

RS-232C standard command specification

MODEL: **RX-V1900**
 HTR-6290

Revision 1.00

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1. Outline

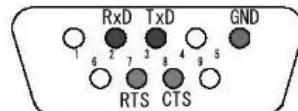
RX-V1900 in this protocol refers to the RX-V1900 and HTR-6290.

1.1 Connection

5 wire system

RX-V1900 Slave	TxD(PIN3) Receive GND(PIN5) CTS(PIN8) RTS(PIN7)	Transpose <-----> Ground <-----> Permit to send data <----->	RxD(PIN2) TxT(PIN3) GND(PIN5) RTS(PIN7) CTS(PIN8)
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HOST.
master



*When not connected, data transmission to RX-V1900 is prohibited (CTS port pull down).

1.2 RS-232C Settings

*Full duplex, start-stop synchronization communication

Baud rate	9600bps
Data bits	8
Parity	No
Stop bit	1bit
Handshaking	Hardware

*The RX-V1900 RTS port outputs at low level when the AC plug is disconnected.

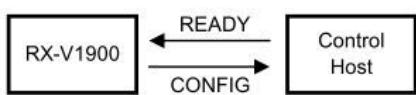
If RTS output stays low even when the AC plug is connected, a problem may occur.

1.3 Data block timeout

It takes the RX-V1900 a maximum of 500msec to send one data block. If a complete data block is not received within 500msec, cancel the transaction. A problem may occur.

2. Start Commands

2.1 Starting Communication

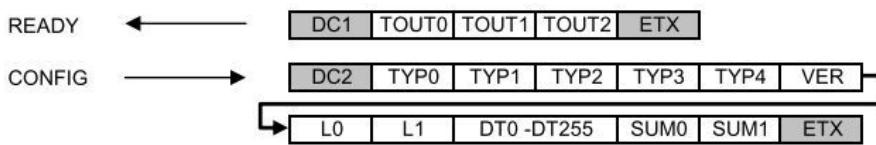


The Ready command is the first command to be sent to the RX-V1900 at the start of communication. TOUT0 - 2 in the Ready Command sets communication timeout.

RX-V1900 sends a Configuration command (Model ID, software version and setting data) to the host in reply to the Ready command.

The RX-V1900 will send a Configuration command within 1 sec. after receiving a Ready command from the host. If not, send a Ready Command again (max 5 times).

If the RX-V1900 won't send a Configuration command after the fifth retry, cancel the transaction because there may be a problem.



*TYPx Model ID = "R0240" (RX-V1900)
 Model ID = "R0241" (HTR-6290)

*VER Software Version

*SUM The sum of all data except for the header and footer

function name	function	data (ASCII)	range (HEX)
TOUT0 - 2	communication timeout	0 - 9, A - F	0 - 0FFF

*timeout between the header and the footer

*timeout=0 means no timeout

function name	function	data (ASCII)	range (HEX)
TYP0 - 4	model ID	0 - 9, A - F	voluntary
VER	software version	A - Z	voluntary
L0 - 1	data length	0 - 9, A - F	0 - 0xFF
DT0 - 255	data	0 - 9, A - F	0 - 0xF
SUM0	upper 4 bit of SUM	0 - 9, A - F	0 - 0xF
SUM1	lower 4 bit of SUM	0 - 9, A - F	0 - 0xF

***Data Structure of Configuration Command**

When the power is OFF, only DT0,1,...,9 are sent to the Host.

data	Report		
DT0	-	Fixed Baud Rate	Don't care ('@')
DT1	-	Fixed Receive Buffer	Don't care ('E')
DT2	-	Fixed Receive Buffer	Don't care ('0')
DT3	-	Fixed Command Timeout	Don't care ('1')
DT4	-	Fixed Command Timeout	Don't care ('9')
DT5	-	Fixed Command Timeout	Don't care ('0')
DT6	-	Fixed Handshaking	Don't care ('0')
DT7	00	0 / 2 System	0: OK / 1: Busy / 2: Standby
DT8	20	0 - 7 Power	Main Room / Zone2 / Zone3 Power Status (All off , All on, Main on...)
DT9	21	0 - F Input	Upper 4 bit
DT10		0 - F Input	Lower 4 bit
DT11	22	0 - 8 Audio Select	0: Auto / 3: COAX/OPT / 4: Analog / 8:HDMI
DT12	23	0 - 1 Audio Mute	0: Off / 1: On
DT13	24	0 - E Zone2 Input	0: PHONO / 1: CD / 2: TUNER / 3: MD/CD-R / 4: MD/TAPE / 5: DVD / 6: TV / 7: CBL/SAT 8: DOCK (BLUETOOTH) / 9: VCR / A: DVR / B: SIRIUS** / C: V-AUX / D: USB* / E: XM** F: BD/HD DVD *Except USA & Canada **Only USA & Canada
DT14	25	0 / 1 Zone2 Mute	0: Off / 1: On
DT15	26	0 - F Master Volume	Upper 4 bit
DT16		0 - F Master Volume	Lower 4 bit
DT17	27	0 - F Zone2 Volume	Upper 4 bit
DT18		0 - F Zone2 Volume	Lower 4 bit
DT19	28	0 - F Program	Upper 4 bit
DT20		0 - F Program	Lower 4 bit
DT21	28	0 / 1 Effect	0: Off / 1: On
DT22	2D	0 - 6 Extended Surround	0: Off / 1: EX/ES / 3: Auto / 4: EX / 5: PLIIx Movie / 6: PLIIx Music 7: Neural THX
DT23	2B	1 - 2 Short Message	1: On / 2: Off
DT24	2C	0 - 4 System Sleep	0: 120 / 1: 90 / 2: 60 / 3: 30 / 4: OFF
DT25	29	0 - 4 Tuner Preset Page	0: Page A / 1: Page B / 2: Page C / 3: Page D / 4: Page E
DT26	2A	0 - 7 Tuner Preset Number	0: No.1 / 1: No.2 / 2: No.3 / 3: No.4 / 4: No.5 / 5: No.6 / 6: No.7 / 7: No.8
DT27	BB	0 - 2 Night Mode	Upper 4 bit 0: OFF / 1:Cinema / 2:Music
DT28	BB	0 - 2 Night Mode Parameter	Lower 4 bit 0:Low / 1:Mid / 2:High
DT29	2E	0 / 1 Speaker Relay A	0: Off / 1: On
DT30	2F	0 / 1 Speaker Relay B	0: Off / 1: On
DT31	10	0 - F Format	Upper 4 bit
DT32		0 - F Format	Lower 4 bit
DT33	11	0 - F Sampling	Upper 4 bit
DT34		0 - F Sampling	Lower 4 bit
DT35	12	0 - F Channel Front/Rear	0: 1+1 / 1: 1/0 / 2: 2/0 / 3: 3/0 / 4: 2/1 / 5: 3/1 / 6: 2/2 / 7: 3/2 / 8: 2/3 / 9: 3/3 A: 2/4 / B: 3/4 / C: MLT / F: ---
DT36	34	0 / 1 Head Phone	0: Off / 1: On
DT37	35	0 / 1 Tuner Band	0: FM / 1: AM
DT38	13	0 - F Channel LFE	0: 0.1 / 1: 0.2 / F: ---
DT39	36	0 / 1 Trigger1 Output	0: Low / 1: High
DT40	5E	0 - 2 Decoder Mode	0: Auto / 1:DTS / 2:AAC* *Only Japanese Model
DT41	39	0 - 2 Dual Mono	0: Main / 1:Sub / 2:All (Only Japanese Model)
DT42	3A	0 - 3 Trigger1 Control	0: All (Zone1-3) / 1:Main / 2: Zone2 / 3: Zone3
DT43		Don't care	
DT44	3B	0 - 3 Trigger2 Control	0: All (Zone1-3) / 1:Main / 2: Zone2 / 3: Zone3
DT45	3C	0 / 1 Trigger2 Output	0: Low / 1: High
DT46	3D	0 / 1 Speaker B set	0: Main / 1: Zone B
DT47	3E	0 - 3 Zone 2 Amplifier	0: EXT / 1: INT: Speaker[1] / 2: INT: Speaker[2] / 3: INT Both
DT48	40	0 - F Level Front R	Upper 4 bit
DT49		0 - F Level Front R	Lower 4 bit
DT50	41	0 - F Level Front L	Upper 4 bit
DT51		0 - F Level Front L	Lower 4 bit
DT52	42	0 - F Level Center	Upper 4 bit
DT53		0 - F Level Center	Lower 4 bit
DT54	43	0 - F Level Surround R	Upper 4 bit
DT55		0 - F Level Surround R	Lower 4 bit
DT56	44	0 - F Level Surround L	Upper 4 bit
DT57		0 - F Level Surround L	Lower 4 bit
DT58	45	0 - F Level Surround Back R	Upper 4 bit
DT59		0 - F Level Surround Back R	Lower 4 bit
DT60	46	0 - F Level Surround Back L	Upper 4 bit
DT61		0 - F Level Surround Back L	Lower 4 bit

