Pioneer *seeing and hearing like never before*

ELITE

SC-05

RS232C Protocol

August 2008

For Custom Installation

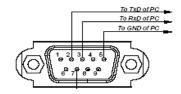## *Physical Cable Connection*

Connector

RS232C DB9 Male

Pioneer A/V Receivers use a "crossover" (aka/"null modem" or "twisted pair") cable.

Pin	AV Receiver
1	*1
2	RXD
3	TXD
4	*1
5	GND
6	*1
7	NC
8	NC
9	NC

Pin	Computer/Controller
1	*1
2	RXD
3	TXD
4	*1
5	GND
6	*1
7	NC
8	NC
9	NC

*PinS 1, 4, & 6 are shorted to each other.

RECEIVER PINOUTS

To TxD of PC
To RxD of PC
To GND of PC

Communication

Communication Speed : 9600bps

Protocol Type : 8data bits,1stop bit,no parity

Notice1

To meet stringent power conservation measures Pioneer A/V receivers consume less
than 1 Watt when in the "Standby" or "Off" mode.
To achieve this the main CPU doesn't operate in Standby/Off.
For this reason the receiver may not understand the first command send to it's the RS-232C port
but the main CPU will "wake up" with the first command.
In other words, the receiver is using the first command as a trigger to wake up the main CPU
and may not respond correctly to it.
For the proper execution of the first command please send the command twice.

Also, please make sure to have at least a 100msec. interval between the first and second command.

Example1

       PO\<CR\>
         ↓
       100msec Wait
         ↓
       PO\<CR\>

Notice2

It takes a brief amount of time for the receiver to respond to a command like "Surround Mode"
from your control system.
When the receiver receives a command it writes that information to the EEPROM.
Accordingly, you have to keep at least 100msec. before you do a "TIMEOUT" after sending the command to the receiver.

Example2
SR: The receiver's response to the command for PRO LOGIC II MUSIC.

Control System		Receiver
014SR\<CR\>	→	Receives the command and writes the info to the EEPROM.
		↓
		↓ 100msec
		↓
Confirmation	←	SR014\<CR+LF\>

Notice3

The interval between each response sent from the receiver is 20msec.
Therefore you have to wait at least 20msec. before a "TIMEOUT".

Example3
?F: Responding to a request for the current function (input).

Control System		Receiver
?F\<CR\>	→	Receives the command and processes a response.
		↓ 20msec
		F
		↓ 20msec
		N
		↓ 20msec
		0
		↓ 20msec
		4
		↓ 20msec
		CR
		↓ 20msec
Confirmation	←	LF

Automatic Feedback

When the customer changes the status using knobs on the front panel or the remote controller of the AV receiver,
the AV receiver will send the new status automatically. (VOLXX,PQRX,MUTX,FNXX,SRXXXX,LMXXX)

(For example) The user changes function on the front panel.
    We send : FNXX<CR+LF>

All commands and requests must be followed by a Carriage Return <CR>.

X:Argument:ASC code

Status Request Command

Command	Command Name	Argument	operation	Answer
?V<CR>	VOLUME LEVEL STATUS REQUEST		Return the VOLUME LEVEL	VOLXX<CR+LF> *1
?P<CR>	POWER STATUS REQUEST		Return the POWER status	PWRX<CR+LF> *2
?M<CR>	MUTE STATUS REQUEST		Return the MUTE status	MUTX<CR+LF> *2
?F<CR>	FUNCTION MODE REQUEST		Return the FUNCTION MODE	FNXX<CR+LF> *3
?S<CR>	LISTENING MODE SETTING REQUEST		Return the L.M SETTING	SRXXXX<CR+LF> *4
?L<CR>	LISTENING MODE REQUEST		Return the L.M	LMXXX<CR+LF> *5
?TO<CR>	TONE STATUS REQUEST		Return the TONE status	TOX<CR+LF> *6
?BA<CR>	BASS STATUS REQUEST		Return the BASS Level	BAXX<CR+LF> *7
?TR<CR>	TREBLE STATUS REQUEST		Return the TREBLE Level	TRXX<CR+LF> *8
?PR<CR>	TUNER PRESET REQUEST		Return the PRESET number	PRXXX<CR+LF> *9
?FR<CR>	TUNER FREQ REQUEST		Return the FREQ number	FRXXXXX<CR+LF> *10
?MI<CR>	MULTI INPUT CH REQUEST		Return the MULTI INPUT CH. status	MIX<CR+LF> *13
?AP<CR>	ZONE 2 POWER STATUS REQUEST		Return the POWER status	APRX<CR+LF> *2
?BP<CR>	ZONE 3 POWER STATUS REQUEST		Return the POWER status	BPRX<CR+LF> *2
?ZS<CR>	ZONE 2 FUNCTION STATUS REQUEST		Return the FUNCTION MODE	Z2FXX<CR+LF> *3
?ZT<CR>	ZONE 3 FUNCTION STATUS REQUEST		Return the FUNCTION MODE	Z3FXX<CR+LF> *3
?ZV<CR>	ZONE 2 VOLUME STATUS REQUEST		Return the VOLUME LEVEL	ZVXX<CR+LF> *1
?YV<CR>	ZONE 3 VOLUME STATUS REQUEST		Return the VOLUME LEVEL	YVXX<CR+LF> *1
?MC<CR>	MCACC POSITION REQUEST		Return the MCACC POSITION status	MCX<CR+LF> *15
?EX<CR>	SBch PROCESSING STATUS REQUEST		Return the SBch PROCESSING status	EXXX<CR+LF> *14
?XM<CR>	XM channel REQUEST (USA model)	000-255	Return XM channel	XMXXX<CR+LF>
?IS<CR>	PHASE CONTROL STATUS REQUEST		Return PHASE CONTROL STATUS	ISX<CR+LF>*16
?SI<CR>	Sirius channel REQUEST (USA model)	000-255	Return Sirius channel	SIXXX<CR+LF>

