

The HXL-44 RS-232 communication protocol uses a fixed length with 5 bytes of data as defined below. The default baud rate is 9600 bps, no parity bit, 8 data bits, and 1 stop bit. The IP communication uses Telnet default. Use IP address or hostname with port 23 to connect to device. The commands and responses are the same for RS-232 and IP.

Host Request

A standard command is composed of the following 5 bytes:

Device + Command + Index + Value + CRC

Byte 1: Device Byte (DB)

Byte 2: Request Byte (RB)

Byte 3: Index Byte (IB)

Byte 4: Value Byte (VB)

Byte 5: CRC Byte (CB)

*Note: Host must send CRC code following the last byte.

Device Byte (DB)

Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DB	0	0	1	0	0	0	0	0

Device ID: Device ID should be set to 0x20.

Request Byte (RB)

Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
RB	0	0	Request Type (000000-111111)					

Request Type: Please refer to "Table - Host Request List".

Table - Host Request List

Request	Description	Index	Value	ACK
Switch Tools				
0x01	Switch Video Output Channel	Output	Input	A

0x03	Store Video Preset	0	Preset Slot	A
0x05	Recall Video Preset	0	Preset Slot	A
0x07	Request Video Output Channel	Output	0	B
Plug Detect				
0x09	Request Input Plug Status	Input	0	B
0x0B	Request Output Plug Status	Output	0	B
EDID				
0x20	Select Input EDID Type	0	EDID	A

Index Byte (IB)

Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
IB	Index							

Index: Please refer to “Table – Host Request List” and “Table – Command Index List”.

Table – Command Index List

Index	Description
Output	The output that will be selected. (1-4)
Input	The input that will be selected. (1-4)

Value Byte (VB)

Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
IB	Value							

Value: Please refer to “Table – Host Request List” and “Table – Command Value List”.

Table – Command Value List

Value	Description
Input	The input that will be connected. (1 – 4)

Preset Slot	Select the preset slot (1 through 4).
EDID	Select Output EDID or custom EDID file to set to all inputs. Use 1-4 for output EDID 1-4 and 5 for custom EDID file.

CRC Byte (CB)

Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
IB	CRC (cyclic redundancy check)							

CRC: Host must send CRC code following last byte.

Table - CRC Table

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	5E	BC	E2	61	3F	DD	83	C2	9C	7E	20	A3	FD	1F	41
10	9D	C3	21	7F	FC	A2	40	1E	5F	01	E3	BD	3E	60	82	DC
20	23	7D	9F	C1	42	1C	FE	A0	E1	BF	5D	03	80	DE	3C	62
30	BE	E0	02	5C	DF	81	63	3D	7C	22	C0	9E	1D	43	A1	FF
40	46	18	FA	A4	27	79	9B	C5	84	DA	38	66	E5	BB	59	07
50	DB	85	67	39	BA	E4	06	58	19	47	A5	FB	78	26	C4	9A
60	65	3B	D9	87	04	5A	B8	E6	A7	F9	1B	45	C6	98	7A	24
70	F8	A6	44	1A	99	C7	25	7B	3A	64	86	D8	5B	05	E7	B9
80	8C	D2	30	6E	ED	B3	51	0F	4E	10	F2	AC	2F	71	93	CD
90	11	4F	AD	F3	70	2E	CC	92	D3	8D	6F	31	B2	EC	0E	50
A0	AF	F1	13	4D	CE	90	72	2C	6D	33	D1	8F	0C	52	B0	EE
B0	32	6C	8E	D0	53	0D	EF	B1	F0	AE	4C	12	91	CF	2D	73
C0	CA	94	76	28	AB	F5	17	49	08	56	B4	EA	69	37	D5	8B
D0	57	09	EB	B5	36	68	8A	D4	95	CB	29	77	F4	AA	48	16
E9	E9	B7	55	0B	88	D6	34	6A	2B	75	97	C9	4A	14	F6	A8
F0	74	2A	C8	96	15	4B	A9	F7	B6	E8	0A	54	D7	89	6B	35

Example: Switch output 6 to input 3.

Byte 1 (DB) is 0x20: Device ID = 0x20

Byte 2 (RB) is 0x01: Switch Video Output Channel = 0x01
 Byte 3 (IB) is 0x06: Output 6 = 0x06
 Byte 4 (VB) is 0x03: Input 3 = 0x03
 Byte 5 (CB) is 0x93: CRC code from Byte 1 to Byte 4.

CRC Calculation

CRC 0 = 0 (initial value)

CRC 1 = CRC_TABLE[CRC 0 ^ **Byte 1**] = CRC_TABLE[0x00 ^ 0x20] = 0x23

CRC 2 = CRC_TABLE[CRC 1 ^ **Byte 2**] = CRC_TABLE[0x23 ^ 0x01] = 0x0F

CRC 3 = CRC_TABLE[CRC 2 ^ **Byte 3**] = CRC_TABLE[0x0F ^ 0x06] = 0x8D

CRC 4 = CRC_TABLE[CRC 3 ^ **Byte 4**] = CRC_TABLE[0x8D ^ 0x03] = 0x93

Device ACK Packet

When the device receives supported commands from the host, it will respond with the following ACK types:

Table - ACK Type List

ACK Type	Byte 1	Byte 2	Byte 3	Byte 4	Last Byte
A	AB				CB
B	AB	LB	Index 1	Value 1	CB

ACK Type A (2 Bytes)

Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
AB	ACC	0	0	Device ID (0x20)				
CB	CRC							

ACC: The devices acknowledge status. Accept or Reject.

1: Command is accepted (ACK).

2: Command is rejected (NAK).

Device ID: The HXL-44's ID is 0x20.

CB: Device always sends the CRC byte following the last byte.

ACK Type B (2 Bytes)

Name	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
AB	ACC	0	0	Device ID (0x20)				
LB	Length for the total data bytes (Index+Value)							
IB	Index							
VB	Value							
CB	CRC							

ACC: The devices acknowledge status. Accept or Reject.

1: Command is accepted (ACK).

2: Command is rejected (NAK).

Device ID: The HXL-44's ID is 0x20.

LB: LB value is equal to the total data bytes (Index+Value), not including the CRC byte.

IB & VB: IB/VB often is the input or output port number depending on the command. Please see table below.

CB: Device always sends the CRC byte following the last byte.

IB/VB: Command Response

Command	Description	Index	Value
0x07	Request Video Output Channel	Output	Input
0x09	Request Video Input Plug Status	Input	0: Unplugged 1: Plugged in
0x0B	Request Video Output Plug Status	Output	