivity direction (0:X, 1:Y, 2:Z, 3:N/A)	BYTE	1
	Transducer Electrical Signal Type (0: Voltage Sensor)	BYTE	1
	Mapping Method(0: Linear)	BYTE	1
	AC or DC coupling (0:DC, 1:AC, 1 = fixed)	BYTE	1
	Polarity (sign) (0:Positive,1:Negative)	BYTE	1
	Reserved	char	2
	Sensitivity @ reference condition [V/(ms ²)]	float	4
	High-pass cut-off frequency [Hz]	float	4
	Transducer weight [g]	float	4
	Reference frequency [Hz]	float	4
	Reference temperature [°C]	float	4
	Calibration Date (e.g. "2005/01/01")	char	16
	Calibration Initials (Max 3chrs. e.g. "TK")	char	4
	Calibration period [days]	WORD	2
	Measurement location ID (0 to 2047)	WORD	2
	Total of Template ID No. 4		172

Template ID No.	Content	Types of Variables	The number of Bytes
5	Standard Template ID	BYTE	1
	Sensitivity direction (0:X, 1:Y, 2:Z, 3:N/A)	BYTE	1
	Transducer Electrical Signal Type (0: Voltage Sensor)	BYTE	1
	Mapping Method(0: Linear)	BYTE	1
	AC or DC coupling (0:DC, 1:AC)	BYTE	1
	Polarity (sign) (0:Positive,1:Negative)	BYTE	1
	Reserved	char	2
	Sensitivity @ reference condition [V/(ms ²)]	float	4
	High-pass cut-off frequency [Hz]	float	4
	Transducer weight [g]	float	4
	Reference frequency [Hz]	float	4
	Reference temperature [°C]	float	4
	Low-pass cut-off frequency [Hz]	float	4
	Resonance frequency (fres) [Hz]	float	4
	Quality factor at fres	float	4
	Amplitude slope (a) [%/decade]	float	4
	Temperature Coefficient (b) [%/°Ce]	float	4
	Calibration Date (e.g. “2005/01/01”)	char	16
	Calibration Initials (Max 3chrs. e.g. “TK “)	char	4
	Calibration period [days]	WORD	2
	Measurement location ID (0 to 2047)	WORD	2
	Total of Template ID No. 5		72
6	Standard Template ID	BYTE	1
	Physical Measurand	BYTE	1
	Transducer Electrical Signal Type (0: Voltage Sensor)	BYTE	1
	Full-Scale Electrical Value Precision	BYTE	1
	Mapping Method(0: Linear)	BYTE	1
	AC or DC coupling (0:DC, 1:AC)	BYTE	1
	Reserved	char	2
	Minimum physical value	float	4
	Maximum physical value	float	4
	Minimum voltage output [V]	float	4
	Maximum voltage output [V]	float	4
	Sensor output impedance [ohms]	float	4
	Response Time [sec]	float	4
	Calibration Date (e.g. “2005/01/01”)	char	16
	Calibration Initials (Max 3chrs. e.g. “TK”)	char	4
	Calibration period [days]	WORD	2
	Measurement location ID (0 to 2047)	WORD	2
	Total of Template ID No. 6		200

Template ID No.	Content	Types of Variables	The number of Bytes
7	Standard Template ID	BYTE	1
	Physical Measurand	BYTE	1
	Power-supply type (0:DC,1:Bipolar DC,2:AC (rms))	BYTE	1
	Transducer Electrical Signal Type (0: Voltage Sensor)	BYTE	1
	Full-Scale Electrical Value Precision	BYTE	1
	Mapping Method(0: Linear)	BYTE	1
	AC or DC coupling (0:DC, 1:AC)	BYTE	1
	Reserved	char	1
	Minimum physical value	float	4
	Maximum physical value	float	4
	Minimum voltage output [V]	float	4
	Maximum voltage output [V]	float	4
	Sensor output impedance [ohms]	float	4
	Response Time [sec]	float	4
	Power-supply level, nominal [V]	float	4
	Power-supply level, min [V]	float	4
	Power-supply level, max [V]	float	4
	Max current at nominal power level [A]	float	4
	Calibration Date (e.g. “2005/01/01”)	char	16
	Calibration Initials (Max 3chrs. e.g. “TK”)	char	4
	Calibration period [days]	WORD	2
	Measurement location ID (0 to 2047)	WORD	2
	Total of template ID No. 7		72
8	Standard Template ID	BYTE	1
	Physical Measurand	BYTE	1
	Transducer Electrical Signal Type (3: Bridge Sensor)	BYTE	1
	Full-Scale Electrical Value Precision	BYTE	1
	Mapping Method(0: Linear)	BYTE	1
	Bridge Type (0:QUARTER,1:HALF,2:FULL)	BYTE	1
	Reserved	char	2
	Minimum physical value	float	4
	Maximum physical value	float	4
	Minimum electrical output [V/V]	float	4
	Maximum electrical output [V/V]	float	4
	Bridge element impedance [ohms]	float	4
	Response Time [sec]	float	4
	Excitation level, nominal [V]	float	4
	Excitation level, min [V]	float	4
	Excitation level, max [V]	float	4
	Calibration Date (e.g. “2005/01/01”)	char	16
	Calibration Initials (Max 3chrs. e.g. “TK”)	char	4
	Calibration period [days]	WORD	2
	Measurement location ID (0 to 2047)	WORD	2
	Total of template ID No. 8		212

Template ID No.	Content	Types of Variables	The number of Bytes
9	Standard Template ID	BYTE	1
	Transducer Electrical Signal Type (0: Voltage Sensor)	BYTE	1
	Mapping Method (4: Thermocouple)	BYTE	1
	Thermocouple type (0 to 8) 0: B type, 1: E Type, 2: J Type, 3: K Type 4: N Type, 5: R Type, 6: S Type, 7: T Type 8: Non-standard	BYTE	1
	Cold-junction compensation required (0: CJC required, 1: Compensated)	BYTE	1
	Reserved	char	3
	Minimum temperature [°C]	float	4
	Maximum temperature [°C]	float	4
	Minimum voltage output [V]	float	4
	Maximum voltage output [V]	float	4
	Thermocouple resistance [ohms]	float	4
	Sensor Response Time [sec]	float	4
	Calibration Date (e.g. “2005/01/01”)	char	16
	Calibration Initials (Max 3chrs. e.g. “TK”)	char	4
	Calibration period [days]	WORD	2
	Measurement location ID (0 to 2047)	WORD	2
	Total of template ID No. 9		56

MEMO

Validity of Basic TEDS information, Standard Template TEDS information, and User Data information

1) When template ID No. = 0

- Validity of template ID No. is always ‘0’ (Invalid).
- Basic TEDS information is invalid.
- Standard Template TEDS information is invalid.
- User Data information is invalid.

2) When template ID No. = 1

- Validity of template ID No. is always ‘0’ (Invalid).
- Basic TEDS information is valid.
- Standard Template TEDS information is invalid.
- User Data information is invalid.

