

Preliminary manual version

Operating Manual

SurroundControl 31900 series/31960 series

RTW

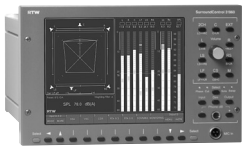
Operating Manual for

RTW SurroundControl 31900 series

and

RTW SurroundControl 31960 series





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Reg.-no.: DE 90666819
Category: 9
Device type: These instruments comply with and fall under category 9 Monitoring and control equipment of Annex 1B of the RoHS-Directive 2002/95/EC.

Note:
The photos and graphics in this manual are provided to illustrate the functions and displays of the instrument and make the descriptions and instructions more comprehensible. Ongoing product development may result in minor design changes, so that your version of the instrument may look slightly different from the illustrations. This applies in particular to the screen displays.

Note:
The picture on the cover page shows the main unit 31900 with Remote Control 30050 and the optional Remote Display 30010

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1 Before you begin

1.1 Preface



Fig. 1-1: SurroundControl 31900 series with Remote Control 30050 included (left, Remote Display 30010 is optional) and SurroundControl 31960 series (right),

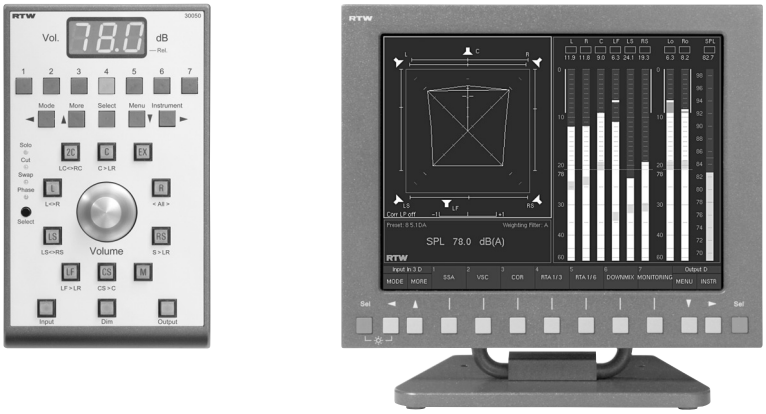


Fig. 1-2: RTW options: Remote Control 30050 (left) and Remote Display 30010 (right)

The SurroundControl 31900 series and SurroundControl 31960 series are 8-channel analog and digital monitoring controller with extensive level metering and signal analysis functions for comprehensive metering and monitoring of your audio programmes. The combination of metering and monitoring controller functions in single units with many different signal and control interfaces make the SurroundControl units ideal for surround sound productions. They are the perfect choice for visualizing analog and digital audio surround, stereo and multichannel formats in several professional audio applications like broadcast, pre and post production environments, music production, DVD mastering and cinema surround sound. Additional features like the integrated multi-channel test signal generator and the connection for a calibration microphone extend the SurroundControl's scope to calibration and general maintenance of your entire studio monitoring setup.

The multifunctional units feature et al. Peak Program Meter (plus separate SPL/LEQ-Bargraph), ITU BS.1771 Loudness Meter, Surround Sound Analyzer, Multi-Correlator, Vectorscope (Lissajous), 1/3 and 1/6 RTA, AES/EBU Status Monitor, Blits and Dialnorm. Depending on the model HD/SD SDI signals can be de-embedded or Dolby® E and Dolby® AC-3 signals can be decoded, the signal's status and their data can be displayed. Furthermore there are different display modes for the extenxive monitoring functions like Mono Mode, DIM Level, Solo Mode, Surround Mode Settings, Volume Sensibility, Listening Level, Channel Setting and the different options for Calibration.

The functions selected by the user are presented in up to three separate display sections, which are displayed on an external VGA monitor (31900 series) using the VGA output or on the built-in VGA color display (31960 series). The right display section shows a PPM- or Loudness display. The two left display sections can be programmed to show individual instrument functions at the same time. A fourth lower display section always shows the Toolbar with the key functions for operation.

The internal menu system contains in-depth configuration options for all global settings, for all the display functions and for the comprehensive signal routing. Individual setups for different applications can be stored as user presets inside the unit and these are accessible directly from normal operation with a single button.

The electronics of the SurroundControl 31900 series are installed in a 19"/1U housing. The instruments are operated with Remote Control 30050 remote control units. Up to three remote control units can be connected simultaneously. To view the instrument's output you need an external CRT or TFT display, such as the optional 8.4" Remote Display 30010 from RTW (see Fig. 1-3), the colour and design of which match the main SurroundControl 31900 units.

The electronics of the SurroundControl 31960 series are installed in a half-19"/3U rack-mountable module for standard 19" installation racks as used in video studios. The instruments are operated with front panel control. Optional up to two RTW Remote Control 30050 units can be connected simultaneously. The instrument's output is displayed on the integrated 6.5" TFT display, but optional you can connect an external CRT or TFT display, such as the optional 8.4" Remote Display 30010 from RTW (see Fig. 1-3), the colour and design of which match the SurroundControl 31960 units.

Basic operations and concepts are presented in this manual in detail.

1.2 About this manual

This manual is the operating handbook for the SurroundControl 31900 series and the SurroundControl 31960 series. Features and functionality of the instrument are described in 9 chapters containing the following topics:

- Chapter 1: Before you begin
  Safety information, package contents etc.
- Chapter 2: Key Features
  A short summary of basic instrument display modes and features
- Chapter 3: Quick Start
  Startup information on recalling and saving presets, accessing display modes, navigating the menu, etc.
- Chapter 4: Remote Control 30050
  Monitor controlling and operating with the remote control
- Chapter 5: Display Modes
  Explanation of all available display modes
- Chapter 6: Menu
  Menu structure overview and description of all menu options
- Chapter 7: Installation
  Information about installing, connecting and remote control and important additional information about safety
- Chapter 8: Service
  Information about how to make software updates
- Chapter 9: Drawings
  Mechanical Dimensions and configuration scheme
- Appendix A: List of Factory Presets and their Sub Presets
  Tables with the main routing settings and default instruments
- Appendix B: Specifications
  A summary of the main technical data
- Appendix C: EC declaration of confirmity
- Appendix D: Licenses
- Appendix E: GNU General Public License
- Appendix F: Index

Symbols used in this manual:

 This symbol draws your attention to related topics.

→ Press the button/key or select the menu tab or menu item ...

Displayed menu item

 Warning! (see Safety Symbols description on the next page)

 Attention! (see the next page)

 Functional earth terminal (see the next page)

 Protective earth terminal (see the next page)

1.3 Safety Symbols and terms

The following symbols may be marked on the panels or covers of equipment or module and are used in this manuals with these terms:



WARNING! - This symbol alerts you to a potentially hazardous condition, such as the presence of dangerous voltage that could pose a risk of electrical shock. Refer to the accompanying Warning Label or Tag, and exercise extreme caution.



ATTENTION! - This symbol alerts you to important operating considerations or a potential operating condition that could damage equipment. If you see this marked on equipment, consult the Operating manual for precautionary instructions.



FUNCTIONAL EARTH TERMINAL - This symbol marks a terminal that is electrically connected to a reference point and is intended to be earthed for any functional purpose other than safety.



PROTECTIVE EARTH TERMINAL - This symbol marks a terminal that is bonded to conductive parts of the instrument. Confirm that this terminal is connected to an external protective earthing system.

1.4 General Safety Summary

Before installing and configuring the SurroundControl 31900/31960 series please study the following safety information carefully and observe all the recommendations to avoid injury and prevent damage to this product or any products connected to it.



To prevent possible electrical shock, fire, injuries and malfunctions, use this product only as specified.

- Only qualified personnel should perform service procedures.
- Do not open the housing.
- Do not insert your fingers or any other objects into the housing.
- Do not cover the unit and do not place any objects or anything containing liquids on it.
- Use proper power supply. Use only the power cord and power supply specified for this product and certified for the country of use.
- Connect and disconnect properly. Use only connectors specified for this product and fix them tight before use.
- Observe all terminal ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the operating manual for further ratings information before making connections to this product.
- Do not apply a potential to any terminal that exceeds the maximum rating of that terminal.
- Power disconnect. The power cord of the external power supply disconnects the product from the power source. Do not block the power cord or power supply; it must remain accessible to the user at all times.

- Do not operate without covers. Do not operate this product with cover plates or panels removed.
- Use proper fuse. Use only fuse type and rating specified for this product.
- Avoid exposed circuitry. Do not touch exposed connections and components when power is present.
- Do not operate with suspected failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.
- Do not operate in wet/damp conditions.
- Do not operate in explosive atmosphere.
- Do not operate in dusty environments.
- Do not operate the unit without adequate ventilation.
- Turn off and disconnect the power supply immediately it the unit produces unusual smells, noises or smoke, or if foreign substances (e. g. liquids) or foreign objects enter the unit.
- Keep product surfaces clean and dry.



There are no user-serviceable parts in the SurroundControl 31900/31960 units. Please always have any necessary servicing performed by a properly qualified technician. Never remove any parts from the unit and do not make any modifications to the unit without the express written consent of RTW. Modifications can cause both safety hazards and affect the unit's EMI-CE conformity.



The SurroundControl 31900/31960 units are designed for indoor use only and may only be operated with a power supply unit provided for it.

1.5 Environmental Considerations

This section provides information about the environmental impact of the product.

Product End-of-Life Handling
Observe the following guidelines when recycling an instrument or component:

- **Equipment Recycling.**
  Production of this equipment required the extraction and use of natural resources. The equipment may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. In order to avoid release of such substances into the environment and to reduce the use of natural resources, we encourage you to recycle this product in an appropriate system that will ensure that most of the materials are reused or recycled appropriately.

- **Battery Recycling.**
  This product may contain a Nickel Cadmium (NiCd) or lithium ion (Li-ion) rechargeable battery, which must be recycled or disposed of properly. Please properly dispose of or recycle the battery according to your local government regulations.

- **Restriction of Hazardous Substances**
  This product has been classified as Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive. This product may contain lead, cadmium and/or mercury in slight quantities. Please dispose of or recycle the electronic parts or devices according to your local government regulations.

1.6 Package Contents

Unpack the instrument, and check that you received all items listed as Package Content. Recommended accessories, instrument options and upgrades are also listed in this section.

1.6.1 Package Content

Model 31900:
- SurroundControl 19“/1U main unit
- Remote Control 30050
- Earthed 3-wire power cord
- This manual

Model 31900S:
- SurroundControl 19“/1U main unit with HD/SD SDI de-embedder interface
- Remote Control 30050
- Earthed 3-wire power cord
- This manual

Model 31900D:
- SurroundControl 19“/1U main unit with Dolby® E and Dolby® AC-3 decoder
- Remote Control 30050
- Earthed 3-wire power cord
- This manual

Model 31900SD:
- SurroundControl 19“/1U main unit with HD/SD SDI de-embedder interface and Dolby® E and Dolby® AC-3 decoder
- Remote Control 30050
- Earthed 3-wire power cord
- This manual

Model 31960:
- SurroundControl (rack-mountable module for standard 19“ installation racks for waveform monitors)
- Rack-mounting adapters for cases with 407 mm mounting depth
- Counter plug for power supply
- This manual

Model 31960S:
- SurroundControl (rack-mountable module for standard 19“ installation racks for waveform monitors) with HD/SD SDI de-embedder interface
- Rack-mounting adapters for cases with 407 mm mounting depth
- Counter plug for power supply
- This manual

Model 31960D:

- SurroundControl (rack-mountable module for standard 19“ installation racks for waveform monitors) with Dolby® E and Dolby® AC-3 decoder
- Rack-mounting adapters for cases with 407 mm mounting depth
- Counter plug for power supply
- This manual

Model 31960SD:

- SurroundControl (rack-mountable module for standard 19“ installation racks for waveform monitors) with HD/SD SDI de-embedder interface and Dolby® E and Dolby® AC-3 decoder
- Rack-mounting adapters for cases with 407 mm mounting depth
- Counter plug for power supply
- This manual

1.6.2 Optional Accessoires

- **VGA display**
  - Remote Display 30010 with 8.4“ VGA color TFT display with function control keys
  - VGA connecting cable, Bürklin type 13M4240 5 m long with ferrite and all pins wired, connects the 30010 with 31900 and 31960 series

- **External Power Supplies**
  - Wide voltage power supply with Euro plug and locking 4-pin low voltage connector, 90 - 264 V AC/24 V DC, 3.0 A, Cat. no. 1177A-R (for 31960 only)
  - Wide voltage power supply with Euro plug and locking 4-pin low voltage connector, 90 - 240 V AC/24 V DC, 630 mA, Cat. no. 1171-R (for 30010 only)
  - Wide voltage power supply with different plugs (Euro, UK, US, AUS) and locking 4-pin low voltage connector, 90 - 240 V AC/24 V DC, 630 mA, Cat. no. 1172-R (for 30010 only)

- **Audio Cable**
  - 25 pin sub-D-M to 8 x XLR 3p-F snake cable 4 m for analog input signals for connection to the Analog In connectors, Cat. no. 1186
  - 25 pin sub-D-M to 8 x XLR 3p-M snake cable 4 m for analog output signals for connection to the Analog Out connector, Cat. no. 1163
  - 25 pin sub-D-M to 4 x XLR 3p-F and 4 x XLR 3p-M snake cable 4 m for digital input and output signals for connection to the Digital In/Out connectors, Cat. no. 1167

- **Measuring microphone**
  - Measuring microphone MM1 for connecting to the XLR connector on the front of 31900 series

2 Key Features

The SurroundControl units feature comprehensive display modes for analyzing surround, multichannel or stereo audio signals in various ways. These modes are referred to as “instruments”.

For operation in parallel three different instruments and the Toolbar with several buttons divide the display into up to four sections or windows.

Usually, all four windows are visible, but sometimes larger instruments can cover other instruments. The sizes and positions of the instruments on the screen are fixed and cannot be adjusted by the user. A detailed description follows on the next page.

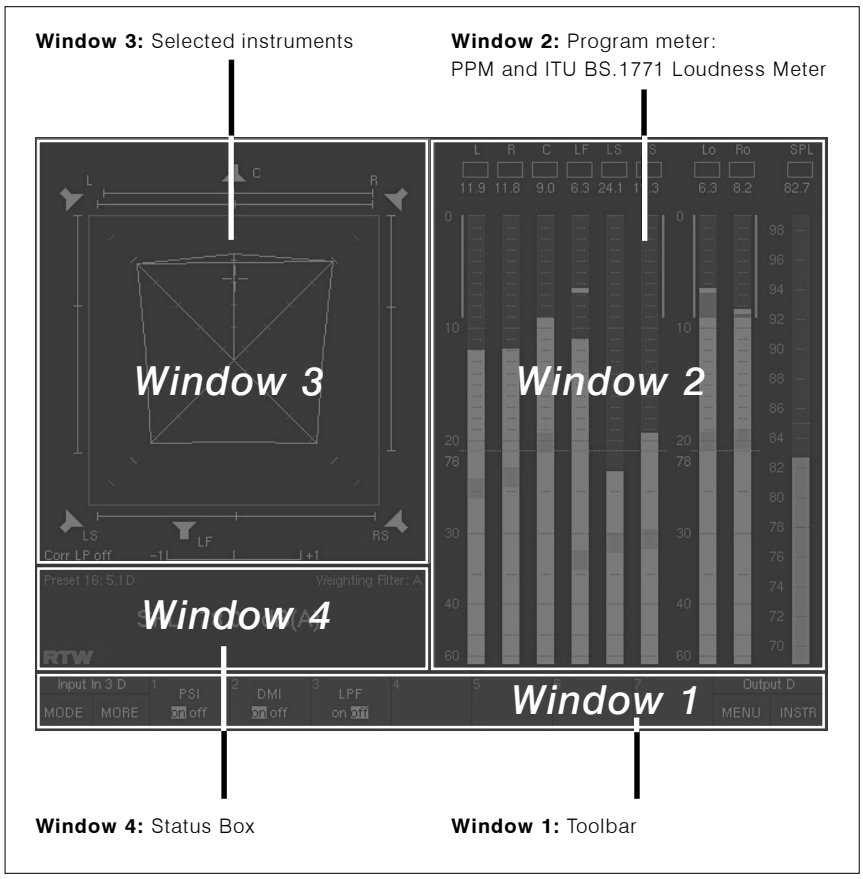


Fig. 2-1: The four screen display windows

- **Window 1: Toolbar**
  The Toolbar is always visible. It contains the controls for all the instruments' functions and the instrument selections and displays information on current operating modes. You can control the functions in three ways: With the Remote Control 30050 (31900 series) resp. the control panel (31960 series), with the keys on the Remote Display 30010 or with an optional computer mouse.

- **Window 2: Program Meter**
  The right half of the screen is normally occupied by the Program Meter display. Depending on the settings it shows the Peak Program Meter bargraphs with Peak Hold and RMS (SPL) displays or the ITU BS.1771 Loudness Meter bargraphs for each channel with momentary, integrated and long-term loudness value displays. The Program Meter will only be covered when the RTA 1/6 instrument is activated.

- **Window 3: Selected Instruments**
  The left part of the screen is used to display the instruments selected with the buttons in the Toolbar, the function keys on the Remote Control 30050 (31900 series) resp. on the front panel of the 31960 series or with an optional mouse.

- **Window 4: Status Box**
  Depending on the selected modes this window is used to display current status information (e. g. selected preset, SPL value), messages etc. or a chart recorder. Some of the instruments cover the Status Box when they are activated.



Note:
A short description and examples for the displays of the instruments follow on the next pages. For more detailed information about the Display Modes of the SurroundControl 31900 series and the SurroundControl 31960 series and how to get there please refer to Chapter 5.

See Chapter 5 for details

→ INSTR (Instrument), until Window 2 is highlighted with a white frame

2.1 Program Meter in Window 2

See Chapter 5.nn for operating instructions

2.1.1 Multi-Standard Peak Program Meter

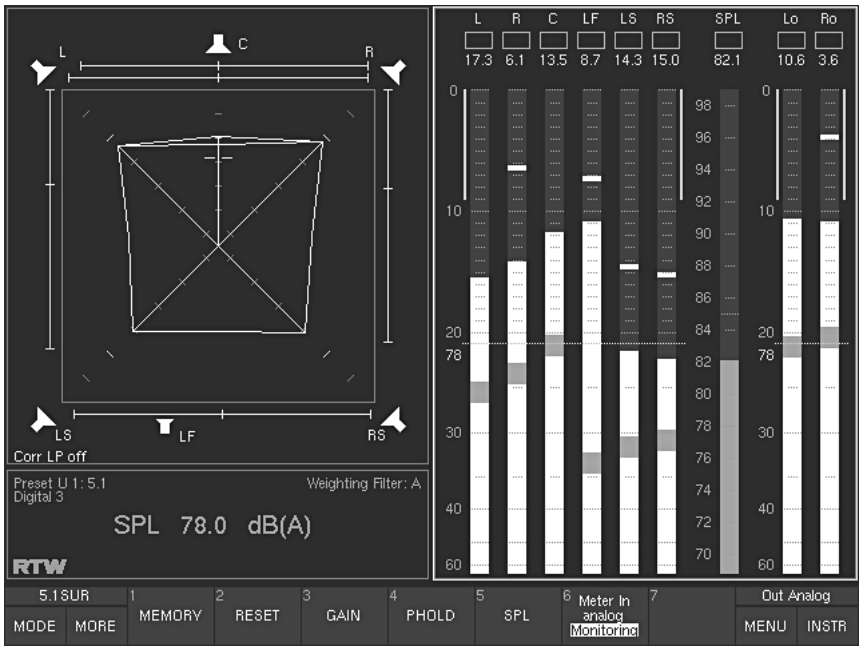


Fig. 2-2: Display elements of the Program Meter instrument in Window 2 (highlighted with a white frame) with PPM mode in 5.1 Surround format selected

Window 2 in the screen display is permanently assigned to the peakmeter groups when PPM mode is selected for the Program Meter. They are always displayed in the right-hand window, only the RTA 1/6 instrument overwrites the PPM instrument. The display of the Peakmeter and according to that the display of other instruments depends on the Mode selected with the combo box in the Monitoring Input Routing sub menus.

See Chapter 5.nn for operating instructions and Chapter 6.5.2 for selection

The ITU BS.1771 Loudness Meter is **only** available in digital 5.1 Surround and 2-ch. Stereo modes

2.1.2 ITU BS.1771 Loudness Meter

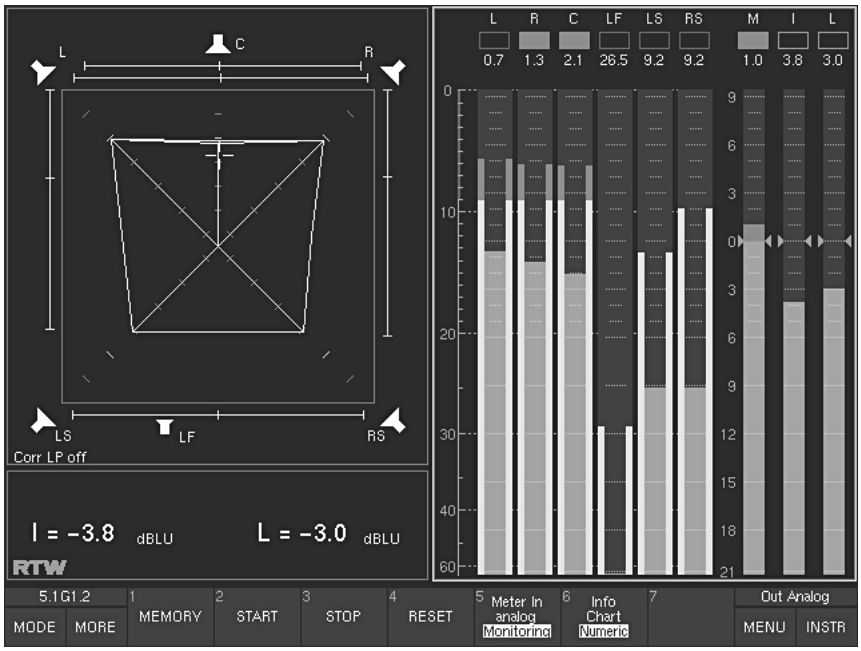


Fig. 2-3: Display elements of the Program Meter instrument in Window 2 (highlighted with a white frame) with ITU BS.1771 Loudness Meter mode selected in 5.1 Surround format, combined with peakmeter display

For the digital 5.1 Surround and 2-channel Stereo modes the integrated ITU BS.1771 Loudness Meter can be displayed in Window 2 alternatively or in addition to the Peak Program Meter. It shows high resolution loudness level bargraphs according to ITU BS.1771 standard for up to six channels for the display of the momentary single values and three additional bargraphs for the display of the summed momentary loudness reading (bargraph **M**), for a loudness value which has been integrated for a longer time (bargraph **I**) as well as the loundness value of a long-term reading for up to more than seven days (bargraph **L**). The scale is acc. to ITU BS.1771 (–21 to +9 dB LU) with weighting filter R2LB-RMS, alarm and digital error display.

→ INSTR (Instrument), until Window 3 is highlighted with a white frame

2.2 Selected Instruments in Window 3

2.2.1 Surround Sound Analyzer (SSA)

→ MODE, → SSA. See Chapter 5.nn for operating instructions

The SSA instrument is **only** available in Surround and 2-ch. Stereo modes!

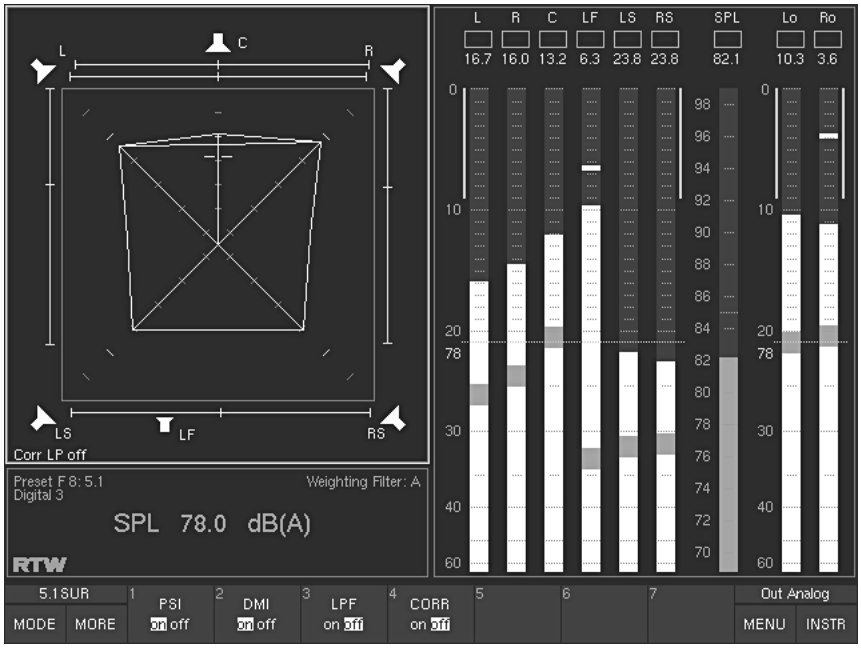


Fig. 2-4: The Surround Sound Analyzer instrument (SSA) displayed in Window 3 (highlighted with a white frame)

The Surround Sound Analyzer is a powerful tool for visualizing serveral aspects of surround signals in parallel, e. g. the balance between front and surround channels and between L-C-R channels, display of either phantom sound sources or correlators or both, total volume indication, dominant sound events, phase relationships and many others. The dynamic behaviour of all display elements corresponds to the subjective listening impression, enabling you to see the balance of your surround programme intuitively and at a glance.

→ MODE, → VSC.
See Chapter 5.nn for operating instructions

2.2.2 Audio Vectorscope (VSC) (Lissajous)

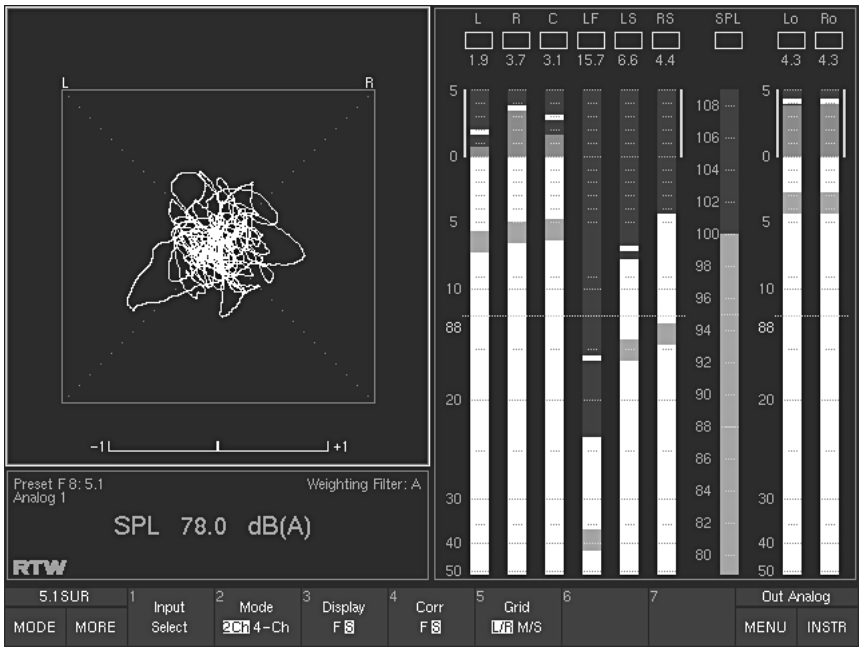


Fig. 2-5: The Audio Vectorscope instrument (VSC) displayed in Window 3 (highlighted with a white frame)

The Audio Vectorscope is a high quality Lissajous display for stereo signals available in the surround modes and for all modes with stereo channel pairs. This display mode also includes a phase meter (correlator).
In Surround modes it is switchable between 2-channel and 4-channel mode with channel pairs L-R and LS-RS and displays separate phase meters for these channel pairs.

→ MODE, → CORR.
See Chapter 5.nn for operating instructions

2.2.3 Correlator (CORR)

The CORR instrument is **only** available in 5.1, 6.1, 7.1 Surround modes and for the stereo channel pairs in Multi-Channel mode!

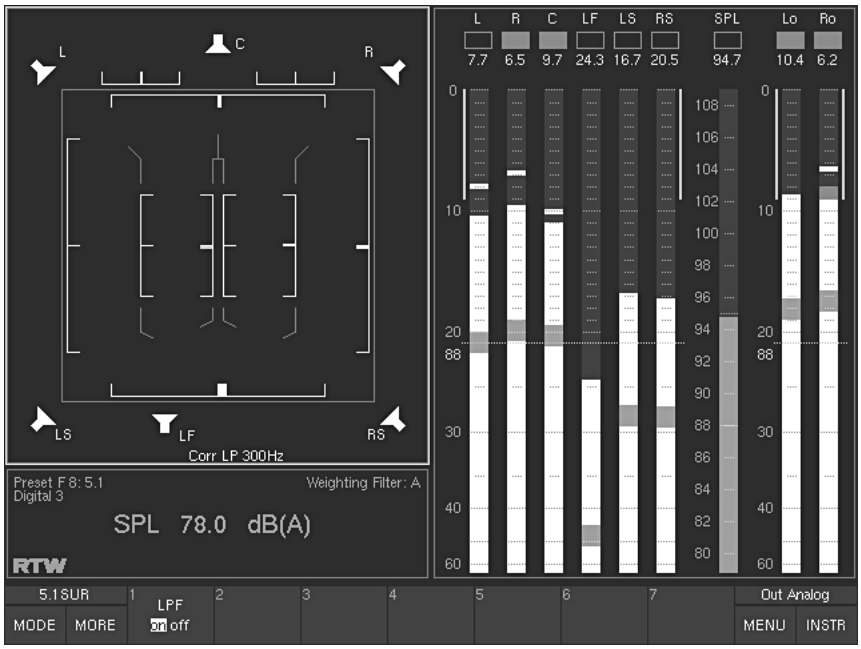


Fig. 2-6: The Correlator instrument (CORR) with phase meters for every channel pair displayed in Window 3 (highlighted with a white frame)

The Correlator is a multi-fold display mode with up to ten phase meters for all possible channel pairs, graphically placed inside a 5.1 speaker setup. In 5.1 surround mode the Correlator display shows a clear graphical representation of all 10 channel pairs. You can also activate an optional 300 Hz low pass filter upstream from the instrument to obtain a view of the “surround envelopment” effect. This makes it possible to identify correlations at low frequencies that detract from the sense of envelopment.

In 6.1 surround mode the system does not yet have a separate display for the surround center channel.

In 7.1 mode the levels of the additional front channels are mixed with those of the front center channel. There is thus only one common front center indicator.

In Multi-Channel modes it can be used for the display of the phase correlationship of the defined stereo channel pairs.

In 3.1 Surround and 2-Channel Stereo modes this instrument is not available. For this mode the phase meter is integrated in the Vectorscope instrument (VSC – see Chapter 2.2.2).

→ MODE, → RTA 1/3.
See Chapter 5.nn for operating instructions

2.2.4 Third Octave Real Time Analyzer (RTA 1/3)

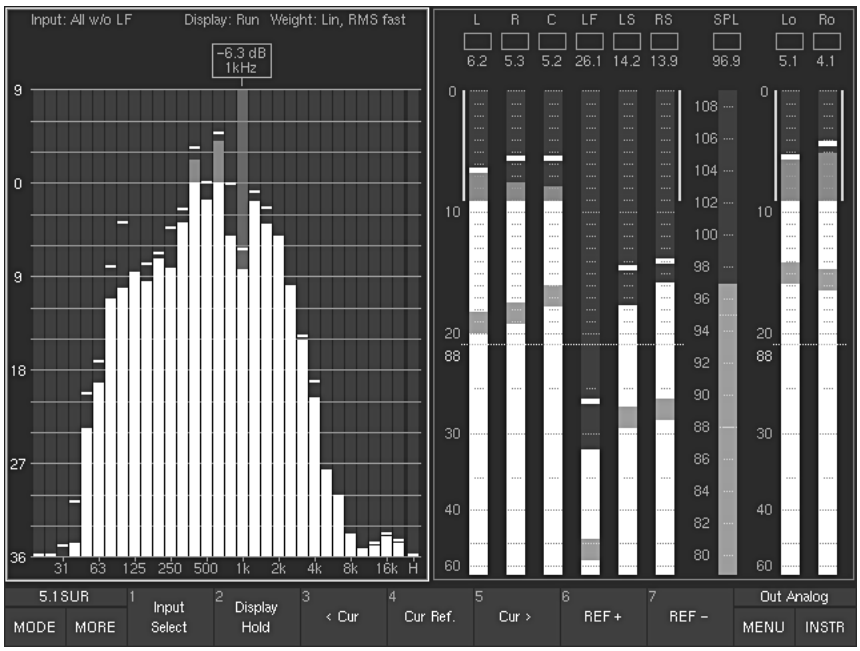


Fig. 2-7: The 1/3rd octave Real Time Analyzer instrument (RTA 1/3) displayed in Window 3 and Window 4 (highlighted with a white frame)

The third octave Real Time Analyzer (real filter type) displays the spectral distribution of individual channels or channel groups. When the RTA 1/3 instrument is activated it covers the Status Box (Window 4).

→ MODE, → RTA 1/6.
See Chapter 5.nn for operating instructions

2.2.5 Sixth Octave Real Time Analyzer (RTA 1/6)

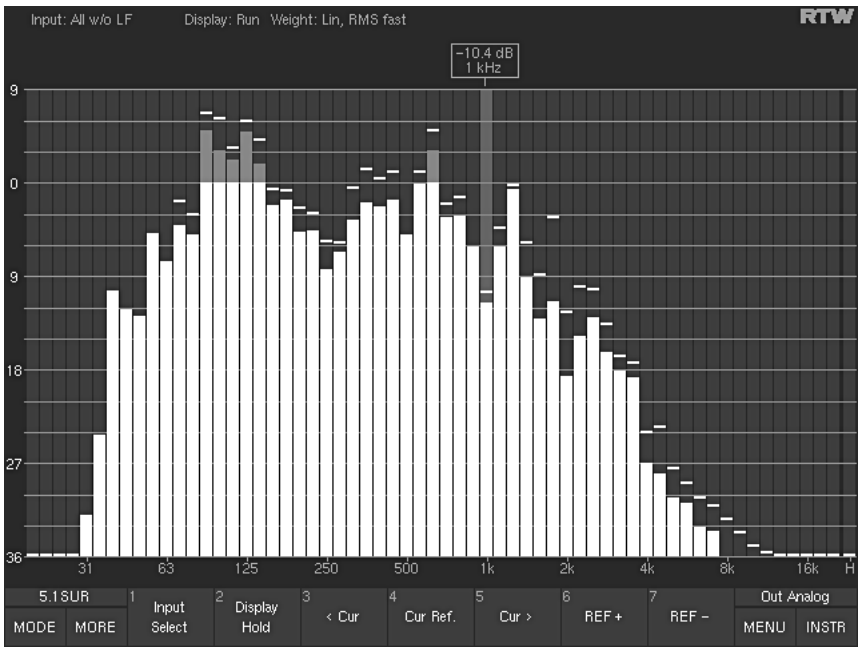


Fig. 2-8: The 1/6th octave Real Time Analyzer instrument (RTA 1/6) displayed in Window 2, Window 3 and Window 4

The RTA 1/6 is the only instrument that covers Window 2 with the Program Meter when it is activated. This is necessary because the 1/6 octave analyzer needs more space to be displayed legibly. The functions and controls are identical to those of the RTA 1/3 instrument, with one exception:

See Chapter 5.nn

When you are calibrating the monitoring system you can activate RTA 1/6 from the CAL instrument (see Chapter 5.nn) for evaluation of the signal from the calibration microphone.

→ MODE, → DOWNMIX. See Chapter 5.nn for operating instructions

The DOWNMIX instrument is **only** available in Surround modes!

2.2.6 (Two-Channel) Downmix Meter (DOWNMIX)

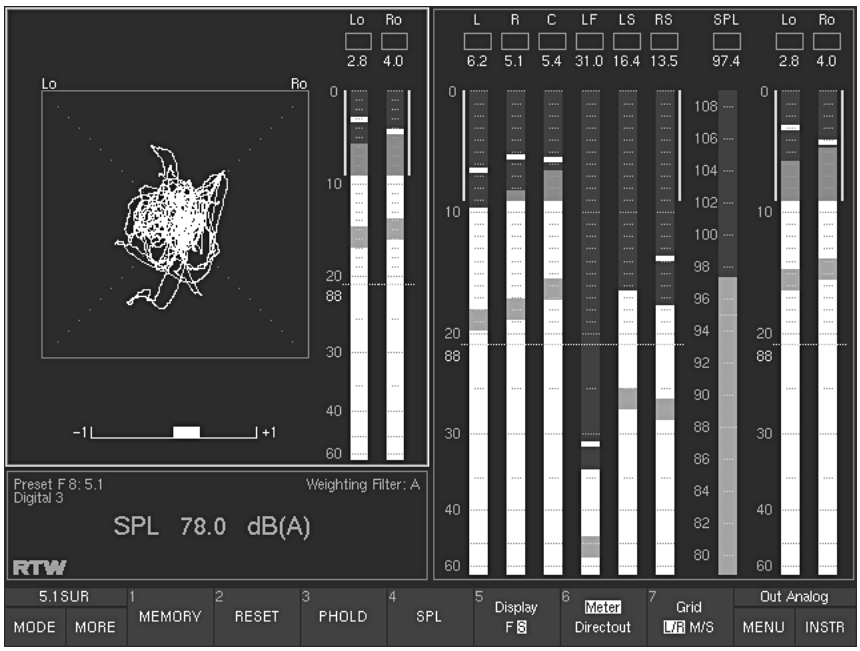


Fig. 2-9: The Two Channel Downmix Meter instrument (DOWNMIX) displayed in Window 3 (highlighted with a white frame)

The (Two-Channel) Downmix Meter instrument displays the levels and the correlation of the internally-generated two-channel downmix signal. It either can be metered and switched to the front loudspeakers or directly given out via the output connectors and then be monitored with the Downmix Meters. The instrument also features an audio vectorscope function.

