

# DAS Series External Control Specification

Ver. 1.02

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Ver.	Rev. Date	Rev. Content	Remark
Ver. 0.02	04/03/2013	ECHO Repeat is deleted, and MUTE added.	
Ver. 0.03	04/03/2013	The communication specification is modified.	
Ver. 1.00	04/23/2013	Used for MP	
Ver. 1.01	08/12/2013	2.2 Data signal transmission rate Correction	
Ver. 1.02	09/13/2013	2.5 Command list and Specifications to add "KEY CONTROL SET". Add "RETURN" to "KEY CONTROL SENSE"	

## 1. Abstract

This specification introduces the protocols for controlling the Kara-Ok power amplifier DAS-300/150 via a computer or any other host machine.

## 2. Specification

### 2.1 Electrical specification (technical parameters)

Reference standard: RS-232C

Impedance 3K~7KΩ

Voltage output at the transmission end 3~15V (in connection), 25V below (in opening)

Voltage 1: -3V below

0: +3V above

Maximum cable length 15m

### 2.2 Communication specification

Communication mode For RS-232C switch bridge

Data signal transmission rate 38,400 bit/sec 20k bit/sec

Character length 8 bits

Parity check bit N/A

Stop bit 1 bit

The data signal transmission rate, character length, parity check bit and stop bit of DAS-300/150 are fixed.

### 2.3 Pin configuration

Connector

EIA-574 DSUB-9P end (DOS/V computer)

Pin	In/Out	Signal name		Functional description	Classification
1	In	DCD		Carrier wave detecting	Control
2	In	RxD		Data receiving	Data
3	Out	TxD		Data delivering	Data
4	Out	DTR		Data terminal device	Control
5	-	GND		Signal ground wire	
6	In	DSR		Data prepared	Control
7	Out	RTS		Request to send	Control
8	In	CTS		Clear to send	Control
9		RI		Ring indication	Control

### 2.4 Command format

The command format is shown as below:

Byte 1	Byte 2	Byte 3	Byte4	Byte 5	Byte 6	Byte 7	...	Byte n
LF	Command		Data 1	Data 2	Data 3	Data 4		CR

The command starts from LF and terminates at CR by ASCII format.

The command is expressed by a 2-byte ASCII.

Bytes under the command mean data of 0 byte above (no-data command) and 98 bytes at most.

See details of each Command for related data. And meanwhile, in commands 0~9 and A~F used as values, A-F must be capitalized.

Detailed command examples

Example 1: When delivering a command of MIC VOLUME UP to the controlled unit

The Mic Volume of the controlled unit will be increased according to this command.

The command for MIC VOLUME UP is 10, and the following command is delivered:

		Command		
ASCII	LF	1	0	CR
HEX	0Ah	31h	30h	0Dh

Example 2: When delivering a Message command to the controlled unit

Deliver the characters displayed:

To perform this action, the command delivered is MESSAGE CHARACTER PRESET [2B].

The data and bytes are formed by a 2-byte ASCII code.

Data 1: CODE for the first character

Data 2: CODE for the second character

Data 3: CODE for the third character

Data 4: CODE for the fourth character

So, the command delivered is as below:

		Command		Data: XING				
ASCII	LF	2	B	X	I	N	G	CR
HEX	0Ah	32h	42h	58h	49h	4Eh	47h	0Dh

Method for designated display:

Deliver the command MESSAGE DISPLAY OPTION PRESET [2C].

The data and bytes are formed by a 2-byte ASCII code.

It will be designated roll-displaying.

Data1 "0x01"

		Command		Data 1	
ASCII	LF	2	B	0x01	CR
HEX	0Ah	32h	42h	01h	0Dh

## 2.5 Command list

The command list is shown as below:

Control/Preset/Sense Command		Return Command		Remark
0E	MACHINE TYPE SENSE	8E	MACHINE TYPE RETURN	
0F	INFORMATION REQUEST	8F	INFORMATION RETURN	
10	MIC VOLUME UP			
11	MIC VOLUME DOWN			
12	MUSIC VOLUME UP			
13	MUSIC VOLUME DOWN			
14	ECHO VOLUME UP			
15	ECHO VOLUME DOWN			
16	ECHO VOLUME SENSE	96	ECHO VOLUME RETURN	
17	MIC VOLUME SENSE	97	MIC VOLUME RETURN	
18	MUSIC VOLUME SENSE	98	MUSIC VOLUME RETURN	
19	MIC VOLUME SET	97	MIC VOLUME RETURN	
1A	MUSIC VOLUME SET	98	MUSIC VOLUME RETURN	
1B	ECHO VOL SET	96	ECHO VOLUME RETURN	
20	ECHO SEL DOWN	A3	ECHO SEL RETURN	
21	ECHO SEL UP	A3	ECHO SEL RETURN	
22	ECHO SEL SET	A3	ECHO SEL RETURN	
23	ECHO SEL SENSE	A3	ECHO SEL RETURN	
24	KEY CONTROL UP	A7	KEY CONTROL RETURN	
25	KEY CONTROL DOWN	A7	KEY CONTROL RETURN	
26	KEY CONTROL SET	A7	KEY CONTROL RETURN	
27	KEY CONTROL SENSE	A7	KEY CONTROL RETURN	
		F2	ILLEGAL STATUS	
		F4	POWER ON STATUS	
40	EQ mode SENSE	C0	EQ mode RETURN	

50	ECHO mode DOWN	C0	EQ mode RETURN	
51	ECHO mode UP	C0	EQ mode RETURN	
60	INPUT AUTO	C4	INPUT RETURN	
61	INPUT KARAOKE	C4	INPUT RETURN	
62	INPUT AUX1	C4	INPUT RETURN	
63	INPUT AUX2	C4	INPUT RETURN	
64	INPUT SENSE	C4	INPUT RETURN	
65	MUTE ON	C7	MUTE RETURN	
66	MUTE OFF	C7	MUTE RETURN	
67	MUTE SENSE	C7	MUTE RETURN	
70	MUSIC MAX VOL	D1	MUSIC MAX VOL RETURN	
71	MUSIC MAX VOL SENSE	D1	MUSIC MAX VOL RETURN	
72	MUSIC INITIAL VOL	D3	MUSIC INITIAL VOL RETURN	
73	MUSIC INITIAL VOL SENSE	D3	MUSIC INITIAL VOL RETURN	
74	MIC MAX VOL	D5	MIC MAX VOL RETURN	
75	MIC MAX VOL SENSE	D5	MIC MAX VOL RETURN	
76	MIC INITIAL VOL	D7	MIC INITIAL VOL RETURN	
77	MIC INITIAL VOL SENSE	D7	MIC INITIAL VOL RETURN	
78	ECHO MAX VOL	D9	ECHO MAX VOL RETURN	
79	ECHO MAX VOL SENSE	D9	ECHO MAX VOL RETURN	
7A	ECHO INITIAL VOL	DB	ECHO INITIAL VOL RETURN	
7B	ECHO INITIAL VOL SENSE	DB	ECHO INITIAL VOL RETURN	

## 2.6 Command and sequence

In respect of the preset commands for transmission, control and data delivered from the controller, the ACK character will not be delivered nearly in every case.

In respect of the request reply of the set data, sense, and command of value, the controlled unit will feed back the return command.

Moreover, commands are spaced by 20ms at least.

Example for the Command sequence of controlled unit:

Example 1: sequence of a general Command

Mic Volume is taken as an example for explanation.

After the command of MIC VOLUME UP is received by the controlled unit, the action for

increasing the Mic Volume will be performed, and the ACK character of this command will not be delivered.

Command		
Controller	Controlled unit	State of the controller
MIC VOLUME UP	→	Increase the MIC MASTER Volume

Example 2: Acquire the set data

An example for acquiring the set Key Control Data is introduced as follows.

After the command of KEY CONTROL SENSE is received by the controlled unit, the set Key Control Data will be delivered immediately.

Command		
Controller	Controlled unit	State of the controller
KEY CONTROL SENSE	↔ KEY CONTROL RETURN	

## 2.7 Detailed content of command

Command and data are both characters (ASCII).

The Command is a 2-byte character or 1 byte character.

### MACHINE TYPE SENSE

Request to reply the type of controlled unit.

This Command is normally working.

Command 0E

Data N/A

Return MACHINE TYPE RETURN [8E]

### MACHINE TYPE RETURN

Reply the type of controlled unit.

This Command is normally working.

