

AV-UHS500
External interface
Communication protocol
Specifications

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1. Introduction	4
2. About communication	4
2-1. Communication classification	4
2-2. Command format.....	4
3. Sequence	5
3-1. Control command.....	5
3-2. Query command.....	6
3-3. Update notification.....	6
4. Command List	7
4-1. Crosspoint related command.....	8
SBUS.....	8
ABUS.....	8
QBSC	9
ABSC	9
4-2. Source name related command	10
SPST	10
SSNM.....	10
ASNM.....	11
QSNM	11
4-3. Bus linkage related command	12
SKRS	12
AKRS	12
QKRS.....	12
4-4. Error response.....	13
EROR.....	13
4-5. Source Name/Tally related command (TSL Protocol).....	14

1. Introduction

This document is the specification indicated the interface protocol between AV-UHS500 (live switcher) and the external equipment. To use this function from PC, it is necessary to install the plug-in software for external I/F control. Such as a bus change and material information acquisition are controllable from the application on PC connected with AV-UHS500 in the network.

2. About communication

2-1. Communication classification

The environment setting to communicate with AV-UHS500 is as follows.

- 100Base-TX (AUTO-MDIX supported)
- IPv4
- TCP/IP, UDP/IP
- IP Address; Changeable from MENU (Factory default settings; 192.168.0.8)
- Subnet Mask; Changeable from MENU (Factory default settings; 255.255.255.0)
- Receive Port Number; Changeable from MENU (Factory default settings; 62000)
* Number of simultaneous connections for external control is under consideration.
- Submit Port Number (UDP); Changeable from MENU (Factory default settings; 65000)
- Minimum command interval; 16 milliseconds or more

2-2. Command format

Transmission / Receive command formats of the are as follows.

Format

<STX> Command : Parameter1 : Parameter2 : Parameter3 <ETX>

Format description

<STX> Start Of Text(=0x02)
command Refer to the command list below (4 alphabetical characters)
: Parameter1 Refer to the parameter value of each command.
: Parameter2 Refer to the parameter value of each command.
: Parameter3 Refer to the parameter value of each command.
<ETX> End Of Text(=0x03)

Example

<STX>SBUS:01:02<ETX>

Character string notation	<STX>	S	B	U	S	:	0	1	:	0	2	<ETX>
Hexadecimal notation	02	53	42	55	53	3a	30	31	3a	30	32	03

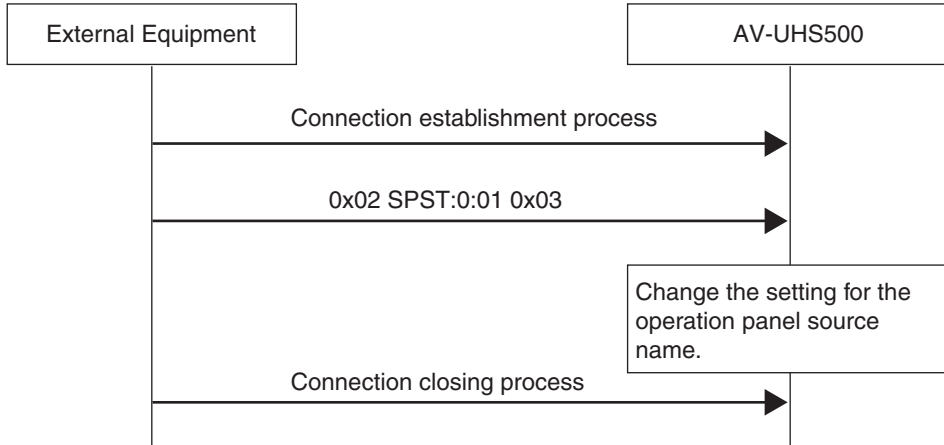
3. Sequence

The available sequence types are;
 The control command sequence, Query sequence by TCP/IP, The update notification by UDP/IP.