DT62	47	0 - F	Level Presence R	Upper 4 bit
DT63		0 - F	Level Presence R	Lower 4 bit
DT64	48	0 - F	Level Presence L	Upper 4 bit
DT65		0 - F	Level Presence L	Lower 4 bit
DT66	49	0 - F	Level Subwoofer	Upper 4 bit
DT67		0 - F	Level Subwoofer	Lower 4 bit
DT68	90	0 - 4	XM Preset Page	0: Page A / 1: Page B / 2: Page C / 3: Page D / 4: Page E (Only USA & Canada)
DT69	91	0 - 7	XM Preset Number	(Only USA & Canada)
DT70	92	0 - 2	XM Search Mode	0: All CH / 1: Category / 2: Preset (Only USA & Canada)
DT71	93	1 - 3	On Screen	1: 10sec / 2: 30sec / 3: Always
DT72	94	0 - F	XM Channel Number	Upper 4 bit (Only USA & Canada)
DT73		0 - F	XM Channel Number	Lower 4 bit (Only USA & Canada)
DT74	51	0 - F	LFE Level SP	Upper 4 bit
DT75		0 - F	LFE Level SP	Lower 4 bit
DT76	52	0 - F	LFE Level HP	Upper 4 bit
DT77		0 - F	LFE Level HP	Lower 4 bit
DT78	53	0 - F	Manual Audio Delay	Upper 4 bit
DT79		0 - F	Manual Audio Delay	Lower 4 bit
DT80	5B	0 - F	Initial Volume	Upper 4 bit
DT81		0 - F	Initial Volume	Lower 4 bit
DT82	5A	0 - A	Max Volume	0: -30dB / 1: -25dB / 2: -20dB / 3: -15dB / 4: -10dB / 5: -5dB / 6: 0dB / 7: 5dB / 8: 10dB / 9: 15dB / A: 16.5dB
DT83	5F	0 / 1	Decoder Mode Set	0: Auto / 1: Last
DT84	60	0 / 1	Audio Select Set	0: Auto / 1: Last
DT85	61	0 - 4	Dimmer	0: -4 / 1: -3 / 2: -2 / 3: -1 / 4: 0
DT86		Don't care		
DT87	62	0 - A	OSD Shift / GUI position	Upper 4 bit
DT88		0 - A	OSD Shift / GUI position	Lower 4 bit
DT89	63	0 / 1	Gray back	0: Off / 1: Auto
DT90	69	0 / 1	Video conversion	0: Off / 1: On
DT91	64	0 - 2	D. Rang SP	0: MAX / 1: STD / 2: MIN
DT92	65	0 - 2	D. Rang HP	0: MAX / 1: STD / 2: MIN
DT93	66	0 / 1	Zone2 Volume Out	0: Variable / 1: Fixed
DT94	6B	0 / 1	Zone3 Volume Out	0: Variable / 1: Fixed
DT95	68	0 / 1	Memory guard	0: Off / 1: On
DT96	70	0 - 2	SP set Center	0: Large / 1: Small / 2: None
DT97	71	0 / 1	Front	0: Large / 1: Small
DT98	72	0 - 2	Sur. L/R	0: Large / 1: Small / 2: None
DT99	73	0 - 4	Sur. Back	0: Large x2 / 1: Large x1 / 2: Small x2 / 3: Small x1 / 4: None
DT100	3F	0 - 3	Zone3 Amplifier	0: EXT / 1: INT: Speaker[1] / 2: INT: Speaker[2] / 3: INT Both
DT101	74	0 / 1	SP set Presence	0: Yes / 1: None
DT102	75	0 - 2	LFE/BASS	0: SWFR / 1: Front / 2: Both
DT103	76	0 / 1	Subwoofer Phase	Upper 4 bit : Phase 0: Normal / 1: Reverse
DT104		Subwoofer Phase		
DT105	80	0 / 1	Test mode	0: OFF / 1: ON
DT106	A7	0 - 2	EQ Select	0: Auto PEQ / 1: GEQ / 2: Off
DT107	58	0 - F	Wall Paper	0: Yes / E: Gray / F: None
DT108		Don't care		
DT109		Don't care		
DT110		Don't care		
DT111	8F	0 / 1	HDMI Support Audio	0: AMP / 1: AMP+TV
DT112	85	0 / 1	Component I/P	0: Off / 1: On
DT113	86	0 / 1	HDMI I/P	0: Off / 1: On
DT114	B6	0 - 5	GUI Language	0: English / 1: Japanese / 2: French / 3: German / 4: Spanish / 5: Russian
DT115	87	0 - 4	HDMI Up-Scaling	0: Through / 1: 480p(576p) / 2: 1080i / 3: 720p / 4: 1080p
DT116	88	0 - 2	HDMI Aspect	0: Through / 1: 16: 9 Normal / 2: Smart Zoom
DT117	8A	0 - 2	THX SB Speaker Distance	0: undef (0.3m) / 1: 1.4ft (0.3-1.2m) / 2: over 4ft (1.2m)
DT118	6C	0 - 2	Zone OSD	0: Off / 1: Zone2 / 2: Zone2 & Zone3
DT119	6E	0 - 9	Decoder Select	0: Pro Logic / 1: PLIIx Movie / 2: PLIIx Music / 3: PLIIx Game / 4: Neo: 6 Cinema / 5: Neo: 6 Music / 6: CSII Cinema* / 7: CSII Music* / 9: Neural Sur. *Only Japanese Model
DT120	B5	0 / 1	Remote ID Tuner	0: ID1 / 1: ID2
DT121	B0	0 / 1	Advanced Setup	0: Off / 1: On
DT122	B1	0 / 1	Remote ID	0: ID1 / 1: ID2
DT123	B2	0 / 1	Fan Control Mode	0: Auto / 1: Cont.
DT124	B3	0 / 1	Speaker Impedance	0: 8 ohm / 1: 6 ohm (Except Japanese Model)
DT125	B4	0 / 1	Tuner Setup	0: AM10/FM100 / 1: AM9/FM50 (Only Destination R & L)
DT126	8C	0 / 1	Pure Direct	0: Off / 1: On
DT127	A0	0 - E	Zone3 Input	0: PHONO / 1: CD / 2: TUNER / 3: MD/CD-R / 4: MD/TAPE / 5: DVD / 6: TV / 7: CBL/SAT 8: DOCK (BLUETOOTH) / 9: VCR / A: DVR / B: SIRIUS** / C: V-AUX / D: USB* / E: XM** F: BD/HD DVD

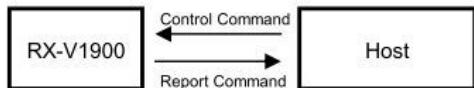
*Except USA & Canada **Only USA & Canada

DT128	A1	0 / 1 Zone3 Mute	0: Off / 1:On	
DT129	A2	0 - F Zone3 Volume	Upper 4 bit	
DT130		0 - F	Lower 4 bit	
DT131	B9	0 / 1 Remote Sensor	0: On / 1: Off	
DT132	7B	0 - C Multi CH Select	0: 6ch / 2: 8ch CD / 3: 8ch MD/CD-R / 4: 8ch MD/TAPE / 5: 8ch DVD / 6: 8ch TV / 7: 8ch CBL/SAT / 9: 8ch VCR / A: 8ch DVR / C: 8ch V-AUX /F: 8ch BD/HD DVD	
DT133	BA	0 / 1 Remote ID XM	0: ID1 / 1: ID2 (Only USA & Canada)	Deletion
DT134	BB	0 / 1 Bi – AMP	0: On / 1: Off	
DT135	7E	0 - 8 Subwoofer Crossover	0: 40Hz / 1: 60Hz / 2: 80Hz / 3: 90Hz / 4: 100Hz / 5: 110Hz / 6: 120Hz / 7: 160Hz / 8: 200Hz	
DT136	BC	0 / 1 TV Format	0: PAL / 1: NTSC	Deletion
DT137	7D	0 / 1 PR/SB Priority	0: Presence / 1: Surround Back	Deletion
DT138		Don't care		
DT139	4B	0 - F Zone2 Tone Control Bass	Upper 4 bit	
DT140		0 - F	Lower 4 bit	
DT141	4C	0 - F Zone2 Tone Control Treble	Upper 4 bit	
DT142		0 - F	Lower 4 bit	
DT143	A8	0 / 1 Tone Bypass	0: Auto / 1: Off	
DT144	BD	0 / 1 Wake on RS-232C Access	0: No / 1: Yes	
DT145	14	0 - F Bit Rate	Upper 4 bit	
DT146		0 - F Bit Rate	Lower 4 bit	
DT147	15	0 - F Dialog	Upper 4 bit	
DT148		0 - F Dialog	Lower 4 bit	
DT149	67	0 - 1 FL Scroll	0: Continue / 1: Once	
DT150	6F	0 - C Multi CH BGV	0: Off / 1: Last / 5: DVD / 6: DTV/CBL / 9: VCR / A: DVR / C: V-AUX / F: BD	Deletion
DT151	96	0 - 1 iPod Charge on Standby	0: Off / 1: Auto	
DT152	97	0 - 2 iPod Repeat	0: Off / 1: One / 2: All	
DT153	98	0 - 2 iPod Shuffle	0: Off / 1: Songs / 2: Albums	
DT154	99	0 - 2 USB Repeat	0: Off / 1: Single / 2: All (Except USA & Canada)	
DT155	9A	0 - 1 USB Shuffle	0: Off / 1: On (Except USA & Canada)	
DT156	A9	0 - A Zone2 Max Volume	0: -30dB / 1: -25dB / 2: -20dB / 3: -15dB / 4: -10dB / 5: -5dB / 6: 0dB / 7: 5dB / 8: 10dB / 9: 15dB / A: 16.5dB	
DT157	AB	0 - F Zone2 Initial Volume	Upper 4 bit	
DT158		0 - F Zone2 Initial Volume	Lower 4 bit	
DT159	AD	0 - F Zone2 Balance	Upper 4 bit	
DT160		0 - F Zone2 Balance	Lower 4 bit	
DT161	AA	0 - A Zone3 Max Volume	0: -30dB / 1: -25dB / 2: -20dB / 3: -15dB / 4: -10dB / 5: -5dB / 6: 0dB / 7: 5dB / 8: 10dB / 9: 15dB / A: 16.5dB	
DT162	AC	0 - F Zone3 Initial Volume	Upper 4 bit	
DT163		0 - F Zone3 Initial Volume	Lower 4 bit	
DT164	AE	0 - F Zone3 Balance	Upper 4 bit	
DT165		0 - F Zone3 Balance	Lower 4 bit	
DT166	9B	0 - 2 NET/USB Source Select	0: PC/MCX / 1: NET Radio / 2: USB	Deletion
DT167	BF	0 - 1 Monitor Check	0: Skip / 1: Yes	
DT168	4D	0 - F Zone3 Tone Control Bass	Upper 4 bit	
DT169		0 - F	Lower 4 bit	
DT170	4E	0 - F Zone3 Tone Control Treble	Upper 4 bit	
DT171		0 - F	Lower 4 bit	
DT172	16	0 - F Flag	Upper 4 bit	
DT173		0 - F	Lower 4 bit	
DT174	56	0 - F Auto Audio Delay	Upper 4bit	
DT175		0 - F Auto Audio Delay	Lower 4bit	
DT176	59	0 - 1 HDMI Lipsync	0: Auto / 1:Off	
DT177	5C	0 - 1 Extended Surround Auto/Last	0: Auto / 1: Last	
DT178	5D	0 - 1 Adaptive DSP Level Auto/Off	0: Auto / 1: Off	
DT179	6D	0 - 1 Adaptive DRC Auto/Off	0: Auto / 1: Off	
DT180	57	0 - 1 3D DSP	0: Off / 1: On	
DT181	C0	0 - 4 SIRIUS Preset Page	0: Page A / 1: Page B / 2: Page C / 3: Page D / 4: Page E (Only USA & Canada)	
DT182	C1	0 - 7 SIRIUS Preset Number	0: No.1 / 1: No.2 / 2: No.3 / 3: No.4 / 4: No.5 / 5: No.6 / 6: No.7 / 7: No.8 (Only USA & Canada)	
DT183	C2	0 - 2 SIRIUS Search Mode	0: All CH / 1: Category / 2: Preset (Only USA & Canada)	
DT184	C3	0 - F SIRIUS Channel Number	Upper 4bit (Only USA & Canada)	

DT185	C4	0 - F SIRIUS Channel Number	Lower 4bit (Only USA & Canada)
DT186	C5	0 - 4 MAIN Sleep	0: 120 / 1: 90 / 2: 60 / 3: 30 / 4: OFF
DT187	C6	0 - 4 ZONE2 Sleep	0: 120 / 1: 90 / 2: 60 / 3: 30 / 4: OFF
DT188	C7	0 - 4 ZONE3 Sleep	0: 120 / 1: 90 / 2: 60 / 3: 30 / 4: OFF
DT189	8D	0 - 1 Pure Direct Video	0: Audio / 1: Audio+Video
DT190	8D	0 - 2 PEQ Select Type	0: Natural / 1: Flat / 2:Front

*OSD = On Screen Display

3. Control Commands



* The RX-V1900 can receive control commands only when the power is on (except Power commands and System commands*).

* Do not send any control commands when the system status is Wait. No commands are permitted until the RX-V1900 reports OK.

* The RX-V1900 will send a Report Command** within 1 sec of receiving the Control Command. If no Report Command is received, resend control command (max 5 times).

If the RX-V1900 doesn't send a Report Command after the fifth retry, cancel the transaction because there may be a problem.

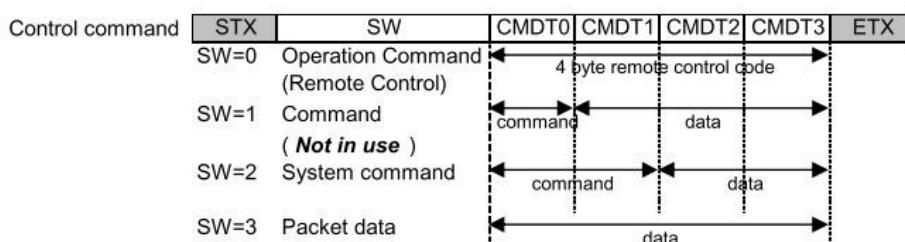
* 'SW' switches the type of the control command. When the 'SW' is set to '0', you can control the RX-V1900 remotely via RS-232C.

* The RX-V1900 will only send one report command for each type of control. The Report Command will report only the final status of all settings in strings of commands (may not report all steps in a status, only final status).