Operation command

Command	Command Name	Argument	Operation	Answer
VU<CR>	VOLUME UP		VOLUME UP	VOLXX<CR+LF> *1
VD<CR>	VOLUME DOWN		VOLUME DOWN	VOLXX<CR+LF> *1
XXVL<CR>	VOLUME SET	00-93 *1	Set the VOLUME level	VOLXX<CR+LF> *1
PO<CR>	POWER ON (You must repeat the command quickly when the receiver is OFF）		POWER ON	PWRX<CR+LF> *2
PF<CR>	POWER OFF		POWER OFF	PWRX<CR+LF> *2
MO<CR>	MUTE ON		MUTE ON	MUTX<CR+LF> *2
MF<CR>	MUTE OFF		MUTE OFF	MUTX<CR+LF> *2
XXFN<CR>	FUNCTION MODE SET	*3	Set the FUNCTION MODE	FNXX<CR+LF> *3
FU<CR>	FUNCTION MODE UP		Change the FUNCTION MODE	FNXX<CR+LF> *3
0XXXSR<CR>	LISTENING MODE SET	*4	Change the LISTENING MODE	SRXXX(X)<CR+LF> *4
TO<CR>	TONE ON/BYPASS		TONE ON or BYPASS	TOX<CR+LF>
BI<CR>	BASS INCREMENT		BASS INCREMENT	BAXX<CR+LF> *7
BD<CR>	BASS DECREMENT		BASS DECREMENT	BAXX<CR+LF> *7
TI<CR>	TREBLE INCREMENT		TREBLE INCREMENT	TRXX<CR+LF> *8
TD<CR>	TREBLE DECREMENT		TREBLE DECREMENT	TRXX<CR+LF> *8
TB<CR>	TUNER BAND		change the BAND (AM/FM)	FRXXXXX<CR+LF> *10
XTP<CR>	TUNER PRESET	0-9	change the TUNER PRESET	PRXXX<CR+LF> *9
TC<CR>	TUNER CLASS		change the TUNER CLASS	PRXXX<CR+LF> *9
TPI<CR>	TUNER PRESET INCREMENT		TUNER PRESET INCREMENT	PRXXX<CR+LF> *9
TPD<CR>	TUNER PRESET DECREMENT		TUNER PRESET DECREMENT	PRXXX<CR+LF> *9
TFI<CR>	TUNER FREQ INCREMENT		TUNER FREQ INCREMENT	FRXXXXX<CR+LF> *10
TFD<CR>	TUNER FREQ DECREMENT		TUNER FREQ DECREMENT	FRXXXXX<CR+LF> *10
XMI<CR>	MULTI INPUT CH	0,1,2,3	change the MULTI INPUT CHANNEL	MIX<CR+LF> *13
XXZS<CR>	ZONE2 FUNCTION MODE SET	*3	Set the FUNCTION MODE	Z2FXX<CR+LF> *3
XXZT<CR>	ZONE3 FUNCTION MODE SET	*3	Set the FUNCTION MODE	Z3FXX<CR+LF> *3
ZU<CR>	ZONE2 VOLUME UP		VOLUME UP	ZVXX<CR+LF> *1
ZD<CR>	ZONE2 VOLUME DOWN		VOLUME DOWN	ZVXX<CR+LF> *1
XXZV<CR>	ZONE2 VOLUME SET	00-80	Set the VOLUME level	ZVXX<CR+LF> *1
YU<CR>	ZONE3 VOLUME UP		VOLUME UP	ZVXX<CR+LF> *1
YD<CR>	ZONE3 VOLUME DOWN		VOLUME DOWN	YVXX<CR+LF> *1
XXYV<CR>	ZONE3 VOLUME SET	00-80	Set the VOLUME level	YVXX<CR+LF> *1
APO<CR>	ZONE2 POWER ON (You must repeat the command quickly when the receiver is OFF）		ZONE2 POWER ON	APRX<CR+LF> *2
APF<CR>	ZONE2 POWER OFF		ZONE2 POWER OFF	APRX<CR+LF> *2
BPO<CR>	ZONE3 POWER ON (You must repeat the command quickly when the receiver is OFF）		ZONE3 POWER ON	BPRX<CR+LF> *2
BPF<CR>	ZONE3 POWER OFF		ZONE3 POWER OFF	BPRX<CR+LF> *2
XMC<CR>	MCACC POSITION	0,1,2,3,4,5,6	change the MCACC POSITION	MCX<CR+LF> *15
XXEX<CR>	SBch PROCESSING SET	0,1,2	Change EXTENDED MODE	EXXX<CR+LF> *14
STS<CR>	STATUS DISPLAY		to see OSD display	R
XIS<CR>	PHASE CONTROL	0,1,2	PHASE CONTROL ON/OFF	ISX<CR+LF>*16
HO<CR>	HDMI OUTPUT SELECT	1,2	HDMI OUTPUT SELECT	HOX<CR+LF>
CUP<CR>	AMP CURSOR UP		AMP CURSOR UP	R
CDN<CR>	AMP CURSOR DOWN		AMP CURSOR DOWN	R
CRI<CR>	AMP CURSOR RIGHT		AMP CURSOR RIGHT	R
CLE<CR>	AMP CURSOR LEFT		AMP CURSOR LEFT	R
CEN<CR>	AMP CURSOR ENTER		AMP CURSOR ENTER	R
CRT<CR>	AMP RETURN		AMP RETURN	R
APA<CR>	AUDIO PARAMETER		AUDIO PARAMETER	R
VPA<CR>	VIDEO PARAMETER		VIDEO PARAMETER	R
KOF<CR>	KEY OFF (for USB, NETWORK)		KEY OFF	R

