

Denon CY2022 AVR control protocol

Application Category : Denon AV Surround Receiver

Last Update: 13-Oct-22

Ver.02

Application terminal: Ethernet/RS-232C

Model	Terminal	Beacon No	
AVR-S970H/ AVR-X2800H/AVR-X2800H DAB	Ethernet/ RS-232C (X2800H NA only)	20.4.0	As for command for Network-related operation (e.g. NS***), these models use CLI command. For CLI command, please refer to "HEOSCLIProtocolSpecification.pdf"
AVR-X3800H/AVC-X3800H	Ethernet/RS-232C	20.5.0	
AVR-X4800H/AVC-X4800H	Ethernet/RS-232C	20.6.0	
AVR-A1H/AVC-A1H	Ethernet/RS-232C	20.0.0	

Connector specification

I. RS-232C

Connector type: DB-9pin female type, slave straight connection (DCE type)

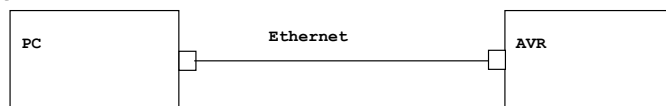
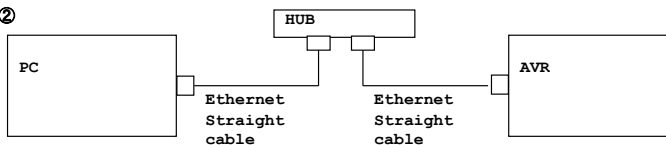
(1pin : GND , 2pin : TxD , 3pin : RxD , 5pin : Common(GND) , 4,6,7,8,9pin : NC)

Communication format:

Synchronous system : Tone step synchronization
 Communication system : A half duplex
 Communication speed : 9600bps
 Character length : 8 bits
 Parity control : None
 Start bit : 1 bit
 Stop bit : 1 bit
 Communication procedure : Non procedural
 Communication data length : 135 bytes (maximum)

II. Ethernet

Connector type : RJ-45 (10BASE-T/100BASE-TX)

Example ①**Example ②**

Communication format :
Communication system : A half duplex
Communication speed : 10Mbps/100Mbps
Communication port : TCP port 23 (telnet)
Communication data length : 135bytes (maximum)

NETWORK SETUP of AV Receiver

>Procedure of Network Setup mode.

(1) Press **SETUP** button, then Menu appears on FL-display (and GUI)

(2) Select "Network > Settings > " .

(3) Set parameters described below.

<DHCP> "ON"---Use this setting when DHCP server is on the local network.

<IP Address> When <DHCP> sets "Off", please set IP address.

<Subnet Mask> When <DHCP> sets "Off", please set Subnet Mask.

<Gateway> Set the address of Gateway when Gateway is on the local network.

<Primary DNS> Do not set this parameter.

<Second DNS> Do not set this parameter.

<Proxy> Set this parameter "Off".

<Network Option: Network Standby Mode>

(1) Press **SETUP** button, then Menu appears on FL-display (and GUI)

(2) Select "Network > Network Control"

(3) Set this parameter "Always On".

"Always On"---Use this setting when using the AV Receiver Connected in a network.

Always respond to network commands.

"Off In Standby"--- Use this setting when not using the AV Receiver connected in a network.

Ignores network commands during standby to save power.

Protocol specification

The following three data forms are defined.

COMMAND :	The message sent to a system(AVR) from a controller(Touch Panel etc.) A command to a system is given from a controller. Send the COMMAND in <u>50ms or more</u> intervals.
EVENT :	The message sent to a controller (Touch Panel etc.) from a system (AVR) The result is sent, when a system is operated directly and a state changes. The EVENT should be sent within 5 seconds after the state of the system (AVR) is changed. *The form of EVENT presupposes that it is the same as that of COMMAND. **Refer to the following table for the contents of COMMAND and EVENT.
RESPONSE :	The message sent to a controller (Touch Panel etc.) from a system (AVR) if the 'request command' (COMMAND+? +CR (0x0D)) has come from a controller. The RESPONSE should be sent within <u>200ms</u> of receiving the request COMMAND. *The form of RESPONSE presupposes that it is the same as that of EVENT.