→ MODE, → MONITORING. See Chapter 5.nn for operating instructions

2.2.7 Monitoring Controller Instruments (MONITORING)

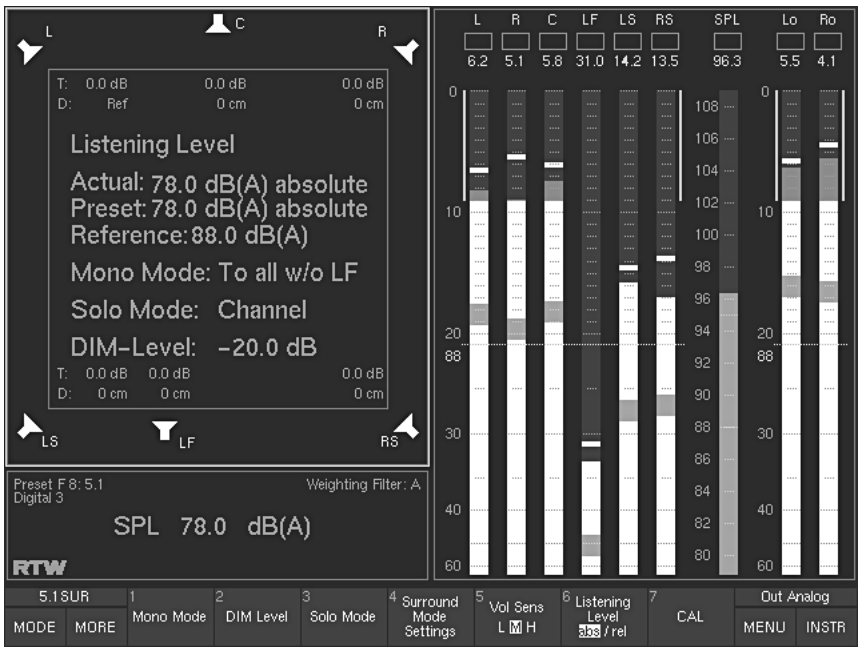


Fig. 2-10: The Monitoring controller instruments (MONITORING) displayed in Window 3 (highlighted with a white frame)

This instrument is used to manage the functions configuration settings of the Monitoring Controller. When the Monitoring instrument is activated Window 3 shows symbols for the loudspeakers and the values of the level trim offset, the delay, the listening level setting, the reference level, the dimming level and the selected mode for the generation of a mono signal. It also features the CAL instrument including the functions for the setting of the Trim and Delay values, the SPL Meter, and a test signal generator with different adjustable signals for calibrating the studio monitoring environment (see next page).

→ MODE, → MONITORING, → CAL.
See Chapter 5.nn for operating instructions

The CAL Instrument (sub-function of the Monitoring instrument)

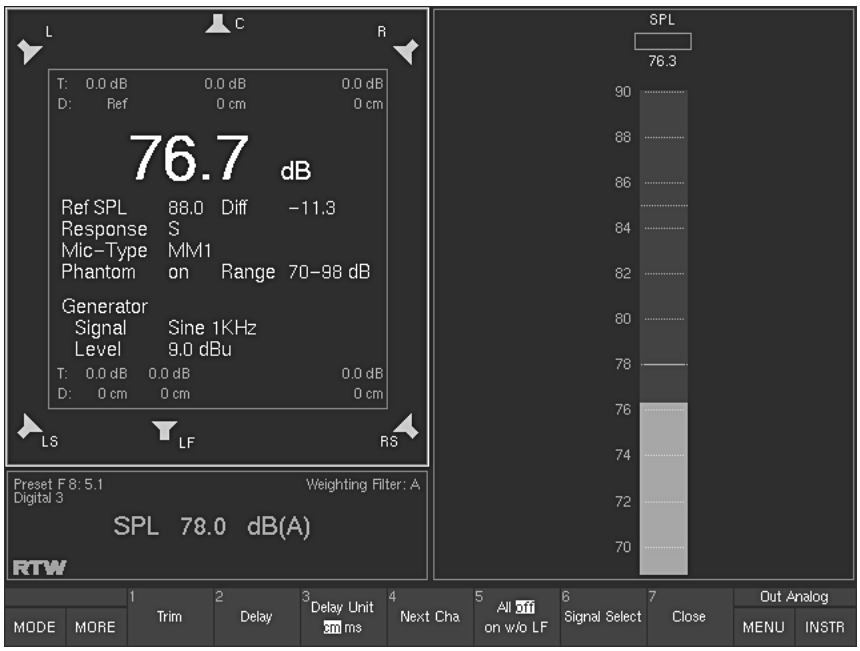


Fig. 2-11: The calibration instruments (CAL) displayed in Window 3 (highlighted with a white frame)

This instrument provides an 8-channel test signal generator and an SPL meter for the calibration of the monitoring system. The test signal generator can generate either sine wave signals or pink noise with a variety of bandwidths and levels. The values required for calibration to the various standards are preset, but you can also use variable values.
The SurroundControl's SPL meter enables you to perform the sound pressure level (SPL) measurements that are necessary to calibrate the sound monitoring system. The unit is also fitted with a calibration microphone preamplifier with settings for two different microphone types (i. e. beyerdynamic's MM-1 or Behringer's ECM 8000).

→ MODE, → MORE,
→ AES/EBU STATUS.
See Chapter 5.nn for
operating instructions

2.2.8 AES/EBU Status Monitor (AES/EBU STATUS)

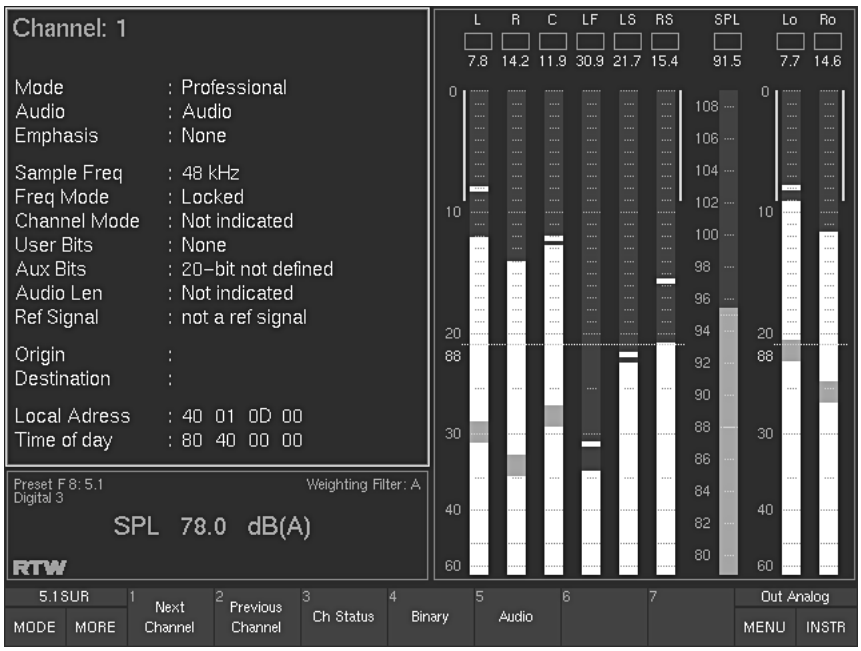


Fig. 2-12: The AES/EBU status monitor instrument (AES/EBU STATUS) displayed in Window 3 (highlighted with a white frame)

The AES/EBU Status Monitor displays the status bytes from the AES/EBU data stream as plain text. In addition to this it also displays a range of signal status information, including Confidence, Lock, Coding, Parity and Validity. Finally, the AES/EBU Status Monitor displays the audio data bits and their activity, which is useful when you need to determine the word width or identify defective bits in the data stream.

→ MODE, → MORE,
→ SDI STATUS.
See Chapter 5.nn for operating instructions

2.2.9 SDI Channel Status Monitor (SDI STATUS)

The SDI STATUS instrument is **only** available with HD/SD SDI deembedder interface installed (31900S, 31960S, 31900SD, 31960SD)!

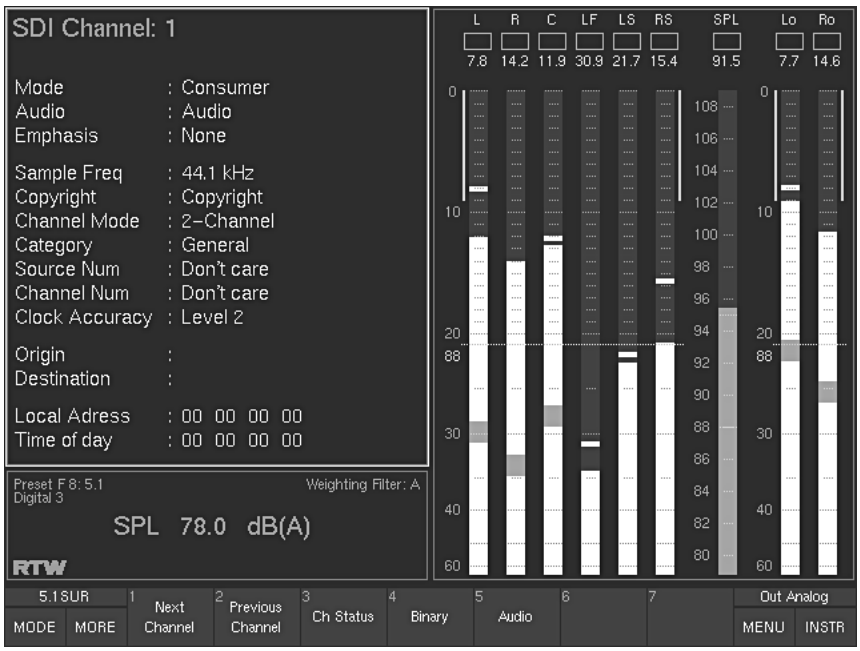


Fig. 2-13: The SDI status monitor instrument (SDI STATUS) displayed in Window 3 (highlighted with a white frame)

If the HD/SD SDI deembedder interface is installed and activated (only included in the S and SD versions), the channel status of each audio channel included in SDI signals can be displayed and monitored. It looks like the AES/EBU Status Monitor (see Chapter 2.2.8).

→ MODE, → MORE,
→ SDI INTERFACE.
See Chapter 5.nn for operating instructions

2.2.10 SDI Interface Status Monitor (SDI INTERFACE)

The SDI INTERFACE instrument is **only** available with HD/SD SDI deembedder interface installed (31900S, 31960S, 31900SD, 31960SD)!

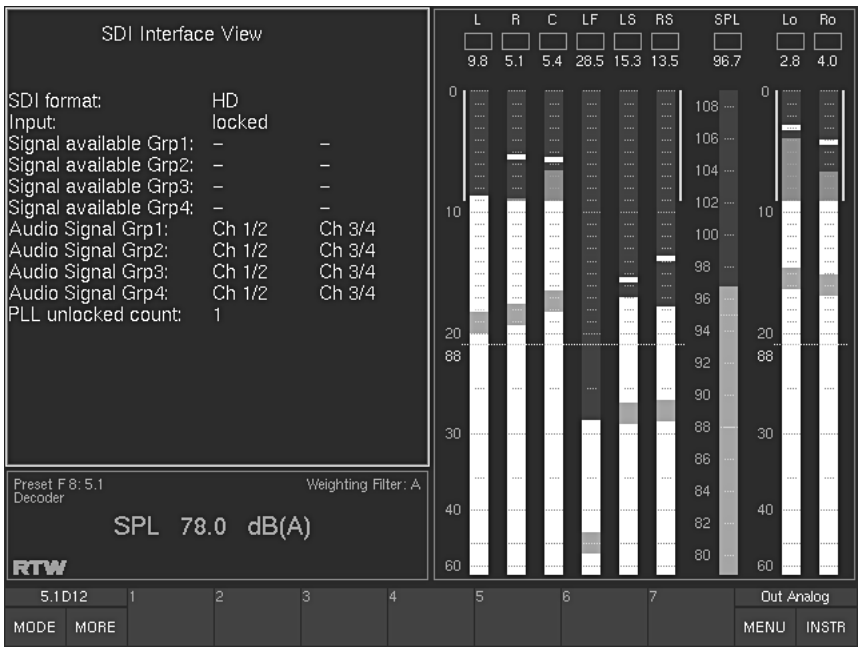


Fig. 2-14: The SDI interface monitor instrument (SDI INTERFACE) displayed in Window 3 (highlighted with a white frame)

If the HD/SD SDI deembedder interface is installed and activated (only included in the S and SD versions), the SDI Interface display shows the status of the interface and the included and available audio signals and signal groups.

→ MODE, → MORE,
→ HARDWARE STATUS.
See Chapter 5.nn for
operating instructions

2.2.11 Hardware Status Monitor (HARDWARE STATUS)

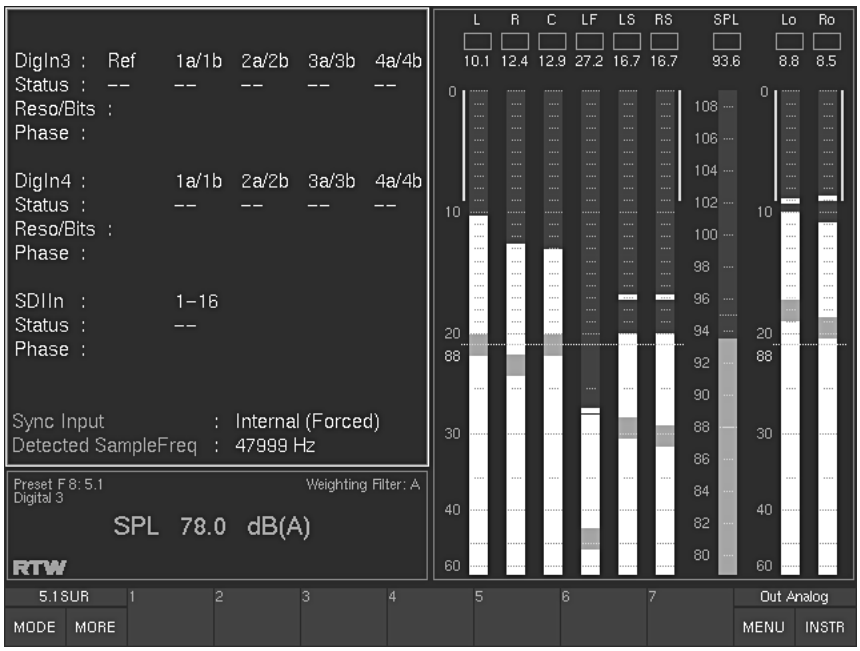


Fig. 2-15: The Hardware Status monitor instrument (HARDWARE STATUS) displayed in Window 3 (highlighted with a white frame)

The Hardware Status Monitor displayes the status of the digital inputs, the resolution and bits, the phase relationship, the sync reference and the detected sampling frequency.

→ MODE, → MORE,
→ DOLBY® META DATA.
See Chapter 5.nn for operating instructions

2.2.12 Dolby® Meta Data Monitor (DOLBY® META DATA)

The DOLBY® META DATA instrument is **only** available with Dolby® E and Dolby® AC-3 decoder installed (31900D, 31960D, 31900SD, 31960SD)!

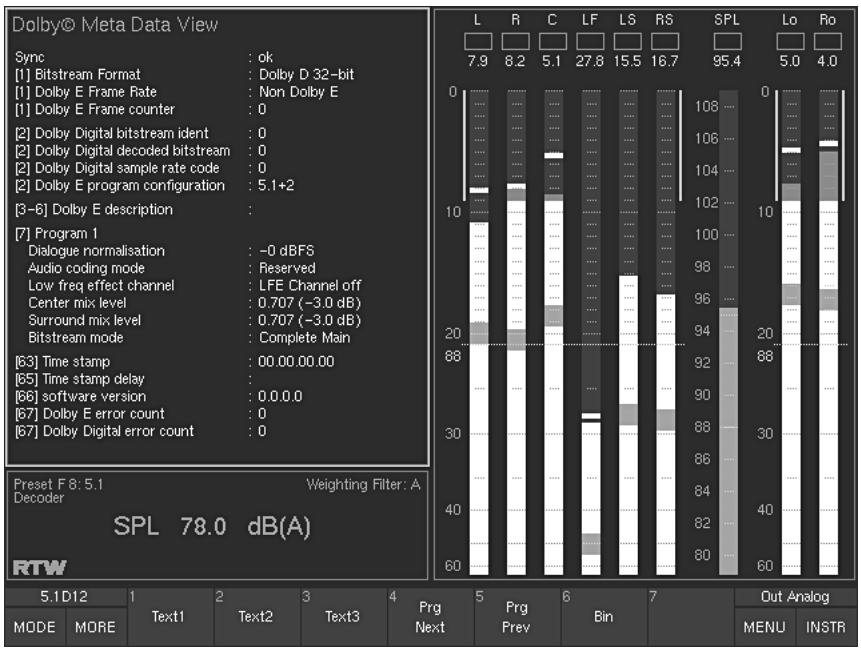


Fig. 2-16: The SDI interface monitor instrument (SDI INTERFACE) displayed in Window 3 (highlighted with a white frame)

If the Dolby® E and Dolby® AC-3 decoder option is installed and activated (only included in the D and SD versions), the meta data included in a Dolby® encoded data stream are displayed in Window 3.

→ MODE, → MORE,
→ DIALNORM.
See Chapter 5.nn for operating instructions

2.2.13 Dialnorm Meter (DIALNORM)

The DIALNORM instrument is **only** available with digital 5.1, 6.1 and 7.1 surround formats!

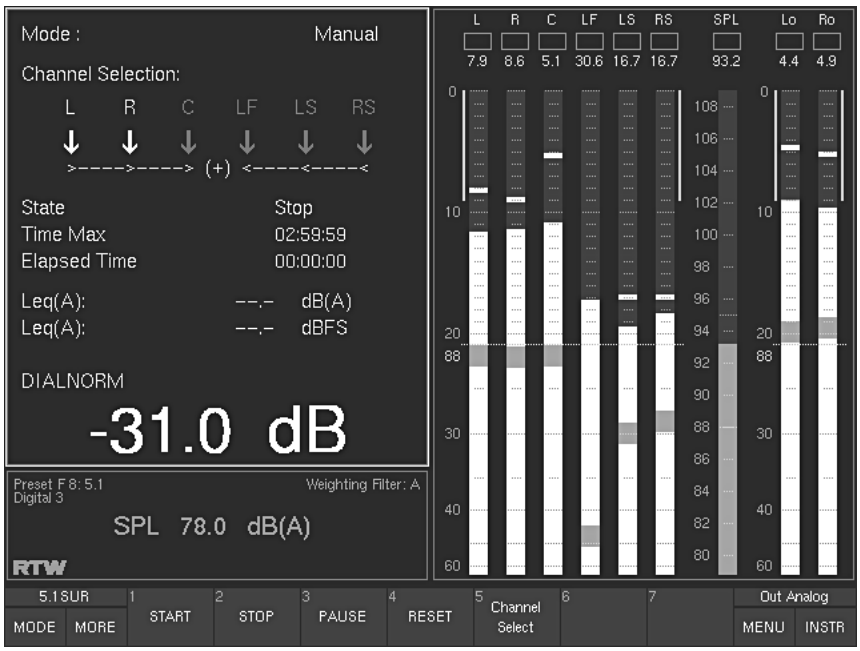


Fig. 2-17: The Dialnorm Meter instrument (DIALNORM) displayed in Window 3 (highlighted with a white frame)

The SurroundControl units can calcualte and show Dialnorm values from its digital input signals. Dialnorm is used in film sound mixing and describes the normalization of the dialog loudness level with respect to a certain reference monitoring level. With Peak Program Meter selected for the Program Meter this mode allows the measurement of the dialnorm value, the Leq(A) value referred to 0 dB FS as well as the Leq(A) value with A weighting. With ITU BS.1771 Loudness Meter selected in 5.1 surround mode for the Program Meter this mode allows the measurement of the dialnorm value, the Leq(R2LB) value referred to 0 dB FS as well as the Leq(R2LB) value with R2LB weighting.

→ MODE, → MORE, → BLITS. See Chapter 5.nn for operating instructions

2.2.14 BLITS 5.1 Surround Identification (BLITS)

The BLITS instrument is **only** available with 5.1 surround formats!

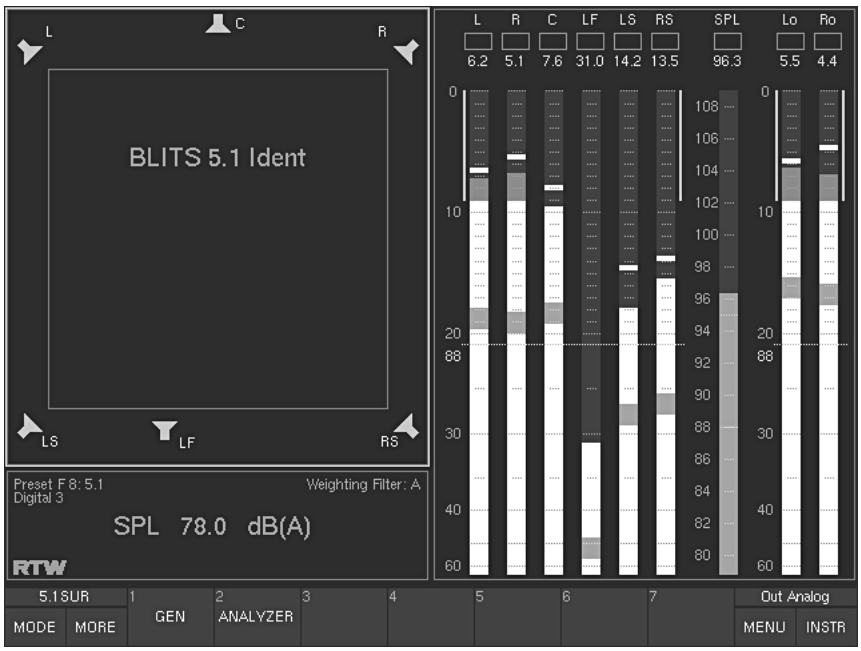


Fig. 2-18: The Dialnorm Meter instrument (DIALNORM) displayed in Window 3 (highlighted with a white frame)

To prevent unintentional channel swapping, an integrated signal generator driving the digital and analog outputs has a BLITS 5.1 Surround Identification mode that provides a signal cluster to facilitate identification of each 5.1 channel.

→ INSTR, → INFO, → CHART, → NUMERIC.
See Chapter 5.nn for operating instructions

2.3 Status Box in Window 4

These functions are **only** available with ITU BS.1771 Loudness selected for the Program Meter in Window 2!

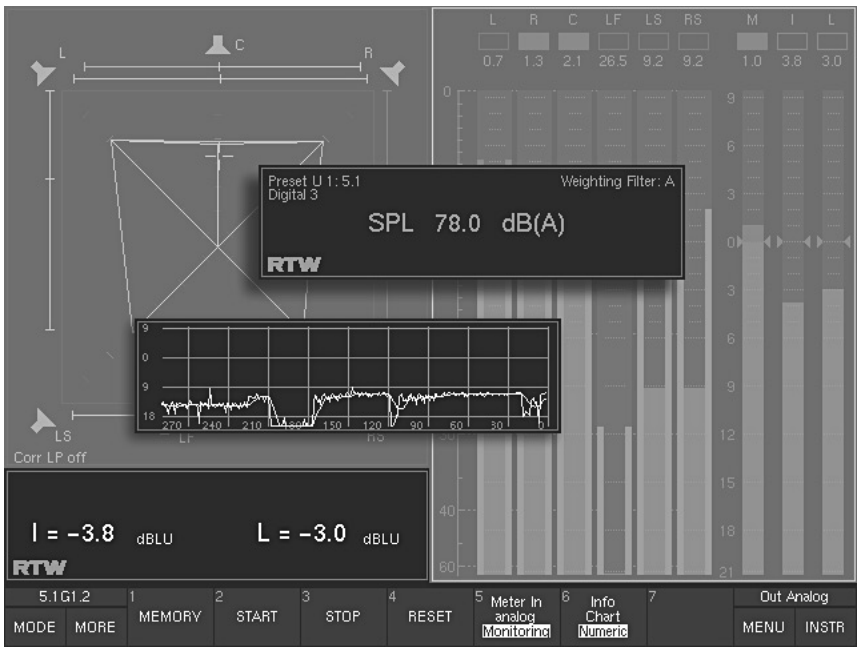


Fig. 2-19: Examples for different displays of the Status Box in Window 4

The Status Box normally shows information is used to display current status information (e. g. selected preset, weighting filter, selected input connector, SPL value) or messages. With ITU BS.1771 Loudness Meter selected for the Program Meter in Window 3 the Status Box in Window 4 also can display a chart recorder for the data logging of Long-term Loudness value readings or display the numerical values of Integrated or/and Long-term Loudness readings. Some of the instruments cover the Status Box when they are activated.

See Chapter 4 for operating instructions

2.4 Function and Monitoring Control

2.4.1 The Remote Control 30050 for the 31900 series

The Remote Control 30050 includes controls for all of the SurroundControl's monitoring functions and the metering functions. The metering functions can also be controlled with an optional computer mouse or with the function and control keys on the optional 8.4" Remote Display 30010 unit. One Remote Control 30050 is included in the standard SurroundControl 31900 series packages but it is also available as an accessory because you can connect up to three Remote Control 30050 units simultaneously to one unit (for connecting several Remote Control 30050 see Chapter N.nn).

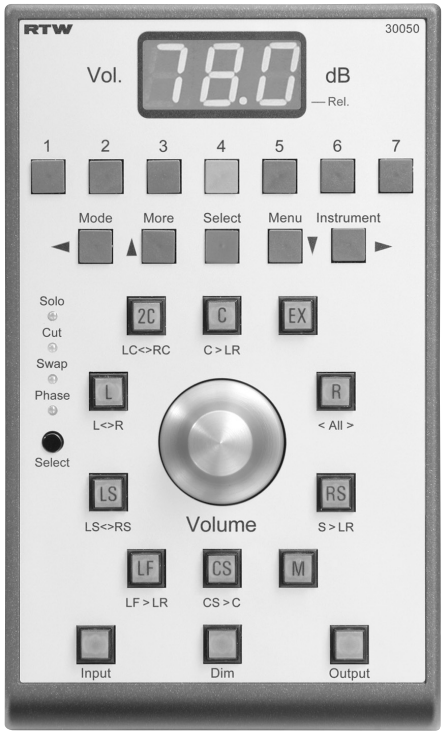


Fig. 2-20: The Remote Control 30050 for function and monitoring control of the 31900 units

2.4.2 The Control Panel of the 31960 series

The front panel of the 31960 series includes control keys for all of the SurroundControl's monitoring functions and the metering functions. The metering functions can also be controlled with an optional computer mouse or with the function and control keys on the optional 8.4" Remote Display 30010 unit. Additionally you also can connect up to two Remote Control 30050 units available as an accessory simultaneously to one 31960 unit for the control of all monitoring and metering functions (for connecting several Remote Control 30050 see Chapter N.nn).

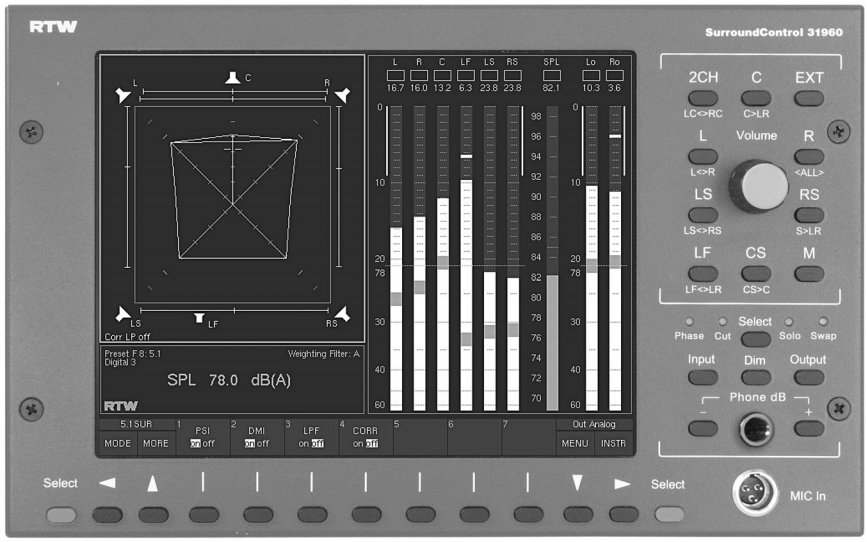


Fig. 2-21: The front panel of the 31960 series with the integrated function and monitoring control keys

3 Quick start

3.1 System Startup

Before switching the unit on, please make sure that the following connections are made according to your individual installation needs:

- Mains voltage
- Remote Control unit 30050 (required for 31900, optional for 31960)
- Analog and/or digital audio input signals
- Analog and/or digital speaker connections
- External VGA display like RTW Remote Display 30010 (required for 31900)
- USB mouse
- LAN/Ethernet (if required)

See Chapter 7

Please refer to Chapter 7 - Installation for details about the configuration, all connections and pinouts.

After switching the unit on, the normal startup sequence will take about 50 seconds until the main screen is shown.

Note:
The first initial startup sequence after unpacking the unit or after a software update may take considerably more time.

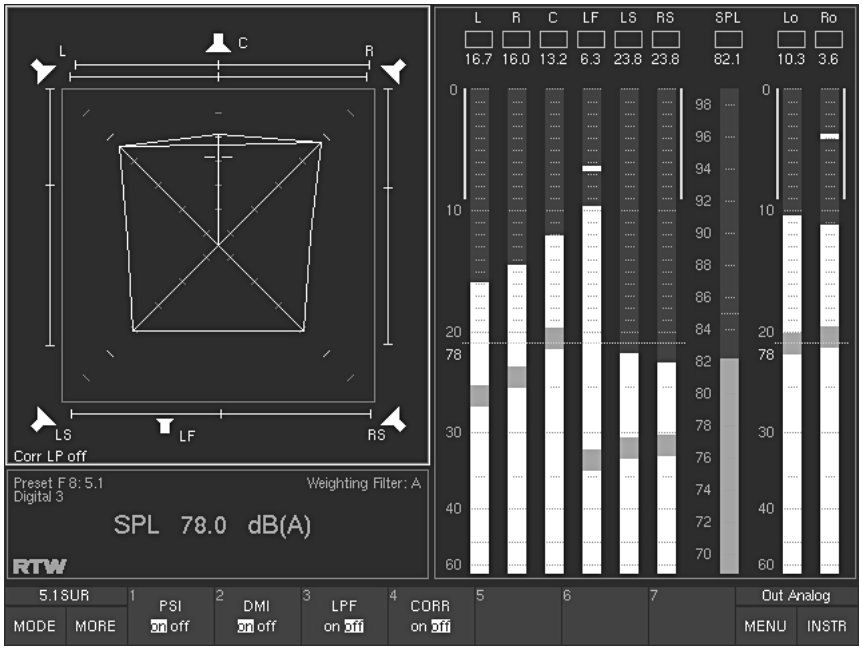


Fig. 3-1: The main screen after startup sequence with Factory Preset F8 and input Digital 3 selected

The user configurable parameters of the SurroundControl 31900 and 31960 set in the menu system consist of **global** and **local** parameters. Local parameters might be changed as soon as a new preset or Sub Preset is loaded, whereas global parameters remain unchanged until edited manually. The local parameters are hold in 7 Factory Presets and 7 User Presets. The preset loaded at startup can be configured in the menu. The SurroundControl 31900 and 31960 can as well load the last active preset used before power down.



Note:
Please refer to Chapter 6.1.1 for more information about local and global settings.

See Chapter 6.1.1



Note:
Please refer to Chapters 3.5 and 6.1.2 for more information about the concept and the use of Sub Presets.

See Chapter 3.5 and E 6.1.2



Note:
Please refer to Chapters 3.4 and 3.9 for information about recalling, renaming and saving presets.

See Chapter 3.4 and 3.9



Note:
Please refer to Chapter 3.11 for information about how to define the preset loaded at power on.

See Chapter 3.11



Note:
It is also possible to define the initial setting of the volume control (SPL level) for the monitor speakers after power on. Please refer to Chapter 6.6 for information about how to define the initial SPL setting.

See Chapter 6.6

3.2 Setting clocking reference and sample rate

The reference source and the sample rate used by the unit are global parameters not being altered by loading new presets or Sub Presets.

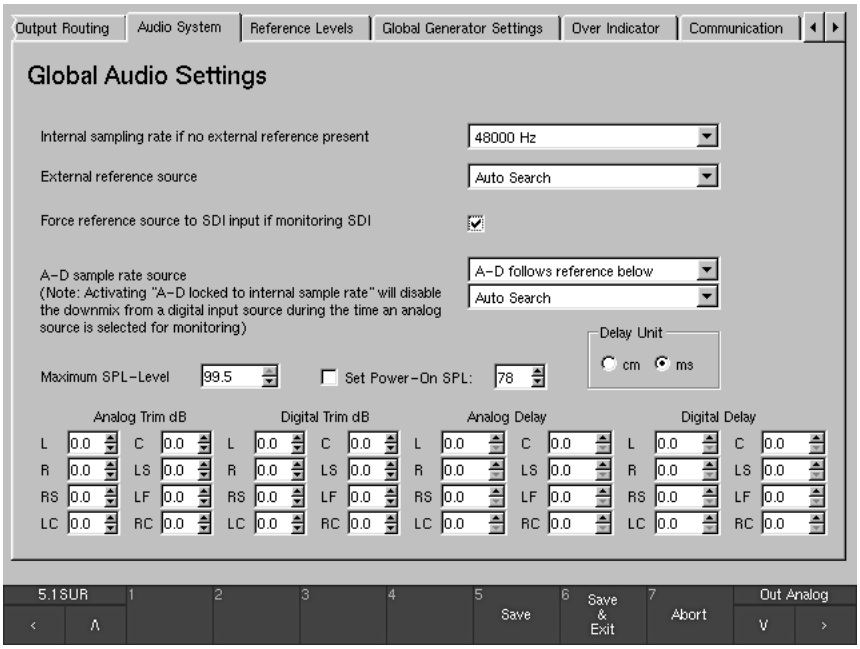


Fig. 3-2: The Audio System menu tab with the Global Audio Settings menu

To adapt these settings to your studio environment please proceed as following:

1. From normal display operation, press the **Menu** key on the Remote Control unit 30050 or the 31960 front panel or click the **MENU** button in the Toolbar (Window 1 of the screen, see Fig. 2-1). The first time the menu system is accessed after power on it will take some seconds to load.

See Fig. 2-1

2. Access the **Audio System** menu tab by clicking it with the mouse or using the **<** and **>** cursor keys on the Remote Control unit 30050 or the 31960 front panel. If the **Audio System** menu tab is not visible use the arrow buttons on the top right corner of the menu screen until you see it. After selecting the menu tab the **Global Audio Settings** menu will be shown.

3. Use the **^** and **v** cursor keys and the red **Sel** key or use the mouse to make settings of sample rate and reference source as required in your setup.

Note:
Please refer to Chapter 6.6 for more detailed information about setting the sample rate and reference source.

See Chapter 6.6

4. Save your settings by clicking the **Save & Exit** button in the Toolbar or pressing the key labeled **6** on the Remote Control unit 30050 or the 31960 front panel. The screen shows **Save Global Settings?**

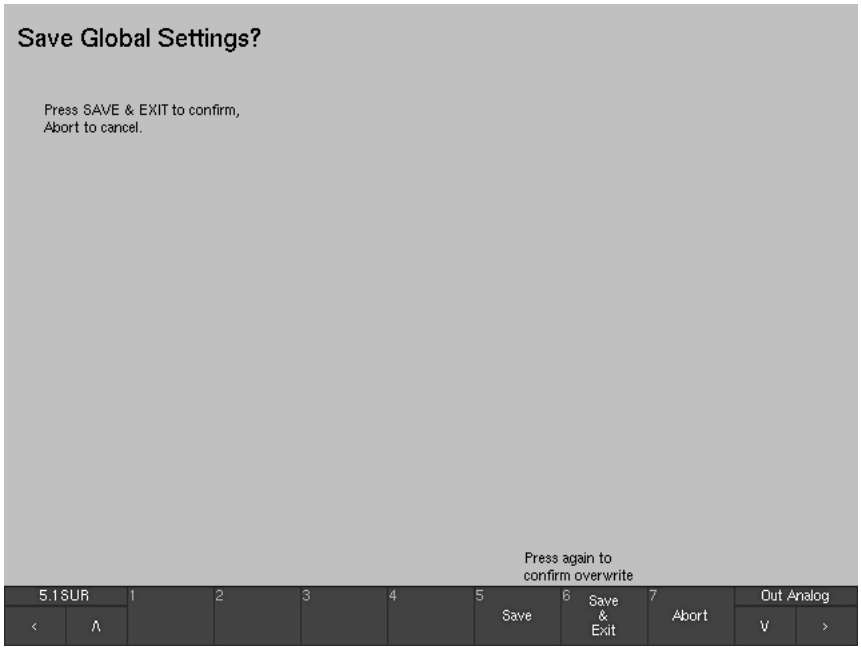


Fig. 3-3: The Save Global Settings? screen

5. Confirm saving the global settings by again clicking the **Save & Exit** button in the Toolbar or pressing the key labeled **6** on the Remote Control unit 30050 or the 31960 front panel.
   Abort any changes by clicking the **Abort** button in the Toolbar or pressing the key labeled **7** on the Remote Control unit 30050 or the 31960 front panel.

3.3 Using Presets

One of the first things you might want to do while configuring your system is finding the right preset for your application and for the audio connections you want to use.

SurroundControl 31900 and 31960 feature a comprehensive preset system reflecting a wide range of setup options. Loading a preset provides an easy and fast way to setup the local parameters of the unit. However, global parameters like the sample rate are not altered when loading a new preset; they remain unchanged until edited manually.
The local parameters are hold in 7 Factory Presets and 7 User Presets. After unpacking the unit, the User Presets named U1 to U7 hold the same content as the Factory Presets named F8 to F14, but they can be overwritten anytime to store individual user settings.

Each of the 14 presets stored in the unit contains 7 Sub Presets. Each Sub Preset can hold individual settings for, among others, the input and output routing and the default instrument displayed after loading a Sub Preset. This means that in fact the unit comes with 49 individual Sub Presets organized in 7 Factory Presets, and the same amount of Sub Presets can be stored individually in the 7 User Presets.

