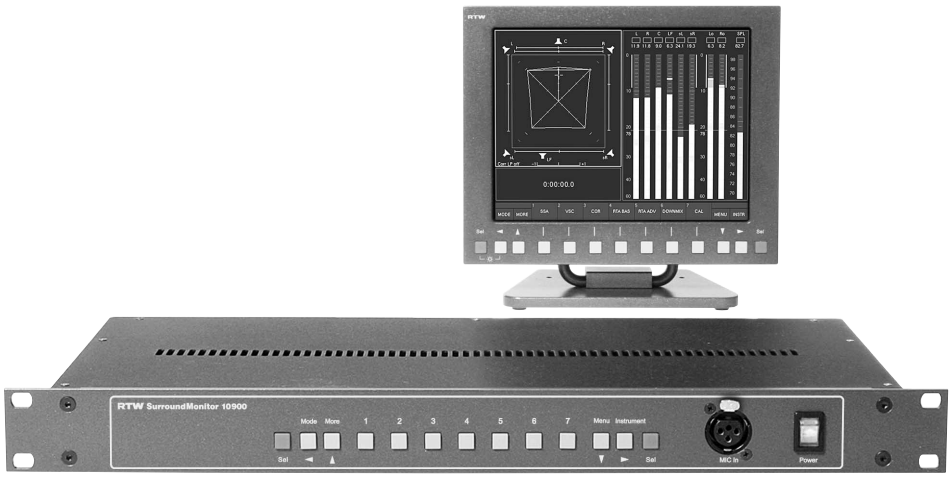


Operating Manual

SurroundMonitor 10900

Operating Manual

RTW SurroundMonitor 10900

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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.

CE

Scope of this manual

This operating manual describes features, connection and functionality of the SurroundMonitor 10900.

- Chapter one contains a basic function description of the instrument.
- Chapter two explains the setup of the SurroundMonitor 10900. This chapter also contains important additional information about safety.
- Chapter three describes all key functions and how to operate the SurroundMonitor 10900.
- Chapter four describes the setting menus
- Informations about software updates can be found in chapter five.
- The appendix covers specifications, declarations of conformity and notes about licenses.

Symbols used in this manual:

This symbol draws your attention to related topics.

→ Press the button/key or select the menu file card ...

Warning! (see next page for description)

Attention! (see next page for description)

Functional earth terminal (see next page for description)

Protective earth terminal (see next page for description)

Safety symbols

The following symbols may be marked on the panels or covers of equipment or modules and are used in this manual:

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 allerts you to important operating considerations or a potential operating condition that could damage equipment. If you see this marked on equipment, consult the User´s manual or Operator 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.

Please note the safety informations in section 6.2. and the hints in every chapter.

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1 Introduction

1.1 The SurroundMonitor 10900 and its Components

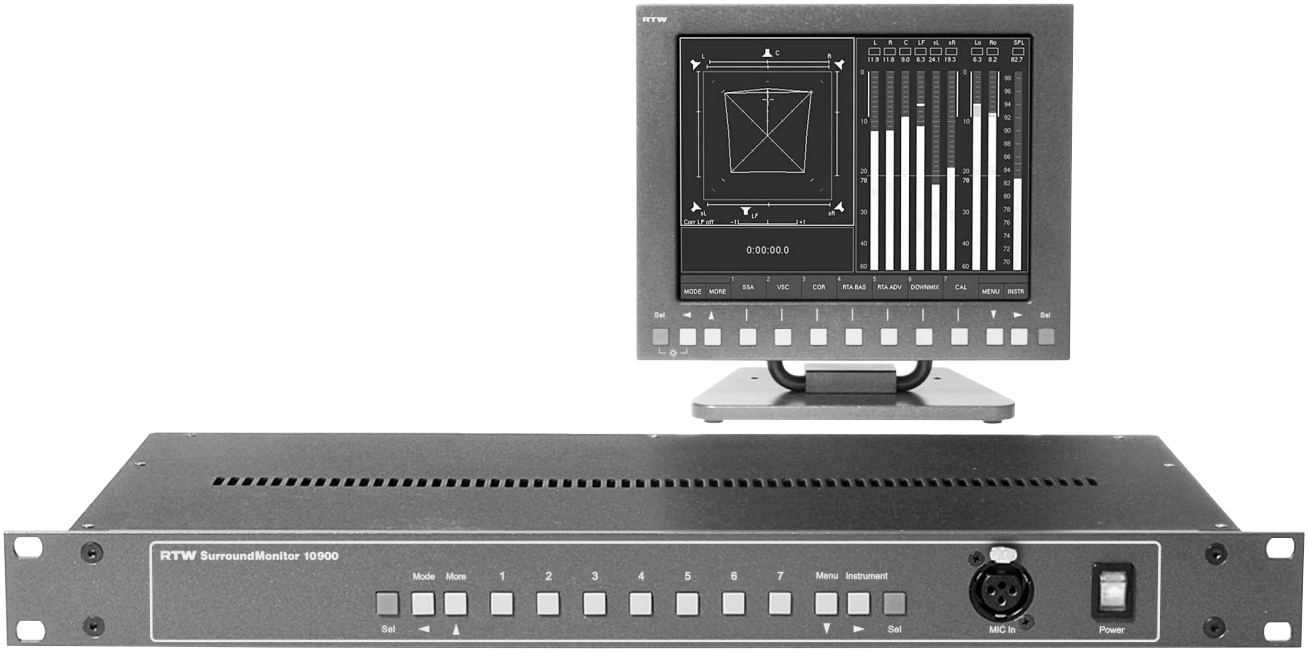


Fig. 1-1: The SurroundMonitor 10900 and the optional Remote Display 30010 (not included in standard package)

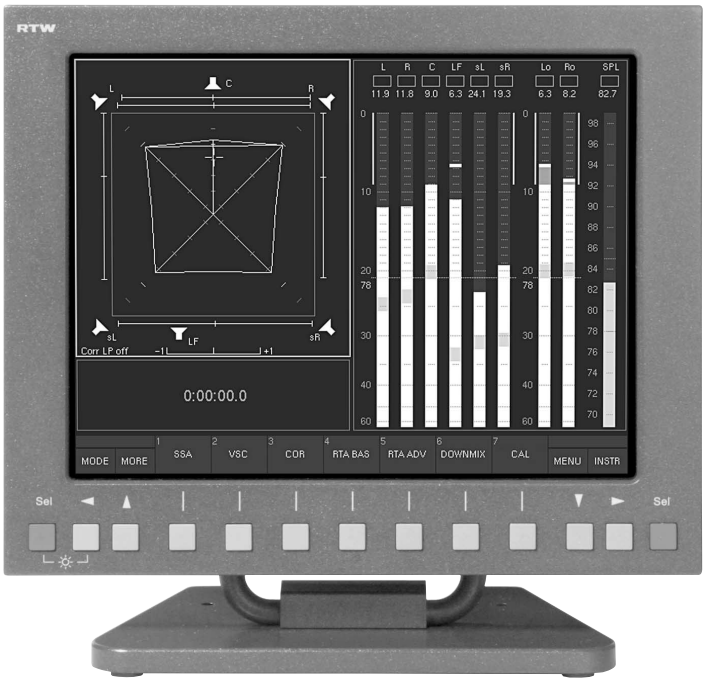


Fig. 1-2: Remote Display 30010 (optional – not included)

1.2 Description

The SurroundMonitor 10900 is an 8-channel metering instrument with level metering and signal analysis functions for comprehensive metering of your audio programmes. The combination of metering functions for surround formats and multi channel applications in a single unit makes the SurroundMonitor 10900 ideal not only for surround sound productions. Additional features like the integrated multi-channel test signal generator and the connection for a calibration microphone extend the SurroundMonitor 10900's scope to calibration and general maintenance of your entire studio monitoring setup.

The electronics are installed in a 19"/1U housing. The instrument is operated with the remote control units on the front. 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. 1-2), the colour and design of which match the main SurroundMonitor 10900 unit.

The SurroundMonitor 10900 has the following signal and control interfaces:

Signal Interfaces:

- Meter In Analog input:
  - 8 analog inputs, electronically balanced
  - Sampling rate 44.1, 48 or 96 kHz selectable in analog mode without digital signal present or else up to 96 kHz according to the digital or reference signal
- Meter In Digital input:
  - 4 AES/EBU inputs each
- „Digital Out" output
  - 4 AES/EBU outputs for test signals in Calibration mode (CAL)
  - Sampling rate according to the ref sync signal or, if no external signal as reference present, to the selected internal sampling rate.
- Separate AES/EBU Ref Sync output

In addition to this the unit also has an analog input (Aux In). This channel is used in combination with the SPL meter as the input for the calibration microphone (additional XLR-F input on the front panel).

Control Interfaces and Other Ports

- VGA output (640 x 480, 256 colours) for connection of a standard TFT or CRT monitor or RTW's optional 8.4" Remote Display 30010, which features control keys that can communicate directly with the SurroundMonitor 10900 via the VGA port.
- Ethernet network connector
- USB 1.1 connector for an optional mouse
- GP IO interface (16 inputs, 8 outputs)

1.3 Product Designations

SurroundMonitor 10900:19''/1U main unit
Remote Display 30010: TFT monitor with integrated function and control keys

1.4 Screen Display and Controls

In this manual the SurroundMonitor 10900's display functions are referred to as "instruments". The instruments and other functions are displayed in up to four 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.

- **Window 1: Toolbar**
  The Toolbar is always visible. It contains the controls for all the instruments' functions and displays information on current operating modes. You can control the functions in three ways: With the keys on the front side of the main unit, with the keys on the Remote Display 30010 or with an optional computer mouse.

- **Window 2: Peak Program Meter**
  The right half of the screen is normally occupied by the PPM display. It is only covered when the RTA Advanced 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 front side of the main unit or an optional mouse.

- **Window 4: Status Box**
  This window is used to display current status information, messages etc. Some of the instruments cover the Status Box when they are activated.

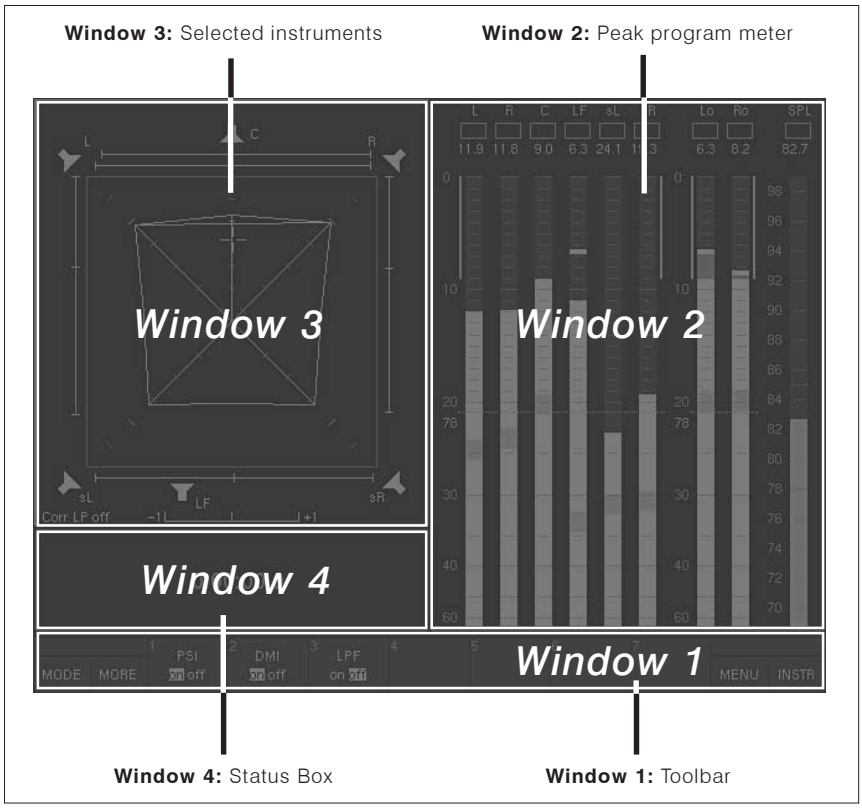


Fig. 1-3: The four screen display windows

1.5 Functions

These functions include the peakmeter and all other functions for signal analysis and monitor calibration:

See Chapter 1.6 for full details

- Multi-format PPM for all common standards, analog and/or digital, with RMS/SPL display, selectable track layout, for surround formats 5.1, (3/2), 6.1 (3/3), 7.1 (5/2), 2/0, SPL calibration supported with display of the resulting SPL
- Multi-format PPM for the Multi Channel mode
- 2-channel PPM for 2 Channel Stereo mode
- Multi-correlator for surround formats 5.1, 6.1, 7.1 (COR)
- Surround sound analyzer (SSA)
- Audio vectorscope with 2 and 4 channel mode (VSC)
- 1/3 octave real time analyzer (RTA Basic)
- 1/6 octave real-time-analyzer (RTA Advanced)
- SPL Meter
- AES/EBU status monitor
- Dialnorm meter
- Downmix matrix with downmix meter (level, correlation meter, vectorscope)
- Multi-channel test signal generator
- Alarm functions

All the metering functions can be operated with the keys on the front side of the main unit. Additional these functions can be operated with the keys on the optional Remote Display 30010 or an optional computer mouse.

See Chapter 1.6.1 and 4.4.2 for setting

1.5.1 The Surround Mode

In this mode the SurroundMonitor 10900 obtains to the internal logical channels L, R, ... with clear allocation to the sides. These channels are routed to three Peakmeter Channel Groups and selected in the Input/Output Routing or Local Input/Output Routing menus separately for every surround format (see Chapters 4.6 and 4.4.6).

See Chapter 1.6.1 and 4.4.2 for setting

1.5.2 The Multi Channel Mode

In this mode the SurroundMonitor 10900 only obtains to the internal channels 1 to 8 which can be routed to four Peakmeter Channel Groups with separate settings for the standard and the domain. There are no logical channels with clear allocation to the sides like in Surround Mode (see 1.5.1.).

But when distributing the channels stereo channel pairs with clear allocation to the sides can be defined. Stereo channel pairs are always consisted of adjacent channels starting with the uneven-numbered channel L (this is displayed with the Spot Correlator between the bar graphs of the stereo channel pair). These now may be displayed in the Vectorscope (VSC – see Chapter 1.6.3) or Correlator (COR – see Chapter 1.6.4) instruments. The distribution of the channels to the channel groups can be selected in the Input/Output Routing or Local Input/Output Routing menus (see Chapters 4.6 and 4.4.6).

See Chapter 1.6.1 and 4.4.2 for setting

1.5.3 The 2 Channel Stereo Mode

In this mode the SurroundMonitor 10900 only obtains to the clear allocated channels L and R. Therefore one Peakmeter Channel Group is available with settings for standard and domain. In this mode only certain instruments can be selected (see the notes at the description of the individual instruments).

1.6 Metering Instruments

See Chapter 3.4 for operating instructions

1.6.1 The Peak Program Meter Instrument (PPM)

Window 2 in the screen display is permanently assigned to the peakmeter groups and is always displayed in the right-hand window, with one exception.

The display of the peak program meter and aligned with them the display of other instruments depends on the Channel Mode selected in the Peakmeter (Peakmeter Settings) menu:

- **Surround Mode:**

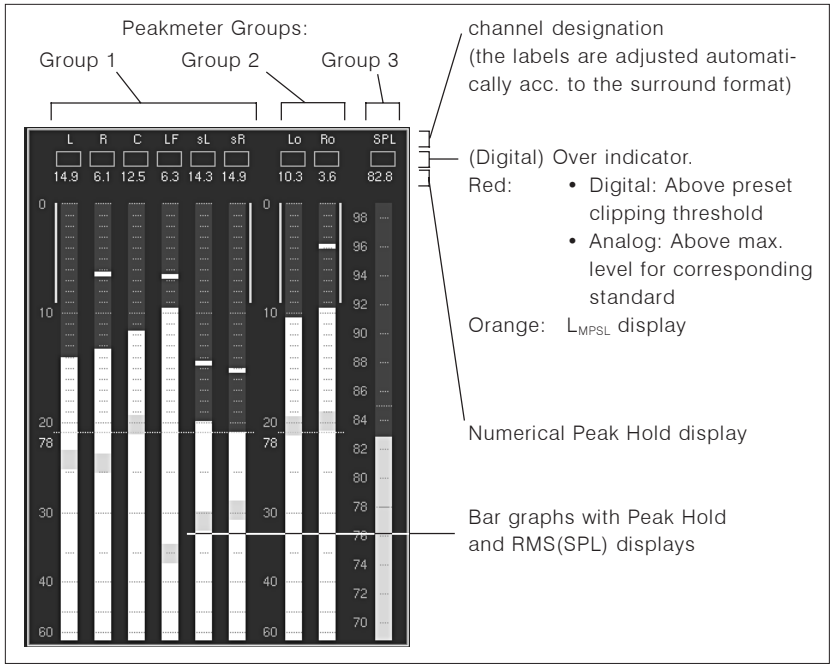


Fig. 1-4: Display elements of the Peak Program Meter instrument (PPM) in Surround mode

See Chapter 4.2. and 4.13. for description of settings

The peakmeter display in Surround mode consists of up to three peakmeter groups (channel groups). Each group can have different domains, standards and settings. **Peakmeter - Channel Group 1** is always active and **dictates the surround format for the entire unit**. The displays of groups 2 and 3 can be turned on and off as required. The positions and widths of the display bars are adjusted automatically by the software.

Selecting the Surround formats:
→ MENU → Edit selected preset button → Peakmeter menu → Channel Mode combo box (Surround) → Channel Group 1 button → Mode Select combo box

The positions and widths of the display bars are adjusted automatically by the software. Every peakmeter group has a numerical display, an Over indicator and a Peak Hold function. The RMS/SPL display can be switched on.

- **Multi Channel Mode:**

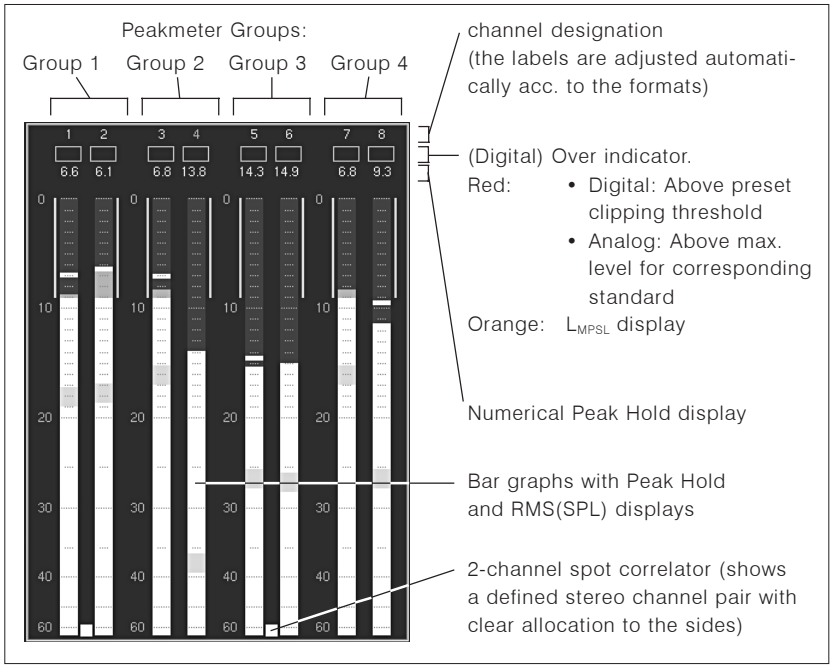


Fig. 1-5: Display elements of the Peak Program Meter instrument (PPM) in Multi Channel mode

See Chapter 4.2. and 4.14. for description of settings

The peakmeter display in Multi Channel mode consists of up to four peakmeter groups (channel groups). Each group can have different domains, standards and settings. **Peakmeter - Channel Group 1** is always active and **dictates the Multi Channel format for the entire unit**. According to the selected format different numbers of peakmeter groups will be displayed (i. e. in 2-channel format 4 channel groups, in 4-channel format 2 or 3 channel groups and in 8-channel format one channel group are displayed). The displays of the groups can be turned on and off as required.

At first there are no logical channels with clear allocation to the sides in Multi Channel mode. But when distributing the channels stereo channel pairs with clear allocation to the sides can be defined. Stereo channel pairs are always consisted of adjacent channels starting with the uneven-numbered channel L (i. e. analog 1-2, 3-4, ... or digital 1A-1B, 2A-2B, ..., but it is not possible to define channels 2 and 3 or 1 and 8 as stereo channel pair).
Two channels become a stereo channel pair when selecting **2 CH Stereo + SpCor** (2-channel spot correlator) mode in **Mode select** of the peakmeter group (see Chapters 4.4.6 and 4.13). This then is displayed with a Spot Correlator between the bar graphs of the stereo channel pair. These now may be displayed in the Vectorscope (VSC – see Chapter 1.6.3) or Correlator (COR – see Chapter 1.6.4) instruments (see example in fig. 1-6).

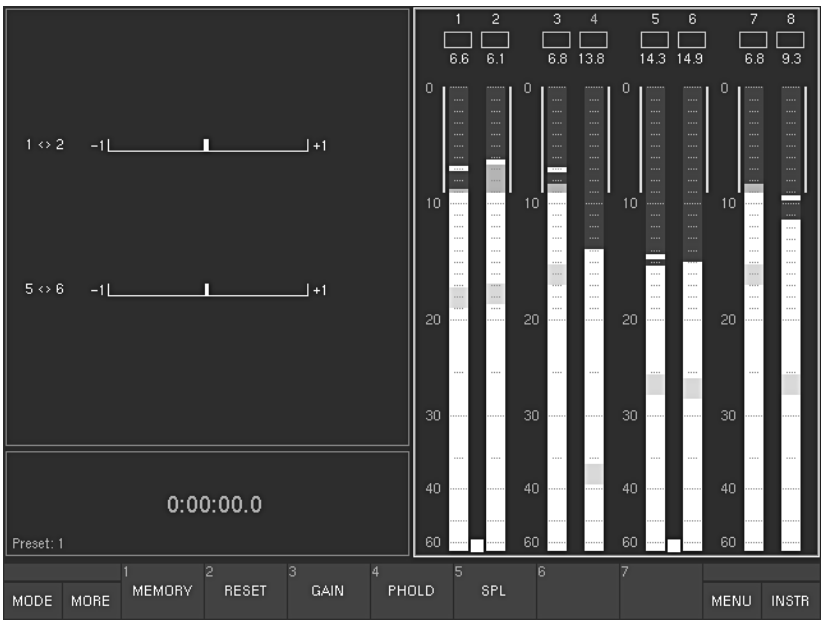


Fig. 1-6: Example for channel groups of the Peak Program Meter instrument (PPM). The stereo channel pairs 1-2 and 5-6 are displayed in the Correlator (COR) instrument.

Selecting the Multi Channel formats:
→ MENU → Edit selected preset button → Peakmeter menu → Channel Mode combo box (Multi Channel) → Channel Group 1 button → Mode Select combo box

The positions and widths of the display bars are adjusted automatically by the software. Every peakmeter group has a numerical display, an Over indicator and a Peak Hold function. The RMS/SPL display can be switched on.

- **2 Channel Stereo Mode:**

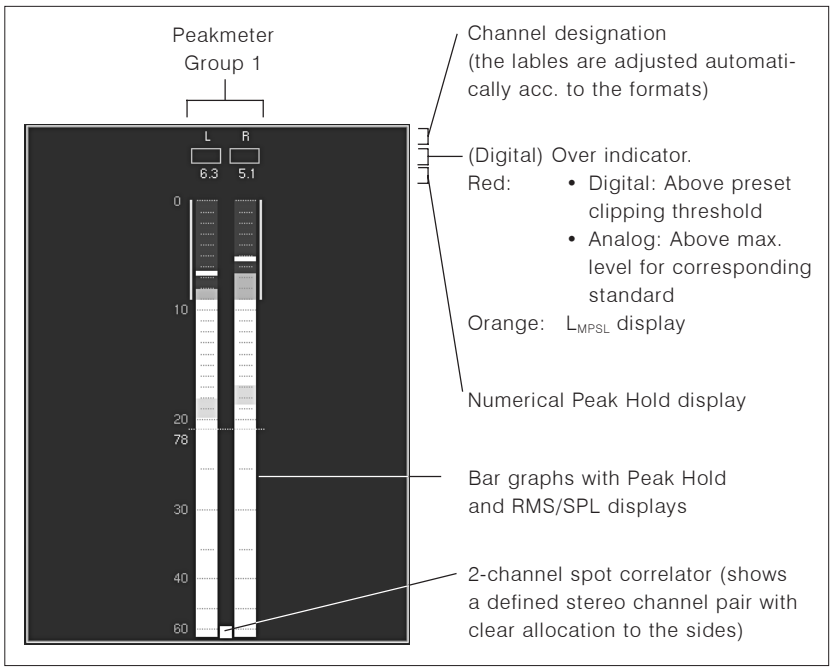


Fig. 1-7: Display elements of the Peak Program Meter instrument (PPM) in 2 Channel Stereo mode

See Chapter 4.2. and 4.14. for description of settings

The peakmeter display in 2 Channel Stereo mode consists of one peakmeter group (Channel Group) for the clear allocated channels L and R. **Peakmeter - Channel Group 1** is always active and **dictates the 2 Channel Stereo format for the entire unit**.