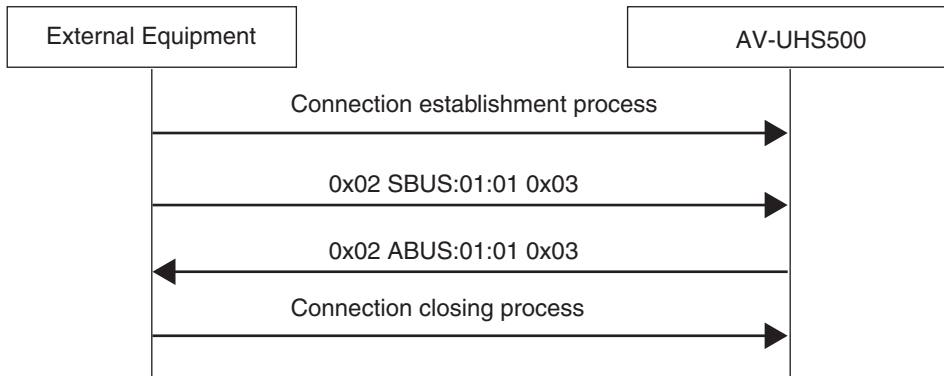
In TCP/IP connection, the AV-UHS500 will disconnect external equipment if it takes more than 20 seconds for the external equipment to transmit the following command after transmitting the control command or the query command.

3-1. Control command

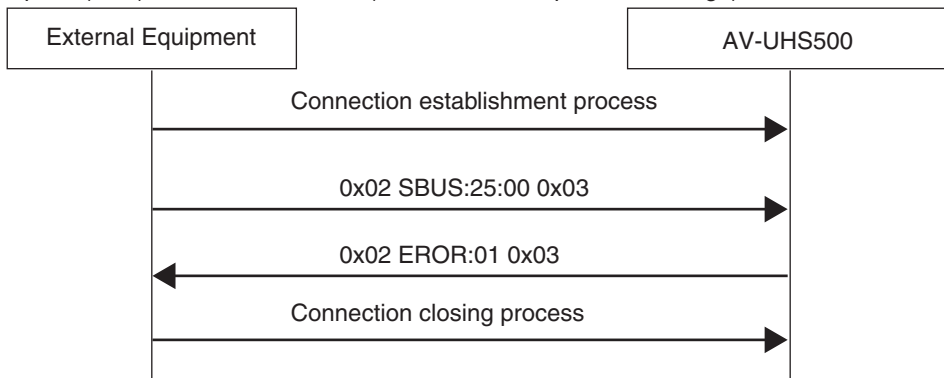
Example; Setting for the operation panel name of AV-UHS500



Example; Crosspoint (XPT) control of the buses (Normal)

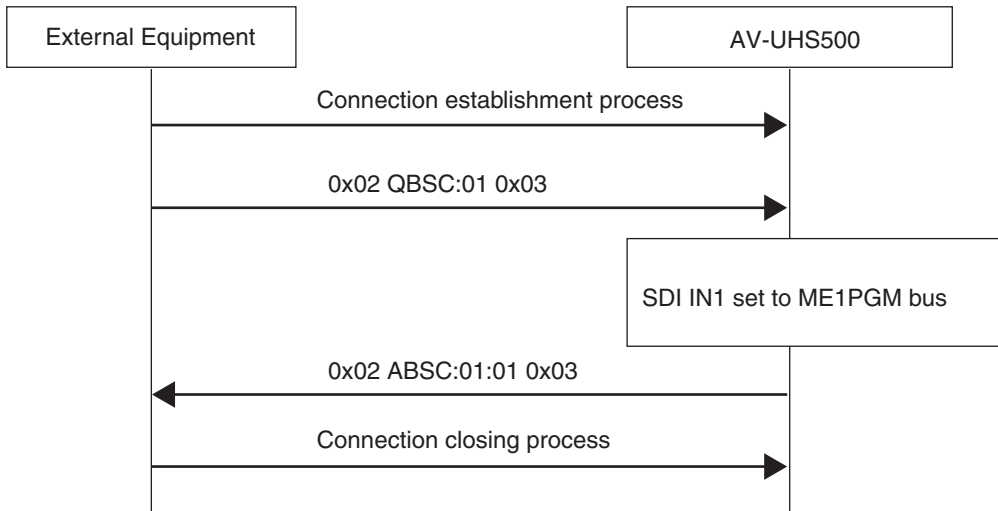


Example; Crosspoint (XPT) control of the buses (Error; Out of the parameter range)



