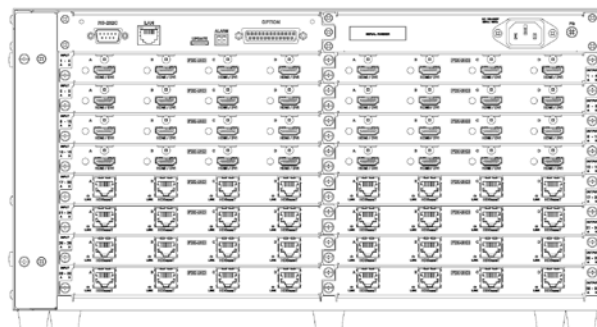
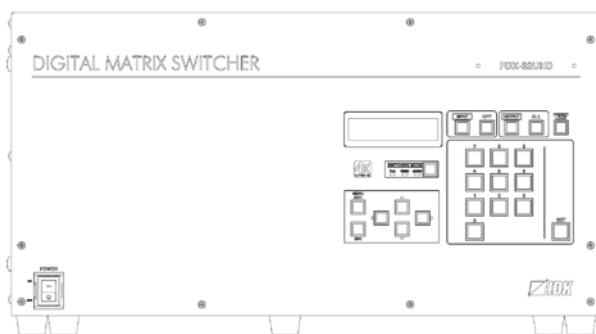


4K@60 and HDCP2.2 supported Digital Matrix Switcher

FDX-32UHD

<Command Reference Guide>

Ver.1.0.1



- Thank you for choosing our product.
- To ensure the best performance of this product, please read this Command Guide and Users Guide fully and carefully before using your product and keep this manual beside the product.

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Before reading this manual

- All rights reserved.
- Some of the contents in this command guide such as appearance diagrams, menu operations, communication commands, and so on may differ from your FDX depending on the version.
- This command guide is subject to change without notice. You can download the latest version from IDK's website at: <http://www.idkav.com>

The reference manual for the FDX-32 consists of the following two volumes:

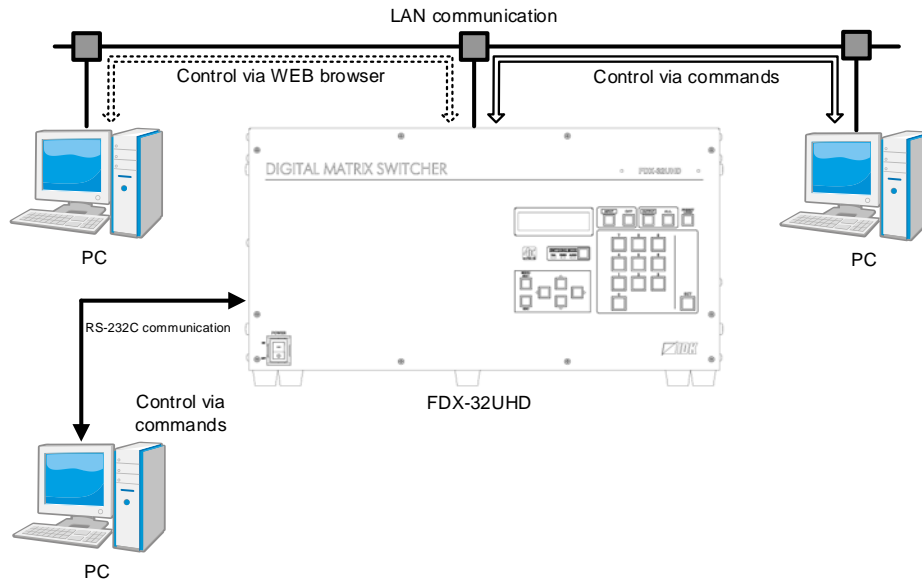
- Users guide:
Provides explanations and procedures for operations, installation, connections among devices, I/O adjustment and settings.
- Command guide (this document): Please download this guide from the website above.
Provides explanations and procedures for external control using RS-232C communication and LAN communications.

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1 About this guide

This guide explains how to control the FDX using commands through RS-232C or LAN communication.



[Fig. 1.1] External control

Communication commands enable the following main operations:

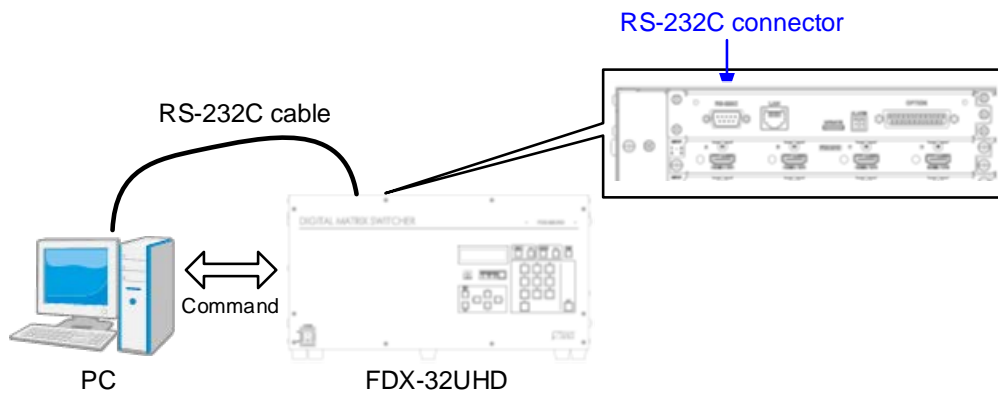
- Switching channels
- Setting input, output, audio, and EDID
- Loading and saving preset memory

2 Communication specification

2.1 RS-232C communication

2.1.1 Setup RS-232C communication

The FDX can be controlled via RS-232C communication. Connect the FDX with a control device (such as PC) via an RS-232C cable and use commands to control the FDX or acquire its status.

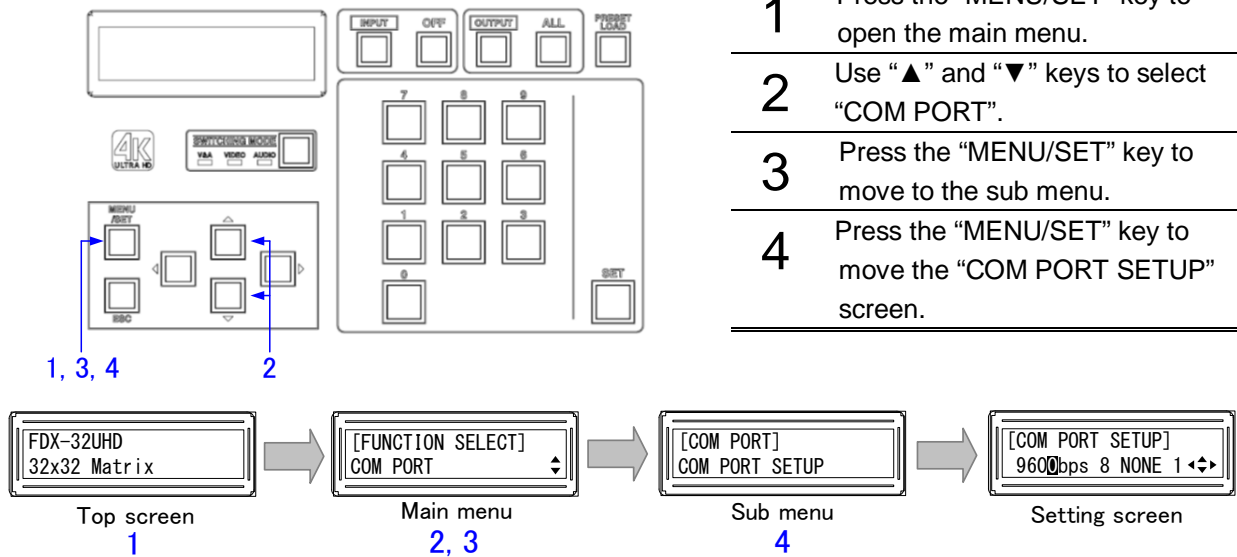


[Fig. 2.1] Connecting control device via RS-232C

To set RS-232C communication:

[See 2.1.3 Specification of RS-232C communication]