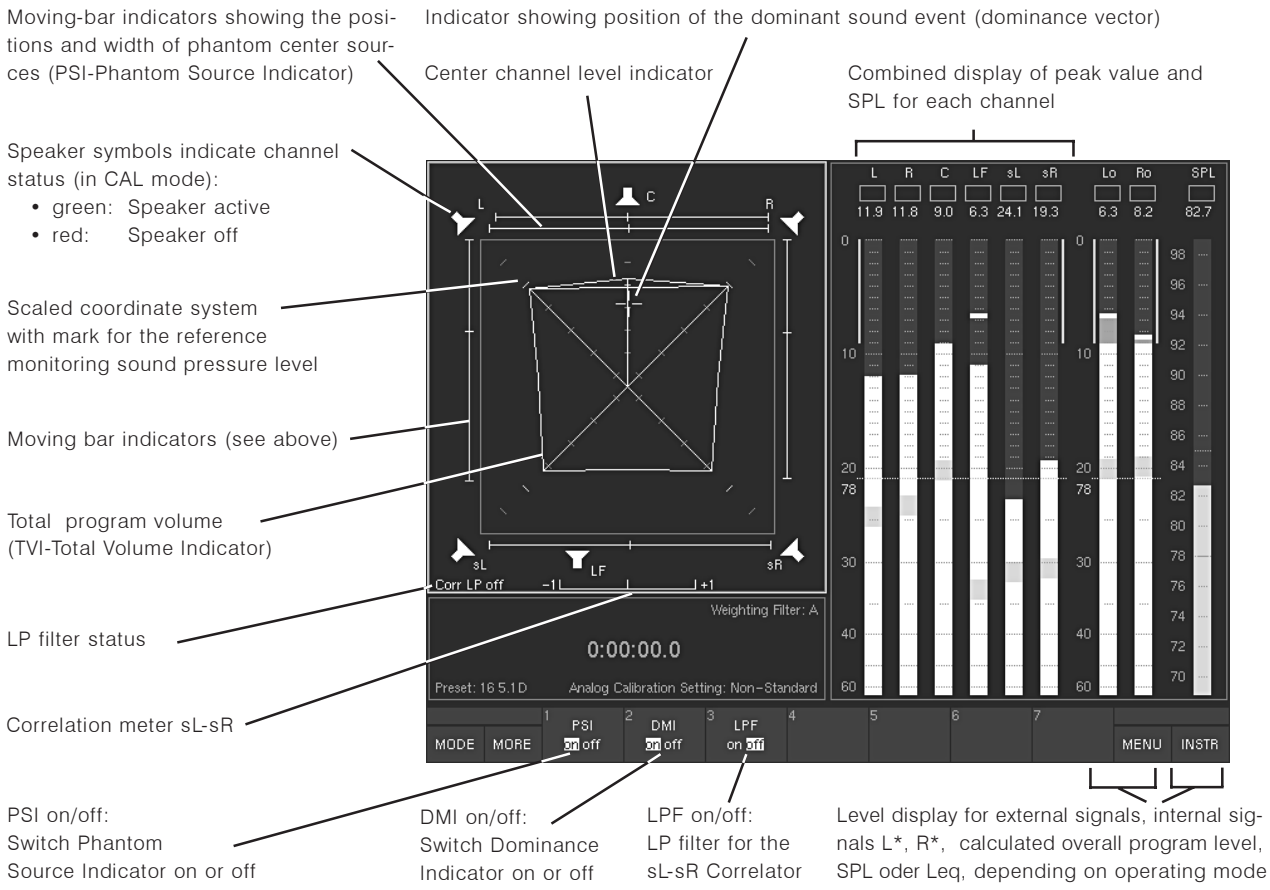
Similar to Multi Channel mode (see above) a stereo channel pair with clear allocation to the sides L and R is defined for the 2 Channel Stereo mode. In the Mode Select combo box therefor 2 CH Stereo + SpCor (2-channel stereo with spot correlator) is set. This then is displayed with a Spot Correlator between the bar graphs of the stereo channel pair.

Selecting the 2 Channel Stereo mode:
→ MENU → Edit selected preset button → Peakmeter menu → Channel Mode combo box (2 Channel Stereo) → Channel Group 1 button → Mode Select combo box

The positions and widths of the display bars are adjusted automatically by the software. The peakmeter group has a numerical display, an Over indicator and a Peak Hold function. The RMS/SPL display can be switched on.

See Chapter 3.5 for operating instructions

1.6.2 The Surround Sound Analyzer Instrument (SSA)



- In 6.1 mode an additional speaker symbol is displayed in the middle at the bottom.
- Im 7.1 mode two additional speaker symbols are displayed to the left and right ot the C symbol at the top. Their levels are mixed with those of the center channel – there is only one combined center indicator. The selected channel functions are displayed for all speakers as described above.
- In 2-channel stereo mode the SSA is not available, if you try to activate it a warning message will be displayed.

Fig. 1-8: Surround Sound Analyzer instrument display (SSA)

The SSA instrument is **only** available in Surround mode

The Surround Sound Analyzer combines displays of all the following information for surround format signals:

- Balance between front and surround channels
- Balance of the L-C-R front channels
- Front, side and rear phantom sources
- Dominant sound events
- Calibratable coordinate system (SPL – volume level)
- Overall volume of the surround signal (indicated by the area of the polygon in the display)
- Phase correlation of the surround channels for low frequencies

The Surround Sound Analyzer displays a correctly-scaled graphical representation of the relative volumes in the surround sound field. The interaction of levels (volume or sound pressure level) and the correlation of all channels in the production of the overall surround sound is displayed graphically, providing a very clear overview. The graphical display has been carefully designed so that 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. The display in the Surround Sound Analyzer can be set to correspond to the volume or the reference sound pressure level by calibrating the SurroundMonitor 10900 and your studio monitoring equipment accordingly. The axes of the 45° co-ordinate system use a dB volume level or dB-SPL scale and have a reference mark that is also displayed in the volume level and SPL displays in the peak program meters.

Graphical display of the overall volume

The Surround Sound Analyzer displays the relative levels of the surround signals with lines that form a polygon. This makes it possible to provide a clear, at-a-glance display of several parameters simultaneously. The polygon is generated by combining the displayed level values on the scales of the 45° coordinate system. If you feed noise signals with exactly the same levels to all channels you will get a square, the area of which corresponds to the overall volume. The relative distribution in the four quadrants corresponds to the volume distribution in the surround field. In addition to this the phase correlation and the positions of possible phantom sources are also displayed.

See Fig. 1-9, No. 1 (on next page)

The Front Center Channel

The balance between the center channel and the L and R front channels is critical for all surround sound productions. The center channel is displayed with its own pair of lines to enable you to see volume differences between the Center and L and R channels very clearly. An additional indicator shows the base width of the center sound source.

See Fig. 1-9, No. 4 - 5 (on next page)

The Center Surround Channel

In 6.1 mode the levels of the additional center surround channel are combined with those of the sL and sR surround channels. Currently, there is no separate center surround indicator.
In 7.1 mode the levels of the additional front channels are combined with the front center channel. There is thus only one combined front center indicator.

Surround Channel Correlation Display

The “envelopment effect” of the surround channels can be evaluated with a separate display that shows the correlation of surround channels sL and sR for broadband or for low frequencies only. Ideally, the low-frequency signal components (reverberation) should be decorrelated as far as possible.

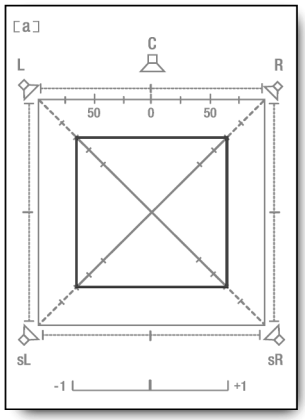
See description in Chapter 1.6.4.

The SurroundMonitor 10900 also includes an instrument called the 10-fold Multi-Correlator (COR) with which you can check the correlation of all other possible channel pairs.

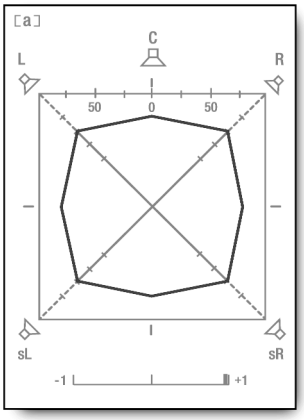
Volume-Referenced Level Metering

Volume-referenced level metering has now been generally recommended for some time as the best method for adjusting the levels of multi-channel programmes. The SurroundMonitor 10900 allows you to adjust your levels on the basis of volume against a defined reference sound pressure level. To do this you calibrate the components in the studio's transmission chain to a reference monitoring sound pressure level (e. g. 85 dB(A)). One of the big advantages of this level control method is that any loudness increase, for example as a result of compression, is automatically included as an absolute value. Volume-based level control makes it much easier to accurately measure and monitor the balance between dialogue, effects and music.

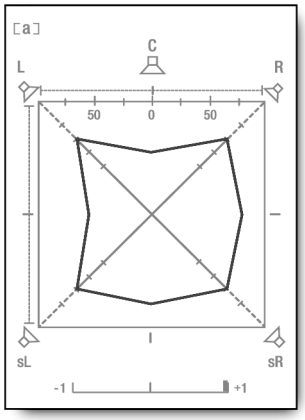
Examples of the Surround Sound Analyzer's displays



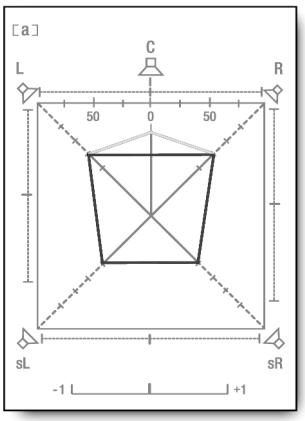
1. Incoherent noise, same levels in the channels L, R, sL and sR



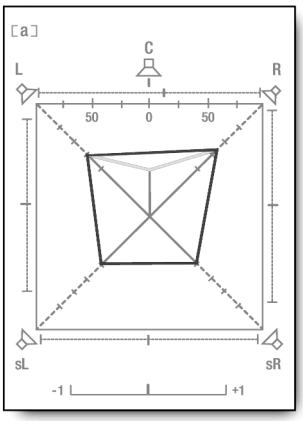
2. Sine wave signal, same level in the channels L, R, sL, sR, similar to a mono signal



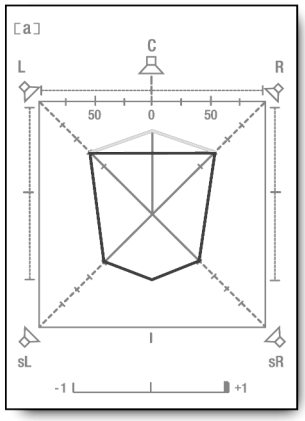
3. Same as the display on the left but with the phase of the left channel rotated through 180°



4. A surround signal with some center presence



5. A surround signal with a low level of center presence



6. The surround signal between sL and sR is mono

Fig. 1-9: Examples of displays in the Surround Sound Analyzer instrument (SSA)

See Chapter 3.6 for operating instructions

1.6.3 The Audio Vectorscope Instrument (VSC)

- **Surround Mode:**

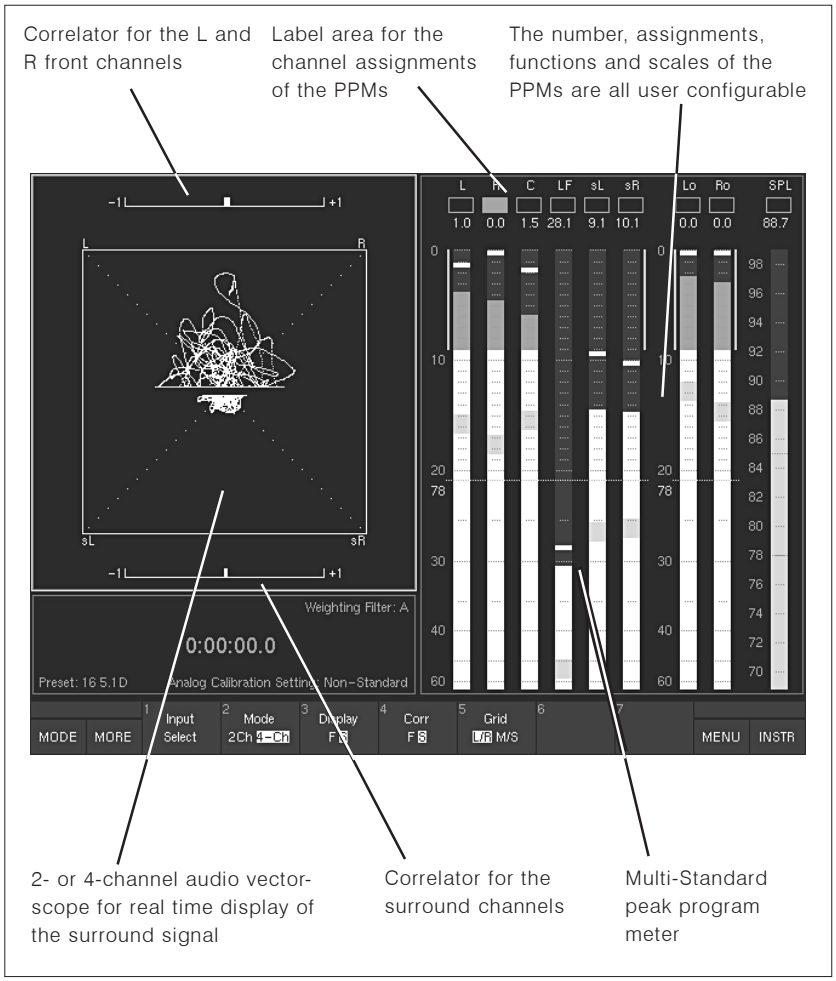


Fig. 1-10: The Audio Vectorscope instrument (VSC) in Surround mode (4-channel mode is displayed)

In Surround mode the audio vectorscope display is switchable between 2-channel and 4-channel mode with channel pairs L-R and sL-sR and has separate correlation displays for these channel pairs.

- **Multi Channel Mode:**

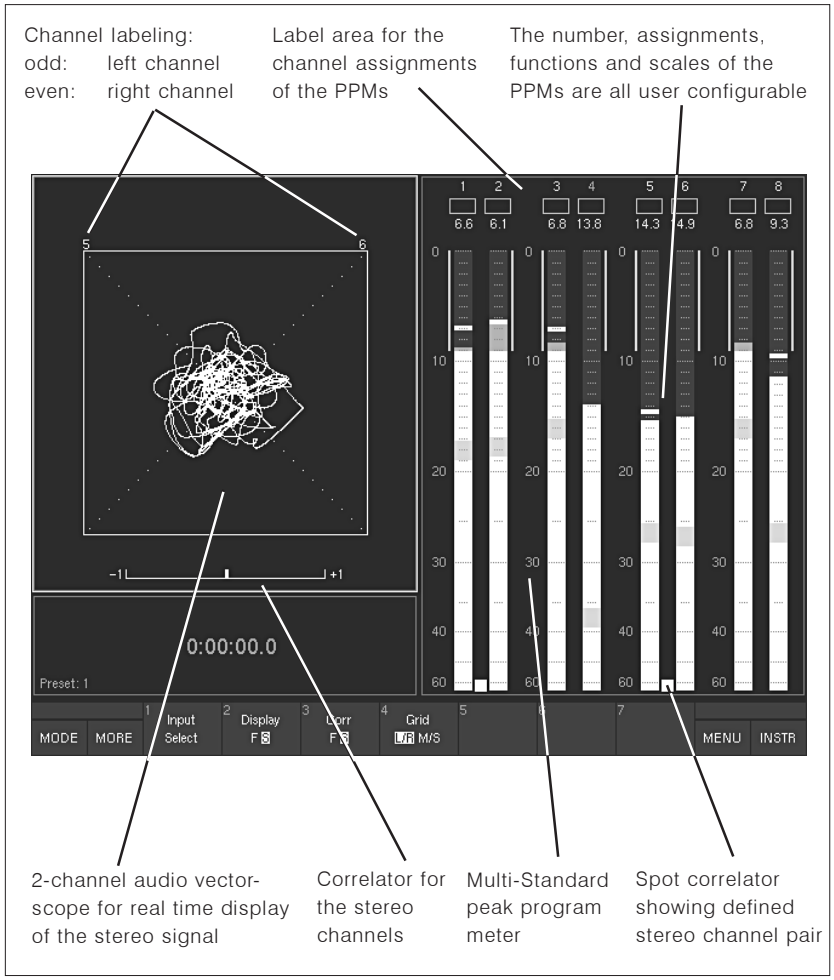


Fig. 1-11: The Audio Vectorscope instrument (VSC) in Multi Channel mode with defined stereo channel pairs

In Multi Channel mode the audio vectorscope display is only available for the defined stereo channel pairs with clear allocation to the sides (this is displayed by the Spot Correlator between the bar graphs of the stereo channel pair in Window 2, see Chapter 1.6.1 and fig. 1-5 and 1-11). Other signals present but with no stereo channel pair defined the vectorscope will show the message „No stereo channels available“ in Window 3.

Also see Chapter 1.6.1 and fig. 1-5 and 1-11

- **2 Channel Stereo Mode:**

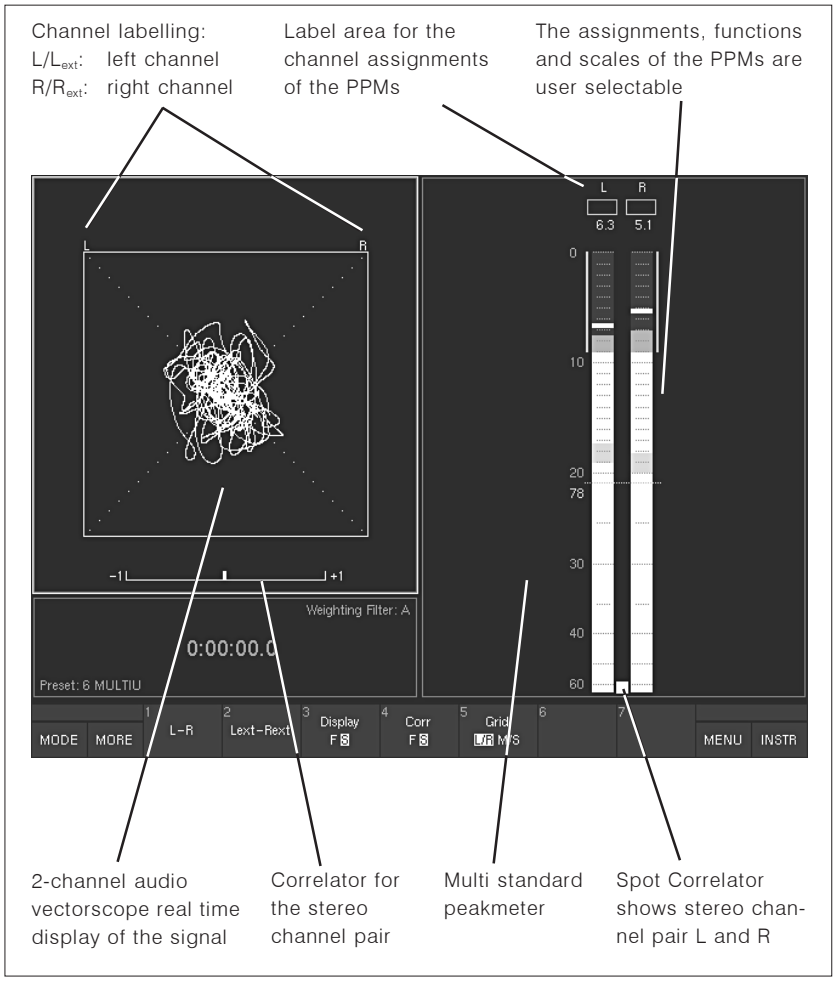


Fig. 1-12: The Audio Vectorscope instrument (VSC) in 2 Channel Stereo mode with the defined stereo channel pair L and R

In 2 Channel Stereo mode the VSC instrument offers an audio vectorscope display for the Peakmeter - Channel Group 1 and its defined stereo channel pair with the dedicated channels L and R (displayed with a Spot Correlator between the bar graphs of the peakmeter display in window 2, see Chapter 1.6.1 and Figs. 1-7 and 1-12).

Also see Chapter 1.6.1 and fig. 1-7 and 1-12

See Chapter 3.7 for operating instructions

1.6.4 The Correlator Instrument (Cor)

- **Surround Mode:**

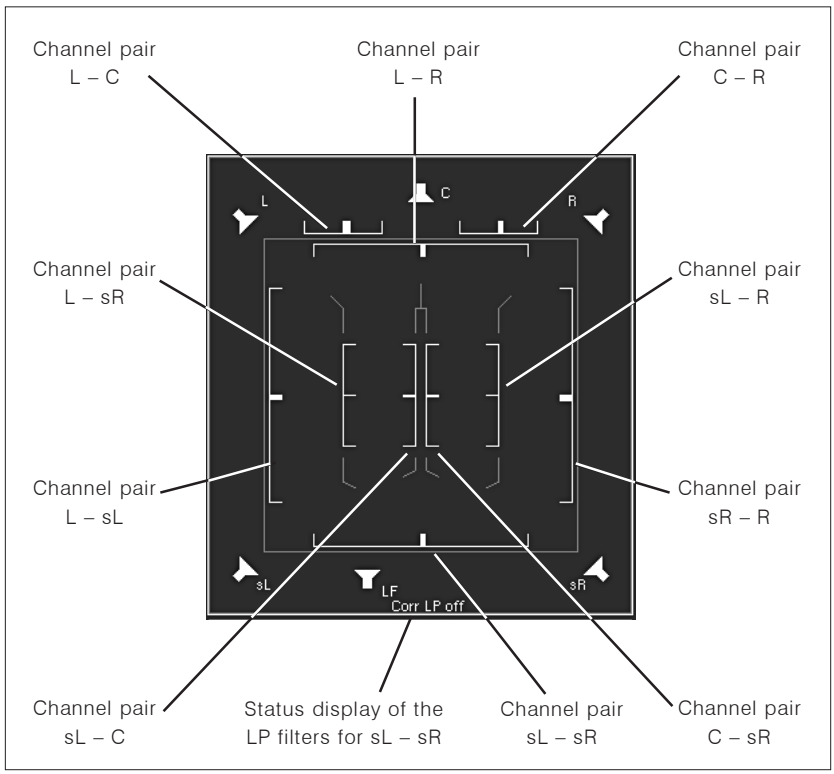


Fig. 1-13: The Correlator instrument (COR) as Multi Correlator in Surround mode

In 5.1 mode the multi-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 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.

- **Multi Channel Mode:**

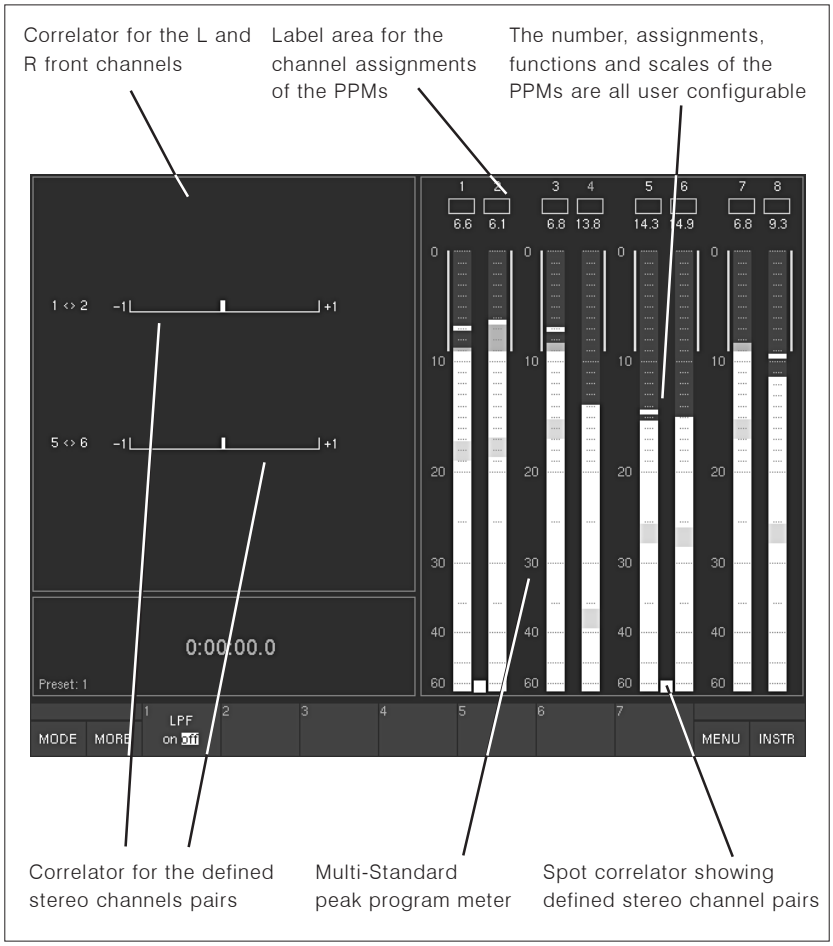


Fig. 1-14: The Correlator instrument (COR) in Multi Channel mode with defined stereo channel pairs

In Multi Channel mode the correlator display is only available for the defined stereo channel pairs with clear allocation to the sides (this is displayed with the Spot Correlator between the bar graphs of the stereo channel pair in Window 2, see Chapter 1.6.1 and fig. 1-5 and 1-14). Other signals present but with no stereo channel pair defined the vectorscope will show the message „No Correlator selected“ in Window 3.

