

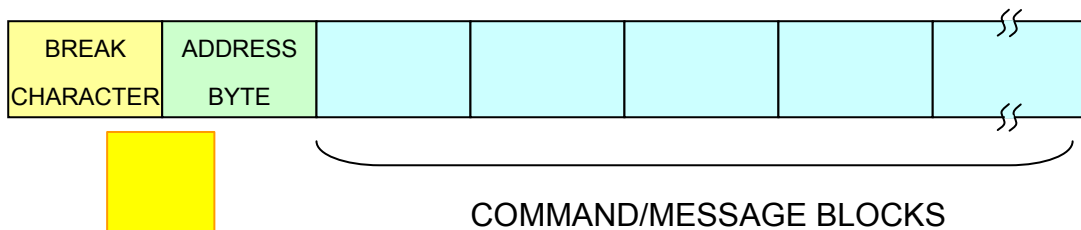
AV-HS450 External Control Protocol

Rev. 2.1 Aug. 2017

AV-HS450 has serial interface port and GVG compatible protocol.

- Note - Supported protocol is subset of GVG "Serial Interface Protocol" and some commands are extended for AV-HS450.
 - AV-HS300, 400 and HS400A don't support this document's protocol.

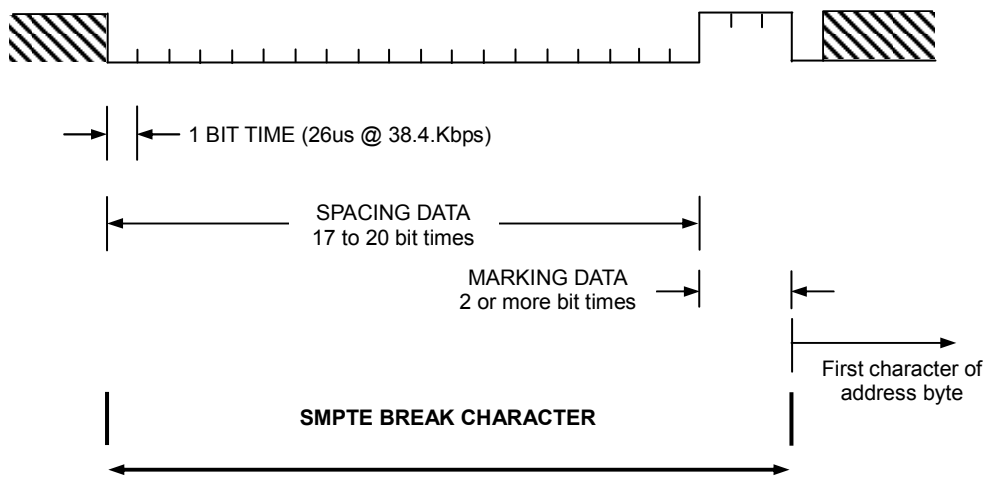
(1) GVG Protocol Overview



These two are defined by GVG protocol, but External device doesn't need to send to AV-HS450.

1) Break Character

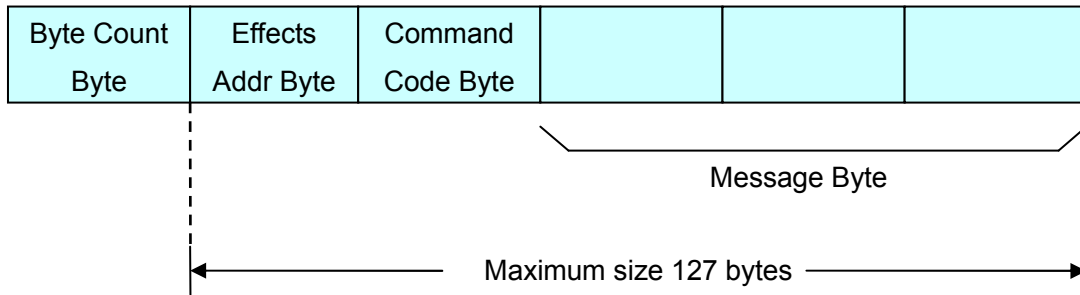
The break character should be sent by the external device to Switcher.
 Switcher is ready to receive command/message, after receiving "BREAK CHARACTER" and "ADDRESS BYTE (0x30)"
 Switcher will send acknowledge "0x84" to the external device.