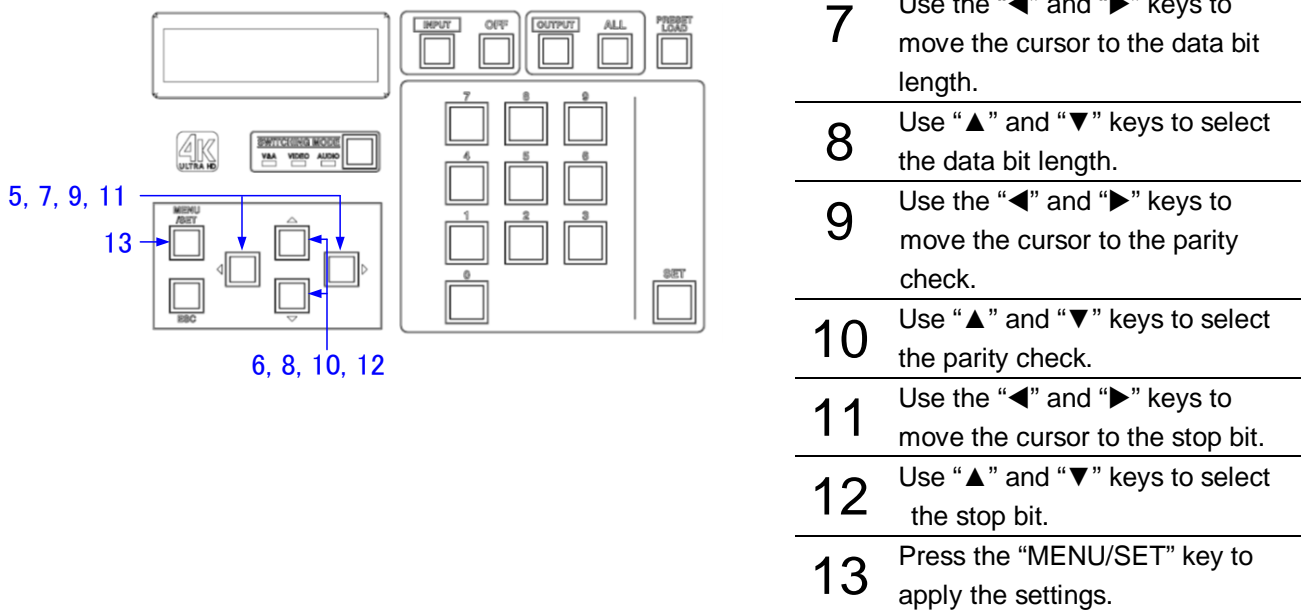
Selecting menu



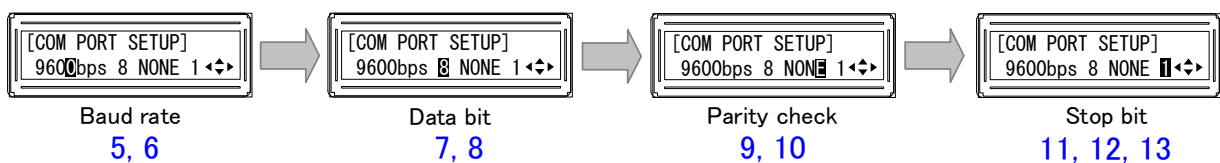
Procedure

- 1 Press the “MENU/SET” key to open the main menu.
- 2 Use “▲” and “▼” keys to select “COM PORT”.
- 3 Press the “MENU/SET” key to move to the sub menu.
- 4 Press the “MENU/SET” key to move the “COM PORT SETUP” screen.

Changing setting



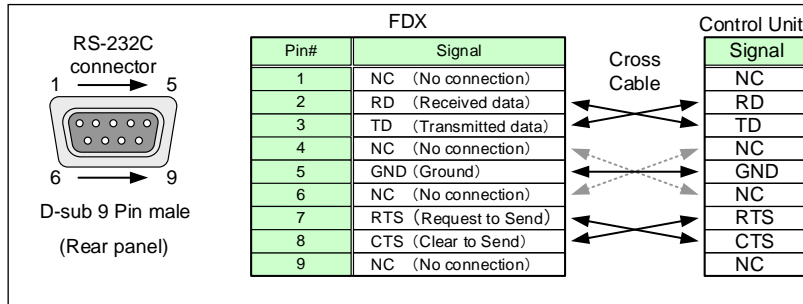
- 5 Use the “◀” and “▶” keys to move the cursor to the baud rate.
- 6 Use “▲” and “▼” keys to select the baud rate.
- 7 Use the “◀” and “▶” keys to move the cursor to the data bit length.
- 8 Use “▲” and “▼” keys to select the data bit length.
- 9 Use the “◀” and “▶” keys to move the cursor to the parity check.
- 10 Use “▲” and “▼” keys to select the parity check.
- 11 Use the “◀” and “▶” keys to move the cursor to the stop bit.
- 12 Use “▲” and “▼” keys to select the stop bit.
- 13 Press the “MENU/SET” key to apply the settings.



[Fig. 2.2] Setup RS-232C communication

2.1.2 RS-232C connector

RS-232C pin assignments



[Fig. 2.3] RS-232C connector

2.1.3 Specification of RS-232C communication

[Table 2.1] RS-232C specification

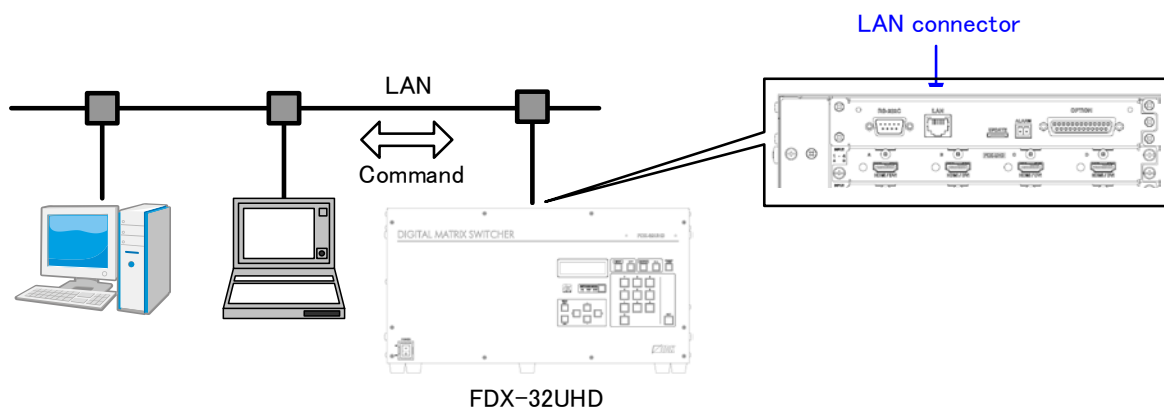
Compliant standard	RS-232C
Baud rate	4800, 9600, 14400, 19200, 38400 [bps]
Data bit	7, 8 [bit]
Parity check	None, even, odd
Stop bit	1, 2 [bit]
X parameter	Invalid
Flow control	None
Delimiter	CR LF (Carriage return and line feed, 0D and 0A in hex)
Communication method	Full duplex

2.2 LAN communication

2.2.1 LAN communication

The FDX can be controlled via LAN communication. Connect the FDX with a control device (such as PC) via an LAN cable and use commands to control the FDX and acquire its status.

For command control, use ports 6000 to 6999 or 1100. If no command is sent for 30 seconds after connection established, the connection will be disconnected.

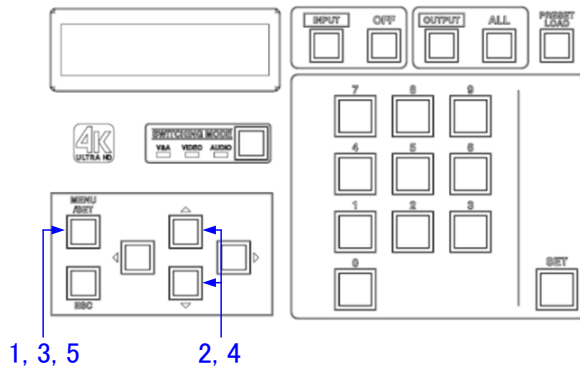


[Fig. 2.4] LAN connection

To set LAN communication: Setting IP address, subnet mask, and port number.

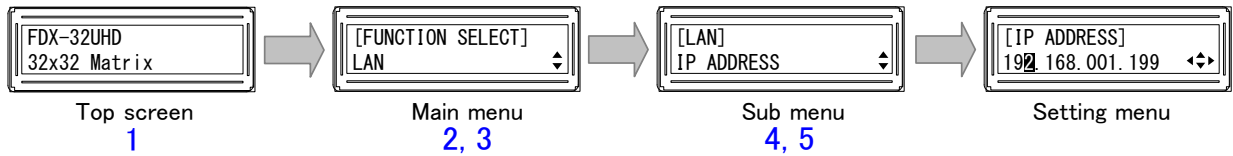
■ IP address

Selecting menu

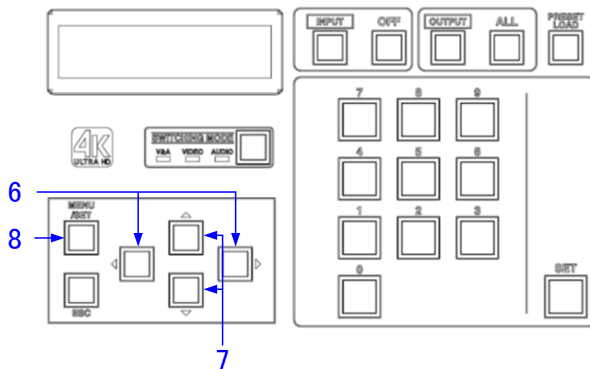


Procedure

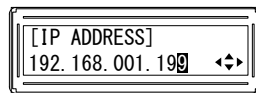
- 1 Press the “MENU/SET” key to open the main menu.
- 2 Use “▲” and “▼” keys to select “LAN”.
- 3 Press the “MENU/SET” key to open the sub menu.
- 4 Use “▲” and “▼” keys to select “IP ADDRESS”.
- 5 Press the “MENU/SET” key to open the setting screen.