3) When template ID No. ≥ 2

- Basic TEDS information is valid.
- When validity of template ID No. is ‘1’ (Valid), the Standard TEDS information is normal.
- When validity of template ID No. is ‘0’ (Invalid), the Standard TEDS information is faulty or sensor is not applicable for the current conditioner card.
- User Data information is valid only when it is Manufacture ID = 58 (KYOWA) of Basic TEDS information.

6-3-29 Reading EDX Status

Generally, since the EDX status is stored in the header section of the Response packet, the EDX status can be obtained by conducting any command and by referring to the header section of the Response packet.

However, when it is required to check the EDX status before issuing the command to the EDX or when the next command cannot be issued unless after checking whether or not processing requiring a certain time in the EDX is surely finished, it is required to obtain the EDX status.

In the above cases, when only the header section of the Command packet (Addition data size: 0) is sent to the EDX, the Response packet only storing the header section is returned. After checking the status items of the Response packet header section, the EDX status can be obtained.

●Command:	None
●Target EDX:	Stand-alone, synchronous master, and synchronous slave
●The number of transferred bytes:	0 byte
●Parameter:	None
●Response data:	0 byte

6-3-30 Measuring/Obtaining Average Value (AVG)

Measures analog CHs of measurement target with 1 kHz sampling frequency and obtains the average value.

- Command: AVG
- Target EDX: Stand-alone and synchronous master

◆◆◆When conducting ◆◆◆

- The number of transferred bytes: 5 bytes
- Parameter: See the following table.

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command	AVG	char	3
2	Parameter 1	Average value measurement mode (0x00: Read results, 0x01: Conduct) Set 0x01.	BYTE	1
3	Parameter 2	Average value obtaining time (sec) 0 to 10 Set '0' to obtain the average data of approx. 1 second.	BYTE	1
The number of transferred bytes				5

- Response data: Standard type (1 byte)
- Remarks: After conducting the AVG command, check the EDX status is not “Executing the command(Busy)” with the status read command. After confirming that the average value measurement is finished, read the results.

◆◆◆When reading the results ◆◆◆

- The number of transferred bytes: 4 bytes
- Parameter: See the following table.

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Command	AVG	char	3
2	Parameter 1	Average value measurement mode (0x00: Read results, 0x01: Conduct) Set 0x00.	BYTE	1
The number of transferred bytes				4

- Response data $4 \text{ bytes} \times 64\text{CHs} \times \text{the number of connected units} = 256 \text{ to } 2560\text{bytes}$

No.	Name	Contents	Types of Variables	The Number of Bytes
1	Response data 1	A/D conversion average value of measured CHs Regardless of whether or not CHs are measured, measured results are output for 64 CHs $\times$ the number of connected units. Data of not measured CH shall be '0.'	long	4 $\times$ 64CHs $\times$ the number of connected units
Total number of response data bytes				256 to 2560

NOTE

- Conducting this command is only available when A/D conversion is stopping in A/D conversion enabled status.
- While measuring the average value, no command other than reading the status is available.

7 MEASURING CONDITION FORMAT

With control command “Setting/Reading Meas Conditions (MES),” measuring condition sent and received between the PC and EDX are set in same format as this measuring condition file.

Format of the measuring condition file is described in the next page.

7-1 MEASURING CONDITION FORMAT

Total size: 46000 bytes

No.	Classification	Contents and Range	Types of Variables	The number of Bytes
1	Overall information 560 bytes	Device ID (“EDX-3000A” fixed, quotations “ ” is not included) (*1)	char	20
		Parameter format version (1 fixed)	WORD	2
		Reserved	Char	2
		Slot 1 card type No. (7-4 CARD TYPE NO.)	BYTE	1
		Slot 2 card type No. (7-4 CARD TYPE NO.)	BYTE	1
		Slot 3 card type No.(7-4 CARD TYPE NO.)	BYTE	1
		Slot 4 card type No. (7-4 CARD TYPE NO.)	BYTE	1
		Slot 5 card type No. (7-4 CARD TYPE NO.)	BYTE	1
		Slot 6 card type No. (7-4 CARD TYPE NO.)	BYTE	1
		Slot 7 card type No. (7-4 CARD TYPE NO.)	BYTE	1
		Slot 8 card type No. (7-4 CARD TYPE NO.)	BYTE	1
		Reserved	char	8
		Synchronous operation mode (reading time only) -1: Stand-alone, 0: Master, 1 to 9: Slave	char	1
		Total number of connecting units that include master (1 to 10).	BYTE	1
		The number of connected EDX-100A and EDX-200A units (0 to 7).	BYTE	1
		Switching oscillator (0: Internal, 1: External)	BYTE	1
		Beep sound when excessive input it applied (0:OFF, 1: When exceeded, 2: Until STOP/PAUSE key is pressed)	BYTE	1
		Beep sound while monitoring data (0: OFF, 1: ON) Only valid when the above “Beep sound when excessive input is applied” is other than 0.	BYTE	1
		Beep sound (0: OFF, 1: ON (High pitch sound), 2: ON (Low pitch sound))	BYTE	1
		After recording is finished, restart the A/D conversion (0: Yes, 1: No)	BYTE	1
		Option button setting 0: None, 1: Start monitoring, 2:Delete recorded data, 3: Output CAL, 4: Over Reset	BYTE	1
		Built-in speaker (0: Yes, 1: No)	BYTE	1
		File overwrite check (0: Yes, 1: No)	BYTE	1
		Total length of synchronous cable (0: 50 m or less, 1: 500 m or less, 2: 1000 m or less)	BYTE	1
		A/D data format (0: 16bits (short), 1: 24bits (long))	BYTE	1
		PAUSE function (0: Valid, 1: Invalid)	BYTE	1
		Type of synchronous unit other than EDX-3000A/B (0: EDX-100A, 1: EDX-200A).	BYTE	1
		Reserved	char	1
		Balance standard value 1 to 50%: Set 10 times larger value as setting value. Example) For 5%, set 50.	WORD	2
		Reserved	char	6
		User designed unit 1 (Max 7 characters)	char	8
		User designed unit 2 (Max 7 characters)	char	8
		User designed unit 3 (Max 7 characters)	char	8

1	Overall information 560 bytes	Slot 1, custom-made cable correction value ^(*2)	double	8
		Slot 2, custom-made cable correction value ^(*2)	double	8
		Slot 3, custom-made cable correction value ^(*2)	double	8
		Slot 4, custom-made cable correction value ^(*2)	double	8
		Slot 5, custom-made cable correction value ^(*2)	double	8
		Slot 6, custom-made cable correction value ^(*2)	double	8
		Slot 7, custom-made cable correction value ^(*2)	double	8
		Slot 8, custom-made cable correction value ^(*2)	double	8
		Reserved	char	4
		Slot 1, input cable No. ^(*2)	BYTE	1
		Slot 2, input cable No. ^(*2)	BYTE	1
		Slot 3, input cable No. ^(*2)	BYTE	1
		Slot 4, input cable No. ^(*2)	BYTE	1
		Slot 5, input cable No. ^(*2)	BYTE	1
		Slot 6, input cable No. ^(*2)	BYTE	1
		Slot 7, input cable No. ^(*2)	BYTE	1
		Slot 8, input cable No. ^(*2)	BYTE	1
		Reserved	char	396

(*1) Even if an instrument's model is EDX-3000B, the fixed character string of device ID is "EDX-3000A".