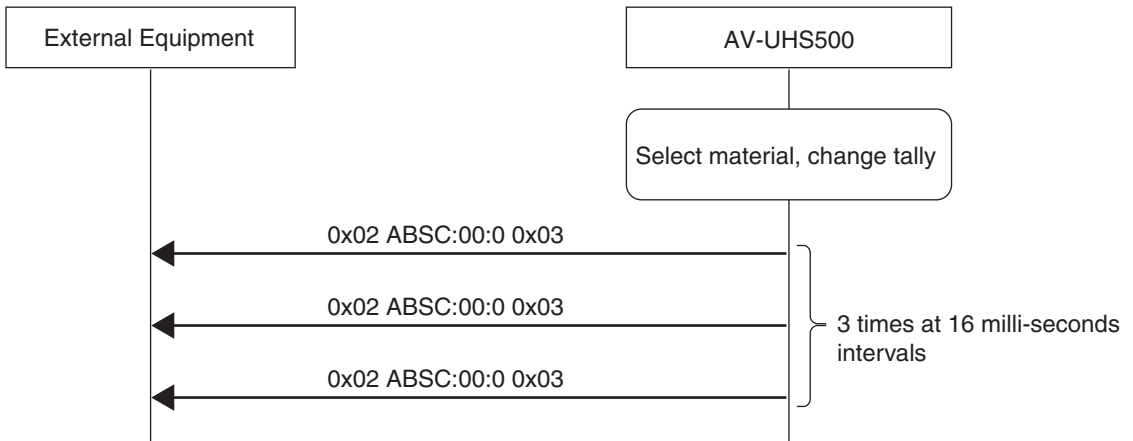
3-2. Query command

Example; Query for the status of each bus (XPT)
In case the query is made when SDI IN1 is set to ME1PGM bus.



3-3. Update notification

In order to transmit using UDP/IP, the source selection information or the Tally information is transmitted with ABSC command from AV-UHS500 to external equipment at 16 milliseconds intervals from the update, without performing connection processing



4. Command List

4.1 Crosspoint related command

No.	Classification	Command name	Function	Protocol
1-1	Control	SBUS	Setting for Bus selection control	Tcp
1-2	Response	ABUS	Response Bus selection	Tcp
1-3	Query	QBSC	Query to the status of buses, tally information	Tcp
1-4	Response	ABSC	Response on the status of buses, tally information	Tcp, Udp

4.2 Source name related command

No.	Classification	Command name	Function	Protocol
2-1	Control	SPST	Setting for displaying Source name of Operation Panel and MV. (default/Panel Name)	Tcp
2-2	Control	SSNM	Setting for Source name displayed on Operation Panel or MV.	Tcp
2-3	Response	ASNM	Response on Source of Operation Panel or MV.	Tcp
2-4	Query	QSNM	Query to Source name of Operation Panel or MV.	Tcp

4.3 Bus linkage related command

No.	Classification	Command name	Function	Protocol
3-1	Control	SKRS	Setting for Master/Slave bus of Key.	Tcp
3-2	Response	AKRS	Response on the setting for Master/Slave bus of Key.	Tcp
3-3	Query	QKRS	Query to the setting for Master/Slave bus of Key.	Tcp

4.4 Error response

No.	Classification	Command name	Function	Protocol
–	Response	EROR	It is used when an error occurs with control commands with a response.	Tcp

4.5 Source Name/Tally related command (TSL Protocol)

4-1. Crosspoint related command

No.	Classification	Command name	Function
1-1	Control	SBUS	Setting for Bus selection control

【 Function description 】

- This function is a setting for Bus selection. The usual cross-point switching process is performed.
- ABUS is replied as a response.

【 Number of Parameters 】

2

【 Parameter 】

Parameter 1; Bus selection

01	ME1PGM	07	ME1KEY3-F	100	DSK2-S	∴		168	MV1-16
02	ME1PVW	08	ME1KEY3-S	∴		150	VMEM-V	169	MV2-1
03	ME1KEY1-F	∴		113	AUX1	151	VMEM-K	∴	
04	ME1KEY1-S	97	DSK1-F	114	AUX2	∴		184	MV2-16
05	ME1KEY2-F	98	DSK1-S	115	AUX3	153	MV1-1		
06	ME1KEY2-S	99	DSK2-F	116	AUX4	∴			

Parameter 2; Source

01	IN1	149	STILL1-V	165	MV1	209	ME PGM	256	OPA IN2
02	IN2	150	STILL1-K	166	MV2	∴		257	OPA IN3
03	SDI IN3	151	STILL2-V	∴		227	AUX1	258	OPA IN4
∴		152	STILL2-K	171	KEY OUT	228	AUX2	259	OPB IN1
08	SDI IN8	∴		172	CLN	229	AUX3	260	OPB IN2
∴		157	CLIP1-V	∴		230	AUX4	261	OPB IN3
145	CBGD1	158	CLIP1-K	201	PGM	∴		262	OPB IN4
146	CBGD2	159	CLIP2-V	∴		251	CLOCK		
147	CBAR	160	CLIP2-K	203	PVW	∴			
148	BLACK	∴		∴		255	OPA IN1		

No.	Classification	Command name	Function
1-2	Response	ABUS	Response Bus selection

【 Function description 】

- The status of Bus selection is replied as a response to SBUS.