Changing setting



- 6 Use the “◀” and “▶” keys to move the cursor to each digit.
- 7 Use “▲” and “▼” keys to select the value.
- 8 Press the “MENU/SET” key to apply the settings.



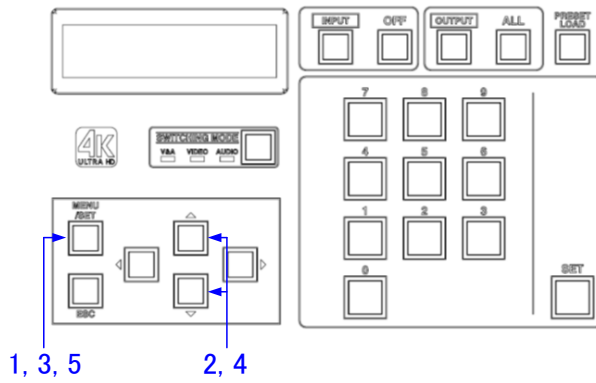
Setting IP address

6, 7, 8

[Fig. 2.5] Setting IP address

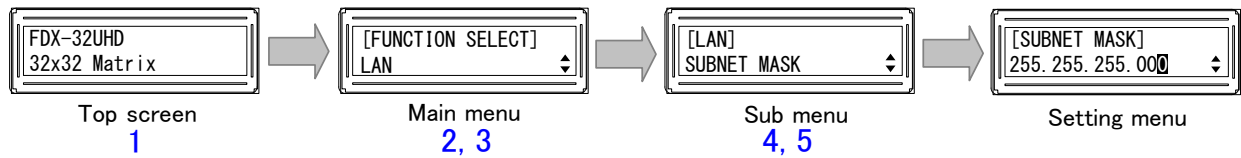
■ Subnet mask

Selecting menu

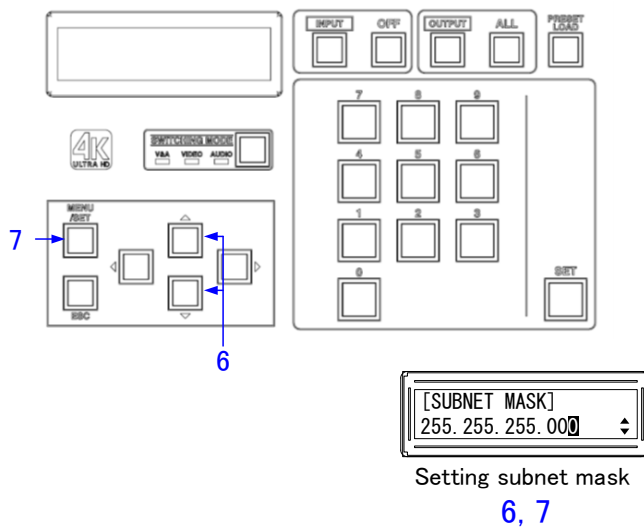


Procedure

- 1 Press the “MENU/SET” key to open the main menu.
- 2 Use “▲” and “▼” keys to select “LAN”.
- 3 Press the “MENU/SET” key to open the sub menu.
- 4 Use “▲” and “▼” keys to select “SUBNET MASK”.
- 5 Press the “MENU/SET” key to open the setting screen.



Changing setting

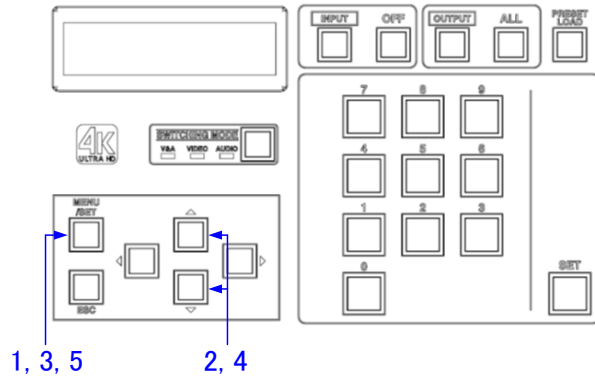


- 6 Use “▲” and “▼” keys to select the value.
- 7 Press the “MENU/SET” key to apply the settings.

[Fig. 2.6] Setting subnet mask

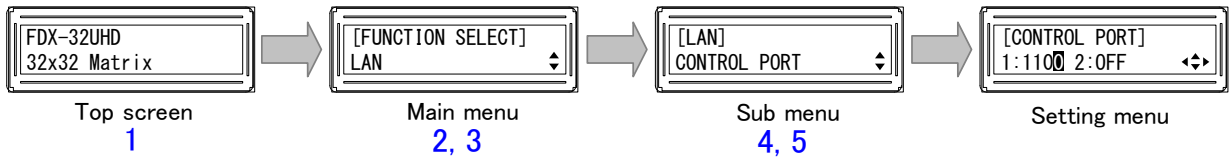
■ TCP port number

Selecting menu

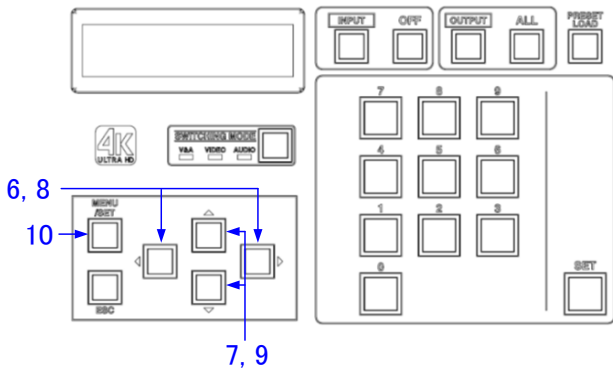


Procedure

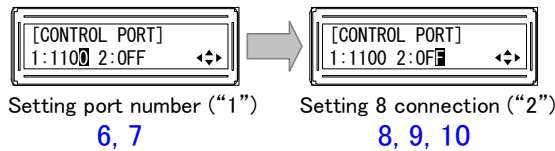
- 1 Press the “MENU/SET” key to open the main menu.
- 2 Use “▲” and “▼” keys to select “LAN”.
- 3 Press the “MENU/SET” key to open the sub menu.
- 4 Use “▲” and “▼” keys to select “CONTROL PORT”.
- 5 Press the “MENU/SET” key to open the setting screen.



Changing setting



- 6 Use the “◀” and “▶” keys to move the cursor to the port number (“1”).
- 7 Use “▲” and “▼” keys to select the port number.
- 8 Use the “◀” and “▶” keys to move the cursor to the 8 connection setting (“2”).
- 9 Use “▲” and “▼” keys to select “OFF” or “ON”.
- 10 Press the “MENU/SET” key to apply the settings.

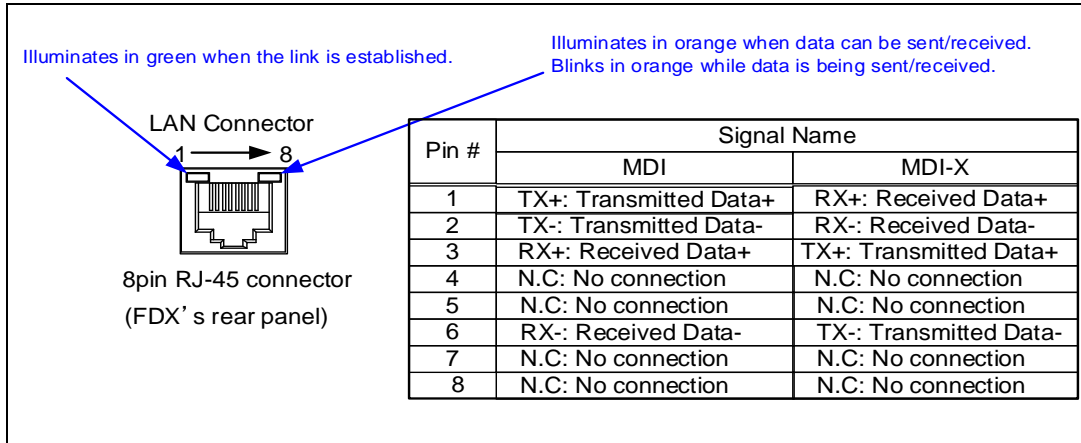


[Fig. 2.7] Setting TCP port number

2.2.2 LAN port specification

LAN port assignments are as follows.

Since Auto MDI / MDI-X that distinguishes and switches straight/cross cables automatically is supported, extra care is not necessary to connect the FDX to PC, HUB or the like.



[Fig. 2.8] LAN port

2.2.3 LAN communication specification

[Table 2.2] LAN communication

Physical layer	10BASE-T (IEEE802.3i) / 100Base-TX (IEEE802.3u)
Network layer	ARP, IP, ICMP
Transport layer	TCP Port used for command control: 1100, 6000 to 6999 Port used for WEB browser control (HTTP): 80
Application layer	HTTP, TELNET

Note:

Up to 8 connections can be used simultaneously for command control (4 connections for WEB browser).