(*2) For details, see "7-6 CUSTOM-MADE CABLE CORRECTION VALUES AND INPUT CABLE"

No.	Classification	Contents & Range		Types of Variables	The number of Bytes
2	Recorded information 400 bytes	Recorded file name (Max. 20 characters)		char	22
		File No. (0 to 9999)		WORD	2
		File title (Max. 40 characters)		char	44
		Reserved		char	332
3	Measuring condition (Common condition) 64 bytes	Sampling frequency (1 to 200000)		DWORD	4
		Sampling frequency type (0: Internal, 1: External) (*)		BYTE	1
		Reserved		char	1
		Frequency dividing of sampling frequency (0 and 1: No frequency dividing, 2 to 65534: Frequency dividing value)		WORD	2
		Reserved		char	16
		Measuring mode 0: Manual, 1: Interval 2: Analog trigger, 3: Digital trigger, 4: External trigger 6: Complex trigger, 10: PC recording		BYTE	1
		DI data measurement		BYTE	1
		The number of recorded analog CHs (The number of CHs set to Meas ON in analog CH condition)		WORD	2
		Reserved		char	36
4	Measuring condition (Manual condition) 32 bytes	The number of recorded data (0, or 2 to the number of recordable data)		INT64	8
		Repeated times (0 to 9999, 0: Infinite)		WORD	2
		Reserved		char	22
5	Measuring condition (Interval condition) 32 bytes	The number of recorded data (2 to the number of recordable data)		INT64	8
		Interval start time	Year (2000 to 2099)	WORD	2
			Month (1 to 12)	BYTE	1
			Day (1 to 31)	BYTE	1
			Hour (0 to 23)	BYTE	1
			Minute (0 to 59)	BYTE	1
			Second (0 to 59)	BYTE	1
			Reserved	char	1
		Interval distance (10 to)		DWORD	4
		Interval times (0 to 9999, 0: Infinite)		WORD	2
		Reserved		char	10

(*) For details of the external clock, see " INSTRUCTION MANUAL EDX-3000A/B MEMORY RECORDER/ANALYZER [FOR HARDWARE]."

No.	Classification	Contents & Range	Types of Variables	The number of Bytes
6	Measuring condition (Trigger common condition) 32 bytes	The number of trigger recorded data With end trigger: 0 Without end trigger: 2 to the number of recording available data	INT64	8
		Pre-trigger delay (0 to 4194304)	DWORD	4
		Post-trigger delay (0 to 4194304)	DWORD	4
		Trigger repeat times (0 to 9999, 0: Infinite)	WORD	2
		End trigger (0: None, 1:Yes)	BYTE	1
		Reserved	char	13
7	Measuring condition (Analog trigger condition) 48 bytes	Start trigger CH (1 to 64, analog CH with Meas ON)	BYTE	1
		Start trigger slope (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	2
		Start trigger level (± 32000 , ± 8192000)	long	4
		Reserved	char	16
		End trigger CH (1 to 64, analog CH with Meas ON)	BYTE	1
		End trigger slope (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	2
		End trigger level (± 32000 , ± 8192000)	long	4
		Reserved	char	16
8	Measuring condition (Digital trigger condition) 16 bytes	Start trigger bit (1 to 16)	BYTE	1
		Start trigger level (0 or 1)	BYTE	1
		Reserved	Char	6
		End trigger bit (1 to 16)	BYTE	1
		End trigger level(0 or 1)	BYTE	1
		Reserved	char	6
9	Measuring condition (External trigger condition) 16 bytes	Start trigger slope (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	7
		End trigger slope (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	7
10	Measuring condition 32 bytes	Reserved	char	32

No.	Classification	Contents and Range	Types of Variables	The number of Bytes
11	Measuring condition (Start complex trigger common condition) 48 bytes	Start AND/OR setting 1 (0: OR, 1: AND) (Set AND/OR of start analog trigger CHs 1 and 2.)	BYTE	1
		Start AND/OR setting 2 (0:OR, 1:AND) (Set AND/OR of start analog trigger CHs 3 and 4.)	BYTE	1
		Start AND/OR setting 3 (0: OR, 1: AND) ("Start AND/OR setting 1" and "Start AND/OR setting 2")	BYTE	1
		Start AND/OR setting 4 (0: OR, 1: AND) ("Start AND/OR setting 3" and "Start external trigger")	BYTE	1
		Reserved	char	28
		Start external trigger (0: Not use, 1: Use)	BYTE	1
		Start external trigger slope (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	1
		Start manual trigger (0: Not use, 1: use)	BYTE	1
		Reserved	char	12
12	Measuring condition (Start complex trigger condition 1) 32 bytes	Start trigger CH 1 condition (0: None, 1: Analog CH, 2: Digital CH)	BYTE	1
		Start trigger CH 1 (1 to 64, analog CH with Meas ON)	BYTE	1
		Start trigger slope 1 (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	1
		Start trigger level 1 (± 32000 , ± 8192000)	long	4
		Start trigger bit 1 (0 to 0xFFFF)	WORD	2
		Start trigger bit status (0 to 0xFFFF) (0: Invalid, 1: Valid)	WORD	2
		Reserved	char	20
13	Measuring condition (Start complex trigger condition 2) 32 bytes	Start trigger CH 2 condition (0: None, 1: Analog CH, 2: Digital CH)	BYTE	1
		Start trigger CH 2 (1 to 64, analog CH with Meas ON)	BYTE	1
		Start trigger slope 2 (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	1
		Start trigger level 2 (± 32000 , ± 8192000)	long	4
		Start trigger bit 2 (0 to 0xFFFF)	WORD	2
		Start trigger bit status 2 (0 to 0xFFFF) (0: Invalid, 1: Valid)	WORD	2
		Reserved	char	20

14	Measuring condition (Start complex trigger condition 3) 32 bytes	Start trigger CH 3 condition (0: None, 1: Analog CH, 2: Digital CH)	BYTE	1
		Start trigger CH3 (1 to 64, analog CH with Meas ON)	BYTE	1
		Start trigger slope 3 (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	1
		Start trigger level 3 (± 32000 , ± 8192000)	long	4
		Start trigger bit 3 (0 to 0xFFFF)	WORD	2
		Start trigger bit status 3 (0 to 0xFFFF) (0: Invalid, 1: Valid)	WORD	2
		Reserved	char	20
15	Measuring condition (Start complex trigger condition 4) 32 bytes	Start trigger CH4 condition (0: None, 1: Analog CH, 2: Digital CH)	BYTE	1
		Start trigger CH 4 (1 to 64, analog CH with Meas ON)	BYTE	1
		Start trigger slope 4 (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	1
		Start trigger level 4 (± 32000 , ± 8192000)	long	4
		Start trigger bit 4 (0 to 0xFFFF)	WORD	2
		Start trigger bit status 4 (0 to 0xFFFF) (0: Invalid, 1: Valid)	WORD	2
		Reserved	char	20
16	Measuring condition (Start complex trigger condition) 432 bytes	Reserved	char	432