(STEREO MODE ONLY — applies to BI, BD, TI, TD)

About "KOF<CR>" command : Use KOF <CR> to stop Network commands such as Up or Down from repeating.

XM radio Operation (USA model only)

Command	Command Name	Argument	Operation	Answer
00XM	STATION 10	-	to see OSD display	XM***<CR+LF>
01XM	1	-	to see OSD display	XM***<CR+LF>
02XM	2	-	to see OSD display	XM***<CR+LF>
03XM	3	-	to see OSD display	XM***<CR+LF>
04XM	4	-	to see OSD display	XM***<CR+LF>
05XM	5	-	to see OSD display	XM***<CR+LF>
06XM	6	-	to see OSD display	XM***<CR+LF>
07XM	7	-	to see OSD display	XM***<CR+LF>
08XM	8	-	to see OSD display	XM***<CR+LF>
09XM	9	-	to see OSD display	XM***<CR+LF>
10XM	CH + / Cursol DOWN↓	-	to see OSD display	XM***<CR+LF>
11XM	CH - / Cursol UP↑	-	to see OSD display	XM***<CR+LF>
12XM	PRESET ST + (→)	-	to see OSD display	XM***<CR+LF>
13XM	PRESET ST - (←)	-	to see OSD display	XM***<CR+LF>
14XM	DISPLAY	-	to see OSD display	XM***<CR+LF>
15XM	PRESET	-	to see OSD display	XM***<CR+LF>
16XM	CLASS	-	to see OSD display	XM***<CR+LF>
17XM	DIRECT ACCESS(CH)	-	to see OSD display	XM***<CR+LF>
18XM	MEMORY (EDIT)	-	to see OSD display	XM***<CR+LF>
19XM	MENU	-	to see OSD display	XM***<CR+LF>
21XM	ENTER	-	to see OSD display	XM***<CR+LF>
22XM	RETURN	-	to see OSD display	XM***<CR+LF>
23XM	CATEGORY	-	to see OSD display	XM***<CR+LF>

(↑when change channel)

Sirius Operation (USA model only)

Command	Command Name	Argument	Operation	Answer
00SI	STATION 10	-	to see OSD display	SI***<CR+LF>
01SI	1	-	to see OSD display	SI***<CR+LF>
02SI	2	-	to see OSD display	SI***<CR+LF>
03SI	3	-	to see OSD display	SI***<CR+LF>
04SI	4	-	to see OSD display	SI***<CR+LF>
05SI	5	-	to see OSD display	SI***<CR+LF>
06SI	6	-	to see OSD display	SI***<CR+LF>
07SI	7	-	to see OSD display	SI***<CR+LF>
08SI	8	-	to see OSD display	SI***<CR+LF>
09SI	9	-	to see OSD display	SI***<CR+LF>
10SI	CH + / Cursol DOWN↓	-	to see OSD display	SI***<CR+LF>
11SI	CH - / Cursol UP↑	-	to see OSD display	SI***<CR+LF>
12SI	PRESET ST + (→)	-	to see OSD display	SI***<CR+LF>
13SI	PRESET ST - (←)	-	to see OSD display	SI***<CR+LF>
14SI	DISPLAY	-	to see OSD display	SI***<CR+LF>
15SI	PRESET	-	to see OSD display	SI***<CR+LF>
16SI	CLASS	-	to see OSD display	SI***<CR+LF>
17SI	DIRECT ACCESS(CH)	-	to see OSD display	SI***<CR+LF>
18SI	MEMORY (EDIT)	-	to see OSD display	SI***<CR+LF>
19SI	MENU	-	to see OSD display	SI***<CR+LF>
21SI	ENTER	-	to see OSD display	SI***<CR+LF>
22SI	RETURN	-	to see OSD display	SI***<CR+LF>
23SI	CATEGORY	-	to see OSD display	SI***<CR+LF>

(↑when change channel)

Home Media Gallery

About the "KOF<CR>" command for USB/Network: After each command for USB and Network send the KOF command.
For instance - the Cursor Up command (CUP<CR>) must be followed by the Key Off command (KOF<CR>) or the
Menu will continue to scroll.