【See: 2.2.4 Limit on the number of TCP-IP connections and port overload management】

2.2.4 Limit on the number of TCP-IP connections and port overload management

The FDX’s maintenance port supports a maximum of eight simultaneous connections (eight logical ports). To maintain optimal system accessibility, it is advisable to issue “port-open” and “port-close” commands before and after command or query strings are issued. This approach enables eight or more control devices to be effectively interfaced simultaneously and without concern for communication errors.

[Table 2.3] Increasing connections

Your PC software		FDX-32UHD
TCP-IP connection	→	(1 port occupied)
Send command (@xxx)	→	
	←	The command (@xxx) replied
TCP-IP close	→	(1 port released)

Note:

If no command is sent from the PC side to the FDX for 30 seconds, the FDX automatically disconnects from that device. As a result, connection needs to be established again from the PC side after the current connection of the PC is disconnected. (Since the number of ports in the FDX is eight, ports are occupied permanently if the PC is turned off while connections are valid. To prevent this, the FDX disconnects connections if no communication command is sent from the PC side.)

3 Command

3.1 Summary

3.1.1 Regular command

A command consists of "@" ("40" in hexadecimal), 3 one-byte alphabetical characters (upper and lower cases) followed by parameters (one-byte numbers). For some commands, multiple parameter values can be specified or parameters are not necessary. Processing is executed by sending a delimiter at the end of the command.

Example: @SPM,2 ↵

","(a comma, "2C" in hex) is indicated between a command and parameter and between two parameters.
 "↵" is indicated as a delimiter CR LF (return+line feed, "0D" and "0A" in hex).

An error response is returned if an undefined command or inappropriate parameter is included.

Example : @SSW,1
 @ERR,1

If only a delimiter is sent, a list of help commands is returned.

Example:↵

- HELP (1/8) - (CHANNEL SELECT Command)

@IOS : Input/Output Select

@GVA: Get Cross Point Video and Audio

@IOV : Input/Output Video Select

@GCP: Get Cross Point Video

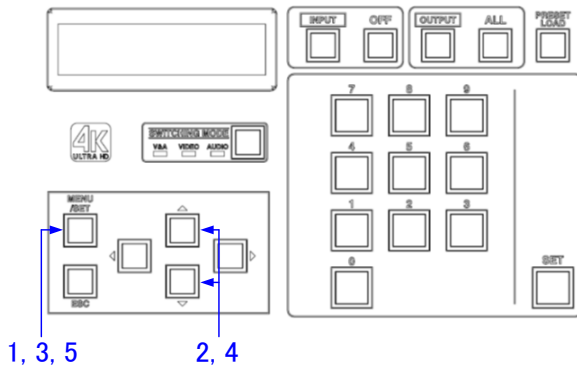
@IOA : Input/Output Audio Select

3.1.2 Compatible mode communication command

The FDX can be controlled by compatible mode communication command. To use this command, change the setting of communication command mode as follows.

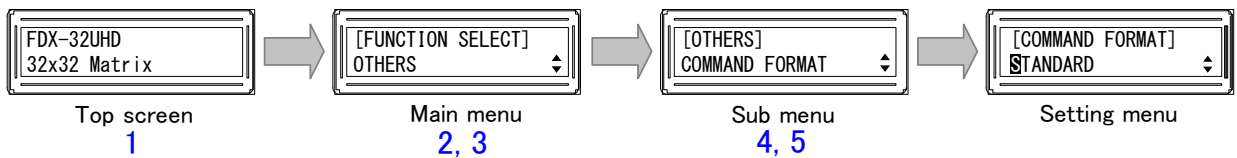
Compatible mode communication command

Selecting menu

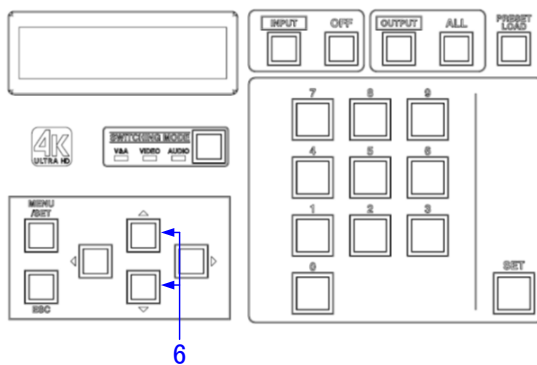


Procedure

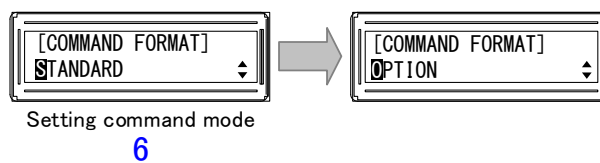
- 1 Press the "MENU/SET" key to open the main menu.
- 2 Use "▲" and "▼" keys to select "OTHERS".
- 3 Press the "MENU/SET" key to open the sub menu.
- 4 Use "▲" and "▼" keys to select "COMMAND FORMAT".
- 5 Press the "MENU/SET" key to open the setting screen.



Changing setting



- 6 Use "▲" and "▼" keys to select "OPTION".



[Fig. 3.1] Setting compatible mode communication command

A command consists of one-byte alphabetical characters (upper and lower cases) and parameters (one-byte numbers). Processing is executed by sending a delimiter at the end of the command.

Example: s,3␣

“,” (a comma, “2C” in hex) is used between a command and parameter and between two parameters.

␣: delimiter CR (return, “0D” in hex)

Example: wwa␣

```
001;002;003;004;005;006;007;008;009;010;011;012;013;014;015;016;017;018;019;020;021;022;023;024;025;026;027;028;029;030;031;032/001;002;003;004;005;006;007;008;009;010;011;012;013;014;015;016;017;018;019;020;021;022;023;024;025;026;027;028;029;030;031;032␣
```

“;” (a semicolon, “3B” in hex) is used between input channel and output channel.

“/” (a slash, “2F” in hex) is used between the FDX and MAU-3232 (optional).

3.2 Command list

Error status

Command	Function
@ERR	Error status

I/O channel selection

Command	Function
@GVA / @IOS	Switching I/O channels of FDX and MAU-3232 (optional) simultaneously
@GCP / @IOV	Switching only FDX I/O channels
@GCA / @IOA	Switching only MAU-3232 I/O channels
@SSC	Straight Switching* I/O channel of FDX and MAU-3232
@SSV	Straight Switching* I/O channel of FDX
@SSA	Straight Switching* I/O channel of MAU-3232
@GCY / @SCY	Input channel selection copy

Input setting

Command	Function
@GDT / @SDT	No-signal-input monitoring
@GHE / @SHE	HDCP input enabled / disabled

Output setting

Command	Function
@GDM / @SDM	Output mode
@GHM / @SHM	Sink device EDID check
@GMK / @SMK	Hot plug ignoring duration

Audio

Command	Function
@GDO / @SDO	Digital audio output

EDID

Command	Function
@GED / @SED	EDID resolution
@RME	Copying EDID
@GEC / @SEC	EDID loading channel
@GDI / @SDI	Deep Color
@GSP / @SSP	The number of audio channels
@GAF / @SAF	Audio format

RS-232C communication

Command	Function
@GCT / @SCT	RS-232C communication

LAN communication

Command	Function
@GIP / @SIP	IP address
@GSB / @SSB	Subnet mask
@GLP / @SLP	TCP port number
@GMC	MAC address

Preset memory

Command	Function
@RPM	Loading cross point
@SPM / @SEM	Saving cross point
@GCM / @ECM	Editing cross point
@GPM	Preset memory number matching current I/O channel status

Others

Command	Function
@GLM / @SLM	Security lock
@GIS	Input signal status (For each channel)
@GOS	Sink device status (For each channel)
@GST	Slot board status
@GSS	Slot board mounting status
@GFS	Cooling fan status
@GPS	Voltage status
@GHC	Self check
@GIV	Version

RS-232C transmission mode

Command	Function
@G++ / @S++	RS-232C transmission sending channel
@G+R / @S+R	RS-232C transmission receiving channel
@G+S / @S+S	RS-232C transmission

3.3 Details of commands

3.3.1 Error status

@ERR		Error status
Description		Response in case the command is not executed.
Return value		@ERR, error ↴
Parameter		error: Error status 1 = Erroneous parameter format or value 2 = Undefined command or wrong format 4 = Loading EDID from the sink device failed.
Getting example	Command	@IOS ↴
	Response	@ERR,2 ↴
	Description	@IOS was sent. Command format error.
Remarks		—