No.	Classification	Contents and Range	Types of Variables	The number of Bytes
17	Measuring condition (End complex trigger common condition) 48 bytes	End AND/OR setting 1 (0: OR, 1: AND) (Set AND/OR of end analog trigger CHs 1 and 2.)	BYTE	1
		End AND/OR setting 2 (0: OR, 1: AND) (Set AND/OR of end analog trigger CHs 3 and 4.)	BYTE	1
		End AND/OR setting 3 (0: OR, 1: AND) ("End AND/OR setting 1" and "End AND/OR setting 2")	BYTE	1
		End AND/OR setting 4 (0: OR, 1: AND) ("End AND/OR setting 3" and "End external trigger")	BYTE	1
		Reserved	char	28
		End external trigger (0: Not use, 1: Use)	BYTE	1
		End external trigger slope (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	1
		End manual trigger (0: Not use, 1: Use)	BYTE	1
		Reserved	char	12
18	Measuring condition (End complex trigger condition 1) 32 bytes	End trigger CH 1 condition (0: None, 1: Analog CH, 2: Digital CH)	BYTE	1
		End trigger CH 1 (1 to 64, analog CH of Meas ON)	BYTE	1
		End trigger slope 1 (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	1
		End trigger level 1 (± 32000 , ± 8192000)	long	4
		End trigger bit 1 (0 to 0xFFFF)	WORD	2
		End trigger bit status (0 to 0xFFFF) (0: Invalid, 1: Valid)	WORD	2
		Reserved	char	20
19	Measuring condition (End complex trigger condition 2) 32 bytes	End trigger CH 2 condition (0: None, 1: Analog CH, 2: Digital CH)	BYTE	1
		End trigger CH 2 (1 to 64, analog CH of Meas ON)	BYTE	1
		End trigger slope 2 (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	1
		End trigger slope 2 (± 32000 , ± 8192000)	long	4
		End trigger bit 2 (0 to 0xFFFF)	WORD	2
		End trigger bit status 2 (0 to 0xFFFF) (0: Invalid, 1: Valid)	WORD	2
		Reserved	char	20

20	Measuring condition (End complex trigger condition 3) 32 bytes	End trigger CH 3 condition (0: None, 1: Analog CH, 2: Digital CH)	BYTE	1
		End trigger CH 3 (1 to 64, analog CH with Meas ON)	BYTE	1
		End trigger slope 3 (0: UP, 1: DOWN)	BYTE	1
		Reserved	char	1
		End trigger slope 3 (± 32000 , ± 8192000)	long	4
		End trigger bit 3 (0 to 0xFFFF)	WORD	2
		End trigger bit status 3 (0 to 0xFFFF) (0: Invalid, 1: Valid)	WORD	2
		Reserved	char	20
21	Measuring condition (End complex trigger condition 4) 32 bytes	End trigger CH 4 condition (0: None, 1: Analog CH, 2: Digital CH)	BYTE	1
		End trigger CH 4 (1 to 64, analog CH with Meas ON)	BYTE	1
		End trigger slope 4 (0:UP, 1:DOWN)	BYTE	1
		Reserved	char	1
		End trigger level 4 (± 32000 , ± 8192000)	long	4
		End trigger bit 4 (0 to 0xFFFF)	WORD	2
		End trigger bit status 4 (0 to 0xFFFF) (0: Invalid, 1: Valid)	WORD	2
		Reserved	char	20
22	Measuring condition (End complex trigger condition) 432 bytes	Reserved	char	432

No.	Classification	Contents and Range	Types of Variables	The number of Bytes
23	Analog CH condition (CH-1 condition) 88 bytes *5632 bytes with 64 CHs	Meas ON/OFF -1: No card or no CH 0: Not measure 1: Measure	BYTE	1
		Mode No. (0 to)	BYTE	1
		Range No. (0 to)	BYTE	1
		High pass filter No. (0 to)	BYTE	1
		Low pass filter No. (0 to)	BYTE	1
		BAL ON/OFF (0: OFF, 1: ON, 2: NONE (only CVM))	BYTE	1
		CAL ON/OFF (0: OFF, 1: ON)	BYTE	1
		CAL range No. (0 to)	BYTE	1
		CAL coefficient value	double	8
		Offset value	double	8
		Unit No. (0 to 62)	BYTE	1
		Internal sensitivity compensation ON/OFF (0: OFF, 1: ON)	BYTE	1
		Card type No.	BYTE	1
		The number of decimal places (-1: Auto, 0 to 8)	char	1
		CH name (Max. 40 characters)	char	44
		Overcheck of + side (-100 to 100%)	char	1
		Overcheck of – side (-100 to 100%)	char	1
		Reserved	char	14
	Analog CH condition (CH-2 condition)	Ditto	---	88
	Analog CH condition (CH-3 condition)	Ditto	---	88
	• • •		---	
	Analog CH condition (CH-64 condition)	Ditto	---	88
24	Digital bit name 1600 bytes	Digital bit name (44 bytes of 1 bit × 32 bits) (1 bit: Max. 40 characters available.)	char	1408
		Reserved	char	192

25	CAN information (whole information) 48 bytes	The number of CAN-IDs (0 to 32)	BYTE	1
		How to cutout CAN-CH condition (0: Start bit + bit length, 1: Start position + last position)	BYTE	1
		Reserved	char	46
26	CAN information (communication condition 1) 16 bytes	Communication standard (0: High speed, 1: Low speed)	BYTE	1
		Communication speed (0 to 10)	BYTE	1
		Sample point (0 to 25)	BYTE	1
		Sample times (0:1 , 1:3)	BYTE	1
		Resynchronous jump width (0: 1 to 3: 4)	BYTE	1
		Termination resistance (0: OFF, 1: ON)	BYTE	1
		Reserved	char	10
	CAN information (communication condition 2) 16 bytes	Ditto	---	16
27	CAN information (ID-1 condition) 64 bytes *2048 bytes with 32-ID	Measurement ON/OFF (0: Not measure, 1: Measure)	BYTE	1
		Format (0: Standard, 1: Expansion)	BYTE	1
		Data length (1 to 8)	BYTE	1
		Endian (0: Little, 1: Big)	BYTE	1
		LSB/MSB (0: LSB, 1: MSB)	BYTE	1
		Using port No. (0: Port1, 1:Port 2)	BYTE	1
		Reserved	char	2
		Frame ID No.	DWORD	4
		ID Name (Maximum 40 characters)	char	44
		Reserved	char	8
	CAN information (ID-2 condition)	Ditto		64
	CAN information (ID-3 condition)	Ditto		64
	• • •			
	CAN information (ID-32 condition)	Ditto		64