For example, if the user sets the input selector on the unit to DTV just after the host sends a command to change the input to CD, the RX-V1900 may report only the final status that the input was changed to DTV by the system operation.

*System command, **Report command --> described in later

- Command Switch (changing the type of control command)



function name	function	data (ASCII)	range (HEX)
SW	command switch	0 - 9	0 - 9
CMDT0 - 3	command & data	0 - 9, A - F	variable

* 'SW' switches the command type of the Control Command.

SW=0 : 4 byte command for remote control code (**CMDT0 = '7'**)

SW=1 : 1 byte command 0 - F (HEX expression in ASCII)

SW=2 : 2 byte command 10 - FF (HEX expression in ASCII)

SW=3 : 4 byte packet data for test data transmission

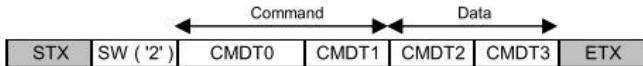


function name	function	data (ASCII)	range (HEX)
SW	command switch	0	0
CMDT0	command	F	F
CMDT1 - 8	command	0 - 9, A - F	variable

* 'SW' switches the command type of the Control Command.

SW=0 : 9 byte command for remote control code (**CMDT0 = 'F'**)

3.1 System Commands (SW = '2')



System Commands can be made by setting the 'SW' byte in the Control Command to '2'. With System commands you can control the RX-V1900's system settings (Report Command Enable / Disable, Report Command delay, etc...)

With a System Command you can also...

- set absolute master volume value.
- send text strings to the On Screen Display (OSD).
- request RX-V1900 text data regarding tuner freq., master volume, input name, zone 2 input name.

SW	Command			Data			Report command			Note
	CMDT0	CMDT1	Function	CMDT2	CMDT3	Parameter	Type	RCMD1, RDAT1,2	RDAT1,2	
2	0	0	Report Command Code	0	0	Enable	0	00	00(OK)	
				0	1	Disable				
2	0	1	Time between two report commands (Report Command Delay)	0	0	real time	0	00	00(OK)	
				0	1	50ms				
				0	2	100ms				
				0	3	150ms				
				0	4	200ms				
				0	5	250ms				
				0	6	300ms				
				0	7	350ms				
				0	8	400ms				
2	1	0	OSD message start command	0	0	Start	0	00	00(OK)	
2	2	0	Tuning frequency text request Main volume value text request Zone2 volume value text request Main Input name text request Zone2 input name text request Zone3 volume value text request Zone3 input name text request	0	0		Refer to the following section			
				0	1					
				0	2					
				0	3					
				0	4					
				0	5					
				0	6					
2	2	B	Short Message	0	1	ON	0	2B		
				0	2	OFF				
2	2	F	Firmware version request	0	0		0	00		
2	3	0	Main volume direct setting	X	X		0	26		
2	3	1	Zone2 volume direct setting	X	X		0	27		
2	3	4	Zone3 volume direct setting	X	X		0	A2		
2	3	8	Mute Type	0	0	Full	0	A5		
				0	1	-20dB				
2	3	E	Zone2 Amplifier	0	0	EXT	0	3E		
				0	1	INT: Speaker[1]				
				0	2	INT: Speaker[2]				
				0	3	INT: Both				
2	3	F	Zone3 Amplifier	0	0	EXT	0	3F		
				0	1	INT: Speaker[1]				
				0	2	INT: Speaker[2]				
				0	3	INT: Both				
2	4	0	Level Front R	X	X		0	40		
2	4	1	Level Front L	X	X		0	41		
2	4	2	Level Center	X	X		0	42		
2	4	3	Level Surround R	X	X		0	43		
2	4	4	Level Surround L	X	X		0	44		
2	4	5	Level Presence R	X	X		0	47		
2	4	6	Level Presence L	X	X		0	48		
2	4	7	Level Surround Back R	X	X		0	45		
2	4	8	Level Surround Back L	X	X		0	46		
2	4	9	Level Subwoofer (1)	X	X		0	49		
2	4	A	Level Subwoofer (2)	X	X		0	4A		
2	4	B	Zone2 Tone Control Bass	X	X		0	4B		
2	4	C	Zone2 Tone Control Treble	X	X		0	4C		
2	4	D	Zone3 Tone Control Bass	X	X		0	4D		
2	4	E	Zone3 Tone Control Treble	X	X		0	4E		
2	5	1	LFE Level for Speaker	X	X		0	51		
2	5	2	LFE Level for Headphone	X	X		0	52		
2	5	3	Manual Audio Delay	X	X		0	53		
2	5	6	HDMI Auto Audio Delay				0	56		
2	5	7	DSP 3D	0	0	Off	0	57		
				0	1	On				
2	5	8	Wall Paper	0	0	Yes	0	58		Deletion
				0	E	Gray				
				0	F	None				

SW	Command			Data			Report command			Note
	CMDT0	CMDT1	Function	CMDT2	CMDT3	Parameter	Type	RCMD1, RDAT1, RDAT1,2		
2	5	9	HDMI Auto Lipsync	0	0	Auto	0	59		
				0	1	Off				
2	5	A	MAX Volume	X	X		0	5A		
2	5	B	Initial Volume	X	X			5B		
2	5	C	Extended Surround Set	0	0	Auto	0	5C		
				0	1	Last				
2	5	D	Adaptive DSP Level	0	0	Auto	0	5D		
				0	1	Off				
2	5	E	Decoder Mode	0	0	AUTO	0	22		
				0	1	DTS				
				0	2	AAC				Only Japan
2	5	F	Decoder Mode Set	0	0	Auto	0	5F		
				0	1	Last				
2	6	0	Audio Select Set	0	0	Auto	0	60		
				0	1	Last				
2	6	1	Dimmer	0	0	-4	0	61		
				0	1	-3				
				0	2	-2				
				0	3	-1				
				0	4	0				
2	6	2	OSD Shift	X	X		0	62		
2	6	3	Gray Back	0	0	Off	0	63		
				0	1	Auto				
2	6	4	Dynamic Range for Speaker	0	0	MAX	0	64		
				0	1	STD				
				0	2	MIN				
2	6	5	Dynamic Range for Headphone	0	0	MAX	0	65		
				0	1	STD				
				0	2	MIN				
2	6	6	Zone2 Volume Out	0	0	Variable	0	66		
				0	1	Fixed				
2	6	7	FL Scroll	0	0	Continue	0	67		
				0	1	Once				
2	6	8	Memory Guard	0	0	Off	0	68		
				0	1	On				
2	6	9	Video Conversion	0	0	Off	0	69		
				0	1	On				
2	6	B	Zone3 Volume Out	0	0	Variable	0	6B		
				0	1	Fixed				
2	6	C	Zone OSD	0	0	Off	0	6C		Deletion
				0	1	Zone2				
				0	2	Zone2 & 3				
2	6	D	Adaptive DRC	0	0	Auto	0	6D		
				0	1	Last				
2	6	F	Multi CH BGV	0	0	Off	0			Deletion
				0	1	Last				
				0	5	DVD				
				0	6	DTV/CBL				
				0	7	CBL/SAT				
				0	9	VCR				
				0	A	DVR				
				0	C	V-AUX				
				0	F	BD/HD DVD				
2	7	0	Speaker Set Center	0	0	Large	0	70		
				0	1	Small				
				0	2	None				
2	7	1	Speaker Set Front	0	0	Large	0	71		
				0	1	Small				
2	7	2	Speaker Set Surround	0	0	Large	0	72		
				0	1	Small				
				0	2	None				
2	7	3	Speaker Set Surround Back	0	0	Large x2	0	73		
				0	1	Large x1				
				0	2	Small x2				
				0	3	Small x1				
				0	4	None				
2	7	4	Speaker Set Presence	0	0	Yes	0	74		
				0	1	None				
2	7	5	Speaker Set Bass Out	0	0	Subwoofer	0	75		
				0	1	Front				
				0	2	Both				

SW	Command			Data			Report command			Note
	CMDT0	CMDT1	Function	CMDT2	CMDT3	Parameter	Type	RCMD1, RDAT1,2		
2	7	6	Speaker Set Subwoofer Phase	0	X	Normal	0	76		Lower 4 bit: Don't care
				1	X	Reverse				
2	7	B	Multi CH Select	0	0	6ch	0	7B		Deletion
				0	2	8ch CD				
				0	3	8ch MD/CD-R				
				0	4	8ch MD/TAPE				
				0	5	8ch DVD				
				0	6	8ch TV				
				0	7	8ch CBL/SAT				
				0	9	8ch VCR				
				0	A	8ch DVR				
				0	C	8ch V-AUX				
				0	F	8ch BD/HD DVD				
2	7	D	PR/SB Priority	0	0	Presence	0	7D		Deletion
				0	1	Sur. Back				
2	7	E	Subwoofer Crossover	0	0	40Hz	0	7E		
				0	1	60Hz				
				0	2	80Hz				
				0	3	90Hz				
				0	4	100Hz				
				0	5	110Hz				
				0	6	120Hz				
				0	7	160Hz				
				0	8	200Hz				
2	8	0	Test Tone	0	0	Off	0	80		
				0	1	On				
2	8	5	Component I/P	0	0	Off	0	85		
				0	1	On				
2	8	6	HDMI I/P	0	0	Off	0	86		
				0	1	On				
2	8	7	HDMI Up-Scaling	0	0	Through	0	87		
				0	1	480p(576p)				
				0	2	1080i				
				0	3	720p				
				0	4	1080p				
2	8	8	HDMI Aspect	0	0	Through	0	88		
				0	1	16:9 Normal				
				0	2	Smart Zoom				
2	8	A	THX SB Speaker Dist.	0	0	under 1ft (0.3m)	0	8A		
				0	1	1-4ft (0.3-1.2m)				
				0	2	over 4ft (1.2m)				
2	8	B	Night Mode	0	0	Off	0	8B		
				1	0	Cinema Low				
				1	1	Cinema Mid				
				1	2	Cinema High				
				2	0	Music Low				
				2	1	Music Mid				
				2	2	Music High				
2	8	D	Pure Direct Video	0	0	Audio	0	8D		
				0	1	Audio+Video				
2	8	F	HDMI Support Audio	0	0	AMP	0	8F		
				0	1	AMP+TV				
2	9	3	On Screen	0	0	Off	0	93		
				0	1	10sec				
				0	2	30sec				
				0	3	Always				
2	9	4	XM Channel Number	X	X		0	94		Only USA & Canada
2	9	5	Hold / Release XM Display	0	0	Release	0	95		Only USA & Canada
				0	1	Hold				
2	9	6	iPod Charge on Standby	0	0	Off	0	96		
				0	1	Auto				
2	9	7	iPod Repeat	0	0	Off	0	97		
				0	1	One				
				0	2	All				
2	9	8	iPod Shuffle	0	0	Off	0	98		
				0	1	Songs				
				0	2	Albums				
2	9	9	USB Repeat	0	0	Off	0	99		Except USA & Canada
				0	1	Single				
				0	2	All				
2	9	A	USB Shuffle	0	0	Off	0	9A		Except USA & Canada
				0	1	On				