3.3.2 I/O channel selection

@GVA / @IOS		Switching I/O channels of FDX and MAU-3232 (optional) simultaneously
Getting	Command	@GVA <input type="checkbox"/>
	Response	@GVA, v_1, a_1, ... v_32, a_32 <input type="checkbox"/>
Setting	Command	@IOS, in_1, out_1 (, in_2, out_2...) <input type="checkbox"/>
	Response	@IOS, in_1, out_1 (, in_2, out_2...) <input type="checkbox"/>
Parameter		v_1-32: FDX output channel a_1-32 : MAU-3232 output channel 0 = OFF [Default], 1 = INPUT1 to 32 = INPUT32, - 1 = Slot board is not mounted.
		in_1-32: FDX and MAU-3232 input channel 0 = OFF, 1 = INPUT1 to 32 = INPUT32
		out_1-32: FDX and MAU-3232 output channels 0 = All outputs, 1 = OUTPUT1 to 32 = OUTPUT32
Getting example	Command	@GVA <input type="checkbox"/>
	Response	@GVA, 1, 1, 2, 2, 3, 3, 4, 4, 5, 5, 6, 6, 7, 7, 8, 8, 9, 9, 10, 10, 11, 11, 12, 12, 13, 13, 14, 14, 15, 15, 16, 16, 17, 17, 18, 18, 19, 19, 20, 20, 21, 21, 22, 22, 23, 23, 24, 24, 25, 25, 26, 26, 27, 27, 28, 28, 29, 29, 30, 30, 31, 31, 32, 32 <input type="checkbox"/>
	Description	Getting I/O channel statuses of FDX and MAU-3232. OUTPUT1 to 32: INPUT1 to 32
Setting example	Command	@IOS, 1, 3 <input type="checkbox"/>
	Response	@IOS, 1, 3 <input type="checkbox"/>
	Description	Setting OUTPUT3 of FDX and MAU-3232 to INPUT1.
Remarks		—

@GCP / @IOV		Switching only FDX I/O channels
Getting	Command	@GCP ↗
	Response	@GCP, v_1, v_2, ... v_31, v_32 ↗
Setting	Command	@IOV, in_1, out_1 (, in_2, out_2...) ↗
	Response	@IOV, in_1, out_1 (, in_2, out_2...) ↗
Parameter		v_1-32: FDX output channel 0 = OFF [Default], 1 = INPUT1 to 32 = INPUT32, -1 = Slot board is not mounted.
		in_1-32: FDX input channel 0 = OFF, 1 = INPUT1 to 32 = INPUT32
		out_1-32: FDX output channels 0 = All outputs, 1 = OUTPUT1 to 32 = OUTPUT32
Getting example	Command	@GCP ↗
	Response	@GCP,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32 ↗
	Description	Getting I/O channel statuses of FDX. OUTPUT1 to 32: INPUT1 to 32
Setting example	Command	@IOV,1,3 ↗
	Response	@IOV,1,3 ↗
	Description	Setting FDX OUTPUT3 to INPUT1.
Remarks		—

@GCA / @IOA		Switching only MAU-3232 I/O channels
Getting	Command	@GCA ↗
	Response	@GCA, a_1, a_2, ... a_31, a_32 ↗
Setting	Command	@IOA, in_1, out_1 (, in_2, out_2...) ↗
	Response	@IOA, in_1, out_1 (, in_2, out_2...) ↗
Parameter		a_1-32: MAU-3232 output channel 0 = OFF [Default], 1 = INPUT1 to 32 = INPUT32, -1 = Slot board is not mounted.
		in_1-32 : MAU-3232 input channel 0 = OFF, 1 = INPUT1 to 32 = INPUT32
		out_1-32: MAU-3232 output channels 0 = All outputs, 1 = OUTPUT1 to 32 = OUTPUT32
Getting example	Command	@GCA ↗
	Response	@GCA,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32 ↗
	Description	Getting I/O channel statuses of MAU-3232. OUTPUT1 to 32: INPUT1 to 32
Setting example	Command	@IOA,1,3 ↗
	Response	@IOA,1,3 ↗
	Description	Setting MAU-3232 OUTPUT3 to INPUT1.
Remarks		—

@SSC		Straight Switching* I/O channel of FDX and MAU-3232
Setting	Command	@SSC ☐
	Response	@SSC ☐
Parameter		—
Setting example	Command	@SSC ☐
	Response	@SSC ☐
	Description	Setting I/O channels of FDX and MAU-3232 to the same number I/O.
Remarks		*Straight switching: For example, OUTPUT1 is connected to INPUT1; OUTPUT2 is connected to INPUT2; OUTPUT32 is connected to INPUT32.

@SSV		Straight Switching* I/O channel of FDX
Setting	Command	@SSV ☐
	Response	@SSV ☐
Parameter		—
Setting example	Command	@SSV ☐
	Response	@SSV ☐
	Description	Setting I/O channel of FDX to the same number I/O.
Remarks		*Straight switching: For example, OUTPUT1 is connected to INPUT1; OUTPUT2 is connected to INPUT2; OUTPUT32 is connected to INPUT32.

@SSA		Straight Switching* I/O channel of MAU-3232
Setting	Command	@SSA ☐
	Response	@SSA ☐
Parameter		—
Setting example	Command	@SSA ☐
	Response	@SSA ☐
	Description	Setting I/O channel of MAU-3232 to the same number I/O.
Remarks		*Straight switching: For example, OUTPUT1 is connected to INPUT1; OUTPUT2 is connected to INPUT2; OUTPUT32 is connected to INPUT32.

@GCY / @SCY		Input channel selection copy
Getting	Command	@GCY, sch ↵
	Response	@GCY, sch, dch_1, ... dch_32 ↵
Setting	Command	@SCY, sch, dch_1 (, dch_2····) ↵
	Response	@SCY, sch, dch_1 (, dch_2····) ↵
Parameter		sch: Output channel to be copied 1 = OUTPUT1 to 32 = OUTPUT32
		dch_1-32: Destination output channels 0 = All outputs, 1 = OUTPUT1 to 32 = OUTPUT32
Getting example	Command	@GCY,1 ↵
	Response	@GCY,1,2,3,4 ↵
	Description	Getting the output channel with the same setting as the input channel assigned to output channel 1. OUTPUTs 2, 3, and 4 have the same input channel as output channle1.
Setting example	Command	@SCY,1,3 ↵
	Response	@SCY,1,3 ↵
	Description	Copying cross point of OUT1 to OUT3.
Remarks		This command is for display the same video that is output to the sink device to another sink device.

@GAF / @SAF		Audio format																
Getting	Command	@GAF,in [↵]																
	Response	@GAF, in, format_1, frequency_1, ... format_7, frequency_7 [↵]																
Setting	Command	@SAF, in, format_1, frequency_1 (, format_2, frequency_2···) [↵]																
	Response	@SAF, in, format_1, frequency_1 (, format_2, frequency_2···) [↵]																
Parameter		<p>in: Input channels 1 = INPUT1 to 32 = INPUT32</p> <p>format_1-7: Audio format 0 = Linear PCM, 1 = AC-3 / Dolby Digital, 2 = AAC, 3 = Dolby Digital+, 4 = DTS, 5 = DTS-HD, 6 = Dolby TrueHD</p> <p>frequency_1-7: The maximum sampling frequency 0 = OFF (Not output), 1 = 32 kHz, 2 = 44.1 kHz, 3 = 48 kHz, 4 = 88.2 kHz, 5 = 96 kHz, 6 = 176.4 kHz, 7 = 192 kHz, -1 = Input slot board is not mounted.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Audio format</th> <th style="width: 50%;">Sampling frequency (kHz)</th> </tr> </thead> <tbody> <tr> <td>Linear PCM</td> <td>32 / 44.1 / 48 [Default] / 88.2 / 96 / 192</td> </tr> <tr> <td>AC-3 / Dolby Digital</td> <td>OFF [Default] / 32 / 44.1 / 48</td> </tr> <tr> <td>AAC</td> <td>OFF [Default] / 32 / 44.1 / 48 / 88.2 / 96</td> </tr> <tr> <td>Dolby Digital +</td> <td>OFF [Default] / 32 / 44.1 / 48</td> </tr> <tr> <td>DTS</td> <td>OFF [Default] / 32 / 44.1 / 48 / 96</td> </tr> <tr> <td>DTS-HD</td> <td>OFF [Default] / 44.1 / 48 / 88.2 / 96 / 176.4 / 192</td> </tr> <tr> <td>Dolby TrueHD</td> <td>OFF [Default] / 44.1 / 48 / 88.2 / 96 / 176.4 / 192</td> </tr> </tbody> </table>	Audio format	Sampling frequency (kHz)	Linear PCM	32 / 44.1 / 48 [Default] / 88.2 / 96 / 192	AC-3 / Dolby Digital	OFF [Default] / 32 / 44.1 / 48	AAC	OFF [Default] / 32 / 44.1 / 48 / 88.2 / 96	Dolby Digital +	OFF [Default] / 32 / 44.1 / 48	DTS	OFF [Default] / 32 / 44.1 / 48 / 96	DTS-HD	OFF [Default] / 44.1 / 48 / 88.2 / 96 / 176.4 / 192	Dolby TrueHD	OFF [Default] / 44.1 / 48 / 88.2 / 96 / 176.4 / 192
Audio format	Sampling frequency (kHz)																	
Linear PCM	32 / 44.1 / 48 [Default] / 88.2 / 96 / 192																	
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Dolby Digital +	OFF [Default] / 32 / 44.1 / 48																	
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DTS-HD	OFF [Default] / 44.1 / 48 / 88.2 / 96 / 176.4 / 192																	
Dolby TrueHD	OFF [Default] / 44.1 / 48 / 88.2 / 96 / 176.4 / 192																	
Getting example	Command	@GAF,1 [↵]																
	Response	@GAF,1,0,3,1,0,2,0,3,0,4,0,5,0,6,0 [↵]																
	Description	Getting the set audio format of INPUT1 channel1. Maximum sampling frequency of linear PCM: 48 kHz; other audio format: OFF																
Setting example	Command	@SAF,1,0,7 [↵]																
	Response	@SAF,1,0,7 [↵]																
	Description	Setting the maximum sampling frequency of linear PCM of INPUT1 to 192 kHz.																
Remarks		<p>The available maximum sampling frequency depends on the audio format. Linear PCM output cannot be disabled. This command is valid only if “EDID resolution” is set to “5” to “46” (Built-in EDID).</p>																