By selecting a factory preset you can define the channel configuration you want to use. For example, F8 is used for 5.1 surround setups, F9 can be used for 2-channel stereo signals and F10 is prepared for multichannel use.

After selecting one of the Factory Presets that reflects your channel configuration best, you can use Sub Presets to switch between the different input sources you might want to use. So, for instance, in F8 the first two Sub Presets use the input connector **Analog 1** while others use a digital input, the SDI interface (optional) or the internal Dolby® decoder (optional).

The good thing about Sub Presets is that they can be switched instantly using dedicated keys on the Remote Control unit 30050 or the 31960 front panel, so it is very easy to jump between input sources connected to the unit. Please read more about Sub Presets in Chapters 3.5 and 6.1.2.

See Chapters 3.5 and 6.1.2

Note:
For a complete list of all Factory Presets and their Sub Presets refer to Appendix XX.

Note:
The SDI and decoder inputs used in some of the Sub Presets can only be accessed if your unit is supplied with the SDI and/or Dolby® options.

3.4 Recalling Factory Presets

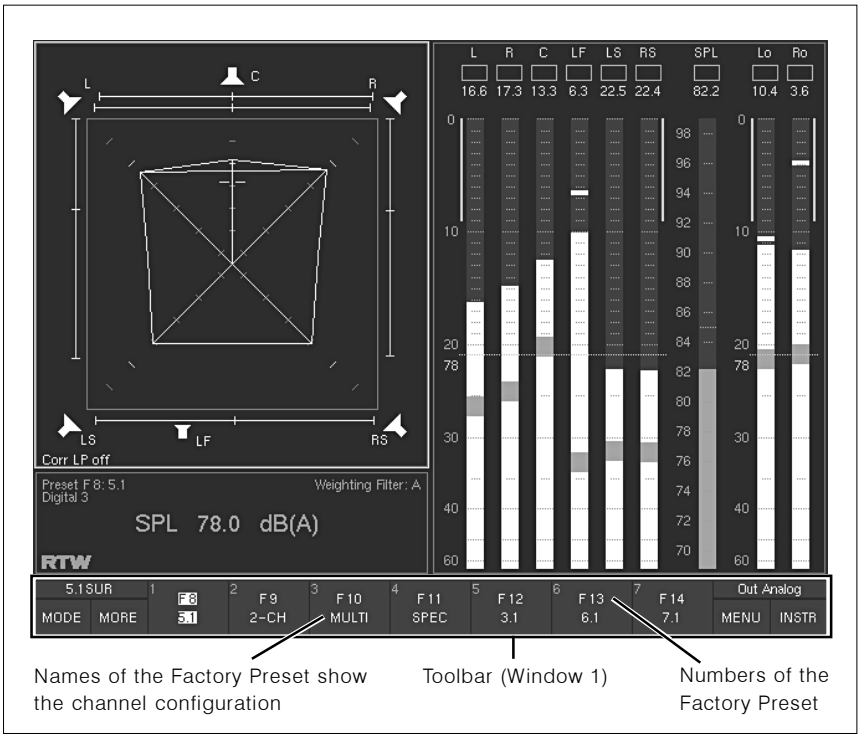


Fig. 3-4: Factory Presets displayed in the Toolbar (Window 1)

To recall a preset, proceed as following:

1. Press the **Mode** key on the Remote Control unit 30050 or the 31960 front panel or click the **MODE** button in the Toolbar (Window 1 of the screen, Fig. 2-1) repeatedly until the **MORE** button in the Toolbar turns yellow.

See Fig. 2-1

2. Press the **More** key on the Remote Control unit 30050 or the 31960 front panel or click the **MORE** button in the Toolbar (Window 1 of the screen) three times. The buttons 1 to 7 in the Toolbar show the Factory Presets F8 to F14 together with their individual names. The preset names in the second line show the channel configurations the presets are intended for.

3. Select the Factory Preset of your choice by pressing one of the numbered keys 1 to 7 on the Remote Control unit 30050 or clicking one of the numbered buttons 1 to 7 in the Toolbar. The new preset will be loaded.

Note:
For a complete list of all Factory Presets and the Sub Presets contained refer to Appendix XX.

See Appendix XX

Note:
Please refer to Chapter 3.9 for details about saving individual settings in User Presets.

See Chapter 3.9

3.5 Switching Input Sources by using Sub Presets

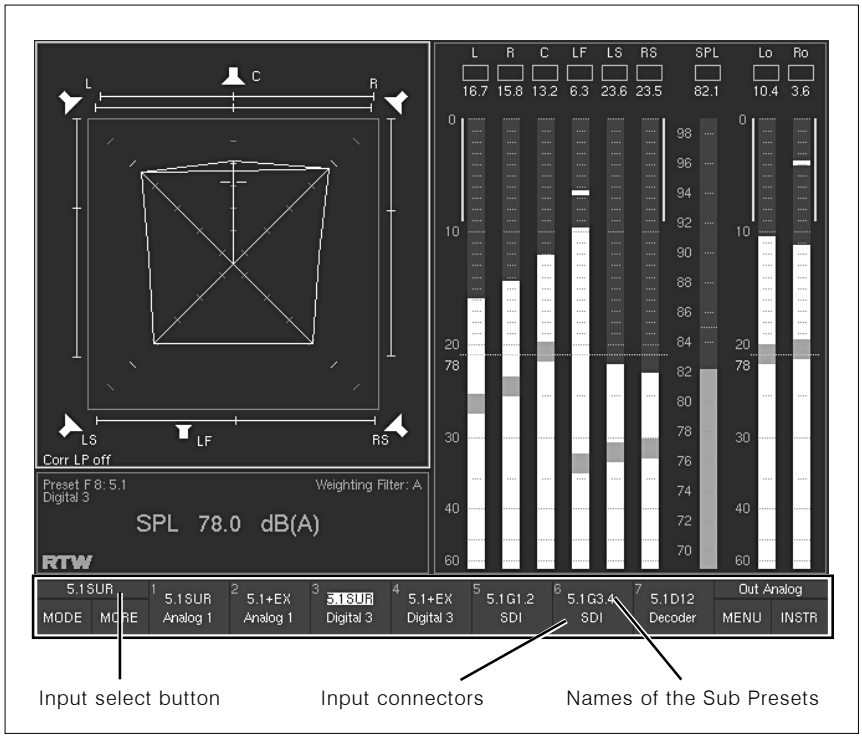


Fig. 3-5: Example: The Sub Presets for the Factory Preset F8

To switch between the (up to) 7 Sub Presets available in a Factory or User Preset, proceed as following:

1. Press the **Input** key on the Remote Control unit 30050 or the 31960 front panel or click the **Input Select** button in the Toolbar. The input select button is located above the **MODE** and the **MORE** button and always shows the currently loaded Sub Preset. Press or click the key/button once or twice so that the input key on the Remote Control unit 30050 or on the 31960 front panel lights up blue. Now the names of the 7 Sub Presets and the input connector they use are shown in the buttons 1 to 7 of the Toolbar.

2. Select the Sub Preset of your choice by pressing one of the numbered keys 1 to 7 on the Remote Control unit 30050 or the 31960 front panel or clicking one of the numbered buttons 1 to 7 in the Toolbar. The new Sub Preset will be loaded instantly. The unit will use the input signals fed to the connector defined in the Sub Preset.

See Chapter 3.10

Note:
In case the routing settings of the selected Sub Preset do not fit your connecting scheme you will have to adapt the routing setup of the preset. Please refer to Chapter 3.10 for more details about this.

3.6 Switching Instruments in Window 3

The Window 3 (the top left area of the display) can show several instrument types (display modes), e. g. Surround Sound Analyzer (SSA), Vectorscope (VSC), Correlator (COR) or RTA. Using the Instrument Select mode the instruments can be switched easily without loading new presets or accessing the menu system. Depending on the version of your unit up to 14 instruments are provided.

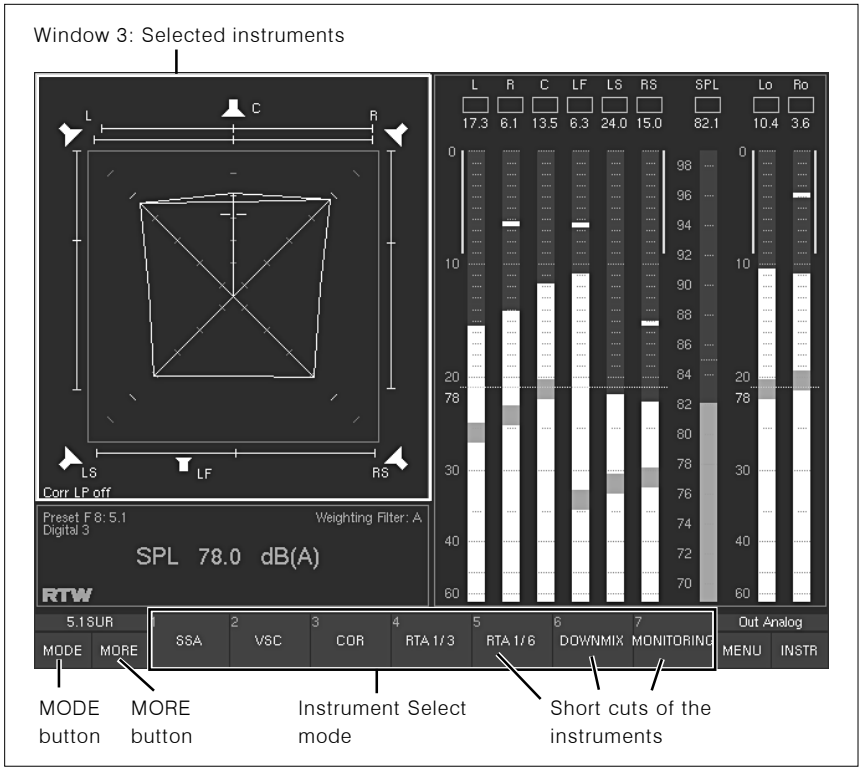


Fig. 3-6: The Surround Sound Analyzer is displayed in Window 3 and the first instrument selection level (displayed after selecting MODE) in the Toolbar

Proceed as following:

1. Press the **Mode** key/button on the Remote Control unit 30050 or the 31960 front panel or click the **MODE** button in the Toolbar (Window 1 of the screen, see Fig. 2-1). The buttons in the Toolbar numbered 1 to 7 switch into the Instrument Select mode and show the first seven available instrument types (display modes, see Fig. 3-6).

2. If you want to choose one of the other seven instruments, press or click the **MORE** key/button. The buttons numbered 1 to 7 in the Toolbar now show a second level of available instrument types (display modes, see Fig. 3-7).

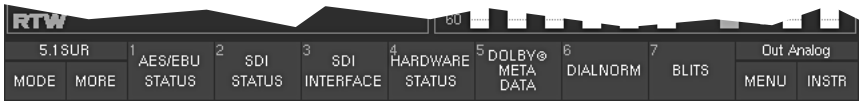


Fig. 3-7: The second Toolbar instrument level (displayed by selecting MORE)

3. Select the instrument type of your choice by pressing the related number key on the Remote Control unit 30050 or the 31960 front panel or clicking the number button in the screen Toolbar. The buttons in the Toolbar numbered 1 to 7 now switch back to the Function Select mode and show the corresponding functions of the selected instrument.

4. If you want to select another instrument type, use the **MODE** button again to change into the Instrument Select mode (as explained above) until the instrument types are shown. Make a selection as described.



Note:
The provided instruments will vary depending on the version of your unit (319n0, 319n0S, 319n0D, 319n0SD).



Note:
The instrument types available will vary depending on the channel configuration of the loaded preset.

See Chapter 3.4



Note:
Please refer to Chapter 3.4 for information about recalling presets.

3.7 Controlling Loudspeaker Monitoring

Besides controlling the metering functions of the SurroundControl 31900, the Remote Control Unit 30050 is also a fully featured surround monitoring controller with numerical readout of the volume level set.

Note:
All controls described for the Remote Control 30050 are located in a similar way on the front panel of the SurroundControl 31960 unit.

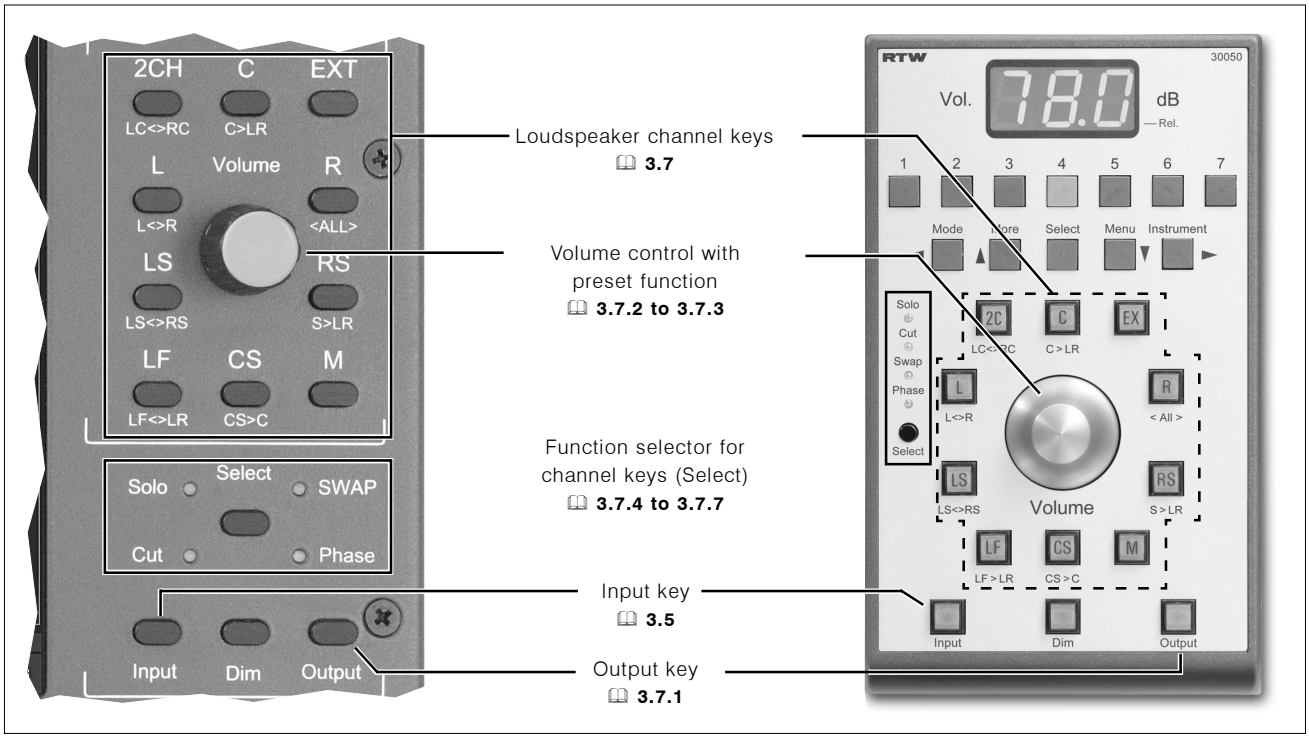


Fig. 3-8: The Remote Control 30050 (left) and the corresponding control panel of the SurroundControl 31960 series (right)

3.7.1 Switching monitoring outputs

Pressing the **Output** key on the Remote Control unit 30050 or the 31960 front panel or clicking the **Output Select** button in the top right corner of the Toolbar it is possible to toggle between two output connectors carrying the monitor signals at any time. This is a fast way to switch monitoring between two individual loudspeakers sets.
The two output connectors used when the **Output** key is active resp. inactive are defined in the menu and can be part of the local configuration stored in presets. For all Factory Presets, the **Analog Out** connector (see Chapter 7.3.13) is used when the **Output** key is not active and the **Digital 3 In**/**Out** connector (see Chapter 7.3.11) is used when the **Output** key is lit. To switch between both, press the **Output** key.

See Chapter 7.3.13
See Chapter 7.3.11

3.7.2 Controlling the volume

Turning the **Volume** dial controls the listening level of the selected monitoring outputs in steps of 0.5 dB each. Pressing the dial will switch the listening level to a preset value defined by the user (see next article about how to do this). It is also possible to set an initial listening level always set after power-on. Please refer to Chapter 6.6 for details about how to set the power-on SPL level in the **Audio System** menu tab of the menu.

See Chapter 6.6

3.7.3 Setting the preset volume

In all channel modes except 6.1, pressing the **SC** key (placed under the volume dial, see Fig. 3-8) defines the current volume setting to be the preset level.

Proceed as following:

1. Find the preset level of your choice using the volume dial.
2. Press the **SC** key to set it.
3. After this, you can return at any time to the preset level by simply pressing the volume dial.

If you are using the 6.1 channel mode, the **SC** key is used to control the Surround Center channel of the 6.1 Setup. To set the preset volume level then, proceed as following:

1. Change to a different channel configuration.
2. Set the preset level using the **SC** key.
3. Return to 6.1 mode.
4. Now you also can return at any time from the 6.1 mode to the preset level by simply pressing the volume dial.

3.7.4 Soloing individual channels

If you want to monitor one individual channel, proceed as following:

1. Press the small black **Select** key until the **Solo** LED lights up.
2. Press the channel key you want to solo. If the Surround Sound Analyzer display is visible on the screen, the according loudspeaker symbol of all other channels will turn red.

Note:
The channel keys can be used in radio button style so that only one channel at a time is performing the selected function (Solo, Cut, Phase), cancelled by the next key pressed. Alternatively, an adding mode can be set. Please refer to Chapter 6.10.5 for details about how to change this global setting.

See Chapter 6.10.5

3.7.5 Muting individual channels

If you want to mute one individual channel, proceed as following:

1. Press the small black **Select** key until the **Cut** LED lights up.

2. Press the channel key you want to mute. If the Surround Sound Analyzer display is visible on the screen, the according loudspeaker symbol of that channel will turn red.

Note:
The channel keys can be used in radio button style so that only one channel at a time is performing the selected function (Solo, Cut, Phase), cancelled by the next key pressed. Alternatively, an adding mode can be set. Please refer to Chapter 6.10.5 for details about how to change this global setting.

See Chapter 6.10.5

3.7.6 Switching polarity of individual channels

To switch the polarity of one individual channel, proceed as following:

1. Press the small black **Select** key until the **Phase** LED lights up.

2. Press the channel key for which you want to change the polarity. If the Surround Sound Analyzer display is visible on the screen, the according loudspeaker symbol of that channel will turn to a green outline and the channel labeling is signed with ^.

Note:
The channel keys can be used in radio button style so that only one channel at a time is performing the selected function (Solo, Cut, Phase), cancelled by the next key pressed. Alternatively, an adding mode can be set. Please refer to Chapter 6.10.5 for details about how to change this global setting.

See Chapter 6.10.5

3.7.7 Swapping channels

Sometimes it is helpful to judge the surround channels of a 5.1 signal by listening to them through the front instead of the rear loudspeakers. The **Swap** function provides an easy way to switch certain channels to other loudspeakers temporarily.

Proceed as following:

1. Press the small black **Select** key until the **Swap** LED lights up. The channel keys now act as swap keys performing the swap function labeled below the channel keys of the Remote Control unit 30050 or the 31960 front panel.

2. Press the channel key performing the swap function you want to use. If the Surround Sound Analyzer display is visible on the screen, some according loudspeaker symbols of certain channels will turn red. The names of the switched channels are always labeled in brackets next to the symbols of the channels they are switched to.

3. To return to normal output routing, press the channel key again.

3.8 Menu Access

The menu system of the SurroundControl 31900 and 31960 gives access to all **local** parameters stored in presets as well as to the **global** settings.

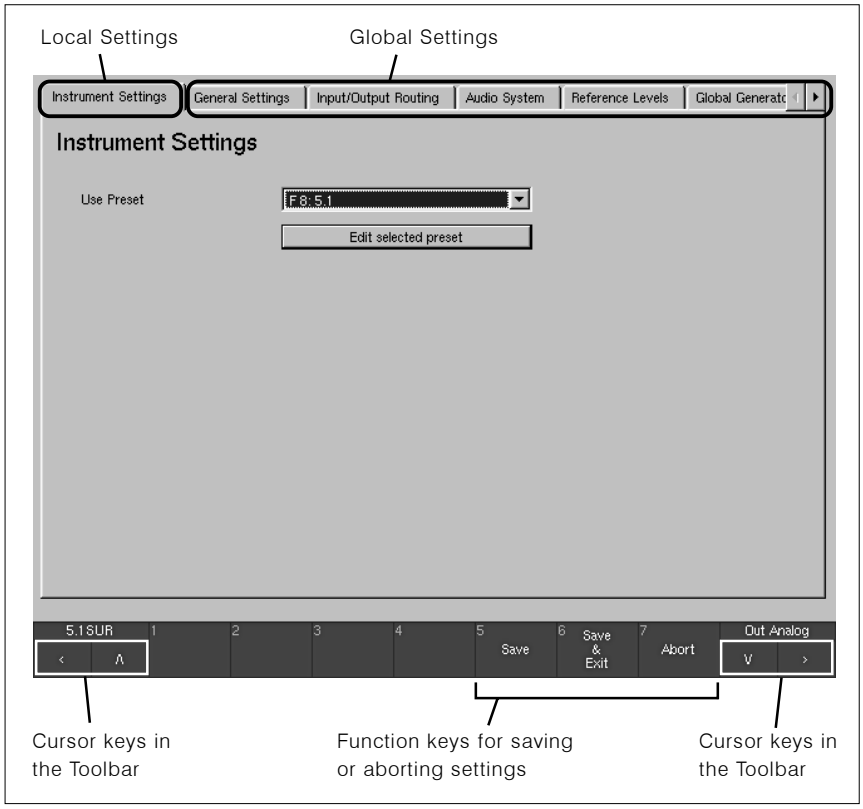


Fig. 3-9: The menu tabs for local settings and global settings

To enter and to use the menu, proceed as following:

1. Press the **Menu** key on the Remote Control unit 30050 or the 31960 front panel or click the **MENU** button in the Toolbar. If this is the first time you access the menu after powering on the unit, the menu software will take some seconds to load.

2. Use the mouse or the cursor keys on the Remote Control unit 30050 or the 31960 front panel to select the menu tab you want to access.

3. To change the **local** settings of a preset, use the **Instrument Settings** menu tab on the left.

4. Select the preset you want to modify with **Use Preset**.

5. Select the **Edit selected preset** button to change local settings.

6. All other menu tabs of the menu are used to access **global** settings that do not change when a new preset is loaded.

7. To save the changes made and leave the menu, press the key **6** on the Remote Control unit 30050 or the 31960 front panel or click the **Save & Exit** button in the Toolbar. The unit saves the settings and returns to normal display operation.
   To leave the menu aborting all changes made, press the key **7** on the Remote Control unit 30050 or the 31960 front panel or click the **Abort** button in the Toolbar until the unit returns to normal display operation.



See Figs. 3-3 and 3-10

Note:
The saving procedure will vary slightly depending when local or global menu settings are about to be saved (see Figs. 3-3 and 3-10).



See Chapter 6

Note:
Please refer to Chapter 6 for detailed information about all menu items.

3.9 Saving Presets

See Chapter 3.8

After altering the settings of one of the presets in the menu (see Chapter 3.8), the new configuration must be saved in one of the User Presets U1 to U7 before you can use it.

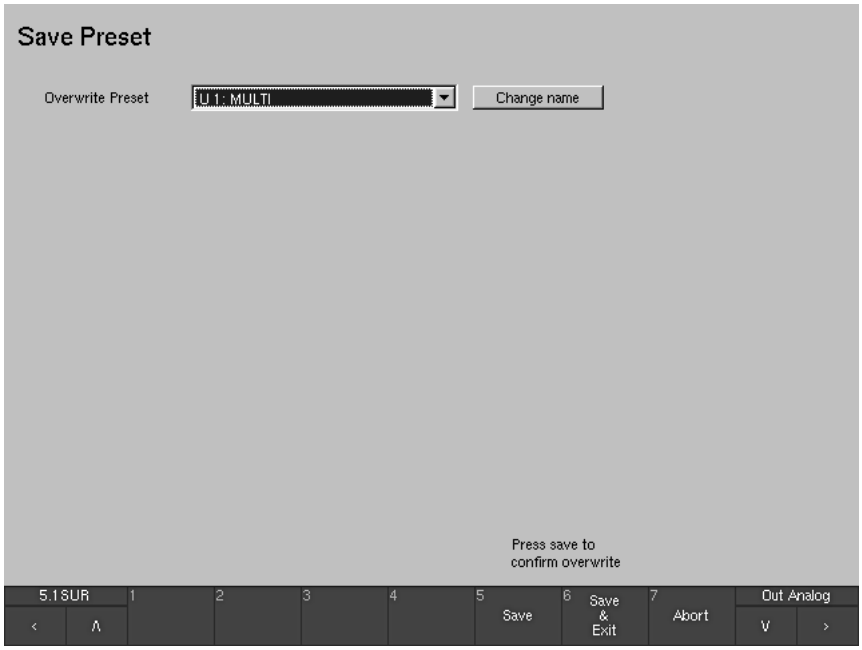


Fig. 3-10: The Save Preset screen

Proceed as following:

1. Press the key **6** on the Remote Control unit 30050 or the 31960 front panel or click the **Save & Exit** button in the Toolbar. The **Save Preset** dialog window will appear giving you the choice to select one of the 7 User Presets to be overwritten with the new settings. Select one.

2. If you want, you can change the name of the selected preset. Selecting the **Change name** button opens a menu page with keyboard buttons. Enter a name with up to 6 characters. Store the name and get back to the Save Preset dialog window with the selection of the **Enter = Close** button.

3. To save the changes made in the user preset selected in the **Overwrite Preset** combo box and leave the menu, press the key **6** on the Remote Control unit 30050 or the 31960 front panel or click the **Save & Exit** button in the Toolbar. The new settings are stored and the unit returns to normal display operation.
   To leave the menu aborting all changes made, press the key **7** on the Remote Control unit 30050 or the 31960 front panel or click the **Abort** button in the Toolbar until the unit returns to normal display operation.

3.10 Adapting the Routing

If the routing settings used in the Sub Preset of your choice don't fit your actual connecting scheme, you can use the menu to alter the routing of the Sub Preset as desired. The new routing can be saved in one of the User Presets U1 to U 7.

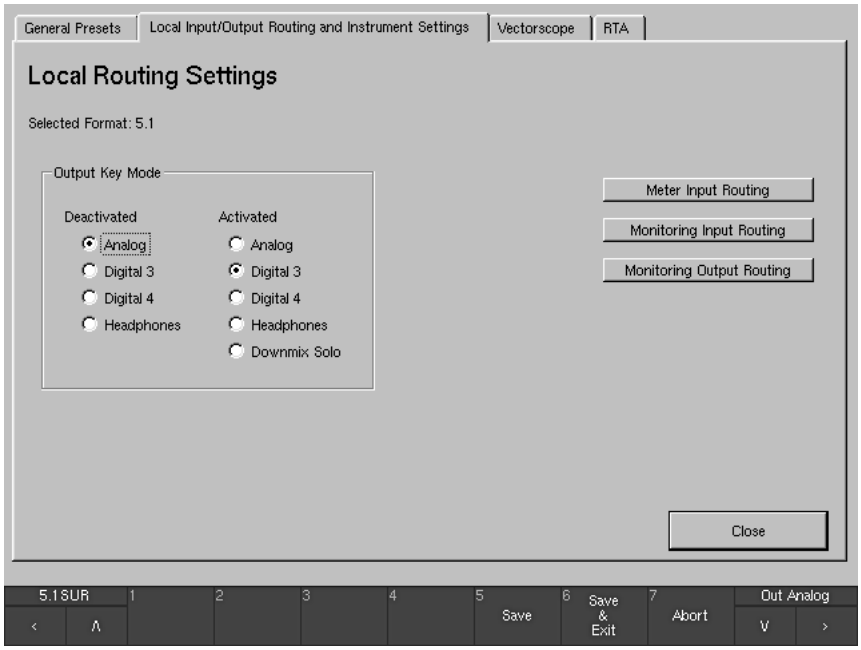


Fig. 3-11: The Local Routing Settings menu

Proceed as following:

1. Enter the menu by pressing the **Menu** key on the Remote Control unit 30050 or the 31960 front panel or clicking the **MENU** button in the Toolbar. If this is the first time you access the menu after powering on the unit, the menu software will take some seconds to load.

2. Use the mouse or the cursor keys on the Remote Control unit 30050 or the 31960 front panel to select the **Instrument Settings** menu tab.

3. Select the preset that contains the Sub Preset you want to change with the **Use Preset** combo box.

4. Select the **Edit selected preset** button.

5. Select the **Local Input/Output Routing and Instrument Settings** menu tab.

6. For changing the input routing, select the **Monitoring Input Routing** button. Seven menu tabs labeled **Key 1** to **Key 7** appear showing the options for each Sub Preset (see Fig. 3-12 on the next page).

See Fig. 3-12

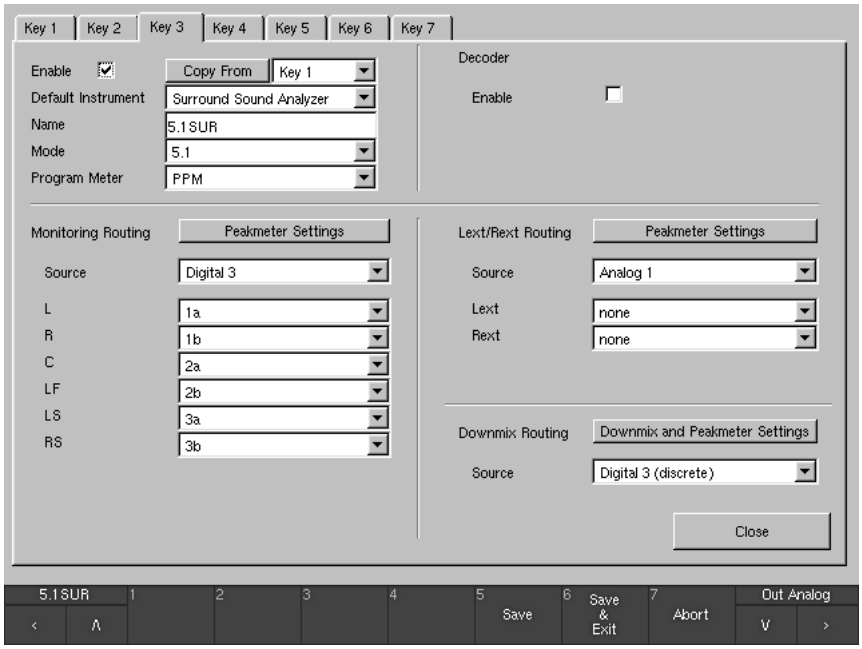


Fig. 3-12: The Key 1 to 7 Sub Preset menu tabs of the Monitoring Input Routing setting

7. Select the Sub Preset you want to change with one of the seven Key 1 to 7 menu tabs.

8. Use the **Source** combo box to select one of the input connectors of the unit and the channel combo boxes below it (e. g. labeled with **L**, **R**, **C**, **LF**, **LS**, **RS** in 5.1 surround mode) to route each channel of that connector to the desired instrument channel.

9. Use the **Close** button to store the settings and to get back to the **Local Routing Settings** menu (see Fig. 3-11).

See Fig. 3-11

10. To change the output routing, select the **Monitoring Output Routing** button.

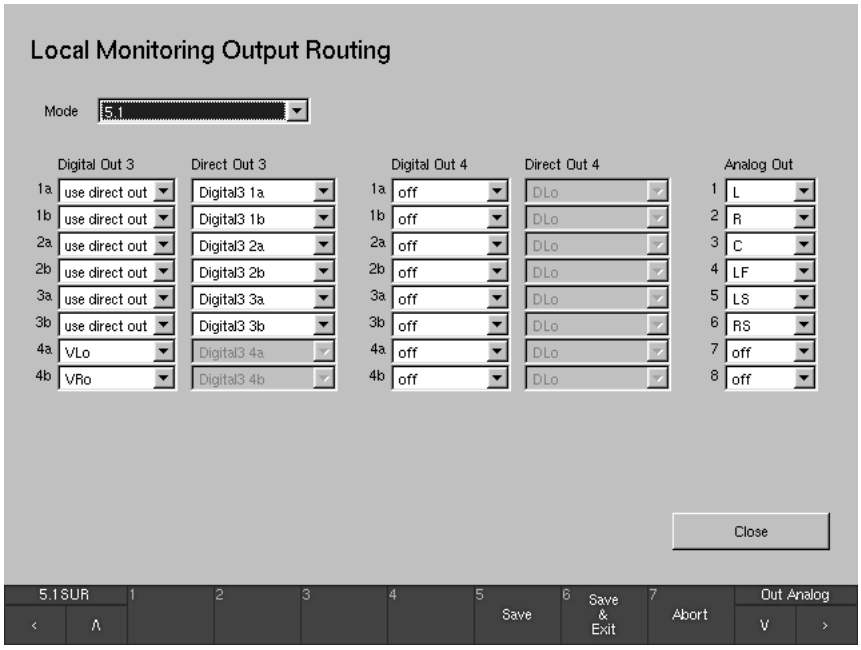


Fig. 3-13: The Local Monitoring Output Routing menu

11. Use the channel combo boxes to route each channel of the output connectors to the desired instrument channel. Similar to a router the digital outputs have the additional option to be used as direct outputs for any input signals. In this case, instead of the instrument outputs controlled by the monitoring functions of the unit, they deliver the unaltered input signals. The analog outputs are always controlled by the monitoring functions (i. e. Volume, Cut, Solo).

See Fig. 3-10

12. After you have made the desired changes, use the **Close** button of the menu window(s) accessed until the **Save Preset** dialog appears (see Fig. 3-10), giving you the choice to select one of the 7 User Presets to be overwritten with the new settings. Select one.

13. If you want, you can change the name of the selected preset. Selecting the **Change name** button opens a menu page with keyboard buttons. Enter a name with up to 6 characters. Store the name and get back to the Save Preset dialog window with the selection of the **Enter = Close** button.

14. To save the changes made in the user preset selected in the **Overwrite Preset** combo box and leave the menu, press the key **6** on the Remote Control unit 30050 or the 31960 front panel or click the **Save & Exit** button in the Toolbar. The new settings are stored and the unit returns to normal display operation. To leave the menu aborting all changes made, press the key **7** on the Remote Control unit 30050 or the 31960 front panel or click the **Abort** button in the Toolbar until the unit returns to normal display operation.

Note:

See Chapters 6.5.2 and 6.5.3

Refer to Chapters 6.5.2 and 6.5.3 to learn more about the input and output routing options of the menu.

See Chapter 3.7

Refer to Chapter 3.7 for details about switching between two output routings with the Output key.

3.11 Defining the Power On Preset

The SurroundControl 31900 and 31960 can be configured to load a pre-defined preset after power on or to re-use the last preset that was active before power down.

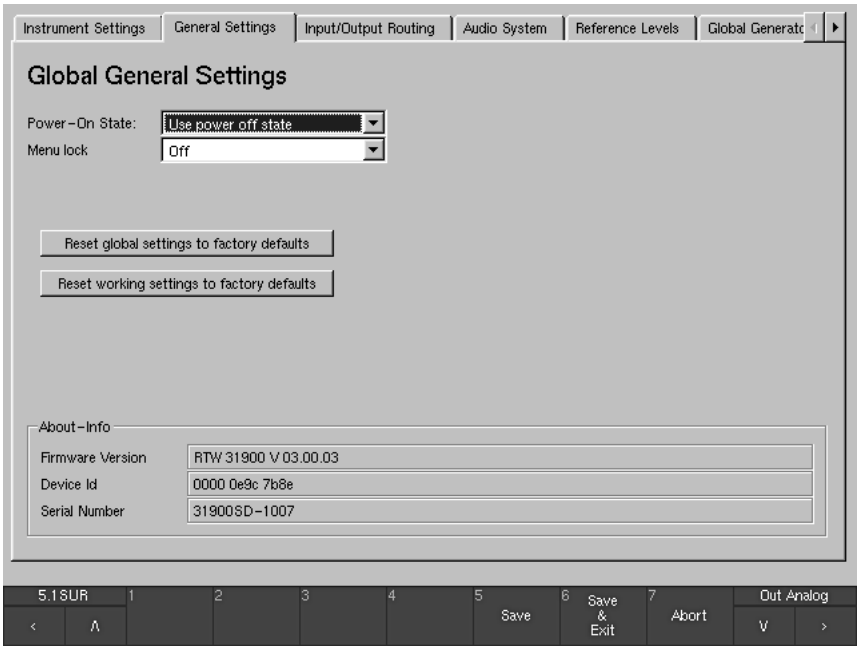


Fig. 3-14: The General Settings menu tab with the Global General Settings menu

Proceed as following:

1. Enter the menu by pressing the **Menu** key on the Remote Control unit 30050 or the 31960 front panel or clicking the **MENU** button in the Toolbar. If this is the first time you access the menu after powering on the unit, the menu software will take some seconds to load.

2. Use the mouse or the cursor keys on the Remote Control unit 30050 or the 31960 front panel to select the **General Settings** menu tab. The **Global General Settings** menu is shown.

3. Select the preset that you want to be loaded after power on with the **Power-On State** combo box. Alternatively, you can select the option Use power off state if you want the unit to come up with the last used preset.

4. To save the changes made and leave the menu, press the key **6** on the Remote Control unit 30050 or the 31960 front panel or click the **Save & Exit** button in the Toolbar. The **Save Global Settings?** dialog appears (see Fig. 3-3). Again, press the key **6** on the Remote Control unit 30050 or the 31960 front panel or click the **Save & Exit** button in the Toolbar. The new settings are stored and the unit returns to normal display operation.
   To leave the menu aborting all changes made, press the key **7** on the Remote Control unit 30050 or the 31960 front panel or click the **Abort** button in the Toolbar until the unit returns to normal display operation.

See Fig. 3-3

Note:

See Chapter 6.4

Refer to Chapter 6.4 for more details about the power on state.

3.12 Changing Scales and Reference Levels

The SurroundControl 31900 and 31960 are supporting many different reference level settings.

