

- **Automatic HD/SD-SDI selection**
- **External reference switching**
- **Selectable switching line**
- **Control via keypad, RS232, LAN or CNS1000 remote panel**
- **16 storable presets**
- **Balanced audio combined**
- **Disabling of equalization selectable on each input**
- **Disabling of reclocking selectable on each output**
- **Redundant power supply**

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When installing the SDZHD08, please read this handbook carefully.

The manufacturer assumes no liability whatsoever for damage or injury caused by the use of its products, including the correct use thereof.

Product data and characteristics may be modified without prior notice.

All updates and information about this product are published on our website:
www.elprovideolabs.com .

1.0 OVERVIEW

Thank you for buying this product. Check the contents of the packaging carefully. This contains:

- The SDZHD08 unit



- This handbook and the certificate of conformity



- Mains cables (2)



The SDZHD08 is an 8x8 HD-SDI and SD-SDI digital matrix with analog audio combined. It is the ideal solution for switching HD/SD-SDI signals in TV studios, production centers and non-linear editing systems. The inputs are provided with an automatic equalization circuit. The signals are reclocked before being transmitted to the outputs. Audio inputs and outputs are both balanced. The matrix can be controlled via keypad, PC with RS232 or LAN interface and CNS1000 remote panel. The SDZHD08 can perform synchronous switching with an external analog signal (bi-level or tri-level sync) and the switching line is selectable.

2.0 POWER SUPPLY

The SDZHD08 is available in the dual power supply version, with a voltage of 90÷240 Vac 50/60Hz. Use the mains cables supplied with the unit, which must be connected to the two panel plugs on the back of the matrix. To switch the matrix on, set the two switches located next to the relative plugs to "ON". Thanks to the dual power supply, the unit continues to work normally and without any interruption even in the event of a fault or disconnection of one of the power supplies. The two LEDs on the front of the matrix light up to indicate correct unit operation. If the need to guarantee uninterrupted operation even in the event of a power failure is not a priority, the unit can be used with a single power supply; in that case, one of the LEDs does not light up.

Each panel plug is provided with a fuse-holder for 5x20 fuses. If the fuse blows, replace it with a fuse with **the same rating** as specified on the back of the unit.



IMPORTANT

All servicing and repairs must be performed by qualified personnel who have been informed of the risk of electric shock.

In some countries, the cable plug must be adapted for use with standard local types. Wires are identified according to the following code:

Brown	PHASE	Marked with the letter L, may be red
Blue	NEUTRAL	Marked with the letter N, may be black
Yellow/Green	GROUND	Marked with the letter E, may be green



IMPORTANT

A ground connection is mandatory

3.0 PRESETTINGS

The only internal presetting regards the *output card* on which there is a jumper for each channel, to set the outputs to mute in case of signals that are not recognized by the reclocking circuit.

**In that case, insert the jumper in position A.
(MUTE for non-standard signals)**

Alternatively, non-standard output signals are also possible but cannot be regenerated.

**In that case, insert the jumper in position B.
(NO MUTE for signals out-of-range)**

This usually results in higher output noise.

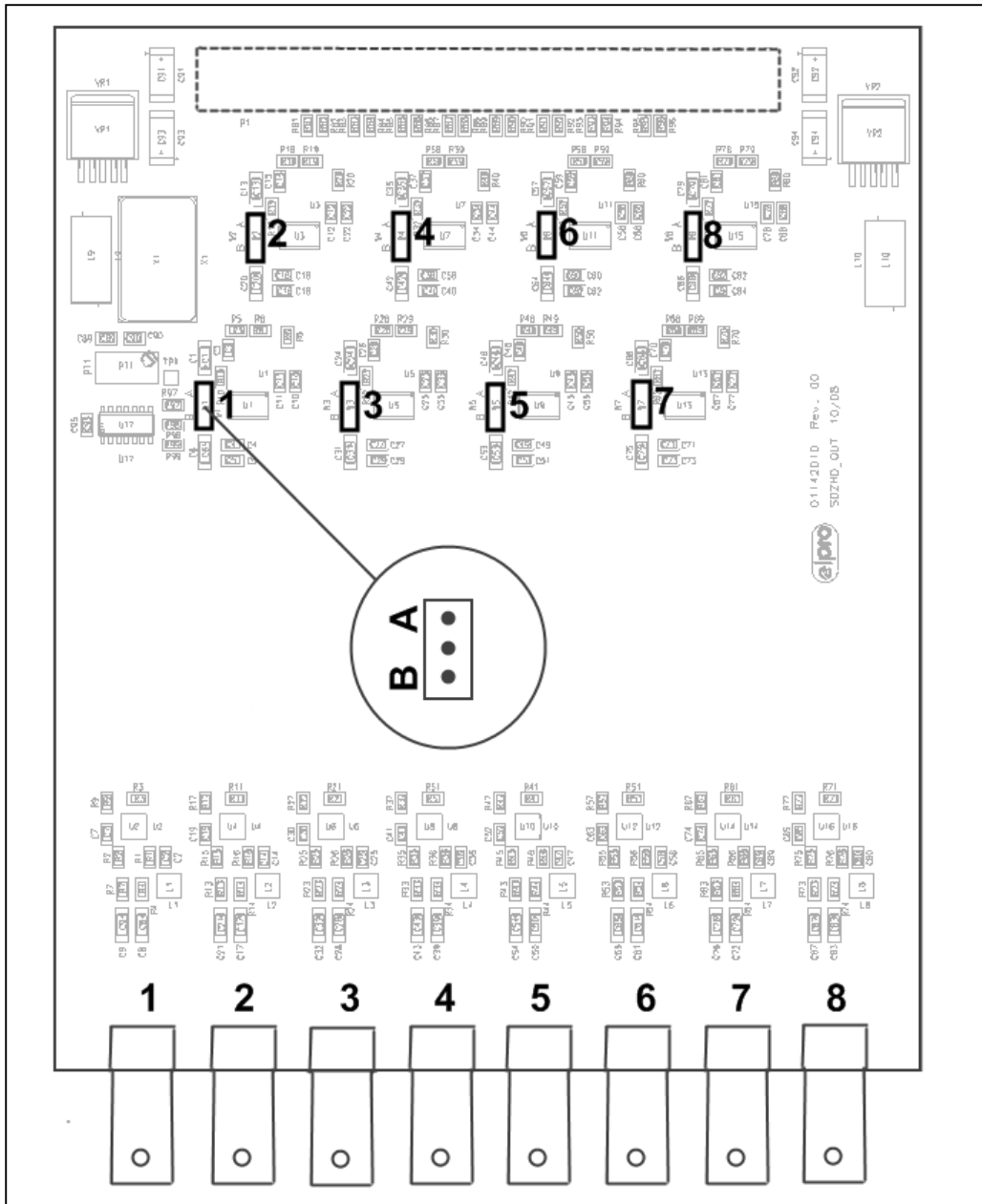
The factory setting for jumpers W1÷ W8 is position A.



