Marantz

RS232C Control Specification

for

SR7400/8400

Category	:	*AV. Receiver*
Document Version	:	*1.00*
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Number of Page	:	**17**

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1. Introduction

1-1. Purpose

This document was written in order to clarify specification for control this product by the host controller.

1-2. Scope

This document would be using by software or hardware engineers for production of this product.
This product is [marantz SR6400/SR5400]. (It's refered to as "This product" after this.)

1-3. Abbreviations

Abbreviation	Description

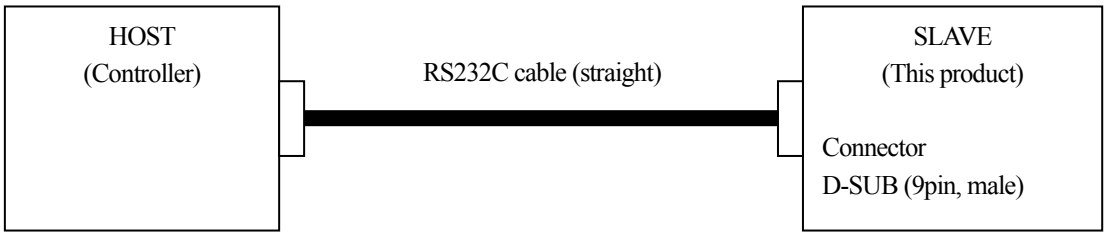
1-4. References

2. Global Description

2-1. Overview

A Host controller can control or watch out This product as a Slave very easily via the communication cable.

2-2. Block Diagram



2-3. Interface connecter specification of This Product

Processor Interface	Signal name	Connection device	D-Sub Pin	Connecter
-	N.C.	-	1	RS232C D-SUB (9pin,male)
UART	TxD (output)	RS232C Level shift driver	2	
	RxD (input)		3	
-	N.C.	-	4	
-	GND		5	
-	N.C.		6	
GENERAL PORT	CTS (input)	RS232C Level shift driver	7	
	RTS (output)		8	
-	N.C.	-	9	

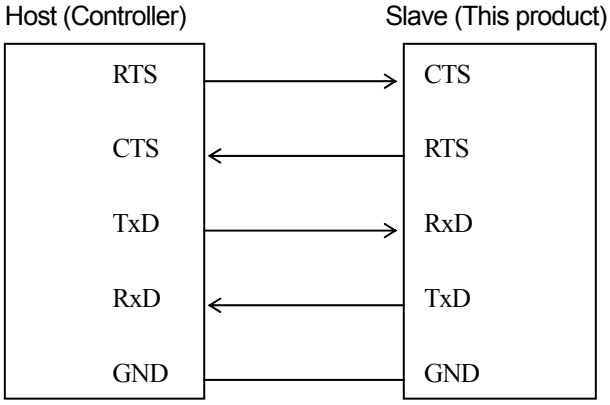
2-4. Assumptions and Dependencies

3. Detailed Description

The interface specification between This product and a Host controller is described below.

3-1. Connection format

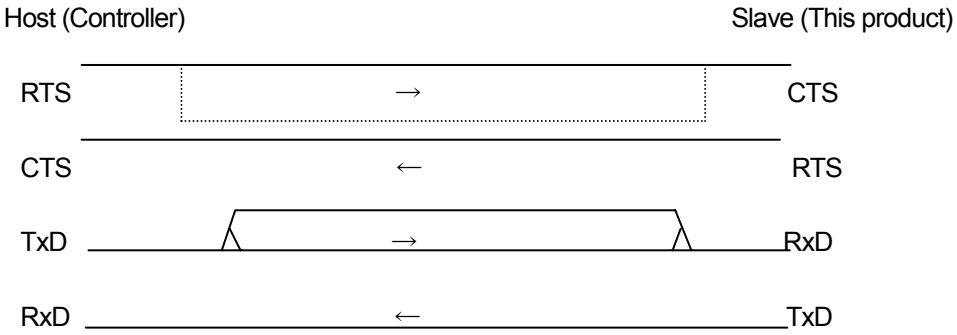
3-1-1. Physical connection



(Serial setting <RS232C basic>)

Baud Rate	: 9600bps
Data Bits	: 8bit
Parity	: None
Stop bit	: 1bit
Handshaking	: (RTS/CTS)

3-1-1-1. Data transmission sequence from Host to Slave



1. The host checks that CTS is High, then starts a data transmission from TxD.
2. The host performs the data transmission of the number of required bytes, and ends a transmission.

* The host can do RTS to Low during the transmission for disable data transmission from a slave.

3-1-1-2. Data transmission sequence from Slave to Host

1. The slave checks that CTS is High, then starts a data transmission from TxD.
2. The slave performs the data transmission of the number of required bytes, and ends a transmission.

* The slave can do RTS to Low during the transmission for disable data transmission from a host.

3-2. Transmission data format

3-2-1. Transmission data format from Host to Slave

There are two kinds of transmission data form from Host shown below.

