

**AV-HS7300**  
**External interface**  
**Communication protocol**  
**Specifications**

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## Charge History

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2014. 7. 14	<ul style="list-style-type: none"> <li>- Deleted the parameter, DSK1PVW, DSK2PVW, DSK3PVW and DSK4PVW, in SBUS and ABSC commands.</li> <li>- Deleted DSK1PVW, DSK2PVW, DSK3PVW and DSK4PVW from the INDEX in the TSL Protocol.</li> <li>- Added corresponding buses DSK1–DSK4 in the Bus linkage related, Source Link function.</li> <li>- Added the description of tally color in TSL protocol.</li> <li>- Corrected to the Minimum command interval 1 field or more, V blanking time.</li> <li>- Corrected the notification way to the Update Notification from the Periodic Transmission, to notify 3 times from the update.</li> </ul>	1.01
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## 1. Introduction

This document is the specification indicated the interface protocol between AV-HS7300 (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-HS7300 in the network.

## 2. About communication

### 2.1 Communication classification

The environment setting to communicate with AV-HS7300 is as follows.

- 100Base-TX (AUTO-MDIX supported)
- IPv4
- TCP/IP,UDP/IP
- IP Address ; Changeable from MENU ( Factory default settings; 192.168.0.5 )  
It is IP Address of AV-HS7300.
- Subnet Mask ; Changeable from MENU ( Factory default settings; 255.255.255.0 )
- Receive Port Number ; Changeable from MENU ( Factory default settings; 62000 )  
AV-HS7300 receives requests and reply via this port No.  
\*Number of simultaneous connections for external control is under consideration.
- Submit Port Number (UDP) ; Changeable from MENU ( Factory default settings; 65000 )  
AV-HS7300 sends UDP/IP data to this port No. of external equipments.
- Minimum command interval ; 16 milli-seconds 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)
<i>command</i>	Refer to the command list below (4 alphabetical characters)
: <i>Parameter1</i>	Refer to the parameter value of each command.
: <i>Parameter2</i>	Refer to the parameter value of each command.
: <i>Parameter3</i>	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

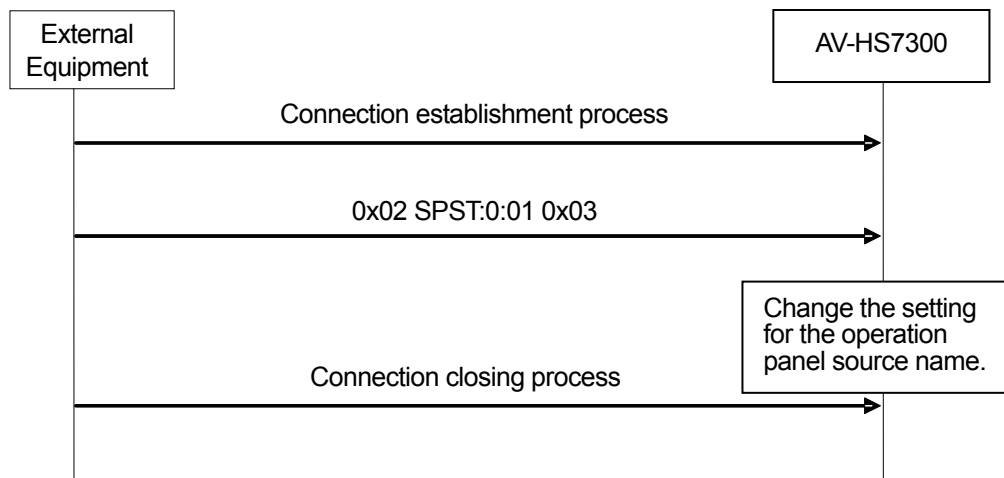
The available sequence types are;

The control command sequence, Query sequence by TCP / IP, The update notification by UDP / IP.