Basic specification: The command by ASCII CODE, parameter expression

*ASCII CODE which can be used is from 0x20 to 0x7F:
the alphabet and the number of 0-9, and space (0x20), some signs,
AND carriage return (0x0D) --- It is used only as a pause sign.

Command structure: COMMAND + PARAMETER + CR (0x0D)

COMMAND: ASCII CODE of 2 characters

Ex. SI : Select Input source
MS : surround Mode Setting
MV : Master Volume setting
PW : system Power setting

PARAMETER : ASCII CODE (up to 25 characters)

Ex. DVD : function name
STEREO : surround mode name

*Special Parameter--- ? : for request command

The example of a command * <CR> is the meaning of 0x0D.

SIDVD<CR> : Select Input source DVD
MSSTEREO<CR> : surround Mode Set to STEREO
MVUP<CR> : Master Volume UP
PWON<CR> : system Power ON
PWSTANDBY<CR> : system Power STANDBY
SI?<CR> : Request command for now playing input source >> Return RESPONSE 'SI***<CR>'

Others

A) COMMAND is receivable also during transmission of EVENT.

B) Since CHANNEL VOLUME changes simultaneously when the input source changes, the value of the channel volume of used channels returns as EVENT.

C) Since SURROUND MODE or CHANNEL VOLUME changes simultaneously when the INPUT source changes, the SURROUND MODE or CHANNEL VOLUME returns as EVENT.

D) When SURROUND MODE or CHANNEL VOLUME is the same in between INPUT source change before and after, EVENT of SURROUND MODE and CHANNEL VOLUME does NOT return.

E) Although EVENT of SURROUND MODE returns when the present SURROUND MODE is set up again, CHANNEL VOLUME does NOT return.

F) When SURROUND MODE is changed, before returning SURROUND MODE after change as EVENT, the present SURROUND MODE is returned.

G) The RESPONSE should be sent as opposed to the request command by all the commands with which an EVENT exists, not need to the another request commands(ex. SV command).

H) The PARAMETER (with COMMAND and RESPONSE, EVENT) of minimum level of MASTER VOLUME defines "00".

I) If the MASTER VOLUME & CHANNEL VOLUME set with 0.5dB step, the PARAMETER (with COMMAND and RESPONSE, EVENT) defines three ASCII characters as bellows.

```
Ex. MASTER VOLUME   =   +18.0dB : MV98<CR>
                        +1.0dB : MV81<CR>
                        +0.5dB : MV805<CR>
                        0dB : MV80<CR>
                        -0.5dB : MV795<CR>
                        -1.0dB : MV79<CR>
                        |
                        |
                        -79.5dB : MV005<CR>
                        --- : MV00<CR>
```

* At the *.0dB step, only uses two ASCII characters as PARAMETER, same as usual.

J) 1 second later, please transmit the next COMMAND after transmitting a power on COMMAND (PWON) .