3-2-1-1. Form1: Command

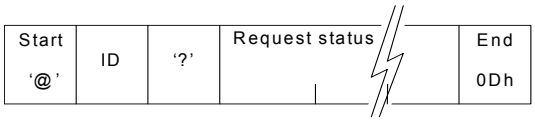
Command is a data that requests some status change.

Start character : '@'
ID : '0' ~ '9' (A Slave has own ID, A Host has to set the ID.)
COMMAND : see "Command list"
End character : 0Dh

3-2-1-2. Form2: Status request

Status request is a data that requests a answer of some status.

Start character : '@'
ID : '0' ~ '9' (A Slave has own ID, A Host has to set the ID.)
Request character : '?'
Request status : see "Status request list"
End character : 0Dh



3-2-2. Transmission data format from Slave to Host

There are two kinds of transmission data form from Slave shown below.

3-2-2-1. Form1: ACK/NAK

ACK is a reply data from Slave when Slave got an acceptable command data from Host.

ACK : 06h

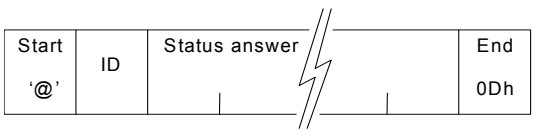
NAK is a reply data from Slave when Slave got an incorrect Command data, Status request data or some other data from Host.

NAK : 15h

3-2-2-2. Form2: Status answer

Status answers are reply data when Slave got an acceptable Request status data from Host.

Start character : '@'
ID : '0' ~ '9' (A Slave will set own ID.)
Answer character : see "Status answer list"
End character : 0Dh



3-3. The transaction sequences and the regulations

3-3-1. The transaction sequences

The transactions have two kinds of sequence.

*A transaction is a Command from Host then the Slave will be an answer by ACK or NAK.

*A transaction is a Status request from Host then the Slave will be an answer by Status answer.

3-3-2. The transaction regulations

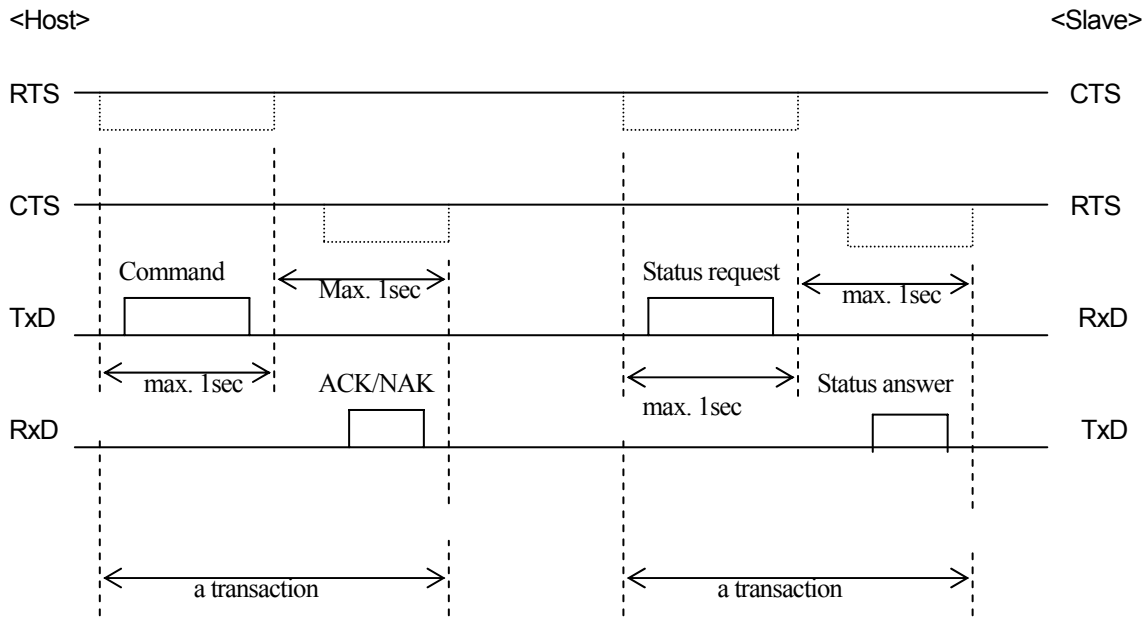
The transactions have some kinds of regulation.

* A Command or a Status request transmission by the Host has to finish within one second.

* An answer (ACK, NAK or Status answer) transmittion by the Slave has to finish within one second when got a Command or a Status request from the Host.

* The Host must not transmit an another Command or Status request until "it receives a answer by a previous Command or Status request" or "it passes one second from a finishing of previous transmission of a Command or a Status request ".

