

SD-16

In-picture audio meter

From the range of in-picture audio meters by Chromatec

User instructions



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SD-16

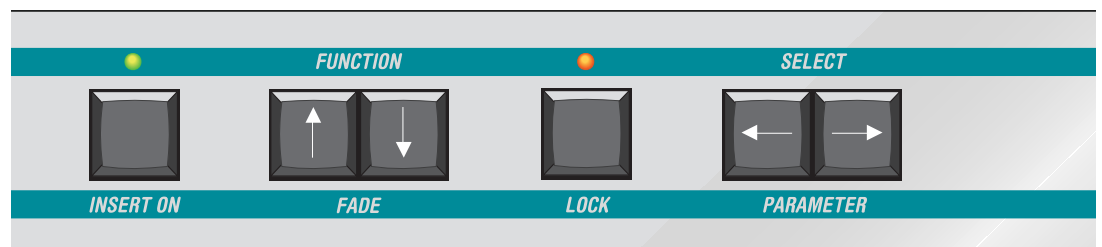
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Model overview

The Model SD-16 is a serial digital in-picture audio meter capable of displaying up to 16 channels of embedded audio in bargraph form. The audio bargraphs and on-screen data are mixed with the outgoing SDI signal. A composite video monitor output is also provided.

A comprehensive on-screen menu allows the user to configure the SD-16 according to requirements including bar colours, position on screen, level references, etc. Up to four groups of four audio channels may be displayed together with sum & difference (M&S) meters and a phase correlation meter. Six standard meter scales and ballistics are available together with VU superimposed on PPM. Alarms are provided for audio/video loss, over level, and sustained anti-phase with TTL outputs and on-screen indication in an alarm condition. There is provision for a wired remote control, duplicating the operation of the front panel buttons.

Front panel buttons



Insert on

The 'Insert On' button switches the bargraphs on or off according to the bar groups pre-selected from the Menu and at the previously set fade level.

Function/fade

The Fade buttons determine the mix level of the bargraphs superimposed on the outgoing video and operate only when the unit is locked (with the red LED off). When the unit is unlocked and in the Menu mode, these buttons are used to move the cursor up or down the Menu line in order to select a function.

Lock

The 'Lock' button performs two functions depending in which mode the unit is operating. When in the locked mode with the red LED off, pressing the button briefly will reset the alarms, peak hold and 'over' indicators. Unlock is activated by keeping the button pressed for about 3 seconds after which the red LED will be lit and the on-screen Menu appears, disabling the Fade function. After carrying out changes within the Menu, pressing the Lock button briefly will save the settings and return the SD-16 to the normal meter mode.

Select parameter

The 'Select Parameter' buttons are disabled when the unit is locked. When the unit is unlocked the Select Parameter buttons are used to change the system settings depending on the Menu line selected.

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Menu display

In order to change the numerous parameters of the SD-16 it is necessary to enter the system Menu by pressing the Lock button for approximately 3 secs, whereupon the red LED above the Lock button will light and the Menu will appear on-screen together with all of the bargraphs previously selected. When in the unlocked mode with the Menu displayed, both the Function and Select Parameter buttons are used to change the system settings. The Function buttons are used to move the cursor up or down the Menu line and the Select Parameter buttons to select the option required. See following Menu pages.

Bar groups

There are four bar groups, designated A, B, C, & D. Two or four audio channels may be assigned according to the selection made in the 'Bar Group Channels' line of the menu. The bar groups may be assigned to display level, sum & difference or sum only, or turned off. Their horizontal position on screen may be adjusted individually.

Meter scales

Normally, the AES/EBU digital scale would be used. However, standard analogue scales and their corresponding ballistics may also be selected. In this situation the 0dB reference point may be set against the AES/EBU digital scale. Additionally, when using PPM scales a VU meter may be superimposed enabling both peak and average readings simultaneously.

Phase correlation meters

Two horizontal phase bars may be assigned to any adjacent pair of audio channels or to each group as a whole. The phase bars may be placed at the top or bottom of the screen and can be adjusted for vertical position. If only two audio channels are chosen in the bar groups only one of the phase correlation meters will appear.