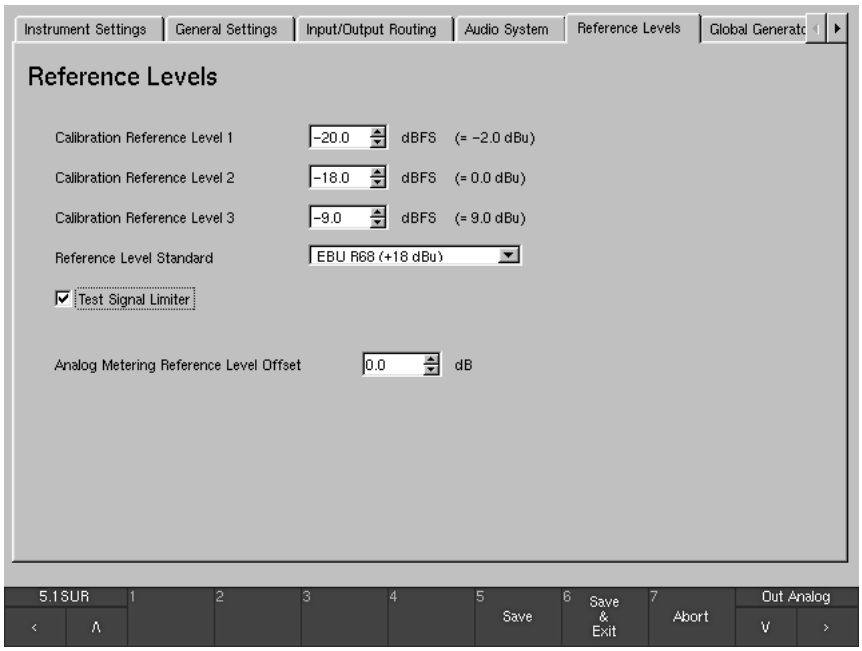


Fig. 3-15: The Reference Levels menu tab with the Reference Levels menu

To modify these global parameters, proceed as following:

1. Enter the menu by pressing the **Menu** key on the Remote Control unit 30050 or the 31960 front panel or clicking the **MENU** button in the Toolbar. If this is the first time you access the menu after powering on the unit, the menu software will take some seconds to load.

2. Use the mouse or the cursor keys on the Remote Control unit 30050 or the 31960 front panel to select the **Reference Levels** menu tab.

3. Make the desired changes on the **Reference Levels** menu page.

4. To save the changes made and leave the menu, press the key **6** on the Remote Control unit 30050 or the 31960 front panel or click the **Save & Exit** button in the Toolbar. The **Save Global Settings?** dialog appears (see Fig. 3-3). Again, press the key **6** on the Remote Control unit 30050 or the 31960 front panel or click the **Save & Exit** button in the Toolbar. The new settings are stored and the unit returns to normal display operation.
   To leave the menu aborting all changes made, press the key **7** on the Remote Control unit 30050 or the 31960 front panel or click the **Abort** button in the Toolbar until the unit returns to normal display operation.

See Fig. 3-3

Note:
Refer to Chapter 6.8 for more details about reference levels.

See Chapter 6.8

3.13 Using Loudness Display Options

The SurroundControl 31900 and 31960 are supporting ITU BS.1771 for displaying loudness information on the program meter bargraphs in various modes.

Note:
The loudness display options are only available for digital input signals in 2-channel stereo or 5.1 surround channel configurations.

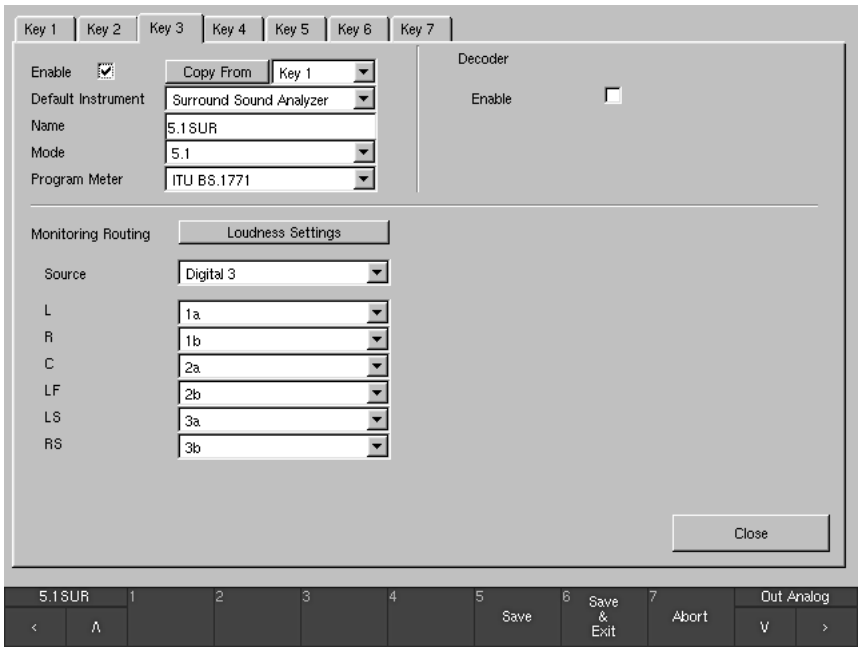


Fig. 3-16: The Key 1 to 7 Sub Preset menu tabs of the Monitoring Input Routing setting with ITU BS.1771 selected for Program Meter

To set one of the loudness options for the program meters, proceed as following:

1. Enter the menu by pressing the **Menu** key on the Remote Control unit 30050 or the 31960 front panel or clicking the **MENU** button in the Toolbar. If this is the first time you access the menu after powering on the unit, the menu software will take some seconds to load.

2. Use the mouse or the cursor keys on the Remote Control unit 30050 or the 31960 front panel to select the **Instrument Settings** menu tab.

3. Using the **Use Preset** combo box select the preset that contains the Sub Preset for which you want to activate the loudness option.

4. Select the **Edit selected preset** button.

5. Select the **Local Input/Output Routing and Instrument Settings** menu tab.

6. Select the **Monitoring Input Routing** button.

7. Select the Sub Preset you want to change with one of the seven **Key 1** to **Key 7** menu tabs.

8. Use the **Program Meter** combo box to switch from PPM to **ITU BS.1771** mode.

9. Use the **Loudness Settings** button to get to the **ITU BS.1771 Loudness Settings** menu and to configure the available loudness options.

10. After you have made the desired changes, use the **Close** button of the menu window(s) accessed until the **Save Preset** dialog appears (see Fig. 3-10), giving you the choice to select one of the 7 User Presets to be overwritten with the new settings. Select one.

11. If you want, you can change the name of the selected preset. Selecting the **Change name** button opens a menu page with keyboard buttons. Enter a name with 6 characters. Store the name and get back to the Save Preset dialog window with the selection of the **Enter = Close** button.

12. To save the changes made in the user preset selected in the **Overwrite Preset** combo box and leave the menu, press the key **6** on the Remote Control unit 30050 or the 31960 front panel or click the **Save & Exit** button in the Toolbar. The new settings are stored and the unit returns to normal display operation.
    To leave the menu aborting all changes made, press the key **7** on the Remote Control unit 30050 or the 31960 front panel or click the **Abort** button in the Toolbar until the unit returns to normal display operation.

    Note:
    Please refer to Chapter XX for more information about the loudness options.

4 Operation

The Remote Control 30050 (31900 series) and the control panel of the 31960 series are the main control units for all the monitoring and metering functions of the SurroundControl units as described in the following chapters.

4.1 General

The metering functions (instrument functions) and the menu items of the SurroundControl units generally can be operated in three different ways: With the Remote Control 30050 unit (31900 series) resp. the control panel (31960 series), with an optional computer mouse using the controls displayed in the Toolbar on the screen (Window 1), or with the control keys on the optional Remote Display 30010 unit. The several display modes with the functions of the instruments are described in Chapter 5. The menu items can be found in Chapter 6.

Besides controlling the metering functions the Remote Control 30050 for the 31900 series and the control panel of the 31960 series are fully featured monitoring controller units with loudspeaker channel keys, several functions for the channel keys like Solo, Cut, Swap and Phase reverse, numerical readout of the volume level set, input and output selection, and DIM or MUTE function. Up to three Remote Control 30050 can be connected to the 31900 series and up to two to the 31960 series.

4.2 Operating Options

SurroundControl 31900 series

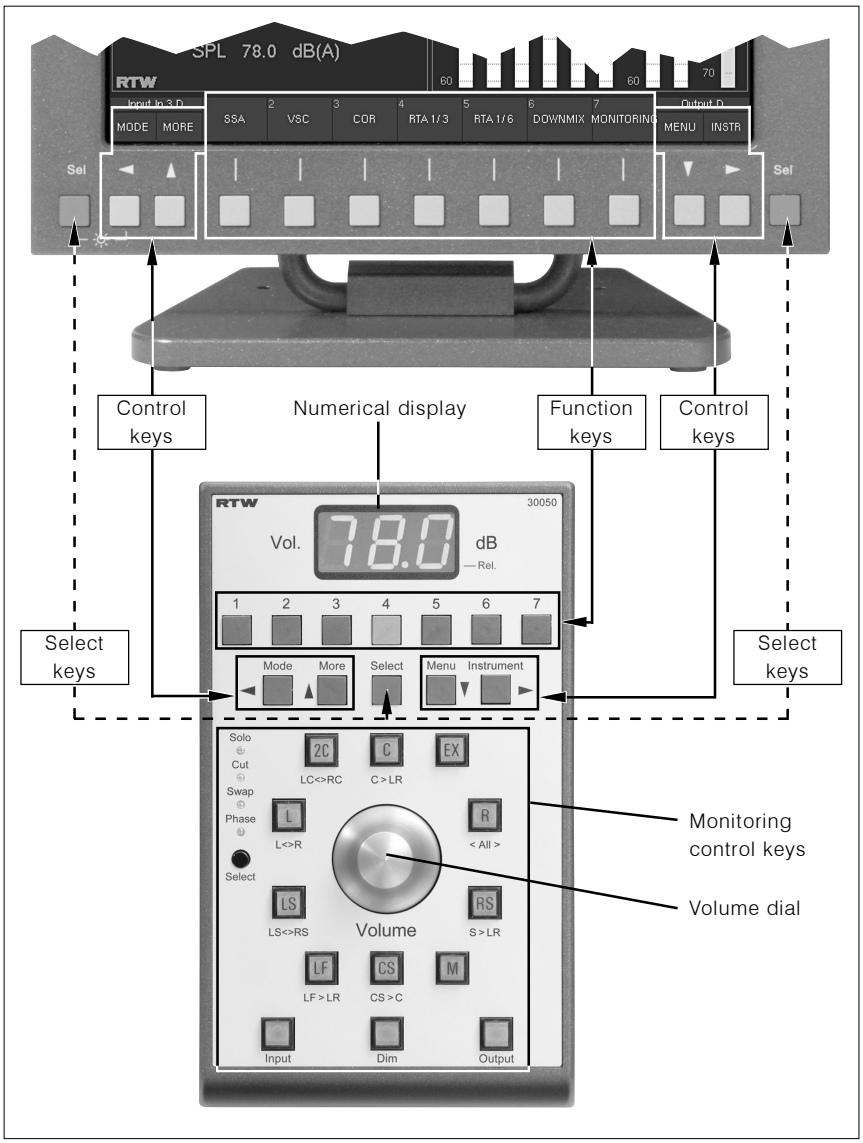


Fig. 4-1: The Remote Control 30050 with the controls of the 31900 system

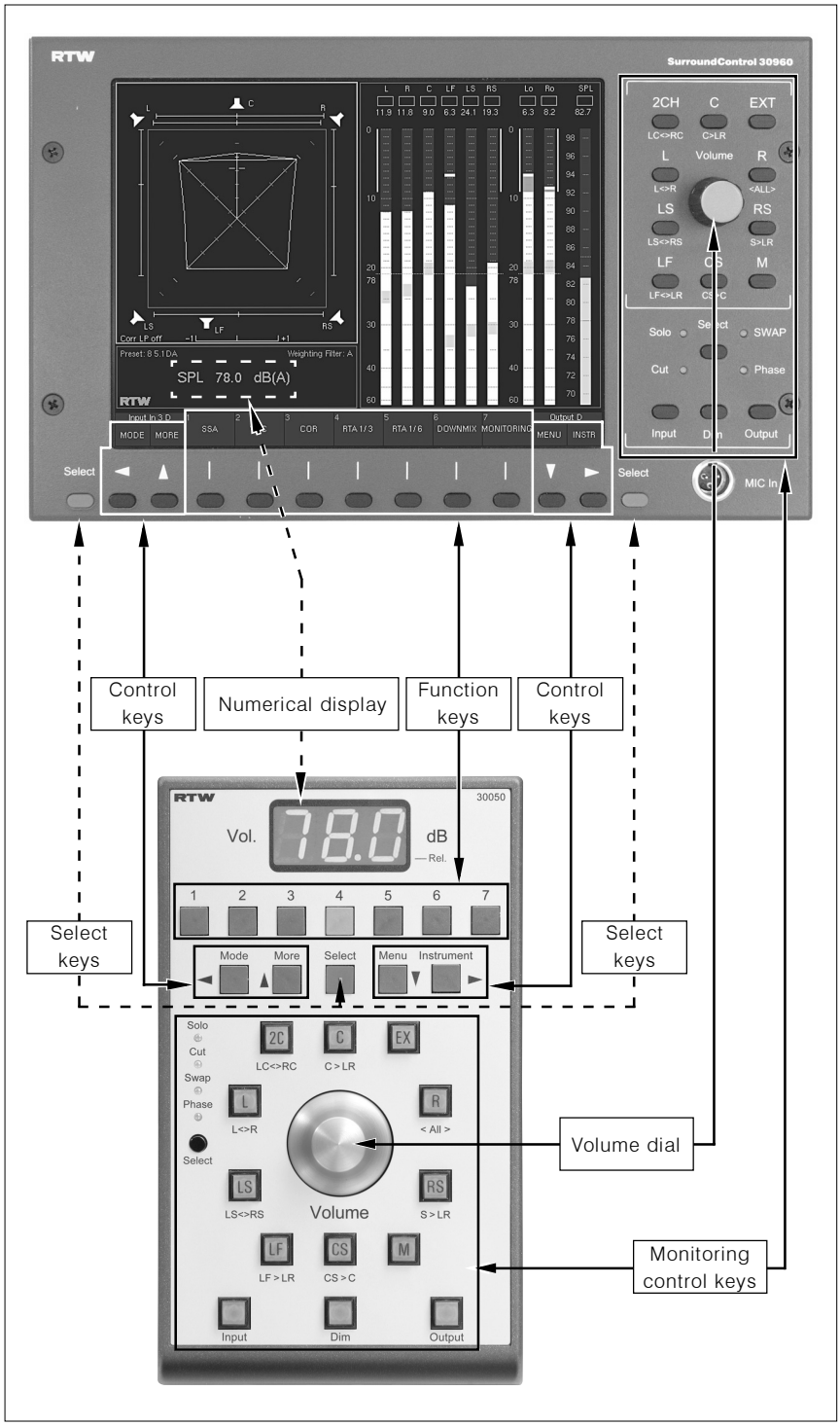


Fig. 4-2: The corresponding controls of the 31960 series

Function keys see Figs. 4-1 and 4-2

The Remote Control 30050 (31900 series, see Fig. 4-1) and the control panel of the 31960 series (see Fig. 4-2, also the Remote Display 30010) have a total of 7 function keys for the selection of a display mode, a preset or the instruments functions. On the Remote Control 30050 these keys are numbered. These numbers correspond to the buttons of the Toolbar in Window 1 of the display (see Fig. 4-1).

Control keys see Figs. 4-1 and 4-2

Another two pairs of control keys are located below the function keys on the Remote Control 30050 resp. to the left and right of the function keys on the control panel of the 31960 series (also in the same way on the Remote Display 30010):

→ MODE
- MODE: Switches between Function Select and Instrument Select modes.

→ MORE
- MORE: Moves down to the next Toolbar level.

→ MENU
- MENU: Opens the configuration menu pages in which you can view and adjust settings.

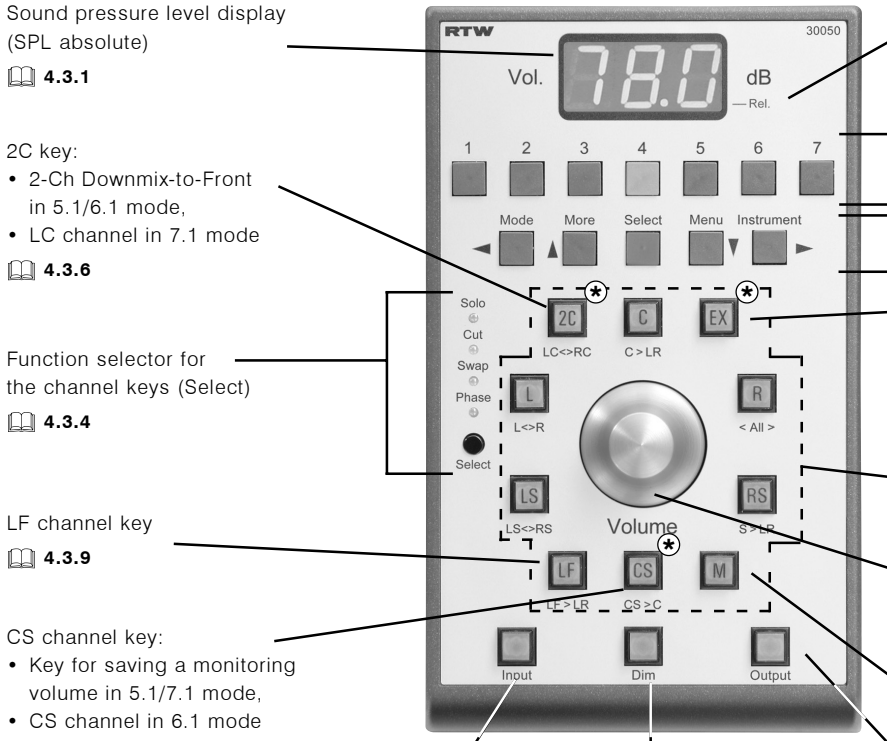
→ INSTR(UMENT)
- INSTR(UMENT): Stands for „Instrument“ and switches the focus between Window 2 and Window 3.

In the configuration menus these four keys function as cursor keys.

Select keys see Figs. 4-1 and 4-2
→ Sel(ect)

The Remote Control 30050 has one Select key between the two pairs of control keys. The control panel of the 31960 series (also the Remote Display 30010) has two Select keys which are located outside on the left and outside on the right. These keys are used to confirm selections in the menus.

4.3 The Function and Control Keys in Detail



Sound pressure level display (SPL absolute)
4.3.1

2C key:
- 2-Ch Downmix-to-Front in 5.1/6.1 mode,
- LC channel in 7.1 mode

4.3.6

Function selector for the channel keys (Select)
4.3.4

LF channel key
4.3.9

CS channel key:
- Key for saving a monitoring volume in 5.1/7.1 mode,
- CS channel in 6.1 mode

4.3.8

⊛ *Key labels can be switched for different applications*

Input switcher: Select inputs via the function keys
4.3.12

DIM or Mute function, can have switching or temporary function
4.3.13

SPL relativ display mode
4.3.1

Function keys for controlling instrument functions
4.3.2

Control and cursor keys
4.3.3

EX key:
- 2-Ch Extern-to-Front in 5.1/6.1 mode,
- RC channel in 7.1 mode

4.3.7

Loudspeaker keys
3.15.5

Volume dial with preset function
4.3.11

Mono key
4.3.10

Output switcher:
- Swap
- Downmix-Solo

4.3.14

Fig. 4-3: The controls of the Remote Control 30050 for 31900 series, the same functions are available on the control panel of the 31960 series

4.3.1 The Monitoring Sound Pressure Level Display (SPL)

(See Figs. 4-1 to 4-3)

Listening Level:
→ INSTR (until Window 3 is highlighted)
→ MODE
→ MONITORING
→ Listening Level (until abs or rel is selected)

There are two different modes for displaying the monitoring volume (Listening Level) in the 3-digit 7-segment display resp. in the Status Box in Window 4:

- SPL Absolute: Displays the set equivalent listening sound pressure level in dB SPL(A). This is the sound pressure you would get if you applied a noise signal with a reference level to the input (e. g. –18 dB FS RMS).
- SPL Relative: Displays the attenuation or gain relative to the reference sound pressure level in dB. A display of 0 dB corresponds to your preset reference sound pressure level.

See Chapter 5.n.n

You can select the display mode with the function keys of the Monitoring instrument (see Chapter 5.n.n) displayed in Window 3. There is also displayed, if the absolute or the relative listening level is selected.

To switch between absolute and relative mode please proceed as following:

1. Press the **INSTR** button/key on the right until Window 3 gets the white frame.

2. Press the **MODE** button/key on the left to switch from Function Select mode to Instrument Select mode.

3. Press button/key 7 labelled **MONITORING**. The Monitoring instrument is displayed in Window 3 and the Toolbar switches to the Function Select mode for the Monitoring instrument.

4. Press button/key 6 labelled **Listening Level abs/rel** until you have selected the option you prefer: absolute (abs) or relative (rel). The selected option is highlighted on the button in the Toolbar and mainly displayed in the Monitoring instrument.

5. Turn the volume control and adjust the listening level.



Note:
You can calibrate the connected monitoring system with the SurroundControl's integrated test signal generator and SPL Meter (see Chapters 5.n. and 5.n). You also need a calibration microphone which is available as an optional accessory.

See Chapters 5.n and 5.n



Additionally on the Remote Control 30050 the decimal point of the rightmost digit on in the three digit 7-segment display lights up when SPL Relative mode is active. When this decimal point is off this indicates that the display is in SPL Absolute mode.
In SPL Relative mode both positive and negative values are possible and the first digit of the three digit 7-segment display is used for the sign. When values greater than ±9.9 dB are displayed the scale switches automatically and the digit on the right displays the 1 dB values instead of the 1/10 dB values.

4.3.2 The Function Keys

(See Figs. 4-1 to 4-3)

The functions assigned to function keys 1 – 7 change depending on the current instrument and operating mode. The currently active functions are always displayed in the Toolbar on the connected monitor (Remote Display 30010 or a standard VGA monitor). See Chapter 5 for detailed descriptions of the functions available in the individual instruments and display modes.

See Chapters 4.2 and 5

4.3.3 The Control Keys and the Select Key

(See Figs. 4-1 to 4-3)

See Chapters 4.2 and 5

→ MODE

- MODE: Switches between Function Select (select functions) and Instrument Select (select instruments) modes. The default mode is Function Select, which is also activated automatically as soon as you select an instrument.

→ MORE

- MORE: Displays the next Toolbar function level if additional functions are available. When you are on the last available level selecting MORE returns you to the first level. The text in the Toolbar buttons also changes to grey when no more levels are available.

→ Sel(ect)

- Sel(ect): Used to terminate and confirm your inputs in the menus.

→ MENU

- MENU: Opens the menu pages for configuration of the system settings.

→ INSTR(UMENT)

- INSTR(UMENT): Switches the focus between Window 2 (Program Meter) and Window 3 (current instrument) – see Chapter 2 for details. The function keys always control the instrument that currently has the focus, which is indicated by the highlighted frame around the instrument.

In the configuration menus the control keys on the left and right of the Select key (in the middle) function as cursor keys.

4.3.4 Function Selector for the Channel Keys

(See Figs. 4-1 to 4-3)

The black Select button, on the Remote Control 30050 left hand sided and on the control panel of the 31960 series right handed in the middle, sets the current function of the channel keys, which is indicated by a yellow LED:

- Solo: Mutes all channels except the selected channel.
- Cut: Mutes the selected channel.
- Swap: Swaps channels as indicated by the labels on the panel beneath the keys (see Fig. 4-4)
- Phase: Rotates the phase of the selected channel by 180°. The corresponding loudspeaker symbol of the display changes to a lined symbol, the sign ^ is added to the channel labelling.

These functions apply for keys with channel allocations, which correspond to the surround format you are currently using.

See Chapters 4.3.5 to 4.3.10

Note:
Depending on the surround format selected the 2C, EX and SC keys also can proceed as channel keys (see Chapters 4.3.5 to 4.3.10).

Swap Functions (labels beneath the keys on the panel):

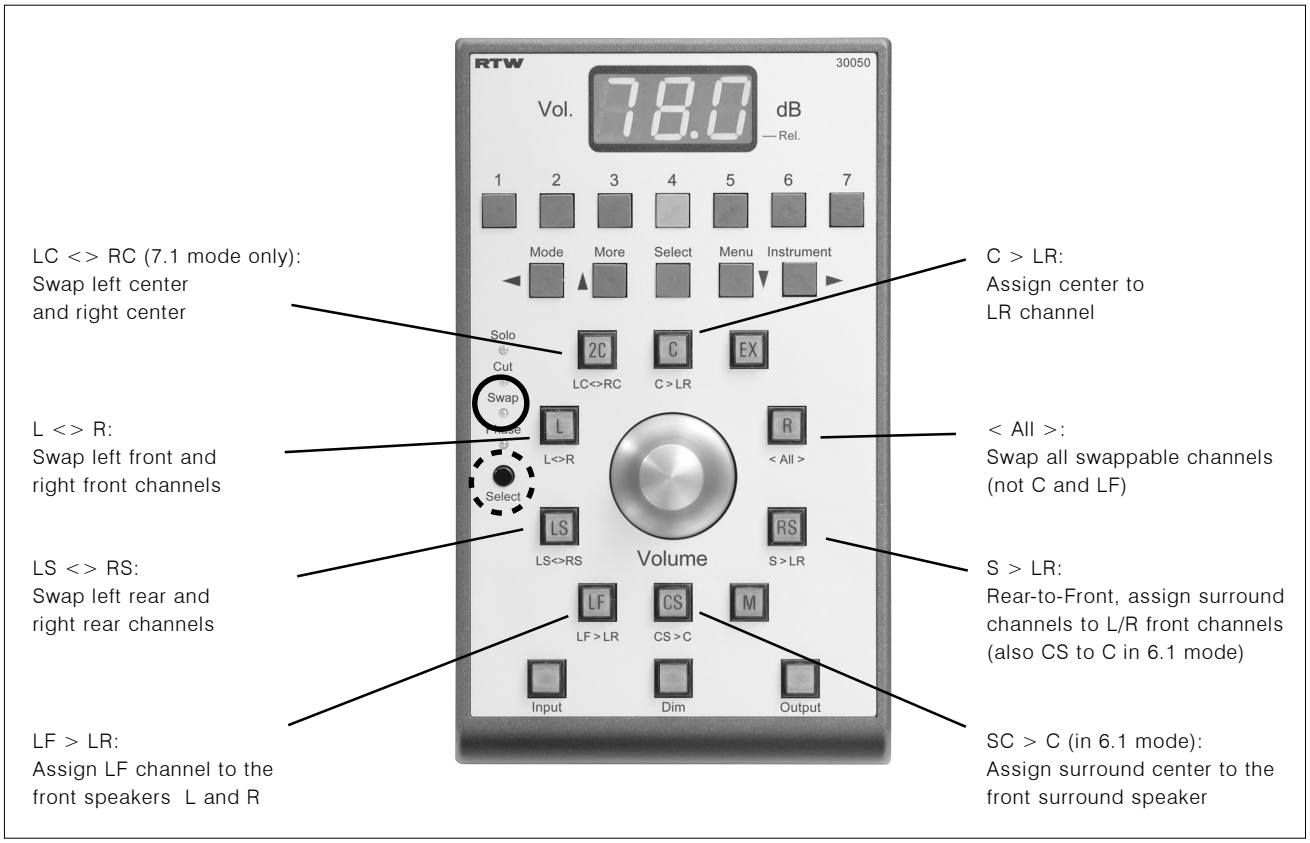


Fig. 4-4: Remote Control 30050 key assignments in Swap mode (31900 series), the same functions are available on the control panel of the 31960 series

4.3.5 The Channel Keys

(See Figs. 4-1 to 4-3)

The channel keys control the channel functions of the loudspeaker outputs. The functions that can be performed by these keys (Solo, Cut, Swap, Phase) are set with the black Select button (see 4.3.4). Some of the channel keys can have different functions in some surround formats (see Chapters 4.3.6 to 4.3.10).

See Chapter 4.3.4

See Chapters 4.3.5 to 4.3.10

4.3.6 The 2C Key

(See Figs. 4-1 to 4-3)

This key performs different functions depending on the current mode:

- 3.1/5.1/6.1 mode: Irrespective of the channel key function set with the Select button (see Chapter 4.3.4) pressing this key in these modes switches the internal Lo/Ro (VOL) (2-Ch Downmix) to the L and R front channels, and all other channels including LF are muted. In these modes the 2C key has a toggle function and is linked to the EX key (see Chapter 4.3.7).

  In the Key Settings menu (see Chapter 6.12.3) you can configure the Downmix Meter (see Chapter 5.n.n) or the Surround Sound Analyzer (SSA) instrument to activate automatically when you switch to Lo/Ro Monitoring.

See Chapter 6.12.3 and 5.n.n

2C key cap can be changed with LC key cap included in standard package.

- 7.1 mode: In this mode this key is assigned to the Left Center (LC) channel. It enables you to apply the functions selected with the black Select button (see Chapter 4.3.4.) to the LC channel.

To set the instrument for the Lo/Ro monitoring when switching the 2C key please proceed as following:

1. Press the **MENU** button/key. The last used menu page is opened.
2. Use the **<** or **>** button/key to select the Key Settings menu tab. The Key Settings menu page is displayed.
3. Select the instrument you prefer with activating the check box in the **Display Mode for Downmix Monitoring** frame.
4. Press the **Save & Exit** button/key (6)to store your selection.
5. Press the **2C** key on the Remote Control 30050 (31900 series) resp. on the control panel of the 31960 series. The downmix signal is switched to the front loudspeakers and your selected instrument is now displayed in Window 3.

4.3.7 The EX Key

(See Figs. 4-1 to 4-3)

This key performs different functions depending on the current mode:

- 3.1/5.1 mode: Irrespective of the channel key function set with the Select button (see Chapter 4.3.4) pressing this key in these modes switches the external Lext/Rext (2-Ch Downmix) to the L and R front channels, and all other channels including LF are muted. In these modes the EX key has a toggle function and is linked to the 2C key (see Chapter 4.3.6).

See Chapter 6.12.2 and 5.n.n

In the Key Settings menu (see Chapter 6.12.2) you can configure the Vectorscope (settings see Chapter 5.n.n) or the Surround Sound Analyzer instrument to activate automatically when you switch to Lext/Rext Monitoring.

EX key cap can be changed with RC key cap included in standard package.

- 7.1 mode: In this mode this key is assigned to the Right Center (RC) channel. It enables you to assign the functions selected with the black Select button (see Chapter 4.3.4) to the RC channel.

To set the instrument for the Lext/Rext monitoring when switching the EX key please proceed as following:

1. Press the **MENU** button/key. The last used menu page is opened.

2. Use the **<** or **>** button/key to select the Key Settings menu tab. The Key Settings menu page is displayed.

3. Select the instrument you prefer with activating the check box in the **Display Mode for External Monitoring** frame.

4. Press the **Save & Exit** button/key (6)to store your selection.

5. Press the **EX** key on the Remote Control 30050 (31900 series) resp. on the control panel of the 31960 series. The external signal is switched to the front loudspeakers and your selected instrument is now displayed in Window 3.

4.3.8 The CS Channel Key

(See Figs. 4-1 to 4-3)

This key performs different functions depending on the current mode:

Setting preset level:
→ turn volume control to the level of your choice
→ CS key
See Chapter 3.7.3 

- 3.1/5.1/7.1 mode: Pressing the CS key in these modes stores the value of the current reference sound pressure level (SPL) setting as a preset (see Chapter 3.7.3). The value can then be displayed and activated by pressing the Volume control (see Chapter 4.3.11). The preset also remains stored when the SurroundControl is switched off. This does not have an effect on the calibration of the monitoring system. This function is simply provided as a useful feature that allows you to return quickly to a stored volume level.
- 6.1 mode: In this mode the CS key is assigned to the Surround Center channel (CS). It enables you to apply the functions selected with the black Select button (see Chapter 4.3.4.) to the SC channel.

4.3.9 The LF Channel Key

(See Figs. 4-1 to 4-3)

This key enables you to apply the functions selected with the black Select button (see Chapter 4.3.4.) to the subwoofer (LF) channel.

4.3.10 The Mono Key

(See Figs. 4-1 to 4-3)

Mono Mode:
→ INSTR (until Window 3 is highlighted)
→ MODE
→ MONITORING
→ Mono Mode
→ button/key 1 to 5 (select your preferred channel)
→ Close

This key switches the mono signal to the channel(s) selected with the Mono Mode function in the Monitoring instrument (see Chapter 5.n.n). The function selected in the Toolbar remains activated until you select the **Close** button/key. This enables you to check the effects of different settings. Window 4 (Status Box) then additionally displays the message „Mono active“.

To select the Mono mode please proceed as following:

1. Press the **INSTR** button/key until Window 3 gets the white frame.
2. Press the **MODE** button/key on the left to switch from Function Select mode to Instrument Select mode.
3. Press button/key 7 labelled **MONITORING**. The Monitoring instrument is displayed in Window 3 and the Toolbar switches to the Function Select mode for the Monitoring instrument.
4. Press button/key 1 labelled **Mono Mode**. Now you can select the channels or channel groups to which the mono signal should be switched.
5. When you have found your preferred channel or channel group, press the **Close** button/key to get back to the functions of the Monitoring instrument.
6. Press the **M** key on the Remote Control 30050 (31900 series) resp. on the control panel of the 31960 series. The mono signal is switched to the selected channel or channel group.

4.3.11 The Volume control

(See Figs. 4-1 to 4-3)

Vol Sens:
→ INSTR (until Window 3 is highlighted)
→ MODE
→ MONITORING
→ Vol Sens (until L, M or H is selected)

This control adjusts the listening volume. You can set the sensitivity of the volume control (Vol Sens) in the Monitoring instrument spreading the level range that can be passed through by one turn of the volume control.

The volume control is also used in the CAL instrument for setting trim and delay values for individual channels, by holding down the Trim or Delay button/key and simultaneously turning the volume control (see Chapters 5.n.n and 5.n.n) and in Multi-Channel modes for selecting one of the Listening Groups (see Chapter X.n.n).

See Chapters 5.n.n, 5.n.n and X.n.n

Setting preset level:
→ In 3.1/5.1/7.1 surround modes turn volume control to the level of your choice
→ CS key

In all modes pressing the Volume control retrieves and sets the preset value stored with the CS channel key (see Chapter 4.3.8). The Downmix-Direct-Out signals DLo, DRo and DMo are not affected by the volume control setting.

When the **Adding Mode, push volume knob for global reset** check box is activated on the Key Settings menu tab (see Chapter 6.12.5) all channels can be set back to the basic position by pressing the volume control.

To select the sensitivity of the volume control please proceed as following:

1. Press the **INSTR** button/key on the right until Window 3 gets the white frame.

2. Press the **MODE** button/key on the left to switch from Function Select mode to Instrument Select mode.

3. Press button/key 7 labelled **MONITORING**. The Monitoring instrument is displayed in Window 3 and the Toolbar switches to the Function Select mode for the Monitoring instrument.

4. Press button/key 5 labelled **Vol Sens L/M/H** until you have selected the sensitivity option you prefer: low (L) for a small volume level range that can be passed through with one turn, middle (M) for a middle range or high (H) for a large range. The selected option is highlighted on the button in the Toolbar.

5. Now you can use the volume control with the selected sensitivity.

4.3.12 The Input Key (input switcher)

(See Figs. 4-1 to 4-3)

This key selects the input for the Monitoring Controller. Pressing the key activates the display of the 7 Sub Presets corresponding to the selected Preset as input sources on the buttons of the Toolbar (Window 1). With the corresponding buttons/keys (1 to 7) the input source can be selected (see Chapter 3.5). Pressing the Input key again switches back to the used instrument now with the selected input source.

See Chapter 3.5

4.3.13 The Dim Key

(See Figs. 4-1 to 4-3)

DIM Level:
→ INSTR (until Window 3 is highlighted)
→ MODE
→ MONITORING
→ DIM Level
→ Mute (until on or off is selected)
→ Moment (until on or off is selected)
See Chapter 5.n.n 

This key activates dimming (level attenuation), using the value set with the **DIM Level** function in the Monitoring instrument (see Chapter 5.n.n). Setting this value to minus infinity is equivalent to a Mute All function.

You can configure the behaviour of this key with the Monitoring instrument. The available options are Mute and Moment, which have the following functions:

- Mute off: Pressing the Dim key on the Remote Control 30050 (31900 series) resp. the control panel of the 31960 series activates dimming with the configured attenuation level value. Window 4 then displays: Monitor dimmed.
- Mute on: Pressing the Dim key on the Remote Control 30050 (31900 series) resp. the control panel of the 31960 series mutes the output signal. Window 4 then displays: Monitor muted.
- Moment on: The Dim/Mute function only remains active as long as you press the Dim key on the Remote Control 30050 (31900 series) resp. the control panel of the 31960 series.
- Moment off: Pressing the Dim key on the Remote Control 30050 (31900 series) resp. the control panel of the 31960 series switches the Dim/Mute function on or off. On the Remote Control 30050 the current status is then indicated by the key light.

To define the preset for the DIM key please proceed as following:

1. Press the **INSTR** button/key on the right until Window 3 gets the white frame.

2. Press the **MODE** button/key on the left to switch from Function Select mode to Instrument Select mode.

3. Press button/key 7 labelled **MONITORING**. The Monitoring instrument is displayed in Window 3 and the Toolbar switches to the Function Select mode for the Monitoring instrument.

4. Press button/key 2 labelled **DIM Level**. The Toolbar switches to the functions for the DIM level setting.

5. Press button/key 5 labelled **Mute on off** until you have selected the option you prefer. The selected option is highlighted on the button in the Toolbar.

6. Press button/key 6 labelled **Moment on off** until you have selected the option you prefer. The selected option is highlighted on the button in the Toolbar.

7. Press **Close** to get back to functions of the Monitoring instrument. The Dim key now is preset with your individual needs.

4.3.14 The Output Key (output switcher)

(See Figs. 4-1 to 4-3)

This key switches the output signals to the analog or digital outputs (see also Chapters 5.n.n and 5.n.n).