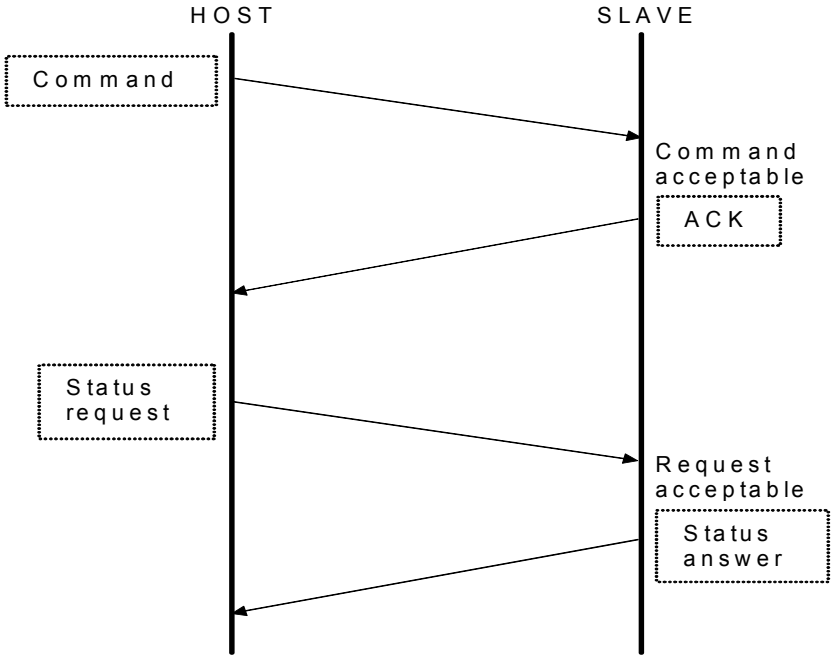
3-3-3. Example of the transactions



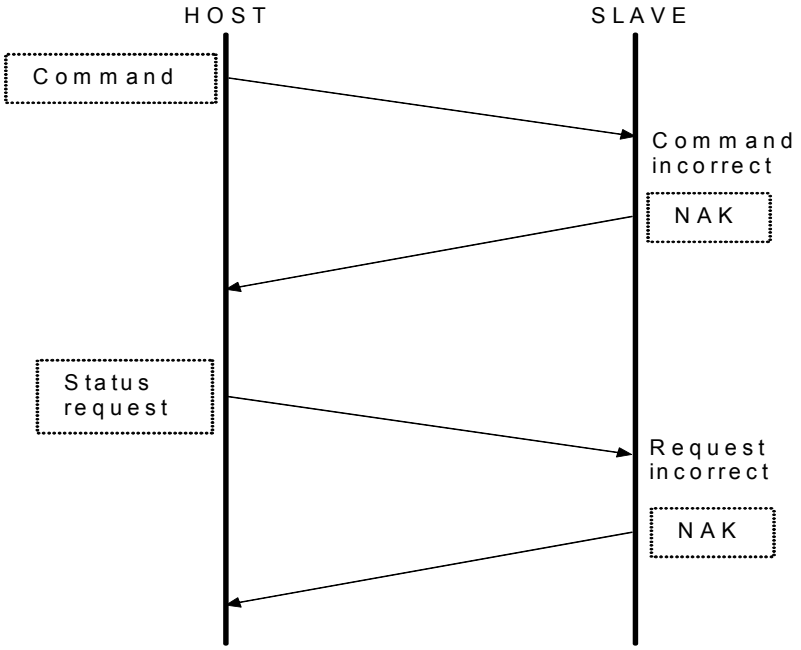
Example of the transactions

3-3-4. Examples of the handshaking flowchart

3-3-4-1. Example of successful handshaking



3-3-4-2. Example of error handshaking



3-4. Command list

3-4-1. Normal Command list

(Samples indicated the ID set to as '1'.)