2) Address Byte

After the break character has been received, Switcher will expect a one-byte address. This is select address and should be "0x30".

3) COMMAND/MESSAGE BLOCK STRUCTURE



Byte Count Byte : The number of the sequent bytes in the block.

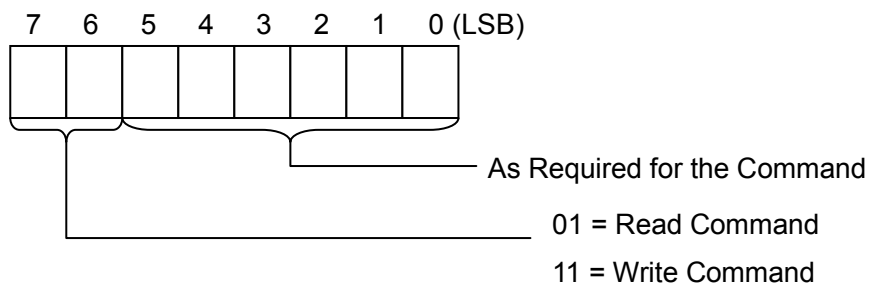
Effects Address Byte : The effects address byte is typically referred to as EX. In case of Model 100, the EX byte has only two values.

- To access any DSK analog controls, EX must be set to 0x00.
- For the analog controls of the effects systems (EFFECTS KEYS, EFFECTS TRANSITION, and PATTERN CONTROL), EX must be set to 0x01.

For all other controls, EX may be any value.

Please note AV-HS450 has extended EX value.

Command Code Byte : Command codes have two categories; read commands and write commands. When the external device issues a read command, the switcher responds by sending the current status of an operational parameter(s) back to the external device. The status information is returned in the format of the write command. Write commands are used by the external device to change an operational parameter(s) of the switcher.



Response to a write command

The response to a write command is a two-byte status message. The first byte is the byte count which is 0x01. The second byte is the switcher response to the command which is shown below. The bits that are set to one (1) indicate the status.

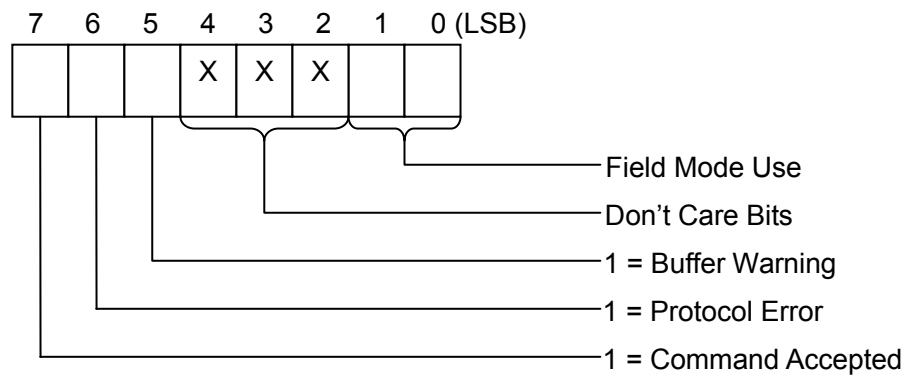
Bit 7 ; Set "1", when HS450 receives command properly.

Bit 6 ; Set "1", when HS450 can't receive command correctly.

Bit 5 ; Set "1", when received buffer is overflowed.

0x0180 = ACK

0x0140 = NAK



(2) AV-HS450 PROTOCOL TABLES

1) Crosspoint

Function	Byte Count	Effects Address	Command Code	Message
WRITE				
Program Bus	03	Except 07	C1	Crosspoint#
Preset Bus	03	Except 07	C2	Crosspoint#
KeyS Bus	03	Except 07,3B,3D	C3	Crosspoint#
KeyF Bus	03	Except 07,3B,3C,3D,3E	C4	Crosspoint#
Dsk1S Bus	03	3B	C3	Crosspoint#
Dsk1F Bus	03	3B	C4	Crosspoint#
Dsk2S Bus	03	3D	C3	Crosspoint#
Dsk2F Bus	03	3D	C4	Crosspoint#
PinP1 Bus	03	3C	C4	Crosspoint#
PinP2 Bus	03	3E	C4	Crosspoint#
Aux 1 Bus	03	07	C1	Crosspoint#
Aux 2 Bus	03	07	C2	Crosspoint#
Aux 3 Bus	03	07	C3	Crosspoint#
Aux 4 Bus	03	07	C4	Crosspoint#
READ				
Program Bus	02	Except 07	41	-
Preset Bus	02	Except 07	42	-
KeyS Bus	02	Except 07,3B,3D	43	-
KeyF Bus	02	Except 07,3B,3C,3D,3E	44	-
Dsk1S Bus	02	3B	43	-
Dsk1F Bus	02	3B	44	-
Dsk2S Bus	02	3D	43	-
Dsk2F Bus	02	3D	44	-
PinP1 Bus	02	3C	44	-
PinP2 Bus	02	3E	44	-
Aux 1 Bus	02	07	41	-
Aux 2 Bus	02	07	42	-
Aux 3 Bus	02	07	43	-
Aux 4 Bus	02	07	44	-