Command	Command Name	Argument	Operation	Answer
00NW	0	-	to see OSD display	R
01NW	1	-	to see OSD display	R
2NW	2	-	to see OSD display	R
3NW	3	-	to see OSD display	R
4NW	4	-	to see OSD display	R
5NW	5	-	to see OSD display	R
6NW	6	-	to see OSD display	R
7NW	7	-	to see OSD display	R
8NW	8	-	to see OSD display	R
9NW	9	-	to see OSD display	R
10NW	PLAY	-	to see OSD display	R
11NW	PAUSE	-	to see OSD display	R
12NW	PREVIOUS (|<|<|)	-	to see OSD display	R
13NW	NEXT (|>|>|)	-	to see OSD display	R
14NW	REV (<|<|)	-	to see OSD display	R
15NW	FWD (|>|>)	-	to see OSD display	R
18NW	DISPLAY	-	to see OSD display	R
20NW	STOP	-	to see OSD display	R
26NW	UP	-	to see OSD display	R
27NW	DOWN	-	to see OSD display	R
28NW	RIGHT	-	to see OSD display	R
29NW	LEFT	-	to see OSD display	R
30NW	ENTER	-	to see OSD display	R
31NW	RETURN	-	to see OSD display	R
32NW	PROGRAM	-	to see OSD display	R
33NW	CLEAR	-	to see OSD display	R
34NW	REPEAT	-	to see OSD display	R
35NW	RANDOM	-	to see OSD display	R
36NW	MENU	-	to see OSD display	R
37NW	EDIT	-	to see OSD display	R
38NW	CLASS	-	to see OSD display	R

Error message

Error Message	Error Name	Meaning
E04<CR+LF>	COMMAND ERROR	Detect Inappropriate Command line
E06<CR+LF>	ARGUMENT ERROR	Inappropriate Factor

Explanation of argument

*17 VOLUME LEVEL [3byte]

185	+12.0dB
184	+11.5dB
161	0dB
002	-79.5dB
001	-80.0dB
000	-- (same as mute)

Example1-2
  Command ?V<CR>   Request Volume Level.
    Answer VOL185<CR+LF>   Volume is set to +12.0dB.

*2 ON/OFF [1byte]

0	ON
1	OFF

Example2
  Command ?M<CR>   Request Mute Status.
    Answer MUT0<CR+LF>   Mute On.

*3 FUNCTION MODE NO. [2byte]

00	PHONO
01	CD
02	TUNER
03	CDR
04	DVD
05	TV
10	VIDEO or VIDEO1
12	Multi CH
14	VIDEO2
15	DVR or DVR1
16	DVR2
18	XM
19	HDMI1
20	HDMI2
21	HDMI3
25	BDP
26	HOME MEDIA GALLARY
27	SIRIUS
31	HDMI (cyclic)
32	VIDEO 3

Example3
  Command 04FN<CR>   Change to source 04(DVD).
    Answer FN04<CR+LF>

Example4
  Command in respect of "?F<CR>"   Request Current Source.
    Answer FN04<CR+LF>   Source 04 is selected(DVD).

*6 TONE STATUS [1byte]

0	BYPASS
1	ON

Example1
  Command ?TO<CR>   Request TONE Status.
    Answer TO1<CR+LF>   Tone On.

*7 BASS status [2byte]

00	+6
01	+5
02	+4
03	+3
04	+2
05	+1
06	0
07	-1
08	-2
09	-3
10	-4
11	-5
12	-6

Example2
  Command ?BA<CR>   Request BASS Level.
    Answer BA02<CR+LF>   BASS is set to +4dB.

*8 **TREBLE status** [2byte]

00	+6
01	+5
02	+4
03	+3
04	+2
05	+1
06	0
07	-1
08	-2
09	-3
10	-4
11	-5
12	-6

Example3
   Command ?TR<CR>   Request TREBLE Level.
      Answer TR02<CR+LF>   TREBLE is set to +4dB.

*9 **PRESET number** [3byte]

*01	1
*02	2
*03	3
*04	4
*05	5
*06	6
*07	7
*08	8
*09	9
*10	0

* = B : class B
* = C : class C

Example4
   Command ?PR<CR>   Request PRESET number
      Answer PRA04<CR+LF>   PRESET number is set to class A4
             PRC10<CR+LF>   PRESET number is set to class C0

*10 **FREQ number** [7byte]

A0****	
F*****	

A is AM
F is FM
* is ASC code 0 - 9

Example5
   Command ?FR<CR>   Request FREQ number
      Answer FRA00890<CR+LF>   FREQ number is set to AM 890 kHz
             FRF08010<CR+LF>   FREQ number is set to FM 80.10 MHz

Example9
   Command 1MCH<CR>   change the MULTI INPUT CHANNEL
      Answer MCH1<CR+LF>   MULTI INPUT CHANNEL is set to 2 CHANNEL

*14 **SBch PROCESSING** [1byte]

0	OFF
1	ON
2	AUTO

*15 **MCACC POSITION** [1byte]

0	MCACC OFF
1	MEMORY 1
2	MEMORY 2
3	MEMORY 3
4	MEMORY 4
5	MEMORY 5
6	MEMORY 6

*16 **PHASE CONTROL** [1byte]

0	OFF
1	PHASE CONTROL ON
2	F U L L BAND PHASE CONTROL ON

*4 LISTENING MODE SET,LISTENING MODE SETTING REQUEST [4byte]

When you set the "Listening Mode"with the product front panel keys and knobs,
you operate the "LISTENING MODE SELECTOR" knob with "LISTENING CH SELECT"button.
There are some modes which are not available depending on the source signal. There is
automatic detection for 2ch and Multi-channel, though some modes override auto detection.