Command 8E

Data Please set the data size within 96 bytes. ASCII

Example: in case of "DAS-300/150"

Data 1	Data 2	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	Data 9	Data 10	Data 11
"D"	"A"	"S"	"_"	"3"	"0"	"0"	"/"	"1"	"5"	"0"
44h	41h	53h	21h	33h	30h	30h	2Fh	31h	35h	30h

Request MACHINE TYPE SENSE [0E]

#### INFORMATION REQUEST

Request to reply the software revision and internal marker of controlled unit.

This Command is normally working.

Command 0F

Data N/A

Return INFORMATION RETURN [8F]

#### INFORMATION RETURN

Reply the software revision and internal marks of controlled unit.

This Command is normally working.

Command 8F

Data Display 8-byte ASCII

Data 1	Ten- digit of the software version
Data 2	One-digit of the software version
Data 3	1 <sup>st</sup> decimal digit of the software version
Data 4	2 <sup>nd</sup> decimal digit of the software version
Data 5	Thousand-digit of software internal mark
Data 6	Hundred-digit of software internal mark
Data 7	Ten-digit of software internal mark
Data 8	One-digit of software internal mark

Request INFORMATION REQUEST

#### MIC VOLUME UP

Increase the Mic Volume of the controlled unit.

This Command is frequently working.

Command 10

Data N/A

Return N/A

#### MIC VOLUME DOWN

Decrease the Mic Volume of the controlled unit.

This Command is normally working.

Command 11

Data N/A

Return N/A

#### MIC VOLUME SET

Set the Mic Volume of the controlled unit.

This Command is normally working.

Command 19

Data 2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Return MIC VOLUME RETURN [97]

#### MIC VOLUME SENSE

Request to reply the current Mic Volume information of the controlled unit.

This Command is normally working.

Command 17

Data N/A

Return MIC VOLUME RETURN [97]

#### MUSIC VOLUME UP

Increase the Mic Volume of the controlled unit.

This Command is normally working.

Command 12

Data N/A

Return N/A

#### MUSIC VOLUME DOWN

Decrease the Mic Volume of the controlled unit.

This Command is normally working.

Command 13

Data N/A

Return N/A

#### MUSIC VOLUME SET

Set the Mic Volume of the controlled unit.

This Command is normally working.

Command 1A

Data 2 byte ASCII Code

Min. value	Max. value
------------	------------

"00"	"32"
------	------

Transform the values expressed with HEX into ASCII code.

Return MUSIC VOLUME RETURN [98]

#### MUSIC VOLUME SENSE

Request to reply the current music Mic Volume information of the controlled unit.

This Command is normally working.

Command 18

Data N/A

Return MIC VOLUME RETURN [98]

#### ECHO VOLUME UP

Increase the echo volume of the controlled unit.

This Command is normally working.

Command 14

Data N/A

Return N/A

#### ECHO VOLUME DOWN

Decrease the echo volume of the controlled unit.

This Command is normally working.

Command 15

Data N/A

Return N/A

#### ECHO VOLUME SET

Set the echo volume of the controlled unit.

This Command is normally working.

Command 1B

Data 2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code.

Return ECHO VOLUME RETURN [96]

#### ECHO VOLUME SENSE

Request to reply the current echo volume information of the controlled unit.

This Command is normally working.

Command 16  
 Data N/A  
 Return ECHO VOLUME RETURN [96]

ECHO SEL DOWN

Transform the running ECHO of the controlled unit into the next mode of ECHO SEL Menu.  
 If the running ECHO is at the last of Menu, it will return back to the front of Menu.

This Command is normally working.

Command 20  
 Data N/A  
 Return ECHO SEL RETURN [A3]

ECHO SEL UP

Transform the running ECHO of the controlled unit into the previous mode of ECHO SEL Menu.  
 If the running ECHO is at the first page of Menu, it will return back to the last page of Menu.

This Command is normally working.

This Command is normally working.

Command 21  
 Data N/A  
 Return ECHO SEL RETURN [A3]

ECHO SEL SET

Set the ECHO type in the controlled unit.

This Command is normally working.

Command 22  
 Data 2byte ASCII Code

Item	Data	Default
Popular	"00"	
Ballaade	"01"	
Pro	"02"	
Rock	"03"	
Vintage	"04"	
Old BMB	"05"	

Return ECHO SEL RETURN [A3]

KEY CONTROL UP

Increase the Key of the controlled unit.

This Command is normally working.

Command            24  
 Data                N/A  
 Return              KEY CONTROL RETURN [A7]

KEY CONTROL DOWN

Decrease the Key of the controlled unit.

This Command is normally working.