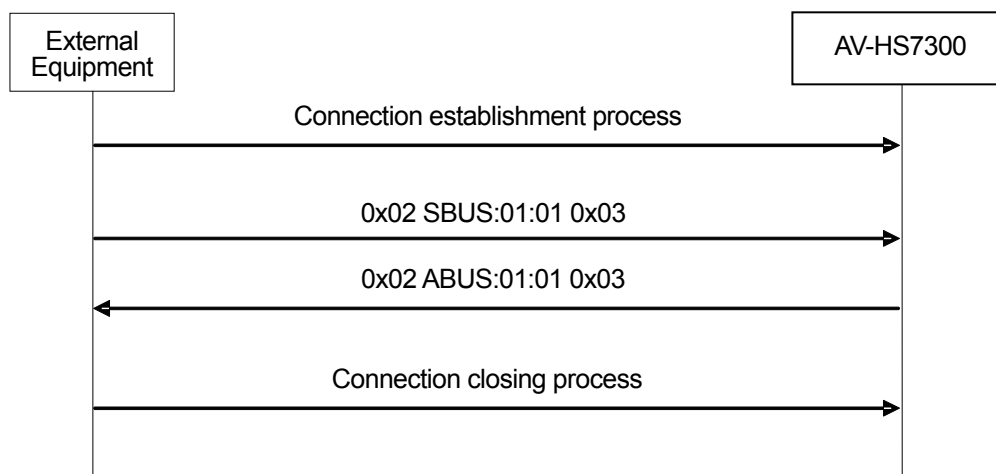
In TCP/IP connection, the AV-HS7300 will disconnect external equipment if it takes more than 20 seconds for the external equipment to transmit the following command after transmitting the control command or the query command.

#### 3.1 Control command

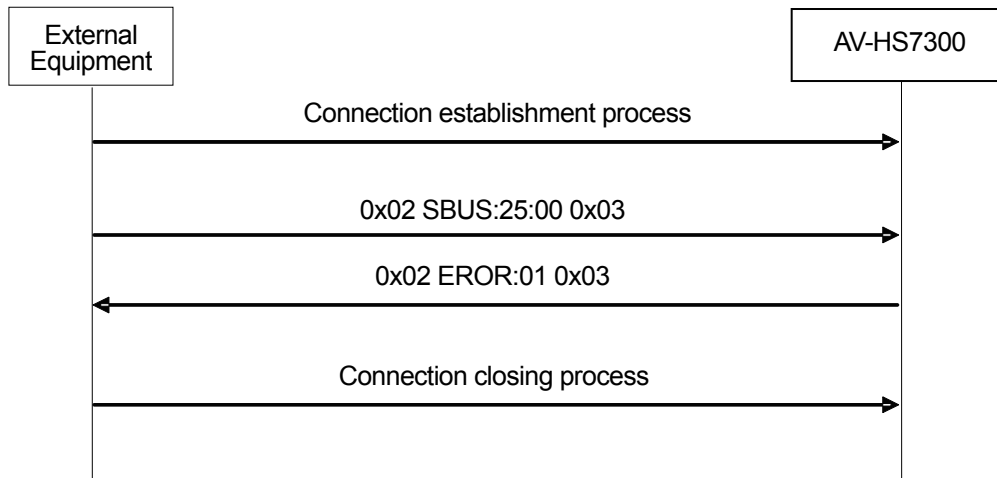
Example; Setting for the operation panel name of AV-HS7300



