8500 Balboa Blvd. , Northridge, CA 91329

SDP-25 SERIAL CONTROL PROTOCOL

Introduction

This document is intended for users who wish to provide their own user interface or control system for an SDP-25 system. The below controls are intended to be used by experienced systems designers. The commands can be sent and received over RS232 control ports.

SDP-25 receives commands and can send responses to each command. It can also (optionally) broadcast automatic responses to certain system events such as source switching from the front panel etc. (see AUFB). The following commands can be sent over RS232.

RS232 Setup

9600 Baud
8 bit data
1 start bit
1 stop bit
no parity
no handshake

Command format:
ASCII strings ended with carriage return (code 13). All Host Controller commands (input to SDP-25) and SDP-25 Response (feedback) use the same format.

#	D1	D2	C1	C2	C3	C4	P1	P2	...	<CR>

 # Command start character. In Hex this is 23 or \x23.
D1 Device category, one digit. For SDP-25 D1 must be 1.
D2 RS485 device ID, 1 digit. For SDP-25 D2 should remain 0.
C1..C4 Command name (4 chars) , typically uppercase ASCII letters.
P1,P2 Parameters are two or more arbitrary ASCII characters.
<CR> Special end character \r: Decimal code 13 or in hex 0D over RS232

Response format:
Response format is the same as commands, repeating the D1,D2,C and P bytes (P bytes may carry either an actual status value or ?? in case of errors).

Example of Command and Response for power:

Description	**String Example**
command: query power status	**#10MPWRQS\r**
response: power is off (in standby)	**#10MPWR00\r**
command: power up	**#10MPWR01\r**
response(delayed): power is on	**#10MPWR01\r**

Communication Notes:
All characters preceding the # of a command, and following the <CR> will be ignored. Do not insert #, spaces, <LF>, <TAB> or other non-ASCII characters inside the command string.
Do not assume that the number of response bytes P1,P2,... is fixed. Allow up to 320 bytes to be read or until a <CR> is encountered.
The format of the automatic responses is the same as the response to a serial command sent with the parameter bytes P1 P2 = "QS".

Errors:
A command that is sent with a valid format but a Parameter that cannot be valid (such as input source 10, which does not exist) will return "??" in the parameter bytes.

Description	**String Example**
Response: Main Source Error	#10MSRC??\r

Any non recognized command or command which has non standard or incorrect formatting will be ignored. If no response is received within 500ms assume that the command is invalid.

Power On Timing Sequence:
After the power on command is sent the unit will take 5 seconds to power on and acknowledge the power on command. You should wait until the Power ON feedback is received before starting a timer to block sending any additional commands. After receiving the Power On feedback an additional 4.5 seconds should be allowed before sending any commands. During this time the commands may be ignored and will need to be resent.
Power OFF:
All commands except **MPWR** are ignored in standby.

Command List

COMMAND **Bytes C1,C2,C3,C4**	**PARAMETER** **Bytes** **P1,P2,..**	**DESCRIPTION** **All feedback is in the same format. In this way the response will echo the command if the command is valid.**	**NOTES**
MPWR		**Main Power**	
	00	Off (Standby)	
	01	On	
	QS	Query Status	
AUFB		**auto-feedback**	
	00	OFF - automatic response on device status change or button press actions will not be broadcast	

	01	Automatic response will always be sent.	Recommended to be sent on power up
	QS	query, return AUFB status	
MSRC		**Main Source**	System power on defaults to last used source
	00	Blu-ray	
	01	SAT / CBL	
	02	Game	
	03	Media	
	04	DVR	
	05	Video 1	
	06	Video 2	
	07	Video 3	
	08	TV	
	09	USB	
	10	Front HDMI	
	11	Front Audio	
	QS	Query Status	
MVOL		**Main Volume**	MVOL can be used to set the volume, bump it up/down. The unit will respond with a MVOL and the current volume.
	UP	Up 1 step (0.5dB)	
	DN	Down 1 step (0.5dB)	
	xxxx	0100..1100 (-90.0..10.0dB) Steps: 5 units = 0.5dB	
	QS	Query Status	
MMUT		**Main Mute**	
	00	Mute Off	
	01	Mute On	
	02	Mute toggle	
	QS	Query Status	
ZVID		**Zone Video Source**	
	00	Blu-ray	
	01	SAT / CBL	