This pink color's cell = New assigned code

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Subwoofer Level	...SUBWOOFER(1) Level Adjust ...AL32AL24V.ASC1.00000...	LSWL UP	PSWL UP<CR>	PSWL 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	LSWL DOWN	PSWL DOWN<CR>	PSWL 50<CR>	X	X	X	X	X	X	
Center Level	...Center Level Adjust ...AL32AL24V.ASC1.00000...	CLV UP	PSCLV UP<CR>	PSCLV 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	CLV DOWN	PSCLV DOWN<CR>	PSCLV 50<CR>	X	X	X	X	X	X	
LFE	...LFE UP/DOWN direct change to ""dB ...AL32AL24V.ASC1.00000...	FLV UP	PSFLV UP<CR>	PSFLV 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	FLV DOWN	PSFLV DOWN<CR>	PSFLV 50<CR>	X	X	X	X	X	X	
LFE in L1 CH mode	...LFE Level direct change(When 7-ICH N1) ...AL32AL24V.ASC1.00000...	FLFE UP	PSFLFE UP<CR>	PSFLFE 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	FLFE DOWN	PSFLFE DOWN<CR>	PSFLFE 50<CR>	X	X	X	X	X	X	
PANORAMA	...PANORAMA ON/OFF ...AL32AL24V.ASC1.00000...	PLN UP	PSPLN UP<CR>	PSPLN 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLN DOWN	PSPLN DOWN<CR>	PSPLN 50<CR>	X	X	X	X	X	X	
DIMENSION	...DIMENSION UP/DOWN direct change to ""dB ...AL32AL24V.ASC1.00000...	PLM UP	PSPLM UP<CR>	PSPLM 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLM DOWN	PSPLM DOWN<CR>	PSPLM 50<CR>	X	X	X	X	X	X	
CFMTR Width	...CENTER WIDTH UP/DOWN direct change to ""dB ...AL32AL24V.ASC1.00000...	PLW UP	PSPLW UP<CR>	PSPLW 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLW DOWN	PSPLW DOWN<CR>	PSPLW 50<CR>	X	X	X	X	X	X	
CFMTR Image	...CENTER IMAGE UP/DOWN direct change to ""dB ...AL32AL24V.ASC1.00000...	PLI UP	PSPLI UP<CR>	PSPLI 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLI DOWN	PSPLI DOWN<CR>	PSPLI 50<CR>	X	X	X	X	X	X	
CENTER Spread	...CENTER SPREAD ON/OFF ...AL32AL24V.ASC1.00000...	PLS UP	PSPLS UP<CR>	PSPLS 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLS DOWN	PSPLS DOWN<CR>	PSPLS 50<CR>	X	X	X	X	X	X	
Speaker Virtualizer	...Speaker Virtualizer ON/OFF ...AL32AL24V.ASC1.00000...	PLV UP	PSPLV UP<CR>	PSPLV 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLV DOWN	PSPLV DOWN<CR>	PSPLV 50<CR>	X	X	X	X	X	X	
Thxion Control	...THXION ON/OFF ...AL32AL24V.ASC1.00000...	PLT UP	PSPLT UP<CR>	PSPLT 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLT DOWN	PSPLT DOWN<CR>	PSPLT 50<CR>	X	X	X	X	X	X	
MAX	...MAX Mode Settings for MAX contents ...AL32AL24V.ASC1.00000...	PLM UP	PSPLM UP<CR>	PSPLM 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLM DOWN	PSPLM DOWN<CR>	PSPLM 50<CR>	X	X	X	X	X	X	
CINEMA EQ	...CINEMA EQ ON/OFF ...AL32AL24V.ASC1.00000...	PLC UP	PSPLC UP<CR>	PSPLC 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLC DOWN	PSPLC DOWN<CR>	PSPLC 50<CR>	X	X	X	X	X	X	
MULTI EQ	...MULTI EQ ON/OFF ...AL32AL24V.ASC1.00000...	PLM UP	PSPLM UP<CR>	PSPLM 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLM DOWN	PSPLM DOWN<CR>	PSPLM 50<CR>	X	X	X	X	X	X	
Dynamic EQ	...Dynamic EQ ON/OFF ...AL32AL24V.ASC1.00000...	PLD UP	PSPLD UP<CR>	PSPLD 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLD DOWN	PSPLD DOWN<CR>	PSPLD 50<CR>	X	X	X	X	X	X	
Thxion Vnd	...THXION Vnd ON/OFF ...AL32AL24V.ASC1.00000...	PLV UP	PSPLV UP<CR>	PSPLV 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLV DOWN	PSPLV DOWN<CR>	PSPLV 50<CR>	X	X	X	X	X	X	
Acoustic EQ	...Acoustic EQ ON/OFF ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Graphic EQ	...Graphic EQ ON/OFF ...AL32AL24V.ASC1.00000...	PLG UP	PSPLG UP<CR>	PSPLG 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLG DOWN	PSPLG DOWN<CR>	PSPLG 50<CR>	X	X	X	X	X	X	
Headphone EQ	...Headphone EQ ON/OFF ...AL32AL24V.ASC1.00000...	PLH UP	PSPLH UP<CR>	PSPLH 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLH DOWN	PSPLH DOWN<CR>	PSPLH 50<CR>	X	X	X	X	X	X	
Effect	...EFFECT ON/OFF direct change ...AL32AL24V.ASC1.00000...	PLE UP	PSPLE UP<CR>	PSPLE 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLE DOWN	PSPLE DOWN<CR>	PSPLE 50<CR>	X	X	X	X	X	X	
RTI AY TMRP	...RTI AY TMRP ON/OFF ...AL32AL24V.ASC1.00000...	PLT UP	PSPLT UP<CR>	PSPLT 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLT DOWN	PSPLT DOWN<CR>	PSPLT 50<CR>	X	X	X	X	X	X	
ROOM SIZE	...ROOM SIZE ON/OFF ...AL32AL24V.ASC1.00000...	PLR UP	PSPLR UP<CR>	PSPLR 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLR DOWN	PSPLR DOWN<CR>	PSPLR 50<CR>	X	X	X	X	X	X	
Audio Filter	...Audio Filter ON/OFF ...AL32AL24V.ASC1.00000...	PLF UP	PSPLF UP<CR>	PSPLF 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLF DOWN	PSPLF DOWN<CR>	PSPLF 50<CR>	X	X	X	X	X	X	
AUXIN RESTERBER	...AUXIN RESTERBER ON/OFF ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Auto-Matic 3D Preset	...Auto-Matic 3D Preset direct change ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Auto-Matic 3D Stereo	...Auto-Matic 3D Stereo direct change ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Amm-3D Mode	...Amm-3D Mode ON/OFF ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Bluetooth Transmitter	...Bluetooth Transmitter ON/OFF ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Speaker Preset	...Speaker Preset 1 ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Picture Mode	...Picture Mode direct change ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Contrast	...CONTRAST UP/DOWN direct change to ""dB ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Brightness	...BRIGHTNESS UP/DOWN direct change to ""dB ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Saturation	...SATURATION UP/DOWN direct change to ""dB ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
DNR	...DNR ON/OFF ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Enhancer	...ENHANCER UP/DOWN direct change to ""dB ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Tuner	...Tuner ON/OFF ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Menu	...Menu ON/OFF ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
All Zone Stereo	...All Zone Stereo direct Control ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Control Lock	...REMOTE CONTROL LOCK ON/OFF ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
System Reset	...System Reset ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Network Broadcast	...Network Broadcast ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
Trisoser	...Trisoser 1 ON/OFF Control ...AL32AL24V.ASC1.00000...	PLA UP	PSPLA UP<CR>	PSPLA 50<CR>	X	X	X	X	X	X	
	...AL32AL24V.ASC1.00000...	PLA DOWN	PSPLA DOWN<CR>	PSPLA 50<CR>	X	X	X	X	X	X	