IMPORTANT

If the disable reclocking function is used the jumper must be placed in position "B". If placed in position "A", the output would automatically be set to mute upon disabling of the reclocking function.

Positions of jumpers in relation to their outputs on the SDZHD_OUT card are shown in the diagram below.



4.0 INSTALLATION

4.1 Switching on

When the matrix is switched on, the hardware configuration that has been identified is shown on the display panel for a few seconds.



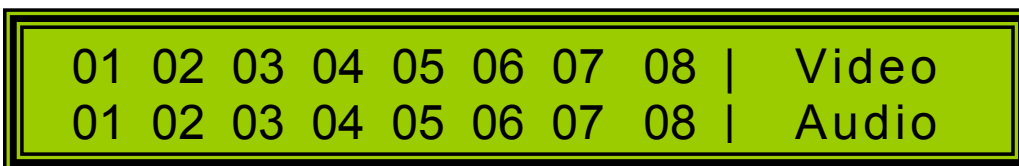
Next the matrix checks the video reference signal and displays its format, again for a few seconds.



The unit then assumes one of the following configurations:

- a) The factory configuration, with connection of inputs and outputs with the same number (1 to 1, 2 to 2, etc.).

This configuration is assumed the first time the unit is switched on.



- b) The last configuration when the unit was switched off.

This is the case with normal operation.

- c) The default configuration.

Once the default configuration has been enabled, the SDZHD08 assumes this status each time it is switched on, regardless of its status when switched off.

If the function is not enabled, when the SDZHD08 is switched on it maintains the status it had when switched off. When the unit is switched on, the default configuration enabled condition is indicated by the "Default Status" message, displayed briefly on the right of the display panel.



IMPORTANT

Unless the function is disabled, its status is stored internally by the unit 3 seconds after the last setting, ready for the next switch-on. Thus, if switching is performed and the unit is switched off immediately afterwards, the last command is not stored

4.2 SDI Digital Part

To use the SDI part, proceed as follows:

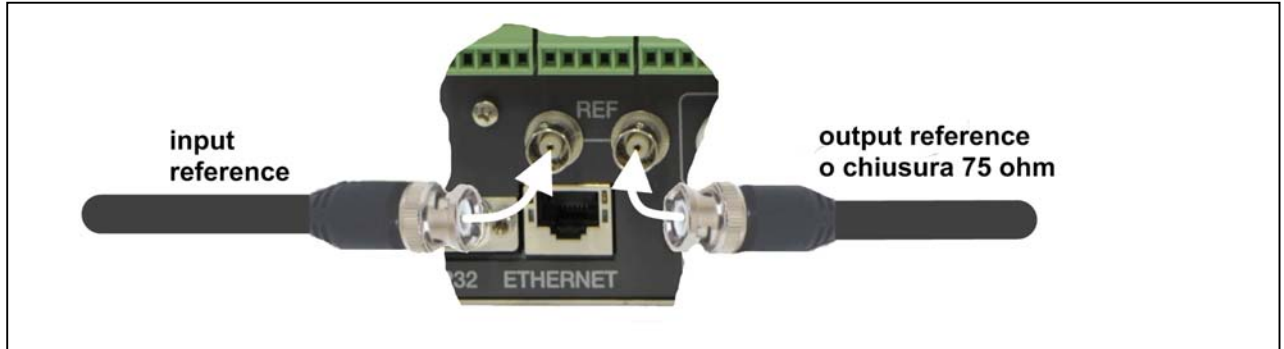
- a) Make sure all units to be installed are switched off.
- b) Connect the SDI sources and destinations, following the indications printed on the rear panel, bearing in mind that the matrix is capable of managing SD-SDI and HD-SDI signals simultaneously with no settings needed.



IMPORTANT

**The inputs are 75Ω terminated.
Input loops are not possible**

- c) The external analog reference signal (bi-level or tri-level sync) can, at discretion, be connected to one of the BNCs marked REF. If the other BNC in the loop is not used, close it with a 75Ω termination.



The letter "L", displayed in a dark field in the bottom right part of the display panel, indicates that the reference signal is present and has been recognized.

The matrix switches the signals synchronously with the reference signal, i.e. vertical interval switching.

The range within which the switching line can be selected on the external analog reference varies according to the type of synchronism. When the line has been selected, switching is performed at about half of the line; however, this point can be shifted horizontally forwards or backwards by a few μs with respect to the center of the line. The configuration parameters for the most common formats are summarized in the table below. The parameters for any other formats are those shown in the last line of the table, provided the signal is decoded, even if it is not recognized (in which case the symbol "L" appears in the bottom right part of the display).