Command            25  
 Data                N/A  
 Return              KEY CONTROL RETURN [A7]

KEY CONTROL SENSE

Request to reply the Key information of the controlled unit.

This Command is normally working.

Command            27  
 Data                N/A  
 Return              KEY CONTROL RETURN [A7]

ECHO VOLUME RETURN

Reply the current set ECHO VOLUME of the controlled unit.

This Command is normally working.

Command            96  
 Data                2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Request ECHO VOLUME SENSE [16]

ECHO SEL RETURN

Reply the running Effect type of the controlled unit.

This Command is normally working.

Command            A3  
 Data                2 byte ASCII Code

Item	Data	Default
Popular	"00"	
Ballaade	"01"	
Pro	"02"	
Rock	"03"	

Vintage	"04"	
Old BMB	"05"	

Request ECHO SEL SENSE [23]

ECHO SEL DOWN [20]

ECHO SEL UP [21]

ECHO SEL SET [22]

#### KEY CONTROL SENSE

Reply the value of running KEY CONTROL of the controlled unit.

This Command is normally working.

Command           A7

Data               2 byte ASCII Code

Key values are shown in the table below:

Key	Data	Default
#6	"02"	
#5	"03"	
#4	"04"	
#3	"05"	
#2	"06"	
#1	"07"	
␣	"08"	
␣ 1	"09"	
␣ 2	"0A"	
␣ 3	"0B"	
␣ 4	"0C"	
␣ 5	"0D"	
␣ 6	"0E"	

Request KEY CONTROL SENSE [27]

KEY CONTROL UP [24]

KEY CONTROL DOWN [25]

KEY CONTROL SET [26]

#### ILLEGAL STATUS

When an invalid Command or Data is received by the controlled unit, this Command will be replied.

When this Command from the controlled unit is received, the controller will request to deliver

the conformable Command.

This Command is normally working.

Command F2

Data N/A

Request N/A

#### POWER ON STATUS

Inform the controlled unit of power on for working.

This Command is used for power on or auto reset.

Command F4

Data N/A

Request N/A

#### EQ mode RETURN

Reply the running Effect type of the controlled unit.

This Command is normally working.

Command C0

Data 2 byte ASCII Code

Item	Data	Default
Small Room	"00"	
Middle Room	"01"	
Large Room	"02"	
Small Hall	"03"	
Middle Hall	"04"	
Large Hall	"05"	

Request EQ mode SENSE [40]

EQ mode DOWN [50]

EQ mode UP [51]

#### INPUT AUTO

Set the music input of the controlled unit into auto detecting.

This Command is normally working.

Command 60

Data N/A

Return INPUT RETURN [C4]

#### INPUT KARAOKE

Fix the music input of controlled unit into Kara OK.

This Command is normally working.

Command           61  
Data                N/A  
Return             INPUT RETURN [C4]

#### INPUT AUX1

Fix the music input of controlled unit into AUX1.

This Command is normally working.

Command           62  
Data                N/A  
Return             INPUT RETURN [C4]

#### INPUT AUX2

Fix the music input of controlled unit into AUX2.

This Command is normally working.

Command           63  
Data                N/A  
Return             INPUT RETURN [C4]

#### INPUT RETURN

Reply the type of current music input of the controlled unit.

This Command is normally working.

Command           C4  
Data                2 byte ASCII Code

Item	Data	Default
INPUT AUTO	"00"	
INPUT KARAOKE	"01"	
INPUT AUX1	"02"	
INPUT AUX2	"03"	

Request INPUT SENSE [64]

#### MUSIC MAX VOLUME SET

Set the music max volume of the controlled unit.

This Command is normally working.

Command           70  
Data                2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Return MUSIC MAX VOLUME RETURN [D1]

#### MUSIC MAX VOLUME SENSE

Request to reply the current echo volume information of the controlled unit.

This Command is normally working.

Command 16

Data N/A

Return ECHO VOLUME RETURN [96]

#### MUSIC MAX VOLUME RETURN

Reply the current set music max volume of the controlled unit.

This Command is normally working.

Command D1

Data 2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Request MUSIC MAX VOLUME SENSE [71]

MUSIC MAX VOLUME SET [70]

#### MUSIC INITIAL VOLUME SET

Set the music volume of controlled unit at power on.

This Command is normally working.

Command 72

Data 2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Return MUSIC INITIAL VOLUME RETURN [D3]

#### MUSIC INITIAL VOLUME SENSE

Request to reply the music volume information of controlled unit at power on.