Also see Chapter 1.6.1 and fig. 1-5 and 1-14

- **2 Channel Stereo Mode:**

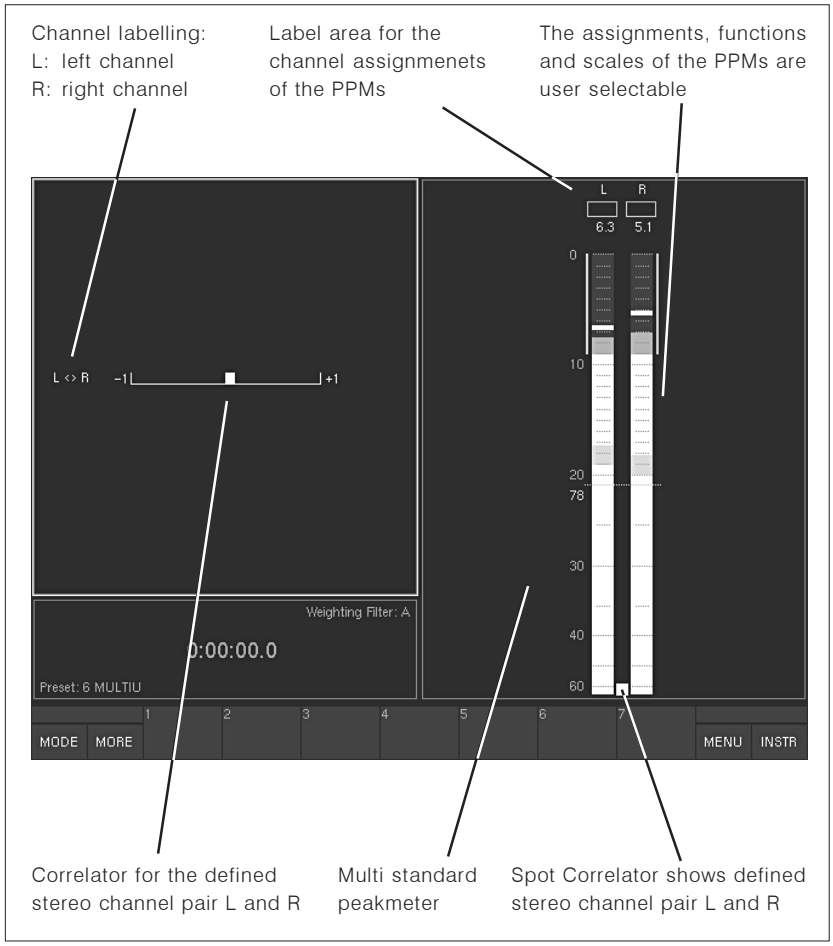


Fig. 1-15: The Correlator instrument (COR) in 2 Channel Stereo mode with defined stereo channel pair L and R

In 2 Channel Stereo mode the COR instrument offers a correlator display for the defined stereo channel pair with the dedicated channels L and R (displayed with a Spot Correlator between the bar graphs of the peakmeter display in Window 2, see Chapter 1.6.1 and Figs. 1-7 and 1-15).

Also see Chapter 1.6.1 and fig. 1-7 and 1-15

See Chapter 3.8 for operating instructions

1.6.5 The RTA Basic Instrument (RTA BAS)

The Real-Time Analyzer displays the spectral distribution of individual channels, the front channel group or the surround channel group.

- RMS integration time pursuant to IEC651
- RMS peak: Rise time 10 ms, fallback time same as a peakmeter
- Additional HF range for signal components above 20 kHz
- Display Hold function for easy evaluation
- Band Cursor with cursor readout to make the values more easily readable
- Reference Cursor function shows the difference between the current band and the reference band

When the RTA Basic instrument is activated it covers the Status Box.

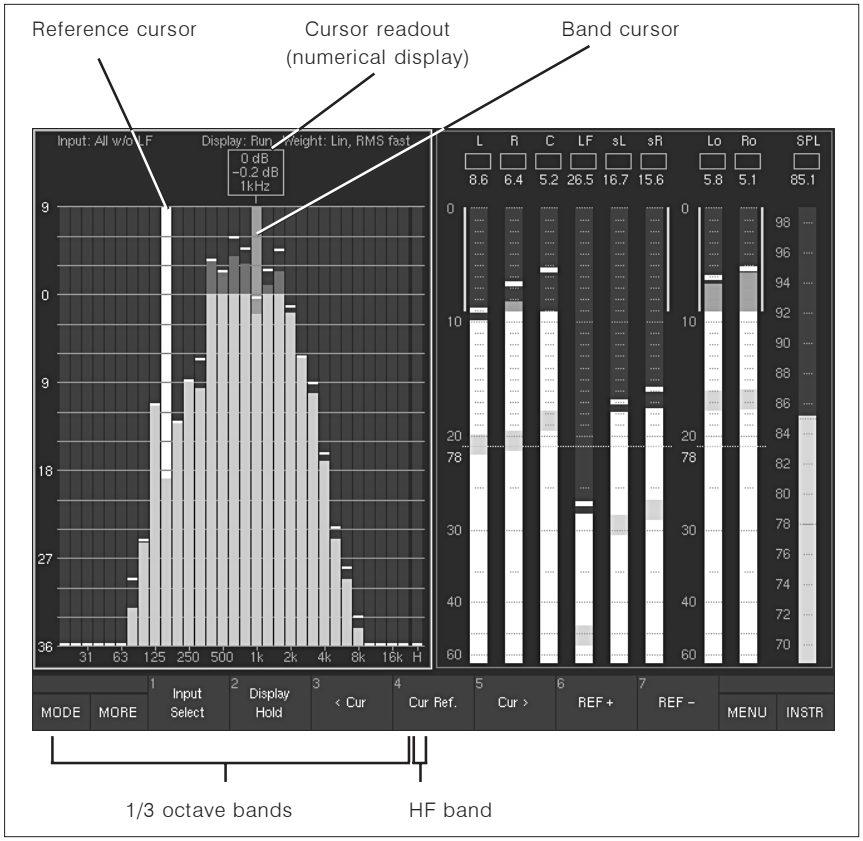


Fig. 1-16: The RTA Basic instrument (RTA BAS)

See Chapter 3.8 for operating instructions

1.6.6 The RTA Advanced Instrument (RTA ADV)

RTW Advanced is the only instrument that covers Window 2 with the Peak 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 Basic instrument, with one exception: When you are calibrating the monitoring system you can activate RTA Advanced from the CAL instrument for evaluation of the signal from the calibration microphone.

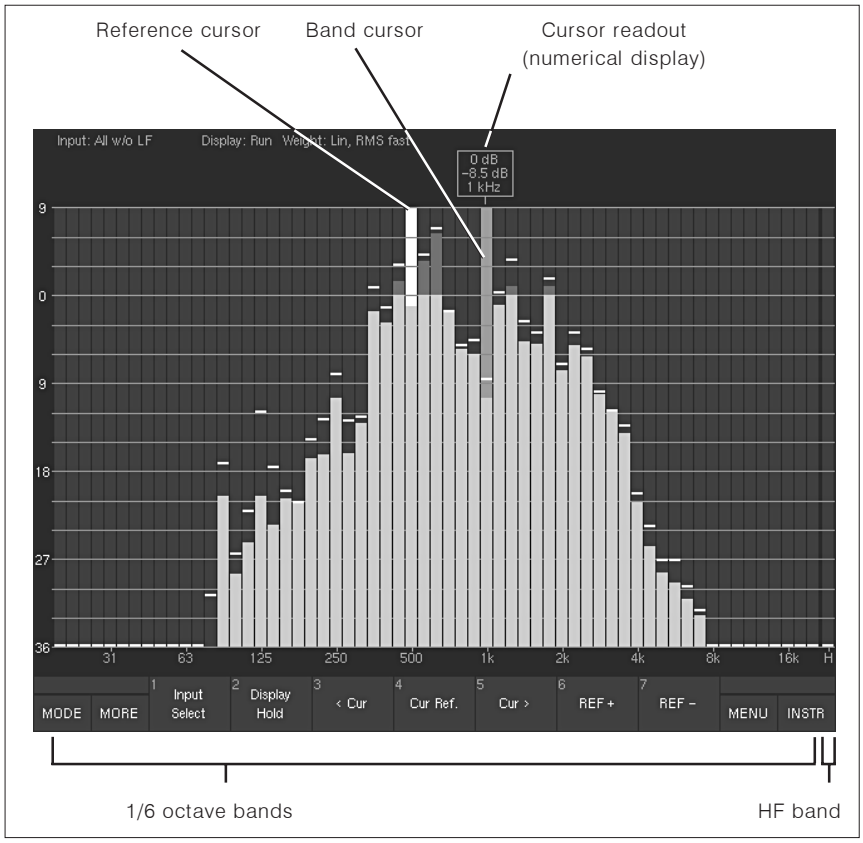


Fig. 1-17: The RTA Advanced instrument (RTA ADV)

See Chapter 3.9 for operating instructions

1.6.7 The (Two-Channel) Downmix Meter Instrument (Downmix)

The (Two-Channel) Downmix Meter instrument displays the levels and the correlation of the internally-generated two-channel downmix, and it also has a stereo vectorscope function. The Downmix Meter is only active when the internal downmix matrix is also activated and the unit operates in Surround mode. In Multi Channel mode the message „Downmix not available in multi channel mode“ is displayed.

See Chapter 3.6. and 3.4.6. for activating the Downmix Matrix

The DOWNMIX instrument is **only** available in Surround mode

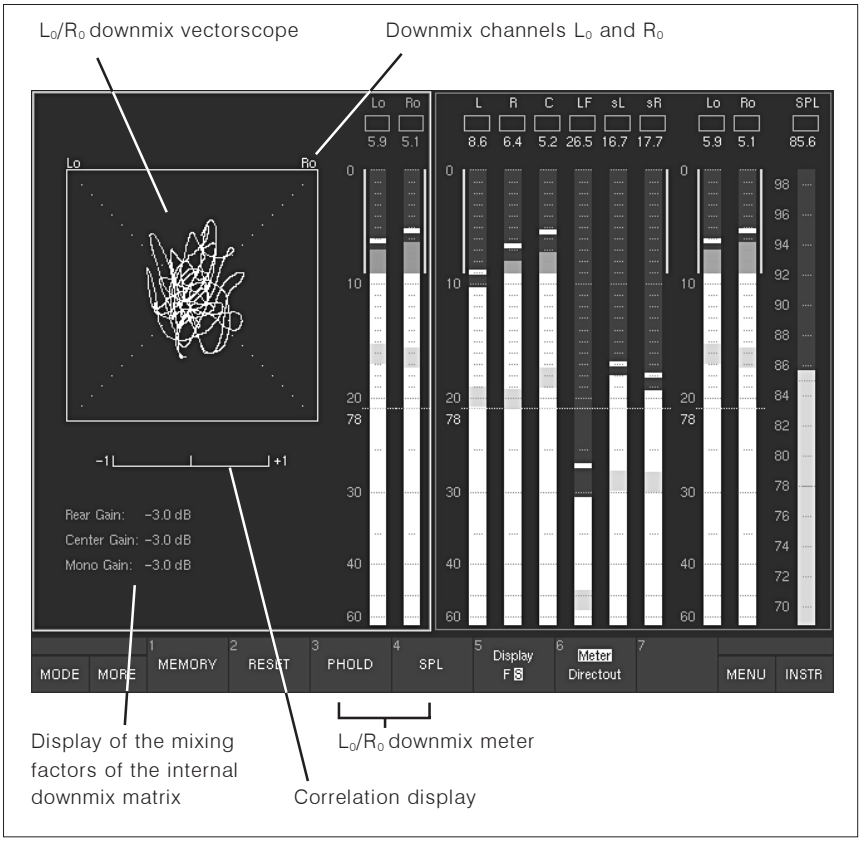


Fig. 1-18: The (Two-Channel) Downmix Meter instrument (DOWNMIX)

Activating the Downmix Matrix:

→ MENU → Menu Input/Output Routing → activating check box Downmix

See Chapter 3.10 for operating instructions

1.6.8 The Calibration Instrument (CAL)

This instrument provides an 8-channel test signal generator and a SPL meter for 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.
Digital test signals are put out via the Digital Out interface (see Chapter 2.3.9), analog test signals are not available.
The SurroundMonitor 10900'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 and Behringer's ECM 8000).

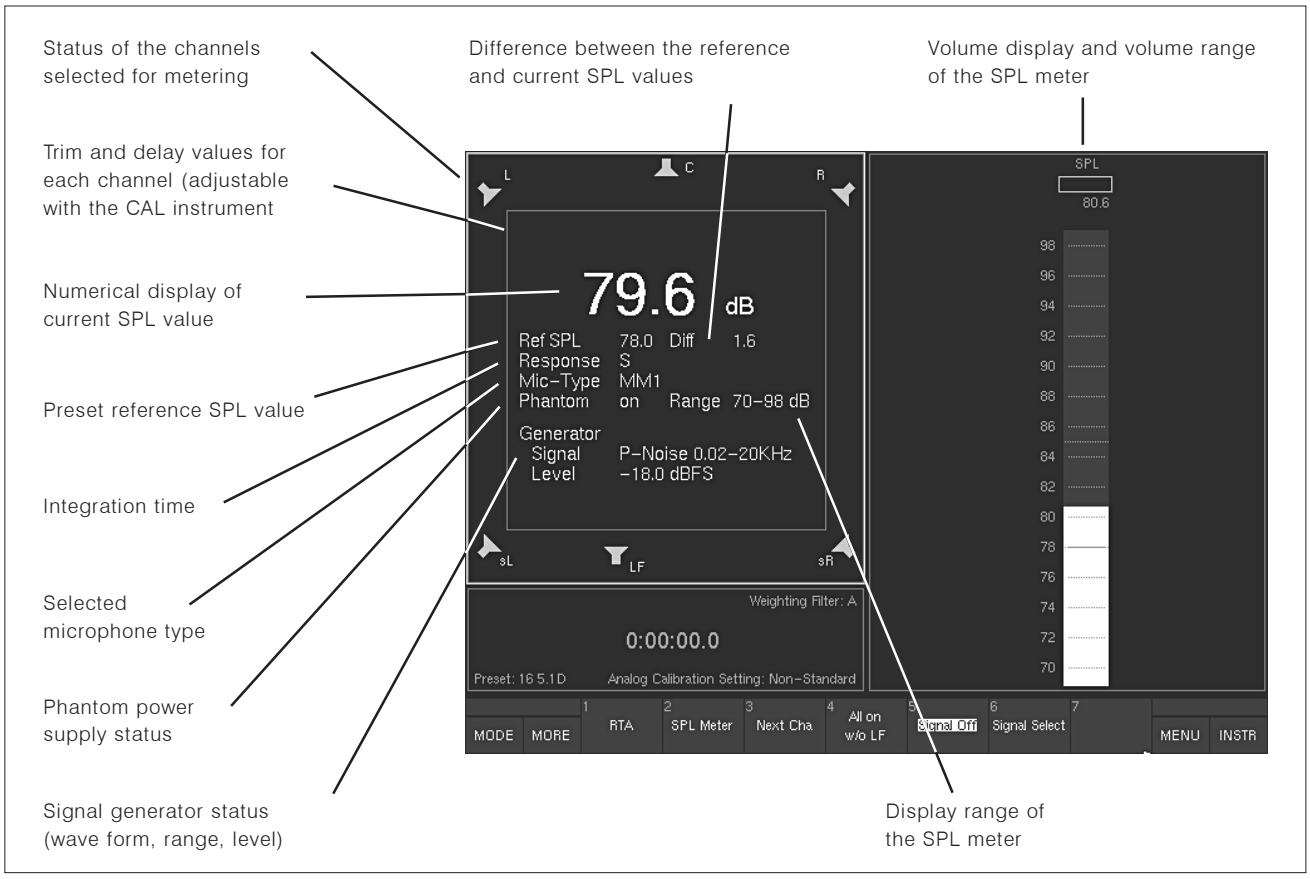


Fig. 1-19: The Calibration instrument (CAL)

See Chapter 3.12 for operating instructions

1.6.9 The AES/EBU Status Monitor instrument (AES/EBU)

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.

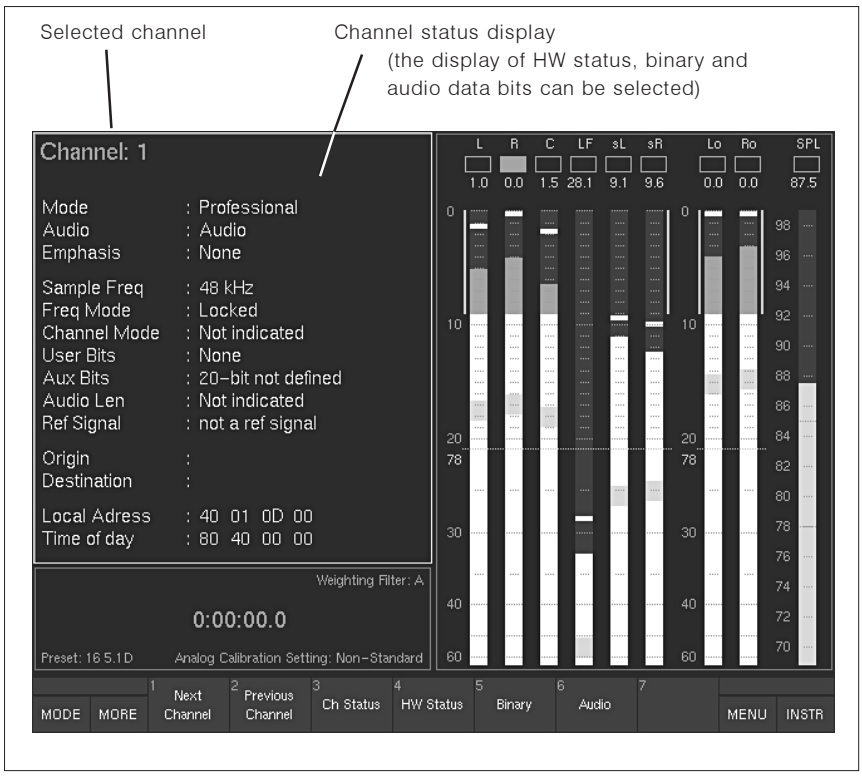


Fig. 1-20: The AES/EBU status monitor instrument (AES/EBU)

See Chapter 3.13 for operating instructions

1.6.10 The Dialnorm Instrument (DIALNORM)

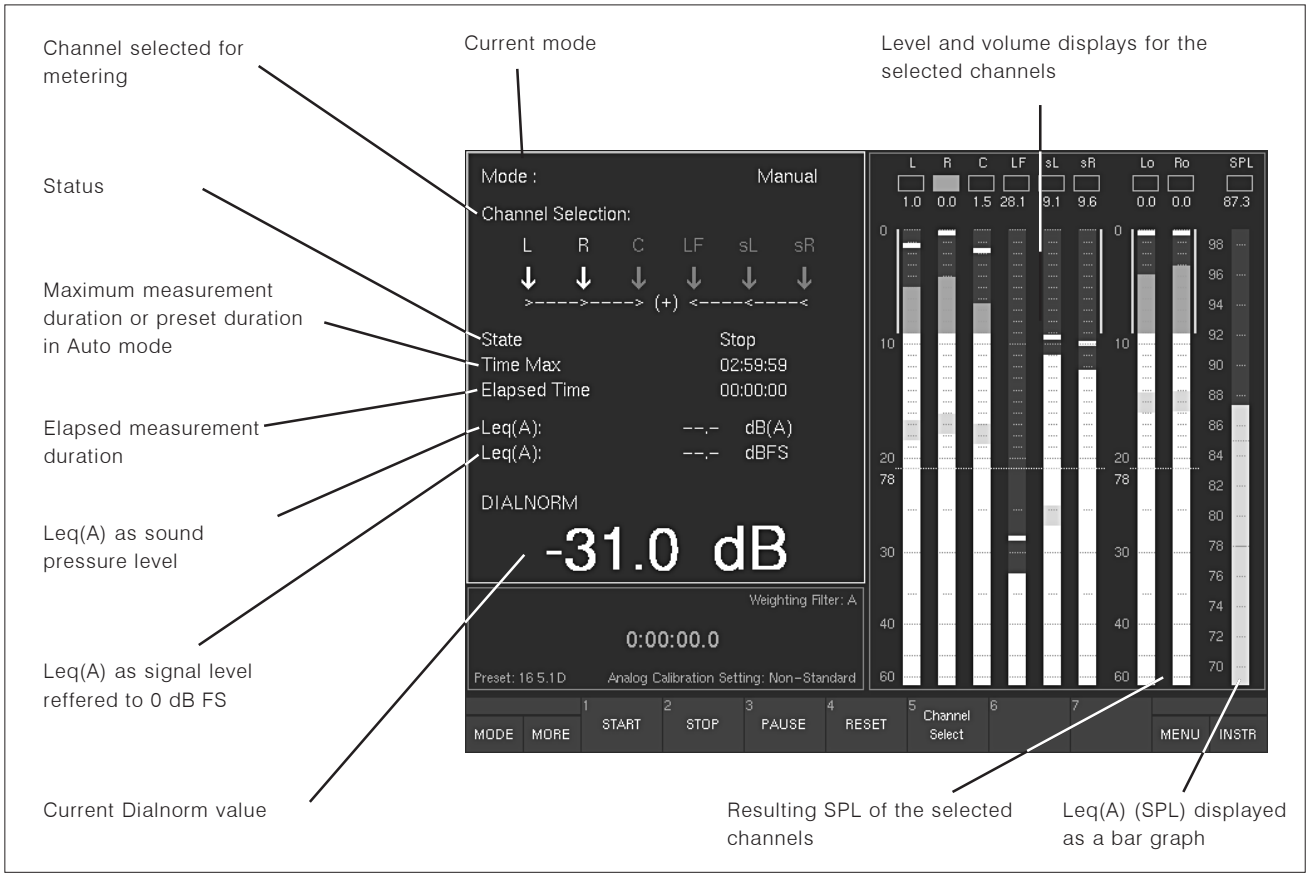


Fig. 1-21: The Dialnorm instrument (DIALNORM)

The Dialnorm instrument is **only** available in Surround mode

The term Dialnorm originates from film sound mixing and is an abbreviation for “dialogue normalisation”. It refers to the process of normalising the dialogue loudness level, for which a reference value of –31 dB FS is used in surround sound programmes. The idea is that the perceived total loudness of a mixed audio signal may be determined and kept relatively constant for the listener by using the dialogue level (optimised for a balance between good intelligibility and minimisation of annoying excessive dialogue volume levels) with its fixed loudness ratio in relation to music and sound effects as a reference. The ATSC standards A/53 and A/52 specify the transmission of the Dialnorm parameter as part of the meta data in multi-channel sound programmes.

The Dialnorm value is determined with a method used in noise pollution measurement, in which one measures Leq(A), the energy-equivalent A-weighted sound pressure level as defined in IEC 60804. The Dialnorm system uses a modified version of this standard. Instead of using the sound pressure level with a value of 20 µPa as a reference, Dialnorm measures the electrical signal level with reference to 0 dB FS. This Dialnorm value with 0 dB FS as

a reference corresponds to the measured Leq(A) value, using a lower threshold value of –31 dB FS. In the decoder, Dialnorm values above –31dB FS lead to a level reduction of the total audio signal by a value of (31dB + (Dialnorm)) [dB].

Dialnorm has no effect on the dynamics of the audio programme or the loudness ratios of dialogue, music, and effects. Only the overall level of the programme is controlled in relation to a reference value. The overall level of the programme is reduced if the Dialnorm value exceeds this reference value. The Dialnorm value is used by the decoder in the receiver to control the average overall volume in order to achieve a constant perceived loudness. This correction process operates slowly and smoothly and is not noticed by the listener.

2 Getting Started

2.1 Installation and Setup

The main SurroundMonitor 10900 unit is designed for installation in 19” rack systems. All necessary power supply voltages are supplied by the integrated wide voltage power supply unit. The SurroundMonitor 10900 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 24 V DC power supply unit. A 5-metre VGA connection cable 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 2.3.2 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 2.3.1 – 2.3.11

- Before installing the unit please study the safety information in Chapter 2.2 and the information on connections in Chapters 2.3.1 – 2.3.11.
- Make sure that the power supply cord is **not** connected and the power switch on the front panel is in the OFF position.

See Fig. 2-2 and Chapter 2.3.2

- 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. 2-2 and Chapter 2.3.3 – 2.3.11

- Connect all your other components to the appropriate connectors on the SurroundMonitor 10900, using the correct standard connection cables for the components.



- Then connect the power with an earthed 3-wire power supply cord. **Never operate the unit without a properly earthed power supply cord!**

See Chapter 2.3.1

- Switch on the power. The SurroundMonitor 10900 will then initiate its system startup sequence. This takes around 25 seconds, after which it is ready for use.

2.2 Safety Information

Before installing and configuring the unit please study the following safety information carefully and observe all the recommendations:



To prevent possible electrical shock, fire, injuries and malfunctions:

- Never open the housing.
- Never insert your fingers or any other objects into the housing.
- Never expose the unit to moisture and do not install it in a dusty environment.
- Never cover the unit or place any objects on it.
- Never operate the unit without adequate ventilation.
- Never place anything containing liquids on the unit.
- Turn off and disconnect the power supply immediately if the unit produces unusual smells, noises or smoke, or if foreign substances (e. g. liquids) or foreign objects enter the unit.



There are no user-serviceable parts in the SurroundMonitor 10900. 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 SurroundMonitor 10900 is designed for indoor use and may only be operated with a properly-earthed, 3-wire power supply cord.

2.3 Connections

All of the unit's audio inputs and audio outputs are electronically balanced.