Crosspoint 0x00 to 0xFFh is corresponding to crosspoint button 1 to 32 of AV-HS450.

Crosspoint 0x32 to 0x4C can select physical input source directly and internal source.

32h - 45h : Input1 - 20

46h : Color Bar

47h : Color BackGround

48h : Black

49h : FMEM1

4Ah : FMEM2

4Bh : FMEM3

4Ch : FMEM4

When Aux Bus is selected, following four numbers are valid.

- 4Dh : PGM
- 4Eh : PVW
- 4Fh : KEYOUT
- 50h : CLN

2) Pushbutton

Function	Byte Count	Effects Address	Command Code	Message
WRITE				
Auto Trans	03	Ex	FB	0B
DSK1	03	Ex	FB	0C
WIPE	03	Ex	FB	0E
MIX	03	Ex	FB	0F
DSK2	03	Ex	FB	10
PinP1	03	Ex	FB	11
Pinp2	03	Ex	FB	12
Key	03	Ex	FB	13

3) Pushbutton Lamp ON control

Function	Byte Count	Effects Address	Command Code	Message
WRITE				
Dsk1 On Take	03	01	C6	0D
Dsk2 On Take	03	01	C6	60
Wipe On	03	01	C6	0E
Mix On	03	01	C6	0F
RevWipe On	03	01	C6	1D
Dsk1 Pw On	03	01	C6	1E
Dsk2 Pw On	03	01	C6	61
Ftb On Take	03	01	C6	1F
Bkgd(N.Trns) On	03	01	C6	48
Key(N.Trns) On	03	01	C6	49
Key On Take	03	01	C6	52
Key On Take	03	01	C6	3A
Dsk1 On Take	03	01	C6	3B
Dsk2 On Take	03	01	C6	62
PinP1 On Take	03	01	C6	3C
PinP2 On Take	03	01	C6	63
Key Pw On	03	01	C6	3D
Dsk1 Pw On	03	01	C6	3E
Dsk2 Pw On	03	01	C6	64
PinP1,2 Pw On	03	01	C6	3F
AUX Trans Enable	03	01	C6	70

4) Pushbutton Lamp OFF control

Function	Byte Count	Effects Address	Command Code	Message
WRITE				
Dsk1 Off Take	03	01	C7	0D
Dsk2 Off Take	03	01	C7	60
Wipe Off	03	01	C7	0E
Mix Off	03	01	C7	0F
RevWipe Off	03	01	C7	1D
Dsk1 Pvw Off	03	01	C7	1E
Dsk2 Pvw Off	03	01	C7	61
Ftb Off Take	03	01	C7	1F
Bkgd(N.Trns) Off	03	01	C7	48
Key(N.Trns) Off	03	01	C7	49
Key Off Take	03	01	C7	52
Key Off Take	03	01	C7	3A
Dsk1 Off Take	03	01	C7	3B
Dsk2 Off Take	03	01	C7	62
PinP1 Off Take	03	01	C7	3C
PinP2 Off Take	03	01	C7	63
Key Pvw Off	03	01	C7	3D
Dsk1 Pvw Off	03	01	C7	3E
Dsk2 Pvw Off	03	01	C7	64
PinP1,2 Pvw Off	03	01	C7	3F
AUX Trans Disable	03	01	C7	70

5) Wipe Pattern Select

Function	Byte Count	Effects Address	Command Code	Message
Write Wipe pattern	03	Ex	C8	Wipe#

Each wipe pattern has following wipe#.