Peak hold indicators

Peak hold indicators are provided for all channels. The delay time before decay may be set according to requirements and includes an 'infinite' setting which indicates the maximum level attained over any period of time until it is reset. This is carried out by briefly pressing the 'Lock' button when in the normal operating mode.

Alarms & over-scale indicators

Alarms are incorporated in the SD-16 for SDI input loss, audio loss, over level and sustained anti-phase. On-screen indication is provided in the form of flashing coloured rectangles situated at the top of the respective bargraphs.

525 or 625 line operation

525 or 625 line operation is automatically set according to the SDI input signal.

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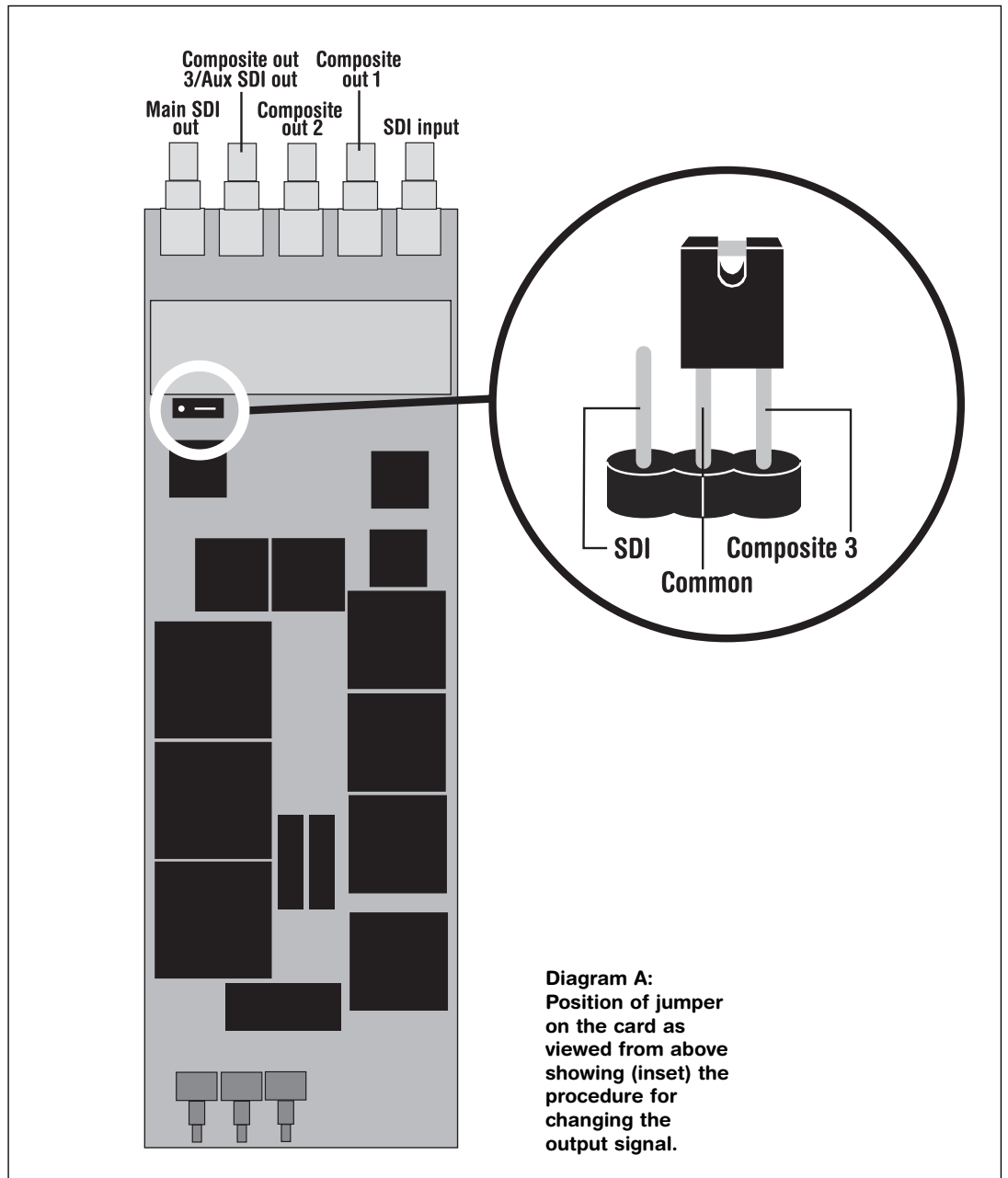
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Connections