Command		Character	Sample
POWER	POWER ON	AA	"@1AA",0x0D
	POWER OFF	AB	"@1AB",0x0D
	POWER(Toggle)	AC	"@1AC",0x0D
INPUT SELECT	DSS	CA	"@1CA",0x0D
	TV	CB	"@1CB",0x0D
	DVD	CD	"@1CD",0x0D
	VCR1	CE	"@1CE",0x0D
	AUX1	CG	"@1CG",0x0D
	AUX2	CH	"@1CH",0x0D
	CD	CJ	"@1CJ",0x0D
	TAPE	CK	"@1CK",0x0D
	CD-R	CL	"@1CL",0x0D
	FM	CN	"@1CN",0x0D
	AM(MW)	CO	"@1CO",0x0D
	TUNER	CQ	"@1CQ",0x0D
MULTI-CHANNEL	MULTI-CHANNEL INPUT ON	CS	"@1CS",0x0D
	MULTI-CHANNEL INPUT OFF	CT	"@1CT,0x0D
INPUT SIGNAL	A/D DIG AUTO	DA	"@1DA",0x0D
	A/D DIG FIX	DB	"@1DB",0x0D
	A/D ANA	DC	"@1DC",0x0D
VOLUME	VOLUME UP	EA	"@1EA",0x0D
	VOLUME DOWN	EB	"@1EB",0x0D
	VOLMUE UP FAST	EC	"@1EC",0x0D
	VOLUME DOWN FAST	ED	"@1ED",0x0D
TONE	BASS UP	FA	"@1FA",0x0D
	BASS DOWN	FB	"@1FB",0x0D
	TREBLE UP	FC	"@1FC",0x0D
	TREBLE DOWN	FD	"@1FD",0x0D
AUDIO MUTE	MUTE OFF	GA	"@1GA",0x0D
	MUTE ON	GB	"@1GB",0x0D
VIDEO MUTE	VIDEO MUTE OFF	HA	"@1HA",0x0D
	VIDEO MUTE ON	HB	"@1HB",0x0D
ATT	ATT OFF	IA	"@1IA",0x0D
	ATT ON	IB	"@1IB",0x0D
SPEAKER A OFF	SPEAKER A OFF	JA	"@1JA",0x0D
SPEAKER A ON	SPEAKER A ON	JB	"@1JB",0x0D
SPEAKER B OFF	SPEAKER B OFF	KA	"@1KA",0x0D
SPEAKER B ON	SPEAKER B ON	KB	"@1KB",0x0D
SLEEP MODE	SLEEP OFF	LA	"@1LA",0x0D
	SLEEP 10min	LB	"@1LB",0x0D
	SLEEP 20min	LC	"@1LC",0x0D
	SLEEP 30min	LD	"@1LD",0x0D
	SLEEP 40min	LE	"@1LE",0x0D
	SLEEP 50min	LF	"@1LF",0x0D
	SLEEP 60min	LG	"@1LG",0x0D
	SLEEP 70min	LH	"@1LH",0x0D
	SLEEP 80min	LI	"@1LI",0x0D
	SLEEP 90min	LJ	"@1LJ",0x0D
DISP	DISP (Toggle)	MA	"@1MA",0x0D
OSD	OSD OFF	NA	"@1NA",0x0D
	OSD ON	NB	"@1NB",0x0D

MENU	MENU OFF	ZA	"@1ZA",0x0D
	MENU (OK)	ZB	"@1ZB",0x0D
CURSOL	CURSOL UP	ZC	"@1ZC",0x0D
	CURSOL DOWN	ZD	"@1ZD",0x0D
	CURSOL LEFT	ZE	"@1ZE",0x0D
	CURSOL RIGHT	ZF	"@1ZF",0x0D
TUNER FREQUENCY	FREQ. UP	PB	"@1PB",0x0D
	FREQ. DOWN	PC	"@1PC",0x0D
	AUTO UP START/STOP	PD	"@1PD",0x0D
	AUTO DOWN START/STOP	PE	"@1PE",0x0D
TUNER PRESET	PRESET INFO.	QA	"@1QA",0x0D
	P-SCAN	QB	"@1QB",0x0D
	PRESET UP	QC	"@1QC",0x0D
	PRESET DOWN	QD	"@1QD",0x0D
F-DIRECT	F-DIRECT OFF	RA	"@1RA",0x0D
	F-DIRECT ON	RB	"@1RB",0x0D
TUNER MODE	STEREO	RC	"@1RC",0x0D
	MONO	RD	"@1RD",0x0D
MEMO/CLR	CLR	RE	"@1RE",0x0D
	MEMO	RF	"@1RF",0x0D
DIRECT KEY	DIRECT KEY 0	SA	"@1SA",0x0D
	DIRECT KEY 1	SB	"@1SB",0X0D
	DIRECT KEY 2	SC	"@1SC",0x0D
	DIRECT KEY 3	SD	"@1SD",0x0D
	DIRECT KEY 4	SE	"@1SE",0x0D
	DIRECT KEY 5	SF	"@1SF",0x0D
	DIRECT KEY 6	SG	"@1SG",0x0D
	DIRECT KEY 7	SH	"@1SH”,0x0D
	DIRECT KEY 8	SI	"@1SI",0x0D
	DIRECT KEY 9	SJ	"@1SJ",0x0D
RDS	RDS DISP MODE	TA	"@1TA",0x0D
	RDS PTY	TB	"@1TB",0x0D
SURROUND MODE	AUTO	U0	"@1U0",0x0D
	DOLBY	U6	"@1U6",0x0D
	DD+PLⅡx MOVIE	U7	"@1U7”,0x0D
	DD+PLⅡx MUSIC	U8	"@1U8”,0x0D
	AAC+PLⅡx MOVIE	U9	"@1U9”,0x0D
	AAC+PLⅡx MUSIC	UA	"@1UA”,0x0D
	DOLBY PLⅡx MOVIE	UB	"@1UB”,0x0D
	DOLBY PLⅡx MUSIC	UC	"@1UC”,0x0D
	DOLBY PLⅡx GAME	UD	"@1UD”,0x0D
	DOLBY PLⅡ MOVIE	UE	"@1UE”,0x0D
	DOLBY PLⅡ MUSIC	UF	"@1UF”,0x0D
	DOLBY PLⅡ GAME	UG	"@1UG”,0x0D
	DOLBY PROLOGIC	UH	"@1UH",0x0D
	EX/ES	UI	"@1UI",0x0D
	VIRTUAL6.1	UJ	"@1UJ",0x0D
	DOLBY DIGITAL EX	UK	"@1UK",0x0D
	DTS ES	UL	"@1UL",0x0D
	NEO6 CINEMA	UO	"@1UO",0x0D
	NEO6 MUSIC	UP	"@1UP",0x0D
	Mch-STEREO	UQ	"@1UQ",0x0D
	CSⅡ CINEMA	UR	"@1UR",0x0D
	CSⅡ MUSIC	US	"@1US",0x0D
	CSⅡ MONO	UT	"@1UT",0x0D
	VIRTUAL	Uc	"@1Uc",0x0D