	02	Game	
	03	Media	
	04	DVR	
	05	Video 1	
	06	Video 2	
	07	Video 3	
	08	TV	
	09	USB	
	10	Front HDMI	
	11	Front Audio	
	QS	Query Status	
ZAUD		**Zone Audio Source**	
	00	Blu-ray	
	01	SAT / CBL	
	02	Game	
	03	Media	
	04	DVR	
	05	Video 1	
	06	Video 2	
	07	Video 3	
	08	TV	
	09	USB	
	10	Front HDMI	
	11	Front Audio	
	QS	Query Status	
MDSL		**Audio Input Source/Mode**	
	00	not applicable,ignore	
	AN	Analog	
	DI	Digital (COAX or OPTICAL)	
	HD	HDMI	
	BP	Bypass 2-Channel (Analog)	
	QS	Query Status	
MENU		**Menu**	
	ME	Enter/Quit menu	
	LE	Left	
	RI	Right	
	UP	Up	

	DN	Down	
	SL	Select	
	BA	Back to preview menu	
	QS	Query status	Menu is active = 01, Menu inactive = 00.

DISP		**Display brightness**	
	01	25% Brightness	
	02	50% Brightness	
	03	75% Brightness	
	04	100% Brightness	
	QS	Query Status	
OUTP		**Query Output Format (Active Speaker Format)**	
	QS	query, returns listening output format	
		The response will show the speaker output currently active. For example: #OUTP7.1\r would indicate 7.1 speaker output. This does not indicate the decoding or post processing listening mode but does confirm how many speakers are being used.	
LMOD		**Listening Mode**	These represent output or post processing after the analog or digital signal has been decoded. To see what the input signal bitstream decoding is (DD5.1, TRU-HD, etc…) use INPT to querry the input signal format
	00	No Effect	
	01	PLII Movie	
	02	PLII Music	
	03	PLII Game	
	04	Neo:6 Cinema	
	05	Neo:6 Music	
	06	DSP Movie	
	07	DSP Music	
	08	DTS Upmix	
	09	Dolby EX	
	QS	Query Status	

INPT		**Query Input Signal BitStream (Source Program)**	Cannot be changed, this is for information use only. The source controls the bitstream
	QS	query, response xx=	
		00: Unknown or illegal	
		01: Analog, BP7 or BP2	
		02: Digital pass-through	
		03: Pink-noise test	
		04: Auto	
		05: Bitstream	
		06: All DTS formats	
		07: PCM Auto	
		08: PCM (CD audio)	
		09: PCM 8 ch	
		0a: AC3 (Dolby Dig)	
		0b: DTS	
		0c: AAC MPEG4,MPEG2,iPhone,	
		iPod,iPad,NintendoDSi,	
		iTunes,DivX,PS3,PSP,	
		SonyWalk,phones,Wii.	
		0d: MPEG(MP1 Layr1 and 2)	
		0e: DTS12 (DVD IEC Type 12)	
		0f: DTS13 (DVD IEC Type 13)	
		10: DTS14 (CD 14-bit)	
		11: DTS16 (CD 16-bit)	
		12: WMP (WMA Pro)	
		13: MP3	
		14: DSD1 (SACD 1bit)	
		15: DSD2	
		16: DSD3	
		17: DDP (Dolby Dig+)	
		18: DTS HD or Master	
		19: Dolby TrueHD	

		1a: DXP (DTS Express)	
DVOL		**Dynamic Range(DRC) and Dolby Volume(DV)**	See User Guide for description of these Dolby Volume parameters
	00	ALL OFF	
	01	DRC OFF; DV Leveler Off	
	02	DRC OFF; DV Low	
	03	DRC OFF; DV Mid	
	04	DRC OFF; DV High	
	05	DRC On; DV OFF	
	06	DRC AUTO;DV OFF	
	QS	Query Status	
TRIG		**Trigger 1 Output**	
	0	Trigger Off	
	1	Trigger On	
	QS	Query Status	
LFVL		**Left Front Vol Trim**	
	UP	Up 1 step (1dB)	
	DN	Down 1 step (1dB)	
	xxxx	0900..1100 (-10.0..10.0dB) Steps: 10 units/1dB	
	QS	Query Status	

RFVL		**Right Front Vol Trim**	
	UP	Up 1 step (1dB)	
	DN	Down 1 step (1dB)	
	xxxx	0900..1100(-10.0..10.0dB) Steps: 10 units/1dB	
	QS	Query Status	
CNVL		**Centre Vol Trim**	
	UP	Up 1 step (1dB)	