The SD-16 is normally connected in-line with an SDI monitor feed via the appropriate 75ohm BNC connectors and is designed to accept 525 or 625 line SMPTE 259M serial digital video.

Three composite video outputs are provided on 75ohm BNC connectors. These are an encoded copy of the main SDI output which includes the superimposed bargraphs. Alternatively, the third composite output may be switched (via an internal jumper) to provide an auxiliary SDI output. See Diagram A for the location of the jumper on the main board which may be accessed by removing the top cover of the unit. The jumper should be located between the center and outside pins to provide the auxiliary SDI output, or between the center and inside pins to provide the third composite output.

It should be noted that the embedded audio is stripped from the main SDI output but remains present on the auxiliary SDI output.



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Alarm output & reset connections

A 15 pin female 'D' Type connector located on the rear panel carries a commoned TTL alarm output and alarm reset functions. See diagram B.

Remote control connections

Remote control connections are also available via the same 15 pin female 'D' Type connector used for the alarms and provides duplication of the front panel button and LED connections. See diagram B.

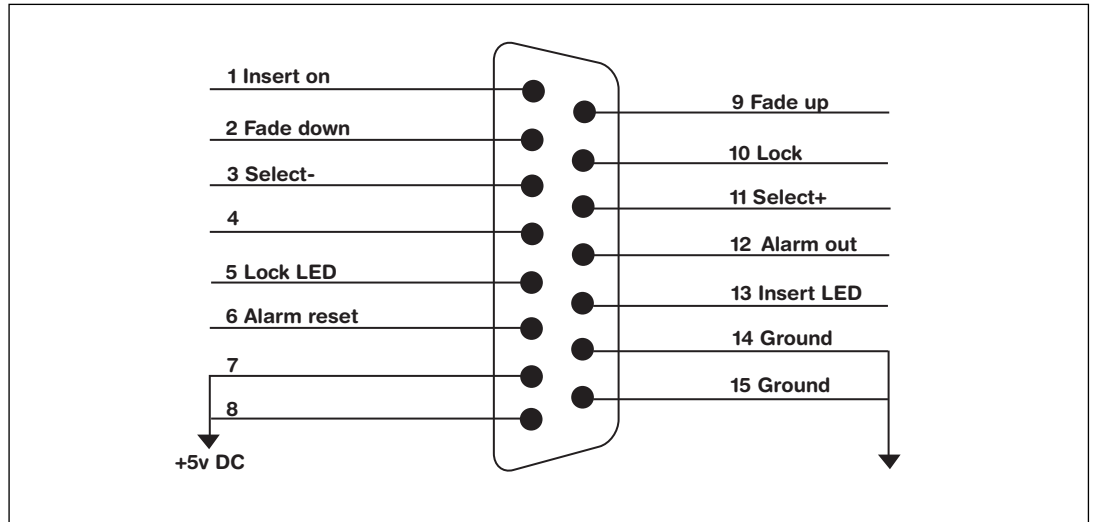
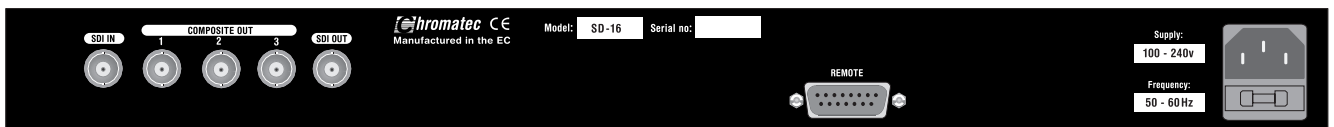


Diagram B

Power connection

The SD-16 will operate from a nominal 100VAC to 250VAC mains supply. The mains input voltage is automatically set according to the supply.