Output Key Mode:
→ MENU
→ Edit selected preset
→ Local Input/Output Routing and Instrument Settings
→ check box in deactivated column with your preferred main output
→ check box in activated column with your preferred alternative output
→ Save & Exit
→ Select User Preset to overwrite
→ Save & Exit
See Chapter 6.5 and 6.5.3 

The **Output Key Mode** is set in the Input/Output Routing menu (Global Routing Settings, see Chapters 6.5) as well as in the Local Input/Output Routing and Instrument Settings menu with the Local Routing Settings. Here you can select the outputs for the deactivated and for the activated (pressed and lightened) status of the Output key. Between these outputs you then can swap, the output signals are sent to the active output, the other outputs are muted. This function is used when you have two monitoring systems.

Example:
The main monitoring system is connected to the Digital 3 In/Out connector (display in the Toolbar is Out Digital 3) and an alternative „home system" is connected directly to the analog outputs via an amplifier (display in the Toolbar is Out Analog).

If you select Downmix-Solo for the activated status of the Output key and when you then press the Output key the signals Lo/Ro are connected to the preselected outputs and all other outputs are muted.

Example:
You want to listen to the 2-Ch Downmix on separate loudspeakers in a near-field set. The Toolbar then displays Out Downmix.

To define the outputs for the Output key please proceed as following:

1. Press the **MENU** button/key and enter the menu system.

2. Use the ^ or v button/keys to select the **Edit selected preset** button. The General Preset Settings menu page is displayed.

3. Use the < or > button/key to select the **Local Input/Output Routing and Instruments Settings** menu tab. The Local Routing Settings menu page is displayed.

4. Select one of the check boxes of the **Deactivated** column in the **Output Key Mode** frame that meets your configuration and should be the main monitoring set.

5. Select one of the check boxes of the **Activated** column in the **Output Key Mode** frame. This should be the alternative set or the Downmix Solo option.

6. If you have selected the **Downmix Solo** option, use the ^ or v button/keys to select the **Monitoring Output Routing** button. The Local Monitoring Output Routing menu page is displayed.

7. Use the cursor and the **Select** buttons/keys to assign the Downmix signals to the outputs.

8. Press **Save & Exit** to get to the **Save Preset** menu page. Use the cursor and the Select buttons/keys to select a User Preset.

9. Pressing **Save & Exit** again turns you back to normal operation.

6 Menu

6.1 Introduction

The SurroundControl 31900 series and the SurroundControl 31960 series are widely configurable systems with many options for precise adoption to the individual needs of different applications. All parameters are accessed through the menu system GUI occupying most of the normal display area of the unit when opened.

To open the menu system simply press the Menu key or click the MENU button in the Toolbar of the display using the mouse.

Fig. 6-1: The menu system

After opening the menu the Toolbar remains visible in the bottom area of the screen. Among others it can be used to leave the menu at any time using the following options:

- Save

(Button/key 5, see Fig. 6-1)

Saves the current status settings with all changes made in the menu system without leaving the current page

- Save & Exit

(Button/key 6, see Fig. 6-1)

Saves the current status with all changes made and returns to normal display mode

- Abort

(Button/key 7, see Fig. 6-1)

- When used on one of the menu pages for the global settings (see Chapter 6.1.1), pressing the Abort button/key discards any changes made in one of the menus, directly leaves the menu system without saving and returns to normal display mode.
- When used on one of the menu pages for the local instrument settings (see Chapter 6.1.1), pressing the Abort button/key discards any changes only made in one of these menus, leaves the local instrument settings menu pages and returns to the Instruments Settings main menu page. If you want, you now can change the global settings. If not, press the Abort button/key again. Then you discard all changes you have made in any of the menus, leave the menu system and return to normal display mode.

The menu topics are organized in pages accessed by selecting the according tabs in the top area of the screen. Tabs that are not displayed can be accessed by using the two cursor buttons on the top right.

From any sub menu window you get back to the top level by using the Close button. Any changes made are retained temporarily and can then be saved

by selecting Save (button/key 5) or Save & Exit (button/key 7).

In most cases the easiest way to navigate the menu will be using a mouse connected to the USB A port of the main unit. Alternatively it is possible to use the cursor buttons on the Remote Control 30050, the front panel of the 31960 or on the optional Remote Display 30010 as well:

- <: This button/key moves the cursor to the left or displays the previous menu page.
- >: This button/key moves the cursor to the right or displays the next menu page.
- `´: This button shifts the focus to the next dialog element. Inside dialog boxes it moves to the next selection.
- ^: This button shifts the focus to the previous dialog element. Inside dialog boxes it moves back to the previous selection.
- Sel(ect): This button confirms the dialog element highlighted with the cursor keys (i. e. the element that currently has the focus) or changes its status by selecting or deselecting it.

6.1.1 Local vs. Global Settings

Fig. 6-2: The menu tabs for local and global settings

Of course all configuration data set in the menu is saved in the unit. The memory system consists of two different areas holding local and global settings:

- Local settings are hold in 7 factory presets and 7 user presets. The local settings are changed any time the user loads a new preset to reflect the stored settings. All settings made on the Instrument Settings page of the menu are local settings saved only for the selected preset. Presets are a good way of storing the individual settings for each user working with the unit.

Fig. 6-3: The Save Preset menu page for holding the local settings

- Global Settings resp. the parameters set on all other menu pages are stored globally and independent of the loaded preset. This means they won't change when a new preset is loaded. Global settings contain settings which most users do not need to modify in daily use, for example parameters related to the studio environment, reference levels etc.

Fig. 6-4: The Save Global Settings menu page for holding the global settings

Note:
The global settings are stored separately from the (local) instrument settings. There is always only one set of global settings - you cannot store different versions as you can for the user presets.

As the input/output routing of the system is very flexible it can be part of the local or the global settings alternatively. If the routing from/to the physical input and output connectors should be fixed for a certain installation and therefore not being altered by a preset change, it can be set globally using the Input/Output Routing menu page. If the user prefers to vary the routing when loading a preset instead, the same parameters can be accessed on

the Instrument Settings page as well and stored together with any user preset. For each preset the user has the option to define whether this preset should use its own individual local input/output routing (Use Local Routing Settings, see Chapter 6.3.1) or the global routing instead.

6.1.2 Sub Presets

Fig. 6-5: Sub Presets 1 to 7 displayed in the Toolbar in Window 1

The concept of „sub presets“ was introduced for making it even easier and faster to adapt to different tasks and production needs. Using sub presets it is not necessary to load a preset each time a new input source and routing is needed. Sub presets are accessed very fast without opening the menu system – via activating the Input key on the Remote Control 30050 or the 31960 front panel and pressing one of the seven numbered keys. Each user preset as well as the global setting contains 7 sub presets holding, among many other parameters, the complete input routing, the preferred instrument shown in the display and detailed settings for the peakmeters. By default, the sub presets are named Key 1, ..., Key 7 to reflect the button/key they are assigned to, but the user has the option to rename them individually anytime. The name of the sub presets is shown in the Toolbar after pressing the Input Select button/key on the Remote Control 30050, on the 31960 front panel or on the Remote Display 30010 front panel.
Because the 7 sub presets are part of the routing settings they will as well follow the local/global setting made for the routing in each preset. This means the settings loaded with the Keys 1 to 7 might change with each new user preset loaded when the Use Local Routing Settings checkbox is activated in the loaded preset (see Chapter 6.3.1). The sub presets then are local sub presets. On the other hand, if the checkbox is not activated, the sub presets are used instead as global sub presets as defined under Global Routing Settings menu (Input/Output Routing menu tab) and Input Routing sub menu (see Chapter 6.5.1).

Note:
Except the first sub preset which is recalled with Key 1 all other sub presets are only available when they are enabled with a checkbox on the Input Routing sub menu page. Please refer to Chapter 6.5.2 for more details about enabling and disabling sub presets.

6.1.3 Channel Organization and Signal Routing

Internally, the unit uses logical channels (L, R, etc.) that match the selected audio format. For example, if you are using 5.1 surround the internal logical channels are L, R, C, LS, RS, LF, Lext, Rext, Lo and Ro. The assignment of the physical signal inputs to these logical channels is performed in the input routing, with separate settings for each input (see Chapters 6.3.2 and 6.5.1). Internally, the metering and the Monitoring Controller always use the logical channels (L, R etc.) and not the physical inputs. The same applies accordingly for the monitoring controller’s outputs: The logical internal channels (L, R etc.) are routed to the physical outputs with settings in the output routing. It is possible to enter different settings for the analog and digital outputs.

Fig. 6-6: Signal routing in the SurroundControl units

6.2 Menu Structure Reference

6.3 Instrument Settings: The Instrument Settings Menu

After selecting the Instruments Settings tab the Instruments Settings menu page is shown.

Fig. 6-7: The Instrument Settings menu page

This menu page is used to load a new preset (Use Preset, the currently selected preset is displayed) or to change the settings of the current preset (select button Edit selected preset). An instrument setting stores the parameters for all available instruments in a single preset. There are 7 user presets (U 1 to U 7) that can be modified by the user and 7 read-only factory presets (F 8 to F 14) available. See Chapters 3, 6.5.2 and Appendix A for details.
With a mouse installed at the USB A connector right-clicking in an instrument window switches from normal display mode to the menu system showing the settings of the current preset. If this is a factory preset you will be prompted to save any changes in one of the 7 user presets when you exit the instrument menu (see Fig. 6-3). If you do not do this, any changes made will be lost.

- If you just want to load a new preset, please select one of the preset names shown under Use Preset on the Instrument Settings menu page and return to normal display mode.
- If you want to edit a preset, click the button Edit selected preset on the Instrument Settings main page. A new menu area with the Instrument Settings of the selected preset opens up, containing the four menu tabs General Presets, Local Input/Output Routing and Instrument Settings, Vectorscope and RTA. Any changes made in this menu area are stored to a user preset after leaving this section with Save or Save & Exit. Leaving the menu section with Abort instead discards all edits made.

6.3.1 Edit selected Preset: General Presets

After selecting the General Presets tab the General Preset Settings menu page is shown.

Fig. 6-8: The General Preset Settings menu page

- Use Local Routing Settings

The status of this checkbox decides, whether the routing of the LOCAL instrument settings stored in the individual user preset or the GLOBAL settings of the unit are used when loading this preset.
- With this option enabled, all routing settings made under Local Input/Output Routing and Instrument Settings are used when the edited preset is loaded.

• With this option disabled, these local settings are NOT used when the edited preset is loaded. The global routing settings made on the Global Routing Settings menu page (Input/Output Routing tab) and its sub menus (see Chapter 6.5.1) are used instead. See Chapter 6.1.1 for further explanation of local and global settings.

Note:
As the sub presets are part of the routing settings, this option also defines whether the local or the global set of sub presets is used with a certain user preset (see Chapter 6.1.2).

• Close
This button closes the menu page and prompts you to save the preset to one of the user presets (U 1 to U 7, see Fig. 6-9). You can also enter an individual name for the preset with the Change name button (6 characters, see Fig. 6-10).

Fig. 6-9: The Save Preset menu page

Fig. 6-10: The keypad on the Preset Name menu page for changing the preset name

6.3.2 Edit selected Preset: Local Input/Output Routing and Instrument Settings

After selecting the Local Input/Output Routing and Instrument Settings tab, the Local Routing settings menu page is shown, when the Use Local Routing Settings checkbox of the General Preset Settings menu is activated (see Chapter 6.3.1).

Fig. 6-11: The Local Routing Settings menu page

As, in almost every aspect, the local input/output routing is identical to the global input/output routing described in Chapter 6.5. Please refer to this Chapter for a detailed explanation of all parameters.

Note:
Nevertheless, please keep in mind that, in contrary to the global settings, the Local Input/Output Routing and Instrument Settings are only applied when the Use Local Routing Settings checkbox is activated for the preset in use (see Chapter 6.3.1).

6.3.3 Edit selected Preset: Vectorscope

After selecting the Vectorscope tab the Vectorscope Settings menu page is shown.

Fig. 6-12: The Vectorscope Settings menu page

• Waveform color
This button displays the color selector so that you can select the display color to be used for the signal in the vectorscope display.

- Grid Color

This button displays the color selector so that you can select the display color to be used for the coordinate grid in the vectorscope display.

- Grid

This combo box is for changing the setting of the coordinate grid in the vectorscope display. Options: Fine (dots) or Normal (lines)

- AGC

This combo box is for adjusting the vectorscope's AGC (Automatic Gain Control) response time. Options: Fast or Slow.

- Close

This button closes the page and prompts you to save the preset (see Chapter 6.3) to one of the user presets (U 1 to U 7, see Fig. 6-9). You can also enter an individual name for the preset with the Change name button (6 characters, see Fig. 6-10).

6.3.4 Edit selected Preset: RTA

After selecting the RTA tab the RTA Settings menu page is shown.

Fig. 6-13: The RTA Settings menu page

- All without LF

This check box determines the behavior of function key/button 1 when the function Input Select (see Chapter X.X) is selected in the instruments RTA 1/3 and RTA 1/6:

- If the check box is disabled, button/key 1 is labeled All. In this case all channels including the LF channel are used for the Real Time Analyzer display.

- If the check box is enabled, the button/key 1 is labeled All w/o LF. In this case all channels except the LF channel are used for the Real Time Analyzer display.

- Bar Organization

This combo box is for changing the way the bargraphs are arranged in the RTA display. You can choose between single bars (Single), groups of three (Group 1/3 Octave) and blocks of three (Block 1/3 Octave).

- Peak Hold fallback time

This combo box is for setting the display duration for the peak hold display. Options: 1 s, 2 s, 4 s, 10 s, 20 s, 30 s and Manual Reset. With Manual Reset selected, you can reset the peak hold display with the PHold Reset function in the RTA 1/3 or RTA 1/6 instrument (see Chapter X.X).

- Background color

This button displays the color selector so that you can change the color of the background of the bargraph display in the RTA instrument.

- Bargraph normal color

This button displays the color selector so that you can choose the display color for the normal range of the bargraphs in the RTA instrument.

- Bargraph over color

This button displays the color selector so that you can choose the display color for the overload range of the bargraphs in the RTA instrument.

- Close

This button closes the page and prompts you to save the preset (see Chapter 6.3) to one of the user presets (U 1 to U 7, see Fig. 6-9). You can also enter an individual name for the preset with the Change name button (6 characters, see Fig. 6-10).

6.4 General Settings: The Global General Settings Menu

After selecting the General Settings tab the Global General Settings menu page is shown.

Fig. 6-14: The Global General Settings menu page

- Power-On State:

This combo box selects the preset that is loaded and activated when the unit is switched on (Use Preset: ...). You can select any of the 7 user presets (U 1 to U 7) or the 7 factory presets (F 8 to F 14). Selecting the option Use power off state loads the last preset used when the unit was switched off.

- Menu lock:

This combo box allows you to choose, whether the menu system is freely accessible (Off) or only available after the user has entered one of the eight 4-digit numeric codes (PINs) offered. After activating the menu lock function by selecting and saving a PIN, a prompt asking the user to enter the PIN code will be displayed when the MENU button/key is activated in normal mode. The buttons in the Toolbar are then labeled with numbers to allow entry of the PIN code. The digits 1 to 6 and Abort button are displayed on the first level and the digits 7 to 9, digit 0, a backspace key (DEL), a Select button and an Abort button are displayed on the second level of the menu, which can be displayed by selecting the button/key „Nach-unten-Zeichen“. Pressing the „Nach-oben-Zeichen“ key takes you back to the first level. On both levels the seventh button/key in the Toolbar offers the Abort function, which cancelles the procedure.

Note:

If you entered a wrong password by pressing the Select button, the message „Wrong password, please try again“ will be shown in the Toolbar (Window 1).

- Reset global settings to factory defaults

With this button all Global Settings (all menu tabs except the Instrument Settings menu tab) can be set back to their factory default settings. A safety request has to be confirmed. When the system returns to normal operation display, the Toolbar shows the message „Global config initialized with factory settings“ for a short time.

- Reset working settings to factory defaults

With this button all settings done in the Toolbar during normal operation of

the unit are set back to their factory default settings. A safety request has to be confirmed. When the system returns to normal operation display, the Toolbar shows the message „Working config initialized with factory settings“ for a short time.

Note:
The Reset buttons both are used to return the unit to normal operation after the user has unintentionally made faulty settings.

- About-Info

This frame displays information on the firmware version of your RTW unit.

6.5 Input/Output Routing: The Global Routing Settings

After selecting the Input/Output Routing tab the Global Routing Settings menu page is shown.

Fig. 6-15: The Global Routing Settings menu page

Note:
All settings made on this menu page or the sub menu pages entered from here are Global Routing Settings. This means that they are only active, when the Use Local Routing Settings checkbox in the loaded preset is NOT selected (disabled) in the Edit selected Preset: General Preset Settings menu (see Chapter 6.3.1).

Note:
When the Use Local Routing Settings checkbox is selected, the local routing settings stored for the loaded preset are used instead. Details about setting up the local routing for the selected preset are described in Chapters 6.3.1 and 6.3.2. Because the Local Routing Settings are similar to the Global Routing Settings, the following descriptions also can be applied to the local settings.

Among many other options, the Global Routing Settings menu page is used to set the channel formats used by the unit as well as the input/output routing of the monitor controller and the input routing of the metering. The settings configured here are used to allocate the physical inputs and outputs to the internal logical channels L, R, and so on.

- Selected Format

In this line the channel format (e. g. 5.1 or 2 channel stereo) used by the unit is displayed. It depends on the Use Preset selection on the Instrument Settings menu page (see the second paragraph of Chapter 6.3)

Note:
This field cannot be edited by the user.

To change the selected format, please use the „Monitoring Input Routing“ button on the same menu page to set the channel format instead (see Chapter 6.5.2).

• Output Key Mode

The „Output“ key (on the Remote Control Unit 30050 or on the 31960 front panel) is used to switch the output signal of the monitoring controller between two output connectors which can be selected with this option.

• Deactivated: The output connector selected here is used when the output key is not illuminated (inactive). Options: Analog, Digital 3, Digital 4, Headphones (on the front panel)

• Activated: The output connector selected here is used when the output key is illuminated (active). Options: Analog, Digital 3, Digital 4, Headphones (on the front panel), Downmix Solo.

With the „Downmix Solo“ option selected, the unit switches the soloed downmix signal to the front speakers of the monitoring setup as soon as the „Output“ key is activated. All other output signals are muted. The downmix signal monitored here is selected in the „Downmix Routing“ section of the Monitoring Input Routing (see Chapter 6.5.2.5).

6.5.1 Meter Input Routing

This button opens the menu page Global Meter Input Routing showing a routing matrix for selecting the feed of the metering.

Fig. 6-16: The Global Meter Input Routing menu page

The metering signal source can be selected in two different ways:

• With the toggle option „Meter In analog/Monitoring“ in the Toolbar (see Chapter X.X) switched to „Monitoring“, the metering will always show the sources selected on the „Monitoring Input Routing“ page (see Chapter 6.5.2). This means the metering will always follow the monitoring source selection in this mode. In this case the settings made on this menu page are irrelevant.

• With the toggle option „Meter In analog/Monitoring“ in the Toolbar (see Chapter X.X) switched to „Meter In analog“, a second input routing for the metering is available (independently from the monitoring input routing). In this way it would be possible to watch a certain signal source in the metering while monitoring a different signal source on the speakers at the same time. In this case the input source of the metering is selected here.

• Source

This menu item selects the input connector used for the metering routing. Options: Meter In analog, Digital 3.

• L, R, C, etc.

This matrix is used to assign the internal logical channels L, R, etc. to the physical input connector selected in the „Source“ selection (see above). The actual channel configuration shown here depends on the channel mode setting on the „Monitoring Input Routing“ page (see Chapter 6.5.2). Each channel can be assigned individually.

• Close

This button closes the page and returns you to the the Global Routing Settings menu page from which you selected the Meter Input Routing.

6.5.2 Monitoring Input Routing

After selecting the Monitoring Input Routing button, a new menu area opens up, containing 7 tabs labeled Key 1 to Key 7.

Fig. 6-17: The Key 1 to Key 7 menu tabs after pressing the Monitoring Input Routing button

These tabs represent the 7 sub presets available within the global settings that can be switched easily using the 7 numbered keys on the Remote Control 30050, on the 31960 front panel or on the Remote Display 30010 front panel or selecting the appropriate Toolbar buttons on the screen. This option makes it very easy and fast to switch between individual channel modes, routings, instruments and peakmeter setups without having to load a new factory or user preset using the menu. For example, after having defined several sub presets it is very easy to check all signal sources connected to the device with the preferred instrument readily configured on the screen. The active sub preset is always shown beneath the name of the chosen preset in the Info Box (Window 4 of the display).

Note:
Even after switching to a new channel mode on one of the seven Key menu pages, the settings for the old mode on this individual Key page are „remembered“ by the device. Therefore, as soon as the old mode is selected again, all parameters will switch back to the settings defined for that mode earlier.

Depending on the channel mode defined for any key, this menu page can look quite different. For example, the „Lext/Rext Routing“ section of the page will be only available when channel modes 3.1 or 5.1 are selected. Also, the channels available in the Monitoring Metering Routing section depend on the selected mode. Please refer to the following screen shots to see how the page looks like in each mode.

Fig. 6-18: Global Monitoring Input Routing menu page with „2 Channel Stereo“ mode selected

Fig. 6-19: Global Monitoring Input Routing menu page with „3.1“ mode selected

Fig. 6-20: Global Monitoring Input Routing menu page with „5.1“ mode selected

Fig. 6-21: Global Monitoring Input Routing menu page with „6.1“ mode selected

Fig. 6-22: Global Monitoring Input Routing menu page with „7.1“ mode selected

Fig. 6-23: Global Monitoring Input Routing menu page with „Multi Channel“ mode selected (8-Channel)

Fig. 6-24: Global Monitoring Input Routing menu page with „Multi Channel“ mode selected (4-Channel, 2-Channel Stereo, 2-Channel)

6.5.2.1. Main Settings

- Enable

(only available for the menu pages Key 2, ..., Key 7)

Fig. 6-25: Example for the menu pages of disabled keys

The number of the sub presets available in the Global Settings is freely variable from 1 to 7. To set the desired number of available sub presets, the Key 2 to Key 7 pages can be individually enabled or disabled using this checkbox. The Key 1 page has no „Enable“ checkbox because at least one setting must always be available for the Global Settings. Please refer to Chapter 6.1.2 for more details about sub presets.

Note:

Pages for disabled sub preset keys are greyed out in the Toolbar on the screen. Their buttons cannot be clicked. Pressing their corresponding keys on the Remote Control 30050, on the 31960 front panel or on the Remote Display 30010 front panel also has no effect.

Fig. 6-26: Example for the display of greyed sub preset keys in the Toolbar

- Copy From

This function, activated by pressing this button, is helpful if you decide to build a new sub preset that shares many settings with another sub preset already set up. Access the page of the new sub preset and select the sub preset you want to copy the settings from in the combo box on the right of the „Copy From“ button. By selecting „Copy From“, all settings are copied to the new sub preset. You can adapt the settings that should be altered after that for the individual application of the new sub preset.

- Default Instrument

For each sub preset, an individual instrument (display mode) can be defined with this combo box that then shows up in Window 3 of the screen after this sub preset is selected. The following instrument types are available:

- Surround Sound Analyzer
- Vectorscope
- Multicorrelator
- RTA 1/3
- RTA 1/6
- Downmix
- Monitoring
- AES/EBU Status
- SDI Status (when SDI option is installed)
- SDI Interface (when SDI option is installed)
- Hardware Status
- Dolby® Status
- Dolby® Meta Data (when Dolby® decoder option is installed)
- Dialnorm
- Blits

Note:

Please refer to Chapter 5 to learn more about the display modes available in the unit.

- Name

By default, the 7 sub presets are named „Key1“ - „Key 7“. However, they can be renamed by selecting the Name description field or clicking in the Name description field with the right mouse key. A new menu page with a set of alpha-numeric buttons opens up after this. Click the buttons to enter the characters you want with the left mouse key. A maximum of 6 characters is allowed.

Fig. 6-27: The keypad on the Preset Name menu page

- Mode

The parameters in this combo box are used to define the overall internal channel configuration of the unit.

Note:

For each sub preset (Key 1, …, Key 7) an individual channel mode setting can be made. In this way the user can switch channel modes very easy by selecting a new sub preset on the toolbar (window 1) without entering the menu.

By switching channel modes you decide which channels will be processed in the monitor controller section. For example, if you select a 7.1 format the unit activates the internal channels L, LC, C, RC, R, LS, RS and LF. These are then selected and adjusted with the channel keys and the volume control on the Remote Control Unit 30050 or the 31960 front panel.

The available options and channel configurations are:

- 2 Channel Stereo L, R
- 3.1 L, C, R, S
- 5.1 L, R, C, LF, LS, RS
- 6.1 L, R, C, LS, RS, CS, LF
- 7.1 L, R, LC, C, RC, LS, RS, LF
- Multi Channel independent channels or channel groups

Use the appropriate Stereo or Surround mode to reflect the channel configuration of the input signal to be monitored. The Multi Channel Mode is useful for sources with unrelated channels or channel groups which should be monitored separately, e. g. Aux sends or SDI groups.

Note:

Even after switching to a new channel mode on one of the seven key pages, the settings for the old mode on this individual key page are „remembered“ by the device. Therefore, as soon as the old mode is selected again, all parameters will switch back to the settings defined for that mode earlier.

Note:

Depending on this mode setting the menu page will change its options. Please refer to the screen shots earlier in this Chapter to see how the page looks like in each mode (see Figs. 6-18 to 6-24).

- Program Meter

(ONLY available when 5.1 or 2 Channel Stereo is selected with the Mode combo box, see above)

By default, the bargraphs in window 2 show the Peak Program Meters (PPM)

with the settings configured after selecting the „Peakmeter Settings“ button in the Monitoring Routing section of this page (see chapter 6.5.2.3). However, there is also the option to show a combination of PPM and loudness bargraphs (the loudness section of this display mode conforming to ITU standard BS.1771). This mode divides the bargraphs into three vertical sections: The center shows the loudness conforming to ITU BS.1771 while the both outer sections show the PPM metering as usual.

The available options are:

- PPM
- ITU BS.1771

Note:
This mode is only available when one of the following channel modes is selected in the „Mode“ combo box (see above):

- 2 Channel Stereo L, R

or

- 5.1 L, R, C, LF, LS, RS

Furtheron, selecting „ITU BS.1771“ in the „Program Meter“ combo box will automatically switch the „Source“ selection in the „ Monitoring Routing“ area of this page to one of the digital sources „Digital 3“ or „Digital 4“ (see chapter 6.5.2.3).

These restrictions are made because ITU BS.1771 is only defined for digital input signals in 2 channel stereo or 5.1 surround channel configurations.

Note:
Selecting the „ITU BS.1771“ option in the „Program Meter“ combo box switches the „Peakmeter Settings“ button in the „ Monitoring Routing“ area of this page to „Loudness Settings“. See chapter 6.5.2.3 for details.

6.5.2.2 Decoder

The SurroundControl 31900 and SurroundControl 31960 are available as „D“ version fitted with the Dolby® decoder option. This version features an internal Dolby® decoder processing Dolby® Pro Logic I, Dolby® AC-3 or Dolby® E signals. The decoder can be switched into the signal chain in between the physical audio inputs and the internal channels selected by the channel mode setting. This offers many additional options, e. g. decoding Dolby® E coded surround signals transmitted via SDI for monitoring and metering in various ways.
When using the internal decoder, the physical input connector used is selected by the „Source“ parameter of the decoder section. After this, the decoder output signal can be selected as source in the „Monitoring Routing“ section.

Fig. 6-28: Example for the enabled Dolby® decoder (only with D and SD versions)

- Enable

Enabling the encoder adds the two additional parameters „Source“ and „Type“ to the decoder section.

• Source

After enabling the decoder, the physical input connector carrying the encoded signal can be selected here. Only channel pairs are selectable as sources because the decoder must be fed with a 2-channel signal. Please note that the available options for this field depend on the „Type“ setting of the decoder as follows:

• Selected Type: Dolby® Pro Logic I: All channel pairs on both analog input connectors, on both digital input connectors and on the SDI interface (if fitted) are available as sources.

• Selected Type: Dolby® Auto, Dolby® AC-3 or Dolby® E: All channel pairs on both digital input connectors and on the SDI interface (if fitted) are available as sources.

Note:
The analog connectors are not available for Dolby® Auto, Dolby® AC-3 or Dolby® E because these signal types can’t be transmitted on analog lines.

• Type

Different decoder types can be selected here. Please note that the available options for this field depend on the „mode“ setting on the same menu page as follows:

• Selected mode 3.1: Dolby® Pro Logic I or Dolby® E are the options available for the decoder type.

• Selected mode 5.1: Dolby® Auto, Dolby® AC-3 or Dolby® E are the options available for the decoder type.

When „Dolby® Auto“ is selected for the decoder type, the decoder will automatically analyze the incoming signal format and switch between Dolby® AC-3 and Dolby® E accordingly.

• All other modes: Only Dolby® E is available as options for the decoder type.

6.5.2.3 Monitoring Routing

The Monitoring Routing section is used to select a physical input source for the internal monitoring metering and to individually assign the channels of this source to the internal channels. The allocated options for the 2-Channel Stereo and Surround modes differ from the Multi Channel mode:

• 2-Channel Stereo and Surround modes

Fig. 6-29: The Monitoring Routing section in 7.1 Surround mode as an example (Markierung)

Depending on the 2-Channel Stereo or one of the Surround modes selected above on the same menu page (see Mode), up to eight logical channels L, R, … with combo boxes are displayed below here. Each combo box offers the available physical input channels. The individually selected physical input channel in one of the combo boxes is assigned to the corresponding logical channel (see Fig. 6-29).

• Multi Channel mode

Fig. 6-30: The Metering Routing section when Multi-Channel mode has been selected (Markierung)

Fig. 6-31: The channels of the Multi-Channel mode devided in groups (Markierung)

With the Multi Channel mode selected, the channel assignment differs. Individual selections for Source, Channels, Routing and Stereo are available (see Fig. 6-30). The additional combo box labeled Channels features the option to define channel groups with individual source selections. Up to four individual groups are available with a maximum of eight internal channels in total (see Fig. 6-31).

- Peakmeter Settings

This button is shown when the „Program Meter“ combo box above is set to the „PPM“ option. The peakmeter section of the unit can be configured individually for each sub preset and each channel mode selected. The button „Peakmeter Settings“ opens a new menu page which is described in detail in Chapter 6.5.2.6.

- Loudness Settings

This button is shown when the „Program Meter“ combo box above is set to the „ITU BS.1771“ option. The loudness options of the unit can be configured individually for each sub preset and the channel modes „2 channel stereo“ and „5.1“. The button „Loudness Settings“ opens a new menu page which is described in detail in Chapter 6.5.2.9.

- Source

Use this option to select the input connector carrying the desired monitoring signal.

- While the „PPM“ option is selected in the „Program Meter“ combo box above, the following options are available: Analog 1, Analog 2, Digital 3, Digital 4, SDI (if fitted), Decoder (if enabled).
- While the „ITU BS.1771“ option is selected in the „Program Meter“ combo box above, the following options are available: Digital 3, Digital 4, SDI (if fitted), Decoder (if enabled).

Note:

The output signal of the decoder is only selectable as a source if the decoder was enabled in the decoder section above right on the same menu page (see Chapter 6.5.2.2).

- L, R, …

(ONLY available with 2-Channel Stereo and Surround modes, see Fig. 6-29)

Depending on the channel mode selected above on the same menu page (see Mode), up to eight logical channels L, R, … with combo boxes asiede are displayed. Each combo box offers the available physical input channels. The individually selected physical input channel in one of the combo boxes is assigned to the corresponding logical channel.

The routing for the 2-Channel Stereo and Surround modes is best described with an example:

With 7.1 selected in the Mode combo box above on the same menu page (see Chapter 6.5.2.1), the logical channels L, R, C, LF, LS, RS, LC and RC

are available and labeled. For each logical channel there is a combo box offering all (up to 16) physical input channels of the selected source. In this way, each individual monitoring channel can be assigned to any physical input channel from that source.

- With Analog selected as source signal, 8 channels are available (1, …, 8)
- With Digital selected as source signal, 8 channels are available (1a, 1b, …, 4a, 4b)
- With SDI selected as source signal, all 16 SDI channels are available: 4 groups (Grp 1, …, Grp 4) with 4 channels (Ch 1, …, Ch 4) each.
- With Decoder selected as input source, a reasonable input assignment between the decoder output channels and the internal channels is performed automatically by the unit.

Examples:

- With channel mode 3.1 selected, the decoder is set to the Dolby® Pro Logic I type (see Type combo box above right) and the decoder output is routed to the four internal channels this way:

L > left
R > right
C > center
S > surround

- With channel mode 5.1 selected, the decoder is set to the Dolby® Auto (AC-3 / E) type (see Type combo box above right) and the decoder output is routed to the channels 1 to 6.

Nevertheless, the user has the option to modify this pre-selected assignment anytime.

A special selection can be made when 5.1 is selected in the Mode combo box (see Chapter 6.5.2.1) and the decoder type is set to Dolby® AC-3 (see Chapter 6.5.2.2):

- With Decoder selected as input source, the two output channels Aux L and Aux R are available for assignment in addition to the decoded output signals. These two channels carry the downmix signal automatically generated by the internal Dolby® decoder. Please do not confuse these signals with the downmix options that are configurable manually in the unit (see Chapter 6.5.2.5). The downmix signals Aux L and Aux R are a useful way to check how a consumer receiver would generate a downmix signal automatically.

Note:

It is not possible to mix input channels coming from different sources, e. g. if „Digital 3“ is selected as source connector, only the eight channels of this source are available for assignment.

- Channels

(ONLY available with Multi Channel mode, see Fig. 6-30 and Fig. 6-31)
Use this option to define the channel count for the selected source. Available options: 8, 4, 2.

- With 8 selected, all internal channels are assigned to one source as usual.
- With 4 selected, only four internal channels are available in the routing and a second group of four channels is introduced with its own source

selection. This second group can be divided into two groups of two channels with its own Channels combo box set to 2.

- With 2 selected in the first group, up to four groups can be defined this way.

To define groups with different channel counts like 3, it is possible to select a four channel group and switch off one channel in the routing.

- Routing

(ONLY available with Multi Channel mode)
In every group the Routing combo boxes are used to assign the physical input channels of the selected source to the internal channels. Each channel can be assigned individually.

- Stereo

(ONLY available with Multi Channel mode)
This option is only available for Groups with two channels. These groups can be defined as Stereo groups instead of 2-Channel groups. In Stereo groups, both channels share the same listening group while two separate listening groups for both channels are defined if the „Stereo“ option is not checked.

- Listening Group

Up to eight listening groups are defined depending on the selection of the „Channels“ and „Stereo“ options. Each listening group can be monitored separately through the speakers.

Note:
While monitoring Multi Channel sources, all channels are played back via the L and R speakers. The corresponding Peakmeter bargraphs are on top marked with green loudspeaker (see Fig. 6-57). Stereo groups are listened to in stereo while all other channels of a listening group are mixed to mono.

Note:
In Multi Channel mode only, the RTA instrument will follow the selected listening group.

- PPM Input Source

Normally the Peakmeter uses the Monitoring inputs as sources. The source can manually be changed to Meter In analog. Please use button/key 6 in the Toolbar of the Peakmeter instrument in normal display operation to toggle between these input sources.
If one SurroundControl unit is used for different applications with different input sources, it might be necessary to fix the corresponding input sources in different Sub Presets.
With this combo box you can select the options Don’t change, Use Monitoring and Use Meter for the definition of the input source for the Peakmeter.

- Don’t change (default setting by factory)

The Peakmeter uses the source set by default (Monitoring) or set with the selection of one of the other options in another Sub Preset.

- Use Monitoring

The Peakmeter always uses the Monitoring inputs as signal sources.

- Use Meter in

The Peakmeter always uses the Meter In analog input as signal sources.

Note:
All the Sub Presets with the Don't change option selected will follow the last used Sub Preset with the PPM Input Source set to the Use Monitoring or Use Meter in option.

6.5.2.4 Lext/Rext Routing

(ONLY available with 3.1 and 5.1 Surround modes while the „Program Meter" combo box is set to the „PPM" option)

In channel modes 3.1 and 5.1, the user has the option to use free internal channels for monitoring an external two channel signal using the „EX" key on the Remote Control Unit 30050 or on the 31960 front panel. In this way it is very easy to quickly check an external stereo signal, e. g. coming from a CD player, by just pressing the „EX" key without having to select a new sub preset.
The Lext/Rext section offers individual routing and peakmeter settings for this external signal.

Fig. 6-32: The Lext/Rext Routing section (Markierung)

- Peakmeter Settings

The button Peakmeter Settings opens a new menu page used to configure the individual appearance of the peakmeter for the Lext/Rext section.

Note:
The parameters on this menu page are also found when selecting the channel group buttons on the Peakmeter Settings menu page for the Monitoring Routing section and the channel group button on the Two Channel Downmix Settings menu page of the Downmix Routing section. Therefore the menu page for the peakmeter parameters once is described in detail in Chapter 6.5.2.8.

- Source

All physical input connectors plus the decoder output (if enabled) are available as the Lext/Rext input source. Options: Analog 1, Analog 2, Digital 3, Digital 4, SDI (if fitted), Decoder (if enabled).

Note:
The output signal of the decoder is only selectable as a source if the decoder was enabled in the decoder section on the same menu page (see Chapter 6.5.2.2).

- Lext/Rext

These combo boxes are used to assign the channels of the selected signal source (see above) to the internal channels Lext and Rext.

Note:
Please use the „Display Mode for external Monitoring" option on the „Key Settings" menu page (see Chapter 6.12) to select the display mode used after pressing the „EX" button.