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



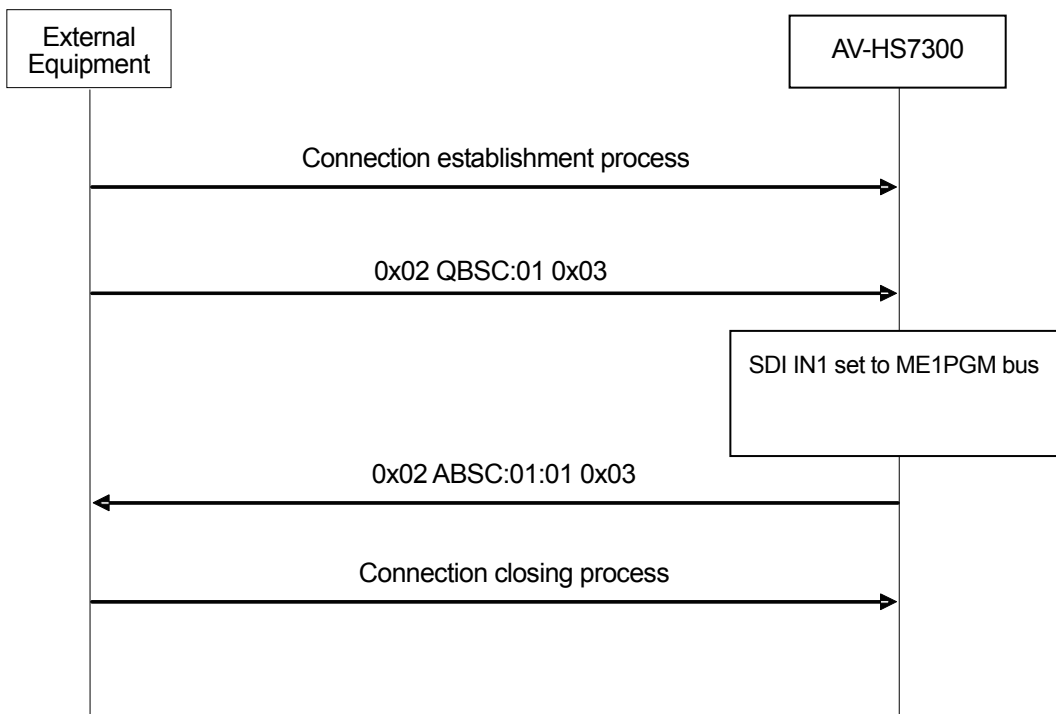
Example; Crosspoint (XPT) control of the buses ( Error; Out of the parameter range )



### 3.2 Query command

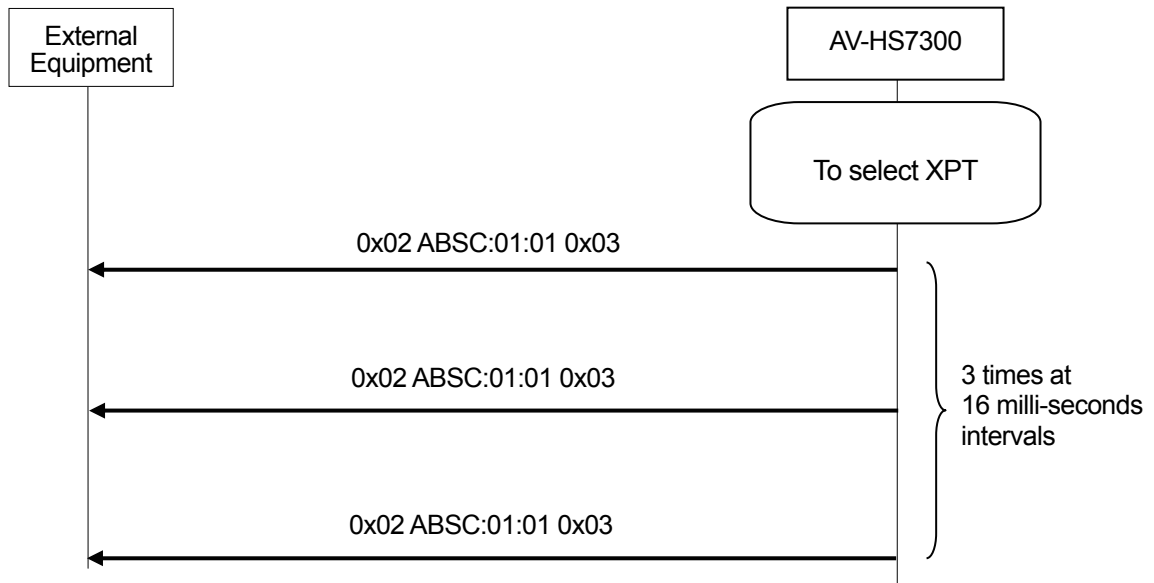
Example; Query for the status of each bus (XPT)