3.3.7 RS-232C communication

@GCT / @SCT		RS-232C communication
Getting	Command	@GCT
	Response	@GCT, baudrate, length, parity, stop
Setting	Command	@SCT, baudrate, length, parity, stop
	Response	@SCT, baudrate, length, parity, stop
Parameter		baudrate: Baud rate 0 = 4800 bps, 1 = 9600 bps [Default], 2 = 14400 bps, 3 = 19200 bps, 4 = 38400 bps
		length: Data bit length 0 = 7 bit, 1 = 8 bit [Default]
		parity: Parity check 0 = None [Default], 1 = Odd, 2 = Even
		stop: Stop bit 0 = 1 bit [Default], 1 = 2 bit
Getting example	Command	@GCT
	Response	@GCT,1,1,0,0
	Description	Getting the setting of RS-232C communication. Baud rate: 9600 bps; data bit length: 8 bit; parity check: none; stop bit: 1 bit.
Setting example	Command	@SCT,1,1,0,0
	Response	@SCT,1,1,0,0
	Description	Setting baud rate, data bit, parity check, and stop bit to 9600 bps, 8 bit, none, and 1 bit, respectively.
Remarks		Once RS-232C communication setting is changed, the communication may be disabled. Change the environmental settings of communication based on the FDX settings.

3.3.8 LAN communication





@GIP / @SIP		IP address
Getting	Command	@GIP <input type="checkbox"/>
	Response	@GIP, unit_1, unit_2, unit_3, unit_4 <input type="checkbox"/>
Setting	Command	@SIP, unit_1, unit_2, unit_3, unit_4 <input type="checkbox"/>
	Response	@SIP, unit_1, unit_2, unit_3, unit_4 <input type="checkbox"/>
Parameter		unit_1: Upper bit of the IP address to unit_4: lower bit of the IP address 0 to 255 = 8 bit (Decimal notation) [Default] 192.168.1.199
Getting example	Command	@GIP <input type="checkbox"/>
	Response	@GIP,192,168,1,200 <input type="checkbox"/>
	Description	Getting the set IP address of the FDX. IP address: 192.168.1.200
Setting example	Command	@SIP,192,169,1,200 <input type="checkbox"/>
	Response	@SIP,192,169,1,200 <input type="checkbox"/>
	Description	Setting IP address to 192.168.1.200.
Remarks		Once LAN setting is changed, the communication may be disabled. Change the environmental settings of communication based on the FDX settings.









@GSB / @SSB		Subnet mask
Getting	Command	@GSB <input type="checkbox"/>
	Response	@GSB, unit_1, unit_2, unit_3, unit_4 <input type="checkbox"/>
Setting	Command	@SSB, unit_1, unit_2, unit_3, unit_4 <input type="checkbox"/>
	Response	@SSB, unit_1, unit_2, unit_3, unit_4 <input type="checkbox"/>
Parameter		unit_1: Upper bit of the subnet mask to unit_4: lower bit of the subnet mask 0 to 255 = 8 bit (Decimal notation) [Default] 255.255.255.0
Getting example	Command	@GSB <input type="checkbox"/>
	Response	@GSB,255,255,255,0 <input type="checkbox"/>
	Description	Getting the set subnet mask of the FDX. Subnet mask: 255.255.255.0.
Setting example	Command	@SSB,255,255,255,254 <input type="checkbox"/>
	Response	@SSB,255,255,255,254 <input type="checkbox"/>
	Description	Setting subnet mask to 255.255.255.254.
Remarks		Once LAN setting is changed, the communication may be disabled. Change the environmental settings of communication based on the FDX settings.

@GLP / @SLP		TCP port number
Getting	Command	@GLP ↵
	Response	@GLP, port, add ↵
Setting	Command	@SLP, port,add ↵
	Response	@SLP, port, add ↵
Parameter		port: Port number 1100 [Default] 6000 to 6999 add: 8 connection setting 0 = 8 connection setting OFF [Default] (WEB browser 4 connections/communication command control 4 connections), 1 = 8 connection setting ON (Communication command control 8 connections)
Getting example	Command	@GLP ↵
	Response	@GLP,1100,0 ↵
	Description	Getting the set TCP port number. Port number: 1100; 8 connection setting: OFF
Setting example	Command	@SLP,1100,0 ↵
	Response	@SLP,1100,0 ↵
	Description	Port number: 1100; 8 connection setting: OFF
Remarks		Once LAN setting is changed, the communication may be disabled. Change the environmental settings of communication based on the FDX settings.









@GMC		MAC address
Getting	Command	@GMC ↵
	Response	@GMC, unit_1, unit_2, unit_3, unit_4, unit_5, unit_6 ↵
Parameter		unit_1: Upper bit of the MAC address to unit_6: lower bit of the MAC address 00 to FF = 8 bit (in hexadecimal)
Getting example	Command	@GMC ↵
	Response	@GMC,00,08,E5,59,00,01 ↵
	Description	Getting MAC address. The MAC is 00-08-E5-59-00-01.
Remarks		—

3.3.9 Preset memory

@RPM		Loading cross point
Setting	Command	@RPM, preset 
	Response	@RPM, preset 
Parameter		preset: Preset memory 1 to 32
Setting example	Command	@RPM,1 
	Response	@RPM,1 
	Description	Loading video and audio channels of preset memory 1.
Remarks		—

@SPM / @SEM		Saving cross point
Setting	Description	Overwriting all
	Command	@SPM, preset (, name) 
	Response	@SPM, preset (, name) 
Setting	Description	Overwriting partly
	Command	@SEM, preset (, name) 
	Response	@SEM, preset (, name) 
Parameter		preset: Preset memory 1 to 32 name: Memory name Up to 10 characters from 20 to 7D of ASCII code You can skip the naming process. If you skip it, only cross point will be saved without changing the name.
Setting example	Command	@SPM,1,MEMORY1 
	Response	@SPM,1,MEMORY1 
	Description	Saving the current I/O channel settings in preset memory 1 with the name of "MEMORY1".
Setting example	Command	@SEM,1,MEMORY1 
	Response	@SEM,1,MEMORY1 
	Description	Saving the current I/O channel settings in preset memory 1 with the name of "MEMORY1". For preset setting, if not control channel setting is included, the output channel setting is not saved.
Remarks		—

3.3.10 Others

@GLM / @SLM		Security lock
Getting	Command	@GLM 
	Response	@GLM, channel, menu, preset 
Setting	Command	@SLM, channel, menu, preset 
	Response	@SLM, channel, menu, preset 
Parameter		channel : I/O channel selection keys, channel switching selection keys menu : Menu operation keys preset : Preset memory loading keys 0 = Security lock disabled [Default] 1 = Security lock enabled
Getting example	Command	@GLM 
	Response	@GLM,0,0,0 
	Description	Getting the security lock status. The all target keys are unlocked.
Setting example	Command	@SLM,1,1,1 
	Response	@SLM,1,1,1 
	Description	Setting all target keys to be locked.
Remarks		—