Rear panel layout



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SD-16 menu pages

| CHROMATEC SD-16 V1.0 PAGE 1 | | |
|------------------------------------|------------------|--|
| | (Default) | (Alternatives) |
| SCALES SELECT | AES/EBU | DIN PPM, BBC PPM, NORD PPM, VU, |
| SUPERIMPOSE VU | OFF | ON VU EXTD |
| ANALOG SCALE REF | -20dBFS | -28dBFS to -12dBFS in 2dB increments |
| SUM LEVEL SET | -3dB | -6dB, 0dB |
| OVER-RANGE POINT | 0dB | ±10dB in 1dB increments |
| PEAK HOLD SET | 3 SECS | OFF, 0.5 SEC, 1 SEC, 2 SEC, 3 SEC, 10 SEC, 20 SEC, 30 SEC, INF |
| BAR GRP A DISPLAY | LEVEL | SUM+DIFF, SUM ONLY, OFF |
| BAR GRP A CHANNELS | 1+2 | 3+4, 5+6, 7+8, 9+10, 11+12, 13+14, 15+16 |
| BAR GRP A SCALE | ON | OFF |
| BAR GRP A POSITION | | |
| BAR GRP B DISPLAY | LEVEL | SUM+DIFF, SUM ONLY, OFF |
| BAR GRP B CHANNELS | 1+2 | 3+4, 5+6, 7+8, 9+10, 11+12, 13+14, 15+16 |
| BAR GRP B SCALE | ON | OFF |
| BAR GRP B POSITION | | |
| BAR GRP C DISPLAY | LEVEL | SUM+DIFF, SUM ONLY, OFF |
| BAR GRP C CHANNELS | 1+2 | 3+4, 5+6, 7+8, 9+10, 11+12, 13+14, 15+16 |
| BAR GRP C SCALE | ON | OFF |
| BAR GRP C POSITION | | |
| BAR GRP D DISPLAY | LEVEL | SUM+DIFF, SUM ONLY, OFF |
| BAR GRP D CHANNELS | 1+2 | 3+4, 5+6, 7+8, 9+10, 11+12, 13+14, 15+16 |
| BAR GRP D SCALE | ON | OFF |
| BAR GRP D POSITION | | |
| CHROMATEC SD-16 V1.0 PAGE 2 | | |
| | (Default) | (Alternatives) |
| PHASE BAR ENABLE | TOP | BOTTOM, OFF |
| PHASE BAR CHANS | 1+2 | 3+4, 5+6, 7+8, 9+10, 11+12, 13+14, 15+16 |
| PHASE BAR POSITION | | |
| LEVEL 1 BAR COLOUR | RED | Colour options: |
| LEVEL 2 BAR COLOUR | GREEN | |
| LEVEL 3 BAR COLOUR | RED | |
| LEVEL 4 BAR COLOUR | GREEN | |
| S/IMP VU COLOUR 1 | GREEN | |
| S/IMP VU COLOUR 2 | RED | BLACK, BLUE, RED, MAGENTA, |
| S/IMP VU COLOUR 3 | GREEN | GREEN, CYAN, YELLOW, WHITE |
| S/IMP VU COLOUR 4 | GREEN | |
| SUM BAR COLOUR | CYAN | |
| DIFF BAR COLOUR | YELLOW | |
| OVER-RANGE COLOUR | WHITE | |
| PHASE-OUT COLOUR | MAGENTA | |
| PHASE-IN COLOUR | GREEN | |
| SDI INPUT LOSS | ALARM OFF | ALARM ON |