	DN	Down 1 step (1dB)	
	xxxx	0900..1100(-10.0..10.0dB) Steps: 10 units/1dB	
	QS	Query Status	
SBVL		**Subwoofer Vol Trim**	
	UP	Up 1 step (1dB)	
	DN	Down 1 step (1dB)	
	xxxx	0900..1100(-10.0..10.0dB) Steps: 10 units/1dB	
	QS	Query Status	
LSVL		**Left Surr Vol Trim**	
	UP	Up 1 step (1dB)	
	DN	Down 1 step (1dB)	
	xxxx	0900..1100(-10.0..10.0dB) Steps: 10 units/1dB	
	QS	Query Status	
RSVL		**Right Surr Vol Trim**	
	UP	Up 1 step (1dB)	
	DN	Down 1 step (1dB)	
	xxxx	0900..1100(-10.0..10.0dB) Steps: 10 units/1dB	
	QS	Query Status	
LBVL		**Left Back Vol Trim**	
	UP	Up 1 step (1dB)	
	DN	Down 1 step (1dB)	
	xxxx	0900..1100(-10.0..10.0dB) Steps: 10 units/1dB	
	QS	Query Status	
RBVL		**Right Back Vol Trim**	
	UP	Up 1 step (1dB)	

	DN	Down 1 step (1dB)	
	xxxx	0900..1100(-10.0..10.0dB) Steps: 10 units/1dB	
	QS	Query Status	
SPFR		**Front Speakers Setup**	
	00	Off (Not allowed)	
	01	Full	
	02	40Hz	
	03	50Hz	
	04	60Hz	
	05	70Hz	
	06	80Hz	
	07	90Hz	
	08	100Hz	
	09	110Hz	
	10	120Hz	
	QS	Query Status	
SPCN		**Centre Speaker Setup**	
	00	Off	
	01	Full	
	02	40Hz	
	03	50Hz	
	04	60Hz	
	05	70Hz	
	06	80Hz	
	07	90Hz	
	08	100Hz	
	09	110Hz	
	10	120Hz	
	QS	Query Status	
SPSB		**Subwoofer Setup**	

	00	Off	
	01	On	
	QS	Query Status	
SPSR		**Surr Speakers Setup**	
	00	Off	
	01	Full	
	02	40Hz	
	03	50Hz	
	04	60Hz	
	05	70Hz	
	06	80Hz	
	07	90Hz	
	08	100Hz	
	09	110Hz	
	10	120Hz	
	QS	Query Status	
SPBK		**Back Speakers Setup**	
	00	Off	
	01	Full	
	02	40Hz	
	03	50Hz	
	04	60Hz	
	05	70Hz	
	06	80Hz	
	07	90Hz	
	08	100Hz	
	09	110Hz	
	10	120Hz	
	QS	Query Status	

XBAS		**Extra Bass Setup**	
		(sub must be on and front=large only)	

	00	Off	
	01	On	
	QS	Query Status	
TEST		**Pink noise setup**	
	ALL	Automatically sequence all channels every 4s.	
	MAN	Start manual sequence or increment channel if already started	
	LF	Start Left front(01)	
	CN	Start Centre(02)	
	RF	Start Right front (03)	
	RS	Start Right surround(04)	
	RB	Start Right back(05)	
	LB	Start Left back (06)	
	LS	Start Left surround (07)	
	SB	Start Subwoofer (08)	
	EX	Stop and Exit pink noise setup	
	QS	query status. Resp	
	00	00 = not playing	Response to QS will be the currently active TEST output channel
	01	01 = L (left front)	
	02	02 = C (center)	
	03	03 = R (right front)	
	04	04 = Rs (right surr side)	
	05	05 = Rb (right surr back)	
	06	06 = Lb (left surr back)	
	07	07 = Ls (left surr side)	
	08	08 = SUBWOOFER	

RATE		**Query Input Sample Rate (Frame Rate)**	
	QS	Query, returns sample rate in Hz (000000=unknown).	
VFMT		**Query Video Input Format**	

	QS	Query, returns video timing and format code xx in hex.	See Video Format Chart Below
VCOL		**Video color depth**	
	QS	query, response xx=	
		00: AUTO	
		04: 3x8 bit	
		05: 3x10 bit	
		06: 3x12 bit	
		07: 3x16 bit	
VCPP		**Copy protection status**	
	QS	query, response xx=	
		00: none	
		01: HDCP	