SW	Command			Data			Report command		Note
	CMDT0	CMDT1	Function	CMDT2	CMDT3	Parameter	Type	RCMD1, RDAT1,2	
2	9	C	USB Preset Recall	X	X		0	9C	Except USA & Canada
2	9	D	USB Preset Memory	X	X		0	9D	Except USA & Canada
2	A	7	EQ (Equalizer) Select	0	0	Auto PEQ	0	A7	
				0	1	GEQ			
				0	2	EQ Off			
2	A	8	Tone Control Auto Bypass	0	0	Auto	0	A8	
				0	1	Off			
2	A	9	Zone2 MAX Volume	X	X		0	A9	
2	A	A	Zone3 MAX Volume	X	X		0	AA	
2	A	B	Zone2 Initial Volume	X	X		0	AB	
2	A	C	Zone3 Initial Volume	X	X		0	AC	
2	A	D	Zone2 Balance	X	X		0	AD	
2	A	E	Zone3 Balance	X	X		0	AE	
2	A	F	Music Enhancer	0	0	Off	0	28	
				0	1	2ch Low			
				0	2	2ch High			
				0	3	7ch Low			
				0	4	7ch High			
2	B	0	Advanced Setup	0	0	Off	0	B0	Effective in STANDBY
				0	1	On			
2	B	1	Remote ID	0	0	ID1	0	B1	
				0	1	ID2			
2	B	2	Fan Control Mode	0	0	Auto	0	B2	
				0	1	Cont			
2	B	3	Speaker Impedance	0	0	8 ohm	0	B3	Except Japan
				0	1	6 ohm			
2	B	4	Tuner Frequency Step	0	0	10k/100kHz	0	B4	Only Destination R & L
				0	1	9k/50kHz			
2	B	5	Remote ID for Tuner	0	0	ID1	0	B5	Deletion
				0	1	ID2			
2	B	6	Language	0	0	English	0	B6	Deletion
				0	1	Japanese			
				0	2	French			
				0	3	German			
				0	4	Spanish			
				0	5	Russian			
2	B	7	User Preset	0	0	Cancel	0	B7	
				0	1	All			
				0	2	DSP Parameter			
				0	3	Video			
				0	4	Network			
2	B	8	Video Reset	0	0	Cancel	0	B8	
				0	1	Yes			
2	B	9	Remote Sensor	0	0	On	0	B9	
				0	1	Off			
2	B	A	Remote ID for XM	0	0	ID1	0	BA	Deletion
				0	1	ID2			
2	B	B	Bi-Amplifier	0	0	On	0	BB	
				0	1	Off			
2	B	C	TV Format	0	0	PAL	0	BC	Deletion
				0	1	NTSC			
2	B	D	Wake on RS-232C Access	0	0	No	0	BD	
				0	1	Yes			
2	B	E	Network Reset	0	0	Cancel	0	BE	
				0	1	Yes			
2	B	F	Monitor Check	0	0	Skip	0	BF	
				0	1	Yes			
2	C	3	SIRIUS Channel Number	X	X		0	C3	Only USA & Canada
				0	0	Release			
2	C	4	Hold/Release SIRIUS Display	0	1	Hold	0	C4	Only USA & Canada
				0	2				
2	C	5	Main Sleep	0	0	120	0	C5	
				0	1	90			
				0	2	60			
				0	3	30			
				0	4	OFF			
2	C	6	Zone2 Sleep	0	0	120	0	C6	
				0	1	90			
				0	2	60			
				0	3	30			
				0	4	OFF			

SW	Command			Data			Report command			Note
	CMDT0	CMDT1	Function	CMDT2	CMDT3	Parameter	Type	RCMD1,2	RDAT1,2	
2	C	7	Zone3 Sleep	0	0	120	0	C7		
				0	1	90				
				0	2	60				
				0	3	30				
				0	4	OFF				
2	C	8	PEQ Select Type	0	0	Natural	0	C8		
				0	1	Flat				
				0	2	Front				
2	C	9	Bluetooth Control	0	0	Pairing Start	0	C9		
				0	1	Pairing Cancel				
				0	2	Connect				
				0	3	Disconnect				

***OSD message function**

The OSD Message function can display a message of 16 characters to the RX-V1900's OSD for a few seconds.

The command sequence block will start by sending "start command" as mentioned above, followed by four bytes of packet data (SW:3) repeated four times. Then a message of sixteen characters (ASCII) will display and the command block will finish automatically.

(ex.) Want to display " Test message ! " characters to OSD.

1. Send the start command.

STX	2	1	0	0	0	ETX
-----	---	---	---	---	---	-----

2. Send SW:3 commands four times as follows.

STX	3	''	'T'	'e'	's'	ETX
STX	3	't'	''	'm'	'e'	ETX
STX	3	's'	's'	'a'	'g'	ETX
STX	3	'e'	''	'!'	''	ETX

3. The command block will be finished automatically.

Characters available for displaying the message are as follows:

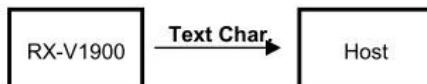
" "(SPACE) "!" "#" "%" "&" "(" ")" "+" "-" "." "0" "1" "2" "3" "4" "5" "6" "7" "8" "9" ":" "<" "=" ">" "?" "A" "B" "C" "D"
 "E" "F" "G" "H" "I" "J" "K" "L" "M" "N" "O" "P" "Q" "R" "S" "T" "U" "V" "W" "X" "Y" "Z" "[" "]" "_" "a" "b" "c" "d" "e" "f" "g"
 "h" "i" "j" "k" "l" "m" "n" "o" "p" "q" "r" "s" "t" "u" "v" "w" "x" "y" "z"

***Commands to get the display characters as text data (ASCII)**

This command can get certain text data (ASCII) from the RX-V1900 to be used by a host device as follows.

- Tuner frequency characters : " 1 07.9 "(MHz)
- Master volume value characters : "-40.0dB" / " MUTE"
- Input name : " MY PC " (Even renamed by "SET MENU:INPUT RENAME")
- Zone2 input name : " PS 3 " (Even renamed by "SET MENU:INPUT RENAME")

The response protocol for the text request commands are as follows.



RCMD0,1	COMMAND	0 - 9,A - F	0...0xFF
DDAT 0 - 8	DATA	0 - 9,A - Z SP	ASCII char. Space char.

Report Command

	DC1	RCMD0	RCMD1	DDAT 0	DDAT 1	DDAT 2	DDAT 3	DDAT 4	DDAT 5	DDAT 6	DDAT 7	DDAT 8	ETX
Tuner Frequency	DC1	0	0	SP	SP	X	X	X	X	X	X	X	ETX
Main Volume Value	DC1	0	1	SP	X	X	X	X	X	X	X	SP	ETX
Zone2 Volume Value	DC1	0	2	SP	X	X	X	X	X	X	X	X	ETX
Input Name	DC1	0	3	X	X	X	X	X	X	X	X	X	ETX
Zone2 Input Name	DC1	0	4	X	X	X	X	X	X	X	X	X	ETX
Zone3 Volume Value	DC1	0	5	SP	X	X	X	X	X	X	X	X	ETX
Zone3 Input Name	DC1	0	6	X	X	X	X	X	X	X	X	X	ETX

3.2 Operation Commands (SW = '0', CMDT0 = '7')

4 Byte Remote Control



SW	CMDT_	Function	Setting	Report Command		Note
				Type	RCMD1,2	
0	7 A 1 A	Main Volume	Up	0	26	
0	7 A 1 B		Down			
0	7 E A 2	Audio Mute	On (Full)	0	23	
0	7 E D F		On (-20dB)			
0	7 E A 3		Off			
0	7 A 1 4	Input	PHONO	0	21	
0	7 A 1 5		CD			
0	7 A 1 6		TUNER			
0	7 A 1 9		MD/CD-R			
0	7 A 1 8		MD/TAPE			Deletion
0	7 A C 8		BD/HDD DVD			
0	7 A C 1		DVD			
0	7 A 5 4		TV			
0	7 A C 0		CBL/SAT			
0	7 A 0 F		VCR			
0	7 A 1 3	Input	DVR			
0	7 A 5 5		V-AUX			
0	7 A 8 7		MULTI CH			
0	7 A B 4		XM			Only USA & Canada
0	7 A 3 9		SIRIUS			Only USA & Canada
0	7 E A 4	Multi CH Input	On	0	21	
0	7 E A 5		Off			
0	7 E 8 0	Pure Direct	On	0	8C	
0	7 E 8 2		Off			
0	7 E A 6	Audio Select	Auto	0	22	
0	7 E A 9		COAX/OPT			
0	7 E A A		Analog			
0	7 E D A		HDMI			
0	7 E D B	Decoder Mode	AUTO	0	5E	Deletion
0	7 E A 8		DTS			
0	7 E 3 B		AAC			
0	7 A D A	Zone2 Volume	Up	0	27	
0	7 A D B		Down			
0	7 E A 0	Zone2 Mute	On	0	25	
0	7 E A 1		Off			
0	7 A D 0	Zone2 Input	PHONO	0	24	
0	7 A D 1		CD			
0	7 A D 2		TUNER			
0	7 A D 4		MD/CD-R			
0	7 A D 3		MD/TAPE			Deletion
0	7 A C E		BD/HDD DVD			
0	7 A C D		DVD			
0	7 A D 9		TV			
0	7 A C C		CBL/SAT			
0	7 A D 6		VCR			
0	7 A D 7		DVR			
0	7 A D 8		V-AUX			
0	7 A B 8		XM			Only USA & Canada
0	7 A 3 A		SIRIUS			Only USA & Canada
0	7 A 1 D	All Zone Power	On	0	20	
0	7 A 1 E		Standby			
0	7 E 7 E	Main Zone Power	On	0	20	
0	7 E 7 F		Standby			
0	7 E B A	Zone2 Power	On	0	20	
0	7 E B B		Standby			
0	7 A E D	Zone3 Power	On	0	20	
0	7 A E E		STANDBY			
0	7 E 2 6	Zone3 Mute	On	0	A1	
0	7 E 6 6		Off			
0	7 A F D	Zone3 Volume	Up	0	A2	
0	7 A F E		Down			

SW	CMDT_				Function	Setting	Report Command		Note
	0	1	2	3			Type	RCMD1,2	
0	7	A	F	1	Zone3 Input	PHONO	0	A0	
0	7	A	F	2		CD			
0	7	A	F	3		TUNER			
0	7	A	F	5		MD/CD-R			
0	7	A	F	4		MD/TAPE			Deletion
0	7	A	F	B		BD/HD DVD			
0	7	A	F	C		DVD			
0	7	A	F	6		TV			
0	7	A	F	7		CBL/SAT			
0	7	A	F	9		VCR			
0	7	A	F	A		DVR			
0	7	A	F	0		V-AUX			
0	7	A	B	9		XM			Only USA & Canada
0	7	A	3	B		SIRIUS			Only USA & Canada
0	7	E	B	0	Short Message	Off	0	2B	Deletion
0	7	E	B	1		On			
0	7	E	B	2		Full			
0	7	E	B	3	System Sleep Timer	Off	0	2C	
0	7	E	B	4		120			
0	7	E	B	5		90			
0	7	E	B	6		60			
0	7	E	B	7		30			
0	7	A	5	7		TOGGLE			
0	7	E	B	8	EXTD SUR.	EX/ES	0	2D	
0	7	E	B	9		Off			
0	7	E	7	C		Auto			
0	7	E	D	C		EX			Deletion
0	7	E	D	D		PLIIx Movie			
0	7	E	D	E		PLIIx Music			
0	7	E	9	C	Night Listening Mode	Off	0	2B	
0	7	E	9	B		Cinema			
0	7	E	C	F		Music			
0	7	E	2	7	EFFECT	ON	0	28	
0	7	E	E	0					
0	7	E	D	8	DSP / Surround	Straight Enhancer	0	28	
0	7	E	D	9		Off			
0	7	E	E	1	DSP / Surround	Munich	0	28	
0	7	E	E	5		Vienna			
0	7	E	E	6		Amsterdam			
0	7	E	E	8		Freiburg			
0	7	E	A	F		Chamber			
0	7	E	E	B		Village Vanguard			
0	7	E	E	E		Warehouse Loft			
0	7	E	C	D		Cellar Club			
0	7	E	E	C		The Bottom Line			
0	7	E	E	D		The Roxy Theatre			
0	7	E	F	0		Disco			
0	7	E	F	2		Game			
0	7	E	F	F		7ch Stereo			
0	7	E	C	0		2ch Stereo			
0	7	E	F	8		Sports			
0	7	E	F	2		Action Game			
0	7	E	C	E		Roleplaying Game			
0	7	E	F	3		Music Video			
0	7	E	F	5		Recital/Opera			
0	7	E	F	E		Standard			
0	7	E	F	9		Spectacle			
0	7	E	F	A		Sci-Fi			
0	7	E	F	B		Adventure			
0	7	E	F	C		Drama			
0	7	E	F	7		Mono Movie			
0	7	E	F	D		Surround Decode			
0	7	E	C	2	THX Cinema	THX Cinema	0	29	Except USA
0	7	E	C	3		THX Music			
0	7	E	C	8		THX Game			
0	7	A	E	0	Tuner Preset Page	A	0	29	Except USA
0	7	A	E	1		B			
0	7	A	E	2		C			
0	7	A	E	3		D			
0	7	A	E	4		E			