【 Number of parameters 】

2

【 Parameter 】

Same as SBUS.

No.	Classification	Command name	Function
1-3	Query	QBSC	Request for the status of each bus

【 Function description 】

- Request for the status of the selection of each bus.
- ABSC is replied as a response.

【 Number of parameters 】

1

【 Parameter 】

Parameter 1; Bus selection

Same as the Parameter 1 (Bus selection) of SBUS.

No.	Classification	Command name	Function
1-4	Response	ABSC	Response on the status of each bus.

【 Function description 】

- The status of the bus selection is replied as a response to QBSC.
- The original selected status is replied during the AUX transition.

【 Number of parameters 】

2

【 Parameter 】

Same as SBUS.

4-2. Source name related command

No.	Classification	Command name	Function
2-1	Control	SPST	Setting for displaying Source name of Panel or MV

[Function description]

- This function sets up the classification of the source name displayed on the Operation Panel or MV. The setting is made once only at the panel and MV level rather than for each source.
- There is no response to this command.

[Number of parameters]

2

[Parameter]

Parameter 1; Object

0	Panel Name
---	------------

Parameter 2; Status

00	default
01	User

No.	Classification	Command name	Function
2-2	Control	SSNM	Setting for Source name displayed on Panel or MV.

[Function description]

- Source name displayed on the Panel or MV is set.
- ASNM is replied as a response.

[Number of parameters]

3

[Parameter]

Parameter 1; Object

00	Panel Name
----	------------

Parameter 2; Object

01	IN1	145	CBGD1	151	STILL2-V	160	CLIP2-K	259	OPB IN1
02	IN2	146	CBGD2	152	STILL2-K	:		260	OPB IN2
03	SDI IN3	147	CBAR	:		255	OPA IN1	261	OPB IN3
:		148	BLACK	157	CLIP1-V	256	OPA IN2	262	OPB IN4
08	SDI IN8	149	STILL1-V	158	CLIP1-K	257	OPA IN3		
:		150	STILL1-K	159	CLIP2-V	258	OPA IN4		

Parameter 3; Status

Source Name	Alphanumeric characters (up to 12bytes)
-------------	---

No.	Classification	Command name	Function
2-3	Response	ASNM	Response on Source name of Panel or MV.

【 Number of parameters 】

3

【 Parameter 】

Same as SSNM.

No.	Classification	Command name	Function
2-4	Query	QSNM	Query to Source name displayed on Panel or MV

【 Function description 】

- Source name displayed on the Panel or MV is requested.
- ASNM is replied as a response.

【 Number of parameters 】

2

【 Parameter 】

Parameter 1; Object

Same as the parameter 1 (Object) of SSNM.

Parameter 2; Object

Same as the parameter 2 (Object) of SSNM.

4-3. Bus linkage related command

No.	Classification	Command name	Function
3-1	Control	SKRS	Setting for Master/Slave bus of Key.

【 Function description 】

- Setting for which of Fill and Source is Master or Slave in the material selections corresponding to the Key1 – Key3, DSK1, and DSK2 buses of each ME.
When the Master bus is selected, the Slave bus is changed according to the table set on the Source Link menu of the switcher.
Fill to Source; The Fill bus is Master and the Source bus is Slave.
Source to Fill; The Source bus is Master and the Fill bus is Slave.
- AKRS is replied as a response.

【 Number of parameters 】

1

【 Parameter 】

Parameter 1; Status

00	Fill to Source
01	Source to Fill

No.	Classification	Command name	Function
3-2	Response	AKRS	Response for setting Master/Slave of Key

【 Function description 】

- As a response to SKRS, this is a response for which of Fill and Source is Master or Slave in the material selections corresponding to the Key1 – Key3, DSK1, and DSK2 buses of each ME.

【 Number of parameters 】

1

【 Parameter 】

Same as SKRS.

No.	Classification	Command name	Function
3-3	Query	QKRS	Query to the setting for Master/Slave of Key.