VFMT		**Query Video Input Format**	
	QS	Query, returns video	
		format code xx in hex:	
		00: invalid, unknown, unchanged	
		-- TV --	
		01: 640x480p_60Hz	
		02: 720x480p 60Hz	

03: 720x480p 60Hz wide

04: 1280x720p_60Hz

05: 1920x1080i_60Hz

06: 720x480i_60Hz

07: 720x480i_60Hz wide

08: 720x240p_60Hz

09: 720x240p_60Hz wide

0a: 2880x480i_60Hz

0b: 2880x480i_60Hz wide

0c: 2880x240p_60Hz
0d: 2880x240p_60Hz wide
0e: 1440x480p_60Hz
0f: 1440x480p_60Hz wide
10: 1920x1080p_60Hz
11: 720x576p_50Hz
12: 720x576p_50Hz wide
13: 1280x720p_50Hz
14: 1920x1080i_50Hz
15: 720x576i_50Hz
16: 720x576i_50Hz wide
17: 720x288p_50Hz
18: 720x288p_50Hz wide
19: 2880x576i_50Hz
1a: 2880x576i_50Hz wide
1b: 2880x288p_50Hz
1c: 2880x288p_50Hz wide
1d: 1440x576p_50Hz
1e: 1440x576p_50Hz wide
1f: 1920x1080p_50Hz
20: 1920x1080p_24Hz
21: 1920x1080p_25Hz
22: 1920x1080p_30Hz
23: 2880x480p_60Hz
24: 2880x480p_60Hz wide
25: 2880x576p_50Hz
26: 2880x576p_50Hz wide
27: 1920x1080i_50Hz
28: 1920x1080i_100Hz
29: 1280x720p_100Hz
2a: 720x576p_100Hz
2b: 720x576p_100Hz wide
2c: 720x576i_100Hz
2d: 720x576i_100Hz wide
2e: 1920x1080i_120Hz

2f: 1280x720p_120Hz
30: 720x480p_120Hz
31: 720x480p_120Hz wide
32: 720x480i_120Hz
33: 720x480i_120Hz wide
34: 720x576p_200Hz
35: 720x576p_200Hz wide
36: 720x576i_200Hz
37: 720x576i_200Hz wide
38: 720x480p_240Hz
39: 720x480p_240Hz wide
3a: 720x480i_240Hz
3b: 720x480i_240Hz wide
3c: 1280x720p_24Hz
3d: 1280x720p_25Hz
3e: 1280x720p_30Hz
3f: 1920x1080p_120Hz
40: 1920x1080p_100Hz

-- PC formats --

80: PC_640x480p_60Hz
81: PC_800x600p_60Hz
82: PC_1152x960p_60Hz
83: PC_1024x768p_60Hz
84: PC_1280x768p_60Hz
85: PC_1280x1024p_60Hz
86: PC_1360x768p_60Hz
87: PC_1400x1050p_60Hz
88: PC_1600x1200p_60Hz
89: PC_1024x768p_70Hz
8a: PC_640x480p_72Hz
8b: PC_800x600p_72Hz
8c: PC_640x480p_75Hz
8d: PC_1024x768p_75Hz
8e: PC_800x600p_75Hz
8f: PC_1024x864p_75Hz

90: PC_1280x1024p_75Hz
91: PC_640x350p_85Hz
92: PC_640x400p_85Hz
93: PC_720x400p_85Hz
94: PC_640x480p_85Hz
95: PC_800x600p_85Hz
96: PC_1024x768p_85Hz
97: PC_1152x864p_85Hz
98: PC_1280x960p_85Hz
99: PC_1280x1024p_85Hz
9a: PC_1024x768i_87Hz
9b: PC_800x600p_56Hz
9c: PC_1152x864p_70Hz
9d: PC_1152x864p_75Hz
9e: PC_1280x960p_60Hz
9f: PC_1280x960p_75Hz
-- 3D TV --
ee: 1920x1080p_24Hz_3D_FP
ef: 1280x720p_50Hz_3D_FP
f0: 1280x720p_60Hz_3D_FP
-- special --
fc: FORCE_PASS_THRU
fd: PASS_THRU
fe: AUTO
ff: UNSUPPORTED