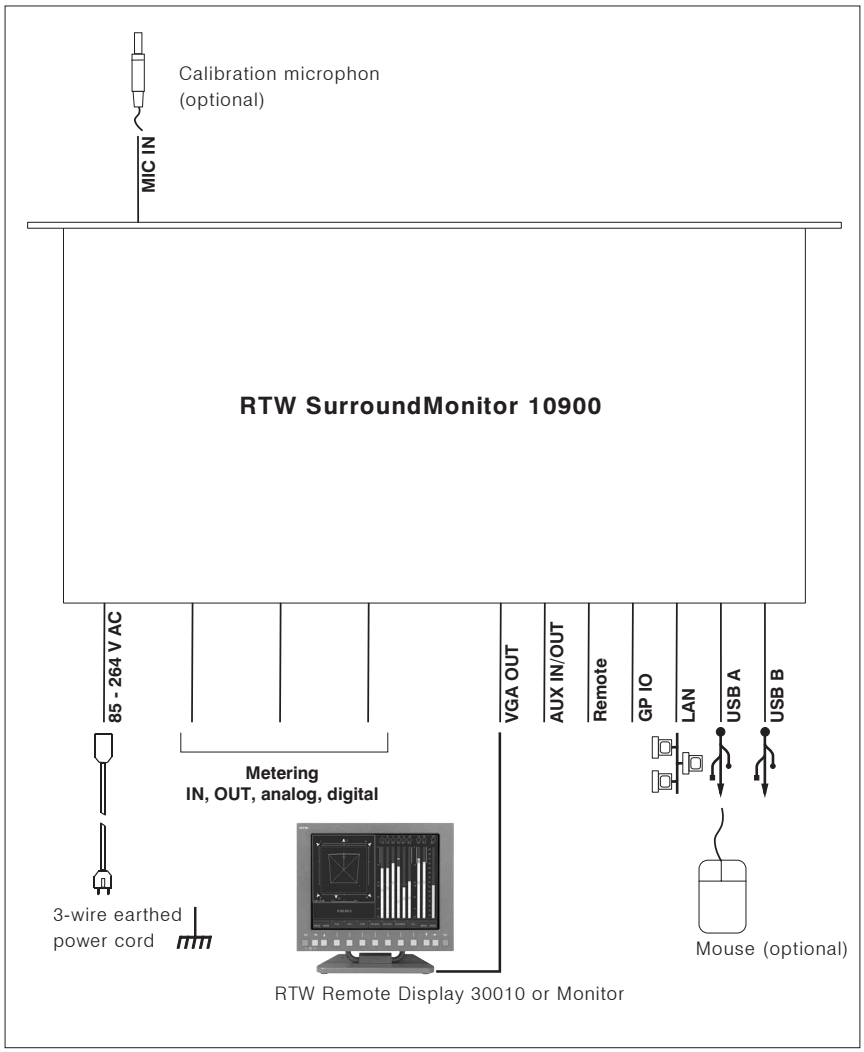


Fig. 2-1: Schematic representation of the unit's connections

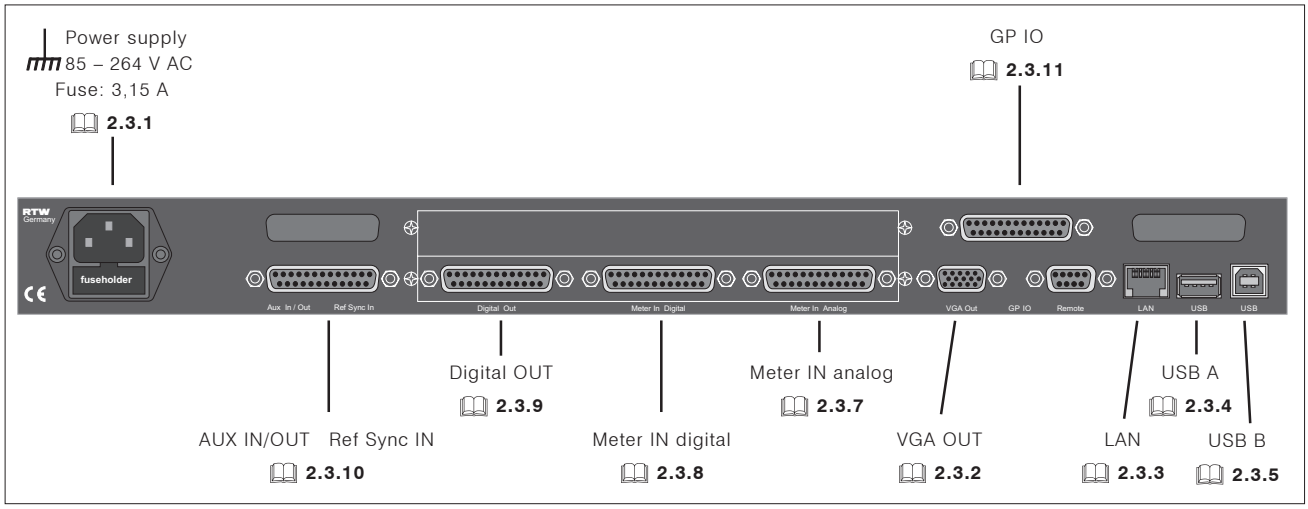


Fig. 2-2: Connectors on the rear panel of the SurroundMonitor 10900

2.3.1 Power Supply

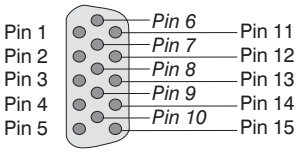
The SurroundMonitor 10900's integrated wide voltage power supply unit can be operated on mains voltages between 85 and 264 V AC. The power supply is fitted with a 3.15 A fuse, which is the same irrespective of the mains voltage. The unit must be connected with a properly-earthed 3-wire power cord.

2.3.2 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.

2.3.3 LAN Connector

This is a standard network port with an RJ45 connector. It can be connected with a standard RJ45 network cable (not included).

2.3.4 USB A Connector

This is a standard USB 1.1 port for connection of an optional computer mouse (not included).

2.3.5 USB B Connector

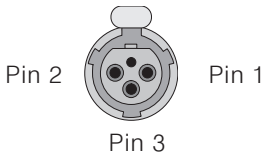
This connector is currently not used.

2.3.6 XLR Connector

This connector is located on the front panel of the 19”/1U SurroundMonitor 10900 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)

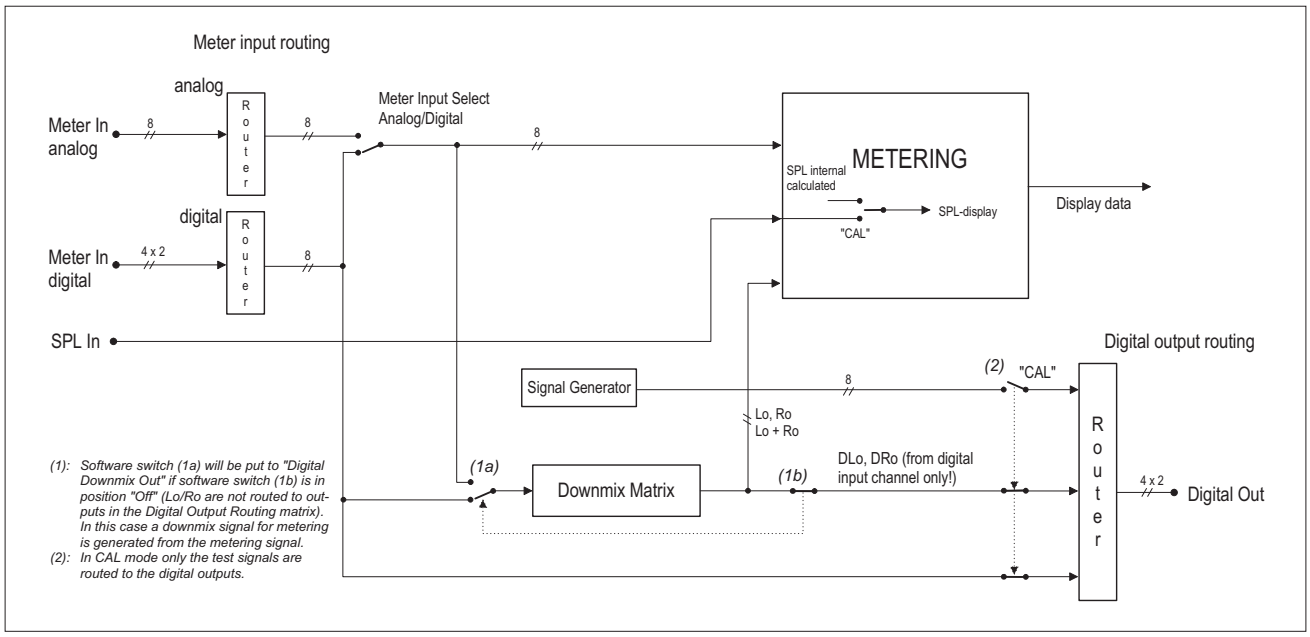


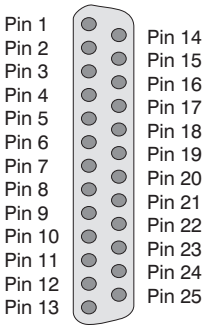
Fig. 2-3: Information flowchart SurroundMonitor 10900

2.3.7 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



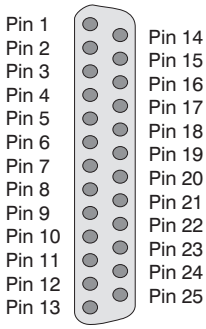
(External view of the connector)

2.3.8 Meter IN Digital Connector

This is a 4-fold AES/EBU interface for the metering.

25-pin female Sub-D-F connector:

Pin:	Function:
1	Not used
14	Not used
2	Not used
15	Not used
3	Not used
16	Not used
4	Not used
17	Not used
5	Not used
18	Not used
6	Not used
19	Not used
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)

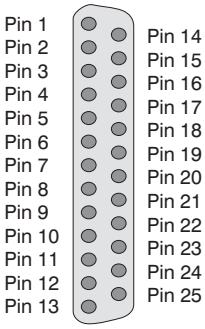
The AES/EBU inputs are permanently terminated with 110 Ω.

2.3.9 Digital OUT Connector

This is a 4-fold digital output connector for using incoming signals, 2-channel downmix signals generated of digital signals or multi channel signals of the test signal generator.

25-pin female Sub-D-F connector:

Pin:	Function:
1	Not used
14	Not used
2	Not used
15	Not used
3	Not used
16	Not used
4	Not used
17	Not used
5	Not used
18	Not used
6	Not used
19	Not used
7	Digital audio output 4 (+, hot)
20	Digital audio output 4 (-, cold)
8	Shield/chassis
21	Digital audio output 3 (+, hot)
9	Digital audio output 3 (-, cold)
22	Shield/chassis
10	Digital audio output 2 (+, hot)
23	Digital audio output 2 (-, cold)
11	Shield/chassis
24	Digital audio output 1 (+, hot)
12	Digital audio output 1 (-, cold)
25	Shield/chassis

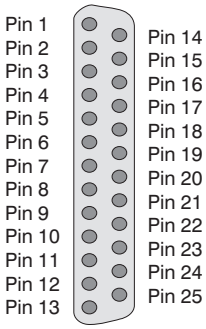


(External view of the connector)

2.3.10 Aux IN/OUT Ref Sync IN Connector

This is an 8-channel connection to which the AUX input and output signals and/or external sync signals can be connected.

25-pin female Sub-D-F connector:



(External view of the connector)

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	Preamp OUT (+, heiß)
17	Preamp OUT (–, kalt)
5	Shield/chassis
18	not used
6	not used
19	Schirm/Gehäuse
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	AES/EBU-sync in (+, heiß)] Permanently terminated with 110 Ω
12	AES/EBU-sync in (–, kalt)]
25	Shield/chassis

The AES/EBU Sync input is permanently terminated with 110 Ω.

2.3.11 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:

See fig. 3-1

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)

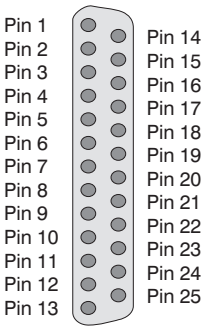
The stop watch is shown in Window 4 (see figures 1-3 and 3-1)

13	GP IO IN	Stop watch key START
14	GP IO IN	Stop watch key STOP
15	GP IO IN	Stop watch key RESET
16	GP IO IN	not used

See Chapter 4.11 and Figs. 4-26, 4-27, 4-30 and 4-31

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

25 Common potential and shield/chassis



(External view of the connector)

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 4.11). 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 4.12) 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 4.11) different alarm events can be selected to put out via the several control outputs (see above).

2.4 Presets

The SurroundMonitor 10900 features 7 Factory- (15 F to 21 F) and 14 User- (1 U to 14 U) Presets. When delivered from the factory the factory programed presets are copied into the User-Presets 1 U to 7 U and again into the User-Presets 8 U to 14 U. The User-Presets provide a basis for own settings.



Please note, that all **Factory-Presets** are set to **Use Local Routing Settings** (see Chapter 4.4.1.) and that thus uses the **local** routing settings (see Chapter 4.4.6.)!

→ MODE → MORE → MORE
→ MORE → MORE
→ Button/key 1

See Chapters 4.1 and 4.4 

2.4.1 Preset 15 F: 5.1A

(copied to: 1 U and 8 U)

Definition:	5.1 format	
	Analog input	
	Surround channels Out 1 : 1 to analog	
	Digital L_0/R_0 Out	
Input:	Meter In analog	(📖 2.3.7.)
Output:	Digital Out:	(📖 2.3.9.)
	• Input channels digital 1 : 1	
	• Digital L_0/R_0 Out	
Scale PPM:	DIN	(📖 4.11.)
Select default instrument:	Surround Sound Analyzer	(📖 4.4.1.)
Downmix:	Activated	(📖 4.4.6., 4.6.)
DL_0/DR_0 Out:	Digital Audio output 4	(📖 2.3.9.)
Routing Input(s):	Standard configuration	(📖 2.4.8.)
Routing Output(s):	Standard configuration	(📖 2.4.8.)
Use Local Routing Settings:	Activated	(📖 4.4.1.)

→ MODE → MORE → MORE
→ MORE → MORE
→ Button/key 2

See Chapters 4.1 and 4.4 

2.4.2 Preset 16 F: 5.1 D

(copied to: 2 U and 9 U)

Definition:	5.1 format	
	Digital input	
	Surround channels Out 1 : 1 to digital	
	Digital L_0/R_0 Out	
Input:	Meter In digital	(📖 2.3.8.)
Output:	Digital Out:	(📖 2.3.9.)
	• Input channels digital 1 : 1	
	• Digital L_0/R_0 Out	
Scale PPM:	0 dB FS	(📖 4.11.)
Select default instrument:	Surround Sound Analyzer	(📖 4.4.1.)
Downmix:	Activated	(📖 4.4.6., 4.6.)
DL_0/DR_0 Out:	Digital Audio Output 4	(📖 2.3.9.)
Routing Input(s):	Standard configuration	(📖 2.4.8.)
Routing Output(s):	Standard configuration	(📖 2.4.8.)
Use Local Routing Settings:	Activated	(📖 4.4.1.)

→ MODE → MORE → MORE
→ MORE → MORE
→ Button/key 3

See Chapters 4.1 and 4.4 

2.4.3 Preset 17 F: 5.1 AEX

(copied to: 3 U and 10 U)

Definition:	5.1 format	
	Analog input	
	L_{ext}/R_{ext} input	
	No downmix	
Input:	Meter In analog	(2.3.7.)
Output:	Digital Out:	(2.3.9.)
	Inputskanäle digital 1 : 1	
Scale PPM:	DIN	(4.11.)
Select default instrument:	Surround Sound Analyzer	(4.4.1.)
Downmix:	Deactivated	(4.4.6., 4.6.)
DL_0/DR_0 Out:	– –	
Routing Input(s):	Standard configuration	(2.4.8.)
Routing Output(s):	Standard configuration	(2.4.8.)
Use Local Routing Settings:	Activated	(4.4.1.)

→ MODE → MORE → MORE
→ MORE → MORE
→ Button/key 4

See Chapters 4.1 and 4.4 

2.4.4 Preset 18 F: 5.1 AD

(copied to: 4 U and 11 U)

Definition:	5.1 format	
	Digital input	
	L_{ext}/R_{ext} input	
	No downmix	
Input:	Meter In digital	(2.3.8.)
Output:	Digital Out:	(2.3.9.)
	Inputskanäle digital 1 : 1	
Scale PPM:	60 dB FS	(4.11.)
Select default instrument:	Surround Sound Analyzer	(4.4.1.)
Downmix:	Deactivated	(4.4.6., 4.6.)
DL_0/DR_0 Out:	– –	
Routing Input(s):	Standard configuration	(2.4.8.)
Routing Output(s):	Standard configuration	(2.4.8.)
Use Local Routing Settings:	Activated	(4.4.1.)

→ MODE → MORE → MORE
→ MORE → MORE
→ Button/key 5

See Chapters 4.1 and 4.4 

2.4.5 Preset 19 F: 7.1 D

(copied to: 5 U and 12 U)

Definition:	7.1 format	
	Digital input	
	Digital channels Out 1 : 1	
	No downmix	
Input:	Meter In digital	(2.3.8.)
Output:	Digital Out:	(2.3.9.)
	Input channels digital 1 : 1	
Scale PPM:	60 dB FS	(4.11.)
Select default instrument:	Surround Sound Analyzer	(4.4.1.)
Downmix:	Deactivated	(4.4.6., 4.6.)
DL_0/DR_0 Out:	– –	
Routing Input(s):	Standard configuration	(2.4.8.)
Routing Output(s):	Standard configuration	(2.4.8.)
Use Local Routing Settings:	Activated	(4.4.1.)

→ MODE → MORE → MORE
→ MORE → MORE
→ Button/key 6

See Chapters 4.1 and 4.4 (📖)

2.4.6 Preset 20 F: Multi 1

(copied to: 6 U and 13 U)

Definition:	Multi Channel mode	
	2 x Stereo digital	
	2 x Stereo analog	
Input:	Meter In analog: (5-6, 2-8)	(📖 2.3.7.)
	Meter In digital: (1-2, 3-4)	(📖 2.3.8.)
Output:	Digital Out:	(📖 2.3.9.)
	Input channels digital 1 : 1	
Scale PPM:	Digital: 60 dB FS	(📖 4.11.)
	Analog: DIN	
Select default instrument:	Vectorscope	(📖 4.4.1.)
Downmix:	Deactivated	(📖 4.4.6., 4.6.)
DL_0/DR_0 Out:	– –	
Routing Input(s):	Standard configuration	(📖 2.4.8.)
Routing Output(s):	Standard configuration	(📖 2.4.8.)
Use Local Routing Settings:	Activated	(📖 4.4.1.)

→ MODE → MORE → MORE
→ MORE → MORE
→ Button/key 7

See Chapters 4.1 and 4.4 (📖)

2.4.7 Preset 21 F: Multi 2

(copied to: 7 U and 14 U)

Definition:	Multi Channel mode	
	2 x 4-channel analog	
Input:	Meter In analog	(📖 2.3.7.)
Output:	Digital Out:	(📖 2.3.9.)
	Input channels digital 1 : 1	
Scale PPM:	DIN	(📖 4.11.)
Select default instrument:	– –	(📖 4.4.1.)
Downmix:	Deactivated	(📖 4.4.6., 4.6.)
DL_0/DR_0 Out:	– –	
Routing Input(s):	Standard configuration	(📖 2.4.8.)
Routing Output(s):	Standard configuration	(📖 2.4.8.)
Use Local Routing Settings:	Activated	(📖 4.4.1.)

2.4.8 Note for audio signal wiring

Standard Channel Configuration				
Meter In analog 25-pin Sub-D-F	**XLR connector (RTW 1186)**	**Meter In digital 25-pin Sub-D-F**	**XLR connector (RTW 1186)**	**Internal channels (Surround)**
1	1	1A	1	L
2	2	1B	1	R
3	3	2A	2	C
4	4	2B	2	LF
5	5	3A	3	sL
6	6	3B	3	sR
7	7	4A	4	L_{ext} (inputs only)
8	8	4B	4	R_{ext} (inputs only)
📖 **2.3.7**		📖 **2.3.8**		
RTW 1186: 8-pair snake cable 25-pin Sub-D-M to 8 XLR-F				

3 Operation

3.1 Operating Options

The SurroundMonitor 10900 can be operated in three different ways: With the control keys on the front side of the unit, with the control keys on the optional Remote Display 30010 unit or with an optional computer mouse using the controls displayed in the Toolbar on the screen (Window 1).
All the system's functions and setup menus can be accessed with the optional mouse and the control keys on the Remote Display 30010.

Fig. 3-1 shows the key layouts on the front side of the SurroundMonitor 10900, on the front side of the Remote Display 30010 and an example of a Toolbar as displayed on the screen.

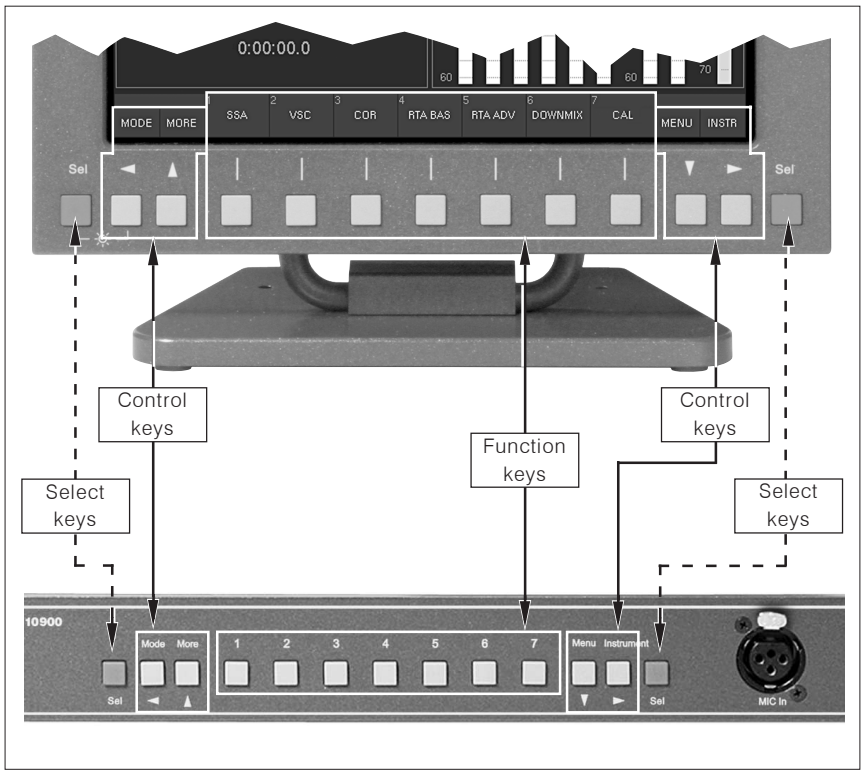


Fig. 3-1: The SurroundMonitor 10900 controls

3.2 The Control Keys and the Toolbar

The front side of the main unit and the Remote Display 30010 have a total of 11 keys for operating the SurroundMonitor 10900 system. On-screen buttons providing the same control functions for access with an optional mouse are displayed in the Toolbar in Window 1 of the display.

Function keys see Fig. 3-1



The functions assigned to function keys 1 – 7 change depending on the current system mode. The functions that are currently active are displayed in the Toolbar. These keys can function as either pushbuttons or switches, and they can also be used to adjust settings with up to three options for some instruments. The current option is highlighted (see illustration on the left) and you can switch between the available options by pressing the key or clicking the corresponding button repeatedly.

Control keys see Fig. 3-1

→ MODE

→ MORE

→ MENU

→ INSTR(UMENT)

Two pairs of control keys are located to the left and right of the function keys on the front side of the main unit and the Remote Display 30010:

- MODE: Switches between Function Select and Instrument Select modes (see Chapter 3.3).
- MORE: Moves down to the next Toolbar level. 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.
- MENU: Opens the configuration menu pages in which you can view and adjust settings.
- INSTR: 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 Fig. 3-1
→ SEL

The main unit of the SurroundMonitor 10900 and the Remote Display 30010 have two Select keys. These keys are used to confirm selections in the menus. When you are using the optional mouse, the left mouse key is used to confirm selections.

The buttons displayed in the Toolbar are numbered. These numbers correspond to the numbers above the function keys on the front side of the main unit (see Fig. 3-1).

3.3 Toolbar Modes: Function Select and Instrument Select

→ MODE

The Toolbar has two different modes which can be selected with the MODE key:

See Chapter 3.3.1
- **Function Select**: Mode for operating the instruments

See Chapter 3.3.2
- **Instrument Select**: Mode for selecting an instrument or a preset

The default mode is Function Select.

3.3.1 Function Select

When Function Select mode is active you can operate the active instrument, which is identified by a highlighted frame around the instrument window. You can switch the focus between Window 2 and Window 3 by pressing the INSTR key or clicking in the window with the left mouse key. Window 1 (Toolbar) and Window 4 (Status Box) can never be given the focus (made active) because this mode is not relevant for them.

→ INSTR

→ (Button/key 1 – 7)

The available functions for the active instrument are shown as buttons in the Toolbar. If more than 7 functions are available the additional functions can be displayed by selecting MORE.

→ MORE → (other functions)

3.3.2 Instrument Select

→ MODE → (Instruments)

In this mode there are two Toolbar levels for selecting the available instruments and three additional levels with 7 factory presets and 14 user presets. To display an instrument in Window 3 and activate it just press the corresponding function key or optional click on its Toolbar button with the mouse. When you select a new instrument the current settings of the instrument you were using are stored automatically and restored when you return to the instrument again later.