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 HS7300 to external equipment 3 times at 16 milli-seconds 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 each Bus	TCP
1-4	Response	ABSC	Response on the status of each Bus	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	ASNMM	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		TCP

### 4.5 Source Name / Tally related command (TSL Protocol 5.0)



#### 4.1 Crosspoint related command

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

**【 Function discription 】**

- 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
02	ME1PVW
03	ME1KEY1-F
04	ME1KEY1-S
05	ME1KEY2-F
06	ME1KEY2-S
07	ME1KEY3-F
08	ME1KEY3-S
09	ME1KEY4-F
10	ME1KEY4-S
11	ME1UTIL1
12	ME1UTIL2
13	ME2PGM
14	ME2PVW
15	ME2KEY1-F
16	ME2KEY1-S
17	ME2KEY2-F
18	ME2KEY2-S
19	ME2KEY3-F
20	ME2KEY3-S
21	ME2KEY4-F
22	ME2KEY4-S
23	ME2UTIL1
24	ME2UTIL2
25	ME3PGM
26	ME3PVW
27	ME3KEY1-F
28	ME3KEY1-S
29	ME3KEY2-F
30	ME3KEY2-S
31	ME3KEY3-F
32	ME3KEY3-S

33	ME3KEY4-F
34	ME3KEY4-S
35	ME3UTIL1
36	ME3UTIL2
37	ME4PGM
38	ME4PVW
39	ME4KEY1-F
40	ME4KEY1-S
41	ME4KEY2-F
42	ME4KEY2-S
43	ME4KEY3-F
44	ME4KEY3-S
45	ME4KEY4-F
46	ME4KEY4-S
47	ME4UTIL1
48	ME4UTIL2
97	DSK1-F
98	DSK1-S
99	DSK2-F
100	DSK2-S
101	DSK3-F
102	DSK3-S
103	DSK4-F
104	DSK4-S
113	AUX1
	(AUX2-AUX23)
136	AUX24
141	DISP
142	USK1-F
143	USK1-S
144	USK2-F
145	USK2-S
146	USK3-F
147	USK3-S
148	USK4-F
149	USK4-S
150	VMEM-V
151	VMEM-K
153	MV1-1
	(MV1-2 – MV1-15)
168	MV1-16
169	MV2-1
	(MV2-2 – MV2-15)
184	MV2-16
185	MV3-1
	(MV3-2 – MV3-15)

200	MV3-16
201	MV4-1
	( MV4-2 – MV4-15 )
216	MV4-16

Parameter 2; Source

01	SDI IN1
	( SDI IN2 – SDI IN71 )
72	SDI IN72
145	CBGD1
146	CBGD2
147	CBAR
148	BLACK
149	STILL1-V
150	STILL1-K
151	STILL2-V
152	STILL2-K
153	STILL3-V
154	STILL3-K
155	STILL4-V
156	STILL4-K
157	CLIP1-V
158	CLIP1-K
159	CLIP2-V
160	CLIP2-K
161	CLIP3-V
162	CLIP3-K
163	CLIP4-V
164	CLIP4-K
165	MV1
166	MV2
167	MV3
168	MV4
169	ME1PGM
170	ME1PVW
171	ME1CLN/KEYOUT
172	ME1KEYPVW
173	ME2PGM
174	ME2PVW
175	ME2CLN/KEYOUT
176	ME2KEYPVW
177	ME3PGM
178	ME3PVW
179	ME3CLN/KEYOUT
180	ME3KEYPVW
181	ME4PGM

182	ME4PVW
183	ME4CLN/KEYOUT
184	ME4KEYPVW
201	DSK-PGM1
202	DSK-PGM2
203	DSK-PVW1
204	DSK-PVW2
209	DSK1CLN
210	DSK2CLN
211	DSK3CLN
212	DSK4CLN
225	SEL-KEYPVW
227	AUX1
	(AUX2-AUX23)
250	AUX24
251	CLOCK
252	LTC

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, AUX1 – AUX4 buses.