6.5.2.5 Downmix Routing

(ONLY available with 3.1, 5.1, 6.1 and 7.1 Surround modes while the „Program Meter“ combo box is set to the „PPM“ selection)

This section offers the option to generate an internal downmix from a selectable source. A stereo-compatible 2-channel signal is downmixed using adjustable factors (see Peakmeter Settings section below). The unit makes the 2-channel downmix signal available as Downmix Direct Out (Routing Matrix designations: DLo, DRo, DMo) and Downmix Volume Out (VLo, VRo) (see Chapter nnn). The Direct Out signal is generated independently of all the channel functions and can be used for recording or as a parallel signal for transmission as a stereo broadcast. The „Vol“ signal is used for monitoring and is thus routed via the Monitoring Controller. You can switch this signal to the L/R channels of the main monitoring system with the „2C“ key on the Remote Control 30050 or the 31960 front panel. All other channels are then muted. Alternatively, you can switch the signal to separate outputs with the Output key, for example when you want to monitor it on a near field loudspeaker system. The necessary settings are made on the „Monitoring Output Routing“ page (see Chapter 6.5.3).

Fig. 6-33: The Downmix Routing section (Markierung)

- Downmix and Peakmeter Settings

The button Peakmeter Settings opens a new menu page which can be used to configure the level parameters for the downmix (frame labeled Downmix Parameters) and the parameters for the downmix vectorscope (buttons and combo boxes on the right). This menu page is described in detail in Chapter 6.5.2.7.

- Source

All physical input connectors plus the decoder output (if enabled) are available as the Lext/Rext input source. Options: Analog 1, Analog 2, Digital 3, Digital 4, SDI (if fitted), Decoder (discrete) (if enabled), Decoder (if enabled).

Note:

The output signal of the decoder is only selectable as a source if the decoder was enabled in the decoder section on the same menu page (see Chapter 6.5.2.2). The „Decoder“ option uses the downmix signal automatically generated by the Dolby® decoder itself, while „Decoder (discrete)“ uses the discrete surround signals delivered by the Dolby® decoder.

Note:

Please use the „Display Mode for Downmix Monitoring“ option on the „Key Settings“ menu page (see Chapter 6.12) to select the display mode used for Downmix Monitoring.

- Close

This button closes the selected Key menu page and returns you to the Global Routing Settings menu page from which you selected the Input Routing.

6.5.2.6 Peakmeter Settings for Monitoring Routing section

(Peakmeter Settings menu page)

The peakmeter section of the unit can be configured individually for each sub preset and each channel mode selected. The button Peakmeter Settings of the Monitoring Metering Routing section (see 6-18 to 6-24) opens the Peakmeter Settings menu page which can be used to configure the individual appearance of the peakmeter for the selected sub preset. The parameters on this page are defined for all channel groups.

Fig. 6-34: The Peakmeter Settings menu page (e. g. 5.1 Surround mode)

- Channel Mode

This field shows the channel mode selected for the sub preset you are working on. To edit the channel mode, close the „Peakmeter Settings“ window and select a new „Mode“ setting.

- Weighting Filter

This combo box is for selecting the weighting filter for the volume level display. Options: Linear+RMS, Awt+RMS (Leq(A)), Cwt+RMS, CCIR+RMS (Leq(M)), ITU BS 1770 R2LB.

- RMS response

This combo box is for setting the response time of the RMS detector for the volume level display. Options: fast, slow.

- Peak Hold fallback time

This combo box is for setting the hold time for the peak hold display. Options: 1 s, 2 s, 4 s, 10 s, 20 s, 30 s and Manual Reset. With Manual Reset selected, you can reset the peak hold display with the Reset function in the PPM instrument (see Chapter X.X).

- Background color

This button displays the color selector so that you can change the color of the background of the screen display.

- Position

With these combo boxes the peakmeter channel groups can be activated and arranged (Off: deactivated, 1: position 1, the channel group is set to the left, 2: position 2, 3: position 3 and 4: position 4, the channel group is set to the right).

- Channel Group

The peakmeter bargraphs can be arranged in individual groups separated from each other. Depending on the selected channel mode, up to four channel groups are available.

- Surround modes:

All the channels of a surround signal (3.1, 5.1, 6.1 or 7.1), the Lo/Ro or Lext/Rext channels and a SPL bargraph can be displayed in separate groups.

Fig. 6-35: The Peakmeter Settings menu page in 6.1 Surround mode as an example

• Multi Channel mode:
The 8 channels of multi channel signals can be displayed all in one group, in two groups with four each, in one group with four and two groups with one pair each and as pairs in four separate groups.

Fig. 6-36: The Peakmeter Settings menu pages with different Multi-Channel modes

• 2 Channel Stereo mode:
The 2 channels of the Stereo channel pair and a SPL bargraph can be displayed in separate groups.

Fig. 6-37: The Peakmeter Settings menu page in 2 Channel Stereo mode

These buttons open the menu pages with the parameters for the peakmeter settings of the corresponding channel groups.

Note:
The menu pages with the peakmeter parameters are nearly the same for the different channel groups of the Peakmeter Settings menu of the Monitoring Metering Routing section (see Figs. 6-18 to 6-24), for the channel group of the Two Channel Downmix Settings of the Downmix Routing section (see Figs. 6-19 to 6-22) and for the Peakmeter Settings of the Lext/Rext Routing section (see Figs. 6-19 to 6-20). Therefore the menu page for the peakmeter parameters once is described in detail in Chapter 6.5.2.8.

• Close
This button closes the menu page and returns you to the Key menu page from which you selected the Peakmeter Settings for the Monitoring Routing.

6.5.2.7 Downmix and Peakmeter Settings for Downmix Routing section
(Two Channel Downmix Settings menu page)

The button Downmix and Peakmeter Settings of the Downmix Routing section (see Figs. 6-19 to 6-22) opens the Two Channel Downmix Settings menu page which can be used to configure the level parameters for the downmix (frame labeled Downmix Parameters), the parameters for the downmix peakmeter (button Channel Group below) and the parameters for the downmix vectorscope (buttons and combo boxes on the right).

Fig. 6-38: The Two Channel Downmix Settings menu page

• Downmix Parameter
The downmix parameters adjust the mixing gains for the individual channel groups (values in dB, adjustment in 0.5 dB steps). In 5.1 format, the surround channels LS and RS are output to the left and right channels, and the Center channel is mixed into both channels with the same level on each side. It is advisable to apply an attenuation of 3 dB for the Center channel.

• Waveform color
This button displays the color selector so that you can select the display color to be used for the signal in the vectorscope of the Downmix instrument display in Window 3 of the normal operation mode.

- Grid color

This button displays the color selector so that you can select the display color to be used for the coordinate grid in the vectorscope of the Downmix instrument display in Window 3 of the normal operation mode.

- Grid

This combo box is for changing the setting of the coordinate grid in the vectorscope of the Downmix instrument display in Window 3 of the normal operation mode. Available settings are: Fine (dots) or Normal (lines).

- AGC

This combo box is for adjusting the downmix vectorscope's AGC (Automatic Gain Control) response time. Available settings are: Fast or Slow.

- Channel Group

The button Channel Group opens a new menu page used to configure the individual appearance of the downmix peakmeter.

Note:

The menu page with the peakmeter parameters selected from here is nearly the same as the menu pages for the different channel groups of the Peakmeter Settings menu of the Metering Routing section (see Figs. 6-18 to 6-24) and the menu page for the Peakmeter Settings of the Lext/Rext Routing section (see Figs. 6-19 to 9-20). Therefore the menu page for the peakmeter parameters once is described in detail in Chapter 6.5.2.8.

- Close

This button closes the menu page and returns you to the Key menu page from which you selected the Peakmeter Settings for the Downmix Routing.

6.5.2.8 Peakmeter Parameters available in the channel groups

After selecting one of the Channel Group buttons as described in 6.5.2.6, different labeled menu pages with generally the same content of peakmeter parameters are opened.

- The Peakmeter – Channel Group menu pages are opened with the Channel Group buttons of the Peakmeter Settings menu page (see Chapter 6.5.2.6 and Figs. 6-35 to 6-37).

- Surround modes:

Fig. 6-39: Example for the Peakmeter – Channel Group menu pages in Surround (3er Bild)

- Multi Channel mode:

Fig. 6-40: Example for the Peakmeter – Channel Group menu pages in Multi-Channel mode (4er Bild)

- 2 Channel Stereo mode:

Fig. 6-41: The Peakmeter – Channel Group menu pages in 2 Channel Stereo mode (2er Bild)

• The Lext/Rext – Channel Group menu page is opened with the Peakmeter Settings button of the Lext/Rext Routing section of the Key 1 to Key 7 menus (see Chapter 6.5.2.4 and Fig. 6-32).

Fig. 6-42: The Lext/Rext – Channel Group menu page

• The Downmix – Channel Group menu page is opened with the Channel Group button of the Two Channel Downmix Settings menu page (see Chapter 6.5.2.7 and Fig. 6-38).

Fig. 6-43: The Downmix – Channel Group menu page

These menu pages can be used to configure the peakmeter display individually for each channel group mentioned. They contain settings for the operating modes, standard settings for the digital and analog signal paths, VU Lead and the display colors for the individual elements. With some exceptions, they apply for all channel groups. The exceptions and individual differences are all explained explicitly where applicable.

• Mode Selected
(Does NOT apply for all Channel Groups, see the following description)
• Surround modes:
• In Peakmeter – Channel Group 1, this field shows the channel mode selected for the sub preset you are working on. To edit the channel mode, close the Peakmeter – Channel Group menu and the Peakmeter Settings menu and select a new Mode setting.
• In Peakmeter – Channel Group 3, this field shows the mode assigned to this channel group, i. e. SPL.
• In Lext/Rext – Channel Group, this field shows the mode assigned to this channel group, i. e. Lext/Rext (only available with 3.1 and 5.1 surround format).
• In Downmix – Channel Group, this field shows the mode assigned to this channel group, i. e. Lo/Ro.

• Multi Channel mode:
• When 8 CH or 4 CH is selected as Channels settings in the Metering Routing section, in Peakmeter – Channel Group 1 this field shows the channel mode selected for the sub preset you are working on. To edit the channel mode, close the Peakmeter – Channel Group menu and the Peakmeter Settings menu and select a new Mode setting.

• 2 Channel Stereo mode:
• In Peakmeter – Channel Group 1, this field shows the channel mode selected for the sub preset you are working on. To edit the channel mode, close the Peakmeter – Channel Group menu and the Peakmeter Settings menu and select a new Mode setting.
• Peakmeter – Channel Group 2 is not available.
• In Peakmeter – Channel Group 3, this field shows the mode assigned to this channel group, i. e. SPL.

• Mode Select
(Does ONLY apply for some Channel Groups, see the following description)
• Surround modes:
This combo box is used to select the display mode for Channel Group 2.

The available options are the downmix signals either generated from the surround format (Lo/Ro) set with the Mode parameter (see Chapter 6.5.2.1) or input from an external source (Lext/Rext). For both signals you can also select the display of the downmix parameters with separate bargraphs for sum and difference (Lo/Ro + Sum/Diff and Lext/Rext + Sum/Diff).

- Multi Channel mode:

When 2 CH is selected for each group as Channels settings in the Metering Routing section, these combo boxes are used to select the display mode for the Channel Groups 1 to 4. The available options are either the solely channel pairs (2 channels or Stereo) or the channel pairs with additional displays of sum and difference in separate bargraphs. The available signals you can select for display are 2 CH, 2 CH + Sum/Diff, 2 CH Stereo + SpCor or 2 CH + Sum/Diff + SpCor.

- 2 Channel Stereo mode:

In 2 Channel Stereo mode there are no combo boxes in the available channel groups. The mode selected is displayed (see Mode Selected above).

Note:

Stereo channel pairs are defined and marked with a spot correlator (SpCor) between the corresponding bargraphs.

- Standard Settings Digital

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)

This combo box applies to the four combo boxes and two list boxes grouped directly below it.

When you select Digital or ARD all these boxes are automatically set to values corresponding to the digital or the ARD standards. If you then change any of the settings of these boxes with the exception of the box „PH integration time“ and the box „Operation indicator area“ manually the text „Non Standard“ is displayed in the Standard Settings Digital combo box. Reselecting Digital or ARD automatically resets all decisive boxes grouped below to the standard values of these presets.

- Scale

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)

This combo box allows you to select the available scales:

- Dig60dB (–60 dB FS to 0 dB FS, standard settings digital)
- Dig20dB (–20 dB FS to 0 dB FS)
- Dig+18 dB... 0 dB (0 dB FS = +18 dB)
- Dig+18 dB... 0... –18 dB (0 dB FS = +18 dB)
- Dig+20 dB... 0... –40 dB (0 dB FS = +20 dB)
- ARD +9 dB... –60 dB (0 dB FS = +9 dB)
- <q> DIN 5 dB (quasi-DIN scale, 0 dB FS = ??)
- <q> DIN 10 dB (quasi-DIN scale, 0 dB FS = ??)
- <q> Zoom +/– 10 dB (quasi-DIN scale, 0 dB FS = ??)
- <q> Zoom +/– 1 dB (quasi-DIN scale, 0 dB FS = ??)
- <q> Nordic (quasi-Nordic scale, 0 dB FS = ??)

- Integration time

(Does NOT apply for Peakmeter – Channel Group 3, see Figs. 6-39)
This combo box allows you to select the integration time of the level display:

- 10 ms
- 20 ms
- 1 ms
- 0.1 ms
- Sample (standard settings digital)

- PH Integration Time

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
This combo box sets the integration time for the peak hold display:

- Integration Time: Uses the same integration time as for the level display (standard settings digital).
- Sample: Uses a sample-precise integration time that is independent of the level display.

- DC-Filter

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
This combo box sets the DC filter. You can switch the filter off (Off) or set it to 5 Hz (standard settings digital), 10 Hz or 20 Hz.

- Headroom

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
This list box sets the beginning of the headroom in the range between –20 dB FS and –5 dB FS. The digital standard setting is –9 dB FS.

Note:
The headroom of the ARD +9 dB... –60 dB scale is fixed to –9 dB FS, a selection in the Headroom list box has no effect.

- Operation indicator area

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
This list box sets the area over which the indicator for the operating area is activated. You can enter values between –20 dB and 0 dB. The digital standard setting is 0 dB.

- Standard Settings Analog

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
This combo box applies to the three combo boxes and the one list box grouped directly below it.
If you select one of the standards listed below the first two boxes are automatically set to the values corresponding to the selected standard. If you then change one of these two boxes manually the text Non Standard is displayed in the Standard Settings Analog combo box. If you then reselect one of the standards the decisive boxes grouped below are automatically reset to the values corresponding to the selected standard.

The following analog standards are available:

- DIN
- Nordic
- British IIa
- British IIb
- VU
- SMPTE
- NHK
- Non Standard

- Scale

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)

This combo box allows you to select the scale you want to use:

- Din5dB (–50 dB to +5 dB, 0 dB display is referred to +6 dBu, DIN standard setting)
- DIN 10 dB (–50 dB to +10 dB, 0 dB is +6 dBu)
- Nordic (–42 dB to +12 dB, 6 dB is +6 dBu, Nordic standard setting)
- British IIa („1“ to „7“, „6“ is +8 dBu, British IIa standard setting)
- British IIb („–12“ to „+12“, „8“ is +8 dBu, British IIb & SMPTE standard setting)
- Vu (–20 dB to +3 dB, 0 dB is +6 dBu, VU standard setting)
- Zoom +/–10dB (–10 dB to +10 dB, 0 dB is +6 dBu)
- Zoom +/–1dB (–1 dB to + 1 dB, 0 dB is +6 dBu)
- SMPTE24dB–abs (–35 dB to +24 dB, 0 dB is 0 dBu)

  Only available when SMPTE/RP155 (+24 dBu) is selected as Reference Level Standard in the Reference Levels menu.
- SMPTE20dB–rel (–40 to +20 dB, 0 dB is +4 dBu)

  Only available when SMPTE/RP155 (+24 dBu) is selected as Reference Level Standard in the Reference Levels menu. The reference level for the 0 dB display is +4 dBu.
- NHK

  Only available when SMPTE/RP155 (+24 dBu) or User (+18 ... +24 dBu) is selected as Reference Level Standard in the Reference Levels menu. The reference level for the 0 dB display refers to the selected standard resp. to the individual selected reference level (see the User list box in the Reference Levels menu).

- Integration time

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)

This combo box sets the integration time for the level display:

- 10 ms (DIN, Nordic & SMPTE standard setting)
- 20 ms (British IIa & British IIb standard setting)
- 1 ms
- 0.1 ms
- 300 ms (VU standard setting)

- PH Integration Time

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)

This combo box sets the integration time for the peak hold display:

- Integration Time: Uses the same integration time as for the level display. This applies for all standard settings.

- Sample: Uses a sample-precise integration time that is independent of the level display.

- Headroom

(Is ONLY available with NHK scale selected and does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
This list box sets the beginning of the headroom in the range between –20 dB FS and –5 dB FS. The digital standard setting is –9 dB FS.

- Operation indicator area

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
This list box sets the area over which the indicator for the operating area is activated. You can enter values between –20 dB and 0 dB. A setting of 0 dB corresponds to 0 dBr. The standard setting is 0 dB.

- VU-Lead

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
This list box is for setting the lead for the VU display. You can enter values between 0 dB and 10 dB.

- Grid Color

This button displays the color selector so that you can change the color of the scale grid for the bargraph display.

- Label/scale/numeric font color

These three buttons each display the color selector so that you can change the color of the label font, the scale font and the numeric font used in the peakmeter display.

- Bargraph enabled

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
With these check boxes the display of each bargraph can be deactivated separately for every channel in the peakmeter display.

- Bargraph normal color

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
These buttons open the channel selector separately for every channel so that you can change the color of each bargraph in the peakmeter display.

- Bargraph operation color

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)
These buttons open the channel selector separately for every channel so that you can change the color of the working range of each bargraph in the peakmeter display.

- Bargraph over color

(Does NOT apply for Peakmeter – Channel Group 3 in Surround and 2 Channel Stereo modes, see Figs. 6-39 and 6-41)

These buttons open the channel selector separately for every channel so that you can change the color of the over range of each bargraph in the peakmeter display.

- RMS indicator color

This button displays the color selector so that you can change the color of the RMS indicator of the bargraphs in the peakmeter display.

- Bargraph background color

These buttons open the channel selector separately for every channel so that you can change the background color of each bargraph in the peakmeter display.

- Tracklayout

(Does ONLY apply for Peakmeter – Channel Group 1 in Surround modes)
This combo box is for selecting the channel sequences of the bargraphs for the individual channel groups. The selection options are available for the 5.1 surround format, for the formats 3.1, 6.1 and 7.1 the track layout is displayed:
For the selection of the format use the Mode Select combo box:

- 3.1: 3.1
- 5.1: SMPTE.TV: L.R.C.LF.LS.RS
  SMPTE.FILM: L.LS.C.RS.R.LF
  DTS: L.R.LS.RS.C.LF
  FILM: L.C.R.LS.RS.LF
  L,C,R,LF,LS,RS
- 6.1: DTS: L.C.R.LS.CS.RS.LF
- 7.1: SMPTE: L.LC.C.RC.R.LS.RS.LF

- SPL Reference indicator

With this option, a spot indicator can be activated for each bargraph of the channel group showing the SPL measurement in each channel.

- Close

This button closes the page and returns you to the menu page from which you selected the Channel Group.

6.5.2.9 Loudness Settings

(„ITU BS.1771 Loudness Settings“ menu page)

Fig. 6-44: The ITU BS.1771 Loudness Settings menu page

This button is shown in the Metering Monitoring Routing section of the page when the „Program Meter“ combo box above is set to the „ITU BS.1771“ option. The loudness options of the unit can be configured individually for each sub preset and the channel modes „2 channel stereo“ and „5.1“.

After clicking the „Loudness Settings“ button, the page „ITU BS.1771 Loudness Settings“ is opened showing the following options:

- Channel Mode

This field shows the channel mode selected for the sub preset you are working on.

- Background color

This button displays the color selector so that you can change the color of the background of the Program Meter area in loudness mode.

- Filter

This option selects the weighting filter used for the loudness calculation. The only option available at this time is the R2LB filter defined by ITU BS.1770.

- Scale

This option selects the scale used for the bargraphs in ITU BS.1771 mode. The only option available at this time is the scale defined by ITU BS.1771.

- Reference

This option selects the digital reference level (in dB FS) for a sine input signal reading 0 dB LU on the loudness bargraphs. For instance, when set to -24 dB FS, a digital sine signal with -24 dB FS at the input will cause the loudness bargraph to read 0 dB LU. The reference can be set to values between -10 dB FS and -30 dB FS in steps of 1 dB FS.

- Channel Group

The menu page opening after clicking the „Channel Group“ button lets you configure the way the bargraphs in the channel section of the Program Meter work after the „Program Meter“ combo box is set to „ITU BS.1771“. The parameters of this Channel Group are described in detail in Chapter 6.5.2.10.

- Sum Group

The Sum Group, located right to the bargraphs of the Channel Group, contains up to 3 additional bargraphs (Momentary, Integrated, Long term) with special functions of the ITU BS.1771 (loudness) mode of the Program Meter. The parameters of the Sum Group are described in detail in Chapter 6.5.2.11.

- Close

This button closes the menu page and returns you to the Key menu page from which you selected the Peakmeter Settings for the Downmix Routing.

6.5.2.10 Parameters available in the Loudness Channel Group

The Channel Group menu page opening after clicking the „Channel Group“ button on the ITU BS.1771 Loudness Settings menu page lets you configure the way the bargraphs in the channel section of the Program Meter work after the „Program Meter“ combo box is set to „ITU BS.1771“.

Fig. 6-45: The Channel Group menu page for the Loudness Settings

The Channel Group consists of 2 bargraphs in 2 channel stereo mode and 6 bargraphs in 5.1 mode. Each bargraph shows a combination of PPM and loudness bargraphs (the loudness section of this display mode conforming to ITU standard BS.1771). This mode divides the bargraphs into three vertical sections: The center shows the loudness conforming to ITU BS.1771 while the both outer sections show the PPM metering being set on this page.

- Standard Settings Digital

As the ITU BS.1771 standard is only defined for digital input signals, the only option selectable here is „Digital“.

- Scale

As the ITU BS.1771 standard is only defined for digital input signals, the only option selectable here is „Dig60dB“ (–60 dBFS to 0 dBFS, standard settings digital).

- Integration time

This combo box allows you to select the integration time of the level display:

- 10 ms
- 20 ms
- 1 ms
- 0.1 ms
- Sample (standard settings digital)

- DC-Filter

This combo box sets the DC filter. You can switch the filter off (Off) or set it to 5 Hz (standard settings digital), 10 Hz or 20 Hz.

- Headroom

This list box sets the beginning of the headroom in the range between –20 dB FS and –5 dB FS. The digital standard setting is –9 dB FS.

- Operation indicator area

This list box sets the area over which the indicator for the operating area is activated. You can enter values between –20 dB and 0 dB. The digital standard setting is 0 dB.

- Peak Hold fallback time

This combo box is for setting the hold time for the peak hold display. Options: 1 s, 2 s, 4 s, 10 s, 20 s, 30 s and Manual Reset. With Manual Reset selected, you can reset the peak hold display with the Reset function in the PPM instrument (see Chapter X.X).

- Mode

This combo box is for switching the Peak Hold function on or off. Options: Normal, Peakhold.

- PPM Type

This combo box is for selecting the type of the PPM display. Options: Bar, Spot.

- Loudness

- Operation indicator area

This list box sets the area over which the indicator for the operating area is activated. You can enter values between –20 dB and 0 dB. The digital standard setting is 0 dB.

- PPM Grid Color

This button displays the color selector so that you can change the color of the scale grid for the PPMs.

- PPM Scale font color

This button displays the color selector so that you can change the color of the scale font used for the PPM labels.

- PPM enabled

With these check boxes the PPM part of each bargraph can be deactivated separately for every channel in the Channel Group.

- PPM normal color

These buttons open the channel selector separately for every channel so that you can change the color of each PPM bargraph.

- PPM operation color

These buttons open the channel selector separately for every channel so that you can change the color of the working range of each PPM bargraph in the Channel Group.

- PPM over color

These buttons open the channel selector separately for every channel so that you can change the color of the over range of each PPM bargraph in the Channel Group.

- PPM background color

These buttons open the channel selector separately for every channel so that you can change the background color of each PPM bargraph in the Channel Group.

- Loudness Grid Color

This button displays the color selector so that you can change the color of the scale grid for the loudness bargraphs.

- Loudness Label/scale/numeric font color

These three buttons each display the color selector so that you can change the color of the label font, the scale font and the numeric font used for the loudness bargraphs.

- Loudness enabled

With these check boxes the Loudness part of each bargraph can be deactivated separately for every channel in the Channel Group.

- Loudness normal color

These buttons open the channel selector separately for every channel so that you can change the color of each loudness bargraph in the Channel Group.

- Loudness operation color

These buttons open the channel selector separately for every channel so that you can change the color of the working range of each loudness bargraph in the Channel Group.

- Loudness over color

These buttons open the channel selector separately for every channel so that you can change the color of the over range of each loudness bargraph in the Channel Group.

- Loudness background color

These buttons open the channel selector separately for every channel so that you can change the background color of each loudness bargraph in the Channel Group.

- Tracklayout

This combo box is for selecting the channel sequences of the bargraphs for the individual channel groups.

For the selection of the format use the Mode Select combo box:

- 5.1: SMPTE.TV: L.R.C.LF.LS.RS
  SMPTE.FILM: L.LS.C.RS.R.LF
  DTS: L.R.LS.RS.C.LF
  FILM: L.C.R.LS.RS.LF
  L,C,R,LF,LS,RS

- Close

This button closes the page and returns you to the Loudness menu page from which you selected the Channel Group.

6.5.2.11 Parameters available in the Loudness Sum Group

In normal display operation up to three additional Loudness bargraphs (Loudness Sum Group) with special functions of the ITU BS.1771 (Loudness) mode are located right to the Loudness channel bargraphs (Loudness Channel Group) in the Program Meter display (see Fig. XX).
The additional bargraphs are:

- Momentary bargraph

The „Momentary“ bargraph, labelled „M“ by default, shows the summed loudness of all channels in the Channel Group. The integration time used for this is variable.

- Integrated bargraph

The „Integrated“ bargraph, labelled „I“ by default, shows the integration of the loudness history of the summed signal over the last 5 - 20 seconds. This calculation uses a dynamic time window.

- Long term bargraph

The „Long term“ bargraph, labelled „L“ by default, shows the integration of loudness values over up to 7 days 23 hours. This is done by taking integrated loudness values once a second, recording them in the internal memory and calculating the average loudness. Special care is taken to exclude signal breaks from the calculation by introducing a threshold level. As soon as the signal level falls under this value, the values are no longer included in the calculation.

Fig. 6-46: The Loudness Sum Group menu page

The parameters of the Sum Group are as follows:

- General

- Alarm Threshold

With this list box the Alarm threshold value in dB LU can be set. Signals exceeding this value are triggering the Alarm signalisation in the display. Options: 0.0 dB LU - 9.0 dB LU in steps of 0.5 dB LU.

- Alarm Hold

With this combo box the hold time for the Alarm signalisation can be selected. Options: 1 s, 5 s, Manual Reset.

- Momentary

- Integration time

With this combo box the integration time for the „Momentary“ bargraph can be selected. Options: IEC 125 ms, 250 ms, 500 ms, 750 ms, IEC 1000 ms, 1500 ms, 2000 ms.

- Integrated

- Weighting time

With this list box the Weighting time for the „Integrated“ bargraph can be set. Options: 5 s - 20 s in steps of 1 second.

- Long term

- Use Threshold

With this check box activated, the threshold function is used so that values falling under the threshold selected are ignored in the calculation.

- Threshold mode

With this combo box the properties of the Threshold can be selected:

- fixed: The Threshold can be set to an absolute value, the list box below is correspondently labelled with Threshold absolute
- dynamic: The Threshold can be set to a dynamic time window as described in the Long term bargraph section above. The list box below now is correspondently labelled with Threshold offset

- Threshold absolute

This list box sets the absolute threshold value used when the Threshold mode is set to „fixed“. Signals under the selected value are ignored in the calculation. Options: –40 to 0 dB LU in 1 dB LU steps.

- Threshold offset

This list box sets the threshold offset value used when the Threshold mode is set to „dynamic“. Options: –12 dB LU to 0 dB LU in 1 dB LU steps.

- Integration time

This option sets the integration time for the Long term calculation. The time interval can be entered in days/hours with two list boxes to the maximum of 7 days 23 hours in steps of 1 hour.

- Recalc data

With this check box activated it is possible to execute a recalculation of the Loudness values when any Loudness parameters have been changed.

- Operation indicator area

This list box sets the area over which the indicator for the operating area is activated. You can enter values between –20 dB and 0 dB. The digital standard setting is 0 dB.

- Grid Color

This button displays the color selector so that you can change the color of the scale grid for the M, I and L bargraphs.

- Label/numeric font color

These two buttons each display the color selector so that you can change the color of the label font and the numeric font used for the M, I and L bargraphs.

- Channel

These text fields are used to enter individual names for the three bargraphs of the Sum Group. While positioning the mouse into the field you want to edit, use the right mouse key to open the alphanumerical „Channel Label“ page and select individual names.

- Bargraph enabled

With these check boxes each bargraph can be deactivated separately.

- Bargraph normal color

These buttons open the channel selector so that you can change the color of each bargraph in the Sum Group.

- Bargraph operation color

These buttons open the channel selector so that you can change the color of the working range of each bargraph in the Sum Group.

- Bargraph over color

These buttons open the channel selector separately for every channel so that you can change the color of the over range of each bargraph in the Sum Group.

- Bargraph background color

These buttons open the channel selector separately for every channel so that you can change the background color of each bargraph in the Sum Group.

- Numerical enabled

With these check boxes the numerical displays of the „I“ and „L“ bargraphs can be deactivated.

- Channel Weighting ITU BS.1771 Format 5.1

For 5.1 mode, the weighting of each individual channel for the calculation of the „M“, „I“ and „L“ bargraphs can be varied with this option between –3 and +3 dB in steps of 0.5 dB.

Note:

For 2 Channel Stereo mode, only the list boxes for the left and the right channel are available. There is then no headline for this section.

- Close

This button closes the page and returns you to the Loudness menu page from which you selected the Sum Group.

6.5.3 Monitoring Output Routing

This button opens the menu page „Global Monitoring Output Routing“. It contains routing matrices for the outputs of the Monitoring connectors „Digital 3 In/Out“, „Digital 4 In/Out“ and „Analog Out“. The channels of the output connectors can be assigned to individual internal channels (L, R, etc.) independently. This gives the option to set up separate output routings. Using the „Output“ key on the Remote Control 30050 or the 31960 front panel (or the „Out „ toggle button in the Toolbar on the screen), it is easy to switch between two independent monitoring systems connected to the unit, for example one analog and one digital. Please use the „Output Key Mode“ section on the „Global Routing Settings“ page (see Chapter 6.5) to define how the „Output“ key works.

Fig. 6-47: The Global Monitoring Output Routing menu page

- Mode

It is possible to select an individual channel mode for the output section independently from the channel mode selected for the monitoring input routing and the internal processing. All channel modes from 2 channel stereo to multi channel mode are available for the outputs. Nevertheless, the default setting for this option will always be the same as the monitoring input routing channel mode selected for the sub preset you are working on. This can be modified by selecting a different channel mode here if needed.

- Digital Out 3, Direct Out 3, Digital Out 4, Direct Out 4

For each channel of the „ Digital Out 3“ and „ Digital Out 4“ connectors (1a, 1b, …, 4a, 4b), an individual signal is selectable depending on the channel mode selected (see above).

If the option „use direct out“ is selected instead in „Digital Out 3“, this output connector can be used as a multi-purpose direct output similar to a router. All analog and digital input signals, the discrete output signals and the downmixed decoder outputs can be directed to the direct outs. Also the signal of the Global Generator (see Chapter 6.8) is available. None of the monitor controller functions (solo, mute, listening levels) are applied to the direct out signals.

- Analog Out

For each channel of the „ Analog Out“ connector (1 - 8), an individual signal is selectable depending on the channel mode selected (see above).

6.6 Audio System

After selecting the Audio System tab the Global Audio Settings menu page is shown.

Fig. 6-48: The Global Audio Settings menu page

This menu page is used to configure the audio processing of the unit and, among others, contains all settings related to system clocking, sample rates and analog and digital level- and delay settings for the monitoring outputs.

- Internal sampling rate if no external reference present

With this combo box one of the available internal sampling rates (44100 Hz, 48000 Hz, and 96000 Hz) can be set to be used for the analog inputs when no digital signal is available to be used as a reference sync signal. As soon as digital signals are input to the unit or a valid external reference signal is available and is selected as the sync source with the External Reference Source combo box (see below), the internal A/D and D/A converters and the digital outputs will always use the sampling rate of the digital signal or reference sync signal.

- External reference source

This function offers many different options for synchronizing the unit to an external reference source, taking into respect several conditions.

In an ideal world, there's a common reference clock for all digital equipment used in the studio environment. In this case, all digital sources connected to the digital audio inputs of the unit are in sync.

Nevertheless in the real world it happens that digital sources are connected to the unit that are not in sync to the studio reference, e. g. an external DVD player or a SDI signal. In this case, the reference source option „Monitoring Input" can be used. In this setting, the reference source will always follow the monitoring input signal selected by the user. In this way, the unit will be in sync to its digital input signal at any given time.

Note:

Whereas the analog monitoring output signal will be muted while digital input signals are switched in this mode to avoid clicks caused by the switching of the reference source, it is not possible to avoid this for the digital outputs. It is therefore strongly recommended to mute the connected digital components while switching the reference source.

The following options are available for the external reference source:

- Monitoring Input The monitoring input signal selected by the user is used as external reference source.
- Auto Search This setting automatically polls the digital inputs for a valid digital signal. As soon as a valid signal is found it is used as the reference sync signal. If this signal is no longer available the system polls the other inputs until it finds a valid signal, and the digital inputs are muted while this is being done.
- Use Ref Input: Presets the system to the Ref Sync IN input connector (see Chapter 7.3.15).

Note:

No automatic search is performed when this setting is activated! If there is no reference sync signal, the digital input signals are no longer displayed and the analog input signals are only displayed with a very narrow bandwidth.

- Dig 3.12 to Dig 4.78 (Dig 3.12 is AES input 1 of the Digital 3 In/Out connector, internal channels 1 and 2; Dig 3.34 is AES input 2 of the

Digital 3 In/Out connector, internal channels 3 and 4; ...; Dig 4.56 is AES input 3 of the Digital 4 In/Out connector, internal channels 5 and 6; Dig 4.78 is AES input 4 of the Digital 4 In/Out connector, internal channels 7 and 8) One of the eight available digital input pairs can be selected so that its digital signals can be used as the reference sync signal.

Note:
No automatic search is performed when this setting is activated! If there is no reference sync signal, the digital input signals are no longer displayed and the analog input signals are only displayed with a very narrow bandwidth.

- Use SDI Input: If using the signal connected to the SDI interface, the SDI source must always be the master.

- Force reference source to SDI input if monitoring SDI

If one of the digital inputs, the Auto Search function or the reference input is selected for the reference source, with this option the unit can be forced to switch its reference to the SDI input whenever monitoring a SDI source. This option can be seen as a special version of the „Monitoring Input“ option (see above) where the reference source only follows the monitoring selection in case SDI is selected for monitoring. For all other monitoring sources except SDI the unit will use the reference source selected under „External Reference Source“ (see above).

Note:
If „Monitoring Input“ or „Use SDI Input“ is selected for the external reference source, this option of course is not available.

- A-D Samplerate Source

Using this option, it is possible to define a separate sample rate source only for the A-D converters of the unit. For example, this can be useful to synchronize the A-D converters to the internal 96 kHz clock while the unit is locked to a 48 kHz digital input signal.

- A-D locked to internal samplerate

The A-D converters are always locked to the internal reference selected for the unit.

Note:
Activating this option will disable the downmix from a digital input source during the time an analog source is selected for monitoring. Digital signals are synchronized to the closest available digital sample rate.

- A-D follows reference below

The A-D converters use the digital reference source selected in the combo box below.

The following options are available:

- Auto Search This setting automatically polls the digital inputs for a valid digital signal. As soon as a valid signal is found it is used as the reference sync signal. If this signal is no longer available the system polls the other inputs until it finds a valid signal, and the digital inputs are muted while this is being done.

- Use Ref Input Presets the system to the „Ref Sync IN“ input.

- Dig 3.12 to Dig 4.78 (Dig 3.12 is AES input 1 of the Digital 3 In/Out connector, internal channels 1 and 2; Dig 3.34 is AES input 2 of the Digital 3 In/Out connector, internal channels 3 and 4; ...; Dig 4.56 is AES input 3 of the Digital 4 In/Out connector, internal channels 5 and 6; Dig 4.78 is AES input 4 of the Digital 4 In/Out connector, internal channels 7 and 8)
One of the eight available digital input pairs can be selected so that its digital signal can be used as the reference sync signal.

- Use SDI Input: If using the signal connected to the SDI interface, the SDI source is always the master. In this case, the unit has to be synchronized to its SDI input.

- Maximum SPL-Level
This option defines the maximum SPL that the user can set with the monitoring level control on the Remote Control Unit 30050 or the 31960 front panel. Available range: 10 dB to 99.5 dB.

- Set Power-On SPL
This option is used to define the SPL level the system uses after Power On. Available range: 20 dB to 100 dB.

- Analog Trim dB/Digital Trim dB
These list boxes read the monitor level trim values of individual speaker channels selected as defined in the Cal instrument (see Chapter X.X). A modification can also be performed here.

- Delay Unit
The delay setting can be made with the units „cm“ or „ms“. This function corresponds to the Delay Unit function of the Cal instrument (see Chapter X.X).
- ms: Allows you to set the desired delay individually for each channel
- cm: Deviation of the loudspeaker’s position from the ITU ideal position in cm

- Analog Delay/Digital Delay
With these list boxes, the delay values can be set separately for both analog or digital outputs (see the Cal instrument, the sub-function of the Monitoring instrument, in Chapters XX and XX).

- With the selection „ms“ as the unit (see Delay Unit above and Chapter XX); individual time delay values may be set for all speaker channels.

- With the selection of „cm“ as the unit the left front speaker (L) is used as the reference point (marked with Ref in the display of the Monitoring instrument). Loudspeaker positioning according to the ITU standard is assumed as the basis. Deviations from this ideal circle can be set for all loudspeaker positions in the Cal instrument as positive (larger) and negative (smaller) distance values in cm, separately for analog and digital outputs:
- Entering positive values in the Cal instrument delays the selected channel and moves it back acoustically. The corresponding values are also

displayed on the Audio System menu tab in the list boxes for the delay (see Chapter XX).