→ MODE → MORE
→ (other instruments)

Example:

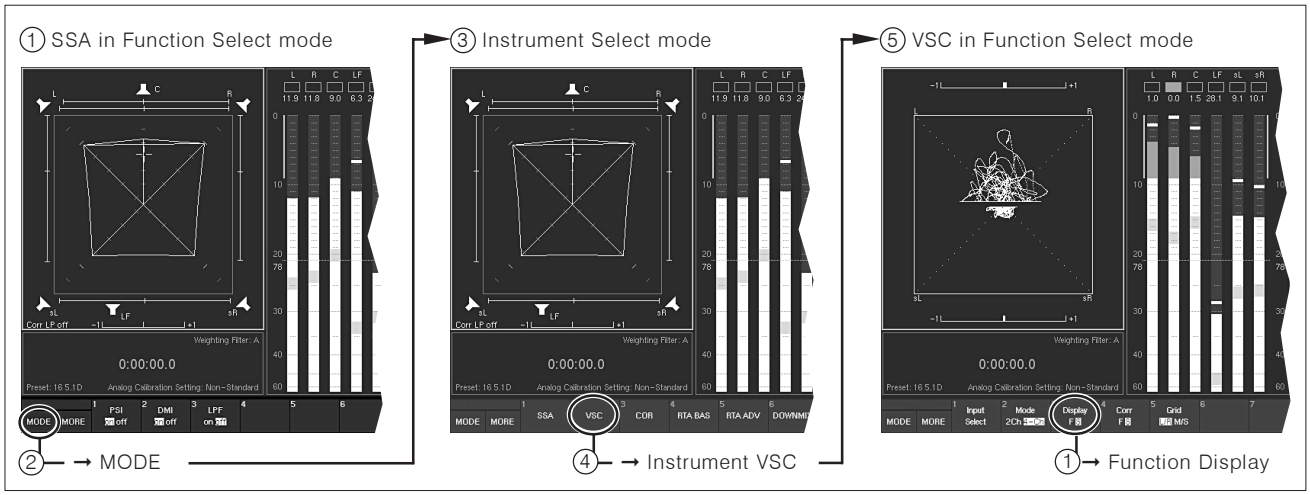


Fig. 3-2: Changing between Function Select and Instrument Select mode when selecting another instrument. Example with the instruments SSA and VSC

Function Select
(see Chapter 3.3.1):
→ INSTR

Brief description in
Chapter 1.6.1

Focus on Window 2
(highlighted frame)

3.4 Functions of the PPM Instrument

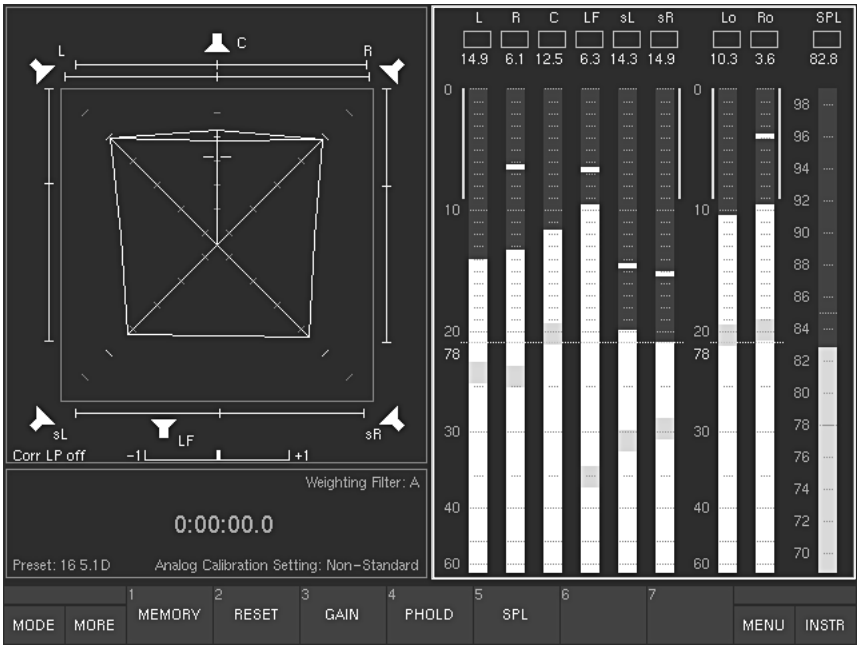


Fig. 3-3: Screen display with PPM instrument selected

The PPM instrument is always displayed in Window 2. To select it assign the focus to it (indicated by a highlighted frame around the window) by pressing the INSTR key. When the focus is on this window the Peak Program Meter functions are displayed in the Toolbar. (The PPM functions are available simultaneously with all other instruments except the RTA ADV instrument, which covers Window 2 and thus hides the peakmeter.) Pressing the INSTR key again returns the focus to Window 3 and displays the functions of the instrument displayed there in the Toolbar (Window 1).

Functions of the PPM instrument:

3.4.1 Memory
(Button/Key 1, see Fig. 3-3)

Depending on the preset this function activates the numerical display of the long-term memory for maximum level, volume level, most negative correlation or digital errors.

3.4.2 Reset
(Button/key 2, see Fig. 3-3)

This function deletes the long-term memory, the peak hold memory and the stored digital errors.

3.4.3 Gain
(Button/key 3, see Fig. 3-3)

This function activates the measurement range expansion and simultaneously switches the peak meter scale. The following gain increases are applied in accordance with the scale standards:

Mode/Standard	Gain
Digital scales	40 dB
DIN	20 dB
Nordic	40 dB
British IIa + IIb	40dB
VU	20 dB
Zoom20	20 dB
+24 dBu	20 dB
+20 dBr	20 dB

For digital input signals the reference point on scales DIN+5, DIN+10, Nordic, British IIa, British IIb, Zoom20 and Zoom2 corresponds to the headroom preset value. Factory default: –9 dB FS.

3.4.4 PHold
(Button/key 4, see Fig. 3-3)

This function activates or deactivates the PPM's peak hold display. The function has no effect on the numerical display.

3.4.5 SPL
(Button/key 5, see Fig. 3-3)

This function activates or deactivates the volume level displays of the individual channels.

Instrument Select (see Chapter 3.3.2): → MODE → SSA

Brief description in Chapter 1.6.2

Focus on Window 3 (highlighted frame)

The SSA instrument is **only** available in Surround mode!

3.5 Functions of the SSA Instrument

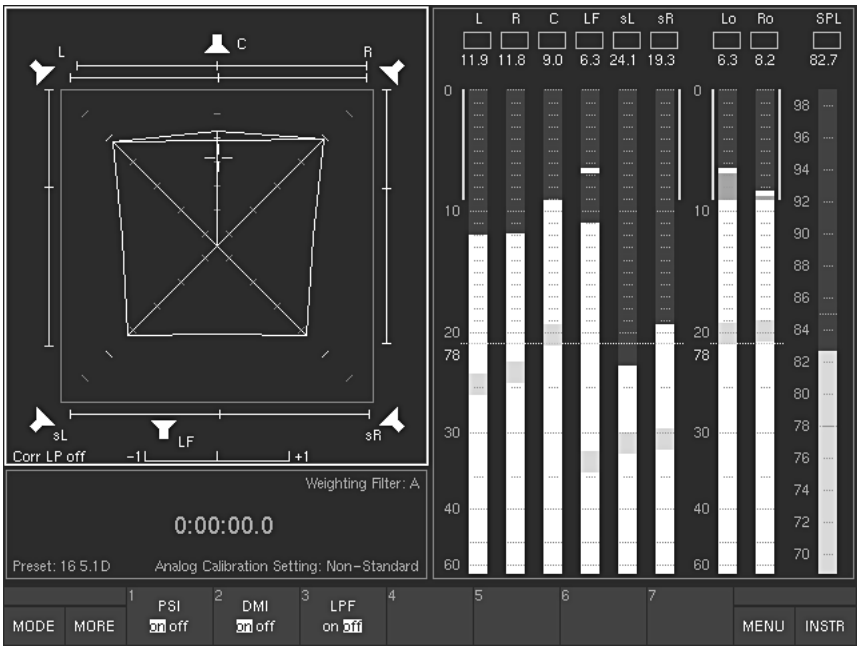


Fig. 3-4: Screen display with SSA instrument selected in Surround mode

3.5.1 PSI

(Button/key 1, see Fig. 3-4)

The PSI function (Phantom Source Indicator) activates or deactivates the indicators for phantom sound sources.

3.5.2 DMI

(Button/key 2, see Fig. 3-4)

The DMI (Dominance Indicator) activates or deactivates the dominance indicator in the surround sound field (white cross).

3.5.3 LPF

(Button/key 3, see Fig. 3-4)

The LPF (Low Pass Filter) function activates or deactivates the low pass filter function (300Hz) of the Surround Correlator. The current status is shown on the lower left in the SSA window.

Instrument Select
(see Chapter 3.3.2):
→ MODE → VSC

Brief description in
Chapter 1.6.3

Focus on Window 3
(highlighted frame)

3.6 Functions of the VSC Instrument

- **Surround Mode:**
  (Please note: description of key labeling is marked with index Sur!)

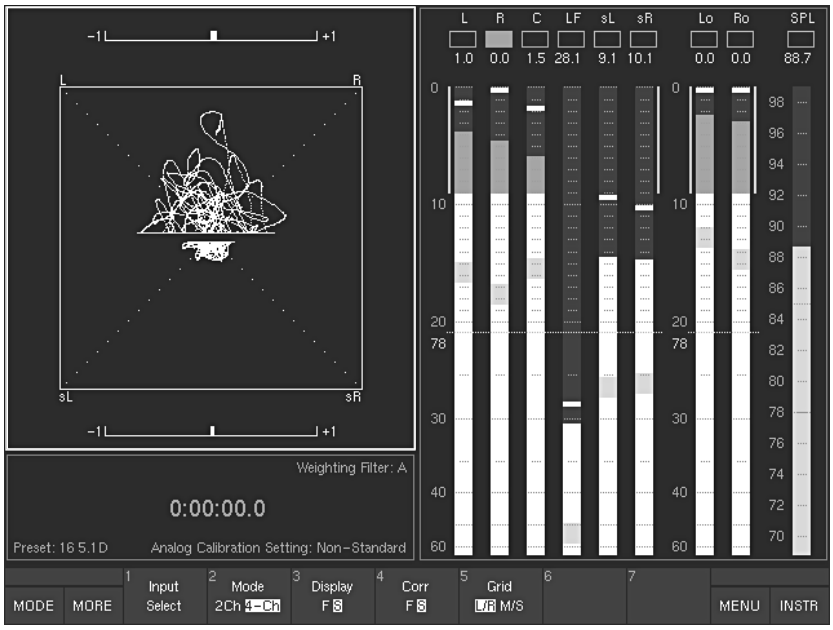


Fig. 3-5: Screen display with VSC instrument selected in Surround mode

- **Multi Channel Mode:**
  (Please note: description of key labeling is marked with index Multi!)

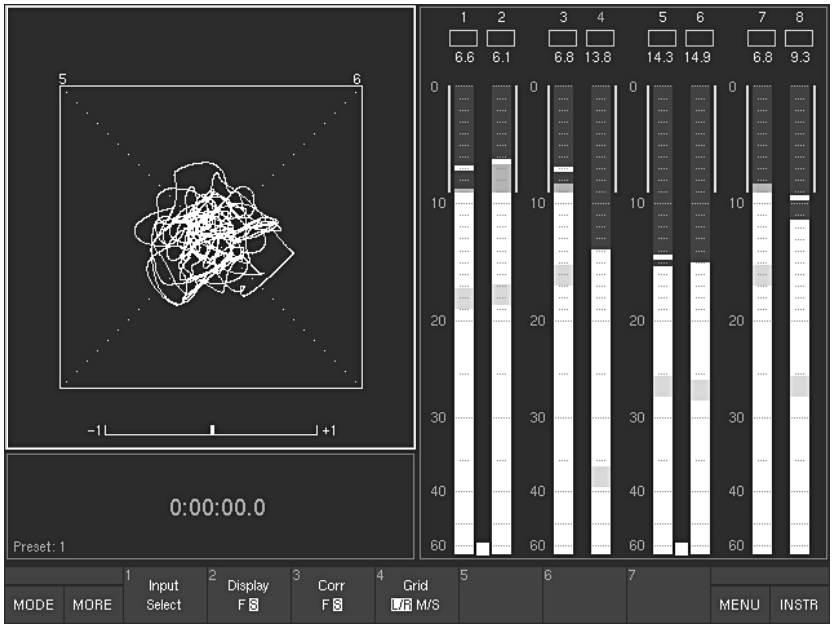


Fig. 3-6: Screen display with VSC instrument selected in Multi Channel mode with defined stereo channel pairs

- **2 Channel Stereo Mode:**
  (Please note: description of key labeling is marked with index 2Ch!)

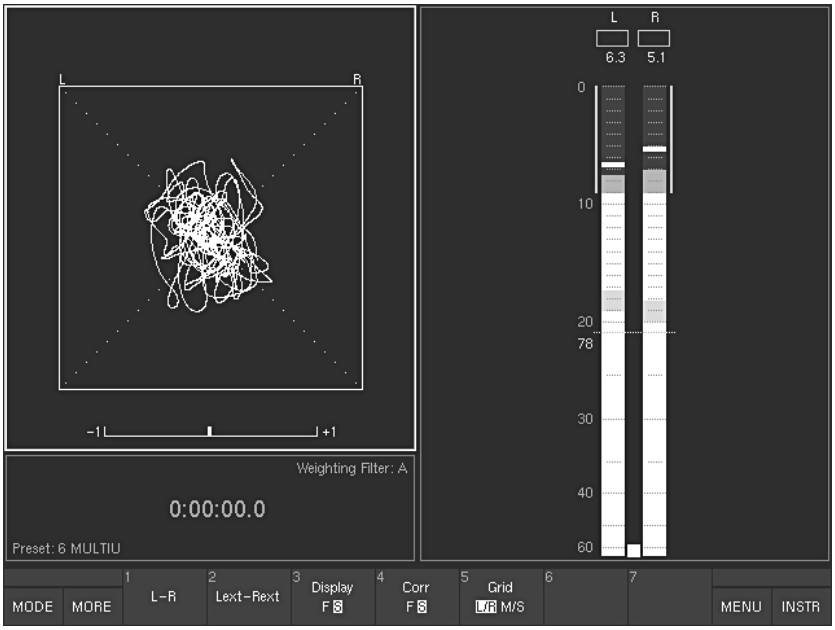


Fig. 3-7: Screen display with VSC instrument selected in 2 Channel Stereo mode with defined stereo channel pairs L and R

3.6.1 Input Select (Sur, Multi) – L - R (2Ch)

(in Surround mode: Input Select, button/key 1, see Fig. 3-5
in Multi Channel mode: Input Select, button/key 1, see Fig. 3-6
in 2 Channel Stereo mode: L - R, button/key 1, see Fig. 3-7)

Depending on the selected mode the buttons/keys get a different labeling (compare Fig. 3-5 and 3-6 with Fig. 3-7)

- **Surround Mode:**
  Selecting the Input Select function displays an additional menu for selecting the inputs for the **two**-channel stereo vectorscope (see Chapter 3.6.2):
  - L – R (Button/key 1)
  - sL – sR (Button/key 2)
  - L – C (Button/key 3)
  - C – R (Button/key 4)
  - L – sL (Button/key 5)
  - R – sR (Button/key 6)
  - L_0 – R_0 (Button/key 7)

  When you select a channel pair the Toolbar display will automatically switch back to the previous level.

Also see Chapter 1.6.1 and fig. 1-5 and 1-11

- **Multi Channel Mode:**
  The seizure of the buttons/keys for displaying potential channel pairs depends on the stereo channel pairs with clear allocation to the sides which are defined in the PPM instrument (this is displayed with the Spot

Correlator between the bar graphs of the stereo channel pairs). Sequentially up to 4 buttons/keys can be occupied:

- 1 – 2 (Button/key 1)
- 3 – 4 (Button/key 2)
- 5 – 6 (Button/key 3)
- 7 – 8 (Button/key 4)

After selecting a channel pair the Toolbar returns to the previous level.

Also see Chapter 1.6.1 and fig. 1-7 and 1-12

- **2 Channel Stereo Mode:**
  In 2 Channel Stereo mode the button/key 1 is labeled L - R and displays the input channels L and R. This button/key has a toggle function linked to button/key 2 labeled Lext - Rext (see Chapter 3.6.2).

This function is **not** available in Multi Channel mode!

3.6.2 Mode 2Ch/4Ch (Sur) – Lext - Rext (2Ch)

(in Surround mode: Mode 2Ch/4Ch, button/key 2, see Fig. 3-5
in 2 Channel Stereo mode: Lext - Rext, button/key 2, see Fig. 3-7)

- **Surround mode:**
  The Mode function switches the vectorscope display between 2 and 4 channel mode (2Ch/4Ch). In 4-channel mode channels L and R are represented in the upper half of the display, channels sL and sR in the lower half. The channel pairs L – R and sL – sR each have a correlation indicator. The Input Select function (see Chapter 3.6.1) then is not available.

- **2 Channel Stereo Mode:**
  In 2 Channel Stereo mode the button/key 2 is labeled Lext - Rext and displays the external input channels Lext and Rext. This button/key has a toggle function linked to button/key 1 labeled L - R (see Chapter 3.6.1).

3.6.3 Display

(in Surround mode: button/key 3, see Fig. 3-5
in Multi Channel mode: button/key 2, see Fig. 3-6
in 2 Channel Stereo mode: button/key 3, see Fig. 3-7)

This function switches the display speed of the vectorscope between fast (F) and slow (S).

3.6.4 Corr

(in Surround mode: button/key 4, see Fig. 3-5
in Multi Channel mode: button/key 3, see Fig. 3-6
in 2 Channel Stereo mode: button/key 4, see Fig. 3-7)

This function switches the display speed of the correlator between fast (F) and slow (S).

3.6.5 Grid

(In Surround mode: button/key 5, see Fig. 3-5
in Multi Channel mode: button/key 4, see Fig. 3-6
in 2 Channel Stereo mode: button/key 5, see Fig. 3-7)

This function switches the vectorscope gird between L/R and M/S.

Instrument Select
(see Chapter 3.3.2):
→ MODE → COR

Brief description in
Chapter 1.6.4

Focus on Window 3
(highlighted frame)

3.7 Functions of the COR Instrument

- **Surround Mode:**

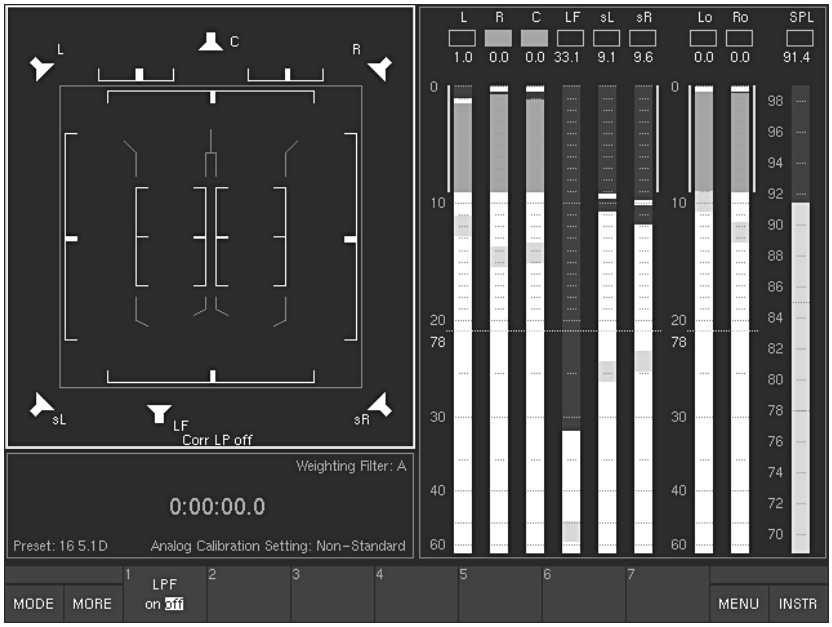


Fig. 3-8: Screen display with COR instrument selected in Surround mode

- **Multi Channel Mode:**

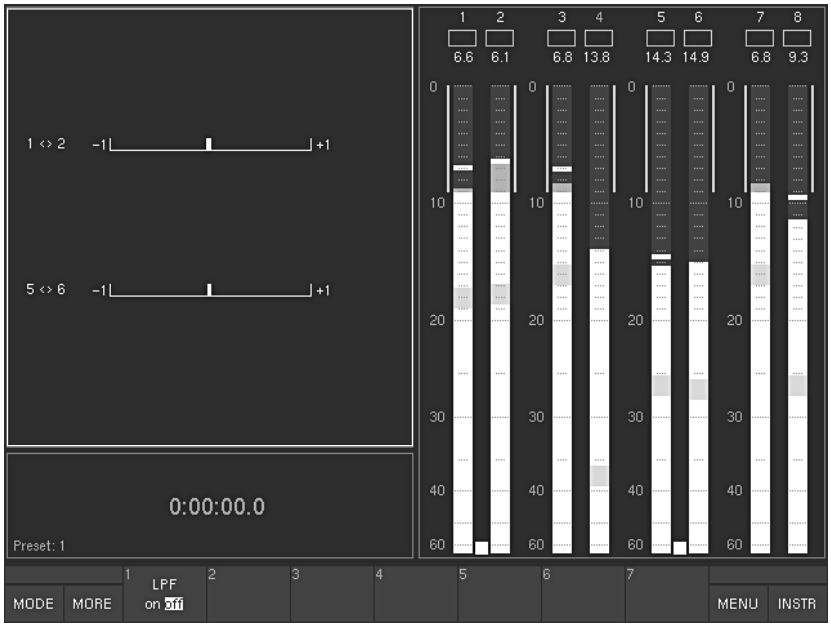


Fig. 3-9: Screen display with COR instrument selected in Multi Channel mode with defined stereo channel pairs

- **2 Channel Stereo Mode:**

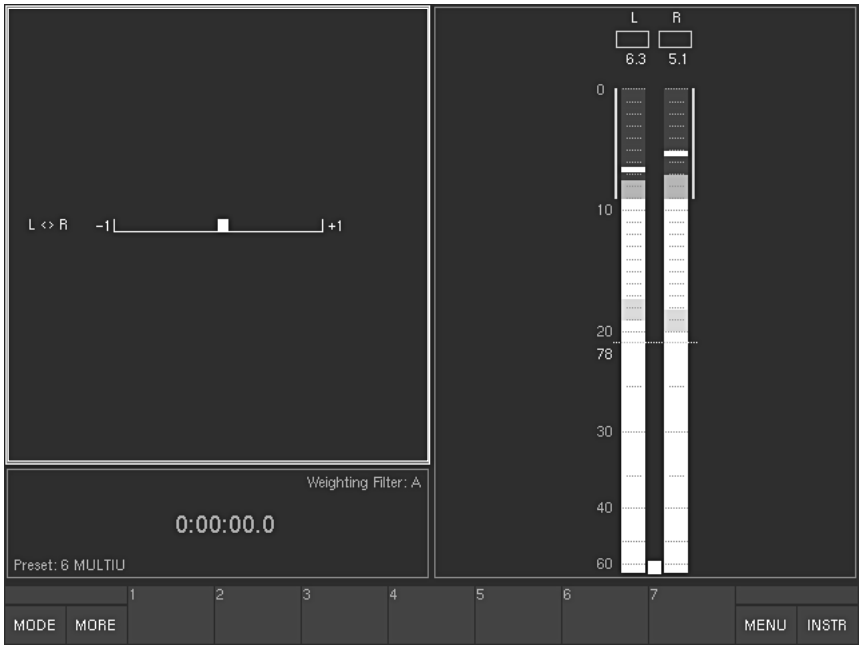


Fig. 3-10: Screen display with COR instrument selected in 2 Channel Stereo mode with defined stereo channel pair L and R

See Fig. 3-8

- **Surround Mode:**
  In Surround Mode the channel pairs of the potential surround channel pair combinations are displayed (see Fig. 3-8).

- **Multi Channel Mode:**
  In Multi Channel mode the correlator display is only available for the defined stereo channel pairs with clear allocation to the sides (this is displayed with the Spot Correlator between the bar graphs of the stereo channel pair in Window 2, see Fig. 3-9, Chapter 1.6.1, Fig. 1-5 and 1-14).

See Fig. 3-9, also see Chapter 1.6.1 and Fig. 1-5 and 1-14

See Fig. 3-10

- **2 Channel Stereo Mode:**
  In 2 Channel Stereo mode the correlator display is only available for the defined stereo channel pair L and R (see Fig. 3-10).

This function is **only** available in Surround mode!

3.7.1 LPF

(Button/key 1, see Fig. 3-8)

The LPF (Low Pass Filter) function activates or deactivates the low pass filter (300 Hz) of the surround correlator. The current status is shown at the bottom of the COR window. This function is **only** available in Surround mode!

3.8 Functions of the RTA BAS and RTA ADV Instruments

First function level:

Instrument Select
(see Chapter 3.3.2):
→ MODE → RTA BAS

Brief description in
Chapter 1.6.5

Focus on Window 3
(highlighted frame),
RTA BAS covers Window 4

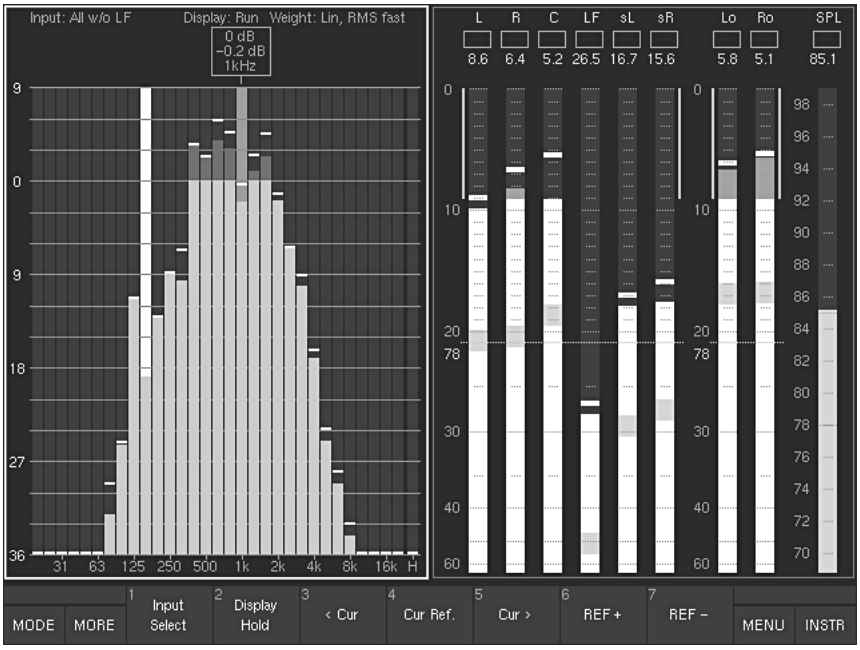


Fig. 3-11: First Toolbar function level of the RTA BAS instrument. Select MORE to display additional functions (level 2).