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| | (Default) | (Alternatives) |
|------------------|----------------------------------|--|
| AUDIO LOSS ALARM | ALL ON | ALL OFF |
| CHANNEL 1 | ON | OFF |
| CHANNEL 2 | ON | OFF |
| CHANNEL 3 | ON | OFF |
| CHANNEL 4 | ON | OFF |
| CHANNEL 5 | ON | OFF |
| CHANNEL 6 | ON | OFF |
| CHANNEL 7 | ON | OFF |
| CHANNEL 8 | ON | OFF |
| CHANNEL 9 | ON | OFF |
| CHANNEL 10 | ON | OFF |
| CHANNEL 11 | ON | OFF |
| CHANNEL 12 | ON | OFF |
| CHANNEL 13 | ON | OFF |
| CHANNEL 14 | ON | OFF |
| CHANNEL 15 | ON | OFF |
| CHANNEL 16 | ON | OFF |
| SET TIME | 10 SECS | 10 SECS to 80 SECS in 10 SEC increments |
| SET THRESHOLD | -60dB to -25dB in 5dB increments | |

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| | (Default) | (Alternatives) |
|------------------|--------------------------------|-----------------------|
| OVER LEVEL ALARM | ALL ON | ALL OFF |
| CHANNEL 1 | ON | OFF |
| CHANNEL 2 | ON | OFF |
| CHANNEL 3 | ON | OFF |
| CHANNEL 4 | ON | OFF |
| CHANNEL 5 | ON | OFF |
| CHANNEL 6 | ON | OFF |
| CHANNEL 7 | ON | OFF |
| CHANNEL 8 | ON | OFF |
| CHANNEL 9 | ON | OFF |
| CHANNEL 10 | ON | OFF |
| CHANNEL 11 | ON | OFF |
| CHANNEL 12 | ON | OFF |
| CHANNEL 13 | ON | OFF |
| CHANNEL 14 | ON | OFF |
| CHANNEL 15 | ON | OFF |
| CHANNEL 16 | ON | OFF |
| SET THRESHOLD | -20dB to 0dB in 2dB increments | |

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| | (Default) | (Alternatives) |
|------------------|------------------|----------------------------|
| ANTI-PHASE ALARM | ALL ON | ALL OFF |
| CHANNELS 1+2 | ON | OFF |
| CHANNELS 3+4 | ON | OFF |
| CHANNELS 5+6 | ON | OFF |
| CHANNELS 7+8 | ON | OFF |
| CHANNELS 9+10 | ON | OFF |
| CHANNELS 11+12 | ON | OFF |
| CHANNELS 13+14 | ON | OFF |
| CHANNELS 15+16 | ON | OFF |
| SET TIME | 1 SEC | 3 SECS, 5 SECS, 10 SECS |

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SD-16 specifications

(subject to change without notice)

Input:

SMPTE 259M Serial 525/625 75ohm BNC, cable EQ up to 300m of high quality cable.

Outputs:

1 x SMPTE 259M Serial 525/625 75ohm BNC
3 x Composite video, 1Vp-p, PAL, NTSC 75ohm BNC

Embedded audio extraction:

Sampling rate: 32-48kHz variable, automatically detected
Digital audio processing resolution: 16 bits
Audio channels extracted: 16

Scales & ballistics:

AES/EBU: Overall dynamic range: 60dB (0dBFS to -60dBFS)
Attack time: 1 sample
Decay time: 1.5secs per 20dB
DIN PPM: Overall dynamic range: 55dB (+5dB to -50dB)
Attack time: 10ms
Decay time: 1.5secs per 20dB
BBC PPM: Overall dynamic range: 28dB (+12dB to -16dB)
Attack time: 10ms
Decay time: 2.8secs per 24dB
Nordic PPM Overall dynamic range: 60dB (+12dB to -48dB)
Attack time: 10ms
Decay time: 1.7secs per 20dB
VU: Overall dynamic range: 33dB (+3dB to -30dB)
Attack time: 400ms
Decay time: 500ms per 20dB
VU EXT D: Overall dynamic range: 70dB (+20dB to -50dB)
Attack time: 400ms
Decay time: 500ms per 20dB

Phase correlation:

Attack time: 1sec for 0 to ± 1 deviation
Decay time: 1sec for ± 1 to 0 deviation
Input dynamic range: 45dB
Minimum input level: -72dB



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