No.	Classification	Contents and Range	Types of Variables	The number of Bytes
28	CAN information (CAN-CH1 condition) 72 bytes *8CH/ID で 18,432 bytes with 32-IDs	Measurement ON/OFF (0: OFF, 1: ON)	BYTE	1
		Start bit (0 to 63)	BYTE	1
		Bit length (1 to 64)	BYTE	1
		Data type 0: Signed (Signed integer) 1: Unsigned (Unsigned integer) 2: Float (Single-precision floating-point number) 3: Double (Double-precision floating point number)	BYTE	1
		Coefficient value	double	8
		Offset value	double	8
		CH name (Max. 40 characters)	char	44
		Unit No. (0 to 62)	BYTE	1
		Number of decimal places (-1: Auto, 0 to 8)	char	1
		Reserved	char	6
	CAN information (CAN-CH2 condition) 72 bytes	Ditto	----	72
	CAN information (CAN-CH3 condition) 72 bytes	Ditto	----	72
	• • •			
	CAN information (CAN-CH256 condition) 72 bytes	Ditto	----	72

29	Arithmetic operation information (Whole information) 928 bytes	Arithmetic operation items: Corresponding to bit 0x0000: No arithmetic operation, 0x0001: HPF 0x0002: LPF, 0x0004: Moving average 0x0008: Differential, 0x0010: Integration 0x0020: Four arithmetic operations	WORD	2
		The number of moving average (0: None, 2 to 5000)	WORD	2
		HPF order (0: None, 1: 2, 2: 3, 3: 4)	BYTE	1
		LPF order (0: None, 1:2, 2:3, 3: 4)	BYTE	1
		Reserved	char	922
30	Arithmetic operation information CH1 (Arithmetic condition) 48 bytes 3,072 bytes with 64 CHs	Arithmetic operation items: Corresponding to bit 0x0000: No arithmetic operation, 0x0001: HPF 0x0002: LPF, 0x0004: Averaging 0x0008: Differential, 0x0010: Integration	WORD	2
		The number of differentials (0: None, 1: 1, 2: 2)	BYTE	1
		The number of integrations (0: None, 1: 1, 2: 2)	BYTE	1
		Reserved	char	4
		HPF cutoff frequency (0 to sampling frequency/2)	double	8
		LPF cutoff frequency (0 to sampling frequency/2)	double	8
		Reserved	char	24
	Arithmetic operation information CH2 (Arithmetic condition) 48 bytes	Ditto	---	48
	Arithmetic operation information CH3 (Arithmetic condition) 48 bytes	Ditto	---	48
	• • •			
	Arithmetic operation information CH64 (Arithmetic condition) 48 bytes	Ditto		48

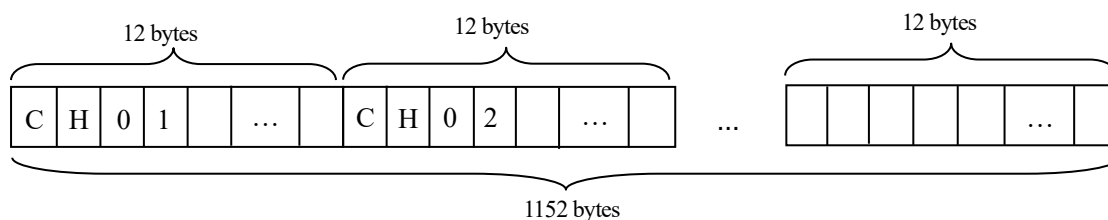
31	Four arithmetic operations information (Whole information) 1232 bytes	The number of arithmetic channels (0: None, 1 to 32)	BYTE	1
		Reserved	char	15
		CH name (*) (12 bytes/item × (64 CHs + 32 CHs))	char	1152
		Reserved	char	64
32	Four arithmetic operations information (Arithmetic CH1 condition) 264 bytes 8,448 bytes with 32 channels	Calculation ON/OFF 0: Not calculate 1: Calculate	BYTE	1
		Unit No. (0 to 62)	BYTE	1
		Number of decimal places (-1: Auto, 0 to 8)	char	1
		Reserved	char	1
		CH name (Maximum 40 characters)	char	44
		Arithmetic expression	char	204
		Reserved	char	12
	Four arithmetic operations information (Arithmetic CH2 condition) 264 bytes	Ditto	---	264
	Four arithmetic operations information (Arithmetic CH3 condition) 264 bytes	Ditto	---	264
	...			
	Four arithmetic operations information (Arithmetic CH32 condition) 264 bytes	Ditto		264
33	Measuring condition	Reserved	char	2080

(*) This “CH name” field needs “Meas on” items in “23 Analog CH condition (CH-x condition)” and “Calculation ON” items in “32 Four arithmetic operations information (Arithmetic CH-x condition)” in character strings.

For example, if CH1, CH2, CH3, and CH4 are “Meas ON” and CH65 and CH66 are “Calculation ON.”

The field of “CH name” in “31 Four arithmetic operations information (Whole information)” needs “CH01”, “CH02”, “CH03”, “CH04”, “CH65”, “CH66”.

It should be noted that the format of the string should be a “CHxx” (xx is a two-digit decimal number, comma and double quotes are not included) as in the example.



7-2 SUPPLEMENT OF SETTING CAN CONDITIONS

7-2-1 CAN Information (Whole information)

(1) The number of IDs

Sets the total number of IDs of the target CAN-ID. The total number range is 0 to 32. Set "0" for not conducting the measurement with a CAN card.

The number of IDs (0 to 32) that is written in No. 25 in the page 76 should be the total number of measurement ON (1 = Measure) IDs of **Measurement ON/OFF (0 = Not measure, 1 = Measure)** that is written in No. 27 in the page 76.

(2) How to cutout CAN-CH condition

Sets cutout method of the CAN-CH conditions.

To decide how to cutout CAN-CH conditions when reproducing the data file recorded with a data reproduction and analyzing software such as the DCS-102A.

Setting values are 0 (Start bit + bit length) and 1 (Start position + end position).

The cutout method have no impact on data recording.

For not using, set "0."

7-2-2 CAN Information (Communication conditions 1 and 2)

Sets communication conditions of a CAN card. The communication condition 1 is for Port 1 and communication condition 2 is for Port 2.

CAN-40A: Port 1 only (Set "0" to the communication condition 2.)

CAN-41A: Port 1 and port 2 (For not using either one port, set '0' to every condition in the port.)

(1) Communication standard

Sets the communication standard of the target CAN bus.

Setting values are 0 (high speed) and 1 (low speed).

(2) Communication speed

Sets communication speed (No.) of the CAN bus.