First function level:

Instrument Select
(See Chapter 3.3.2):
→ MODE → RTA ADV

Brief description in
Chapter 1.6.6

Focus on Window 3
(highlighted frame),
„RTA ADV“ covers
Window 2 and Window 4

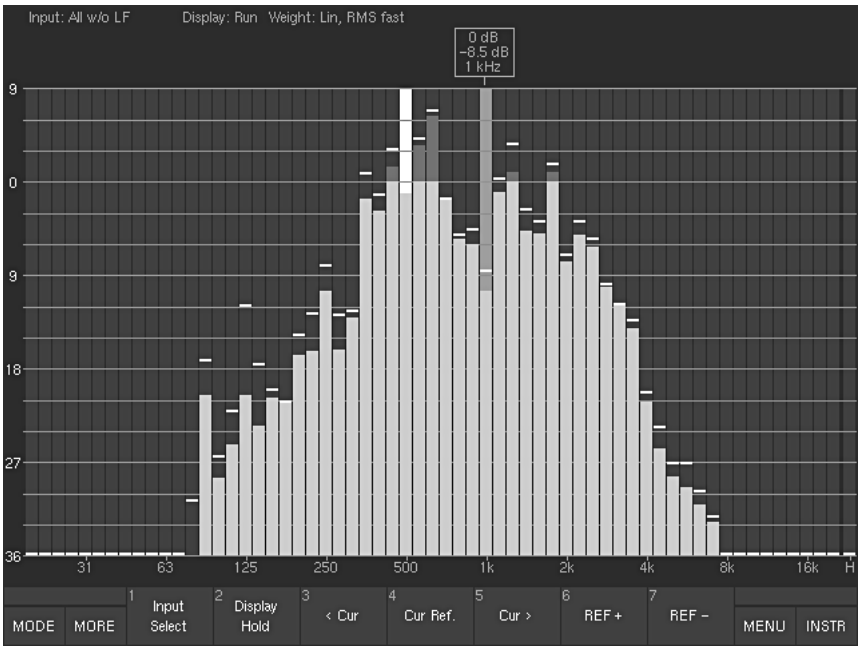


Fig. 3-12: First Toolbar function level of the RTA ADV. Select MORE to display additional functions (level 2).

3.8.1 Input Select

(Button/key 1 – first level, see Figs. 3-11 and 3-12)

This function displays an additional Toolbar level where you can select the input signal sources:

Also see Chapter 4.4.5

- **Surround Mode:**
  - All w/o LF: All channels mixed, without LF, when selected in menu RTA Settings. Otherwise All is displayed here on the button and all channels including LF will be mixed and displayed in the RTA. (Button/key 1)
  - Single: Opens an additional level for selection of a single channel. When you then select a channel the Toolbar will switch back to Function Select mode. (Button/key 2)
  - Front: Sum of the front channels (Button/key 3)
  - Rear: Sum of the surround channels (Button/key 4)
  - L/R: Sum of L + R (Button/key 5)
  - LF: LF channel (Button/key 6)

- **Multi Channel Mode:**
  - Single: Opens the first of two additional levels for selection of a single channel. When you then select a channel the Toolbar will switch back to Function Select mode as shown in Figs. 3-11 and 3-12. (Button/key 1)

See Chapters 1.6.1, 4.4.2 and 4.14

The designations and the channel select function of the buttons/keys 2 to 5 depend on the number of defined stereo channel pairs. Up to four defined stereo channel pairs are selectable with the Peakmeter menu tab (see Chapters 1.6.1, 4.4.2 and 4.14). Then the buttons/keys are assigned as follows:

- 1+2: Defined stereo channel pair with the channels 1 and 2 (Button/key 2)
- 3+4: Defined stereo channel pair with the channels 3 and 4 (Button/key 3)
- 5+6: Defined stereo channel pair with the channels 5 and 6 (Button/key 4)
- 7+8: Defined stereo channel pair with the channels 7 and 8 (Button/key 5)

- **2 Channel Stereo Mode:**
  - L/R: Sum of the channels L and R (Button/key 1)
  - L: Left channel L (Button/key 2)
  - R: Right channel R (Button/key 3)

3.8.2 Display Hold
(Button/key 2 – first level, see Fig. 3-11 and 3-12)

Selecting this function freezes the RTA display. A cursor readout is possible but the buttons/keys Ref+ and Ref- are disabled. This button/key has toggle function – select again to turn off Display Hold.

3.8.3 < Cur and Cur >
(Button/key 3 and button/key 5 – first level, see Figs. 3-11 and 3-12)

These functions move the cursor to the previous or next frequency band in the RTA. You can also move the cursor to the left and right by clicking and dragging with the optional mouse.

3.8.4 Cur Ref
(Button/key 4 – first level, see Figs. 3-11 and 3-12)

Selecting this function sets the current level of the selected frequency band as the reference value. If you then set the cursor on another band the difference between this band and the reference value is shown in the cursor readout.

3.8.5 Ref + and Ref –
(Button/key 6 and button/key 7 – first level, see Fig. 3-11 and 3-12)

These functions enable you to shift the display's reference point for a clearer readout in the window. The RTA's level display is **always** relative.

→ MORE

Second function level (select MORE to activate)**:**

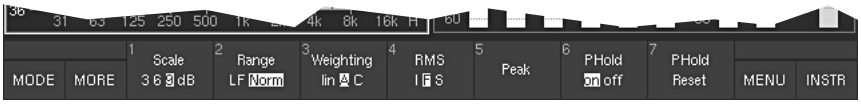


Fig. 3-13: Second Toolbar function level of the RTA BAS and RTA ADV instruments (displayed by selecting MORE)

3.8.6 Scale
(Button/key 1 – second level, see Fig. 3-13)

This function switches the display scale between 3 dB, 6 dB and 9 dB divisions.

3.8.7 Range
(Button/key 2 – second level, see Fig. 3-13)

This function switches the frequency range of the RTA display between LF (5 Hz – 5 kHz) and Norm (20 Hz – 20 kHz).

3.8.8 Weighting

(Button/key 3 – second level, see Fig. 3-13)

This function allows you to select weighting filter A or C. Selecting lin (linear) deactivates the weighting filters.

3.8.9 RMS

(Button/key 4 – second level, see Fig. 3-13)

This function (toggle function linked to button/key 5 – Peak) changes the integration time of the RTA display's RMS detector, as follows:

- I: Impulse
- S: Slow
- F: Fast (corresponds to IEC standard)

3.8.10 Peak

(Button/key 5 – second level, see Fig. 3-13)

This function (toggle function linked to button/key 4 RMS) switches the display between peak integration with 10 ms and RMS integration.

3.8.11 PHold

(Button/key 6 – second level, see Fig. 3-13)

This function switches the peak hold display on or off.

3.8.12 PHold Reset

(Button/key 7 – second level, see Fig. 3-13)

This function clears the long-term memory, the peak hold memory and any stored digital errors.

Instrument Select
(see Chapter 3.3.2):
→ MODE → DOWNMIX

Brief description in
Chapter 1.6.7

Focus on Window 3
(highlighted frame),
covers Window 4

The Downmix instrument
is **only** available in
Surround mode!

3.9 Functions of the Downmix Instrument

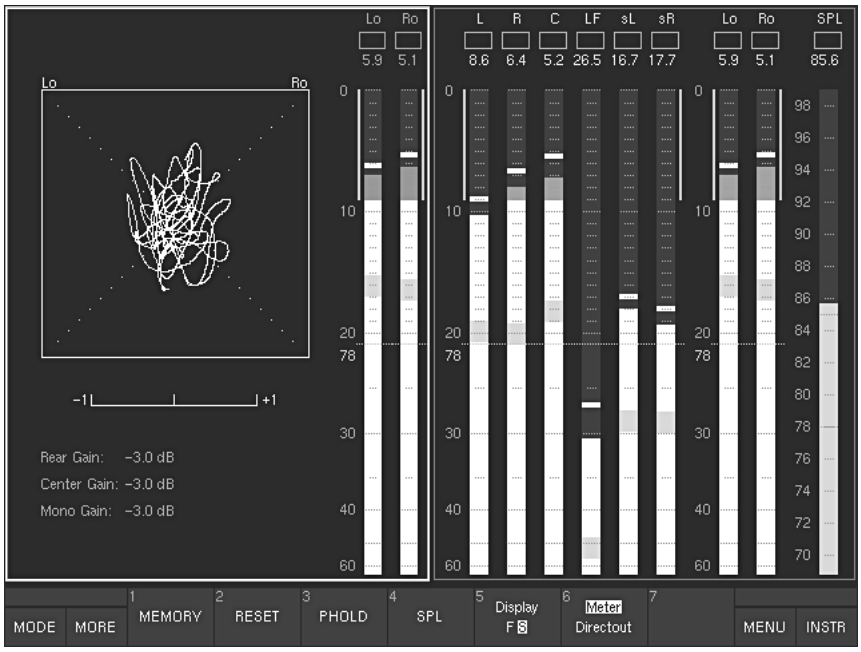


Fig. 3-14: Screen display with DOWNMIX instrument selected

Functions 3.9.1 – 3.9.5 all apply only to the Downmix Meter in Window 3. None of these functions have any effect on the peak meter displays in Window 2!

3.9.1 Memory
(Button/key 1, see Fig. 3-14)

Depending on the current setting this function activates the numerical display of the long-term memory for maximum level, volume level, most negative correlation or digital errors.

3.9.2 Reset
(Button/key 2, see Fig. 3-14)

This function deletes the long-term memory, the peak hold memory and any stored digital errors.

3.9.3 PHold
(Button/key 3, see Fig. 3-14)

This function switches the peak hold display on or off.

3.9.4 SPL
(Button/key 4, see Fig. 3-14)

This function activates or deactivates the volume (sound pressure level) display.

3.9.5 Display

(Button/key 5, see Fig. 3-14)

This function switches the display speed of the vectorscope between fast (F) and slow (S).

3.9.6 Meter/Directout

(Button/key 6, see Fig. 3-14)

With this function the source for the display of the downmix signals can be selected:

- Meter: The signal source can be the analog or digital domain and the internal generated downmix signals are displayed. These signals cannot be routed to the outputs.
- Directout: The values of the internal generated downmix signals present on the digital output (see Fig. 2-3) are displayed. The output of the downmix signals is only available for digital input signals.

See Fig. 2-3

Instrument Select (see Chapter 3.3.2): → MODE → CAL

Brief description in Chapter 1.6.8

Focus on Window 3 (highlighted frame)

3.10 Functions of the Cal Instrument

The signal form and level are selected with the function keys. When the CAL instrument is activated all outputs are automatically muted (indicated by red speaker symbols in Window 3). The default test signal is pink noise with a bandwidth of 20 Hz – 20 kHz and a level of –18 dB FS RMS. The SPL meter is displayed in Window 2 and the calibration microphone input is active.



Fig. 3-15: Screen display with CAL instrument selected

3.10.1 RTA

(Button/key 1, see Fig. 3-15)

This function opens the RTA ADV instrument (the input of which is automatically assigned to the calibration microphone input in this mode) so that you can view the spectrum of the signal input by the microphone. You can use all the functions of the RTA ADV instrument (see Chapter 3.8). Selecting the Meter button/key in the Toolbar of the RTA Advanced instrument takes you back to the first function level of the CAL instrument. Selecting the button/key MORE displays the second-level functions again.

3.10.2 SPL Meter

(Button/key 2, see Fig. 3-15)

This function opens an additional function level with controls for the SPL Meter functions.

- **Weighting**
  (Button/key 1)

  This function allows you to select the A or C weighting filters. Selecting lin (linear mode) switches the weighting filters off.

- **Response**
  (Button/key 2)

  This function switches the integration time between fast (F, 125 ms) and slow (S, 1 s) in accordance with the IEC 651 standard.

- **Microphone Select**
  (Button/key 4)

  This function allows you to select the calibration microphone type:
  - MM-1: Calibration microphone MM 1, 15 mV/Pa (beyerdynamic)
  - ECM: ECM 8000 (Behringer)

  In order to prevent measurement errors there is no facility for entering microphone sensitivity values manually.

- **Phantom**
  (Button/key 5)

  This function switches the 48V phantom power supply on or off.

- **Range**
  (Button/key 6)

  This function sets the measurement range:
  - L (low): 50 – 80 dB SPL
  - M (medium): 70 – 100 dB SPL
  - H (high): 90 – 120 dB SPL

- **Close**
  (Button/key 7)

  This function closes the second function level, leaving the SPL instrument active and returning you to the first function level. To redisplay the second level so that you can access the additional functions again just use the button/key MORE.

3.10.3 Next Cha

(Button/key 3, see Fig. 3-15)

This function switches the test signal to the next channel (all other channels are muted). If no channel is currently active the sequence begins with channel L. Switching is performed clockwise.

3.10.4 All

(Button/key 4, see Fig. 3-15)

This function selects the test signal configuration for all speakers as follows:

- All: Switches the test signal to all outputs including LF
- w/o LF: Switches the test signal to all outputs except LF

3.10.5 Signal Off

This function mutes all channels.

Detailed description in Chapter 3.11

3.10.6 Signal Select

(Button/key 6, see Fig. 3-15)

This function opens a new Toolbar function level with the functions of the test signal generator (see Chapter 3.11 for a detailed description).

See Chapter 3.10.6 and Fig. 3-15
→ MODE → CAL → Signal Select

Focus on Window 3 (highlighted frame)

3.11 The CAL Instrument's Signal Select Functions

Selecting Signal Select (button/key 6 in the CAL instrument, see Fig. 3-15 in Chapter 3.10) opens a new function level containing the controls for the functions of the test signal generator:



Fig. 3-16: Screen display after selecting Signal Select" in the CAL instrument

The test signal generator can produce three different signal types:

- P-Noise: Generates a pink noise test signal. (See Chapter 3.11.1)
- LF-Test: The LF-Test function is used for a listening check of the balance between the subwoofer and the other speakers in accordance with the SSF proposal. (See Chapter 3.11.2)
- Sine: The Sine function generates a sine wave signal with an adjustable frequency and level. (See Chapter 3.11.3)

Selecting one of these functions automatically displays a new function level with the settings for the selected signal type. The level value is a common parameter that is applied for all test signal types, irrespective of which of the three buttons/keys you select to set it.

Buttons/keys 1 – 4 in the respective settings levels thus have the same labels and functions for all three test signal types:

- **Level**
  (Button/key 1 – toggle function linked to Level Var)

See Chapter 4.8.

This function sets the selected level in dB FS RMS. You can adjust three values in the Reference Levels menu.
Factory settings:

- –9 dB FS RMS: Maximum allowed signal level pursuant to EBU, 0 dB on the peak meter (L_{MPSL}) (+6 dBu)
- –18 dB FS RMS: EBU adjustment level (–3 dBu)
- –20 dB FS RMS

- **Dec**
  (Button/key 2 – Decrement)

  This function reduces the variable output signal level (Level Var) in 1 dB steps.

- **Level Var**
  (Button/key 3 – toggle function linked to Level)

  This function selects the variable output signal level set with the buttons/keys 3 (Dec) and 4 (Inc).

- **Inc**
  (Button/key 4 – Increment)

  This function increases the variable output level (Level Var) in 1 dB steps.

3.11.1 P-Noise

(Button/key 1 – first level, see Fig. 3-16)



Fig. 3-17: Toolbar function level ot the P-NOISE instrument

Selecting this function opens a new level with the following functions for setting the signal parameters:

- Level (button/key 1, see description above)
- Dec (button/key 2, see description above)
- Level Var (button/key 3, see description above)
- Inc (button/key 4, see description above)

- **Bandwidth**
  (Button/key 5, see Fig. 3-17)

  This function sets the bandwidth of the pink noise signal:
  0.2 kHz – 20 kHz or 20 Hz – 20 kHz.

- **Cor/Incor**
  (Button/key 6, see Fig. 3-17)

  This function switches all channels between coherent and incoherent noise.

- **Close**
  (Button/key 7, see Fig. 3-17)

  This function stores your settings and closes the current function level. The test signal generator remains active and the test signal remains on.

3.11.2 LF-Test

(Button/key 2 – first level, see Fig. 3-16)

Selecting this function displays a new function level with the functions for setting the LF test signal parameters.

When you perform the test by selecting the corresponding function (see below) a low-frequency signal (second level, see Fig. 3-19) is output to the LF channel and all other speakers are muted. When you select the same function again the noise signal with the bandwidth shown in the bottom row is output to the speakers set with the Output function (see below). Switching back and forth between the two allows you to check the balance of the crossover frequencies and the best position for the subwoofer.

First function level:

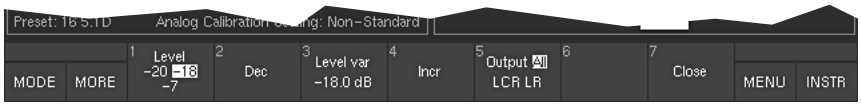


Fig. 3-18: First Toolbar function level ot the LF-TEST instrument. Select MORE to display additional functions (level 2).

- Level (button/key 1 – first level, see above)
- Dec (button/key 2 – first level, see above)
- Level Var (button/key 3 – first level, see above)
- Inc (button/key 4 – first level, see above)

- **Output**
  (Button/key 5 – first level, see Fig. 3-18)

  This function selects the channels to which the test signal will be output:

  - All: All channels (except subwoofer)
  - LCR: Front channels L, R, C only
  - LR: Channels L and R only

- **Close**
  (Button/key 7 – first level, see Fig. 3-18)

  This function stores your settings and closes the current function level. The test signal generator remains active and the test signal remains on.

→ MORE

Second function level (select More to activate)**:**

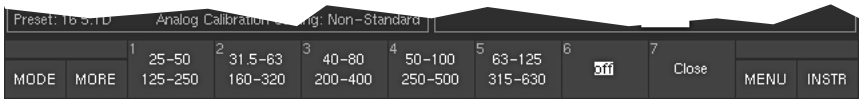


Fig. 3-19: Second Toolbar function level of the LF-TEST instrument (displayed by selecting MORE)

- **Bandwidth**
  (Buttons/keys 1 to 5 – second level, see Fig. 3-19)

  These functions select the bandwidth and output of the test signal.
  - The upper value is activated the first time you select the function. The signal is then routed to the LF channel and all other channels are muted.
  - The lower value is activated when you select the function a second time. The signal is then routed to the channels set with the Output function (button/key 5 – previous level, see above and Fig. 3-18). When All is selected all channels including the LF are activated. When LCR or LR are activated the LF channel is muted.

  Values (in Hz):
  - 25 – 50
    125 – 250: (button/key 1 – second level)
  - 31.5 – 63
    160 – 320: (button/key 2 – second level)
  - 40 – 80
    200 – 400: (button/key 3 – second level)
  - 50 – 100
    250 – 500: (button/key 4 – second level)
  - 63 – 125
    315 – 630: (button/key 5 – second level)

- **Off**
  (Button/key 6 – second level, see Fig. 3-19)

  This function switches off the LF test signal, leaving the current function level open, so that you can reposition the subwoofer.

- **Close**
  (Button/key 7 – second level, see Fig. 3-19)

  Selecting this function ends the LF test.

The output levels of the sine wave generator are limited by default to prevent damage to the monitoring system.
If necessary you can deactivate the limiter in the Reference Levels menu (also see Chapter 4.8.).

3.11.3 Sine

(Button/key 2 – first level, see Fig. 3-16)

Selecting this function opens a new level with functions for setting the sine signal parameters.

First function level:

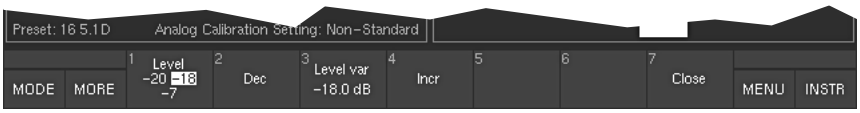


Fig. 3-20: First Toolbar function level ot the SINE instrument. Select MORE to display additional functions (level 2).

The functions in this level allow you to set the frequency and level of the sine wave test signal:

- Level (button/key 1 – first level, see above)
- Dec (button/key 2 – first level, see above)
- Level Var (button/key 3 – first level, see above)
- Inc (button/key 4 – first level, see above)

- **Close**
  (Button/key 7 – first level, see Fig. 3-20)

  This function stores your settings and closes the current function level. The test signal generator remains active and the test signal remains on.

→ MORE

Second function level (select More to activate)**:**

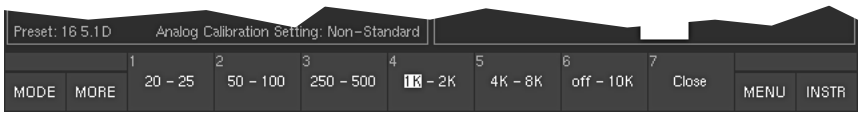


Fig. 3-21: Second Toolbar function level of the SINE instrument (displayed by selecting MORE)

- **Frequency selection functions (in Hz)**
  (Buttons/keys 1 to 6 – second level, see Fig. 3-21)

  - 20 – 25: (button/key 1 – second level)
  - 50 – 100: (button/key 2 – second level)
  - 250 – 500: (button/key 3 – second level)
  - 1k – 2k: (button/key 4 – second level)
  - 4k – 8k: (button/key 5 – second level)
  - Off – 10k (button/key 6 – second level)

- **Close**
  (Button/key 7 – second level, see Fig. 3-21)

  This function stores your settings and closes the current function level. The test signal generator remains active and the test signal remains on.

Instrument Select
(See Chapter 3.3.2):
→ MODE → MORE
→ AES/EBU

Brief description in
Chapter 1.6.9

Focus on Window 3
(highlighted frame)

3.12 Functions of the AES/EBU Instrument

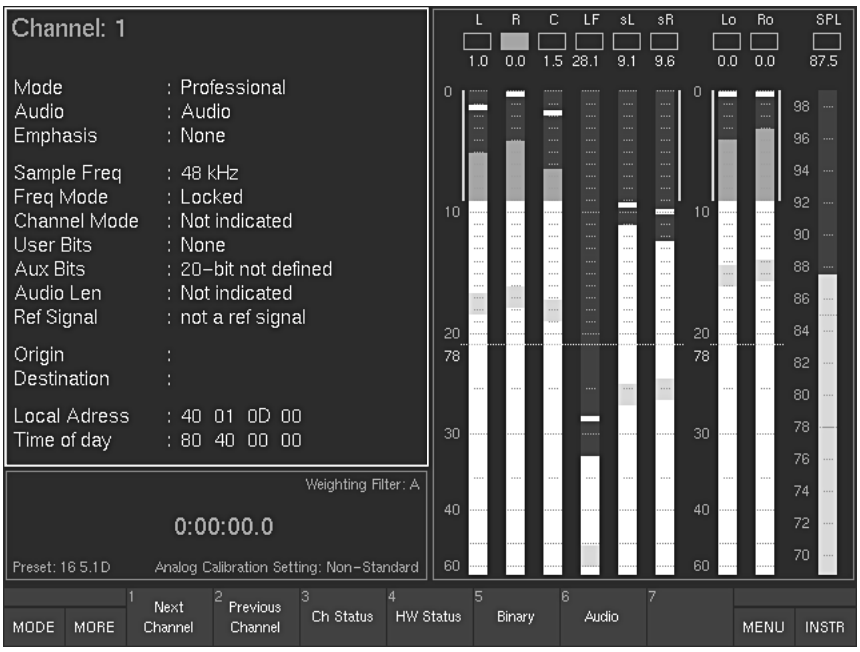


Fig. 3-22: Screen display with AES/EBU instrument selected

3.12.1 Next Channel and Previous Channel

(Buttons/keys 1 and 2, see Fig. 3-22)

These functions switch through the available input channels so that you can display and analyze the channel information with the instrument.

3.12.2 Ch Status

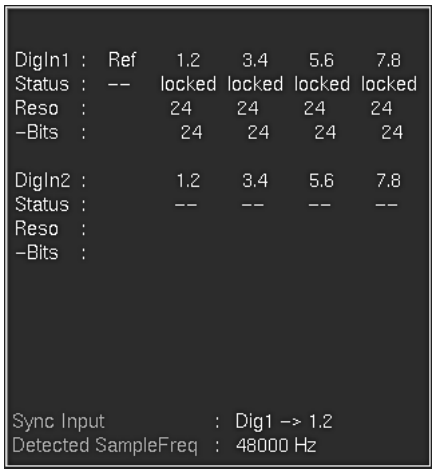
(Button/key 3, see Fig. 3-22 – toggle function linked to Binary)

This function switches the status information display to decoded plain text (Decoded Channel Status). The information displayed includes the origin and destination of the data (Origin, Destination), the CS block address (Local Adr.) and the block number (Time-Day). If no digital input signal is connected the message “Channel data not available” is displayed.
This function is displayed when you select the AES/EBU instrument.

3.12.3 HW Status

(Button/key 4, see Fig. 3-22)

Selecting this function displays the status of the AES/EBU receivers for all digital input sources and shows which digital input is currently being used as the source of the unit's clock signal. The internal sampling rate selected in the Audio System menu is used as clock signal if no digital signal is present at the digital inputs (see Chapter 4.7).



Legend:

locked: AES receiver has dubbed
forced: Reference signal is only taken from this input
– –: There is no valid signal present

Fig. 3-23: Screen display of Window 3 after selecting HW Status function

3.12.4 Binary

(Button/key 5, see Fig. 3-22 – toggle function linked to Ch Status)

Selecting this function activates the hex and binary display of channel status bytes 0 – 23 of the selected channel. If no digital input signal is connected the message "Channel data not available" is displayed.

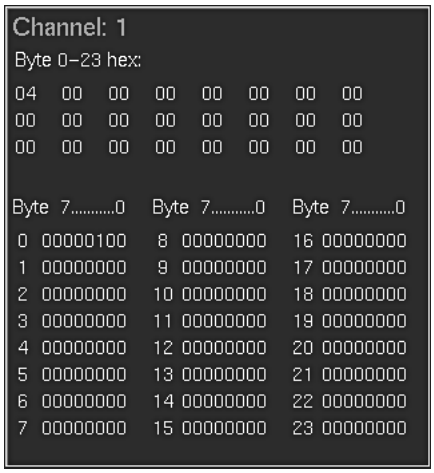


Fig. 3-24: Screen display of Window 3 after selecting Binary function

3.12.5 Audio

(Button/key 6, see Fig. 3-22)

Selecting this function activates the audio display of the bit pattern of the current audio data and the active audio bits registered for the digital inputs.

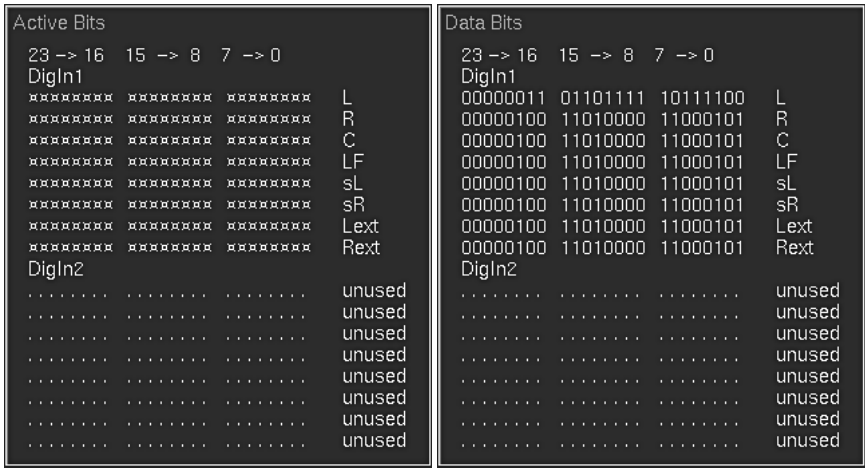


Fig. 3-25: The left screen display of Window 3 is shown after selecting Audio function. Selecting the Audio function again will show the right screen display in Window 3.