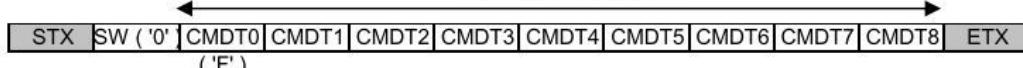
SW	CMDT_				Function	Setting	Report Command		Note
	0	1	2	3			Type	RCMD1,2	
0	7	A	E	5	Tuner Preset Number/CH	1	0	2A	Except USA
0	7	A	E	6		2			
0	7	A	E	7		3			
0	7	A	E	8		4			
0	7	A	E	9		5			
0	7	A	E	A		6			
0	7	A	E	B		7			
0	7	A	E	C		8			
0	7	A	B	1	Tuner CH	9	0	2A	Except USA
0	7	A	B	2		0			
0	7	A	B	3		ENT			
0	7	E	B	C	Tuner Band	FM	0	35	Except USA
0	7	E	B	D		AM			
0	7	E	B	E	Tuner Auto Tuning	Up	0	15	Except USA
0	7	E	B	F		Down			
0	7	E	A	B	Speaker Relay A	On	0	2E	
0	7	E	A	C		Off			
0	7	E	A	D	Speaker Relay B	On	0	2F	
0	7	E	A	E		Off			
0	7	E	2	B	System Memory Save	1	0	31	
0	7	E	2	C		2			
0	7	E	2	D		3			
0	7	E	2	E		4			
0	7	E	2	F		5			
0	7	E	3	0		6			
0	7	E	3	5	System Memory Load	1	0	30	
0	7	E	3	6		2			
0	7	E	3	7		3			
0	7	E	3	8		4			
0	7	E	3	9		5			
0	7	E	3	A		6			
0	7	E	6	B	Main Volume Memory Save	1	0	33	
0	7	E	6	C		2			
0	7	E	6	D		3			
0	7	E	6	E		4			
0	7	E	6	F		5			
0	7	E	7	0		6			
0	7	E	7	5	Main Volume Memory Load	1	0	32	
0	7	E	7	6		2			
0	7	E	7	7		3			
0	7	E	7	8		4			
0	7	E	7	9		5			
0	7	E	7	A		6			
0	7	E	8	7	Zone2 Volume Memory Save	1	0	38	
0	7	E	8	8		2			
0	7	E	8	9		3			
0	7	E	8	A		4			
0	7	E	8	B		5			
0	7	E	8	C		6			
0	7	E	8	D	Zone2 Volume Memory Load	1	0	37	
0	7	E	8	E		2			
0	7	E	8	F		3			
0	7	E	9	0		4			
0	7	E	9	1		5			
0	7	E	9	2		6			
0	7	E	2	0	Zone3 Volume Memory Save	1	0	A4	
0	7	E	2	1		2			
0	7	E	2	2		3			
0	7	E	2	3		4			
0	7	E	2	4		5			
0	7	E	2	5		6			
0	7	E	6	0	Zone3 Volume Memory Load	1	0	A3	
0	7	E	6	1		2			
0	7	E	6	2		3			
0	7	E	6	3		4			
0	7	E	6	4		5			
0	7	E	6	5		6			
0	7	E	D	4	Zone2 Balance	Left	0	AD	
0	7	E	D	5		Right			

SW	CMDT_				Function	Setting	Report Command		Note
	0	1	2	3			Type	RCMD1,2	
0	7	E	D	6	Zone3 Balance	Left	0	AE	
0	7	E	D	7		Right			
0	7	E	3	2	Trigger1 Control	Main	0	3A	
0	7	E	3	3		Zone2			
0	7	E	3	1		Zone3			
0	7	E	3	4		All (Zone1-3)			
0	7	E	7	3	Trigger1 Main	High	0	36	
0	7	E	7	4		Low			
0	7	E	7	1	Trigger1 Zone2	High	0	36	
0	7	E	7	2		Low			
0	7	E	8	3	Trigger1 Zone3	High	0	36	
0	7	E	8	4		Low			
0	7	E	9	3	Dual Mono Mode	Main	0	39	Only Japanese Model
0	7	E	9	4		Sub			
0	7	E	9	5		All			
0	7	E	9	6	Trigger2 Control	Main	0	3B	
0	7	E	9	7		Zone2			
0	7	E	9	F		Zone3			
0	7	E	9	8		All (Zone1-3)			
0	7	E	3	E	Trigger2 Main	High	0	3C	
0	7	E	3	F		Low			
0	7	E	3	C	Trigger2 Zone2	High	0	3C	
0	7	E	3	D		Low			
0	7	E	8	5	Trigger2 Zone3	High	0	3C	
0	7	E	8	6		Low			
0	7	E	2	8	Speaker B SET	Main	0	3D	
0	7	E	2	9		Zone B			
0	7	E	9	9	ZONE2 Amp	INT: Presence	0	3E	
0	7	E	9	A		EXT			
0	7	E	6	7	2ch Decoder	PLIIx Movie	0	6E	
0	7	E	6	8		PLIIx Music			
0	7	E	6	9		Neo:6 Cinema			
0	7	E	6	A		Neo:6 Music			
0	7	E	C	7		PLIIx Game			
0	7	E	C	9		Pro Logic			
0	7	E	C	A		CSII Cinema			Only USA & Japan
0	7	E	C	B		CSII Music			Only USA & Japan
0	7	E	C	C		Neural-THX			Only USA & Canada
0	7	A	6	0	XM CH Number	0	0		
0	7	A	6	1		1	0	91*	*Preset Number
0	7	A	6	2		2	0	91*	
0	7	A	6	3		3	0	91*	
0	7	A	6	4		4	0	91*	
0	7	A	6	5		5	0	91*	
0	7	A	6	6		6	0	91*	
0	7	A	6	7		7	0	91*	
0	7	A	6	8		8	0	91*	
0	7	A	6	9		9	0		
0	7	A	6	A	XM CH/Preset Number	Up	0	91 / 94	91:Preset Number 94:Channel Number
0	7	A	6	B		Down			
0	7	A	6	C	XM Category / Preset Page	Up	0	90	90:Preset Page
0	7	A	6	E		Down			
0	7	A	6	F	XM Hold/Release Display	Toggle	0	95	
0	7	A	7	0		Toggle			Deletion
0	7	A	7	1	XM Preset Memory				
0	7	A	B	5		All CH	0	92	
0	7	A	B	6		Category			
0	7	A	B	7		Preset			
0	7	A	B	A	XM Preset Page	A	0	90	
0	7	A	B	B		B			
0	7	A	B	C		C			
0	7	A	B	D		D			
0	7	A	B	E		E			
0	7	A	B	F	XM ENT.				Decide CH Number

SW	CMDT_				Function	Setting	Report Command		Note
	0	1	2	3			Type	RCMD1,2	
0	7	A	7	3	Zone2 Tone Control	Bass +	0	4B	
0	7	A	7	4		Bass -			
0	7	A	7	5		Treble +	0	4C	
0	7	A	7	6		Treble -			
0	7	A	7	7	Zone3 Tone Control	Bass +	0	4D	
0	7	A	7	8		Bass -			
0	7	A	7	9		Treble +	0	4E	
0	7	A	7	A		Treble -			
0	7	A	A	0	OSD Operation	Top Menu	No Report	Deletion	
0	7	A	D	E		Enter			
0	7	A	A	1		Exit			
0	7	A	9	D		Cursor Up			
0	7	A	9	C		Cursor Down			
0	7	A	9	E		Cursor Right			
0	7	A	9	F		Cursor Left			
0	7	E	D	0	Main Source Display	On	0	No Report	
0	7	E	D	1		Off			
0	7	E	D	2	Zone2 Source Display	On	0	No Report	Deletion
0	7	E	D	3		Off			

3.3 Extended Operation Command (SW = '0', CMDT0 = 'F')

9 Byte Remote Control



SW	CMDT_	Function	Setting	Report Command		Note
				Type	RCMD1,2	
0	F 7 F 0 1 0 F F 0	iPod OSD (GUI) Operation	Menu		No Report	
0	F 7 F 0 1 1 1 E E		Enter			
0	F 7 F 0 1 1 5 E A		Display			Deletion
0	F 7 F 0 1 0 E F 1		Cursor Up			
0	F 7 F 0 1 1 4 E B		Cursor Down			
0	F 7 F 0 1 1 2 E D		Cursor Right			
0	F 7 F 0 1 1 0 E F		Cursor Left			
0	F 7 F 0 1 1 E E 1		Play			
0	F 7 F 0 1 1 D E 2	iPod Operation	Stop		No Report	
0	F 7 F 0 1 1 A E 5		Pause			
0	F 7 F 0 1 1 C E 3		Skip +			
0	F 7 F 0 1 1 B E 4		SKip -			
0	F 7 F 0 1 4 A B 5		Input	DOCK	0	21
0	F 7 F 0 1 4 B B 4	Zone2 Input	DOCK	0	24	
0	F 7 F 0 1 4 C B 3		DOCK	0	A0	
0	F 7 F 0 1 3 F C 0		Input	USB	0	21
0	F 7 F 0 1 4 0 B F	Zone3 Input	Zone2 Input	USB	0	24
0	F 7 F 0 1 4 1 B E		Zone3 Input	USB	0	A0
0	F 7 F 0 1 3 6 C 9		NET/USB Source Select	PC/MCX	0	9B
0	F 7 F 0 1 3 7 C 8		NET Radio			Deletion
0	F 7 F 0 1 3 8 C 7		USB			
0	F 7 F 0 1 2 F D 0		USB OSD Operation	Menu		Except USA & Canada
0	F 7 F 0 1 3 1 C E		Enter			
0	F 7 F 0 1 3 5 C A		Display	Deletion		
0	F 7 F 0 1 2 E D 1		Cursor Up			
0	F 7 F 0 1 3 4 C B		Cursor Down			
0	F 7 F 0 1 3 2 C D		Cursor Right			
0	F 7 F 0 1 3 0 C F		Cursor Left			
0	F 7 F 0 1 3 E C 1	USB Operation	Play		No Report	Except USA & Canada
0	F 7 F 0 1 3 D C 2		Stop			
0	F 7 F 0 1 3 C C 3		Skip +			
0	F 7 F 0 1 3 B C 4		SKip -			
0	F 7 A 8 5 0 0 7 F	System Memory Operation	Play	0	30 (Load) 31 (Save)	
0	F 7 A 8 5 0 3 7 C		Stop			
0	F 7 A 8 5 0 6 7 9		Skip +			
0	F 7 A 8 5 0 9 7 6		SKip -			
0	F 7 E 8 1 1 4 6 B	DSP / Surround	7ch Enhancer	0	28	
0	F 7 E 8 1 7 4 0 B	Adaptive DRC	Auto	0	6D	
0	F 7 E 8 1 7 5 0 A		Off			
0	F 7 E 8 1 7 6 0 9	Adaptive DSP Level	Auto	0	5D	
0	F 7 E 8 1 7 7 0 8		Off			
0	F 7 E 8 1 3 3 4 C	DSP 3D	On	0	57	
0	F 7 E 8 1 3 4 4 B		Off			
0	F 7 E 8 1 1 5 6 A	EXTD SUR.	Neural-THX	0	2D	Only USA & Canada
0	F 7 E 8 1 A 3 D C	2ch Decoder	Neural-THX Music	0	6E	Only USA & Canada
0	F 7 E 8 1 1 6 6 9	Main Sleep Timer	On	0	C5	
0	F 7 E 8 1 1 B 6 4		Off			
0	F 7 E 8 1 1 7 6 8	Zone2 Sleep Timer	On	0	C6	
0	F 7 E 8 1 1 C 6 3		Off			
0	F 7 E 8 1 1 8 6 7	Zone3 Sleep Timer	On	0	C7	
0	F 7 E 8 1 1 D 6 2		Off			
0	F 7 F 0 1 F D 0 2	Tuner Search Mode	Preset			Except USA
0	F 7 F 0 1 F E 0 1		Manual			
0	F 7 F 0 1 4 A 3 5	Tuner Broadcast	Stereo			Except USA
0	F 7 F 0 1 4 B 3 4		Mono			
0	F 7 F 0 1 D 1 2 E	SIRIUS Preset / CH	1	0	C1	Only USA & Canada
0	F 7 F 0 1 D 2 2 D		2			
0	F 7 F 0 1 D 3 2 C		3			
0	F 7 F 0 1 D 4 2 B		4			
0	F 7 F 0 1 D 5 2 A		5			
0	F 7 F 0 1 D 6 2 9		6			
0	F 7 F 0 1 D 7 2 8		7			
0	F 7 F 0 1 D 8 2 7		8			
0	F 7 F 0 1 D 9 2 6	SIRIUS CH	9			Only USA & Canada
0	F 7 F 0 1 D A 2 5		0			
0	F 7 F 0 1 D C 2 3	SIRIUS NUMBER ENTER	Enter			Only USA & Canada