With the "**SR**" command, you can select whichever mode you wish.
Also, you can confirm your selection with the **?S** command.

*) When the LISTENING MODE is changed, the receiver will automatically send an ANSWER to let the external controller know the current
status without a LISTENING MODE SETTING REQUEST command having to be sent (Automatic Feedback

[1-3byte]:data for mode setting.
Indicating below the combination of modes selected by LISTENING MODE
Example

Command 0001SR<CR>	set STEREO mode.
Answer SR0001<CR+LF>	now become STEREO mode.
Answer LM130<CR+LF>	now 96kHz STEREO play.
Command ?S<CR>	now LISTENING mode?
Answer SR0031<CR+LF>	now ACTION mode.

All commands and requests must be followed by a Carriage Return <CR>

0XXXSR	Set Listening Mode	Group	Comment
001	STEREO (cyclic)	STEREO	
002	DIRECT	STEREO	
003	FRONT STAGE SURROUND ADVANCE FOCUS	STEREO	
004	FRONT STAGE SURROUND ADVANCE WIDE	STEREO	
005	AUTO SURROUND/STREAM DIRECT (same as key)	AUTO SURR	
006	AUTO SURROUND	AUTO SURR	
007	NORMAL DIRECT	AUTO SURR	
008	PURE DIRECT	AUTO SURR	
009	STEREO (direct command)	STEREO	
010	STANDARD SELECTION (same as key)	STANDARD	
012	PRO LOGIC	STANDARD	for 2ch Source
013	PRO LOGIC MOVIE	STANDARD	for 2ch Source
014	PRO LOGIC MUSIC	STANDARD	for 2ch Source
015	PRO LOGIC GAME	STANDARD	for 2ch Source
016	Neo:6 CINEMA	STANDARD	for 2ch Source
017	Neo:6 MUSIC	STANDARD	for 2ch Source
018	PRO LOGIC x MOVIE	STANDARD	for 2ch Source
019	PRO LOGIC x MUSIC	STANDARD	for 2ch Source
020	PRO LOGIC x GAME	STANDARD	for 2ch Source
021	Deponding on Source (for Multi-ch)	STANDARD	for Multi-ch Source
022	(Multi-Channel Source) + EX	STANDARD	for Multi-ch Source
023	(Multi-Channel Source) + PRO LOGIC x MOVIE	STANDARD	for Multi-ch Source
024	(Multi-Channel Source) + PRO LOGIC x MUSIC	STANDARD	for Multi-ch Source
025	DTS + Neo:6	STANDARD	for Multi-ch Source
026	DTS-ES matrix6.1	STANDARD	for Multi-ch Source
027	DTS- ES discrete6.1	STANDARD	for Multi-ch Source
028	XM HD SURROUND	STANDARD	for 2ch Source
029	NEURAL THX	STANDARD	for Multi-ch Source
030	DTS- ES 8ch discrete	STANDARD	for Multi-ch Source
050	THX SELECTION (same as key)	HOME THX	
051	PRO LOGIC + THX CINEMA	HOME THX	for 2ch Source
052	PRO LOGIC MOVIE + THX CINEMA	HOME THX	for 2ch Source
053	Neo:6 CINEMA + THX CINEMA	HOME THX	for 2ch Source
054	PRO LOGIC x MOVIE + THX CINEMA	HOME THX	for 2ch Source
055	THX GAMES MODE (THX SELECT2 GAMES)	HOME THX	for 2ch Source
056	THX CINEMA	HOME THX	for Multi-ch Source
057	THX SURROUND EX	HOME THX	for Multi-ch Source
058	PRO LOGIC x MOVIE + THX CINEMA	HOME THX	for Multi-ch Source
059	DTS + Neo:6 + THX CINEMA	HOME THX	for Multi-ch Source
060	DTS-ES MATRIX + THX CINEMA	HOME THX	for Multi-ch Source
061	DTS-ES DISCRETE6.1 + THX CINEMA	HOME THX	for Multi-ch Source
062	THX SELECT2 CINEMA	HOME THX	for Multi-ch Source
063	THX SELECT2 MUSIC	HOME THX	for Multi-ch Source
064	THX SELECT2 GAMES	HOME THX	for Multi-ch Source
067	DTS-ES 8ch DISCRETE + THX CINEMA	HOME THX	for Multi-ch Source
068	THX CINEMA	HOME THX	for 2ch Source
069	THX MUSIC	HOME THX	for 2ch Source
070	THX GAMES	HOME THX	for 2ch Source
071	PL2 MUSIC + THX MUSIC	HOME THX	for 2ch Source
072	PL2x MUSIC + THX MUSIC	HOME THX	for 2ch Source
073	Neo:6 MUSIC + THX MUSIC	HOME THX	for 2ch Source
074	PL2 GAME + THX GAMES	HOME THX	for 2ch Source
075	PL2x GAME + THX GAMES	HOME THX	for 2ch Source
080	THX MUSIC	HOME THX	for Multi-ch Source
081	THX GAMES	HOME THX	for Multi-ch Source
082	PLIIx MUSIC + THX MUSIC	HOME THX	for Multi-ch Source
083	EX + THX GAMES	HOME THX	for Multi-ch Source
084	Neo:6 + THX MUSIC	HOME THX	for Multi-ch Source
085	Neo:6 + THX GAMES	HOME THX	for Multi-ch Source
086	ES MATRIX + THX MUSIC	HOME THX	for Multi-ch Source
087	ES MATRIX + THX GAMES	HOME THX	for Multi-ch Source
088	ES DISCRETE + THX MUSIC	HOME THX	for Multi-ch Source
089	ES DISCRETE + THX GAMES	HOME THX	for Multi-ch Source
090	ES 8CH DISCRETE + THX MUSIC	HOME THX	for Multi-ch Source
091	ES 8CH DISCRETE + THX GAMES	HOME THX	for Multi-ch Source
100	ADVANCED SURROUND SELECTION (same as key)	ADV.SURR	
101	ACTION	ADV.SURR	
102	SCI-FI	ADV.SURR	
103	DRAMA	ADV.SURR	
104	ENTERTAINMENT SHOW (MUSICAL)	ADV.SURR	
105	MONO FILM	ADV.SURR	
106	EXPANDED THEATER (7-D THEATER)	ADV.SURR	
107	CLASSICAL	ADV.SURR	
109	UNPLUGGED (JAZZ)	ADV.SURR	
110	ROCK/POP (ROCK)	ADV.SURR	
112	EXTENDED STEREO (7CH-STEREO)	ADV.SURR	
113	PHONES SURROUND	ADV.SURR	
116	TV SURROUND	ADV.SURR	
117	SPORTS	ADV.SURR	
118	ADV.GAME	ADV.SURR	
151	AUTO LEVEL CONTROL	STEREO	