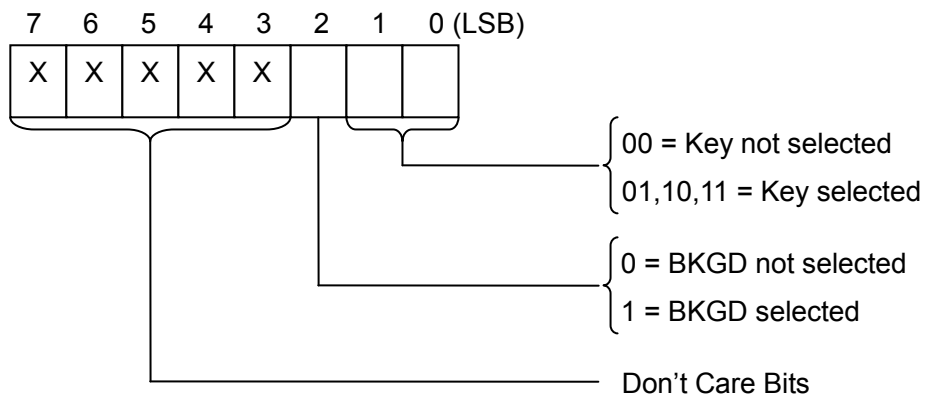
Wipe Number	Wipe Pattern			
01	Upper left			
02	Upper			
03	Upper right			
04	Left			
05	Center			
06	Right			
07	Lower left			
08	Lower			
09	Lower right			
10	Horizontal			
11	Circle			
12	Vertical			
13	SQ Upper left			
14	SQ Upper			
15	SQ Upper right			
16	SQ Left			
17	SQ Center			
18	SQ Right			
19	SQ Lower left			
20	SQ Lower			
21	SQ Lower right			
22	SQ Horizontal			
23	(Reserved)			
24	SQ Vertical			
25	SL Upper left			
26	SL Upper			
27	SL Upper right			
28	SL Left			
29	(Reserved)			
30	SL Right			
31	SL Lower left			
32	SL Lower			
33	SL Lower right			
34	(Reserved)			
35	(Reserved)			
36	(Reserved)			

Wipe Number	Wipe Pattern			
37	Page turn ; Upper left			
38	Door ; Upper			
39	Page turn ; Upper right			
40	Door ; left			
41	Door ; Horizontal			
42	Door ; Right			
43	Page turn ; Lower left			
44	Door ; Lower			
45	Page turn ; Lower right			
46	3D rotate ; X axis			
47	Door ; Vertical			
48	3D rotate ; Y axis			
49	(Reserved)			
50	SQ2ch Vertical-1			
51	(Reserved)			
52	SQ2ch Horizontal-1			
53	(Reserved)			
54	SQ2ch Vertical-2			
55	(Reserved)			
56	SQ2ch Horizontal-2			
57	(Reserved)			
58	(Reserved)			
59	(Reserved)			
60	(Reserved)			
61	(Reserved)			
62	SL2ch Vertical-1			
63	(Reserved)			
64	SL2ch Horizontal-1			
65	(Reserved)			
66	SL2ch horizontal-2			
67	(Reserved)			
68	SL2ch Vertical-2			
69	(Reserved)			
70	(Reserved)			
71	(Reserved)			
72	(Reserved)			
73	(Reserved)			
74	Cube Vertical-1			
75	(Reserved)			
76	Cube Horizontal-1			
77	(Reserved)			
78	Cube Horizontal-2			
79	(Reserved)			
80	Cube Vertical-2			
81	(Reserved)			
82	(Reserved)			
83	(Reserved)			
84	(Reserved)			

6) Transition Mode

Function	Byte Count	Effects Address	Command Code	Message
Write Transition mode	03	Ex	CA	Mode

Mode byte has the following format.



7) Auto Transition Rate

Function	Byte Count	Effects Address	Command Code	Message
WRITE				
Bkgd, Key rate	05	Except 3B,3C,3D,3E,3F,40	CC	Rate1,2,3
Dsk1 rate	05	3B	CC	Rate1,2,3
Dsk2 rate	05	3D	CC	Rate1,2,3
PinP1 rate	05	3C	CC	Rate1,2,3
PinP2 rate	05	3E	CC	Rate1,2,3
AUX rate	05	3F	CC	Rate1,2,3
EFEDSLV rate	05	40	CC	Rate1,2,3

Rate is specified in frames from 000 to 999.