TABLE OF SWITCHING PARAMETER SETTINGS					
FORMAT	Default line	Min line	Max line	Min delay H	Max delay H
576p/50Hz	13	9	22	-8	8
576p/60Hz	13	9	22	-8	8
720p/50Hz	7	3	16	-2	2
720p/60Hz	7	3	16	-5	5
480p/50Hz	13	9	22	-8	8
480p/60Hz	13	9	22	-8	8
1080p/24Hz	7	3	16	-8	8
1080p/25Hz	7	3	16	-8	8
1080p/30Hz	7	3	16	-6	6
1080i/50Hz	6	2	15	-8	8
1080i/60Hz	6	2	15	-6	6
480i/60Hz	9	5	18	-8	8
576i/50Hz	6	2	15	-8	8
Other formats	6	2	15	0	20

Note that the management program is able to recognize the format of the reference signal (at least in the most common cases) but not that of the digital signal to be switched. Therefore it cannot warn of any inconsistencies (e.g. a PAL signal sent as reference for 720p switching). In that case switching is performed on the reference, even though not consistent with the signal to be switched.

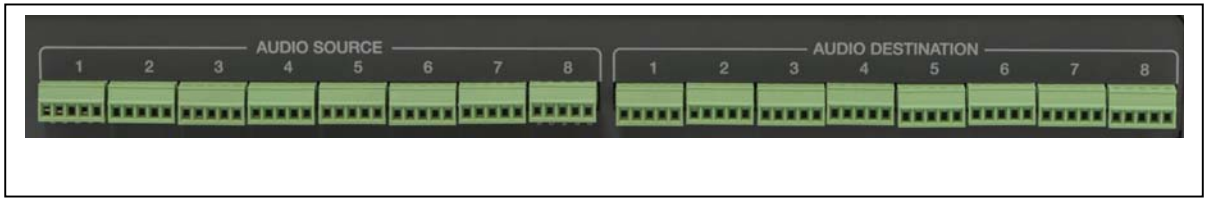
If the external reference is not connected, switching is still performed, but at random.

4.3 Analog Audio Part

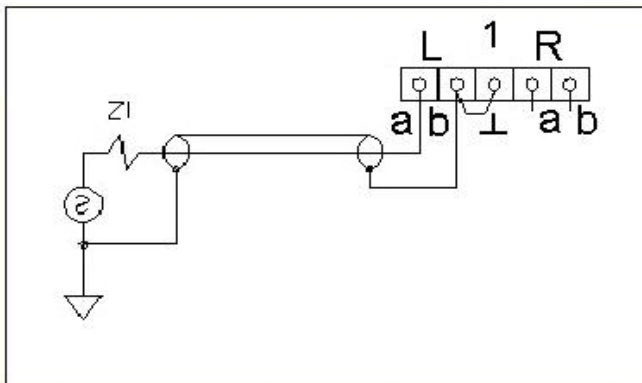
To use the audio part, proceed as follows

- a) Make sure all units to be installed are switched off.
- b) Connect the audio sources and destinations, following the indications printed on the rear panel.

The audio inputs and outputs are balanced. If the source to be connected to the input has an unbalanced output, connect the hot signal to input **a** of the matrix, connect the signal's mass and input **b** to GND.



Balanced audio outputs can be connected to active speakers or to a stereo amplifier.

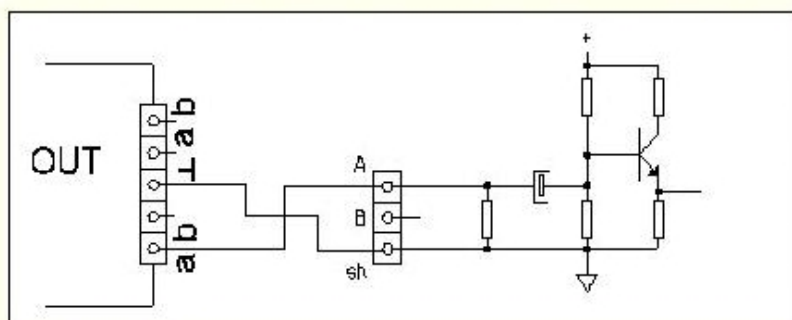


Unbalanced source



IMPORTANT

If the speakers or amplifier have an unbalanced input, use outputs "a" and GND, leaving output "b" free. In that case half the output level is lost.

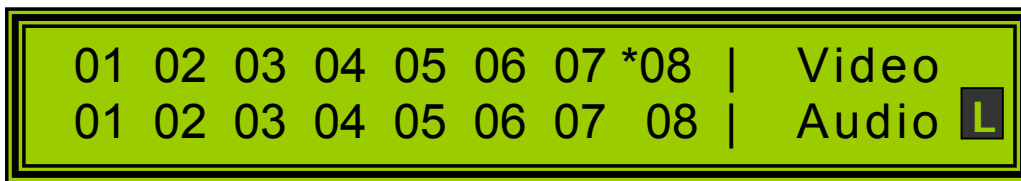


Unbalanced destination

5.0 LOCAL CONTROL

The status of the matrix connections is shown on the LCD display panel. In normal conditions the display is divided into two parts:

- The type of connection being displayed is shown on the right (Video at top, Audio at bottom).
- On the left are the sources (video at top, audio at bottom) switched on the destinations, numbered from 1 to 8, printed directly on the front panel.



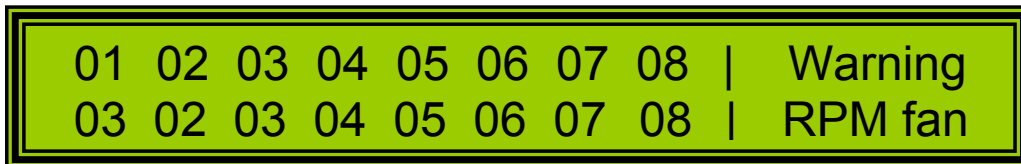
If the letter "L" is displayed in a dark field in the bottom right of the display panel, this indicates the presence and correct recognition of an analog signal on the reference input.

An asterisk may appear next to output 8 to indicate that the PREVIEW presetting has been enabled on the 8th output.



IMPORTANT

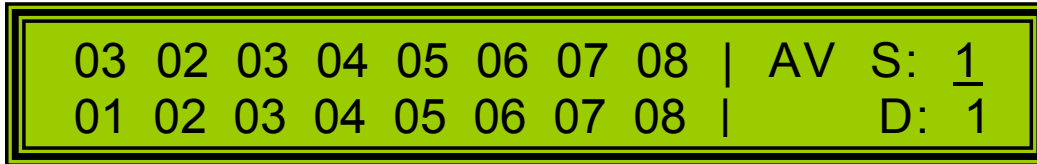
If the message shown in the fig. below appears on the right of the display panel, this indicates a fan fault condition.