SW	CMDT_								Function	Setting	Report Command		Note
	0	1	2	3	4	5	6	7			Type	RCMD1,2	
0	F	7	F	0	1	0	A	7	SIRIUS Preset	A	0	C1	Only USA & Canada
0	F	7	F	0	1	0	B	7		B			
0	F	7	F	0	1	0	C	7		C			
0	F	7	F	0	1	0	D	7		D			
0	F	7	F	0	1	0	E	7		E			
0	F	7	F	0	1	E	1	1	SIRIUS CH/Preset Number	Up	0	C1	Only USA & Canada
0	F	7	F	0	1	E	5	1		Down			
0	F	7	F	0	1	E	4	1	SIRIUS Category/Preset Page	Up	0	C1	Only USA & Canada
0	F	7	F	0	1	E	2	1		Down			
0	F	7	F	0	1	E	3	1	SIRIUS Hold/Release Display	Toggle			Only USA & Canada
0	F	7	F	0	1	0	F	7	SIRIUS Search Mode	All Ch	0	C2	Only USA & Canada
0	F	7	F	0	1	1	0	6		Category			
0	F	7	F	0	1	1	1	6		Preset			
0	F	7	F	0	1	2	1	5	HD RADIO Preset / CH	1	0	2A	Only USA
0	F	7	F	0	1	2	2	5		2			
0	F	7	F	0	1	2	3	5		3			
0	F	7	F	0	1	2	4	5		4			
0	F	7	F	0	1	2	5	5		5			
0	F	7	F	0	1	2	6	5		6			
0	F	7	F	0	1	2	7	5		7			
0	F	7	F	0	1	2	8	5		8			
0	F	7	F	0	1	2	9	5	HD RADIO CH	9			Only USA
0	F	7	F	0	1	2	A	5		0			
0	F	7	F	0	1	2	C	5	HD RADIO NUMBER ENTER	Enter			Only USA
0	F	7	F	0	1	F	0	0	HD RADIO Preset	A	0	29	Only USA
0	F	7	F	0	1	F	1	0		B			
0	F	7	F	0	1	F	2	0		C			
0	F	7	F	0	1	F	3	0		D			
0	F	7	F	0	1	F	4	0		E			
0	F	7	F	0	1	3	1	4	HD RADIO CH /Preset Number	Up			Only USA
0	F	7	F	0	1	3	5	4		Down			
0	F	7	F	0	1	3	4	4	HD RADIO Preset Page	Up			Only USA
0	F	7	F	0	1	3	2	4		Down			
0	F	7	F	0	1	3	3	4	HD RADIO Hold/Release Display	Toggle			Only USA
0	F	7	F	0	1	3	D	4	HD RADIO Program Select	Up			Only USA
0	F	7	F	0	1	3	C	4		Down			
0	F	7	F	0	1	F	8	0	HD RADIO Auto Tuning	Up			Only USA
0	F	7	F	0	1	F	7	0		Down			
0	F	7	F	0	1	0	0	7	HD RADIO Search Mode	Preset			Only USA
0	F	7	F	0	1	0	1	7		Manual			
0	F	7	F	0	1	4	C	3	HD RADIO Broadcast	Stereo			Only USA
0	F	7	F	0	1	4	D	3		Mono			
0	F	7	F	0	1	F	6	0	HD RADIO Band	FM			Only USA
0	F	7	F	0	1	F	5	0		AM			

4. Reset Command

The Reset Command recalls factory preset data. Once the factory presets are recalled, all user controllable setting / parameter data will be deleted and replaced with original factory settings.

Do not use this command unless you have been experiencing problems with the system or if you just want to clean up the system.



After the system is reset, request the Configuration Command using the Ready Command (see section 2) in order to get accurate feedback of RX-V1900 status to your touch panel system.

Ready ← [DC3 | DEL | DEL | DEL | ETX] *recall factory preset of all data

This command was abolished.

5. Report Command

The RX-V1900 will send a Report Command in response to Control Commands from the host controller.
From the Report Command you can receive the current status of the RX-V1900.



There are three types of Report Commands classified by their information type.

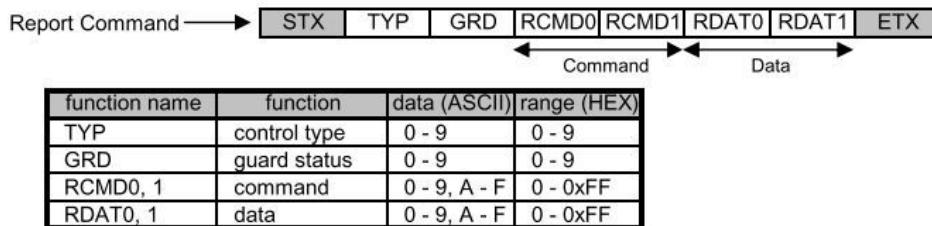
- System Status Report RX-V1900 reports a System Status Report when the system status has changed.
- Playback Status Report RX-V1900 reports a Playback Status Report when the internal playback status has changed.
- Operation Report When the RX-V1900 is controlled by remote controller, front panel, RS-232C or system controller, the RX-V1900 sends an Operation Report, which includes the latest setting status of the controlled function.

*The RX-V1900 reports a System State Report with system guard to inform its power status (power off) if it receives a control command while it is turned off.

*The guard status is included in the Report Command (GRD). If the control command the host sent was accepted, the guard status in the Report Command is '0' (No Guard).

On the contrary the guard status will be 'System Guard' or 'Setting Guard' if the command was guarded for some reason.
(e.g. If you send a 'Speaker A ON' command while you are using a headphone, the guard status will be 'System Guard' because the speaker controls are prohibited when a headphone is being used).

*If a status changes multiple times in a certain time, the RX-V1900 reports only one report command.



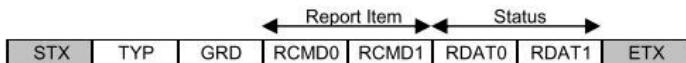
<Control type> This indicates for which type of control the report command is.

TYP	control type
0	controlled by RS-232C
1	controlled by remote controller (IR)
2	controlled by keys in the unit
3	controlled by system
4	controlled by encoder

<Guard status> This indicates guard status against all control commands

GRD	Guard status*
0	no guard
1	system guard
2	setting guard
3	other guard

5.1 System Status Reports



RCMD0, 1	Report Item	RDAT0, 1	Status
00	system	00	OK
		01	Busy
		02	Standby

*RX-V1900 sends this report when the system is reset or the power turns off.

It can be used for observation of the system revival.

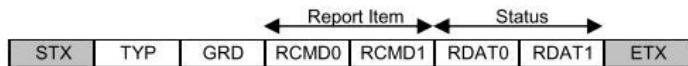
Ready to accept control commands
Start of the term prohibits sending commands
Report against commands which cannot be accepted when Power is on Standby

RCMD0, 1	Report Item	RDAT0, 1	Status
01	warning	00	Over Current
		01	DC Detect
		02	Power Trouble
		03	Over Heat

Report of abnormal states
(Only when it's possible to report)

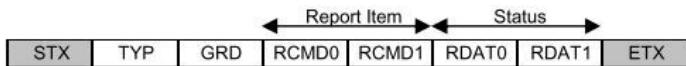
RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
06	XM Message	00	Check Antenna	09	Cmd Error	00	Remoto control cmmand buffer over
		01	Updating	0A	SIRIUS Message	00	Check Tuner
		02	No Signal			01	FW update
		03	Loading			02	Not Support
		04	Off Air			03	Sub update
		05	Unavailable			04	Ch Map update
07	iPod Message	00	Loading			05	Invalid
		01	Connect Error			06	Unsubscribed
		02	Unknown iPod			07	Antenna Error
		03	iPod connected			08	Acquiring
		04	Disconnected			09	No error
		05	Unable to play				
08	NET/USB Message	00	Please wait				
		01	Connected				
		02	Disconnected				
		03	Access error				
		04	List updated				
		05	Startup server				
		06	Unable to play				
		07	Connect error				
		08	Bookmark ON				
		09	Bookmark OFF				
		0A	Not found				

5.2 Playback Status Reports



RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
10	Format	00	Analog		14	Bit Rate	00 32kbps
		01	PCM			01 40kbps	
		02	DSD			02 48kbps	
		03	Digital			03 56kbps	
		04	Dolby Digital			04 64kbps	
		05	DTS			05 72kbps	
		06	AAC			06 80kbps	
		07	DTS-HD			07 96kbps	
		08	DTS-HD MSTR			08 112kbps	
		09	DD Plus			09 128kbps	
		0A	TrueHD			0A 144kbps	
		0B	WMA			0B 160kbps	
		0C	MP3			0C 192kbps	
		FE	???			0D 224kbps	
		FF	---			0E 256kbps	
11	Sampling	00	Analog			0F 288kbps	
		01	8kHz			10 320kbps	
		02	11.025kHz			11 384kbps	
		03	12kHz			12 448kbps	
		04	16kHz			13 512kbps	
		05	22.05kHz			14 576kbps	
		06	24kHz			15 640kbps	
		07	32kHz			16 768kbps	
		08	44.1kHz			17 960kbps	
		09	48kHz			18 1024kbps	
		0A	64kHz			19 1152kbps	
		0B	88.2kHz			1A 1280kbps	
		0C	96kHz			1B 1344kbps	
		0D	128kHz			1C 1408kbps	
		0E	176.4kHz			1D 1411.2kbps	
		0F	192kHz			1E 1472kbps	
		10	2.8MHz (DSD)			1F 1536kbps	
		FE	???			20 1920kbps	
		FF	---			21 2048kbps	
12	Channel Front/Rear	00	1+1			22 3072kbps	
		01	1/0			23 3840kbps	
		02	2/0			24 Open	
		03	3/0			25 Variable	
		04	2/1			26 Loss less	
		05	3/1			FF ---	
		06	2/2		15	Dialog	00 -31dB
		07	3/2				01 -30dB
		08	2/3				... ---
		09	3/3				1E -1dB
		0A	2/4				1F +0dB
		0B	3/4				FF ---
		0C	MLT		16	Flag	xx ---
		0F	---				bit0 DD Karaoke
13	Channel LFE	00	0.1				bit1 DD 6.1
		01	0.2				bit2 dts ES Matrix 6.1
		FF	---				bit3 dts ES Discrete 6.1
							bit4 dts 96kHz/24bit
							bit5 Pre Emphasis
							bit6 DPL Encoded
							bit7 Don't Care