The list below indicates the combination of the LISTENING MODE selected by "SR" command and
the LISTENING MODE determined by the input source signal.

*) When the LISTENING MODE is set and the format for the source signal is confirmed, the set will send an ANSWER COMMAND to the external
controller to let it know the status of the LISTENING MODE. It replies automatically and does not need to receive a LISTENING MODE Request
(Automatic Feedback).

LISTENING MODE shows the current signal format the set is receiving or surround mode which has been added to the original signal.
LM***

LMXXX	Listenning Mode Name	Group	Comment
000	PRO LOGIC MOVIE	STANDARD	
001	PRO LOGIC MUSIC	STANDARD	
002	PRO LOGIC	STANDARD	
003	NEO6 CINEMA	STANDARD	
004	NEO6 MUSIC	STANDARD	
005	PRO LOGIC GAME	STANDARD	
008	96kHz PRO LOGIC	STANDARD	
009	96kHz PRO LOGIC MOVIE	STANDARD	
010	96kHz PRO LOGIC MUSIC	STANDARD	
011	96kHz PRO LOGIC GAME	STANDARD	
015	PCM 96KHz	STANDARD	
016	DOLBY DIGITAL	STANDARD	
017	DOLBY DIGITAL EX	STANDARD	
019	DTS	STANDARD	
022	DTS-ES DISC 6.1	STANDARD	
023	DTS-ES MTRX 6.1	STANDARD	
030	DTS 96/24	STANDARD	
031	PCM	STANDARD	
032	ACTION	ADV.SURR	
033	SCIFI	ADV.SURR	
034	DRAMA	ADV.SURR	
035	ENTERTAINMENT SHOW (MUSICAL)	ADV.SURR	
036	MONOFILM	ADV.SURR	
043	EXPANDED THEATER (7-D THEATER)	ADV.SURR	
050	PRO LOGIC x MOVIE	STANDARD	
051	PRO LOGIC x MUSIC	STANDARD	
052	NEO6 96K CINEMA	STANDARD	
053	NEO6 96K MUSIC	STANDARD	
054	NEO6 88K CINEMA	STANDARD	
055	NEO6 88K MUSIC	STANDARD	
056	PRO LOGIC x GAME	STANDARD	
057	96kHz PRO LOGIC x MOVIE	STANDARD	
058	96kHz PRO LOGIC x MUSIC	STANDARD	
059	96kHz PRO LOGIC x GAME	STANDARD	
080	THX CINEMA	THX	
081	THX SURROUND EX	THX	
083	THX SELECT2 MUSIC	THX	
085	DTS + Neo6 + THX CINEMA	THX	
087	PRO LOGIC x MOVIE + THX CINEMA	THX	
090	THX MUSIC	THX	
091	THX GAMES	THX	
092	THX SELECT2 MUSIC	THX	
093	THX SELECT2 GAMES	THX	
096	CLASSICAL	ADV.SURR	
098	UNPLUGGED (JAZZ)	ADV.SURR	
099	ROCK/POP (ROCK)	ADV.SURR	
107	EXTENDED STEREO (7CH-STEREO)	ADV.SURR	
122	NEURAL THX	etc.	
123	XM HD SURROUND	etc.	
124	SACD DIRECT	etc.	
125	PCM DIRECT	etc.	
126	ANALOG DIRECT	etc.	
128	STEREO	STEREO	
130	96KHz STEREO	STEREO	
134	192kHz STEREO	STEREO	
135	FRONT STAGE SURROUND ADVANCE FOCUS	STEREO	
136	FRONT STAGE SURROUND ADVANCE WIDE	STEREO	
137	AUTO LEVEL CONTROL	STEREO	
140	PCM88.2kHz + PRO LOGIC	STANDARD	
141	PCM88.2kHz + PRO LOGIC MOVIE	STANDARD	
142	PCM88.2kHz + PRO LOGIC MUSIC	STANDARD	
143	PCM88.2kHz + PRO LOGIC GAME	STANDARD	
144	PCM88.2kHz + PRO LOGIC x MOVIE (for 2ch)	STANDARD	
145	PCM88.2kHz + PRO LOGIC x MUSIC (for 2ch)	STANDARD	
146	PCM88.2kHz + PRO LOGIC x GAME	STANDARD	
154	DOLBY DIGITAL + PRO LOGIC x MOVIE	STANDARD	
155	DOLBY DIGITAL + PRO LOGIC x MUSIC	STANDARD	
156	DTS + PROLIGIC x MOVIE	STANDARD	
157	DTS + PROLIGIC x MUSIC	STANDARD	
162	PCM88.2kHz + PRO LOGIC x MOVIE (for multichannel)	STANDARD	
163	PCM88.2kHz + PRO LOGIC x MUSIC (for multichannel)	STANDARD	
164	PCM96kHz + PRO LOGIC x MOVIE (for multichannel)	STANDARD	
165	PCM96kHz + PRO LOGIC x MUSIC (for multichannel)	STANDARD	
166	DTS Express	STANDARD	
167	DTS-HD HIGH RESOLUTION	STANDARD	
168	DTS-HD MASTER AUDIO	STANDARD	
169	DOLBY DIGITAL PLUS	STANDARD	
170	DOLBY DIGITAL PLUS EX	STANDARD	
171	DOLBY DIGITAL PLUS +PRO LOGIC x MOVIE	STANDARD	
172	DOLBY DIGITAL PLUS +PRO LOGIC x MUSIC	STANDARD	
173	DOLBY DIGITAL PLUS +PRO LOGIC x MOVIE +THX CINEMA	THX	
174	DOLBY trueHD	STANDARD	
175	DOLBY TrueHD EX	STANDARD	
176	DOLBY TrueHD +PRO LOGIC x MOVIE	STANDARD	
177	DOLBY TrueHD +PRO LOGIC x MUSIC	STANDARD	
178	DOLBY TrueHD +PRO LOGIC x MOVIE +THX CINEMA	THX	
179	DTS-(HD)ES 8ch Discrete	STANDARD	
181	TV SURROUND	ADV.SURR	
182	SPORTS	ADV.SURR	
183	GAME	ADV.SURR	
185	PHONES SURROUND	ADV.SURR	
200	6CH IN	STANDARD	
202	6CH IN + EX	STANDARD	
204	7CH IN	STANDARD	
206	8CH IN	STANDARD	
208	6CH IN + PRO LOGIC x MOVIE	STANDARD	
209	6CH IN + PRO LOGIC x MUSIC	STANDARD	
210	6CH IN + PRO LOGIC x MOVIE +THX CINEMA	THX	