***In this condition, prolonged use of the unit could cause serious faults.
Please contact the Elpro service center.***

5.1 Signal switching

To set new connections, proceed as follows:



- a) Press the "SOURCE/DEST" button: the area on the right of the display panel will now be used to interact with the user and appears as shown in the figure above; the first line contains the letters AV, or A or V, depending on the currently enabled operating mode. To select a different mode, press the "MODE" button until you have selected the desired mode.

The button lights up in a different colour, depending on the type of switching enabled:

- Yellow: analog Video + Audio switching (Both mode)
- Red: video only switching (Video mode)
- Green: analog audio switching only (Audio mode)

- b) Press the button corresponding to the desired source. The selection is shown on the display panel (next to "S:"). If you wish to *disable* an output instead of connecting an input, press "CANCEL". in that case the number 0 is displayed next to "S:".

Several sources can be selected consecutively. This is particularly useful when the preview function is set on the 8th output to monitor the sources without switching.

- c) Press the "SOURCE/DEST" button to enable selection of the destination.

- d) Press the button corresponding to the desired destination. The selection is displayed (next to "D:"). If you wish to connect *all* the outputs to the selected input, press "CANCEL". in that case the number 0 is displayed next to "D:".

Several selections can be performed consecutively without implementing any switches, until the "TAKE" button is pressed.

- e) Press "TAKE" to enable switching. A confirmation message is displayed. The figure below shows an example of the display panel at

the end of the procedure, if input 8 has been connected to output 6 on both video and audio.

```
01 02 03 04 05 08 07 08 | AV S: 8
01 02 03 04 05 08 07 08 |      D: 6
```

- f) Press "CANCEL" and hold the button down for about 1 second to exit the connection mode and return to the standard display mode.

5.1 Presettings via keypad

SDZHD08, some settings can be entered via the keypad with the help of the LCD panel. Press the "FUNCTION" button to enable the menu. The word "MENU" is displayed briefly, followed by:

```
>Rec.Preset >Preview >BkLight >Setup
>Sav.Preset >Dflt. Cnf >Status
```

Press the "FUNCTION" key again to select the items in the menu, which are described on the following pages.

MENU

Recall Preset

Use to recall previously stored presets

Press TAKE

Enter 1...8

Press TAKE to execute the command and exit the MENU (Note 1)

Save Preset

Use to store up to 8 presets.

Press TAKE

Enter 1...8

Press TAKE to execute the command and exit the MENU (Note 1)

Preview

Use to set the 8th output to preview

Press TAKE

On/Off Select using the SOURCE/DEST key

Press TAKE to execute the command and exit the MENU (Note 2)

Default Configuration

Use to save the current status of the SDZHD08 as the default configuration

Press TAKE

On/Off Select using the SOURCE/DEST key

Press TAKE to execute the command and exit the MENU (Note 3)

Backlight

Use to adjust the intensity of the display backlight

Press TAKE

Enter 1..5

Press TAKE to execute the command and exit the MENU

Continued...

Status

Displays the matrix parameters that cannot be modified by the user

Video Reference

If there is no reference signal, the NO SIGNAL message is displayed
If there is a reference signal with an unknown format, the Unknown Ref. message is displayed and the relative vertical frequency.
If there is a reference signal with a known format, the signal characteristics are displayed.

IN: 08 Out: 08

Indicates the number of inputs and outputs that are present

Fan status

Indicates the status of the fan.
OK indicates correct operation.
FAIL indicates a fault in the fan or that it is not connected:
prolonged use of the matrix in this condition may cause serious damage.

Rev.xx

Indicates the firmware revision currently running on the unit.

Press TAKE to exit the MENU

Setup

Use to modify the configuration parameters

Press TAKE

Switch on External Reference

Use to select the switching line and horizontal delay

Use the FUNCTION key to scroll the following items in the menu:

Switch on line

Use to select the switching line

Enter the line number

Center line delay

Use to select the switching delay with respect to the center of the line

Press the SOURCE/DEST key repeatedly to select the required delay.

Press TAKE to proceed to the next item

Continued...

Output reclocking

Use to enable or disable reclocking

Press the key corresponding to the output to enable/disable that output
Use the SOURCE/DEST key to enable/disable all the outputs
(Re: enabled; -- : disabled)
(Note 4)

Input Equalizer

Use to enable or disable the equalizer

Press the key corresponding to the input to enable/disable that input
Use the SOURCE/DEST key to enable/disable all the inputs
(Eq: enabled; -- : disabled)

Network configuration (Page1)

Use to set the network parameters

Use the FUNCTION key to scroll the following items in the menu:

Protocol

TCP/UDP Use the SOURCE/DEST key to select

IP-address

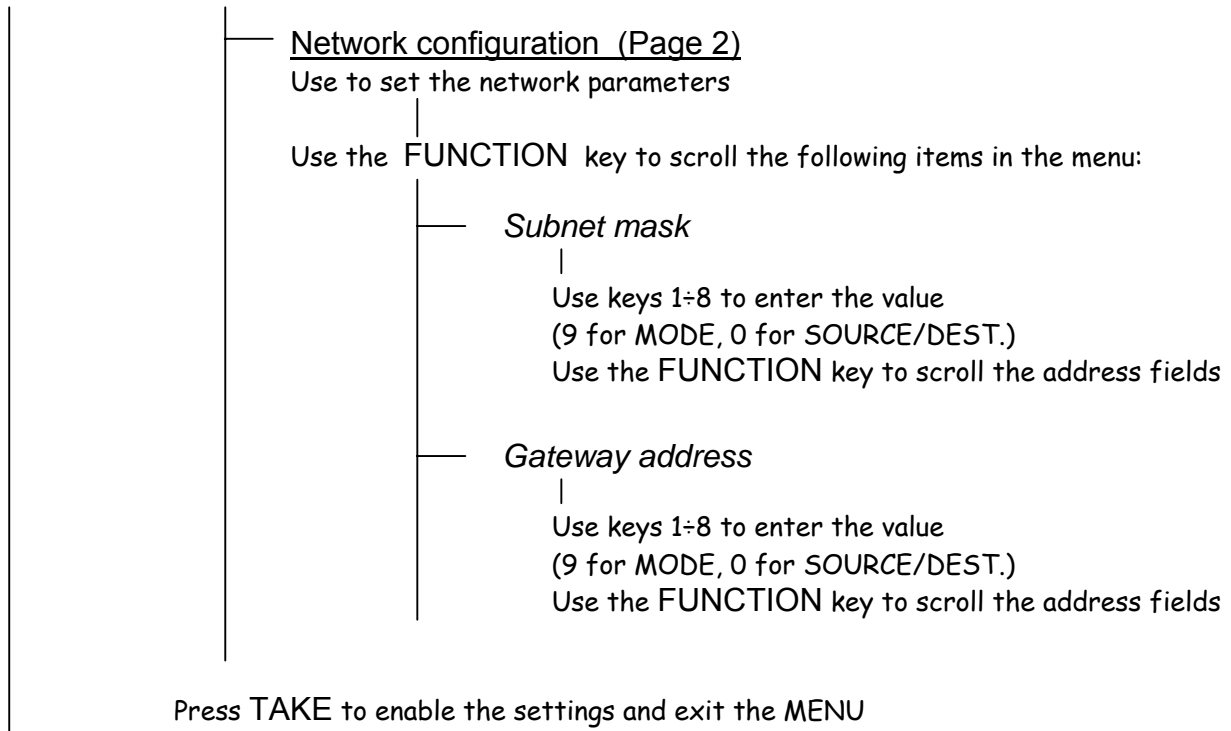
Use keys 1-8 to enter the address value
(9 for MODE, 0 for SOURCE/DEST.)
Use the FUNCTION key to scroll the address fields

Port

Use keys 1-8 to enter the value
(9 for MODE, 0 for SOURCE/DEST.)

Press TAKE to proceed to the next item

Continued...



IMPORTANT:

You can exit the menu without saving at any time, by pressing **CANCEL** and holding down for approx. 1 second

END

NOTE 1

Presets can also be created and recalled via RS232. The first 8 presets overlap. Therefore keypad settings may cancel and replace RS232 settings and vice versa. The other 8 can only be created and recalled via RS232.

NOTE 2

When output 8 is used in preview mode, the source shown on the display panel corresponding to output 8 is marked with an asterisk (*), as a reminder of the machine status.

NOTE 3

When "ON" is selected in Default Configuration mode, the status of the connections of the SDZHD08 at that time becomes the default configuration for all subsequent switch-ons, regardless of the status when the unit is switched off.

NOTE 4

Disabling of the reclocking function is only effective with the jumper of the relative output in position "B" (no mute - see 3.0).

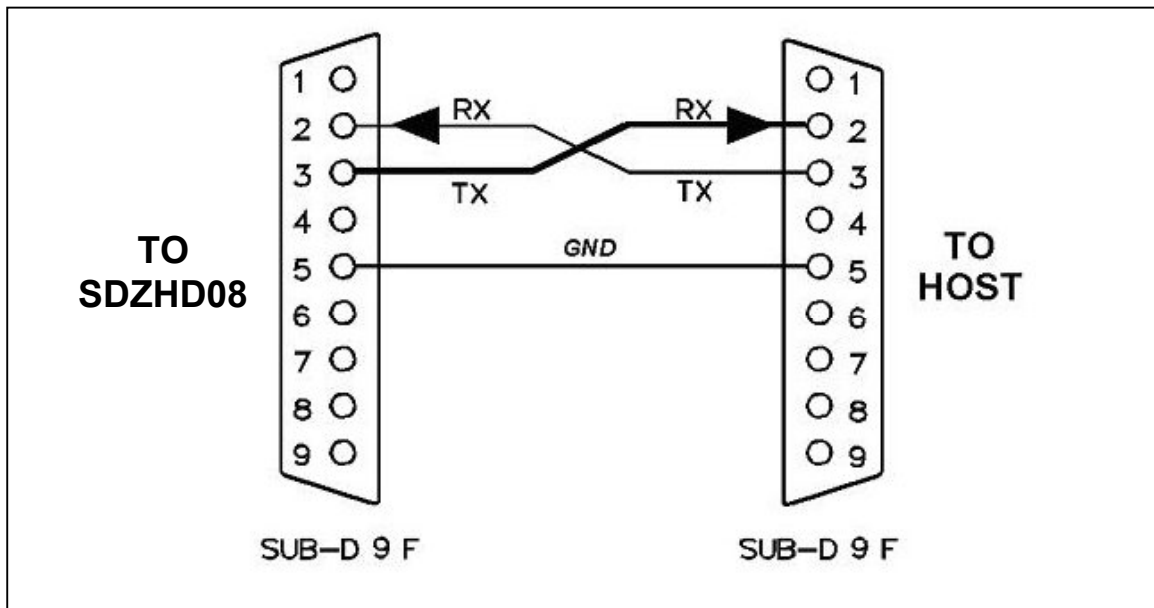
6.0 CONNECTION TO REMOTE HOST

The SDZHD08 can be connected to a remote host either via RS232 serial connection or via a 10/100 base T Ethernet network.

6.1 RS232 serial connection

The serial connection must consist of an f/f crossover RS232 cable as shown:

- SDZHD08 side sub-D9p.f. pin 2 RX, pin 3 TX, pin 5 GND
- Host (PC) side sub-D9p.f. pin 2 RX, pin 3 TX, pin 5 GND



Specifications for exchange via RS232:

speed 9600 baud, 8 data bits, no parity, 1 stop bit.

6.2 Ethernet connection

SDZHD08 commands can be sent via LAN if appropriately configured (IP address, protocol, etc.). The matrix envisages configuration of the necessary network connection parameters.