Fig. 6-49: Comparison of the entered positive delay values in the Cal instrument and the displayed values on the Audio System menu page

• Entering negative values in the Cal instrument (e. g. –12 cm) leaves the selected channel unchanged and applies the select delay value (e. g. 12 absolute) to all the other channels. All channels are delayed except the selected channel, thus moving the selected channel forward acoustically. This is reflected in the values displayed in the delay list boxes on the Audio System menu tab (see Chapter XX, e. g. selected channels: 0 cm, all other: 12 cm)

Fig. 6-50: Comparison of the entered negative delay values in the Cal instrument and the displayed values on the Audio System menu page

Note:
Delay settings can be used to compensate for surround or stereo monitoring installations where not all speakers are positioned at equal distances to the listener.

Note:
The latency introduced by the A-D and D-A converters in the signal chain are not reflected by these settings. To compensate for the delay between the analog and digital outputs, the converter delays for the sample rate used must be entered in the digital delay settings (see table below showing the converter latency at the available sample rates).

6.7 Reference Levels

This menu page contains options for setting the reference levels of the analog inputs and outputs and the calibration levels of the test signal generator (see Chapter XX).
The Analog Metering Reference Level Offset list box can be used to adjust the analog inputs to local applications.

Fig. 6-51: The Reference Levels menu page

• Calibration Reference Level 1 to 3
These list boxes are used to set the various output levels for the test signal generator. The factory defaults are –20 dB FS, –18 dB FS and –9 dB FS. The adjustment of values is possible in 0.5 dB steps.

The current settings are also converted to dBu and displayed to the right of the list boxes.

• Reference Level Standard
This combo box sets the analog output level that corresponds to the digital value 0 dBFS. Available options:
• EBU R68 (+18 dBu)
• SMPTE/RP155 (+24 dBu)

- ARD HFBL-K (+15 dBu)
- User (+18...+24 dBu)

With the „User“ option selected an additional list box opens for the individual selection of the maximum level between +18 dBu and +24 dBu.

- Test Signal Limiter

The test signal generator (see Chapter XX) is equipped with an automatic limiter for sine wave signals to protect the monitoring system. The maximum level of the test signal generator is –9 dB FS for frequencies up to 1 kHz and –18 dB FS for frequencies above 1 kHz.
By default, this limiter is active. It can be switched off by deselecting this checkbox.

- Analog Metering Reference Level Offset

With this list box the reference level of the metering display can be adapted to local conditions. Selections can be made in 0.1 dB steps in a range of ±8 dB.

Example:
The unit is factory preset to „0 dB“ display at +6 dBu input level for analog signals using the DIN scale.
Selecting „+1 dB“ in the „Analog Metering Reference Level Offset“ list box will move the „0 dB“ mark of the metering 1 dB up the scale. Put another way, the input signal is attenuated 1 dB. This means that an input signal level of +6 dBu will be displayed „–1 dB“ instead of „0 dB“.
The other way round, selecting „–1 dB“ in the „Analog Metering Reference Level Offset“ list box will move the „0 dB“ mark of the metering 1 dB down the scale. Put another way, the input signal is amplified 1 dB. This means that an input signal level of +6 dBu will be displayed „+1 dB“ instead of „0 dB“.

6.8 Global Generator Settings

If you have the need of a permanently available test signal, the options for the Global Generator (a simple digital test signal generator) can be selected on this menu page. Then the signal must be routed to one or more of the digital outputs. Therefore use the Global Generator option which can be found in the Direct Out 3 and Direct Out 4 combo boxes on the Global Monitoring Output Routing settings menu page of the Global Routing Settings (see Chapter 6.5.3) resp. the corresponding menu pages of the Local Routing.

Note:
The Global Generator is independent from the Test Signal Generator of the CAL instrument (see Chapter xxx)!

Fig. 6-52: The Global Generator Settings menu page

- Enable

Activating this check box enables the global generator and routes the digital test signal to the selected outputs.

- Level

With this list box the level for the test signal can be set. Values between –60 dB FS and 0 dB FS in steps of 1 dB are available.

- Signal

With this combo box the character of the signal can be selected: Sine (sine wave) or Noise.

- Frequency

This combo box is for the selection of the frequency for the test signal. The following values are available: 20, 25, 50, 100, 250, 500, 1k, 2k, 4k, 8k and 10k Hz.

6.9 Over Indicator

This menu page contains options for setting the response of the digital Over indicator.

Fig. 6-53: The Over Indicator menu page

- Resolution

This list box allows you to switch the digital word length to be evaluated for the Over display between 16 and 24 bits.

- Over Samples

This list box is for setting the number of directly successive samples that must meet the condition set with the Over Sensitivity option (see below) for an Over display to be triggered. You can adjust the number of Over Samples between 1 and 15.

- Over Sensitivity

This combo box is for setting the response threshold for the Over display. Available conditions: Full Scale, Full Scale –1LSB, Full Scale –2 LSB, –0.1 dB, –0.5 dB, –1.0 dB, –2.0 dB and –3.0 dB.

6.10 Communication and Time

This tab opens the menu page Global Communication and Time Settings used to set an IP address and the internal time system. The IP address is for the operation of the unit in a network and essential for software upgrades as well as the import or export of user presets (see Chapter XX for more details). The internal time system can either be synchronized to a NTP server or be set manually. It e. g. provides the basis for the ITU BS.1771 Long term readings and documentation.

Fig. 6-54: The Global Communication and Time Settings menu page

- Use DHCP (Dynamic Host Configuration Protocol)

With this checkbox the automatic and dynamic allocation of an IP address can be activated when a suitable server is used.

- IP Address (4 x)

The unit can be accessed in a network via an IP address. All four 3-digit blocks of the address in the four list boxes must be entered.

- Netmask (4 x)

These four list boxes define up to what part of an IP address the network or the computer is specified.

- Gateway (4 x)

These four list boxes define the IP address of the computer used as bridge to other networks.

- Nameserver (4 x)

The nameserver converts domain names into appropriate IP addresses and vice versa. This allows the entry of a name in plain text into a text field e. g. for the NTP Server (see below) without knowing its IP address. These four list boxes define the IP address where the nameserver is located.

Note:

When the startup sequence of the SurroundControl 31900/31960 series is running the TCP/IP and the netmask addresses are shown in the lower right edge of the display.

- Use NTP Server

The Network Time Protocol (NTP) is a protocol for synchronizing a system clock by querying NTP servers. This check box enables the internal NTP client, which daily synchronizes the time system with the NTP server named with the NTP Server Name text field.

- Set time from NTP server

Pressing this button immediately starts the synchronization of the time system via NTP server. The device can be blocked for some minutes until it is synchronized.

- NTP Server Name

Selecting the text field opens the NTP Server menu page with a keypad for entering the internet address of the NTP server (e. g. pool.ntp.org, see Fig. 6-54).

- Year, Month, Day of month, Hour, Minute, Seconds

With these list boxes the current date and the current time can be set manually.

- Timezone

This combo box offers the common defined time zones. Select the one which corresponds to your country.

- Set time manually

This button starts running the time system with the settings made for the current date, the current time and the corresponding time zone.

6.11 Alarm Configuration

This tab opens the Global Alarm Setting menu page used to configure the display or output of alarm events for the modes.

Fig. 6-55: The Global Alarm Setting menu page

6.11.1 Alarms General Settings
(see Fig. 6-55)

- On/Off

With these option boxes the alarm functions can be activated (On) or deactivated (Off).
When the alarm functions are activated the preset threshold levels are marked with small triangles right beside the bargraphs of the peakmeter. The identified events are displayed in the display areas of the Digital Over indicator (see Figs. 6-56 and 6-57) for each channel without any weighting. The alarm events also can be output via the outputs of the GP IO interface (see Chapter 7.3.16).

Fig. 6-56: Display elements of the Program Meter instruments alarm functions. Example: PPM in Surround mode

Fig. 6-57: Display elements of the Program Meter instruments alarm functions. Example: PPM in Multi-Channel mode

- Output Signal Timing

This combo box is for the selection of the time period of the display or output impulse activated when an alarm event is identified.
- Selecting 0.1, 0.5, 1, 2 or 4 defines the time period in seconds in which the event output is active. It remains active after the selected time period has passed when the conditions for the alarm event are still or again complied.
- Selecting Hold defines, that the active state is kept until a reset with the Reset button/key 2 of the PPM instrument (see Chapter X.X) is made.
- Selecting Event keeps the output active as long as the condition for the alarm event is complied.

With the Alarm-Event Type Selection combo boxes (see Chapter 6.11.4) the several impulse types of each channel of the selected mode can be routed to the corresponding outputs.

- Output Logic

This combo box defines the logical state of the active event outputs. Available options: Active Low and Active High.

6.11.2 Alarms Threshold Settings
(see Fig. 6-55)

- Analog Threshold Over Alarm

This list box is used for setting the Over level threshold in dBu. Exceeding this threshold will activate the alarm event „Over“ for the time period selected with Alarms Timing (see Chapter 6.11.3).

Values between +18 dBu and –55 dBu can be selected in 0.5 dB steps.

- PML

This check box activates the Permitted Maximum Level function („0 dB“). The alarm event Over will be activated when the PML value of the displayed peakmeter is exceeded. This value depends on the current scale (see example in Fig. 6-57).
With the PML check box activated, the selected value for Analog Threshold Over Alarm has no effect, this list box is hided.

- Analog Silence Alarm

This list box is used for setting the Silence level threshold in dBu. A signal falling below this threshold will activate the alarm event Silence for the time period selected with Alarms Timing (see Chapter 6.11.3).
Values between 0 dBu and –60 dBu can be selected in 0.5 dB steps.

Note:

The threshold value is indicated in dBu as absolute level. The setting of the Analog Metering Reference Level Offset list box on the Reference Levels menu tab (see Chapter 6.8) has no effect on the supplied threshold values.

- Digital Threshold Over Alarm

This list box is used for setting the Over level threshold in dB FS. Exceeding this threshold will activate the alarm event Over for the time period selected with Alarms Timing (see Chapter 6.11.3).
Values between 0 dB FS and –55 dB FS can be selected in 0.5 dB steps.

- Headroom

With this check box enabled, the alarm event Over will be activated when the Headroom value of the displayed peakmeter is exceeded (see example in Fig. 6-57).
With the Headroom check box activated, the selected value for Digital Threshold Over Alarm has no effect, this list box is hided.

- Digital Silence Alarm

This list box is for setting the Silence level threshold in dB FS. Falling below this threshold will activate the alarm event Silence for the time period selected with Alarms Timing (see Chapter 6.11.3).
Values between –10 dB FS and –55 dB FS can be selected in 0.5 dB steps.

6.11.3 Alarms Timing

(see Fig. 6-55)

- Threshold Over Attack Time

This combo box is used to select the time period for the threshold condition (see Chapter 6.11.2) before the alarm event Over is activated.

- With PPM-Integration selected, the current integration time of the displayed peakmeter is used without any weighting.
- The values 0.1, 0.5, 1, 2 or 4 define a corresponding integration time in seconds.

- Silence Attack Time

This combo box is used to select the time period for the threshold condition

(see Chapter 6.11.2) before the alarm event Silence is activated. Available values are 0.1, 0.5, 1, 2, 4 or 8 seconds.

6.11.4 Alarm-Event Type Selection

(see Fig. 6-55)

The following eight combo boxes are used to define which alarm event type is routed to which output of the GP IO interface (see Chapter 7.3.16).
The tables on the next pages (Figs. 6-58 and 6-59) show the assignments with different modes selected.

- Threshold Over: Exceeding the upper threshold value activates the alarm event Over according to the settings.
- Digital Over: Meeting or exceeding the above preset clipping threshold Digital Over activates the alarm event according to the settings.
- Silence: Falling below the lower threshold value activates the alarm event Silence according to the settings.

- Surround modes

Fig. 6-58: Selection of the alarm event type options (Alarm Event Type Selection) in Surround mode (Übersicht Surround aus 10900)

- Multi Channel modes

Fig. 6-59: Selection of the alarm event type options (Alarm Event Type Selection) in Multi-Channel mode (Übersicht Multi-Channel aus 10900)

6.12 Key Settings

This menu page contains options for defining which single keys on the Remote Control Unit 30050 or on the 31960 front panel, key groups (see Chapter X.X [3.1 alt]) or control inputs of the GPIO interface (see Chapter 7.3.16) can be locked or configured with different functions.

Fig. 6-60: The Key Settings menu page

Note:
Regardless of these settings all locked functions are still operational using the graphical interface and the mouse.

6.12.1 Preset Recall Mode

(see Fig. 6-60)

- Off

With this option button selected, all keys and control inputs have normal functions as described in the several Chapters of this operating manual (see Chapters X.X and X.X).

- All Keys

With this option button selected, the buttons/keys 1 to 7 (see Chapter X.X) on the Remote Control Unit 30050 or on the 31960 front panel and the

corresponding control inputs of the GPIO interface (see Chapter 7.3.16) can be used for selecting the User Presets U 1 to U 7. The screen buttons MODE, MORE and INSTR are grayed out and not functional in this mode.

Fig. 6-61: Toolbar with All Keys option in the Key settings menu page activated

- GPI only

With this option button selected, the corresponding control inputs of the GP IO interface (see Chapters X.X and X.X) can be used only for the User Presets selection U 1 to U 7. The keys on the Remote Control Unit 30050 or on the 31960 front panel and the corresponding buttons of the Toolbar retain their normal functions.

6.12.2 Display Mode for External Monitoring

(see Fig. 6-60)

These buttons allow calling a new instrument when using the „2-Ch-External-to-Front“ function with the „EX“ key on the Remote Control Unit 30050 or on the 31960 front panel (see Chapter X.X).

- No Change

Pressing the „EX“ key (see Chapter X.X) only switches the external channels to the front loudspeakers (2-Ch-External-to-Front); no new instrument is called.

- Surround Sound Analyzer

Pressing the „EX“ key (see Chapter X.X) automatically calls the Surround Sound Analyzer instrument (SSA, see Chapters X.X and X.X) in 2-channel mode while switching the external channels to the front loudspeakers. Now this instrument is shown in Window 3 of the display with only the L and R channels active. When the 2-Ch-External-to-Front function („EX“ key, see Chapter X.X) is deselected, the display returns to the previous mode.

- Vectorscope

Pressing the „EX“ key (see Chapter X.X) automatically calls the vectorscope instrument (see Chapters X.X, settings with the Extern menu see Chapter X.X) in 2-channel mode while switching the external channels to the front loudspeakers. Now this vectorscope is shown in Window 3 of the display. When the 2-Ch-Extern-to-Front function („EX“ key, see Chapter X.X) is deselected, the display returns to the previous mode.

6.12.3 Display Mode for Downmix Monitoring

(see Fig. 6-60)

These buttons allow calling a new instrument when using the „2-Ch-Down-mix-to-Front“ function with the „2C“ key on the Remote Control Unit 30050 or on the 31960 front panel (see Chapter X.X).

- No Change

Pressing the „2C“ key (see Chapter X.X) only switches the downmix channels to the front loudspeakers (2-Ch-downmix-to-Front); no new instrument is called.

- Surround Sound Analyzer

Pressing the „2C“ key (see Chapter X.X) automatically calls the Surround Sound Analyzer instrument (SSA, see Chapters X.X and X.X) in 2-channel mode while switching the downmix channels to the front loudspeakers. Now this instrument is shown in Window 3 of the display with only the L and R channels active. When the 2-Ch-downmix-to-front function („2C“ key, see Chapter X.X) is deselected, the display returns to the previous mode.

- Downmix Meter

Pressing the 2C key (see Chapter X.X) automatically calls the 2-Channel Downmix Meter instrument (see Chapters X.X and X.X, settings with the Two Channel Downmix menu see Chapter X.X) while switching the downmix channels to the front loudspeakers. Now this instrument is shown in Window 3 of the display. The settings of the Peakmeter - Channel Group menu (see Chapter 6.5.2.8) are used for the peakmeter display. When the „2-Ch-downmix-to-front“ function („2C“ key, see Chapter X.X) is deselected, the display returns to the previous mode.

6.12.4 Disable Keys/GPI

(see Fig. 6-60)

Keys, key groups or control inputs of the GP IO interface (see Chapter 7.3.11) can be locked individually.

- Serial Remote Functions/Control Keys

Activating this checkbox locks the function and control keys of the Remote Control 30050. The message „Serial Remote function and control keys disabled“ is displayed in the Toolbar of the display when using one of the deactivated keys.

- Serial Remote Channel Keys

Activating this checkbox locks the channel keys (see Fig. X.X) of the Remote Control 30050 (see Chapters X.X and X.X). In detail, the following keys are locked:

- 5.1 format: L, C, R, LS, RS, LF, CS and M key
- 6.1 format: L, C, R, LS, RS, LF, CS and M key
- 7.1 format: L, 2C, C, EX, R, LS, RS, LF, CS and M key

The message „Serial Remote channel keys disabled“ is displayed in the Toolbar of the display when using one of the deactivated keys.

- Serial Remote Input/Output Select Keys

Activating this checkbox locks the corresponding keys for the Monitoring (see Figs. X.X and X.X) of the Remote Control 30050 (see Chapters X.X and X.X). In detail, the following keys are locked:

- 5.1 format: 2C, EX, Input and Output key
- 6.1 format: 2C, EX, Input and Output key
- 7.1 format: Input and Output key

The message „Serial Remote input select keys disabled“ is displayed in the Toolbar of the display when using one of the deactivated keys.

- Serial Remote DIM Key

Activating this checkbox locks the „DIM“ key (see Figs. X.X and X.X) of the Remote Control 30050 (see Chapters X.X and X.X). The message „Serial Remote DIM key disabled“ is displayed in the Toolbar of the display when using the deactivated key.

- Remote Display Keys

Activating this check box locks the function and control keys of the Remote Display 30010 (see Chapter X.X). The message „Remote display keys disabled“ is displayed in the Toolbar Window 4 of the display when using one of the deactivated keys.

- GPI (Parallel Remote)

Activating this check box locks the control inputs of the GPIO interface (see Chapter 7.3.16) except the DIM function control input. The message „GPI disabled“ is displayed in the Toolbar Window 4 of the display when using one of the deactivated control inputs.

- GPI DIM Key

Activating this check box locks the „DIM“ function control input of the GP IO interface (see Chapter 7.3.16). The message „GPI DIM key (parallel remote) disabled“ is displayed in the Toolbar of the display when using the deactivated control input.

- GPI Mute Key

Activating this checkbox locks the external Mute on/off function control input of the GP IO interface (pin 16, see Chapter 7.3.16). The message „GPI Mute key (parallel remote) disabled“ is displayed in the Toolbar of the display when using the deactivated control input.

- GPI DIM Key non-latching

Activating this check box switches the external DIM on/off function control input of the GP IO interface (pin 16, see Chapter 7.3.16) from permanent to non-latching operation. The DIM function only remains active as long as you press the GP IO control input key (pin 16).

- GPI Mute Key non-latching

Activating this check box switches the external Mute on/off function control input of the GP IO interface (pin 16, see Chapter 7.3.16) from permanent to non-latching operation. The Mute function only remains active as long as you press the GP IO control input key (pin 16).

6.10.5 Function Mode for Monitoring Channel Keys

(see Fig. 6-60)

These buttons modify the operating behavior of the channel keys on the Remote Control 30050 or on the 31960 front panel (see Fig. X.X).

- Radio Button Style

After activating this option, a channel key pressed will deactivate any channel key pressed before. Only one key can be active at a time.

- Adding Mode for multiple selection

After activating this option, several channel keys can be selected one by one. A selected key is reset by pressing it again. The active keys are only reset by pressing one of the keys „2C“, „EX“ or „M“.

- Adding Mode, push volume knob for global reset

After activating this option, several channel keys can be selected one by one. All active channel keys can be reset by pressing the volume dial of the Remote Control 30050 (see Fig. X.X and Chapter X.X).

6.13. Dolby® Settings

This menu page is only available for „D“ or „SD“ versions with integrated Dolby® decoder option.

Fig. 6-62: The Dolby® Settings menu page

- Downmix

With this combo box the signals being used for the downmix can be selected. Available options are: Lt/Rt, Lo/Ro, Mono and Mute.

7 Installation

7.1 Safety information

Before installing and configuring the unit, please study the following safety information carefully and observe all the recommendations to avoid injury and prevent damage to this product or any products connected to it.



To prevent possible electrical shock, fire, injuries and malfunctions, use this product only as specified.

- Only qualified personnel should perform service procedures.
- Do not open the housing.
- Do not insert your fingers or any other objects into the housing.
- Do not cover the unit and do not place any objects or anything containing liquids on it.
- Use only the supplied power cord and the certified power supply specified for this product and certified for the country of use.
- Connect and disconnect properly and use only connectors specified for this product and fix them tight before use.
- To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the operating manual for further rating information before making connections to this product.
- Do not apply a potential to any terminal that exceeds the maximum rating of that terminal.
- The power cord of the external power supply disconnects the product from the power source. Do not block the power cord or power supply; it must remain accessible to the user at all times.
- Do not operate this product with cover plates or panels removed.
- Use only fuse type and rating specified for this product.
- Avoid exposed circuitry. Do not touch exposed connections and components when power is present.
- Do not operate with suspected failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.
- Do not operate in wet/damp conditions.
- Do not operate in explosive atmosphere.
- Do not operate in dusty environments.
- Do not operate the unit without adequate ventilation.
- Turn off and disconnect the power supply immediately it the unit produces unusual smells, noises or smoke, or if foreign substances (e. g. liquids) or foreign objects enter the unit.
- Keep product surfaces clean and dry.



There are no user-serviceable parts in the SurroundControl 31900 and 31960 units. Please always have any necessary servicing performed by a properly qualified technician. Never remove any parts from the unit and do not make any modifications to the unit without the express written consent of RTW. Modifications can cause both safety hazards and affect the unit's EMI-CE conformity.



The SurroundControl 31900 and 31960 are designed for indoor use. 31900 may only be operated with a properly-earthed, 3-wire power supply cord.

7.2 Installation and Setup

- **SurroundControl 31900 series:**

The main SurroundControl 31900 units are designed for installation in 19” rack systems. All necessary power supply voltages (including the power for the Remote Control 30050) are supplied by the integrated wide voltage power supply unit. The Remote Control 30050 is connected to the main unit with a cable fitted with a 9-pin Sub-D connector. The SurroundControl 31900 can be operated either with the optional Remote Display 30010 from RTW or with a standard external VGA monitor.

The Remote Display 30010 unit is powered by an external 24V DC power supply unit. A 5-meter VGA connection cable (Bürklin type 13M4240) is included with the display unit. If you need to purchase a replacement VGA connection cable for the Remote Display 30010 please make sure that **all** the pins of the connectors listed in Chapter 7.3.3 are wired as shown.

The other ports and interfaces are connected with the appropriate standard connection cables.

Important information – please read before installing:

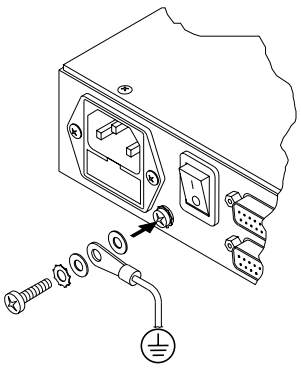
See chapters 7.1, 7.3.1 to 7.3.16
- Before installing the unit please study the safety information in Chapter 7.1 and the information on connections in Chapters 7.3.1 to 7.3.16.
- Make sure that the power supply cord is **not** connected and the power switch on the rear panel is in the OFF position.

See Fig. 7-2 and Chapter 7.3.3
- Connect the Remote Control 30050 unit (included and required for operation) to the **Remote** connector on the rear panel of the main unit.

See Fig. 7-2 and Chapter 7.3.2
- Connect the optional Remote Display 30010 unit to the **VGA Out** connector on the rear panel of the main unit using the VGA connection cable included with the display. Alternatively you can connect a standard VGA monitor to the same output, using a standard VGA connection cable.

See Fig. 7-2 and Chapter 7.3.4 to 7.3.16
- Connect all your other components to the appropriate connectors on the SurroundControl 31900 units, using the correct standard connection cables for the components.

See Chapter 7.3.1
- Then connect the power with an earthed 3-wire power supply cord. **Never operate the unit without a properly earthed power supply cord!**
- **According to EN 61010 standard an additional earth conductor is required, if the unit is mounted into 19’’ racks.** See the figure beside how the additional earth conductor is connected to the rear side of the SurroundControl 31900.



- Switch on the power. The SurroundControl 31900 units will then initiate its system startup sequence. This takes around 50 seconds in which the TCP/IP and the netmask addresses are shown in the lower right edge of the display. After this sequence the unit is ready for use.

- **SurroundControl 31960 series:**

The SurroundControl 31960 half-19''/3U plug-in module is designed for installation in standard 19" rack units as used in video studios. All necessary power supply voltages (including the power for an optional Remote Control 30050) are supplied through the +24 V DC (40 VA) connector using an external power supply unit (such as the optional RTW 1177A-R wide voltage power supply). The SurroundControl 31960 features a 6.5'' VGA display, function keys and control keys. For remote control the optional RTW Remote Control 30050 can be connected to the unit using the fitted 9-pin Sub-D connector.

Optional the RTW Remote Display 30010 or a standard external VGA monitor can be connected for external reading of the display. The Remote Display 30010 unit must be powered by a separate external 24 V DC power supply. A 5-meter VGA connection cable (Bürklin type 13M4240) is included with the display unit. If you need to purchase a replacement VGA connection cable for the Remote Display 30010 please make sure that **all** the pins of the connectors as listed in Chapter 7.3.3 are wired as shown.



See Chapter 7.3.3

The other ports and interfaces are connected with the appropriate standard connection cables.

See chapters 7.1, 7.3.1 to 7.3.16

Important information – please read before installing:

- Before installing the unit please study the safety information in Chapter 7.1 and the information on connections in Chapters 7.3.1 to 7.3.16.
- Make sure that the adapted power supply unit is **not** connected to the SurroundControl 31960 units.
- Screw the two attached mounting bars to the two top bolts on the rear side of the 31960 case.
- Place the unit from the front into the 19'' sub rack. Make sure that the 31960 front panel groove fits precisely with its counterpart of the 19''sub rack.
- Fix the mounting bars on the rear side of the 19'' sub rack with the two enclosed metric screws.

See Fig. 7-2 and Chapter 7.3.3

- Connect an optional Remote Control 30050 unit to the **Remote** connector on the rear panel of the unit.

See Fig. 7-2 and Chapter 7.3.2

- Connect an optional Remote Display 30010 unit to the **VGA Out** connector on the rear panel of the unit using the VGA connection cable included with the display. Alternatively you can connect a standard VGA monitor to the same output, using a standard VGA connection cable.

See Fig. 7-2 and Chapter 7.3.4 to 7.3.16

- Connect all your other components to the appropriate connectors on the SurroundControl 31960 units, using the correct standard connection cables for the components.

See Chapter 7.3.1

- Then connect the locking 4-pin low voltage connector of the external power supply to the +24 V DC (40 VA) connector on the rear. Connect the external power supply to mains.
- The SurroundControl 31960 will initiate its system startup sequence. This takes around 50 seconds in which the TCP/IP and the netmask addresses are shown in the lower right edge of the display. After this sequence the unit is ready for use.

7.3 Connections

All analog audio inputs and audio outputs are electronically balanced.

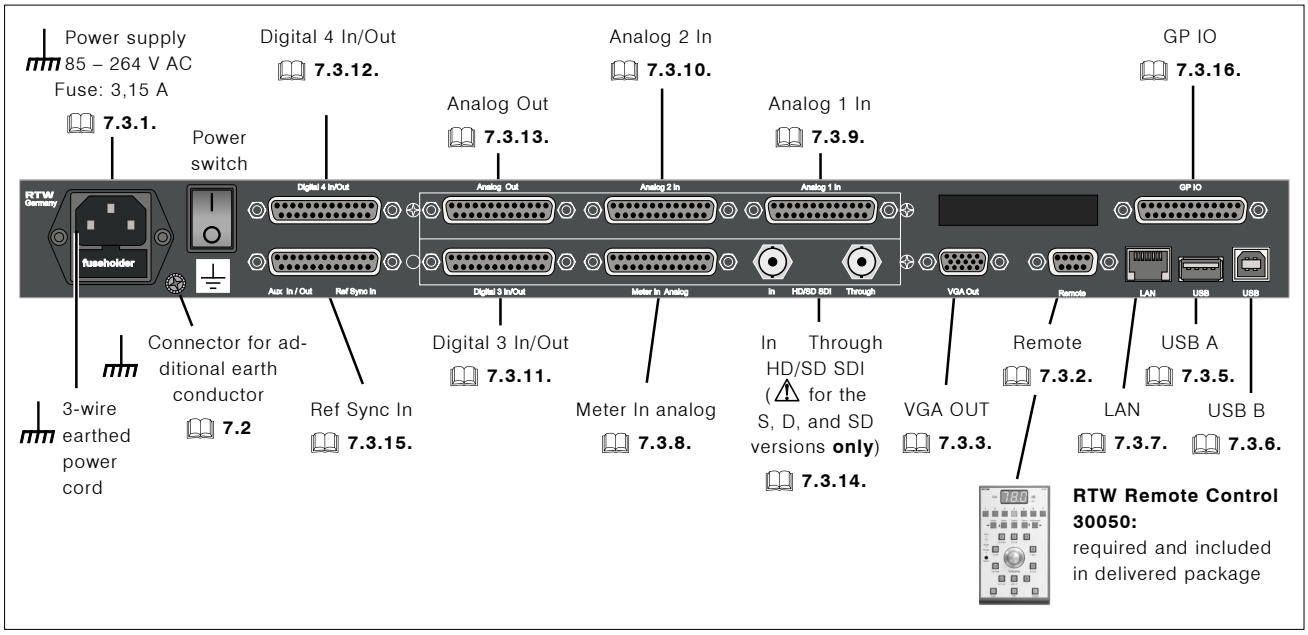


Fig. 7-1: Connectors on the rear panel of the SurroundControl 31900 series

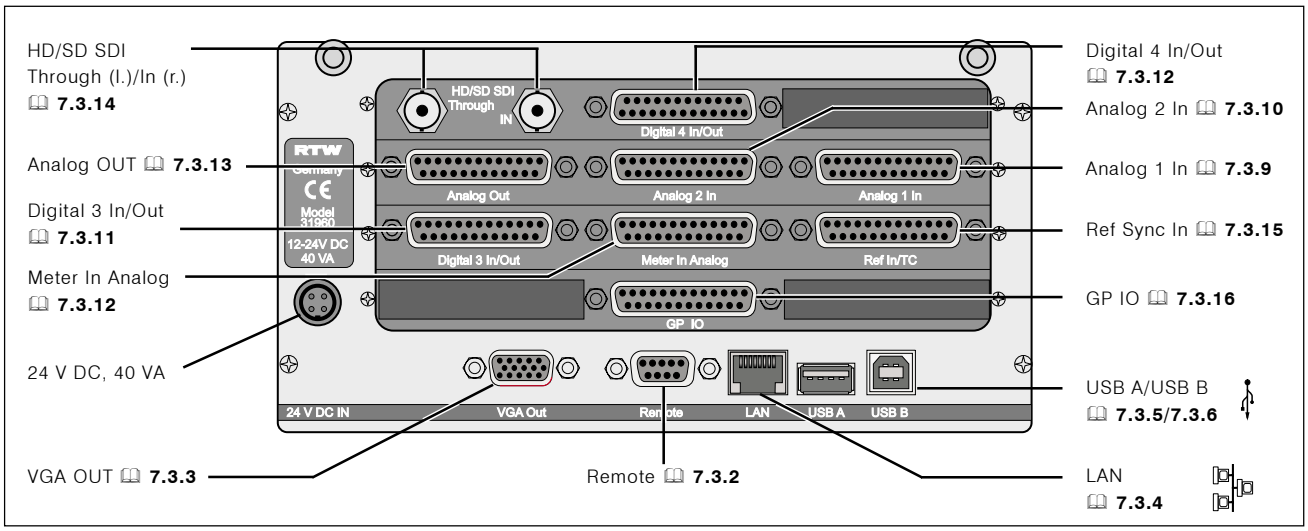


Fig. 7-2: Connectors on the rear panel of the SurroundControl 31960 series

Options:

RTW Accessory:
Measuring microphon XLR-F/Tini-Q-G-M connector on the front side



RTW Accessory:
Remote Display 30010
⚠ **All** pins of the VGA connector cable must be wired!



RTW Accessory:
Remote Control 30050 (up to three/ two can be operated with the units)

Optional:
USB-A mouse

Fig. 7-3: Accessories for SurroundControl 31900 series and 31960 series

7.3.1 Power Supply

- **SurroundControl 31900 series:**

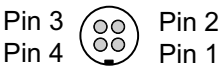
  The SurroundControl 31900's integrated wide voltage power supply unit can be operated on mains voltages between 85 and 264 V AC. The power supply is fitted with a 3.15 A fuse, which is the same irrespective of the mains voltage. **The unit must be connected with a properly-earthed 3-wire power cord.**

- **SurroundControl 31960 series:**

  The SurroundControl 31960 series units need an adapted +24 V DC (40 VA) power supply with a locking 4-pin low voltage connector for operation (a locking 4-pin low voltage connector type Binder 710 is part of delivery). Inside the units a resettable 2.0 A fuse is fitted. A qualified power supply such as the RTW wide voltage power supply 1177A-R is available as an accessory. The connector is wired as follows.

  Locking 4-pin low voltage connector

Pin:	Function:
1	+24 V DC
2	+24 V DC
3	0 V
4	0 V



(External view of the connector)

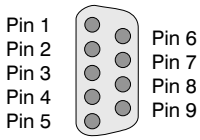
7.3.2 Remote Connector

Remote is an RS-422 port and can only be used to connect the Remote Control 30050. You can connect up to three (31900) resp. up to two (31960) Remote Control 30050 units to this port simultaneously with external Y-adapter cables.

9-pin Sub-D-F female connector

The pins labelled "not used" in the table **must** remain unconnected!

Pin:	Function:
1	Vcc +24 V DC
2	Not used
3	Tx +
4	Rx –
5	GND
6	GND
7	Tx –
8	Rx +
9	Not used



(External view of the connector)

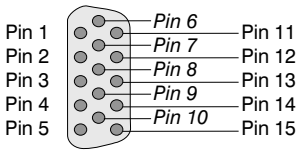
The maximum total cable length for connection of 1 to 3 Remote Control 30050 units is 25 meters.

7.3.3 VGA-OUT Monitor Connector

15-pin female Sub-D-F connector

The pins labelled “not used” in the table **must** remain unconnected!

Pin:	Function:
1	R | Video signal
2	G |
3	B |
4	Not used
5	GND
6	GND
7	GND
8	GND
9	Not used
10	GND
11	Tx – Remote Display 30010
12	Rx – Remote Display 30010
13	H-sync
14	V-sync
15	Not used



(External view of the connector)

Pins 11 and 12 are used for connection of the signals for the control keys on the optional Remote Display 30010.

7.3.4 LAN Connector

This is a standard network port with an RJ45 connector. It can be connected with a standard RJ45 network cable (not included).

7.3.5 USB A Connector

This is a standard USB 1.1 port for connection of an optional computer mouse (not included).

7.3.6 USB B Connector

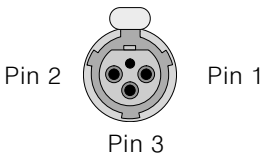
This connector is currently not used.

7.3.7 XLR Connector

This connector is located on the front panel of the 19”/1U SurroundControl 31900 main unit. It is used for connection of a calibration microphone.

3-pin XLR-F connector

Pin:	Function:
1	Shield/Chassis
2	+, hot
3	–, cold



(External view of the connector)

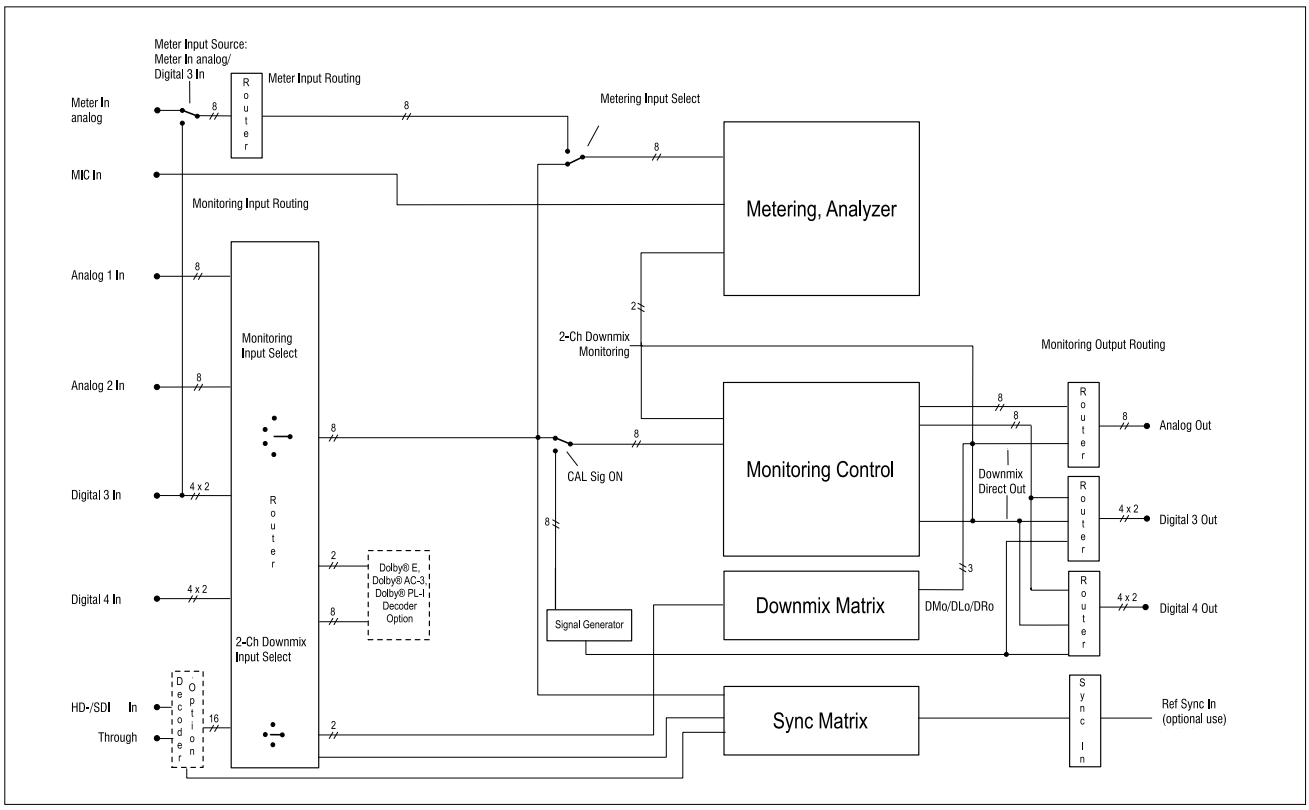


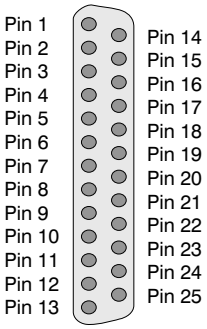
Fig. 7-4: Information flowchart of the SurroundControl 31900 and 31960 series

7.3.8 Meter In Analog Connector

This is an 8-channel analog input for the metering functions.