	STEREO	Ud	"@1Ud",0x0D
	DTS-MODE	UV	"@1UV",0x0D
	SRS-MODE	UW	"@1UW",0x0D
	SOURCE DIRECT	UX	"@1UX",0x0D
	SURR. MODE NEXT	UY	“@1UY”,0x0D
	SURR. MODE PREV	UZ	“@1UZ”,0x0D
TEST TONE	TEST TONE OFF	VA	"@1VA",0x0D
	TEST TONE ON	VB	"@1VB",0x0D
NIGHT	NIGHT OFF	WA	"@1WA",0x0D
	NIGHT ON	WB	"@1WB",0x0D
RE-EQ (HT-EQ)	RE-EQ ON	XA	"@1XA”,0x0D
	RE-EQ OFF	XB	"@1XB,0x0D
BILINGUAL	MAIN+SUB	YGA	"@1YGA",0x0D
	MAIN	YGB	"@1YGB",0x0D
	SUB	YGC	"@1YGC",0x0D
REMOTE DC TREGGER	DC TRG ON	YJA	"@1YJA",0x0D
	DC TRG OFF	YJB	"@1YJB",0x0D

Multi Room control commands as from MULTI ROOM

Command		Character	Sample
MULTI ROOM	MULTI ROOM OFF	aA	"@1aA",0x0D
	MULTI ROOM ON	aB	"@1aB”,0x0D
INPUT SELECT	DSS	cA	"@1cA",0x0D
	TV	cB	"@1cB",0x0D
	DVD	cD	"@1cD",0x0D
	VCR1	cE	"@1cE",0x0D
	AUX1	cG	"@1cG",0x0D
	AUX2	cH	"@1cH",0x0D
	CD	cJ	"@1cJ",0x0D
	TAPE	cK	"@1cK",0x0D
	CD-R	cL	"@1cL",0x0D
	FM	cN	"@1cN",0x0D
	AM(MW)	cO	"@1cO”,0x0D
	TUNER	cQ	"@1cQ",0x0D
INPUT SIGNAL	A/D(Toggle)	dD	"@1dD",0x0D
MULTI ROOM VOLUME	MULTI VOL. UP	eA	"@1eA",0x0D
	MULTI VOL. DOWN	eB	"@1eB",0x0D
MULTI ROOM VOLUME MODE	MULTI VOL. VARIABLE	fA	"@1fA",0x0D
	MULTI VOL. FIXED	fB	"@1fB",0x0D
MULTI SPEAKER	MULTI ROOM SPEAKER OFF	ja	"@1ja",0x0D
	MULTI ROOM SPEAKER ON	jb	"@1jb",0x0D
MULTI SPEAKER MUTE	MULTI ROOM SPEAKER MUTEOFF	ga	"@1ga",0x0D
	MULTI ROOM SPEAKER MUTE ON	gb	"@1gb",0x0D
MULTI ROOM SPEAKER VOLUME	MULTI SPK. UP	hA	"@1hA",0x0D
	MULTI SPK. DOWN	hB	"@1hB",0x0D
MULTI ROOM SPEAKER VOLUME MODE	MULTI SPK. VARIABLE	kA	"@1kA",0x0D
	MULTI SPK. FIXED	kB	"@1kB",0x0D
MULTI ROOM MUTE	MULTI ROOM MUTE OFF	gA	"@1gA",0x0D
	MULTI ROOM MUTE ON	gB	"@1gB",0x0D
MULTI SLEEP MODE	MR SLEEP OFF	lA	"@1lA",0x0D
	MR SLEEP 10min	lB	"@1lB",0x0D
	MR SLEEP 20min	lC	"@1lC",0x0D
	MR SLEEP 30min	lD	"@1lD",0x0D
	MR SLEEP 40min	lE	"@1lE",0x0D
	MR SLEEP 50min	lF	"@1lF",0x0D
	MR SLEEP 60min	lG	"@1lG”,0x0D
	MR SLEEP 70min	lH	"@1lH",0x0D
	MR SLEEP 80min	ll	"@1ll",0x0D
	MR SLEEP 90min	lJ	"@1lJ",0x0D
MULTI ROOM OSD	MULTI ROOM OSD OFF	nA	"@1nA",0x0D
	MULTI ROOM OSD ON	nB	"@1nB",0x0D