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ZONE2	Power	ZONE2 ON/OFF change Return ZONE2 Status		ON	Z2ON<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				OFF	Z2OFF<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				7	Z2I<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
	Input	ZONE2 mode cancel (ZONE2 source is same as MAIN ZONE) Return ZONE2 Status	Z2	SOURCE	Z2SOURCE<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
		ZONE2 mode set, and select source		PHONO	Z2PHONO<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				CD	Z2CD<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				D/D	Z2DD<CR>	<-	---	---	---	---	---	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				BD	Z2BD<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				TV	Z2TV<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				SAT/CBL	Z2SATCBL<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				MPLAY	Z2MPLAY<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				GAME	Z2GAME<CR>	Z2GAME1<CR>	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				GAME1	Z2GAME1<CR>		X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				TUNER	Z2TUNER<CR>		X	X	---	---	---	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				BE	Z2BICR>	<-	---	---	---	---	---	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				AUX1	Z2AUX1<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				AUX2	Z2AUX2<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				AUX3	Z2AUX3<CR>	<-	X	---	---	---	---	This command is available when Additional Source setting is on
				AUX4	Z2AUX4<CR>	<-	X	---	---	---	---	This command is available when Additional Source setting is on
				AUX5	Z2AUX5<CR>	<-	X	---	---	---	---	This command is available when Additional Source setting is on
				AUX6	Z2AUX6<CR>	<-	X	---	---	---	---	This command is available when Additional Source setting is on
				AUX7	Z2AUX7<CR>	<-	X	---	---	---	---	This command is available when Additional Source setting is on
				NET	Z2NET<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				BT	Z2BT<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
	Volume	ZONE2 VOLUME UP/DOWN , direct change to "dB"		UP	Z2UP<CR>	Z2BU<CR>	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
		"-90 to 8dB by ASCII , BD=0dB, DD=---(MR)"		DOWN	Z2DOWN<CR>	Z2BS<CR>	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
		Refer to Volume MUTE DOWN		--	Z2H<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
	Mute	ZONE2 OUTPUT MUTED ON/OFF change Return Z2STRY Status	Z2MU	ON	Z2MOUN<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				OFF	Z2MOFF<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				7	Z2MU7<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
	Quick Select	Z2 QUICK SELECT 1-5 MODE SELECT Return Z2QUICK Status	Z2	QUICK1	Z2QUICK1<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				QUICK2	Z2QUICK2<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				QUICK3	Z2QUICK3<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				QUICK4	Z2QUICK4<CR>	<-	X	X	X	X	X	(B10) Requires to be set "Amp assign + Zone2" (B11) Requires to be set "Amp assign + Zone2C" for Europe/Japan, China models.
				QUICK5	Z2QUICK5<CR>	<-	X	X	X	X	X	(B10) Requires to be set "A