If, to meet specific requirements, ad hoc configuration is necessary to make the SDZHD08 compatible with the existing network, the LAN202 ethernet module installed on the matrix must be configured directly.

The software and relative instruction manual can be downloaded from the Elpro website www.elprovideolabs.com.

For applications that do not interface IP protocols directly, ELPRO devices can be managed in the Windows © environment via LAN connection, by creating virtual serial ports.

A virtual serial port consists of associating a COM port other than those physically present on the PC to an IP address of the ethernet/internet network.

7.0 COMMANDS VIA REMOTE HOST

Regardless of the type of connection that is used, all SDZHD08 matrix function commands can be sent by a host, in the form of hex and ASCII data sequences.

The protocol is based on a command sequence made up of ASCII codes ending with the CR character (hex 0D) sent by the host to the matrix and a reply by the matrix that can be the ACK confirmation character (hex 06) or NAK (hex 15) in case of an error.

Similarly a status request sent by the host to the matrix envisages a reply by the matrix consisting of a sequence of ASCII codes ending with the CR character (hex 0D).

NOTE:

A command or status sequence must end with the single CR character and not the two characters CR+LF which are normally sent by pressing ENTER on the keypad of a PC.

The commands accepted by the matrix and relative parameters are described below. In the description of the commands, the check characters are indicated as follows:

<CR>	closing character of an ASCII command or status sequence hex 0D
<ACK>	positive reply character to a command hex 06
<NAK>	negative reply character to a command hex 15

7.1 Switch Video and Audio command

The host must send the following sequence:

B u u i i <CR>

B 1 command character (Hex 42)
uu 2 characters indicating the output number (from "01" to "08")
ii 2 characters indicating the video and audio input (from "01" to "08")

Important: if *ii* = "00" the HD/SDI output is set to high impedance and the audio output is set to 0 Volt

E.g.: to switch the HD/SDI input and audio N°5 to output N°7 the following hex codes must be sent in line: **42 30 37 30 35 0D**

A video input and an audio input from different sources can also be switched to a video and audio output. This requires the following character sequence:

B u u v v a a <CR>

B 1 command character (Hex 42)
uu 2 characters indicating the output number (from "01" to "08")
vv 2 characters indicating the video input (from "01" to "08")
aa 2 characters indicating the audio input (from "01" to "08")

Important: if *vv* = "00" the HD/SDI output is set to high impedance
if *aa* = "00" the audio output is set to 0 Volt

E.g.: To switch the HD/SDI of input 3 and the audio of input 7 to output 4, the following hex codes must be sent in line: **42 30 34 30 33 30 37 0D**

The matrix replies with:

<ACK> if the command has been executed correctly
<NAK> if transmission errors or non-valid command parameters have been detected

7.2 Switch Video command

The host must send the following sequence:

V u u i i <CR>

V 1 command character (Hex 56)
uu 2 characters indicating the output number (from "01" to "08")
ii 2 characters indicating the video input (from "01" to "08")

Important: if *ii* = "00" the HD/SDI output is set to high impedance

E.g.: To set HD/SDI output 6 to high impedance, the following hex codes must be sent in line:
56 30 36 30 30 0D

The matrix replies with:

<ACK> if the command has been executed correctly

<NAK> if transmission errors or non-valid command parameters have been detected

7.3 Switch Audio command

The host must send the following sequence:

A u u i i <CR>

A 1 command character (Hex 41)

uu 2 characters indicating the audio output number (from "01" to "08")

ii 2 characters indicating the audio input (from "01" to "08")

Important: if **ii** = "00" the audio output is set to 0 Volt

E.g.: To set audio output 4 to 0 Volt, i.e. mute, the following hex codes must be sent in line:
41 30 34 30 30 0D

The matrix replies with:

<ACK> if the command has been executed correctly

<NAK> if transmission errors or non-valid command parameters have been detected

7.4 Request connection status

The host must send the following sequence:

D <CR>

D 1 command character (Hex 44) no other parameters required

The matrix replies with a sequence relating to the status of the connections. The number of connections depends on the number of outputs managed by the matrix:

D 1 character identifying the requested status (Hex 44)

vv1 aa1 16 pairs of characters indicating the video and audio

... input (vv: video, aa: audio) connected to output **n**

vv8 aa8 Values range from "01" a"08".

Note: if vv or aa = "00" the corresponding output is set to high impedance, if video, and to 0 Volt if audio.

E.g.: The host sends the following hex codes in line:

44 0D

A matrix with all the inputs connected to the outputs with the same name will reply with the following hex codes:

**44 30 31 30 31 30 32 30 32 30 33 30 33 30 34 30 34 30 35 30 35 30 36 30 36
30 37 30 37 30 38 30 38 0D**

7.5 Request overall matrix status

The host must send the following sequence:

d <CR>

d 1 command character (Hex 64) no other parameters required

The matrix replies with a connection status sequence consisting of:

d 1 character identifying the requested status (Hex 64)

m 1 character identifying the matrix hardware configuration:

"1" : n.a. (SDZHD16 16 in, 16 out)

"2" : n.a. (SDZHD16 16 in, 8 out)

"3" : n.a. (SDZHD16 8 in, 16 out)

"4" : configuration not implemented

"5" : SDZHD08 8 in, 8 out

vv1 aa1 16 pairs of characters each indicating the video and audio input
... (vv: video, aa: audio) connected to output **n**

vv8 aa8 Values range from "01" a"08".