【 Function description 】

- Request for which of Fill and Source is Master or Slave in the material selections corresponding to the Key1 – Key3, DSK1, and DSK2 buses of each ME.
- AKRS is replied as a response.

【 Number of Parameters 】

0

【 Parameter 】

None

4-4. Error response

No.	Classification	Command name	Function
–	Response	EROR	It is used when an error occurs with control commands with a response.

【 Function description 】

- When a command with a response is sent and a certain error occurs, it sends a reply from a switcher.

【 Number of Parameters 】

1

【 Parameter 】

Parameter 1; Details of the error

01	Out of the parameter range
02	Syntax error (If unrecognized)

4-5. Source Name/Tally related command (TSL Protocol)

In compliance with TSL Protocol 5.0, The transmission/reception of the Operation Panel name of the switcher and the tally are performed using the external equipment via UDP/IP.

■ Transmission

Either at a regular cycle or when Panel Name and Tally are changed the following commands are transmitted from the switcher.

(The interval of the regular cycle can be set from 16ms, 32ms, 48ms, 64ms and 80ms on the menu of the plugin of the switcher.)

Tally is RED=Tally Group1, GREEN=Tally Group2, and AMBER=Tally Group3 and can set on the menu of the switcher (SYS – PERIPHERAL – Tally). ON/OFF of the output of Tally Group1-3 can also be set on the menu of the switcher.

■ Reception

The MV Name display of the switcher is reflected the following commands which are received from the external equipment.

<Command>

Size (Bytes)	Parameter		Description
2	PBC	–	All data size length MAX: 2046bytes (Except this item)
1	VER	–	00 (fixed)
1	FLAGS	–	Bit0: 0 (fixed) ASCII based strings in packet. Bit1: 0 (fixed) If set, data after SCREEN is screen control data (SCONTROL) – otherwise. it's display message data (DMSG) Bit 2–7: 0 (fixed) Reserved
2	SCREEN	–	0: From Switcher to External equipment (For transmission) 1: From External equipment to Switcher (For reception)
2	DMSG	INDEX	Refer to the table in the next page.
2		CONTROL	Bit0–1: RH Tally Lamp State 0=Off, 1=Tally Group1 Bit2–3: Text Tally State 0=Off, 2= Tally Group2 Bit4–5: LH Tally Lamp State 0=Off, 3= Tally Group3 Bit6–7: Brightness value 3 (fixed) Bit8–14: Reserved Clear to 0 Bit15: Control data 0 (fixed)
2		LENGTH	Length of TEXT: 12 (fixed)
12		TEXT	Source name (12bytes fixed) If the string of source name is less than 12 characters, fill the rest of the characters in the null character (¥0).
⋮			
Repeat DMSG necessary. (Total (including PBC) should be 2048 bytes or less.)			

Transmission and reception of 2-byte values in the table are all little endian. For example, the hexadecimal value 1234 is transmitted in the order 34, 12.

<INDEX>

The relation between the INDEX and Source name is as follows.

(Same as the parameter 2 (Source) of SBUS.

Note the differences in the representation of decimal and hexadecimal.)

INDEX		Source name
Decimal	Hex	
01	01	IN1
02	02	IN2
03	03	SDI IN3
⋮	⋮	⋮ (SDI IN4 – SDI IN7)
08	08	SDI IN8
⋮	⋮	
145	91	CBGD1
146	92	CBGD2
147	93	CBAR
148	94	BLACK
149	95	STILL1-V
150	96	STILL1-K
151	97	STILL2-V
152	98	STILL2-K
⋮	⋮	
157	9D	CLIP1-V
158	9E	CLIP1-K
159	9F	CLIP2-V
160	A0	CLIP2-K
⋮	⋮	
165	A5	MV1
166	A6	MV2
⋮	⋮	
171	AB	KEY OUT
172	AC	CLN

INDEX		Source name
Decimal	Hex	
⋮	⋮	
201	C9	PGM
⋮	⋮	
203	CB	PVW
⋮	⋮	
209	D1	ME PGM
⋮	⋮	
227	E3	AUX1
228	E4	AUX2
229	E5	AUX3
230	E6	AUX4
⋮	⋮	
242	F2	AUX16
⋮	⋮	
251	FB	CLOCK
⋮	⋮	
255	FF	OPA IN1
256	100	OPA IN2
257	101	OPA IN3
258	102	OPA IN4
259	103	OPB IN1
260	104	OPB IN2
261	105	OPB IN3
262	106	OPB IN4