Setting values are described as follows. (✓: Available, : Not available)

Setting value	Communication speed (kbps)	Based on communication standard	
		High speed	Low speed
0	1000	✓	
1	800	✓	
2	500	✓	
3	250	✓	
4	125	✓	✓
5	100	✓	✓
6	83.3	✓	✓
7	62.5	✓	✓
8	50	✓	✓
9	33.3	✓	✓
10	25	✓	✓
11	20	✓	✓
12	10	✓	✓

(3) Sample point

Setting values are 0 to 25.

The sample point varies with the communication speed of 800 [kbps].

■ Communication Speed: Other than 800 [kbps]

Setting value	Sample Point
0	85% (TSEG1 = 16, TSEG2 = 3), 40 MHz
1	80% (TSEG1 = 15, TSEG2 = 4), 40 MHz
2	75% (TSEG1 = 14, TSEG2 = 5), 40 MHz
3	70% (TSEG1 = 13, TSEG2 = 6), 40 MHz
4	65% (TSEG1 = 12, TSEG2 = 7), 40 MHz
5	60% (TSEG1 = 11, TSEG2 = 8), 40 MHz
6	80% (TSEG1 = 7, TSEG2 = 2), 40 MHz
7	70% (TSEG1 = 6, TSEG2 = 3), 40 MHz
8	60% (TSEG1 = 5, TSEG2 = 4), 40 MHz
9	87.5% (TSEG1 = 13, TSEG2 = 2), 32 MHz
10	81.3% (TSEG1 = 12, TSEG2 = 3), 32 MHz
11	75.0% (TSEG1 = 11, TSEG2 = 4), 32 MHz
12	68.8% (TSEG1 = 10, TSEG2 = 5), 32 MHz
13	62.5% (TSEG1 = 9, TSEG2 = 6), 32 MHz
14	56.3% (TSEG1 = 8, TSEG2 = 7), 32 MHz
15	75.0% (TSEG1 = 5, TSEG2 = 2), 32 MHz
16	62.5% (TSEG1 = 4, TSEG2 = 3), 32 MHz

■ Communication Speed: 800[kbps]

Setting value	Sample Point
17	85% (TSEG1 = 16, TSEG2 = 3), 32 MHz
18	80% (TSEG1 = 15, TSEG2 = 4), 32 MHz
19	75% (TSEG1 = 14, TSEG2 = 5), 32 MHz
20	70% (TSEG1 = 13, TSEG2 = 6), 32 MHz
21	65% (TSEG1 = 12, TSEG2 = 7), 32 MHz
22	60% (TSEG1 = 11, TSEG2 = 8), 32 MHz
23	80% (TSEG1 = 7, TSEG2 = 2), 32 MHz
24	70% (TSEG1 = 6, TSEG2 = 3), 32 MHz
25	60% (TSEG1 = 5, TSEG2 = 4), 32 MHz

(4) Sample Times

Set sample times.

Setting values are 0 (1 time) and 1 (3 times).

Although the Sample Times of 1 (3 times) is available when the Communication Standard is High speed, the Communication Speed is limited.

NOTE

- When the Communication Standard is High Speed and Sample Times is 1 (3 times), available Communication Speeds are 4 types of 1000, 800, 500, and 250 [kbps].

(5) Resync Jump Width (SJW)

Set Synchronous Jump Width.

Setting values are as follows.

Setting value	Resync Jump Width [TQ]
0	1
1	2
2	3
3	4

NOTE

- The TSEG2 value of the Sample Point and Resync Jump Width should satisfy the following expression.
(Resync Jump Width) $\leq$ (TSEG2 value of the Sample Point)

(6) Terminating Resistance

Sets whether the Terminating Resistance on a CAN card is valid.

Setting values are 0 (OFF: Invalid) and 1 (ON: Valid).

7-2-3 CAN Information (ID-1 to ID-32)

Sets the ID conditions of the CAN card. The CAN card records data in fixed-length packets (known as “data frame”.) The term “ID” is a storing box of data frames. The CAN-40 has 16 boxes and CAN-41 has 32 boxes. The ID condition sets conditions for storing data frames to the “box.”

The data frame is 8-byte fixed length. If you select ON in the following item (1), 8-bytes data/ID is recorded.

If you try to measure all IDs, data volume/sampling is as follows.

CAN-40A: $8 \times 16 = 128$ bytes

CAN-41A: $8 \times 32 = 256$ bytes

CAN-40A: ID 1 to ID 16 are available. Set “0” for ID 17 to ID 32.

CAN-41A: ID 1 to ID 32 are available.

(1) MEAS ON/OFF

Sets whether or not an ID is measured.

Setting available values are 0(OFF: Not measure) and 1(OFF: Measure).

(2) Format

Sets a format of a frame ID No. (refer to item (7) as follows).

Setting available values are 0 (Standard) and 1 (Extended).

For standard format: Frame ID is 0 to 7FFh (11 bits)

For extended format:: Frame ID is 0 to 1FFFFFFFh (29 bits)

Follow the settings of CAN data output equipment.

(3) Data length

Specifies valid data length of a data frame. Data frames covered by the EDX are 8-byte length fixed.

If data less than 8 bytes is outputted from a CAN data output equipment, required number of 0 is added to satisfy the 8-byte length.

Setting available values are 0 (1-byte length) to 7 (8-byte length).

Follow the settings of CAN data output equipment.

(4) Endian

Sets endian of data frame.

Setting available values are 0 (Little) and 1 (Big).

Follow the settings of CAN data output equipment.

(5) LSB/MSB (0: LSB, 1: MSB)

Select and set a point to start extracting data of the data frame from either LSB or MSB side.

This setting is enabled only when the endian of the data frame is set to **Big** endian.

If the endian is set to **Little**, set 0 (LSB).

(6) Using port No.

Sets the using port No.

(7) Frame ID No.

Sets the ID No. of the frame data.

Setting available values depend on the item (2) setting. (Refer to the item (2) Format.)

NOTE

- Set non-overlapping frame IDs. However, if you have any of the following condition, overlapping frame IDs are available.

Having different port numbers. (CAN-41A)

Having different formats.

(8) ID Name

Sets the ID Name within 40 characters (optional).

Set "0" for not setting.

7-2-4 CAN Information (CH-1 to CH-256)

With the EDX, one frame data can be divided (cutout) into Max. 8 data items. CH numbers are allocated to the divided data for management. CAN-CH conditions are for setting cutout conditions of a frame data. In addition, with the EDX, you can display the cutout data in physical quantity by multiplying coefficients. You can also treat the divided data as well as analog CH data items.

Since every CAN-CH has setting conditions of 8 CHs/ID, the EDX-3000A/B has 8 CHs $\times$ 32 IDs = 256 CHs. The CAN-ID numbers and CAN-CH numbers are as follows.