Revision	
CY2022 V01	Added AVR-X3800H/AVC-X3800H/AVR-X2800H/AVR-X2800H DAB/AVR-S970H
CY2022 V02	Added AVR-X4800H/AVC-X4800H/AVR-A1H/AVC-A1H

Volume_CMD"MV**""Z2**""Z3**"

Relative(dB)	Absolute	"MV**""Z2**""Z3**" command
—	0	00
-79.5	0.5	005
-79	1	01
-78.5	1.5	015
-78	2	02
-77.5	2.5	025
-77	3	03
-76.5	3.5	035
-76	4	04
-75.5	4.5	045
-75	5	05
-74.5	5.5	055
-74	6	06
-73.5	6.5	065
-73	7	07
-72.5	7.5	075
-72	8	08
-71.5	8.5	085
-71	9	09
-70.5	9.5	095
-70	10	10
-69.5	10.5	105
-69	11	11
-68.5	11.5	115
-68	12	12
-67.5	12.5	125
-67	13	13
-66.5	13.5	135
-66	14	14
-65.5	14.5	145
-65	15	15
-64.5	15.5	155
-64	16	16
-63.5	16.5	165
-63	17	17
-62.5	17.5	175
-62	18	18
-61.5	18.5	185
-61	19	19
-60.5	19.5	195
-60	20	20
-59.5	20.5	205
-59	21	21
-58.5	21.5	215
-58	22	22
-57.5	22.5	225
-57	23	23
-56.5	23.5	235
-56	24	24
-55.5	24.5	245
-55	25	25
-54.5	25.5	255
-54	26	26
-53.5	26.5	265
-53	27	27
-52.5	27.5	275
-52	28	28
-51.5	28.5	285
-51	29	29
-50.5	29.5	295
-50	30	30
-49.5	30.5	305
-49	31	31