Multi Room control commands as from MULTI ROOM

Command		Character	Sample
TUNER FREQUENCY	FREQ. UP	pB	"@1pB",0x0D
	FREQ. DOWN	pC	"@1pC",0x0D
	AUTO UP START/STOP	pD	"@1pD",0x0D
	AUTO DOWN START/STOP	pE	"@1pE”,0x0D
TUNER PRESET	P-SCAN	qB	"@1qB",0x0D
	PRESET UP	qC	"@1qC",0x0D
	PRESET DOWN	qD	"@1qD",0x0D
F-DIRECT	F-DIRECT OFF	rA	"@1rA",0x0D
	F-DIRECT ON	rB	"@1rB",0x0D
T-MODE	STEREO	rC	"@1rC",0x0D
	MONO	rD	"@1rD",0x0D
DIRECT KEY	DIRECT KEY 0	sA	"@1sA",0x0D
	DIRECT KEY 1	sB	"@1sB",0X0D
	DIRECT KEY 2	sC	"@1sC",0x0D
	DIRECT KEY 3	sD	"@1sD",0x0D
	DIRECT KEY 4	sE	"@1sE",0x0D
	DIRECT KEY 5	sF	"@1sF",0x0D
	DIRECT KEY 6	sG	"@1sG",0x0D
	DIRECT KEY 7	sH	"@1sH”,0x0D
	DIRECT KEY 8	sI	"@1sI",0x0D
	DIRECT KEY 9	sJ	"@1sJ",0x0D
INPUT SELECT(M-SPKR)	DSS	ca	"@1cA",0x0D
	TV	cb	"@1cB",0x0D
	DVD	cd	"@1cD",0x0D
	VCR1	ce	"@1cE",0x0D
	AUX1	cg	"@1cG",0x0D
	AUX2	ch	"@1cH",0x0D
	CD	cj	"@1cJ",0x0D
	TAPE	ck	"@1cK",0x0D
	CD-R	cl	"@1cL",0x0D
	FM	cn	"@1cN",0x0D
	AM(MW)	co	"@1cO”,0x0D
	TUNER	cq	"@1cQ",0x0D

3-5. Status request and Status answer list

3-5-1. Normal Status request and Status answer list

(Samples indicated the ID set to as '1'.)

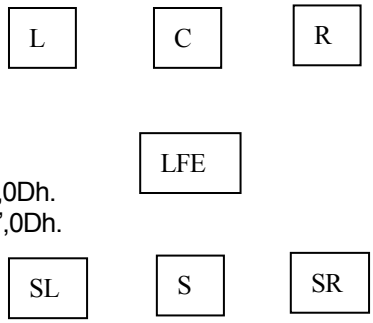
Request Status	Char. & Sample	Status answer	Char. & Sample
POWER Status	'A' ("@1?A",0x0D)	POWER ON	AA ("@1AA",0x0D)
		POWER OFF	AB
VIDEO INPUT	'B' ("@1?B",0x0D)	DSS	BA
		TV	BB
		DVD	BD
		VCR1	BE
		AUX1	BG
AUDIO INPUT	'C' ("@1?C",0x0D)	DSS	CA
		TV	CB
		DVD	CD
		VCR1	CE
		AUX1	CG
		AUX2	CH
		CD	CJ
		TAPE	CK
		CD-R	CL
		FM	CN
		AM(MW)	CO
		TUNER	CQ
		MULTI-CHANNEL INPUT ON	CR
INPUT MODE	'D' ("@1?D",0x0D)	A/D DIG AUTO	DA
		A/D DIG FIX	DB
		A/D ANA	DC
VOLUME Status	'E' ("@1?E",0x0D)	VOL.= XXXdB (XXX = -90～+99)	EAXXX ("@1EA-15",0x0D)
		max	EB
		min (-∞)	EC
BASS Status	'FA' ("@1?FA",0x0D)	BASS:xxdB(xx=-9～+9)	FAxx
TREBLE Status	'FC' ("@1?FC",0x0D)	TREBLE:xxdB(xx=-9～+9)	FCxx
AUDIO MUTE	'G'("@1?G",0x0D)	AUDIO MUTE OFF	GA
		AUDIO MUTE ON	GB
VIDEO MUTE	'H' ("@1?H",0x0D)	VIDEO MUTE OFF	HA
		VIDEO MUTE ON	HB
ATT Status	'I' ("@1?I",0x0D)	ATT OFF	IA
		ATT ON	IB
SPEAKER A	'J' ("@1?J",0x0D)	SPEAKER A OFF	JA
		SPEAKER A ON	JB
SPEAKER B	'K' ("@1?K",0x0D)	SPEAKER B OFF	KA
		SPEAKER B ON	KB
SLEEP MODE	'L' ("@1?L",0x0D)	SLEEP OFF	LA
		SLEEP ON : XXX (001-120)	LBXXX
DISPLAY Status	'M' ("@1?M",0x0D)	DISP ON(INPUT)	MA
		DISP ON(SURR)	MB
		AUTO DISPLAY OFF	MC
		DISP OFF	MD
OSD Status	'N' ("@1?N",0x0D)	OSD OFF	NA
		OSD ON	NB
MENU	'O' ("@1?Z",0x0D)	MENU OFF	OA
		MENU ON	OB