Note: if vv or aa = "00" the corresponding output is set to high impedance, if video, and to 0 Volt if audio.

p 1 character indicating whether the last output is used as preview output:

"0" : last output used normally

"1" : last output used as preview

f	1 character indicating the operating status of the fan: "0" : OK "1" : fault
m	1 character indicating the mute status on the preview output: "0" : mute disabled "1" : mute enabled "2" : video mute "3" : audio mute + video mute
d	1 character indicating the default configuration status: "0" : default configuration not enabled (see section 5.1) "1" : default configuration enabled (see section 5.1)
cc	2 characters indicating the video switching line. The value of this field varies according to the video format (see section 4.3)
f	1 character indicating the video format on the reference signal: "0" : reference video format not identified "1" : 480i "2" : 480p "3" : 576i "4" : 576p "5" : 720p "6" : 1080i "7" : 1080p
v	1 character indicating the vertical frequency on the reference signal: "0" : vertical frequency not recognized "1" : 24 Hz "2" : 25 Hz "3" : 30 Hz "4" : 50 Hz "5" : 60 Hz
r	1 character indicating the presence of the video reference signal: "0" : reference not present, in this case the previous f and v fields are not significant "1" : reference found

E.g.: The host sends the following hex codes in line:

64 0D

A matrix with:

- All inputs connected to outputs of the same name
- 8th output used as preview
- Correct fan operation (no faults)
- Preview Audio and Video mute enabled
- Default configuration not enabled
- Line 6 set as switching line
- Video format 576i
- Vertical frequency 50 Hz
- Reference signal present

will reply with the following hex codes:

**64 30 31 30 31 30 32 30 32 30 33 30 33 30 34 30 34 30 35 30 35 30 36 30 36 30
37 30 37 30 38 30 38 31 30 33 30 30 36 33 34 31 0D**

7.6 Request matrix ID

It is possible to request the ID of the matrix that is connected and the firmware version.

The host must send the following sequence:

i <CR>

i 1 command character (Hex 69) no other parameters required

The matrix replies with the following ID sequence:

i d 0 <CR>

i 1 character identifying the request (Hex 69)

d 1 character identifying the SDZHDxx matrix series (Hex 64)

0 1 character corresponding to firmware version 1.0 (Hex 30)

E.g.: The host sends the following hex codes in line:

69 0D

The matrix will reply with the following hex codes:

69 64 30 0D

7.7 Recalling a preset

Via the host the matrix can enable one of the 16 previously stored presets (the first 8 presets can also be recalled and stored via the matrix keypad). The host must send the following sequence:

R p p <CR>

R 1 command character (Hex 52)
pp 2 characters (from "01" to "16") indicating the preset number to be enabled

E.g.: To recall preset number 15, the host must send the following hex codes in line: **52 31 35 0D**

The matrix replies with:

<ACK> if the command has been executed correctly

<NAK> if transmission errors or non-valid command parameters have been detected

7.8 Creating a preset

Via the host the matrix can create up to 16 internal presets. A preset is a predefined switching point configuration: 8 video and 8 audio switching points, which are stored and can be recalled as required.

The presets are created in the current status of the matrix and are maintained in case of a power failure.



IMPORTANT

The first 8 presets can also be created and recalled via the keypad of the matrix. These presets overlap. Host settings for the first 8 presets could therefore cancel and replace keypad settings or vice versa.

The host must send the following sequence:

S p p <CR>

- S** 1 command character (Hex 53)
pp 2 characters indicating the preset number to be stored (from "01" to "16")

E.g.: To assign preset number 08 to the current matrix status, the host must send the following hex codes in line: **53 30 38 0D**

The matrix replies with:

- <ACK>** if the command has been executed correctly
<NAK> if transmission errors or non-valid command parameters have been detected

7.9 Setting preview output

The host must send the following sequence:

p x <CR>

- p** 1 command character (Hex 70)
x 1 character indicating the mode in which the last matrix output was used:
"0" : last output used normally
"1" : last output used as preview

E.g.: to set the last output as the preview output, the following hex codes must be sent in line: **70 31 0D**

The matrix replies with:

- <ACK>** if the command has been executed correctly
<NAK> if transmission errors or non-valid command parameters have been detected

7.10 Mute setting on preview output

Audio mute, video mute or both can be set on the preview output. The host must send the following sequence:

m x <CR>

- m** 1 command character (Hex 6D)
x 1 character indicating the type of mute on the preview output:
"0" : mute disabled
"1" : audio mute
"2" : video mute
"3" : audio mute + video mute

E.g.: to set only audio mute on the preview output, the following hex codes must be sent in line: **6D 31 0D**

To set mute on both audio and video preview outputs the following hex codes must be sent in line: **6D 33 0D**

The matrix replies with:

- <ACK>** if the command has been executed correctly
<NAK> if the last output has not already been defined as the preview output or in case of transmission errors

7.11 Video and audio connection on preview output

Connection of a video and audio source on the preview output (if configured).
The host must send the following sequence:

b i i <CR>

- b** 1 command character (Hex 62)
i i 2 characters indicating the input (from "01" to "08")

Important: if **i i** = "00" the video preview output is set to high impedance and the audio output to 0 Volt

E.g.: To connect video and audio source 4 to the preview output, the following hex codes must be sent in line: **62 30 34 0D**

The matrix replies with:

- <ACK>** if the command has been executed correctly
<NAK> if transmission errors have been detected or if the last output has not been configured as preview

7.12 Video connection on preview output

Connection of a video source on the preview output (if configured).
The host must send the following sequence:

v i i <CR>

v 1 command character (Hex 76)

i i 2 characters indicating the video input (from "01" to "08")

Important: if i i = "00" the video preview output is set to high impedance

E.g.: To connect video source 5 to the preview output, the following hex codes must be sent in line: **76 30 35 0D**

The matrix replies with:

<ACK> if the command has been executed correctly

<NAK> if transmission errors have been detected or if the last output has not been configured as preview

7.13 Audio connection on preview output

Connection of an audio source on the preview output (if configured).
The host must send the following sequence:

a i i <CR>

a 1 command character (Hex 61)

i i 2 characters indicating the input (from "01" to "08")

Important: if i i = "00" the audio preview output is set to 0 Volt

E.g.: To connect audio source 6 to the preview output, the following hex codes must be sent in line: **61 30 36 0D**

The matrix replies with:

<ACK> if the command has been executed correctly

<NAK> if transmission errors have been detected or if the last output has not been configured as preview

7.14 Default configuration setup

Once enabled, the matrix maintains the default configuration status each time it is switched on, regardless of its status when switched off.