-48.5	31.5	315
-48	32	32
-47.5	32.5	325
-47	33	33
-46.5	33.5	335
-46	34	34
-45.5	34.5	345
-45	35	35
-44.5	35.5	355
-44	36	36
-43.5	36.5	365
-43	37	37
-42.5	37.5	375
-42	38	38
-41.5	38.5	385
-41	39	39
-40.5	39.5	395
-40	40	40
-39.5	40.5	405
-39	41	41
-38.5	41.5	415
-38	42	42
-37.5	42.5	425
-37	43	43
-36.5	43.5	435
-36	44	44
-35.5	44.5	445
-35	45	45
-34.5	45.5	455
-34	46	46
-33.5	46.5	465
-33	47	47
-32.5	47.5	475
-32	48	48
-31.5	48.5	485
-31	49	49
-30.5	49.5	495
-30	50	50
-29.5	50.5	505
-29	51	51
-28.5	51.5	515
-28	52	52
-27.5	52.5	525
-27	53	53
-26.5	53.5	535
-26	54	54
-25.5	54.5	545
-25	55	55
-24.5	55.5	555
-24	56	56
-23.5	56.5	565
-23	57	57
-22.5	57.5	575
-22	58	58
-21.5	58.5	585
-21	59	59
-20.5	59.5	595
-20	60	60
-19.5	60.5	605
-19	61	61
-18.5	61.5	615
-18	62	62
-17.5	62.5	625
-17	63	63
-16.5	63.5	635
-16	64	64
-15.5	64.5	645
-15	65	65
-14.5	65.5	655
-14	66	66
-13.5	66.5	665

-13	67	67
-12.5	67.5	675
-12	68	68
-11.5	68.5	685
-11	69	69
-10.5	69.5	695
-10	70	70
-9.5	70.5	705
-9	71	71
-8.5	71.5	715
-8	72	72
-7.5	72.5	725
-7	73	73
-6.5	73.5	735
-6	74	74
-5.5	74.5	745
-5	75	75
-4.5	75.5	755
-4	76	76
-3.5	76.5	765
-3	77	77
-2.5	77.5	775
-2	78	78
-1.5	78.5	785
-1	79	79
-0.5	79.5	795
0	80	80
0.5	80.5	805
1	81	81
1.5	81.5	815
2	82	82
2.5	82.5	825
3	83	83
3.5	83.5	835
4	84	84
4.5	84.5	845
5	85	85
5.5	85.5	855
6	86	86
6.5	86.5	865
7	87	87
7.5	87.5	875
8	88	88
8.5	88.5	885
9	89	89
9.5	89.5	895
10	90	90
10.5	90.5	905
11	91	91
11.5	91.5	915
12	92	92
12.5	92.5	925
13	93	93
13.5	93.5	935
14	94	94
14.5	94.5	945
15	95	95
15.5	95.5	955
16	96	96
16.5	96.5	965
17	97	97
17.5	97.5	975
18	98	98

Extension COMMAND

- The RC code can be sent from Serial protocol commands

Protocol specification

Command structure: COMMAND + RC FORMAT + RC DATA + CR (0x0D)

COMMAND : ASCII CODE of 2 characters

Ex. RC : RC CODE

RC FORMAT : ASCII CODE of 3 characters

Ex. **KSK** : KASEIKYO FORMAT

SHP : SHARP FORMAT

RC DATA : ASCII CODE of 7 characters

※For details of the RC CODE , please refer to the IR remote control code list.

KASEIKYO FORMAT

REMOTE ID SET : 1

K4-1 : MAIN ZONE																											
No.	GENRE2				Data												ID				parity				Key Name		
	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48			
RCKSK0410002	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	ALL POWER ON		
RCKSK0410003					1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	ALL POWER OFF		
RCKSK0410006					0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	MAIN ZONE ON		
RCKSK0410007					1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	MAIN ZONE OFF		

SHARP FORMAT

No.	Data (C6~C11)	Key Name	No.	Data (C6~C11)	Key Name
RCSHP0230032	000001	ENTER	RCSHP0230048	000011	MUTING
RCSHP0230033	100001	POWER ON	RCSHP0230049	100011	MASTER VOLUME UP
RCSHP0230034	010001	POWER OFF	RCSHP0230050	010011	MASTER VOLUME DOWN
RCSHP0230035	110001	DVD	RCSHP0230051	110011	SL LEVEL UP
RCSHP0230036	001001	STANDARD(DOLBY/DTS SURR.)	RCSHP0230052	001011	SL LEVEL DOWN
RCSHP0230037	101001	SL LEVEL DOWN	RCSHP0230053	101011	MASTER LEVEL UP

The example of a command * <CR> is the meaning of 0x0D.

RCKSK0410002<CR> : All Power ON by using KASEIKYO FORMAT

RCSHP0230033<CR> : All Power ON by using SHARP FORMAT