TUNER FFREQUENCY	'P' ("@1?P",0x0D) FM:076.00-108.00 AM,MW:520-1710 LW:152-282	TUNER FREQUENCY PAxxxx:(Not tuned+Freq.) PBxxxx:(Tuned+Freq.)	(FM: 87.55 = "8755") (FM:108.00 = "0800") (MW: 520="0520") (LW:282="0282")
		Frequency Scaning	PC ("@1PC",0x0D)
		Not available	P- ("@1P-",0x0D)
TUNER PRESET	'Q' ("@1?Q",0x0D)	Preset No. (XX=01～50) Not Preset mode (XX=00)	QAXX or QBXX (A=!tuned, B=tuned)
		Not available	Q- ("@1Q-",0x0D)
F-DIRECT TUNER MODE	'R' ("@1?R",0x0D) (answer) R[D-DIR][T-MODE]	F-DIRECT OFF	RA* ("@1TAC",0x0D)
		F-DIRECT ON	RB*
		Not available	R-*
		AUTO STEREO	R*C
		MONO	R*D
		Not available	R*-
SURROUND MODE	'U' ("@1?U",0x0D)	AUTO	U0 ("@1U0",0x0D)
		DOLBY	U6
		DD+PLⅡx MOVIE	U7
		DD+PLⅡx MUSIC	U8
		AAC+PLⅡx MOVIE	U9
		AAC+PLⅡx MUSIC	UA
		DOLBY PLⅡx MOVIE	UB
		DOLBY PLⅡx MUSIC	UC
		DOLBY PLⅡx GAME	UD
		DOLBY PLⅡ MOVIE	UE
		DOLBY PLⅡ MUSIC	UF
		DOLBY PLⅡ GAME	UG
		DOLBY PROLOGIC	UH
		EX/ES	UI
		VIRTUAL6.1	UJ
		DOLBY DIGITAL EX	UK
		DTS ES	UL
		DTS CINEMA(DTS)	UM
		NEO6 CINEMA	UO
		NEO6 MUSIC	UP
		Mch-STEREO	UQ
		CSⅡ CINEMA	UR
		CSⅡ MUSIC	US
		CSⅡ MONO	UT
		VIRTUAL	Uc
		STEREO	Ud
		S-DIRECT	UX
TEST TONE Status (with T-TONE MDOE)	'V' ("@1?V",0x0D)	TEST TONE OFF	V*A ("@1VBA",0x0D)
		TEST TONE L	V*B * = T-MODE
		TEST TONE C	V*C A = AUTO
		TEST TONE R	V*D B = MANUAL
		TEST TONE SR	V*E
		TEST TONE SBR	V*F
		TEST TONE SBL	V*G
		TEST TONE SL	V*H
		TEST TONE SW	V*I
NIGHT MODE	'W' ("@1?W",0x0D)	NIGHT MODE OFF	WA
		NIGHT MODE ON	WB
RE-EQ (HT-EQ)	'X' ("@1?X",0x0D)	RE-EQ OFF	XA
		RE-EQ ON	XB

SIGNAL FORMAT	'u' ("@1?u",0x0D)	D DIGITAL(AC-3)	uA
		DD SURROUND	uB
		DD SURR EX	uC
		DTS	uD
		DTS ES DISCREATE	uE
		DTS ES MATRIX	uF
		AAC	uG
		PCM	uJ
		HDCD	uK
		OTHER	uM
		NONE_DETECTION	uN
SAMPLING FREQ.	'v' ("@1?v",0x0D)	32K	vA
		44.1K	vB
		48K	vC
		88.2K	vD
		96K	vE
		OUT OF RANGE	vH
		Not available	v-
CHANNEL STATUS	'w' ("@1?w",0x0D)	See below	wA$%
		Not available	w-

* Description of CHANNEL STATUS answer character. (about : $%)
(Character $ and % would be '0' to '9' or 'A' to 'F',it uses to as hex. bit data.)

	$ bit				% bit			
Bit	3	2	1	0	3	2	1	0
	1	LFE	SL	SR	S	L	R	C



When a bit of channel status is effective, it sets to 1.
And when it is opposite condition, it sets to 0.

ex.)
* If front L and R channel status are only effective, it will send "@1w146",0Dh.
* If front and surr. L/R channel status are effective, it will send "@1w1B6",0Dh.
* If all channel status are effective, it will send "@1w1FF",0Dh.
* If all channel status are not effective, it will send "@1w180",0Dh.