The host must send the following sequence:

C x <CR>

C 1 command character (Hex 43)

x 1 character indicating the default configuration enabled status:

"0" : default configuration not enabled

"1" : default configuration enabled

E.g.: To enable default configuration the host sends the following hex codes in line:

43 31 0D

The matrix replies with:

<ACK> if the command has been executed correctly

<NAK> if transmission errors or non-valid command parameters have been detected

7.15 Video switching line selection

The command can be sent to the matrix to fix the switching line in the vertical interval. The line number depends on the video format.

The host must send the following sequence:

L n n <CR>

L 1 command character (Hex 4C)

nn 2 characters indicating the switching line

E.g.: To switch on line 6 the host sends the following hex codes in line: **4C 30 36 0D**

The matrix replies with:

<ACK> if the command has been executed correctly

<NAK> if it has detected transmission errors or the line number is not consistent with the video format found on the reference

7.16 Video input equalizer status setup

Video input equalization can be enabled and disabled. The command relates to the status of all the equalizers on the matrix inputs.

The host must send the following sequence:

E e1 ... e8 <CR>

E 1 command character (Hex 45)
e1 ... e8 8 characters indicating the disabled/enabled status to set on the input equalizers:
 "0" : equalizer disabled
 "1" : equalizer enabled

E.g.: to enable the first 4 equalizers and disable those on inputs 5 to 8, the host must send the following hex codes in line:

45 31 31 31 31 30 30 30 30 0D

The matrix replies with:

<ACK> if the command has been executed correctly
<NAK> if transmission errors have been detected or the number of characters sent does not match the number of inputs on the matrix.

7.17 Video output reclocking status setup

Reclocking on the video outputs can be enabled and disabled. The command relates to the status of all the reclockers on the matrix outputs.

The host must send the following sequence:

K k1 ... k8 <CR>

K 1 command character (Hex 4B)
k1 ... k8 8 characters indicating the disabled/enabled status to set on the reclockers on the outputs:
"0" : reclocking disabled
"1" : reclocking enabled

E.g.: to enable the first 4 reclockers of a matrix with 8 outputs and disable those on outputs 5 to 8, the host must send the following hex codes in line:

45 31 31 31 31 30 30 30 30 0D

The matrix replies with:

<ACK> if the command has been executed correctly
<NAK> if transmission errors have been detected or the number of characters sent does not match the number of outputs on the matrix.

7.18 Request equalization and reclocking status

The status of reclocking and equalization can be requested.

The host must send the following sequence:

e <CR>

e 1 command character (Hex 65) no other parameters required

The matrix replies with a status sequence consisting of:

e 1 character identifying the requested status (Hex 65)
m 1 character identifying the matrix hardware configuration:
"1" : n.a. (SDZHD16 16 in, 16 out)
"2" : n.a. (SDZHD16 16 in, 8 out)
"3" : n.a. (SDZHD16 8 in, 16 out)
"4" : configuration not implemented
"5" : SDZHD08 8 in, 8 out

e1 ... e8 8 characters indicating the equalization disabled/enabled status
"0" : equalization disabled
"1" : equalization enabled

k1 ... k8 8 characters indicating the reclocking disabled/enabled status
 "0" : reclocking disabled
 "1" : reclocking enabled

8.0 FIRMWARE UPGRADE

Remote firmware upgrading is available via PC with RS232 connection. This is particularly useful, as it means customers who purchased previous versions are able to take advantage of new functions as these are implemented.

The SDZHD08 firmware can be upgraded using the **UPLOADER** program. The program must be downloaded from the www.elprovideolabs.com website and installed on a PC with the Windows operating system.

To upgrade the firmware:

- Download the **.hex** file of the firmware version you wish to install from the section of the Elpro website dedicated to the SDZHD08 and save it to your PC.
- Switch the SDZHD08 on press and holding down the MODE button. The "*Enter in Upgrade mode...*" followed by "*Upgrade*" messages appear in the middle of the first line of the display panel to indicate the upgrading condition.
- Launch the **UPLOADER** program and follow the instructions.
- When upgrading is complete, reboot the SDZHD08.

9.0 TECHNICAL DATA**SDI**

Standard	SMPTE 259M (143Mbps, 177Mbps, 270Mbps, 360Mbps) SMPTE 344M (540Mbps) SMPTE 292M (1483Mbps, 1485Mbps)
Input coupling	AC, 75Ω
Inputs	8, with equalizer up to 200 m RG59DS (SD-SDI) or 100 m RG59DS (HD-SDI)
Input return loss	>15dB
Outputs	8 with reclocker
Output amplif.	800mVpp/75Ω
Jitter	<0.2UI
Ext. Sync Ref.	Analog bi-level or tri-level sync, with Loop

AUDIO

Input	Differential with Phoenix screwtype removable
Input coupling	AC
Input impedance	44KΩ differential, 22KΩ single ended
Input level	+21dBm Max (balanced)
Output impedance	600Ω
Output gain	0dB
Frequency response	±0.10 dB from 20Hz to 20KHz
Harmonic distortion	0.2% from 20Hz to 20KHz at +6dBm
Hum & noise	-63dBm unweighted (worst case)
Crosstalk	55dB at 16KHz (worst case)

GENERAL

Remote control	RS232, Ethernet
Main input	90 ÷240Vac
Power consumption	25VA
Size (WxDxH)	438x340x88mm
Weight	5Kg
Operating temp. range	0÷45°C
Safety	According to EN 60065
EMC	According to EN 55103-1 and EN 55103-2



10.0 NOTES

This product is guaranteed for a period of 5 years from the date of purchase.

The guarantee is not valid for defects caused by improper use or service or repairs performed by a third party.

During the period covered by the guarantee Elpro will repair faulty units free of charge.

Faulty units must be sent CARRIAGE PAID to Elpro's office in Turin, Italy, complete with the relative packing list.

Repaired units will be returned CARRIAGE FORWARD to the addressee. Outside the guarantee period, Elpro will repair faulty units, with delivery EX-WORKS to its Turin office, charging the customer for the cost of repair.



For any problems during installation of the SDZHD08 please call the Elpro hotline, +39 011 7701583 or send an e-mail to: info@elprovideolabs.com

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