213	MULTI-CH IN	STANDARD	
214	PRO LOGIC x GAME + THX GAMES	THX	
216	PRO LOGIC GAME + THX GAMES	THX	
219	HDMI THROUGH	etc.	
220	PRO LOGIC + THX CINEMA	THX	
221	PRO LOGIC MOVIE + THX CINEMA	THX	
222	Neo:6 CINEMA + THX CINEMA	THX	
224	THX SELECT2 GAMES (for 2ch)	THX	
225	PRO LOGIC MUSIC + THX MUSIC	THX	
226	PRO LOGIC x MUSIC + THX MUSIC	THX	
227	Neo:6 MUSIC + THX MUSIC	THX	
230	DOLBY DIGITAL + PRO LOGIC x MOVIE + THX CINEMA	THX	
231	DTS + PRO LOGIC x MOVIE + THX CINEMA	THX	
232	DTS-ES MATRIX6.1 + THX CINEMA	THX	
233	DTS-ES DISCRETE6.1 + THX CINEMA	THX	
235	WMA 9 Pro + PRO LOGIC x MOVIE + THX CINEMA	THX	
236	THX SELECT2 CINEMA	THX	
237	THX SELECT2 GAMES	THX	
238	PCM + PRO LOGIC x MOVIE + THX CINEMA	THX	
239	DTS-(HD)ES 8ch Discrete +THX CINEMA	THX	
240	DTS-(HD)ES Discrete +THX CINEMA	THX	
241	DTS-(HD)ES Matrix +THX CINEMA	THX	
242	PCM + PRO LOGIC x MUSIC + THX MUSIC	THX	
243	PCM + DOLBY EX + THX GAMES	THX	
244	DOLBY DIGITAL + PRO LOGIC x MUSIC + THX MUSIC	THX	
245	DOLBY DIGITAL EX + THX GAMES	THX	
246	DTS + PRO LOGIC x MUSIC + THX MUSIC	THX	
248	DTS-(HD)ES Matrix	STANDARD	
249	DTS-(HD)ES Discrete	STANDARD	
250	DVD-AUDIO + PRO LOGIC	STANDARD	
251	DVD-AUDIO + PRO LOGIC MOVIE	STANDARD	
252	DVD-AUDIO + PRO LOGIC MUSIC	STANDARD	
253	DVD-AUDIO + PRO LOGIC GAME	STANDARD	
254	DVD-AUDIO + PRO LOGIC x MOVIE (for 2ch)	STANDARD	
255	DVD-AUDIO + PRO LOGIC x MUSIC (for 2ch)	STANDARD	
256	DVD-AUDIO + PRO LOGIC x GAME	STANDARD	
257	DVD-AUDIO + PRO LOGIC x MOVIE (for multichannel)	STANDARD	
258	DVD-AUDIO + PRO LOGIC x MUSIC (for multichannel)	STANDARD	
260	DVD-AUDIO 88.2k + PRO LOGIC	STANDARD	
270	DVD-AUDIO 96k + PRO LOGIC	STANDARD	
280	SACD + PRO LOGIC	STANDARD	
281	SACD + PRO LOGIC MOVIE	STANDARD	
282	SACD + PRO LOGIC MUSIC	STANDARD	
283	SACD + PRO LOGIC GAME	STANDARD	
284	SACD + PRO LOGIC x MOVIE (for 2ch)	STANDARD	
285	SACD + PRO LOGIC x MUSIC (for 2ch)	STANDARD	
286	SACD + PRO LOGIC x GAME	STANDARD	
287	SACD + PRO LOGIC x MOVIE (for multichannel)	STANDARD	
288	SACD + PRO LOGIC x MUSIC (for multichannel)	STANDARD	
300	PCM 88.2KHz	STANDARD	