This Command is normally working.

Command 72

Data N/A

Return                   MUSIC INITIAL VOLUME RETURN [D3]

#### MUSIC INITIAL VOLUME RETURN

Reply the initial music volume of controlled unit at power on.

This Command is normally working.

Command               D1

Data                   2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Request MUSIC INITIAL VOLUME SENSE [73]

MUSIC INITIA VOLUME SET [72]

#### MIC MAX VOLUME SET

Set the maximum Mic Volume of the controlled unit.

This Command is normally working.

Command               74

Data                   2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Return                   MIC MAX VOLUME RETURN [D5]

#### MIC MAX VOLUME SENSE

Request to reply the current maximum Mic Volume information of the controlled unit.

This Command is normally working.

Command               74

Data                   N/A

Return                   MIC MAX VOLUME RETURN [D5]

#### MIC MAX VOLUME RETURN

Reply the current set maximum MIC volume of the controlled unit.

This Command is normally working.

Command               D5

Data                   2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Request MIC MAX VOLUME SENSE [75]  
MIC MAX VOLUME SET [74]

#### MIC INITIAL VOLUME SET

Set the Mic volume of controlled unit at power on.

This Command is normally working.

Command 76

Data 2byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Return MIC INITIAL VOLUME RETURN [D7]

#### MIC INITIAL VOLUME SENSE

Request to reply the MIC volume of controlled unit at power on.

This Command is normally working.

Command 77

Data N/A

Return MIC INITIAL VOLUME RETURN [D7]

#### MIC INITIAL VOLUME RETURN

Reply the initial MIC volume of controlled unit at power on.

This Command is normally working.

Command D7

Data 2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Request MIC INITIAL VOLUME SENSE [77]

MIC INITIA VOLUME SET [76]

#### ECHO MAX VOLUME SET

Set the maximum Echo Volume of the controlled unit.

This Command is normally working.

Command 78

Data 2 byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Return ECHO MAX VOLUME RETURN [D9]

#### ECHO MAX VOLUME SENSE

Request to reply the current maximum Mic Echo Volume information of the controlled unit.

This Command is normally working.

Command 79

Data N/A

Return ECHO MAX VOLUME RETURN [D9]

#### ECHO MAX VOLUME RETURN

Reply the current set maximum MIC echo volume of the controlled unit.

This Command is normally working.

Command D9

Data 2byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Request ECHO MAX VOLUME SENSE [79]

ECHO MAX VOLUME SET [78]

#### ECHO INITIAL VOLUME SET

Set the Mic echo volume of controlled unit at power on.

This Command is normally working.

Command 7A

Data 2byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Return ECHO INITIAL VOLUME RETURN [DB]

#### ECHO INITIAL VOLUME SENSE

Request to reply the MIC echo volume of controlled unit at power on.

This Command is normally working.

Command 7B

Data N/A

Return ECHO INITIAL VOLUME RETURN [DB]

#### ECHO INITIAL VOLUME RETURN

Reply the initial MIC echo volume of controlled unit at power on.

This Command is normally working.

Command           DB  
Data               2byte ASCII Code

Min. value	Max. value
"00"	"32"

Transform the values expressed with HEX into ASCII code

Request ECHO INITIAL VOLUME SENSE [7B]

ECHO INITIAL VOLUME SET [7A]

#### MUTE ON

Set the music input of controlled unit into MUTE.

This Command is normally working.

Command           65  
Data               N/A  
Return             MUTE RETURN [C7]

#### MUTE OFF

Cancel the MUTE of the music input of controlled unit.

This Command is normally working.

Command           66  
Data               N/A  
Return             MUTE RETURN [C7]

#### MUTE SENSE

Request to reply the music input MUTE information of the controlled unit.

This Command is normally working.

Command           67  
Data               N/A  
Return             MUTE RETURN [C7]

### KEY CONTROL SET

Set the KEY CONTROL type in the controlled unit.

This Command is normally working.

Command 26

Data 2byte ASCII Code

Key	Data	Default
#6	"02"	
#5	"03"	
#4	"04"	
#3	"05"	
#2	"06"	
#1	"07"	
□	"08"	
b1	"09"	
b2	"0A"	
b3	"0B"	
b4	"0C"	
b5	"0D"	
b6	"0E"	

Return KEY CONTROL RETURN [A7]

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