CAN-ID No.	Applicable CAN-CH No.	Remarks
1	1 to 8	For CAN-40A and CAN-41A
2	9 to 16	
3	17 to 24	
•		
•		
•		
16	121 to 128	For CAN-41A only
17	129 to 136	
18	137 to 144	
•		
•		
•		
32	249 to 256	

*Since ID numbers of the CAN-40A is 16, front 128 channels are valid.

(1) MEAS ON/OFF

Sets Valid/invalid of the target CAN-CH condition. Setting values are 0 (OFF: Not measure) and 1 (ON: Measure).

1 (ON: Measure): Conditions are valid.

0 (OFF: Not measure): Conditions are not valid.

When the target CAN-ID condition is Measurement ON, least one Measurement ON/OFF setting of the applicable CAN-CH condition must be set to Measurement ON.

(2) Start bit

Sets a bit No. to a position that starts extracting data. Setting available range is 0 to 63.

(3) Bit length

Sets bit length of the extracted data. Setting available range is 1 to 64.

(4) Data type

Sets the type of the extracted data. Setting available range is 0 to 3.

No.	Notation	Details
0	Signed	Integer type data with sign.
1	Unsigned	Integer type data with no sign.
2	Float	Single-precision floating point numbers (32 bits)
3	Double	Double-precision floating point numbers (64 bits)

(5) CAL coefficient/Offset

Sets CAL coefficient (A) and Offset (B) for converting the extracted data into physical value.

Use single-precision floating point number (Float).

Suppose the extracted data (X)

Physical value (Y)

$$Y = AX + B$$

(6) Name

Sets the CH Name within 40 characters (optional).

Set "0" for not setting.

(7) Unit No.

Sets the converted physical quantity unit based on the above item (5) to Unit No. Setting available range is 0 to 62.

For details, refer to **"7-3 UNIT NO. AND UNIT CHARACTER STRING."**

7-3 UNIT NO. AND UNIT CHARACTER STRING

Unit No. and unit character string used in the EDX are responding to each other as described in the following table.
Unit character string may partially differ according to setting of “KS2 based language” (Japanese or English) of measuring condition parameter.

Unit Nos. 60 to 62 are User defined units.

No.	Unit Character String		No.	Unit Character String	
	Japanese	English		Japanese	English
0	$\mu\epsilon$	um/m	32	%	
1	ϵ	e	33	dB	
2	mV		34	ppm	
3	V		35	cm/s	
4	mA		36	m/s	
5	A		37	m/min	
6	mm		38	km/h	
7	cm		39	Hz	
8	m		40	kHz	
9	°C	degC	41	MHz	
10	°F	degF	42	°	deg
11	gf/cm2		43	deg	
12	kgf/mm2		44	rad	
13	kgf/cm2		45	kN	
14	kgf/m2		46	kNm	
15	mmHg		47	kW	
16	kPa		48	rpm	
17	MPa		49	cm/s2	
18	g		50	m/s2	
19	Kg		51	G	
20	ton		52	daN	
21	gf		53	mile/h	
22	kgf		54	*100kpa	
23	tonf		55	deg/s	
24	N		56	msec	
25	kgf・mm	Kgf.mm	57	sec	
26	kgf・cm	Kgf.cm	58	min	
27	kgf・m	Kgf.m	59	hour	
28	Nm		60	(User defined unit)	
29	Ω	OHM	61	(User defined unit)	
30	k Ω	kOHM	62	(User defined unit)	
31	M Ω	MOHM			

7-4 CARD TYPE NO.

Card type Nos. used in commands and condition files are listed in the following table.

Card type No.	Card name	Remarks
0	No card	
1	Unknown card	
2	CDV-40A	
3, 4	(System reserve)	(*1)
5	CAN-40A	
6	CTA-40A	
7	(System reserve)	(*1)
8	DPM-42A	
9	CCA-40A	
10	CFV-40A	
11, 12	(System reserve)	(*1)
13	Not applicable card	Installation slot error
14	CDV-40A-F	
15	DPM-42A-F	
16	CCA-40A-F	
17 to 22	(System reserve)	(*1)
23	CAN-41A	
24 to 25	(System reserve)	(*1)
26	DPM-42B-I	
27	DPM-42B-I-F	
28	DPM-42B	
29	DPM-42B-F	
30	CDV-40B	
31	CDV-40B-F	
32 to 34	(System reserve)	(*1)
35	CDV-44AS	
36	(System reserve)	(*1)
37	CDA-44AS	(*1)
38	CDA-45AS	
39	CVM-40A	
40	(System reserve)	(*1)
41	AD-40AS	
42	AD-40AS-F	
43, 44	(System reserve)	(*1)
45	CVM-41A	
46	(System reserve)	(*1)
47	CDV-46AS	
48	(System reserve)	(*1)

(*1) When System reserve No. is returned from the EDX, the card is a custom-made card.

7-5 SET VALUE OF CONDITIONER CARD

Set values of conditioner cards are listed in the following table.

(Shaded portions are initial values.)

Card No:Type	2 : CDV-40A 14 : CDV-40A-F 30 : CDV-40B 31 : CDV-40B-F		10 : CFV-40A	6 : CTA-40A	
Mode	0:Strain	1:Voltage	0:ZC/S 1:ZC/N 2:TTL	0:K(ON) 1:K(OFF)	2:T(ON) 3:T(OFF)
Range	0:500um/m 1:1kum/m 2:2kum/m 3:5kum/m 4:10kum/m 5:20kum/m 6:50kum/m 7:OFF	0:0.1V 1:0.2V 2:0.5V 3:1.0V 4:2.0V 5:5.0V 6:10.0V 7:OFF	0:50Hz 1:100Hz 2:500Hz 3:1kHz 4:2kHz 5:5kHz 6:10kHz 7:20kHz 8:OFF	0:240degC 1:480degC 2:1230degC 3:OFF	0:210degC 1:400degC 2:OFF
LPF	0:FLAT 1:10kHz 2:3kHz 3:1kHz 4:300Hz 5:100Hz 6:30Hz 7:10Hz 8:AUTO(CDV-40A/B-F Only)		0:***	0:***	
HPF	0:OFF 1:0.2Hz 2:1Hz		0:OFF 1:ON	0:***	
CAL Range	0:100% 1:50% 2:SHUNT	0:100% 1:50%	0:100% 1:50%	0:100% 1:50% 2:CHECK	

Card No:Type	9 : CCA-40A 16 : CCA-40A-F	8 : DPM-42A 15:DPM-42A-F 28 : DPM-42B 29 : DPM-42B-F 26 : DPM-42B-I 27 : DPM-42B-I-F	
Mode	0:Voltage	0:BV(2.0V)	1:BV(0.5V)
Range	0:20mV 1:50mV 2:100mV 3:200mV 4:500mV 5:1000mV 6:2000mV 7:5000mV 8:OFF	0:200um/m 1:500um/m 2:1kum/m 3:2kum/m 4:5kum/m 5:10kum/m 6:20kum/m 7:OFF	0:1kum/m 1:2kum/m 2:5kum/m 3:10kum/m 4:20kum/m 5:50kum/m 6:OFF
LPF	0:FLAT 1:10kHz 2:3kHz 3:1kHz 4:300Hz 5:AUTO(CCA-40A-F Only)	0:FLAT 1:1kHz 2:300Hz 3:100Hz 4:30Hz 5:10Hz 6:AUTO(DPM-42A/B-F, and DPM-42B-I-F Only)	
HPF	0:***	0:***	
CAL Range	0:DC100% 1:DC50% 2:AC100% 3:AC50%	0:100% 1:50% 2:SHUNT	