5.3 Operation Reports



RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
20	Power	00	ALL (Main/Zone2/3) OFF	27	Zone 2 Vol.	00	-oo (Infinite Attenuation)
		01	ALL (Main/Zone2/3) ON			27	-80dB
		02	Main On / Zone2 Off / Zone3 Off			...	0dB
		03	Main Off / Zone2 On / Zone3 On			C7	16.5dB
		04	Main On / Zone2 On / Zone3 Off			...	
		05	Main On / Zone2 Off / Zone3 On			E8	
		06	Main Off / Zone2 On / Zone3 Off				
		07	Main Off / Zone2 Off / Zone3 On				
21	Input	00	PHONO	28	Program	00	Munich
		01	CD			01	Hall B
		02	TUNER			02	Hall C
		03	MD/CD-R			04	Hall D
		04	MD/TAPE			05	Vienna
		05	DVD			06	Live Concert
		06	TV			07	Hall in Amsterdam
		07	CBL/SAT			08	Tokyo
		08	SAT			09	Freiburg
		09	VCR			0A	Royaumont
		0A	DVR			0B	Chamber
		0C	V-AUX			0C	Village Gate
		0D	USB			0D	Village Vanguard
		0E	XM			0E	The Bottom Line
22	Audio Select	x, 0	AUTO			0F	Cellar Club
		x, 3	COAX / OPT			10	The Roxy Theater
		x, 4	ANALOG			11	Warehouse Loft
		x, 8	HDMI			12	Arena
	Decoder Mode	0, x	AUTO			14	Disco
		1, x	DTS			15	Party
		2, x	AAC			16	Game
23	Audio Mute	00	Off			17	7ch Stereo
		01	On			18	Music Video
24	Zone2 Input	00	PHONO			19	DJ
		01	CD			1C	Recital/Opera
		02	TUNER			1E	Action Game
		03	MD/CD-R			1F	Roleplaying Game
		04	MD/TAPE			1D	Pavilion
		05	DVD			20	Mono Movie
		06	TV			21	Sports
		07	CBL/SAT			24	Spectacle
		08	DOCK / BLUETOOTH			25	Sci-Fi
		09	VCR			28	Adventure
		0A	DVR			29	Drama
		0B	SIRIUS			2C	Surround Decode
		0C	V-AUX			2D	Standard
		0D	USB			30	PLII Movie
		0E	XM			31	PLII Music
		0F	BD/HD DVD			32	Neo: 6 Movie
25	Zone2 Mute	00	Off			33	Neo: 6 Music
		01	On			34	2ch Stereo
26	Main Volume	00	-oo (Infinite Attenuation)			35	Stereo B: 2ch Direct Stereo
		27	-80dB			36	THX Cinema
		...				37	THX Music
		C7	0dB			3C	THX Game
		...				40	Enhancer 2ch Low
		E8	16.5dB			41	Enhancer 2ch High
						42	Enhancer 7ch Low
						43	Enhancer 7ch High
						80	STRAIGHT

RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
29	Tuner Page	00 01 02 03 04	A B C D E	2C	System Sleep	00 01 02 03 04	120 90 60 30 Off
2A	Preset No.	00 01 02 03 04 05 06 07	1 2 3 4 5 6 7 8	2D	EXTD SUR	00 01 03 04 05 06 07	Off EX/ES Auto EX PLIIx Movie PLIIx Music Neural-THX
2B	Short Message	00 01 02	Full On Off	2E	SP Relay A	00 01	Off On
				2F	SP Relay B	00 01	Off On

RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
30	System Memory	01 02 03 04 05 06	Load 1 2 3 4 5 6	37	Zone 2 Vol. Memory	01 02 03 04 05 06	Load 1 2 3 4 5 6
31	System Memory	01 02 03 04 05 06	Save 1 2 3 4 5 6	38	Zone 2 Vol. Memory	01 02 03 04 05 06	Save 1 2 3 4 5 6
32	Volume Memory	01 02 03 04 05 06	Load 1 2 3 4 5 6	39	Dual Mono	00 01 02	Main Sub All
33	Volume Memory	01 02 03 04 05 06	Save 1 2 3 4 5 6	3A	Trigger1 Control	00 01 02 03	All (Zone1-3) Main Zone 2 Zone 3
34	Headphone	00 01	Off On	3B	Trigger2 Control	00 01 02 03	All (Zone1-3) Main Zone2 Zone3
35	Tuner Band	00 01	AM FM	3C	Trigger2 Output	00 01	Low (Due to the delay) High (Due to the delay)
36	Trigger1 Output	00 01	Low (Due to the delay) High (Due to the delay)	3D	SP B SET	00 01	Main Zone B
				3E	Zone 2 Amp	00 01 02 03	EXT INT: Speaker[1] INT: Speaker[2] INT: Both
				3F	Zone 3 Amp	00 01 02 03	EXT INT: Speaker[1] INT: Speaker[2] INT: Both

RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
40	Level Front R	14 15 ... 3C	-10dB -9.5dB +10dB	47	Level Presence R	14 15 ... 3C	-10dB -9.5dB +10dB
41	Level Front L	14 15 ... 3C	-10dB -9.5dB +10dB	48	Level Presence L	14 15 ... 3C	-10dB -9.5dB +10dB
42	Level Center	14 15 ... 3C	-10dB -9.5dB +10dB	49	Level Subwoofer	14 15 ... 3C	-10dB -9.5dB +10dB
43	Level Surround R	14 15 ... 3C	-10dB -9.5dB +10dB	4B	Zone2 Tone Control Bass	00 01 ... 14	-10dB -9dB +10dB
44	Level Surround L	14 15 ... 3C	-10dB -9.5dB +10dB	4C	Zone2 Tone Control Treble	00 01 ... 14	-10dB -9dB +10dB
45	Level Surround Back R	14 15 ... 3C	-10dB -9.5dB +10dB	4D	Zone3 Tone Control Bass	00 01 ... 14	-10dB -9dB +10dB
46	Level Surround Back L	14 15 ... 3C	-10dB -9.5dB +10dB	4E	Zone3 Tone Control Treble	00 01 ... 14	-10dB -9dB +10dB

RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
50	Main L/R Balance	00 14 ... 28	Lch Max Mid Rch Max	5B	Initial Volume	00 01 27 ... C7 ... E8	Off -oo (Infinite Attenuation) -80dB 0dB 16.5dB
51	LFE Level SP	00 01 ... 14	-20dB -19dB 0dB	5C	Extended Surround Set	00 01	Auto Off
52	LFE Level HP	00 01 ... 14	-20dB -19dB 0dB	5D	Adaptive DSP Level	00 01	Auto Off
53	Manual Audio Delay	00 01 ... F0	0ms 1ms 240ms	5E	Decoder Mode	0, x 1, x 2, x x, 0 x, 1 x, 2 x, 3 x, 4 x, 5 x, 6 x, 7 x, 9 x, A x, C x, E	Auto DTS AAC PHONO CD TUNER CD-R MD/TAPE DVD DTV CBL/SAT VCR1 DVR / VCR2 V-AUX XM Auto Last
56	HDMI Auto Audio Delay	00 01 ... F0	0ms 1ms 240ms	5F	Decoder Mode Set	00 01	Auto Last
57	DSP 3D	00 01	OFF ON				
58	Wall Paper	00 0E 0F	YES Gray NONE				
59	HDMI AUTO Lipsync	00 01	Auto Off				
5A	MAX Volume	00 01 02 ... 08 09 0A	-30dB -25dB -20dB 10dB 15dB 16.5dB				

RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
60	Audio Select Set	00 01	Auto Last	68	Memory Guard	00 01	Off On
61	Dimmer	00 01 02 03 04	-4 -3 -2 -1 0	6B	Video Conversion Zone3 Volume Out	00 01	Off On
		...				00	Variable
		0A	5			01	Fixed
		x, 0 ... x, A	Horizontal 5		Zone OSD	00 01	Off Zone2
		0, x ... A, x	Vertical -5			02	Zone2 & Zone3
62	OSD Shift	00 ... 0A	-5	6C	Adaptive DRC	00 01	Auto Off
	GUI Position	x, 0 ... x, A	Horizontal 5	6D	2ch Decoder	00 01 02 03 04 05 06 07 09 0A	Pro Logic PLIix Movie PLIix Music PLIix Game Neo:6 Cinema Neo:6 Music CSII Cinema CSII Music Neural Sur.
		0, x ... A, x	Vertical -5			04 05 06 07 09 0A	Neo:6 Music CSII Cinema CSII Music Neural Sur. Neural Sur. Music
		63	Gray Back	00 01		04 05 06 07 09 0A	
		64	Dynamic Range SP	00 01 02		04 05 06 07 09 0A	
		65	Dynamic Range HP	00 01 02		04 05 06 07 09 0A	
66	Zone2 Volume Out	00 01	Variable Fixed	6F	Multi CH BGV	00 01 05 06 07 09 0A 0C 0F	Off Last DVD DTV/CBL CBL/SAT VCR DVR V-AUX BD/HD DVD
67	FL Scroll	00 01	Continue Once				

RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
70	Center SP	00 01 02	Large Small None	7B	Multi CH Select	00 02 03 04 05 06 07 09 0A 0C 0F	6ch 8ch CD 8ch MD/CD-R 8ch MD/TAPE 8ch DVD 8ch TV 8ch CBL/SAT 8ch VCR 8ch DVR 8ch V-AUX 8ch BD/HD DVD
71	Front	00 01	Large Small				
72	Surround SP	00 01 02	Large Small None				
73	Surround Back	00 01 02 03 04	Large x2 Large x1 Small x2 Small x1 None	7D	PR/SB Priority	00 01	Presence Surround Back
		74	Presence	00 01		00 01	
		75	LFE Bass Out	00 01 02		00 01 02 03 04 05 06 07 08	40 Hz 60 Hz 80 Hz 90 Hz 100 Hz 110 Hz 120 Hz 160 Hz 200 Hz
		76	Subwoofer Phase	0, x 1, x		00 01 02 03 04 05 06 07 08	

RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
80	Test	00 01	Off On	88	HDMI Aspect	00 01 02	Through 16:9 Normal Smart Zoom
85	Component I/P	00 01	Off On	8A	THX SB Dist	00 01 02	Under 1f (0.3m) 1 – 4f (0.3 – 1.2m) Over 4f (1.2m)
86	HDMI I/P	00 01	Off On	8C	Pure Direct	00 01	
87	HDMI Up-Scaling	00 01 02 03 04	Through 480p / 576p (NTSC / PAL) (*2) 1080i 720p 1080p	8D	Pure Direct Video	00 01	Audio Audio + Video
						00 01	
						00 01	
				8F	HDMI Support Audio	00 01	AMP AMP + TV

RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
90	XM Preset Page	00	A	96	iPod Charge on Standby	00	Off
		01	B			01	Auto
		02	C	97	iPod Repeat	00	Off
		03	D			01	One
		04	E			02	All
91	XM Preset Num	00	1	98	iPod Shuffle	00	Off
		01	2			01	Songs
		02	3			02	Albums
		03	4	99	USB Repeat	00	Off
		04	5			01	Single
		05	6			02	All
		06	7	9A	USB Shuffle	00	Off
		07	8			01	On
92	XM Search Mode	00	All CH	9B	NET/USB Source Select	00	PC/MCX
		01	Category			01	NET Radio
		02	Preset			02	USB
93	On Screen	00	Off	9C	USB Preset Recall	00	Parameter Error
		01	10sec			01	1
		02	30sec			02	2
		03	Always			...	
		08				08	8
94	XM CH Number	00	CH #0	9D	USB Preset Memory	00	Parameter Error
		01	CH #1			01	1
		...				02	2
		FF	CH #255			...	
		08				08	8
95	XM Display Hold / Release	00	Release				
		01	Hold				

RCMD0, 1	Report Item	RDAT0, 1	Status	RCMD0, 1	Report Item	RDAT0, 1	Status
A0	Zone 3 Input	00	PHONO	A5	Mute Type	00	Full
		01	CD			01	-20dB
		02	TUNER	A7	EQ Select Type	00	Auto PEQ
		03	MD/CD-R			01	GEQ
		04	MD/TAPE			02	EQ Off
		05	DVD	A8	Tone Bypass	00	Auto
		06	TV			01	off
		07	CBL/SAT	A9	Zone2 MAX Volume	00	-30dB
		08	DOCK / BLUETOOTH			01	-25dB
		09	VCR			02	-20dB
		0A	DVR			...	
		0B	SIRIUS			08	10dB
		0C	V-AUX			09	15dB
		0D	USB			0A	16.5dB
		0E	XM	AA	Zone3 MAX Volume	00	-30dB
		0F	BD/HD DVD			01	-25dB
		08				02	-20dB
		09				...	
		0A				08	10dB
A1	Zone 3 Mute	00	Off			09	15dB
		01	On			0A	16.5dB
A2	Zone 3 Volume	00	-oo (Infinite Attenuation)	AB	Zone2 Initial Volume	00	Off
		27	-80dB			01	-oo (Infinite Attenuation)
		...				27	-80dB
		C7	0dB			...	
		E8	16.5dB			C7	0dB
A3	Zone 3 Volume Memory	01	Load 1			E8	16.5dB
		02	2	AC	Zone3 Initial Volume	00	Off
		03	3			01	-oo (Infinite Attenuation)
		04	4			27	-80dB
		05	5			...	
		06	6			C7	0dB
A4	Zone 3 Volume Memory	01	Save 1			E8	16.5dB
		02	2			02	
		03	3			03	
		04	4			04	
		05	5			05	
		06	6			06	

RCMD0,1	Report Item	RDAT0,1	Status	RCMD0,1	Report Item	RDAT0,1	Status
AD	Zone2 Balance	00 01 ... 14 ... 27 28	L20 L19 Mid R19 R20	AE	Zone3 Balance	00 01 ... 14 ... 27 28	L20 L19 Mid R19 R20

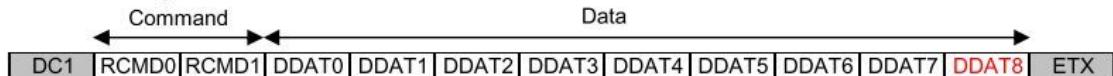
RCMD0,1	Report Item	RDAT0,1	Status	RCMD0,1	Report Item	RDAT0,1	Status
B0	Advanced Setup	00 01	Off On	B7	Initialize	00 01 02 03 04	Cancel All DSP Parameter Video Network
B1	Remote ID	00 01	ID1 ID2	B8	Video Reset	00 01	Cancel Yes
B2	Fan Control Mode	00 01	Auto Cont.	B9	Remote Sensor	00 01	On Off
B3	Speaker Impedance	00 01	8 ohm 6 ohm	BA	Remote ID for XM	00 01	ID1 ID2
B4	Tuner Step	00 01	AM10 / FM100 (kHz) AM 9 / FM50 (kHz)	BB	Bi-AMP	00 01	On Off
B5	Remote ID for Tuner	00 01	ID1 ID2	BC	TV Format	00 01	PAL NTSC
B6	Language	00 01 02 03 04 05	English Japanese French German Spanish Russian	BD	Wake on RS232C	00 01	No Yes
				BE	SIRIUS PIN	00 01	Cancel Reset
				BF	Monitor Check	00 01	Skip Yes

RCMD0,1	Report Item	RDAT0,1	Status	RCMD0,1	Report Item	RDAT0,1	Status
C0	SIRIUS Preset Page	00 01 02 03 04	A B C D E	C5	MAIN Sleep	00 01 02 03 04	120 90 60 30 Off
C1	SIRIUS Preset Num	00 01 02 03 04 05 06 07	1 2 3 4 5 6 7 8	C6	ZONE2 Sleep	00 01 02 03 04	120 90 60 30 Off
C2	SIRIUS Search Mode	00 01 02	All CH Category Preset	C7	ZONE3 Sleep	00 01 02 03 04	120 90 60 30 Off
C3	SIRIUS CH Number	00 01 ...	CH #0 CH #1 CH #255	C8	PEQ Select Type	00 01 02	Natural Flat Front
C4	SIRIUS Display Hold / Release	00 01	Release Hold	C9	Bluetooth Control	00 01 02 03 04 05	Pairing Start Pairing End (User Cancel) Connect Disconnect Pairing End (OK) Pairing End (Timeout)

Attention

- * When the Input is changed, the RX-V1900 sends an Operation Report for Input (RCMD0,1="21") and Audio Select (RCMD0,1="22").
- * When the System Memory is changed, the RX-V1900 sends an Operation Report for System Memory (RCMD0,1="30") and Configuration Command.
- * When a headphone is plugged into the headphone jack and the Speaker Relay is turned off, the RX-V1900 sends an Operation Report for Speaker Relay A and B (RCMD0,1="2E", "2F", RDAT="00(OFF)").
The RX-V1900 sends an Operation Command for Speaker Relay A and B when the headphone is removed also.
- * Each time the source from the Inputs or playback status (ex. 6.1/ES, RED DTS etc.) of the system changes, the RX-V1900 sends a Playback Status report.
- * Each time the busy status of the system changes, the RX-V1900 sends a System Status report.

5.4 Display Text Data Report



RCMD0,1	ITEM	DDAT0-1	DDAT2-7	DDAT8
00	Tuner Frequency	SP	6digits <Upper Lower>	SP

(example)
AM 1710kHz = 'SP' 'SP' '1' '7' '1' '0'
FM 108.5MHz = 'SP' 'SP' '1' '0' '8' '.' '5' '0'

RCMD0,1	ITEM	DDAT0	DDAT1-7	DDAT8
01	Main Volume	SP	7digits <Upper Lower>	SP

(example)
-40.0dB = 'SP' '-' '4' '0' '.' '0' 'd' 'B'

RCMD0,1	ITEM	DDAT0	DDAT1-7	DDAT8
02	Zone2 Volume	SP	7digits <Upper Lower>	SP

RCMD0,1	ITEM	DDAT0-8
03	Input name	9letters <Upper Lower>

RCMD0, 1	ITEM	DDAT0-8
04	Zone 2 Input name	9letters <Upper Lower>

RCMD0,1	ITEM	DDAT0-2	DDAT3-7	DDAT8
05	Zone3 Volume	SP	5digits <Upper Lower>	SP

RCMD0, 1	ITEM	DDAT0-8
06	Zone 3 Input name	9letters <Upper Lower>

RCMD0,1	ITEM	DDAT0-3	DDAT4-7	DDAT8
F0	Remote Code	SP	4digits <Upper Lower>	SP

RCMD0,1	ITEM	DDAT0	DDAT1-3	DDAT4	DDAT5	DDAT6-8
FF	Version Information	MAIN Version	DSP1 Version	RS-232C Version	VIDEO Version	USB Version

FUNCTION	ITEM	DATA (ADCII)	RANGE
RCMD0,1 DDAT 0-7	Command Data	0-9, A-F 0-9, A-Z SP, other ASCII	0...0xFF ASCII Space, dots

Example of RX-V1900 Control Procedure

[1] Connection Start procedure (AC Plug / RS-232C cable connection)

When the AC plug / RS-232C cable are not connected, the RX-V1900 cannot send any data to the host. If the host doesn't receive a configuration command after sending a Ready command 5 times, the host should disable the RS-232C communication and send an alert to the graphic user interface (GUI).

[2] AC plug / RS-232C connection check sequence after the connection has been confirmed in the procedure [1].

If the host doesn't receive a Report Command within 500ms of sending a command, the host should resend the command. If no Report Command is received after sending 5 times, check the AC plug/RS-232 cable (cf. [1]).

When the RS-232C cable is disconnected, the commands generated inside the RX-V1900 are stored in the sending buffer. If the stored commands exceed the buffer memory size (buffer overflow), the RX-V1900 stops reporting any commands. In this case, reconnecting the AC plug or Connection Start procedure [1] will be needed in order to enable the command report.

[3] AC plug connection detection (after [1],[2])

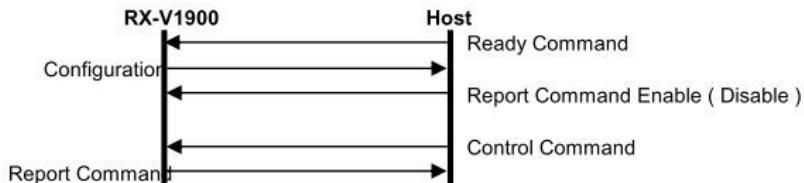
When the AC connection is reset, the RX-V1900 sends a Configuration Command to the host. The host can display the status of the RX-V1900 to its GUI.

[4] Getting the status of the RX-V1900 when the host boots up

At first, the host should send a Ready command and receive the Configuration Command from the RX-V1900 (cf. [1]).

Once the connection is confirmed, the host can send Control Commands to the RX-V1900.

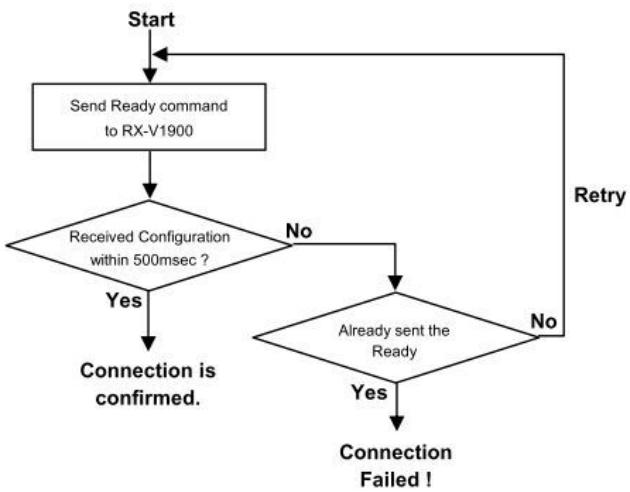
When the RX-V1900 is turned off, it accepts only System Commands and Power ON command.



[5] Error transactions after [4]

While sending a control command, if the RX-V1900 didn't send any corresponding Report Commands regardless of re-trying for 5 times, the host should clear its send buffer and then check the AC plug / RS-232C connection sequence (cf. [1]). When the RX-V1900 responds, the host can display the RX-V1900 status to its GUI then return to the normal communication sequence. If not, the host should cancel the communication and report the alert to its GUI.

[1] : AC Plug / RS-232C connection check (Start transaction)



Appendix

* ASCII Chart

	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	@	P	!	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	*	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	\$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	*	7	G	W	g	w
8	BS	CAN	(8	H	X	h	x
9	HT	EM)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	EXC	*	:	K	[k	{
C	FF	FS	.	<	L	\	l	
D	CR	GS	-	=	M]	m	}
E	SO	RS	-	>	N	^	n	---
F	SI	US	/	?	O	_	o	DEL

* Column numbers = the first hexadecimal digit

Row numbers = the second hexadecimal digit

* The characters in the gray cells are available for RS-232C communication.