**【 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.
- These setting are performed per Panel / MV.
- There is no response to this command.

### 【 Number of parameters 】

2

### 【 Parameter 】

Parameter 1; Object

0	Panel Name
1	MV Name

Parameter 2; Status

00	Default
01	User
02	Picture ( Operation Panel only )
03	Same as Panel ( MV only )



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 MV or Panel is set.
- ASNМ is replied as a response.

**【 Number of parameters 】**

3

**【 Parameter 】**

Parameter 1; Object

00	Panel Name
01	MV Name

Parameter 2; Object ( Source )

01	SDI IN1
	( SDI IN2 – SDI IN71 )
72	SDI IN72
145	CBGD1
146	CBGD2
147	CBAR
148	BLACK
149	STILL1-V
150	STILL1-K
151	STILL2-V
152	STILL2-K
153	STILL3-V
154	STILL3-K
155	STILL4-V
156	STILL4-K
157	CLIP1-V
158	CLIP1-K
159	CLIP2-V
160	CLIP2-K
161	CLIP3-V
162	CLIP3-K
163	CLIP4-V
164	CLIP4-K

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.

**【 Function discription 】**

Source name displayed on a Panel or MV is replied as a response to SSNM.

**【 Number of parameters 】**

3

**【 Parameter 】**

Same as SSNM.

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

**【 Function discription 】**

- Source name displayed on the MV or Panel 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 ( Source )

Same as the parameter 2 ( Object ( Source ) ) 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 】**

- Either “Fill to Source” or “Source to Fill” is set to DSK1 – DSK4 and Key1 ~ Key4 bus of each ME.  
When the Master bus is selected, the Slave bus is changed according to the table set on the Souce 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 】**

- Either “Fill to Source” or “Source to Fill” is replied to DSK1 – DSK4 bus and Key1 ~ Key4 bus of each ME as a response SKRS.

**【 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 discription 】**

- Either "Fill to Source" or "Source to Fill" is requested to DSK1 to DSK4 bus and Key1 ~ Key4 bus 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 discription 】**

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 5.0)

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

##### < Command >

2 bytes values in the table are sent and received in little endian.

For example, the hexadecimal value 1234, is sent and received in the order of 34,12.

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.			

< INDEX >

The relation between the Source name and INDEX 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	SDI IN1
		( SDI IN2 – SDI IN71 )
72	48	SDI IN72
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
153	99	STILL3-V
154	9A	STILL3-K
155	9B	STILL4-V
156	9C	STILL4-K
157	9D	CLIP1-V
158	9E	CLIP1-K
159	9F	CLIP2-V
160	A0	CLIP2-K
161	A1	CLIP3-V
162	A2	CLIP3-K
163	A3	CLIP4-V
164	A4	CLIP4-K
165	A5	MV1
166	A6	MV2
167	A7	MV3
168	A8	MV4
169	A9	ME1PGM
170	AA	ME1PVW
171	AB	ME1CLN/KEYOUT
172	AC	ME1KEYPVW

173	AD	ME2PGM
174	AE	ME2PVW
175	AF	ME2CLN/KEYOUT
176	B0	ME2KEYPVW
177	B1	ME3PGM
178	B2	ME3PVW
179	B3	ME3CLN/KEYOUT
180	B4	ME3KEYPVW
181	B5	ME4PGM
182	B6	ME4PVW
183	B7	ME4CLN/KEYOUT
184	B8	ME4KEYPVW
201	C9	DSK-PGM1
202	CA	DSK-PGM2
203	CB	DSK-PVW1
204	CC	DSK-PVW2
209	D1	DSK1CLN
210	D2	DSK2CLN
211	D3	DSK3CLN
212	D4	DSK4CLN
225	E1	SEL-KEYPVW
227	E3	AUX1
		(AUX2 – AUX23)
250	FA	AUX24
251	FB	CLOCK
252	FC	LTC