25-pin female Sub-D-F connector

Pin:	Function:
1	Analog audio input 8 (+, hot)
14	Analog audio input 8 (-, cold)
2	Shield/chassis
15	Analog audio input 7 (+, hot)
3	Analog audio input 7 (-, cold)
16	Shield/chassis
4	Analog audio input 6 (+, hot)
17	Analog audio input 6 (-, cold)
5	Shield/chassis
18	Analog audio input 5 (+, hot)
6	Analog audio input 5 (-, cold)
19	Shield/chassis
7	Analog audio input 4 (+, hot)
20	Analog audio input 4 (-, cold)
8	Shield/chassis
21	Analog audio input 3 (+, hot)
9	Analog audio input 3 (-, cold)
22	Shield/chassis
10	Analog audio input 2 (+, hot)
23	Analog audio input 2 (-, cold)
11	Shield/chassis
24	Analog audio input 1 (+, hot)
12	Analog audio input 1 (-, cold)
25	Shield/chassis



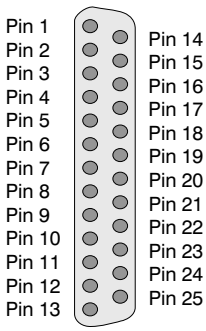
(External view of the connector)

7.3.9 Analog 1 In Connector

This is an 8-channel analog input for the monitoring functions.

25-pin female Sub-D-F connector

Pin:	Function:
1	Analog audio input 8 (+, hot)
14	Analog audio input 8 (-, cold)
2	Shield/chassis
15	Analog audio input 7 (+, hot)
3	Analog audio input 7 (-, cold)
16	Shield/chassis
4	Analog audio input 6 (+, hot)
17	Analog audio input 6 (-, cold)
5	Shield/chassis
18	Analog audio input 5 (+, hot)
6	Analog audio input 5 (-, cold)
19	Shield/chassis
7	Analog audio input 4 (+, hot)
20	Analog audio input 4 (-, cold)
8	Shield/chassis
21	Analog audio input 3 (+, hot)
9	Analog audio input 3 (-, cold)
22	Shield/chassis
10	Analog audio input 2 (+, hot)
23	Analog audio input 2 (-, cold)
11	Shield/chassis
24	Analog audio input 1 (+, hot)
12	Analog audio input 1 (-, cold)
25	Shield/chassis



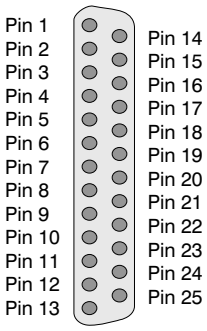
(External view of the connector)

7.3.10 Analog 2 In Connector

This is an 8-channel analog input for the monitoring functions.

25-pin female Sub-D-F connector

Pin:	Function:
1	Analog audio input 8 (+, hot)
14	Analog audio input 8 (-, cold)
2	Shield/chassis
15	Analog audio input 7 (+, hot)
3	Analog audio input 7 (-, cold)
16	Shield/chassis
4	Analog audio input 6 (+, hot)
17	Analog audio input 6 (-, cold)
5	Shield/chassis
18	Analog audio input 5 (+, hot)
6	Analog audio input 5 (-, cold)
19	Shield/chassis
7	Analog audio input 4 (+, hot)
20	Analog audio input 4 (-, cold)
8	Shield/chassis
21	Analog audio input 3 (+, hot)
9	Analog audio input 3 (-, cold)
22	Shield/chassis
10	Analog audio input 2 (+, hot)
23	Analog audio input 2 (-, cold)
11	Shield/chassis
24	Analog audio input 1 (+, hot)
12	Analog audio input 1 (-, cold)
25	Shield/chassis



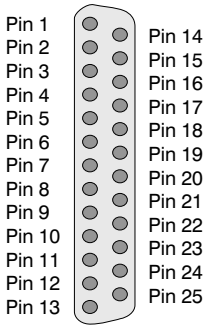
(External view of the connector)

7.3.11 Digital 3 In/Out Connector

This is a 8-fold AES/EBU interface for metering and monitoring with inputs and outputs.

25-pin female Sub-D-F connector:

Pin:	Function:
1	Digital audio output 4 (+, hot)
14	Digital audio output 4 (-, cold)
2	Shield/chassis
15	Digital audio output 3 (+, hot)
3	Digital audio output 3 (-, cold)
16	Shield/chassis
4	Digital audio output 2 (+, hot)
17	Digital audio output 2 (-, cold)
5	Shield/chassis
18	Digital audio output 1 (+, hot)
6	Digital audio output 1 (-, cold)
19	Shield/chassis
7	Digital audio input 4 (+, hot)
20	Digital audio input 4 (-, cold)
8	Shield/chassis
21	Digital audio input 3 (+, hot)
9	Digital audio input 3 (-, cold)
22	Shield/chassis
10	Digital audio input 2 (+, hot)
23	Digital audio input 2 (-, cold)
11	Shield/chassis
24	Digital audio input 1 (+, hot)
12	Digital audio input 1 (-, cold)
25	Shield/chassis



(External view of the connector)

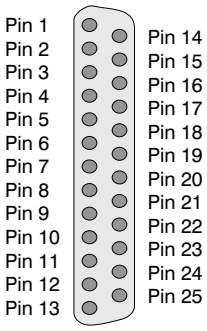
The AES/EBU inputs are permanently terminated with 110 Ω.

7.3.12 Digital 4 In/Out Connector

This is a 8-fold AES/EBU interface for metering and monitoring with inputs and outputs.

25-pin female Sub-D-F connector:

Pin:	Function:
1	Digital audio output 4 (+, hot)
14	Digital audio output 4 (-, cold)
2	Shield/chassis
15	Digital audio output 3 (+, hot)
3	Digital audio output 3 (-, cold)
16	Shield/chassis
4	Digital audio output 2 (+, hot)
17	Digital audio output 2 (-, cold)
5	Shield/chassis
18	Digital audio output 1 (+, hot)
6	Digital audio output 1 (-, cold)
19	Shield/chassis
7	Digital audio input 4 (+, hot)
20	Digital audio input 4 (-, cold)
8	Shield/chassis
21	Digital audio input 3 (+, hot)
9	Digital audio input 3 (-, cold)
22	Shield/chassis
10	Digital audio input 2 (+, hot)
23	Digital audio input 2 (-, cold)
11	Shield/chassis
24	Digital audio input 1 (+, hot)
12	Digital audio input 1 (-, cold)
25	Shield/chassis



(External view of the connector)

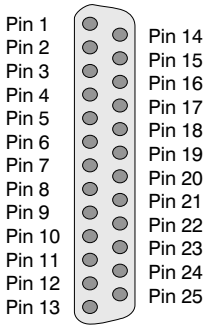
The AES/EBU inputs are permanently terminated with 110 Ω.

7.3.13 Analog Out Connector

This 8-channel analog output is for the monitoring functions and is used to connect the analog monitoring loudspeakers.

25-pin female Sub-D-F connector:

Pin:	Function:
1	Analog audio output 8 (+, hot)
14	Analog audio output 8 (-, cold)
2	Shield/chassis
15	Analog audio output 7 (+, hot)
3	Analog audio output 7 (-, cold)
16	Shield/chassis
4	Analog audio output 6 (+, hot)
17	Analog audio output 6 (-, cold)
5	Shield/chassis
18	Analog audio output 5 (+, hot)
6	Analog audio output 5 (-, cold)
19	Shield/chassis
7	Analog audio output 4 (+, hot)
20	Analog audio output 4 (-, cold)
8	Shield/chassis
21	Analog audio output 3 (+, hot)
9	Analog audio output 3 (-, cold)
22	Shield/chassis
10	Analog audio output 2 (+, hot)
23	Analog audio output 2 (-, cold)
11	Shield/chassis
24	Analog audio output 1 (+, hot)
12	Analog audio output 1 (-, cold)
25	Shield/chassis



(External view of the connector)

7.3.14 HD/SD SDI In/Through Connector

The 2 BNC connectors are used for HD/SD SDI input and active looped output.
The decoded HD/SD SDI signal is used for the monitoring functions.

BNC-F connector:

Pin: Signal
Ring: Shield/chassis

7.3.15 Ref Sync In Connector

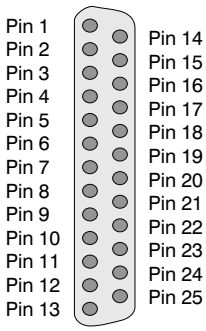
This is an 8-channel connector for external sync signal connection.

25-pin female Sub-D-F connector:

- **SurroundControl 31900 series:**

The pins labelled “not used” in the table **must** remain unconnected!

Pin:	Function:
1	not used
14	not used
2	Shield/chassis
15	not used
3	not used
16	Shield/chassis
4	not used
17	not used
5	Shield/chassis
18	not used
6	not used
19	Shield/chassis
7	not used
20	not used
8	Shield/chassis
21	not used
9	not used
22	Shield/chassis
10	not used
23	not used
11	Shield/chassis
24	Ref IN (AES-3) sync in (+, hot)] Permanently terminated with 110 Ω
12	Ref IN (AES-3) sync in (–, cold)]
25	Shield/chassis



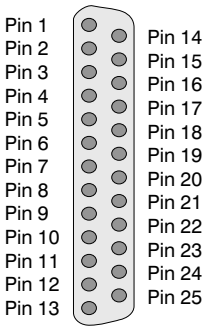
(External view of the connector)

- **SurroundControl 31960 series:**

The pins labelled “not used” in the table **must** remain unconnected!

Pin:	Function:
1	Ref IN (AES-3) sync in (–, cold)
14	Ref IN (AES-3) sync in (+, hot)
2	Shield/chassis
15	not used
3	not used
16	Shield/chassis
4	not used
17	not used
5	Shield/chassis
18	not used
6	not used
19	Shield/chassis
7	not used
20	not used
8	Shield/chassis
21	not used
9	not used
22	Shield/chassis
10	not used
23	not used
11	Shield/chassis
24	not used
12	not used
25	Shield/chassis

Permanently terminated with 110 Ω

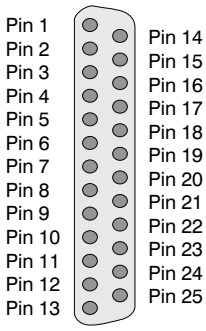


(External view of the connector)

7.3.16 GP IO Connector (General-purpose Input/Output)

This interface can be used for the input and the output of control signals.

25-pin female Sub-D-F connector:



(External view of the connector)

Pin:	Function:	
1	GP IO IN	Function key 1
2	GP IO IN	Function key 2
3	GP IO IN	Function key 3
4	GP IO IN	Function key 4
5	GP IO IN	Function key 5
6	GP IO IN	Function key 6
7	GP IO IN	Function key 7
8	GP IO IN	Control key MODE
9	GP IO IN	Control key MENU
10	GP IO IN	Control key MORE
11	GP IO IN	Control key INSTR(UMENT)
12	GP IO IN	Select key SEL(ECT)

See Chapter 6.12 and Figs. 5-29, 6-30 and 6-31

13	GP IO IN	Key Input (parallel to key on Remote Control 30050)
14	GP IO IN	Key DIM (parallel to key on Remote Control 30050)
15	GP IO IN	Key Output (parallel to key on Remote Control 30050)
16	GP IO IN	Mute on/off key (**NOT** on Remote Control 30050)

See Chapter 6.12.4 and Figs. 5-29 and 6-30

See Chapter 6.12.4

17	GP IO OUT	Output 1
18	GP IO OUT	Output 2
19	GP IO OUT	Output 3
20	GP IO OUT	Output 4
21	GP IO OUT	Output 5
22	GP IO OUT	Output 6
23	GP IO OUT	Output 7
24	GP IO OUT	Output 8

See Chapter 6.11.4 and Fig. 6-29

25 Common potential and shield/chassis

Please note:

- All GP IO inputs are active low. The pins each have to be connected with Pin 25 for switching the corresponding function.
- The logic state of the GP IO outputs is selectable via Alarm Configuration menu (see Chapter 6.11). The pins each have to be connected with Pin 25 for switching the corresponding function.
- The described assignments are factory-made standard settings.
  - Using the Key Setting menu (see Chapter 6.12) keys, groups of keys or control inputs (see above) can be locked or can have other functions (i. e. preset call).
  - Using the Alarm Configuration menu (see Chapter 6.11) different alarm events can be selected to put out via the several control outputs (see above).

Appendix A: Presets

General

The parameters of the units are hold in 7 Factory Presets and 7 User Presets. After unpacking the unit, the User Presets named U1 to U7 hold the same content as the Factory Presets named F8 to F14, but they can be overwritten anytime to store individual user settings. To do so please refer to Chapter 3.9. In the Factory Presets and their corresponding Sub Presets the channel configurations for usual applications are stored. The tables on the next pages give a summary of these input and output routing settings.

See Chapter 3.9

Common for all the Presets are the main parameters listed below. For the complete description of the Peakmeter Settings, the Loudness Settings and the corresponding Channel Group Settings please refer to Chapter 6.5.2.

See Chapter 6.5.2

Peakmeter Settings

General PPM Settings

See Chapter 6.5.2.6

- Weighting Filter: Awt+RMS (Leq(A))
- RMS response: fast
- Peak Hold fallback time: 1 s

Main Peakmeter Channel Group Settings

See Chapter 6.5.2.8

- Standard Settings Digtial: Digital
  - Scale: Dig60dB
  - Integration time: Sample
  - PH Integration Time: Integration Time
  - DC-Filter: 5 Hz
  - Headroom: –9 dBFS
  - Operation indicator area: 0 dB
- Standard Settings Analog: Din
  - Scale: Din5dB
  - Integration time: 10 ms
  - PH Integration Time: Integration Time
  - Operation indicator area: 0 dB
- VU-Lead: 0 dB
- Bargraph enabled: all
- SPL Reference indicator: enabled

ITU BS.1771 Loudness Settings

See Chapter 6.5.2.9

General Loudness Settings

- Filter: ITU BS.1770 R2LB
- Scale: ITU BS.1771
- Reference: –10 dBFS

See Chapter 6.5.2.10

Main Loudness Channel Group Settings

- Standard Settings Digtial: Digital
  - Scale: Dig60dB
  - Integration time: Sample
  - DC-Filter: 5 Hz
  - Headroom: –9 dBFS
  - Operation indicator area: 0 dB
- Peak Hold fallback time: 1 s
- Mode: Normal
- PPM Type: Bar
- Loudness
  - Operation indicator area: 0 dB
- PPM bargraphs enabled: all
- Loudness bargraphs enabled: all

See Chapter 6.5.2.11

Main Loudness Sum Group Settings

- General
  - Alarm Threshold: 0.0 dBLU
  - Alarm Hold: 5 s
- Momentary
  - Integration time: 500 ms
- Integrated
  - Weighting time: 20 s
- Long term
  - Use Threshold: enabled
  - Threshold mode: fixed
  - Threshold absolute: –20 dBLU
  - Integration time: 1 Days, 0 Hours
  - Recalc data: disabled
  - Operation indicator area: 0 dB
- M, I, L bargraphs enabled: all
- Numerical enabled: all
- Channel Weighting ITU BS.1771 Format 5.1
  - Left, Right, Center: 0.0 dB
  - Left Surround, Right Surround: 1.5 dB

Factory Preset F8: 5.1 (5.1 Surround)

Output Key Mode		Output Settings							
Deactivated	**Activated**	**Mode**	**Chan.**	**Digital Out 3**	**Direct Out 3**	**Digital Out 4**	**Direct Out 4**	**Chan.**	**Analog Out**
Analog	Digital 3	5.1	1a	L		L		1	L
			1b	R		R		2	R
			2a	C		C		3	C
			2b	LF		LF		4	LF
			3a	LS		LS		5	LS
			3b	RS		RS		6	RS
			4a	off		off		7	off
			4b	off		off		8	off

Sub Presets of F8

Key 1: 5.1SUR

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**Source:**	**Source:**	5.1	Lo/Ro	SPL	–
SSA		Analog 1	disabled	None	Off	Position 1	Position 3	Position 2	–
	L	1							
	R	2							
	C	3							
	LF	4							
	LS	5							
	RS	6							
	–	–							
	–	–							

Key 2: 5.1+EX

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**Source:**	**Source:**	5.1	Lext/Rext	SPL	–
SSA		Analog 1	disabled	Analog 1	Off	Position 1	Position 3	Position 2	–
	L	1		7					
	R	2		8					
	C	3							
	LF	4							
	LS	5							
	RS	6							
	–	–							
	–	–							

Key 3: 5.1SUR

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**Source:**	**Source:**	5.1	Lo/Ro	SPL	–
SSA		Digital 3	disabled	none	Digital 3 (discrete)	Position 1	Position 3	Position 2	–
	L	1a							
	R	1b							
	C	2a							
	LF	2b							
	LS	3a							
	RS	3b							
	–	–							
	–	–							

Key 4: 5.1+EX

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:		**Source:**	**Source:**	5.1	Lext/Rext	SPL	–
SSA		Digital 3	disabled	Digital 3	Digital 3 (discrete)	Position 1	Position 3	Position 2	–
	L	1a		4a					
	R	1b		4b					
	C	2a							
	LF	2b							
	LS	3a							
	RS	3b							
	–	–							
	–	–							

Key 5: 5.1G12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:		**Source:**	**Source:**	5.1	Lext/Rext	SPL	–
SSA		SDI	disabled	SDI	SDI (discrete)	Position 1	Position 3	Position 2	–
	L	1-1		2-3					
	R	1-2		2-4					
	C	1-3							
	LF	1-4							
	LS	2-1							
	RS	2-2							
	–	–							
	–	–							

Key 6: 5.1G34

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:		**Source:**	**Source:**	5.1	Lext/Rext	SPL	–
SSA		SDI	disabled	SDI	SDI (discrete)	Position 1	Position 3	Position 2	–
	L	3-1		4-3					
	R	3-2		4-4					
	C	3-3							
	LF	3-4							
	LS	4-1							
	RS	4-2							
	–	–							
	–	–							

Key 7: 5.1D12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:	**Dolby® AC-3**	**Source:**	**Source:**	5.1	Lo/Ro	SPL	–
SSA		Decoder	Digital 3	Decoder	Decoder	Position 1	Position 3	Position 2	–
	L	L	1a	Aux-L					
	R	R	1b	Aux-R					
	C	C							
	LF	LF							
	LS	LS							
	RS	RS							
	–	–							
	–	–							

Factory Preset F9: 2-CH (2-Channel Stereo)

Output Key Mode		Output Settings							
Deactivated	**Activated**	**Mode**	**Chan.**	**Digital Out 3**	**Direct Out 3**	**Digital Out 4**	**Direct Out 4**	**Chan.**	**Analog Out**
Analog	Digital 3	2-ch Stereo	1a	L		L		1	L
			1b	R		R		2	R
			2a	off		off		3	off
			2b	off		off		4	off
			3a	off		off		5	off
			3b	off		off		6	off
			4a	off		off		7	off
			4b	off		off		8	off

Sub Presets of F9

Key 1: 2-CH12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**–**	2-CH Stereo + SpCor	–	SPL	–
Vectorscope		Analog 1	disabled	–	–	Position 1	Position 3	Position 2	–
	L	1							
	R	2							

Key 2: 2-CH34

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**–**	2-CH Stereo + SpCor	–	SPL	–
Vectorscope		Analog 1	disabled	–	–	Position 1	Position 3	Position 2	–
	L	3							
	R	4							

Key 3: 2-CH12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**–**	2-CH Stereo + SpCor	–	SPL	–
Vectorscope		Digital 3	disabled	–	–	Position 1	Position 3	Position 2	–
	L	1a							
	R	1b							

Key 4: 2-CH34

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**–**	2-CH Stereo + SpCor	–	SPL	–
Vectorscope		Digital 3	disabled	–	–	Position 1	Position 3	Position 2	–
	L	2a							
	R	2b							

Key 5: 2-CH12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**–**	2-CH Stereo + SpCor	–	SPL	–
Vectorscope		SDI	disabled	–	–	Position 1	Position 3	Position 2	–
	L	1-1							
	R	1-2							

Key 6: 2-CH34									
Default Instrument		**Monitor Routing**	**Decoder**	**Lext/Rext Routing**	**Downmix Routing**	**Instrument Settings**			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**–**	2-CH Stereo + SpCor	–	SPL	–
Vectorscope		SDI	disabled	–	–	Position 1	Position 3	Position 2	–
	L	1-3							
	R	1-4							

Key 7: 2-CH12									
Default Instrument		**Monitor Routing**	**Decoder**	**Lext/Rext Routing**	**Downmix Routing**	**Instrument Settings**			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:	**Dolby® E**	**–**	**–**	2-CH Stereo + SpCor	–	SPL	–
Vectorscope		Decoder	Digital 3	–	–	Position 1	–	Position 2	–
	L	L	1a						
	R	R	1b						

Factory Preset F10: MULTI (Multi-Channel)

Output Key Mode		Output Settings							
Deactivated	**Activated**	**Mode**	**Chan.**	**Digital Out 3**	**Direct Out 3**	**Digital Out 4**	**Direct Out 4**	**Chan.**	**Analog Out**
Analog	Digital 3	Multi-Channel	1a	L		L		1	L
			1b	R		R		2	R
			2a	off		off		3	off
			2b	off		off		4	off
			3a	off		off		5	off
			3b	off		off		6	off
			4a	off		off		7	off
			4b	off		off		8	off

Sub Presets of F10

Key 1: 1-8

Default Instrument			Monitor Routing		Decoder	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
						8-CH	–	–	–
RTA 1/3	**Source**	**Channels**		**Stereo**	disabled	Position 1	–	–	–
	Analog 1	8	1	–					
			2						
			3	–					
			4						
			5	–					
			6						
			7	–					
			8						

Key 2: 4x2ST

Default Instrument			Monitor Routing		Decoder	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
						2-CH Stereo + SpCor	2-CH Stereo + SpCor	2-CH Stereo + SpCor	2-CH Stereo + SpCor
Vectorscope	**Source**	**Channels**		**Stereo**	disabled	Position 1	Position 3	Position 2	Position 4
	Analog 1	2	1	yes					
			2						
	Analog 1	2	3	yes					
			4						
	Analog 1	2	5	yes					
			6						
	Analog 1	2	7	yes					
			8						

Key 3: 1x8

Default Instrument			Monitor Routing		Decoder	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
						8-CH	–	–	–
RTA 1/3	**Source**	**Channels**		**Stereo**	disabled	Position 1	–	–	–
	Digital 3	8	1a	–					
			1b						
			2a	–					
			2b						
			3a	–					
			3b						
			4a	–					
			ab						

Key 4: 4x2ST

Default Instrument			Monitor Routing		Decoder	Instrument Settings Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
						2-CH Stereo + SpCor	2-CH Stereo + SpCor	2-CH Stereo + SpCor	2-CH Stereo + SpCor
Vectorscope	**Source**	**Channels**		**Stereo**	disabled	Position 1	Position 3	Position 2	Position 4
	Digital 3	2	1a	yes					
			1b						
	Digital 3	2	2a	yes					
			2b						
	Digital 3	2	3a	yes					
			3b						
	Digital 3	2	4a	yes					
			4b						

Key 5: 1x8

Default Instrument			Monitor Routing		Decoder	Instrument Settings Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
						8-CH	–	–	–
RTA 1/3	**Source**	**Channels**		**Stereo**	disabled	Position 1	–	–	–
	SDI	8	1-1	–					
			1-2						
			1-3	–					
			1-4						
			2-1	–					
			2-2						
			2-3	–					
			2-4						

Key 6: 4x2ST

Default Instrument			Monitor Routing		Decoder	Instrument Settings Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
						2-CH Stereo + SpCor	2-CH Stereo + SpCor	2-CH Stereo + SpCor	2-CH Stereo + SpCor
Vectorscope	**Source**	**Channels**		**Stereo**	disabled	Position 1	Position 3	Position 2	Position 4
	SDI	2	1-1	yes					
			1-2						
	SDI	2	1-3	yes					
			1-4						
	SDI	2	2-1	yes					
			2-2						
	SDI	2	2-3	yes					
			2-4						

Key 7: 1x8

Default Instrument			Monitor Routing		Decoder	Instrument Settings Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
Dolby® Meta Data					**Dolby® E**	8-CH	–	–	–
	Source	**Channels**		**Stereo**	Digital 3	Position 1	–	–	–
	Decoder	8	1	–	1a				
			2		1b				
			3	–					
			4						
			5	–					
			6						
			7	–					
			8						

Factory Preset F11: SPEC (Special)

Output Key Mode		Output Settings							
Deactivated	**Activated**	**Mode**	**Chan.**	**Digital Out 3**	**Direct Out 3**	**Digital Out 4**	**Direct Out 4**	**Chan.**	**Analog Out**
Analog	Digital 3	Multi-Channel	1a	L		L		1	L
			1b	R		R		2	R
			2a	off		off		3	off
			2b	off		off		4	off
			3a	off		off		5	off
			3b	off		off		6	off
			4a	off		off		7	off
			4b	off		off		8	off

Sub Presets of F11

Key 1: 3.1+DEX

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**Source:**	**Source:**	3.1	Lext/Rext	SPL	–
SSA		Digital 3	disabled	Analog 1	Digital 3 (Discrete)	Position 1	Position 3	Position 2	–
	L	1a		7					
	R	1b		8					
	C	2a							
	S	2b							

Key 2: 3.1+EEX

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:	**Dolby® E**	**Source:**	**Source:**	3.1	Lext/Rext	SPL	–
SSA		Decoder	Digital 3	Decoder	Decoder	Position 1	Position 3	Position 2	–
	L	1	1a/1b	7					
	R	2		8					
	C	3							
	S	4							

Key 3: 3.1+SEX

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:	**Dolby® E**	**Source:**	**Source:**	3.1	Lext/Rext	SPL	–
SSA		Decoder	SDI	Analog 1	Decoder	Position 1	Position 3	Position 2	–
	L	1	1-1	7					
	R	2	1-2	8					
	C	3							
	S	4							

Key 4: 5.1+SEX

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:	**Dolby® E**	**Source:**	**Source:**	5.1	Lext/Rext	SPL	–
SSA		Decoder	Digital 3	SDI	Off	Position 1	Position 3	Position 2	–
	L	left	1a/1b	2-3					
	R	right		2-4					
	C	center							
	LF	LF							
	LS	LS							
	RS	RS							

Key 5: 5.1+AEX

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:	**Dolby® E**	**Source:**	**Source:**	5.1	Lext/Rext	SPL	–
SSA		Decoder	Digital 3	Analog 1	Off	Position 1	Position 3	Position 2	–
	L	left	1a/1b	1					
	R	right		2					
	C	center							
	LF	LF							
	LS	LS							
	RS	RS							

Key 6: 4XM+2X2

Default Instrument			Monitor Routing		Decoder	Instrument Settings Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
						4-CH	2-CH	2-CH	–
RTA 1/3	**Source**	**Channels**		**Stereo**	disabled	Position 1	Position 3	Position 2	–
	Analog 1	4	1	–					
			2						
			3						
			4						
	Digital 3	2	3a	no					
			3b						
	Digital 3	2	4a	no					
			b						

Key 7: 2XST+4XM

Default Instrument			Monitor Routing		Decoder	Instrument Settings Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
						2-CH Stereo + SpCor	2-CH Stereo + SpCor	2-CH	2-CH
Vectorscope	**Source**	**Channels**		**Stereo**	disabled	Position 1	Position 2	Position 3	Position 4
	Analog 1	2	1	yes					
			2						
	Digital 3	2	2a	yes					
			2b						
	Analog 1	2	5	no					
			6						
	Digital 3	2	4a	no					
			4b						

Factory Preset F12: 3.1 (3.1 Surround)

Output Key Mode		Output Settings							
Deactivated	**Activated**	**Mode**	**Chan.**	**Digital Out 3**	**Direct Out 3**	**Digital Out 4**	**Direct Out 4**	**Chan.**	**Analog Out**
Analog	Digital 3	7.1	1a	L		L		1	L
			1b	R		R		2	R
			2a	C		C		3	C
			2b	S		S		4	S
			3a	off		off		5	off
			3b	off		off		6	off
			4a	off		off		7	off
			4b	off		off		8	off

Sub Presets of F12

Key 1: 3.1SUR

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**Source:**	**Source:**	3.1	Lo/Ro	SPL	–
SSA		Analog 1	disabled	none	Off	Position 1	Position 3	Position 2	–
	L	1							
	R	2							
	C	3							
	S	4							

Key 2: 3.1+EX

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**Source:**	**Source:**	3.1	Lext/Rext	SPL	–
SSA		Analog 1	disabled	Analog 1	Off	Position 1	Position 3	Position 2	–
	L	1		7					
	R	2		8					
	C	3							
	S	4							

Key 3: 3.1SUR

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**Source:**	**Source:**	3.1	Lo/Ro	SPL	–
SSA		Digital 3	disabled	none	Digital 3 (Discrete)	Position 1	Position 3	Position 2	–
	L	1a							
	R	1b							
	C	2a							
	S	2b							

Key 4: 3.1+EX

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**Source:**	**Source:**	3.1	Lext/Rext	SPL	–
SSA		Digital 3	disabled	none	Digital 3 (Discrete)	Position 1	Position 3	Position 2	–
	L	1a		4a					
	R	1b		4b					
	C	2a							
	S	2b							

Key 5: 3.1G12									
Default Instrument		**Monitor Routing**	**Decoder**	**Lext/Rext Routing**	**Downmix Routing**	**Instrument Settings**			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**Source:**	**Source:**	3.1	Lext/Rext	SPL	–
SSA		SDI	disabled	SDI	SDI (Discrete)	Position 1	Position 3	Position 2	–
	L	1-1		2-3					
	R	1-2		2-4					
	C	1-3							
	S	1-4							

Key 6: 3.1E34									
Default Instrument		**Monitor Routing**	**Decoder**	**Lext/Rext Routing**	**Downmix Routing**	**Instrument Settings**			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:	**Dolby® E**	**Source:**	**Source:**	3.1	Lext/Rext	SPL	–
SSA		Decoder	Digital 3	Decoder	Decoder	Position 1	Position 3	Position 2	–
	L	1	1a/1b	7					
	R	2		8					
	C	3							
	S	4							

Key 7: 3.1D12									
Default Instrument		**Monitor Routing**	**Decoder**	**Lext/Rext Routing**	**Downmix Routing**	**Instrument Settings**			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:	**ProLogic I**	**Source:**	**Source:**	3.1	Lext/Rext	SPL	–
SSA		Decoder	Digital 3	none	Decoder	Position 1	Position 3	Position 2	–
	L	L	1a/1b						
	R	R							
	C	C							
	S	S							

Factory Preset F13: 6.1 (6.1 Surround)

Output Key Mode		Output Settings							
Deactivated	**Activated**	**Mode**	**Chan.**	**Digital Out 3**	**Direct Out 3**	**Digital Out 4**	**Direct Out 4**	**Chan.**	**Analog Out**
Analog	Digital 3	6.1	1a	L		L		1	L
			1b	R		R		2	R
			2a	C		C		3	C
			2b	LS		LS		4	LS
			3a	RS		RS		5	RS
			3b	CS		CS		6	CS
			4a	LF		LF		7	LF
			4b	off		off		8	off

Sub Presets of F13

Key 1: 6.1SUR

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**Source:**	6.1	Lo/Ro	SPL	–
SSA		Analog 1	disabled	–	Off	Position 1	Position 2	Position 3	–
	L	1							
	R	2							
	C	3							
	LF	4							
	LS	5							
	CS	6							
	RS	7							
	–	–							

Key 2: 6.1SUR

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**Source:**	6.1	Lo/Ro	SPL	–
SSA		Digital 3	disabled	–	Off	Position 1	Position 2	Position 3	–
	L	1a							
	R	1b							
	C	2a							
	LF	2b							
	LS	3a							
	CS	3b							
	RS	4a							
	–	–							

Key 3: 6.1S12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**Source:**	6.1	Lo/Ro	SPL	–
SSA		SDI	disabled	–	Off	Position 1	Position 2	Position 3	–
	L	1-1							
	R	1-2							
	C	1-3							
	LF	1-4							
	LS	2-1							
	CS	2-2							
	RS	2-3							
	–	–							

Key 4: 6.1S34

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:		–	**Source:**	6.1	Lo/Ro	SPL	–
SSA		SDI	disabled	–	Off	Position 1	Position 2	Position 3	–
	L	3-1							
	R	3-2							
	C	3-3							
	LF	3-4							
	LS	4-1							
	CS	4-2							
	RS	4-3							
	–	–							

Key 5: 6.1E12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:	**Dolby® E**	–	**Source:**	6.1	Lo/Ro	SPL	–
SSA		Decoder	Digital 3	–	Off	Position 1	Position 2	Position 3	–
	L	1	1a/1b						
	R	2							
	C	3							
	LF	4							
	LS	5							
	CS	6							
	RS	7							
	–	–							

Key 6: 6.1E34

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:	**Dolby® E**	–	**Source:**	6.1	Lo/Ro	SPL	–
SSA		Decoder	Digital 3	–	Off	Position 1	Position 2	Position 3	–
	L	1	2a/2b						
	R	2							
	C	3							
	LF	4							
	LS	5							
	CS	6							
	RS	7							
	–	–							

Key 7: 6.1S12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:	**Dolby® E**	–	**Source:**	6.1	Lo/Ro	SPL	–
SSA		Decoder	SDI	–	Off	Position 1	Position 2	Position 3	–
	L	1	1-1/1-2						
	R	2							
	C	3							
	LF	4							
	LS	5							
	CS	6							
	RS	7							
	–	–							

Factory Preset F14: 7.1 (7.1 Surround)

Output Key Mode		Output Settings							
Deactivated	**Activated**	**Mode**	**Chan.**	**Digital Out 3**	**Direct Out 3**	**Digital Out 4**	**Direct Out 4**	**Chan.**	**Analog Out**
Analog	Digital 3	7.1	1a	L		L		1	L
			1b	R		R		2	R
			2a	C		C		3	C
			2b	LF		LF		4	LF
			3a	LS		LS		5	LS
			3b	RS		RS		6	RS
			4a	LC		LC		7	LC
			4b	RC		RC		8	RC

Sub Presets of F14

Key 1: 7.1SUR

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**Source:**	7.1	Lo/Ro	SPL	–
SSA		Analog 1	disabled	–	Off	Position 1	Position 2	Position 3	–
	L	1							
	R	2							
	C	3							
	LF	4							
	LS	5							
	RS	6							
	LC	7							
	RC	8							

Key 2: 7.1SUR

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**Source:**	7.1	none	SPL	–
SSA		Digital 3	disabled	–	Off	Position 1	Position 2	Position 3	–
	L	1a							
	R	1b							
	C	2a							
	LF	2b							
	LS	3a							
	RS	3b							
	LC	4a							
	RC	4b							

Key 3: 7.1G12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	**Ch. Gr. 2**	**Ch. Gr. 3**	**Ch. Gr. 4**
		Source:		**–**	**Source:**	7.1	Lo/Ro	SPL	–
SSA		SDI	disabled	–	Off	Position 1	Position 2	Position 3	–
	L	1-1							
	R	1-2							
	C	1-3							
	LF	1-4							
	LS	2-1							
	RS	2-2							
	LC	2-3							
	RC	2-4							

Key 4: 7.1G34

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:		–	**Source:**	7.1	Lo/Ro	SPL	–
SSA		SDI	disabled	–	Off	Position 1	Position 2	Position 3	–
	L	3-1							
	R	3-2							
	C	3-3							
	LF	3-4							
	LS	4-1							
	RS	4-2							
	LC	4-3							
	RC	4-4							

Key 5: 7.1E12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:	**Dolby® E**	–	**Source:**	7.1	Lo/Ro	SPL	–
SSA		Decoder	Digital 3	–	Off	Position 1	Position 2	Position 3	–
	L	1	1a/1b						
	R	2							
	C	3							
	LF	4							
	LS	5							
	RS	6							
	LC	7							
	RC	8							

Key 6: 7.1E34

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:	**Dolby® E**	–	**Source:**	7.1	Lo/Ro	SPL	–
SSA		Decoder	Digital 3	–	Off	Position 1	Position 2	Position 3	–
	L	1	2a/2b						
	R	2							
	C	3							
	LF	4							
	LS	5							
	RS	6							
	LC	7							
	RC	8							

Key 7: 7.1S12

Default Instrument		Monitor Routing	Decoder	Lext/Rext Routing	Downmix Routing	Instrument Settings			
						Ch. Gr. 1	Ch. Gr. 2	Ch. Gr. 3	Ch. Gr. 4
		Source:	**Dolby® E**	–	**Source:**	7.1	Lo/Ro	SPL	–
SSA		Decoder	SDI	–	Off	Position 1	Position 2	Position 3	–
	L	1	1-1/1-2						
	R	2							
	C	3							
	LF	4							
	LS	5							
	RS	6							
	LC	7							
	RC	8							

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Information on the licenses that apply to the software supplied with the product

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Cologne, March 2008

Also see:
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Version 3, 29 June 2007

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