@GIS		Input signal status (For each channel)																								
Getting	Command	@GIS, in, mode [↵]																								
	Response	@GIS, in, mode, status_1 (, status_2, status_3, status_4) [↵]																								
Parameter		in: Input channels 1 = INPUT1 to 32 = INPUT32																								
		mode: Status 0 = All statuses of input signals, 1 = Input mode/Input color depth, 2 = Input resolution/vertical synchronous frequency, 3 = Input audio/Input sampling frequency 4 = Input HDCP status																								
		status_1: Input mode/Input color depth																								
		<table border="1"> <thead> <tr> <th>Input mode</th> <th>Description</th> <th>Input color depth</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>d</td> <td>DVI signal, without HDCP</td> <td>08</td> <td>24bit / pixel (8bit / component)</td> </tr> <tr> <td>D</td> <td>DVI signal, with HDCP</td> <td>10</td> <td>30bit / pixel (10bit / component)</td> </tr> <tr> <td>h</td> <td>HDMI signal, without HDCP</td> <td>12</td> <td>36bit / pixel (12bit / component)</td> </tr> <tr> <td>H</td> <td>HDMI signal, with HDCP</td> <td></td> <td></td> </tr> <tr> <td>N</td> <td>No signal input</td> <td></td> <td></td> </tr> </tbody> </table>	Input mode	Description	Input color depth	Description	d	DVI signal, without HDCP	08	24bit / pixel (8bit / component)	D	DVI signal, with HDCP	10	30bit / pixel (10bit / component)	h	HDMI signal, without HDCP	12	36bit / pixel (12bit / component)	H	HDMI signal, with HDCP			N	No signal input		
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H	HDMI signal, with HDCP																									
N	No signal input																									
status_2: Input resolution/Vertical synchronous frequency																										
		<table border="1"> <thead> <tr> <th>Example</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1920x1080p 59.94Hz</td> <td>1080p@59.94</td> </tr> <tr> <td>1600x1200p 60Hz</td> <td>UXGA@60</td> </tr> <tr> <td>NO SIGNAL</td> <td>No signal input</td> </tr> </tbody> </table>	Example	Description	1920x1080p 59.94Hz	1080p@59.94	1600x1200p 60Hz	UXGA@60	NO SIGNAL	No signal input																
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1920x1080p 59.94Hz	1080p@59.94																									
1600x1200p 60Hz	UXGA@60																									
NO SIGNAL	No signal input																									
		status_3: Input audio/Input sampling frequency																								
		<table border="1"> <thead> <tr> <th>Example</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>L-PCM 48kHz</td> <td>2 channel linear PCM 48 kHz</td> </tr> <tr> <td>L-PCM 48kHz M</td> <td>Multiple channel linear PCM 48 kHz</td> </tr> <tr> <td>COMPRESSED AUDIO</td> <td>Compressed audio</td> </tr> <tr> <td>NO AUDIO</td> <td>No audio input</td> </tr> </tbody> </table>	Example	Description	L-PCM 48kHz	2 channel linear PCM 48 kHz	L-PCM 48kHz M	Multiple channel linear PCM 48 kHz	COMPRESSED AUDIO	Compressed audio	NO AUDIO	No audio input														
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L-PCM 48kHz	2 channel linear PCM 48 kHz																									
L-PCM 48kHz M	Multiple channel linear PCM 48 kHz																									
COMPRESSED AUDIO	Compressed audio																									
NO AUDIO	No audio input																									
		status_4: Input HDCP status																								
		<table border="1"> <thead> <tr> <th>Values to be displayed</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>HDCP 1.4</td> <td>HDCP 1.4 signal is input</td> </tr> <tr> <td>HDCP 2.2</td> <td>No HDCP 2.2 stream type information or unknown signal is input</td> </tr> <tr> <td>HDCP 2.2 Type0</td> <td>HDCP 2.2 stream type 0 signal is input</td> </tr> <tr> <td>HDCP 2.2 Type1</td> <td>HDCP 2.2 stream type 1 signal is input</td> </tr> <tr> <td>NO SIGNAL</td> <td>No signal input</td> </tr> </tbody> </table>	Values to be displayed	Description	HDCP 1.4	HDCP 1.4 signal is input	HDCP 2.2	No HDCP 2.2 stream type information or unknown signal is input	HDCP 2.2 Type0	HDCP 2.2 stream type 0 signal is input	HDCP 2.2 Type1	HDCP 2.2 stream type 1 signal is input	NO SIGNAL	No signal input												
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HDCP 1.4	HDCP 1.4 signal is input																									
HDCP 2.2	No HDCP 2.2 stream type information or unknown signal is input																									
HDCP 2.2 Type0	HDCP 2.2 stream type 0 signal is input																									
HDCP 2.2 Type1	HDCP 2.2 stream type 1 signal is input																									
NO SIGNAL	No signal input																									

@GIS		Input signal status (For each channel) (Cont'd)
Getting example	Command	@GIS,1,0 ☐
	Response	@GIS,1,0,H08,1920x1080p 59.94Hz,L-PCM 48kHz ☐
	Description	Getting all statuses of INPUT1. HDMI signal; with HDCP; color depth: 24 bit/pixel (8 bit/component); input resolution: 1080p@59.94; input audio: 2 channel linear PCM; sampling frequency: 48 kHz
Remarks		—

@GOS		Sink device status (For each channel)																								
Getting example	Command	@GOS, out, mode ☐																								
	Response	@GOS, out, mode, status_1 (, status_2) ☐																								
Parameter		<p>out : Output channels 1 = OUTPUT1 to 32 = OUTPUT32</p> <p>mode: Status 0 = All statuses of sink device, 1 = HDCP of sink device, 2 = HDCP authentication between the FDX and sink device</p> <p>status_1: HDCP of sink device</p> <table border="1"> <thead> <tr> <th>Values to be displayed</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>HDCP 2.2 SUPPORT</td> <td>HDCP 2.2 compliant sink device is connected.</td> </tr> <tr> <td>HDCP 1.4 SUPPORT</td> <td>HDCP 1.4 compliant sink device is connected.</td> </tr> <tr> <td>HDCP SUPPORT</td> <td>HDCP compliant sink device is connected.</td> </tr> <tr> <td>HDCP NOT SUPPORT</td> <td>Non-HDCP compliant sink device is connected.</td> </tr> <tr> <td>HDCP NOT CHECK</td> <td>HDCP of sink device is not checked.</td> </tr> <tr> <td>UNCONNECTED</td> <td>Sink device is not connected.</td> </tr> </tbody> </table> <p>status_2: HDCP authentication between the FDX and sink device</p> <table border="1"> <thead> <tr> <th>Values to be displayed</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>HDCP OFF</td> <td>Signal with HDCP is not input.</td> </tr> <tr> <td>HDCP OK</td> <td>Authentication succeeded.</td> </tr> <tr> <td>HDCP ERROR</td> <td>Authentication failed.</td> </tr> <tr> <td>HDCP CHECK NOW</td> <td>Being authentication processing.</td> </tr> </tbody> </table>	Values to be displayed	Description	HDCP 2.2 SUPPORT	HDCP 2.2 compliant sink device is connected.	HDCP 1.4 SUPPORT	HDCP 1.4 compliant sink device is connected.	HDCP SUPPORT	HDCP compliant sink device is connected.	HDCP NOT SUPPORT	Non-HDCP compliant sink device is connected.	HDCP NOT CHECK	HDCP of sink device is not checked.	UNCONNECTED	Sink device is not connected.	Values to be displayed	Description	HDCP OFF	Signal with HDCP is not input.	HDCP OK	Authentication succeeded.	HDCP ERROR	Authentication failed.	HDCP CHECK NOW	Being authentication processing.
Values to be displayed	Description																									
HDCP 2.2 SUPPORT	HDCP 2.2 compliant sink device is connected.																									
HDCP 1.4 SUPPORT	HDCP 1.4 compliant sink device is connected.																									
HDCP SUPPORT	HDCP compliant sink device is connected.																									
HDCP NOT SUPPORT	Non-HDCP compliant sink device is connected.																									
HDCP NOT CHECK	HDCP of sink device is not checked.																									
UNCONNECTED	Sink device is not connected.																									
Values to be displayed	Description																									
HDCP OFF	Signal with HDCP is not input.																									
HDCP OK	Authentication succeeded.																									
HDCP ERROR	Authentication failed.																									
HDCP CHECK NOW	Being authentication processing.																									
Getting example	Command	@GOS,1,0 ☐																								
	Response	@GOS,1,0,HDCP SUPPORT,HDCP OK ☐																								
	Description	Getting all statuses of OUTPUT1 sink device. The connected sink device is HDCP compliant and HDCP is authorized correctly.																								
Remarks		—																								

@GST		Slot board status
Getting	Command	@GST, board, slot [↵]
	Response	@GST, board, slot, temp, temp_status, voltage [↵]
Parameter		board: Slot board selection 0 = Input slot board, 1 = Output slot board
		slot: Slot board position 1 to 8 = slot board1 to slot board8
		temp: Temperature The value of temperature x 100, -1 = slot board is not mounted. e.g.) 38.75°C: 3875
		temp_status: Temperature status 0 = Normal, 1 = Abnormal, -1 = Slot board is not mounted.
		voltage: Voltage status 0 = Normal, 1 = Abnormal, -1 = Slot board is not mounted.
Getting example	Command	@GST,0,1 [↵]
	Response	@GST,0,1,3425,0,0 [↵]
	Description	Getting status of input slot board1. Temperature: 34.25°C; temperature and voltage are normal.
Remarks		—

@GSS		Slot board mounting status
Getting	Command	@GSS, board [↵]
	Response	@GSS, board, slot1, ···, slot8 [↵]
Parameter		board: Slot board selection 0 = Input slot board, 1 = Output slot board
		slot1 to slot8: Slot board mounting status 0 = Slot board is not mounted., 1 = 4K digital slot board is mounted, 2 = 4K HDBaseT slot board is mounted,
Getting example	Command	@GSS,0 [↵]
	Response	@GSS,0,1,1,1,1,0,0,0 [↵]
	Description	Getting input slot board status. Input slot board5 and later: input slot board is not mounted; other input slot boards: 4K digital slot board is mounted.
Remarks		—

@GFS		Cooling fan status
Getting	Command	@GFS ↵
	Response	@GFS, rpm1, s1, rpm2, s2, rpm3, s3, rpm4, s4, rpm5, s5, rpm6, s6, rpm7, s7 ↵
Parameter		rpm1-7: Cooling fan rotation speed s1-7: Status 0 = Normal, 1 = Abnormal
Getting example	Command	@GFS ↵
	Response	@GFS,3540,0,3540,0,3540,0,3540,0,3540,0,3540,0,3540,0 ↵
	Description	Getting the cooling fan rotations. All cooling fan speed: 3540; status: Normal
Remarks		—