CHANNEL LEVEL	'Y' ("@1?Y*",0x0D)	L : 'YB'	("@1YB**"*,0x0D) *** = +/-?(? = 00~99)
		C : 'YC'	
		R : 'YD'	
		SR : 'YE'	
		SBR : 'YF'	
		SBL : 'YG'	
		SL : 'YH'	
		SW : 'YI'	("@1YB --",0x0D) = Not available
		Not available	
SPEAKER DISTANCE [XX: (00～30) (1 foot = "01") (10 feet="10")]	"xA" ("@1?xA", 0x0D)	LEFT DISTANCE	xAXX ("@1xA10"0x0D)
	"xB" ("@1?xB", 0x0D)	RIGHT DISTANCE	xBXX
	"xC" ("@1?xC", 0x0D)	CENTER DISTANCE	xCXX
	"xD" ("@1?xD", 0x0D)	SUBWF DISTANCE	xDXX
	"xE" ("@1?xE", 0x0D)	SURR. L DISTANCE	xEXX
	"xF" ("@1?xF", 0x0D)	SURR. R DISTANCE	xFXX
	"xG" ("@1?xG", 0x0D)	BACK L DISTANCE	xGXX
	"xH" ("@1?xH", 0x0D)	BACK R DISTANCE	xHXX

SPEAKER SIZE	“yA” ("@1?yA", 0x0D)	FRONT LAGE	yAA
		FRONT SMALL	yAB
	“yB” ("@1?yB", 0x0D)	CENTER LAGE	yBA
		CENTER SMALL	yBB
		CENTER OFF	yBC
	“yC” ("@1?yC", 0x0D)	SUBWF ON	yCA
		SUBWF OFF	yCB
	“yD” ("@1?yD", 0x0D)	SURR. LAGE	yDA
		SURR. SMALL	yDB
		SURR. OFF	yDC
	“yE” ("@1?yE", 0x0D)	BACK LAGE	yEA
		BACK SMALL	yEB
		BACK OFF	yEC
SPEAKER BACK	‘yF’ ("@1?yF", 0x0D)	BACK 1ch	yFA
		BACK 2ch	yFB
		BACK NONE	yFC
BILINGUAL	‘yG’ ("@1?yG",0x0D)	MAIN+SUB	yGA
		MAIN	yGB
		SUB	yGC
REMOTE DC TRIGGER	‘yJ’ ("@1?yJ",0x0D)	DC TRG ON	yJA
		DC TRG OFF	yJB
MULTIROOM Status	‘a’ (“@1?a”,0x0D)	MULTI ROOM OFF	a0 (“@1a0”,0x0D)
		MULTI ROOM ON	a1 (“@1a1”,0x0D)
		Not available	a- (“@1a-”,0x0D)
VIDEO INPUT (Multi Room)	‘b’ (“@1?b”,0x0D)	DSS	bA
		TV	bB
		DVD	bD
		VCR1	bE
		AUX1	bG
		Not available	b-
AUDIO INPUT (Multi Room)	‘c’ (“@1?c”,0x0D)	DSS	cA
		TV	cB
		DVD	cD
		VCR1	cE
		AUX1	cG
		AUX2	cH
		CD	cJ
		TAPE	cK
		CD-R	cL
		FM	cN
		AM(MW)	cO
		TUNER	cQ
		Not available	c-
VOLUME Status (Multi Room)	‘e’ (“@1?e”,0x0D)	VOL .XXX(-90～+99)	eAXXX
		MAX.	eB
		MIN.(-∞)	eC
VOLUME SET Status (Multi Room)	‘f’ (“@1?f”,0x0D)	VARIABLE	fA
		FIXED	fB
MUTE Status (Multi Room)	‘g’ (“@1?g”,0x0D)	MUTE OFF (MR)	gA
		MUTE ON (MR)	gB
SPEAKER Status (Multi Room)	‘j’ (“@1?j”,0x0D)	MULTI SPEAKER OFF	jA
		MULTI SPEAKER ON	jB
VOLUME Mode Status (Multi Room SPK)	‘h’(“@1?h”,0X0D)	VOL .XXX(-90～+99)	hAXXX
		MAX.	hB
		MIN.(-∞)	hC
VOLUME Status (Multi Room SPK)	‘k’ (“@1?k”,0x0D)	MULTI SPK VARIABLE	kA
		MULTI SPK FIXED	kB
SLEEP TIMER Status (Multi Room)	‘l’ (“@1?l”,0x0D)	SLEEP OFF	lA
		SLEEP XXX(1～120)	lBXXX

OSD Status (Multi Room)	'z' ("@1?z",0x0D)	MULTI OSD OFF	zA
		MULTI OSD ON	zB
TUNER FREQUENCY (Multi Room)	'p' ("@1?p",0x0D)	TUNER FREQUENCY XXXX=076.00-108.00(FM) =520-1710(AM,MW) = 152-282(LW)	pAXXXX or pBXXXX (FM:87.50 = "8750") (FM:108.00="0800") (MW: 520="0520") (MW:1710="1710")
		Not available	p- ("@1p-",0x0D)
TUNER PRESET (Multi Room)	'q' ("@1?q",0x0D)	Preset No. (XX=01～50) Not Preset mode (XX=00)	qAXX or qBXX (A=!tuned, B=tuned)
		Not available	q- ("@1q-",0x0D)

4. Revision history

Rev.	Date	Owner	Change description
00	11/20/03	MAI	Released