302	PCM 176.4KHz	STANDARD	
303	PCM 192KHz	STANDARD	
304	PCM 88.2KHz STEREO	STEREO	
305	PCM 96KHz STEREO	STEREO	
306	PCM 176.4KHz STEREO	STEREO	
307	PCM 192KHz STEREO	STEREO	
322	DTS 96/24 STEREO	STEREO	
324	DTS + Neo:6	STANDARD	
330	PCM +EX	STANDARD	
331	PCM 88.2 +EX	STANDARD	
332	PCM 96 +EX	STANDARD	
333	PCM + PRO LOGIC x MOVIE (for multichannel)	STANDARD	
334	PCM + PRO LOGIC x MUSIC (for multichannel)	STANDARD	
340	SACD	STANDARD	
342	SACD STEREO	STEREO	
344	SACD +EX	STANDARD	
350	DVD-AUDIO	STANDARD	
351	DVD-AUDIO 88.2KHz	STANDARD	
352	DVD-AUDIO 96KHz	STANDARD	
356	DVD-AUDIO STEREO	STEREO	
358	DVD-AUDIO 88.2KHz STEREO	STEREO	
360	DVD-AUDIO 96KHz STEREO	STEREO	
362	DVD-AUDIO 176KHz STEREO	STEREO	
363	DVD-AUDIO 192KHz STEREO	STEREO	
366	DVD AUDIO +EX	STANDARD	
367	DVD-AUDIO 88.2KHz +EX	STANDARD	
368	DVD-AUDIO 96KHz +EX	STANDARD	
371	DTS 96/24 + Neo:6	STANDARD	
372	DTS 96/24 ES MATRIX	STANDARD	
373	DVD-AUDIO 176KHz	STANDARD	
374	DVD-AUDIO 192KHz	STANDARD	
380	WMA 9 PRO	STANDARD	
382	WMA 9 PRO + EX	STANDARD	
384	WMA 9 Pro + PRO LOGIC x MOVIE	STANDARD	
385	WMA 9 Pro + PRO LOGIC x MUSIC	STANDARD	
390	DTS + Neo:6 + THX MUSIC	THX	
391	DTS + Neo:6 + THX GAMES	THX	
392	DTS-ES MATRIX6.1 + THX MUSIC	THX	
393	DTS-ES MATRIX6.1 + THX GAMES	THX	
394	DTS-ES DISCRETE6.1 + THX MUSIC	THX	
395	DTS-ES DISCRETE6.1 + THX GAMES	THX	
396	DTS-(HD)ES 8ch Discrete +THX MUSIC	THX	
397	DTS-(HD)ES 8ch Discrete +THX GAMES	THX	
398	DTS-(HD)ES Discrete +THX MUSIC	THX	
399	DTS-(HD)ES Discrete +THX GAMES	THX	
400	DTS-(HD)ES Matrix +THX MUSIC	THX	
401	DTS-(HD)ES Matrix +THX GAMES	THX	
402	MPEG-2 AAC + PRO LOGIC x MUSIC + THX MUSIC	THX	
403	MPEG-2 AAC + DOLBY EX + THX GAMES	THX	
404	WMA 9 Pro + PRO LOGIC x MUSIC + THX MUSIC	THX	
405	WMA 9 Pro + DOLBY EX + THX GAMES	THX	
408	DOLBY DIGITAL PLUS +PRO LOGIC x MUSIC +THX MUSIC	THX	
409	DOLBY DIGITAL PLUS + DOLBY EX + THX GAMES	THX	
410	DOLBY True HD +PRO LOGIC x MUSIC +THX MUSIC	THX	
411	DOLBY True HD + DOLBY EX + THX GAMES	THX	

Example8
  Command ?L<CR>
    Answer LM001<CR+LF>   now PRO LOGIC   MUSIC playing.