Instrument Select
(See Chapter 3.3.2):
→ MODE → MORE
→ DIALNORM

Brief description in
Chapter 1.6.10

Focus on Window 3
(highlighted frame)

The Dialnorm instrument is **only** available in Surround mode and **only** available for **digital** input signals!

3.13 Functions of the Dialnorm Instrument

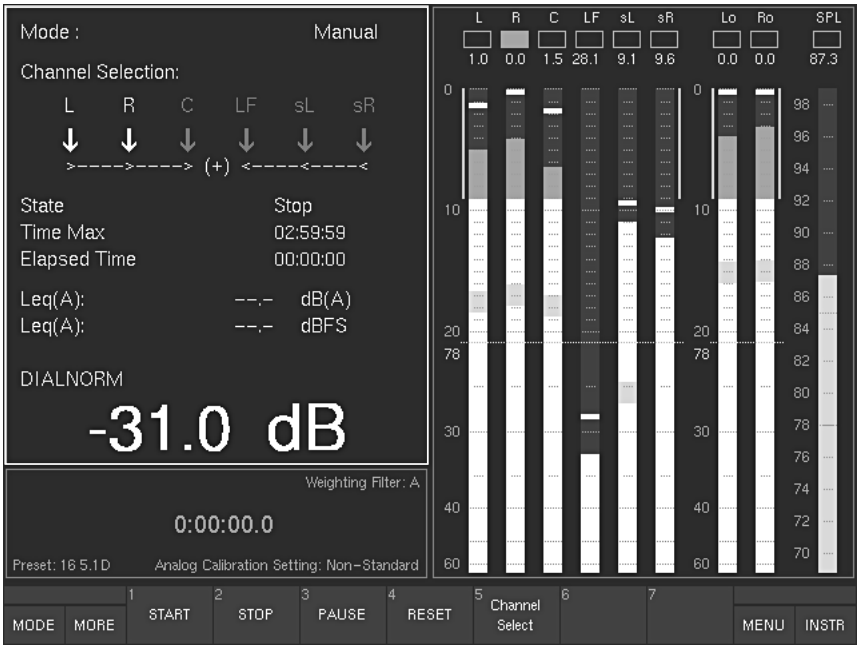


Fig. 3-26: Screen display with DIALNORM instrument selected

3.13.1 Start
(Button/key 1, see Fig. 3-26)

Selecting this function starts the Dialnorm measurement. The colour of the displayed values changes to green.

3.13.2 Stop
(Button/key 2, see Fig. 3-26)

Selecting this function ends the measurement. The colour of the displayed values changes to yellow.

3.13.3 Pause
(Button/key 3, see Fig. 3-26)

Selecting this function interrupts the measurement temporarily. All previously recorded values are stored automatically and the colour of the displayed values changes to red. To restart and continue the measurement select button/key 1 Start (see Chapter 3.12.1).

3.13.4 Reset
(Button/key 4, see Fig. 3-26)

This function resets the time counter.

3.13.5 Channel Select

(Button/key 5, see Fig. 3-26)

Selecting this function opens a new level in which you can select the channels you want to include in a Dialnorm measurement. Selecting the buttons/keys activates the corresponding channels, selecting again deactivates them. Activated channels are highlighted in yellow in the display.

• L + R:	L and R channel pair together	(Button/key 1)
• C:	Centre channel	(Button/key 2)
• LF:	LF channel	(Button/key 3)
• sL + sR:	sL and sR channel pair together	(Button/key 4)
• Close:	Terminates the selection and returns you to the previous level	(Button/key 7)

4 Menus

4.1 Introduction

→ MENU

The button/key MENU opens the start page (the menu tab shown in Fig. 4-1) for the Instrument Settings and the device or Global Settings(all the other tabs, see Fig. 4-1).

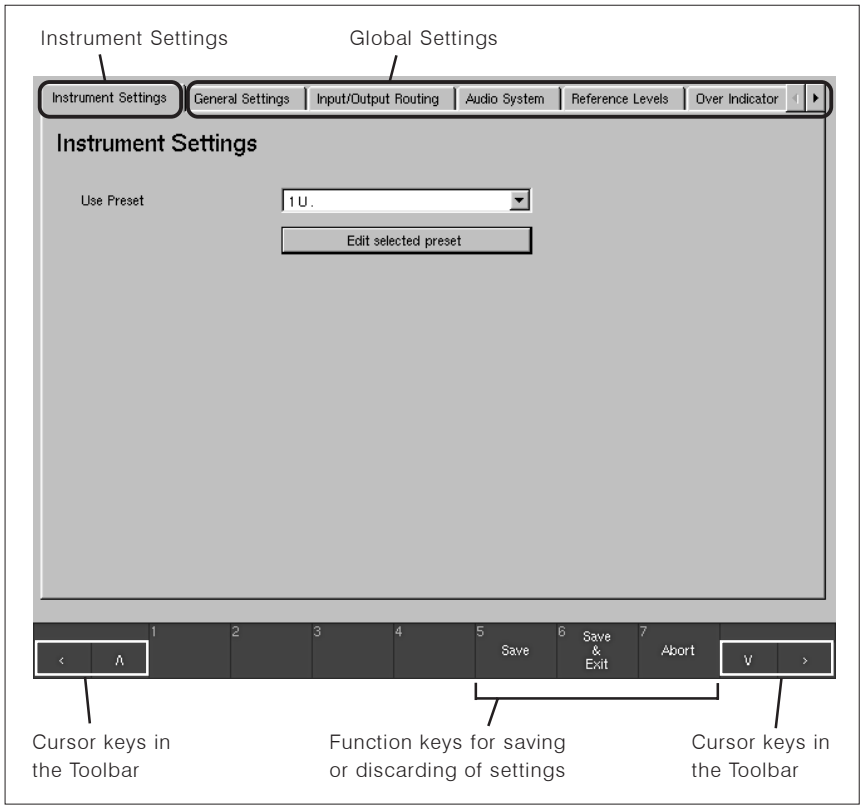


Fig. 4-1: Menu start page of the SurroundMonitor 10900

See Fig. 4-1 and Chapters 4.4., 4.13 and 4.14

Instrument Settings (see Fig. 4-1 and Chapters 4.4, 4.13 and 4.14)
This is where you can change the setting of the current preset (Edit selected preset) or select a different preset. An Instrument Setting stores the settings for all available instruments in a single preset. There are 14 editable user presets and 7 unchangeable factory presets (see Chapter 2.4).
If you install an optional computer mouse you can right-click in an instrument window to switch from the normal display mode to the menu of the instrument you click on. This displays the settings of the current preset. If this is a factory preset you will be prompted to save any changes in one of the 14 user presets when you exit the instrument menu. If you don't do this any changes made will be lost.

See Fig. 4-1 and Chapters 4.5 to 4.10

Global Settings (see Fig. 4-1 and Chapters 4.5 to 4.12)

The global device settings are accessed with the other tabs in the menu, i. e. General Settings, Reference Levels and so on. Note that the Global Settings are stored separately from the Instrument Settings. There is always only one set of Global Settings, you cannot store different versions as you can for the user presets.

Saving settings

You can save or discard changes to both the Instrument Settings and the Global Settings with the function keys/buttons in the Toolbar (see Chapter 3.1 and 3.2):

- **Save**
  (Button/key 5, see Fig. 4-1)

  Saves your settings without exiting the current page.

- **Save & Exit**
  (Button/key 6, see Fig. 4-1)

  Saves your settings and returns you to normal mode.

- **Abort**
  (Button/key 7, see Fig. 4-1)

  Discards all your changes and returns to normal mode without saving.

You can close every menu page with the Close button. When you do this any changes you have made are retained temporarily and can then be saved by selecting Save (button/key 5 in the Toolbar) or Save & Exit (button/key 6 in the Toolbar).

Navigating in the menus

You can navigate through the menus with the control keys on the front side of the main unit or on the Remote Display 30010 or by clicking on the buttons in the Toolbar with the optional mouse. In the menus the control keys have cursor functions (see Fig. 3-1):

→ <
- **<**: 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.

→ v
- **v**: 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)
- 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.

4.2 Settings – Basic Principles

The following sections explain the basic principles of how the SurroundMonitor 10900's settings work to make it easier to use the menus to configure your system.

Internal channel organization and signal routing (see Fig. 4-2)
Internally, the SurroundMonitor 10900 uses logical channels (L, R etc.) that match the selected format. For example, if you are using 5.1 surround the internal logical channels are L, R, C, sL, sR, LF, L_{ext}, R_{ext}, L_0 and R_0. The assignment of the physical signal inputs to these logical channels is performed in the Input Routing, with separate settings for each input. Internally, the Metering of the SurroundMonitor 10900 always use the logical channels (L, R etc.) and not the physical inputs. The same applies accordingly for the digital outputs: The logical internal channels (L, R etc.) are routed to the physical outputs with settings in the Output Routing.

Input routing see Chapter 4.4.6., 4.6. and Figs. 4-12, 4-13, 4-18 and 4-19

Output routing see Chapter 4.4.6., 4.6 and Figs. 4-14, 4-15, 4-20 and 4-21.

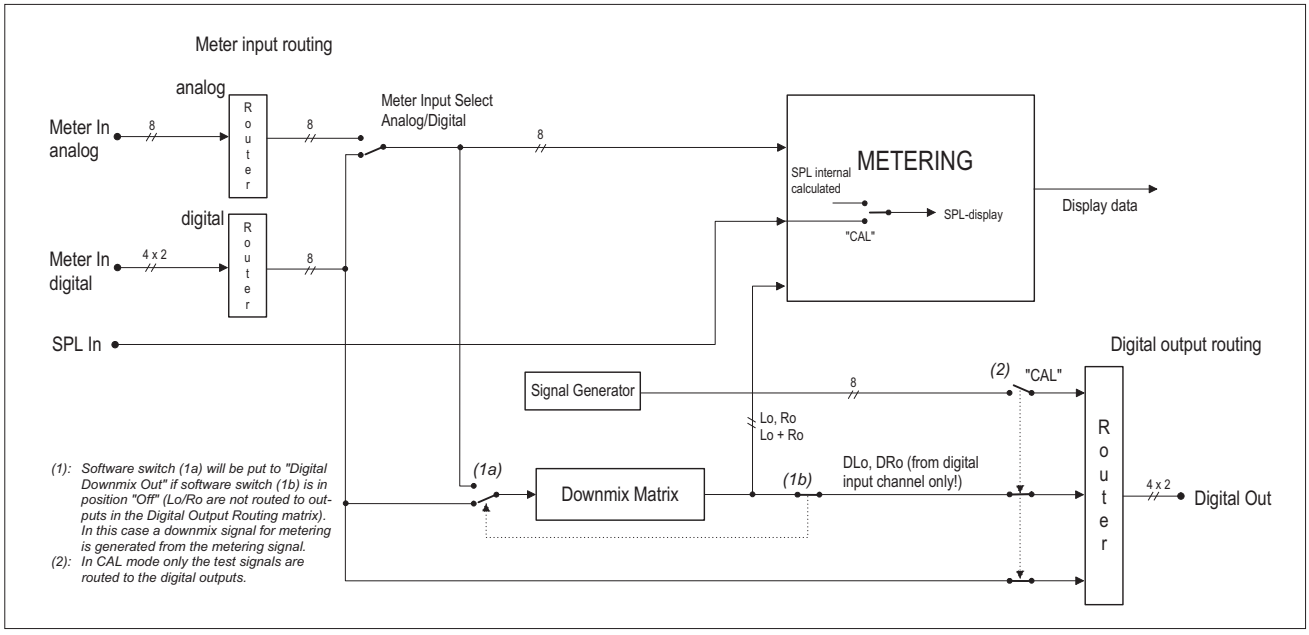


Fig. 4-2: Signal routing in the SurroundMonitor 10900

Global Routing Settings see Chapter 4.6 and Figs. 4-17 to 4-21.

Routing in the Global Settings

These routing settings are normally only configured once when the system is set up in the studio and then not changed again. That is why they are called Global Routing Settings; they are also saved separately from the individual instrument presets.

Local input routing see Chapter 4.4.6 and Figs. 4-11 to 4-15.

Special case: Local routing settings in the Instrument Settings

There are some applications where you may want to use several different presets so that you can quickly configure the SurroundMonitor 10900 for connection to different recorders, for example in mobile operation. In these special cases you can use individual presets to override the global settings with local settings. To do this select the Use Local Routing Settings check box in Instrument Settings menu/Edit Selected Preset button/General Presets menu. Note that selecting a preset in which the check box Use Local Routing Settings is **not** activated resets the SurroundMonitor 10900 to the global routing settings.

Settings see Chapter 4.13, 4.14, 1.6.1 and Figs. 4-34 and 4-39.

The Surround format and Multi Channel format setting

The Surround and the Multi Channel formats are dictated by the **peakmeter setting** (Instrument Settings menu/Edit Selected Preset button/Peakmeter menu/Channel Mode combo box/Channel Group 1 button/Mode Select combo box). For example, if you select a 7.1 format in the Peak Program Meter the SurroundControl activates the internal channels L, LC, C, RC, sL, sR and LF.

The Downmix Matrix

In Surround Mode a stereo-compatible 2-channel signal for display is downmixed from the surround channels using adjustable factors. In 5.1 format the surround channels sL and sR are output to the left and right channels, and the centre 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 Centre channel.

See Fig. 4-2, for the Meter/Directout switching see Chapter 3.9.6

The SurroundMonitor 10900 makes the 2-channel signal available as Downmix Direct Out (Routing Matrix designations: DL_0, DR_0, DM_0). Thereby the downmix matrix uses only the digital input signals. 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. Alternatively, you can switch the signal to the digital outputs, for example when you want to monitor it on your own loudspeaker system. The necessary settings are made in Input/Output Routing menu (Global Routing Settings/Digital Output Routing – see Chapter 4.6 and Figs. 4-17 to 4-21).

See Chapter 4.6 and Figs. 4-17 to 4-21, also Chapter 4.4.6

Downmix in 6.1 and 7.1 Format

The total number of input and output channels is limited to 8 per domain or group. Because of this there are a number of points you need to observe in connection with the downmix (see the section on the next page for details).

The L_{ext}/R_{ext} channels

There are a number of points you need to observe when using the additional external channels, depending on the surround format. Since you have eight channels per domain 5.1 format is not a problem: the unit is able to manage the six surround channels and the two additional channels internally as a group. However, since the 6.1 and 7.1 formats require seven and eight inputs, respectively, it is not possible to configure the external channels in the same channel group. This is particularly important for the outputs.

The L_0/R_0 channels

When the surround signal is mixed to form a stereo-compatible two-channel mix the internal channels L_0/R_0 are generated in the internal downmix matrix. These channels can be displayed in a separate instrument (the Downmix Meter) in the left instrument window, which is Window 3 (level, SPL, correlation and audio vectorscope). You can also display the levels of channels L_0/R_0 in the peak meters.

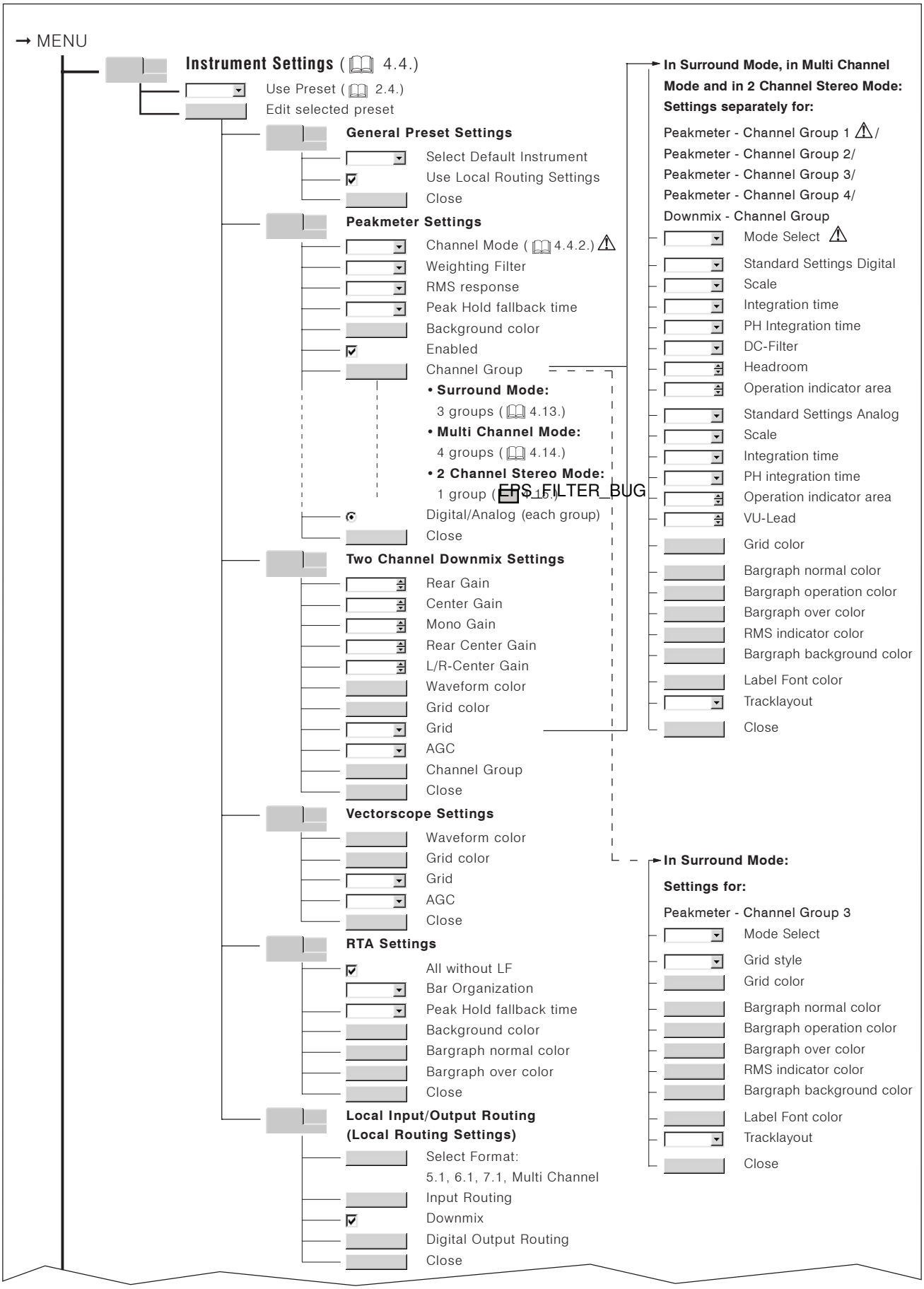
Downmix Matrix see Chapter 4.4.6 and 4.6 (• Downmix and • Digital Output Routing)

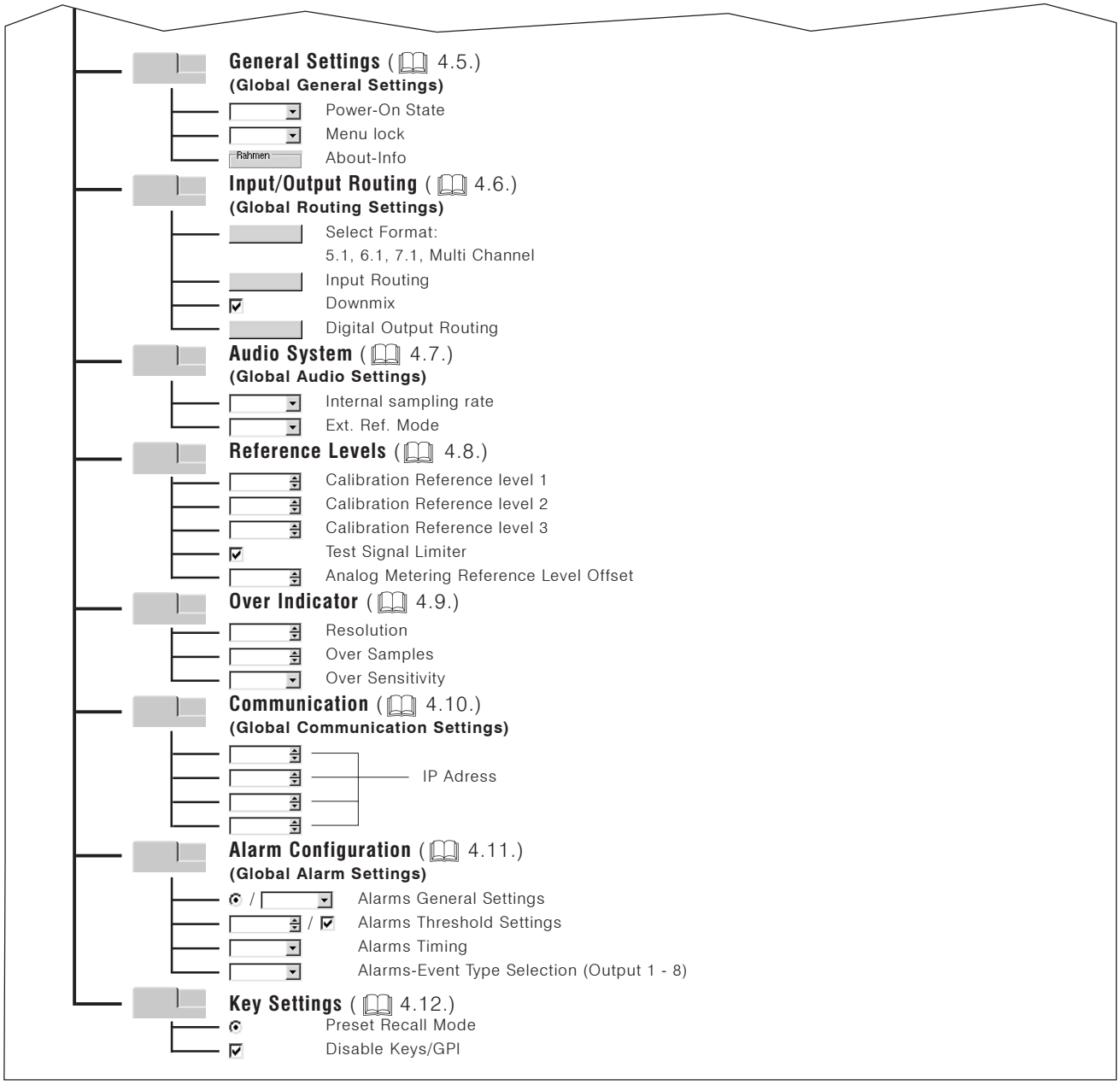
Global Routing Settings see Chapter 4.6 and Figs. 4-17 to 4-21 (also Chapter 4.4.6).

Routing configuration

The routing settings described above can be configured with the Input Routing and Monitor Output Routing buttons in the Input/Output Routing menu (Global Routing Settings – see Chapter 4.6). All routing settings can be configured **independently** for the surround formats 5.1, 6.1 and 7.1 and the Multi Channel formats.

4.3 Menu Structure Reference




General Settings (4.5.)
(Global General Settings)
Power-On State
Menu lock
Rahmen
About-Info
Input/Output Routing (4.6.)
(Global Routing Settings)
Select Format:
5.1, 6.1, 7.1, Multi Channel
Input Routing
Downmix
Digital Output Routing
Audio System (4.7.)
(Global Audio Settings)
Internal sampling rate
Ext. Ref. Mode
Reference Levels (4.8.)
Calibration Reference level 1
Calibration Reference level 2
Calibration Reference level 3
Test Signal Limiter
Analog Metering Reference Level Offset
Over Indicator (4.9.)
Resolution
Over Samples
Over Sensitivity
Communication (4.10.)
(Global Communication Settings)
IP Adress
Alarm Configuration (4.11.)
(Global Alarm Settings)
Alarms General Settings
Alarms Threshold Settings
Alarms Timing
Alarms-Event Type Selection (Output 1 - 8)
Key Settings (4.12.)
Preset Recall Mode
Disable Keys/GPI

4.4 The Instrument Settings Menu

Start page
(→ Instrument Settings)

This menu tab provides functions for selecting a preset (Use Preset, the currently selected preset is displayed) and for editing the selected preset. There are seven non-editable factory presets (15 F to 21 F) and fourteen editable user presets (1 U to 14 U). See Chapter 2.4 for details.

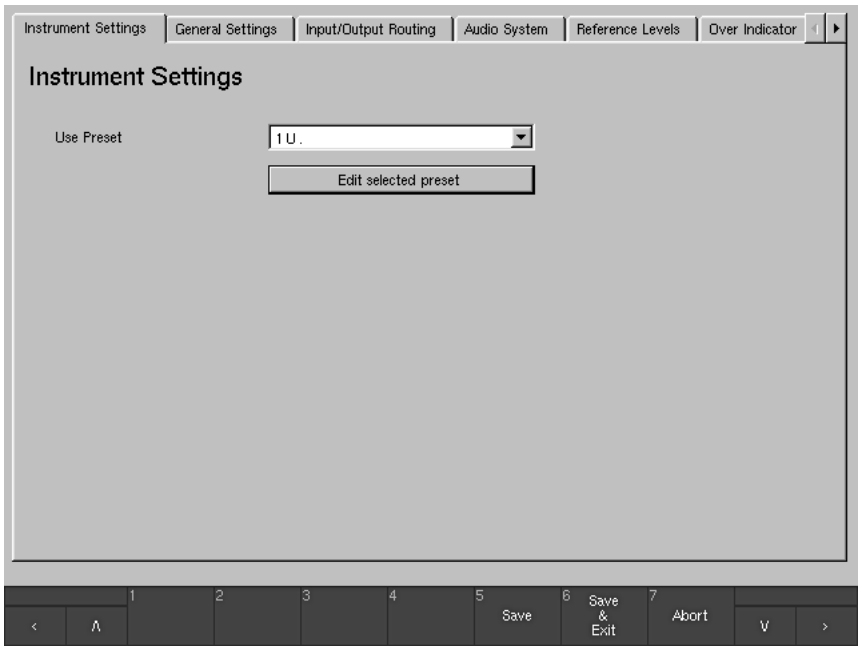


Fig. 4-3: The Instrument Settings menu tab

→ Edit selected preset

The Edit selected preset button opens the Instrument Settings of the selected preset with the menu tabs for the instrument settings (see Fig. 4-4 in Chapter 4.4.1, Chapters 4.4.1 to 4.4.6, 4.13 to 4.15).