@GPS		Voltage status
Getting	Command	@GPS ↵
	Response	@GPS, status ↵
Parameter		status: Voltage status 0 = Normal, 1 = Abnormal
Getting example	Command	@GPS ↵
	Response	@GPS,0 ↵
	Description	Getting voltage status. Normal
Remarks		—

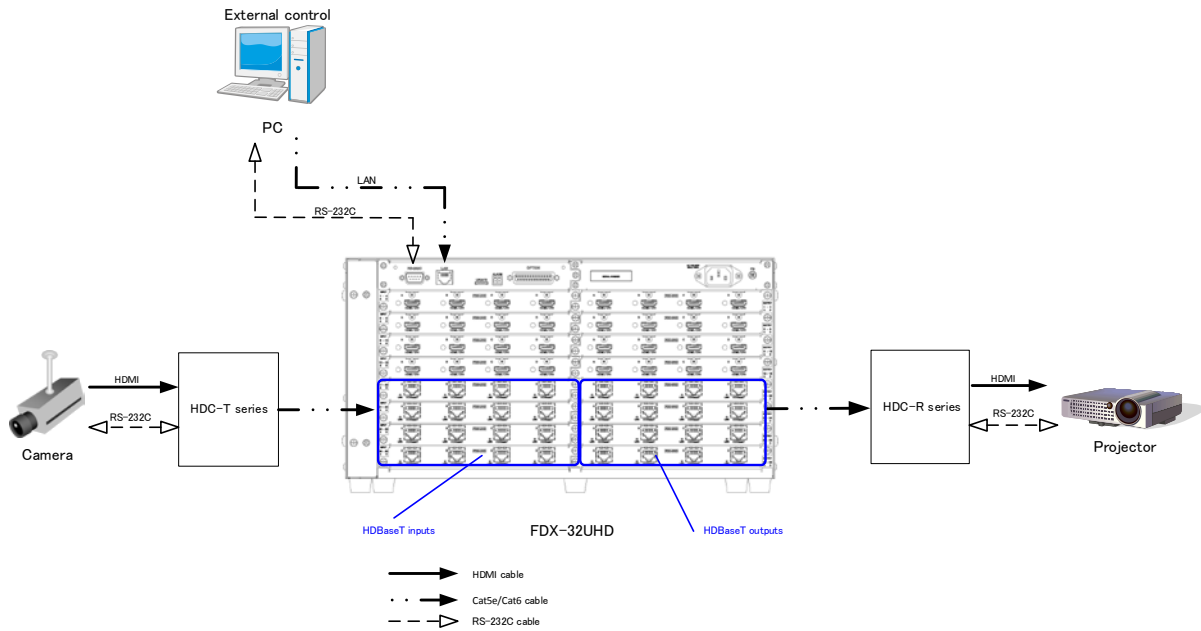
@GHC		Self check
Getting	Command	@GHC ↗
	Response	@GHC, voltage_unit, voltage_in, voltage_out, fan, temp_in, temp_out ↗
Parameter		voltage_unit: Unit voltage 0 = Normal, 1 = Abnormal
		voltage_in: Input slot board voltage 0 = Normal, 1 = Abnormal
		voltage_out: Output slot board voltage 0 = Normal, 1 = Abnormal
		fan: Cooling fan 0 = Normal, 1 = Abnormal
		temp_in: Input slot board temperature 0 = Normal, 1 = Abnormal
		temp_out: Output slot board temperature 0 = Normal, 1 = Abnormal
Getting example	Command	@GHC ↗
	Response	@GHC,0,0,0,1,0,0 ↗
	Description	Getting the self check result. Cooling fan: abnormal; other units' voltages, input slot board and output slot boards' voltages and temperatures: normal.
Remarks		—

@GIV		Version
Getting	Command	@GIV ↗
	Response	@GIV, id, version, input, output ↗
Parameter		id: Model number
		version: Firmware version
		input: The number of inputs 1 to 32
		output: The number of outputs 1 to 32
Getting example	Command	@GIV ↗
	Response	@GIV,FDX-32UHD, 1.00R0,32,32 ↗
	Description	Getting firmware version. Firmware version: 1.00R0; the number of inputs and outputs: 32
Remarks		—

3.3.11 RS-232C transmission mode

Sink devices connected to HDC series over RS-232C can be controlled using FDX's 4K HDBaseT I/O slot board.

【See: 2.1.1 Setup RS-232C communication】



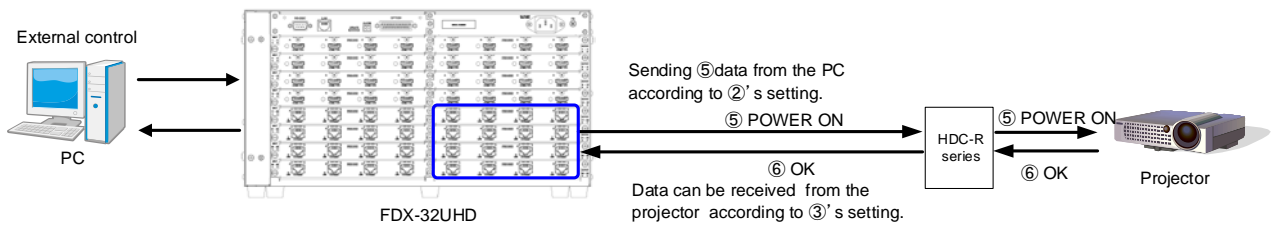
[Fig. 3.2] Application example: RS-232C transmission mode

When the transmission mode is set to RS-232C transmission mode, received data will be sent to the specified I/O channel until normal mode is set.

Several sending channels can be set while only 1 receiving channel can be set.

Example: Sending data to OUTPUT16 and OUTPUT28 and receiving the response from OUTPUT16.

①	@SCT,1,1,0,0	Setting RS-232C communication as follows: baud rate: 9600 bps; data bit length: 8 bit; parity check: none; stop bit: 1 bit
②	@S++,16,28	Setting RS-232C transmission sending channel, specifying OUTPUT16 and OUTPUT28
③	@S+R,16	Setting to RS-232C transmission receiving, specifying OUTPUT16
④	@S+S,1	Setting to RS-232C transmission mode After this, received data is sent to OUTPUT16, OUTPUT28 set by @S++.
⑤	POWER ON	Sending projector powered ON command
⑥	OK	Receiving projector powered ON command
⑦	@S+S,0	Setting to RS-232C transmission normal mode After this, command can be sent to the FDX.
⑧	@GIV	Getting versions



[Fig. 3.3] Transmission example: RS-232C transmission mode

@G++ / @S++		RS-232C transmission sending channel
Getting	Command	@G++ ↵
	Response	@G++, ch_1,···ch_32 ↵
Setting	Command	@S++, ch_1 (, ch_2,···) ↵
	Response	@S++, ch_1 (, ch_2,···) ↵
Parameter		ch_1 to ch_32: RS-232C transmission sending channel 1 = OUTPUT1 to 32 = OUTPUT32 101 = INPUT1 to 132 = INPUT32
Getting example	Command	@G++ ↵
	Response	@G++,1,2,3,4 ↵
	Description	Getting the set RS-232C transmission sending channel. OUTPUT1 to OUTPUT 4: RS-232C transmission sending channel
Setting example	Command	@S++,1,16 ↵
	Response	@S++,1,16 ↵
	Description	Setting OUTPUT1 and OUTPUT16 to RS-232C transmission sending channel.
Remarks		—

@G+R / @S+R		RS-232C transmission receiving channel
Getting	Command	@G+R ↵
	Response	@G+R, channel ↵
Setting	Command	@S+R, channel ↵
	Response	@S+R, channel ↵
Parameter		channel: RS-232C transmission receiving channel 1 = OUTPUT1 to 32 = OUTPUT32 101 = INPUT1 to 132 = INPUT32
Getting example	Command	@G+R ↵
	Response	@G+R,4 ↵
	Description	Getting the set value of status of RS-232C transmission receiving channel. OUTPUT4: RS-232C transmission receiving channel.
Setting example	Command	@S+R,1 ↵
	Response	@S+R,1 ↵
	Description	Setting OUTPUT1 to RS-232C transmission receiving channel.
Remarks		—

@G+S / @S+S		RS-232C transmission
Getting	Command	@G+S ☐
	Response	@G+S, mode ☐
Setting	Command	@S+S, mode ☐
	Response	@S+S, mode ☐
Parameter		mode: Setting RS-232C transmission mode 0 = Normal mode, 1 = RS-232C transmission mode After setting to RS-232C transmission mode, RS-232C is used for the communication with FDX until a normal mode command is received.
Getting example	Command	@G+S☐
	Response	@G+S,1☐
	Description	RS-232C transmission mode: Normal mode
Setting example	Command	@S+S,0☐
	Response	@S+S,0☐
	Description	Setting RS-232C transmission mode to normal mode.
Remarks		—

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