Card No:Type	35 : CDV-44AS		37 : CDA-44AS 38 : CDA-45AS	
Mode	0:Strain(ON) 1:Strain(OFF)	2:Voltage(ON) 3:Voltage(OFF)	0:Strain(ON) 1:Strain(OFF)	2:Voltage(ON) 3:Voltage(OFF)
Range	0:500um/m 1:1kum/m 2:2kum/m 3:5kum/m 4:10kum/m 5:20kum/m 6:OFF	0:1.0V 1:2.0V 2:5.0V 3:10.0V 4:20.0V 5:50.0V 6:OFF	0:500um/m 1:1kum/m 2:2kum/m 3:5kum/m 4:10kum/m 5:20kum/m 6:OFF	0:1.0V 1:2.0V 2:5.0V 3:10.0V 4:20.0V 5:50.0V 6:OFF
LPF	0:FLAT 1:1kHz 2:300Hz 3:100Hz 4:30Hz 5:10Hz		0:FLAT 1:100Hz 2:30Hz 3:10Hz 4:3Hz 5:1Hz	
HPF	0:OFF 1:0.2Hz		0:OFF 1:0.2Hz	
CAL Range	0:100% 1:50% 2:SHUNT	0:100% 1:50%	0:100% 1:50% 2:SHUNT	0:100% 1:50%

Card No:Type	47: CDV-46AS		40 : AD-40AS 41 : AD-40AS-F
Mode	0: Strain (ON) 1: Strain (OFF)	2: Voltage (ON) 3: Voltage (OFF)	0:Voltage
Range	0:2kum/m 1:5kum/m 2:10kum/m 3:20kum/m 4:50kum/m 5:100kum/m 6:OFF	0: 1.0 V 1: 2.0 V 2: 5.0 V 3: 10.0 V 4: 20.0 V 5: 50.0 V 6: OFF	0:5V 1:10V 2:OFF
LPF	0: FLAT 1: 1k Hz 2: 300 Hz 3: 100 Hz 4: 30 Hz 5: 10 Hz		0:FLAT 1:10kHz 2:3kHz 3:1kHz 4:300Hz 5:100Hz 6:30Hz 7:10Hz 8:AUTO(AD-40AS-F Only)
HPF	0: OFF 1: 0.2 Hz		0:***
CAL Range	0: 100% 1: 50% 2: SHUNT	0: 100% 1: 50%	0:TEST

Card No:Type	39:CVM-40A			
Mode	0:Strain(2V)	1:Strain(5V)	2:Voltage, 3:Voltage(2V) 4:Voltage(5V)	5:ACC.
Range	0:5kum/m 1:10kum/m 2:50kum/m 3:100kum/m 4:500kum/m 5:OFF	0:5kum/m 1:10kum/m 2:50kum/m 3:100kum/m 4:200kum/m 5:OFF	0:1.0V 1:5.0V 2:10.0V 3:50.0V 4:OFF	0:100mV 1:500mV 2:1000mV 3:5000mV 4:OFF
LPF	0:FLAT 1:3kHz 2:1kHz 3:300Hz 4:100Hz 5:30Hz 6:AUTO			
HPF	0:OFF 1:0.2Hz 2:1Hz			0:***
CAL Range	0:100% 1:50% 2:SHUNT		0:100% 1:50%	0:DC100% 1:DC50%

Card No:Type	45:CVM-41A				
Mode	0: Strain(2V)	1: Strain(5V)	2: Strain(10V)	3:Voltage, 4:Voltage(2V) 5:Voltage(5V) 6:Voltage(10V)	7:ACC.
Range	0:2kum/m 1:5kum/m 2:10kum/m 3:20kum/m 4:50kum/m 5:100kum/m 6:200kum/m 7:500kum/m 8:OFF	0:2kum/m 1:5kum/m 2:10kum/m 3:20kum/m 4:50kum/m 5:100kum/m 6:200kum/m 7:OFF	0:2kum/m 1:5kum/m 2:10kum/m 3:20kum/m 4:50kum/m 5:100kum/m 6:OFF	0:1.0V 1:2.0V 2:5.0V 3:10.0V 4:20.0V 5:50.0V 6:OFF	0:100mV 1:200mV 2:500mV 3:1000mV 4:2000mV 5:5000mV 6:OFF
LPF	0:FLAT 1:3kHz 2:1kHz 3:300Hz 4:100Hz 5:30Hz 6:AUTO				
HPF	0:OFF 1:0.2Hz 2:1Hz				0:***
CAL Range	0:100% 1:50% 2:SHUNT			0:100% 1:50%	0:DC100% 1:DC50%

7-6 CUSTOM-MADE CABLE CORRECTION VALUES AND INPUT CABLE

When using the CDV-40B/A series and CVM-40A/41A series, select the following input cable No.
(Shaded portions indicate initial values.)

Input cable No.	CDV-40B/A series	CVM-40A/41A series
0	Unspecified	Unspecified
1	U-40 to 48 (0.5 m)	U-121 (0.5 m)
2	U-39 (1.0 m)	U-122 (1.0 m)
3	U-38 (1.5 m)	U-123 (1.5 m)
4	Custom-made cable	Custom-made cable

When using conditioner cards (excluding the CDV-40B/A series and CVM-40A/41A series), select the input cable No.
“0 (Unspecified).”

When the input cable No. is “4 (custom-made cable)”, enter the custom-made cable correction values “-1 to 49.”

When the input cable No. is not “4 (custom-made cable)”, enter the custom-made cable correction values “0”. Input ranges of the custom-made cable correction values are -1 to 49.

NOTE

- If you use this function, the EDX-3000A/B software version should be version 01.45 or higher.
- The internal sensitivity compensation uses the input cable No. and custom-made cable correction values. After changing the input cable No. and custom-made cable correction values, be sure to execute the internal sensitivity compensation again.

MEMO

- The custom-made cable correction values are as follows.
Custom-made cable correction value = (Indicating value of the DCS-100A cable correction value) -1
- When using the CDV-40B/A series and CVM-40A/41A series with the input cable No. “0 (Unspecified)”, based on the custom-made cable correction value, the input cable No. will be changed.
Custom-made cable correction value: 0 The input cable No. will be changed to 2 (1.0 m).
Custom-made cable correction value: Not 0 The input cable No. will be changed to 4 (custom-made cable).