See Chapters 4.4.1 to 4.4.6, 4.13 to 4.15

Start page
(→ General Presets)

4.4.1 General Presets

(General Preset Settings, see Fig. 4-4)

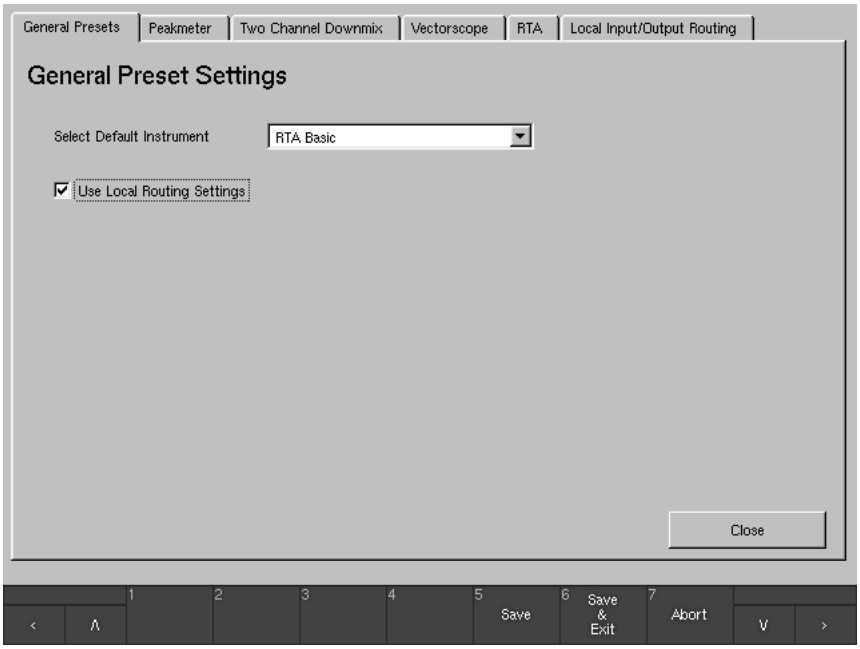


Fig. 4-4: The General Presets menu tab after selecting the Edit selected preset button

See Chapter 4.5

- **Select Default Instrument**
  This combo box is used to select the instrument that is displayed automatically with the selected preset in Window 3 of the screen display when the SurroundMonitor 10900 is switched on.

- **Use Local Routing Settings**
  This check box is used to override the Global Input/Output Routing settings (Global Routing Settings, see Chapter 4.6) for the current preset and use the internal local routing settings instead. You can then configure the local routing settings in the Local Input/Output Routing menu tab (see Chapter 4.4.6).

- **Close**
  This button closes the page and prompts you to save the preset (see Chapter 4.1) to one of the user presets (1 U to 14 U). You can also enter an individual name for the preset with the Change name button (6 characters).

4.4.2 Peakmeter

(Peakmeter Settings, see Fig. 4-5)

- **Surround Mode**

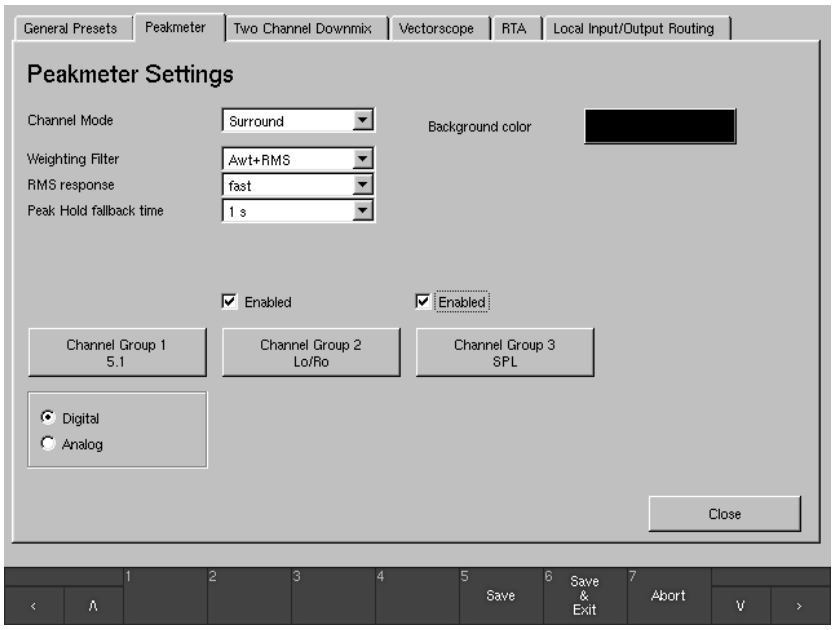


Fig. 4-5: The Peakmeter menu tab in Channel Mode Surround

- **Multi Channel Mode**

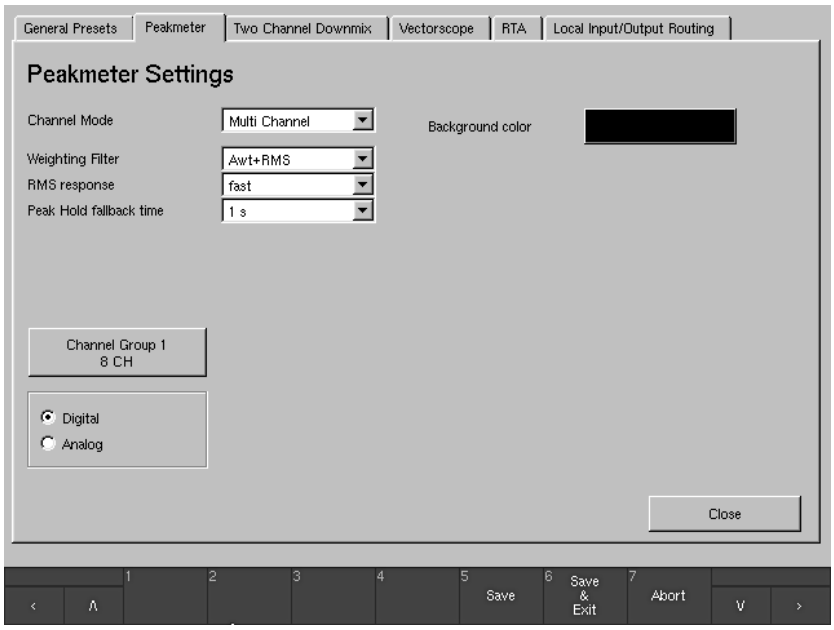


Fig. 4-6: The Peakmeter menu tab in Channel Mode Multi Channel

- **2 Channel Stereo Mode**

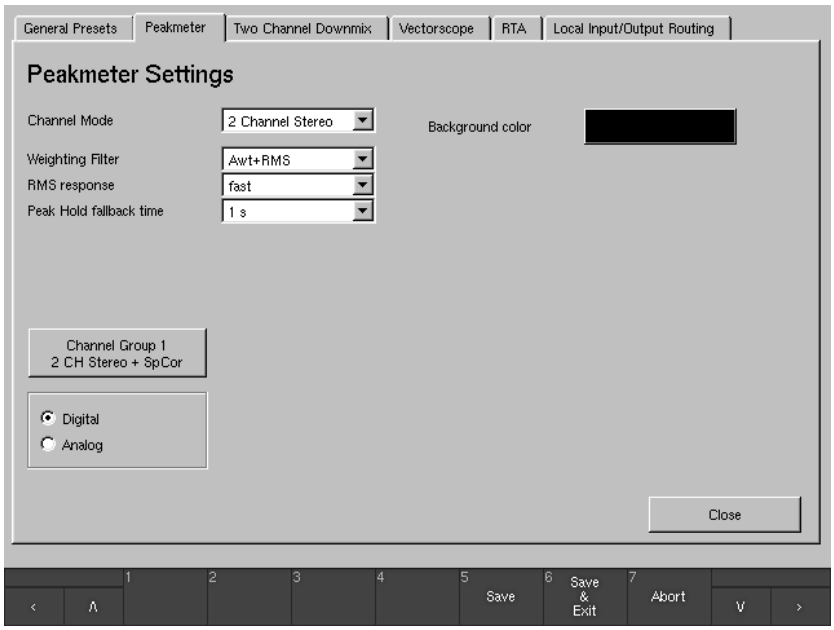


Fig. 4-7: The Peakmeter menu tab in Channel Mode 2 Channel Stereo

- **Channel Mode** [▾]
  With this combo box Surround Mode or Multi Channel Mode can be selected. Depending on the selected mode different numbers of Channel Groups are available:
  - Surround: 3 channel groups (see Fig. 4-5 and Chapter 4.13)
  - Multi Channel: up to 4 channel groups (see Fig. 4-6 and Chapter 4.14).
  - 2 Channel Stereo: 1 channel group (see Fig. 4-7 and Chapter 4.15).

See Fig. 4-5 and Chapter 4.13
See Fig. 4-6 and Chapter 4.14
See Fig. 4-7 and Chapter 4.15

- **Weighting Filter** [▾]
  This combo box is for selecting the weighting filter for the volume level display. Settings: Linear+RMS, Awt+RMS, Cwt+RMS.

- **RMS response** [▾]
  This combo box is for setting the response time of the RMS detector for the volume level display. Settings: fast, slow.

- **Peak Hold fallback time** [▾]
  This combo box is for setting the display duration for the peak hold display. Settings: 1s, 2s, 4s and manual. When manual is selected you can reset the peak hold display with the Reset function in the PPM instrument (see Chapter 3.4.2).

See Chapter 3.4.2

- **Background color** [ ]
  This button displays the color selector so that you can change the color of the background of the screen display.

- **Enabled** ☑
  This check box is for selecting the peak meter channel groups. When it is activated the corresponding channel group is displayed in Window 2 of the screen display. Deactivating the check box disables the display of the channel group. Channel Group 1 cannot be disabled.

- **Channel Group 1, Channel Group 2, Channel Group 3, Channel Group 4**
  These buttons open the menu pages with the peak meter settings for the corresponding channel groups (see Figs. 4-34 to 4-37 and 4-39).

Selecting the Surround format see Chapter 4.13 (also 1.6.1)

- **Surround Mode**
  The surround format for the entire SurroundMonitor 10900 instrument is selected on the menu page for Channel Group 1 (always active) with Mode Select. See Chapter 4.13 for full details on the Channel Group page in Surround Mode.

Selecting the Multi Channel format see Chapter 4.14 (also 1.6.1)

- **Multi Channel Mode**
  At first only the Channel Group 1 (8 CH: 8-channel mode) is shown when selecting Multi Channel Mode. **On the menu page of this channel group (always active) the Multi Channel format for the entire SurroundMonitor 10900 instrument now can be selected with Mode Select.** Depending on the selection different numbers of other channel group buttons are displayed. By using the Mode Select combo boxes on the menu pages of each channel groups the Multi Channel Mode can be defined in detail. See Chapter 4.14 for full details on the Channel Group page in Multi Channel Mode.

Selecting the 2 Channel Stereo format see Chapter 4.15 (also 1.6.1)

- **2 Channel Stereo Mode**
  This format for the entire SurroundMonitor 10900 instrument is displayed on the menu page for Channel Group 1 (always active) at the Mode Select combo box. See Chapter 4.15 for full details on the Channel Group page in 2 Channel Stereo Mode.

- **Digital/Analog** ⊙
  With these option buttons the use of either digital or analog signals can be selected for each channel group. Allocation and adjustment of each channel are set in the menus Input/Output Routing (global settings, see Chapter 4.6) or Local Input/Output Routing (local settings, see Chapter 4.4.6).

- **Close**
  This button closes the page and prompts you to save the preset (see Chapter 4.1) to one of the user presets (1 U to 14 U). You can also enter an individual name for the preset with the Change name button (6 characters).

4.4.3 Two Channel Downmix

(Two Channel Downmix Settings, see Fig. 4-8)

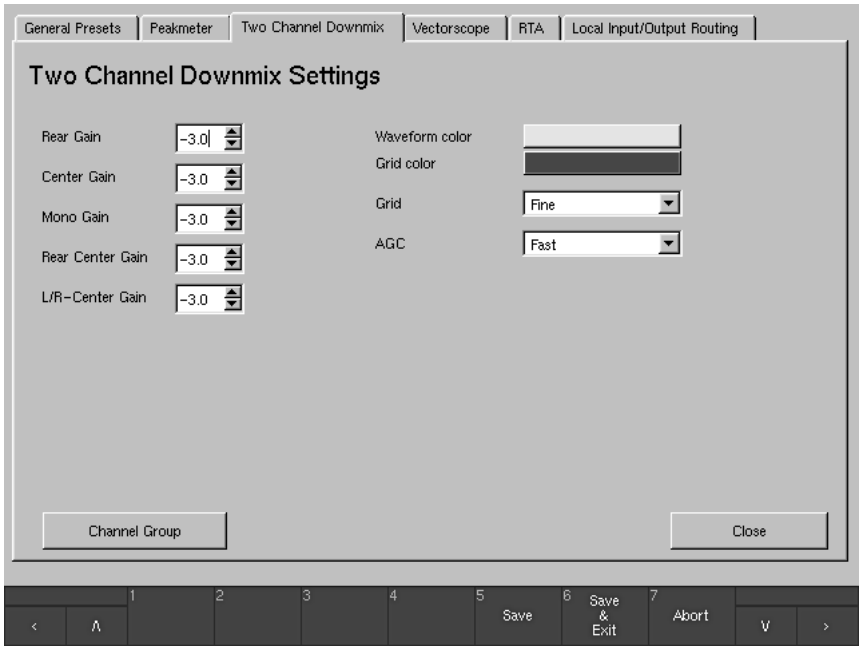


Fig. 4-8: The Two Channel Downmix menu tab

- **Rear Gain, Center Gain, Mono Gain, Rear Center Gain, L/R-Center Gain**
  With these list boxes the mixing factors for the downmix matrix can be adjusted (values in dB, adjustment in 0.5 dB steps).

- **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. Settings: Dots (fine) or lines (normal).

- **AGC**
  This combo box is for adjusting the vectorscope's AGC (Automatic Gain Control) response time. Settings: fast or slow.

Selecting the Downmix format see Chapter 4.13 (also 1.6.1)

The Downmix peakmeter are **only** displayed in Surround Mode

- **Channel Group**
  This button opens a separate menu page for the downmix channel group with the settings for the downmix peak meter (see Fig. 4-37). In Surround Mode the unit generates other signals then in Multi Channel Mode (mode selection: → MENU → Edit selected preset button → Peakmeter menu → Channel mode combo box, see also Chapter 4.4.2).
  For a detailed description of the Channel Group page see Chapter 4.13.

- **Close**
  This button closes the page and prompts you to save the preset (see Chapter 4.1) to one of the user presets (1 U to 14 U). You can also enter an individual name for the preset with the Change name button (6 characters).

4.4.4 Vectorscope

(Vectorscope Settings, see Fig. 4-9)

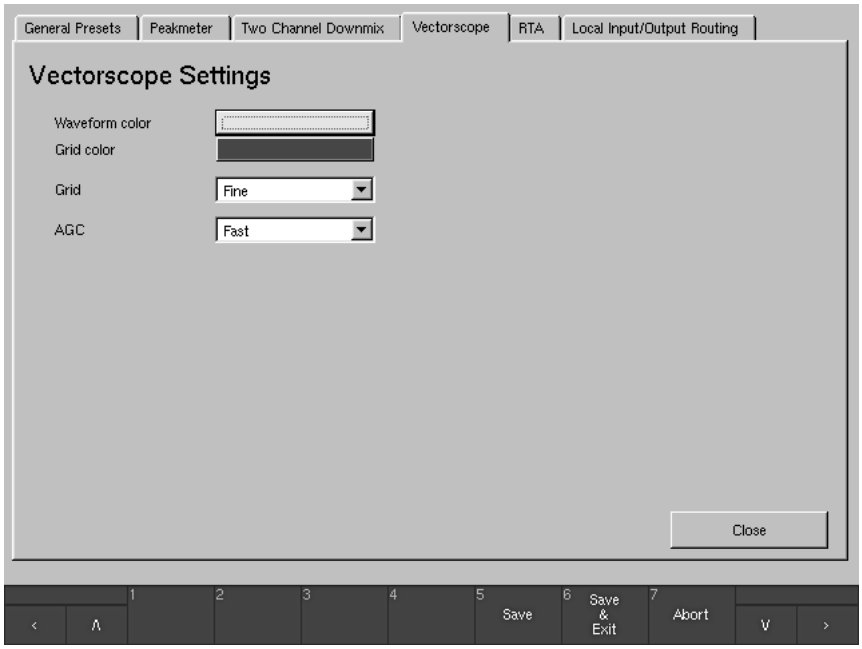


Fig. 4-9: The Vectorscope menu tab

- **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. Settings: Dots (fine) or lines (normal).

- **AGC**
  This combo box is for adjusting the vectorscope's AGC (Automatic Gain Control) response time. Settings: fast or slow.

- **Close**
  This button closes the page and prompts you to save the preset (see Chapter 4.1) to one of the user presets (1 U to 14 U). You can also enter an individual name for the preset with the Change name button (6 characters).

4.4.5 RTA

(RTA Settings, see Fig. 4-10)

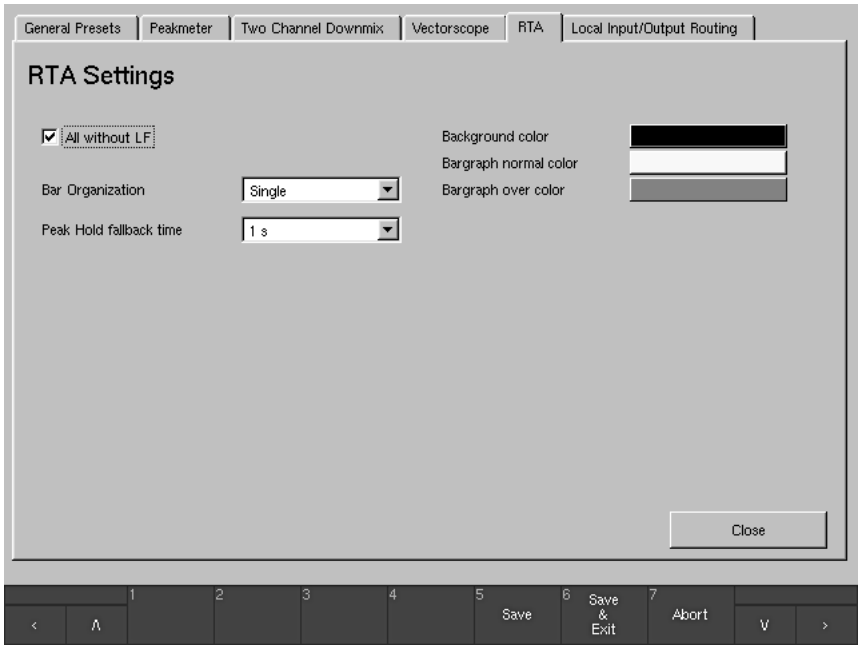


Fig. 4-10: The RTA menu tab

- **All without LF** ☑
  This check box determines the behaviour of function key/button 1 when the function Input Select (see Chapter 3.8.1) is selected in the instruments RTA BAS and RTA ADV:
  - If the box is not checked button/key 1 is labelled All. Then all channels including the LF channel are used for the Real-Time Analyzer display.
  - If the box is checked the button/key is labelled All w/o LF. Then 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 bar graphs are arranged in the vectorscope display. You can choose between single bars (Single), groups of three (Group Terz) and blocks of three (Block Terz).

- **Peak Hold fallback time**
  This combo box is for setting the display duration for the peak hold display. Settings: 1 s, 2 s, 4 s and manual. When manual is selected you can reset the peak hold display with the PHold Reset function in the RTA BAS or RTA ADV instrument (see Chapter 3.8.12).

See Chapter 3.8.12

- **Background color**
  This button displays the color selector so that you can change the color of the background of the bar graph 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 bar graphs 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 bar graphs in the RTA instrument.

- **Close**
  This button closes the page and prompts you to save the preset (see Chapter 4.1) to one of the user presets (1 U to 14 U). You can also enter an individual name for the preset with the Change name button (6 characters).

4.4.6 Local Input/Output Routing

(Local Routing Settings, see Fig. 4-11)

This menu page contains the options for setting the various **local** routing settings for all inputs, outputs and formats. You can configure different routing settings for different formats. When the corresponding surround format is selected in the Peakmeter menu tab (see Chapters 4.4.2 and 4.13 to 4.15) and the Use Local Routing Settings check box is **activated** in the General Presets menu tab (see Chapter 4.4.1) the SurroundMonitor 10900 uses the settings configured here to allocate the physical inputs and outputs to the internal logical channels L, R and so on.

See Chapters 4.4.2, 4.13 to 4.15 and 4.4.1 (also 1.6.1)

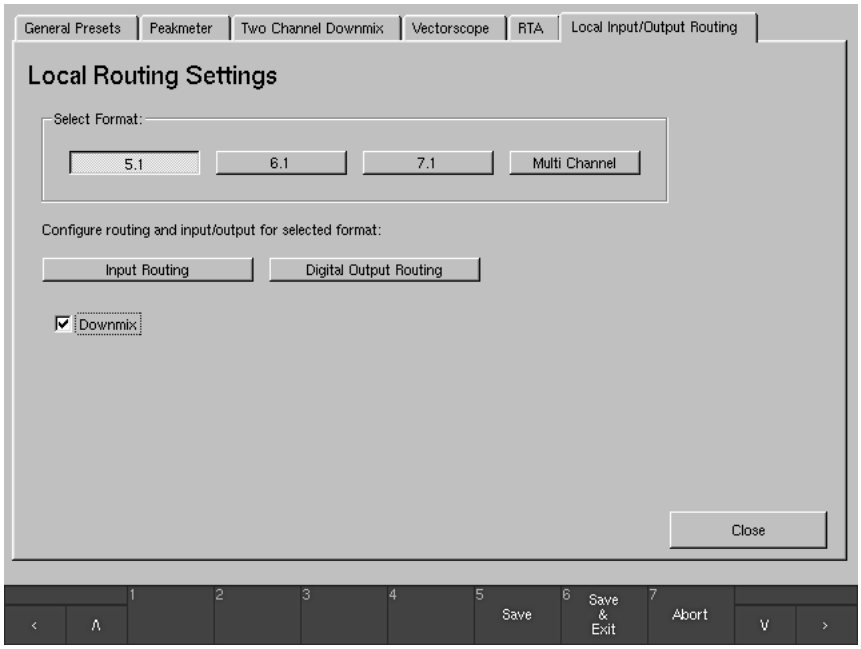


Fig. 4-11: The Local Input/Output Routing menu tab

- **Select Format: 5.1, 6.1, 7.1, Multi Channel**
  These three buttons select the surround format for which you wish to configure the local routing settings. They are toggle buttons and a separate set of settings is associated with each button.

See also Chapter 2.3.7 and 2.3.8

- **Input Routing**
  This button opens a new menu page with the routing matrix in which you can assign the internal logical channels L, R and so on to the physical inputs of the Meter In analog connection (see Chapter 2.3.7) and the Meter In digital connection (see Chapter 2.3.8). See Figs. 4-12 and 4-13 on the following page.

→ Input Routing
(see Fig. 4-11)

- **Surround Mode**
  Input signals can be routed to the following internal channels:
  5.1 format: L, R, C, LF, sL, sR, L_{ext}, R_{ext}
  6.1 format: L, R, C, sL, sR, sC, LF
  7.1 format: L, R, LC, C, RC, sL, sR, LF

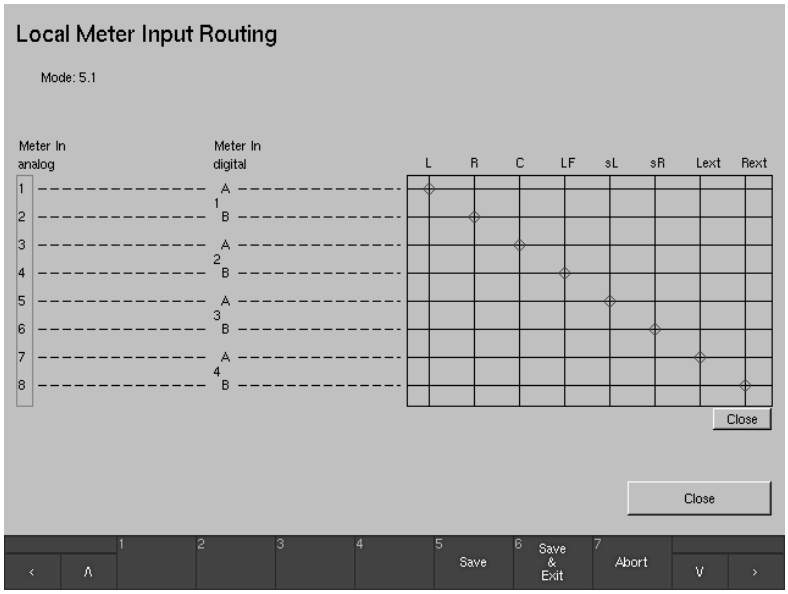


Fig. 4-12: Channel allocation matrix for the Input Routing in Surround Mode (Example: 5.1 mode)

- **Multi Channel Mode**
  Input signals can be routed to the following internal channels:
  1, 2, 3, 4, 5, 6, 7, 8

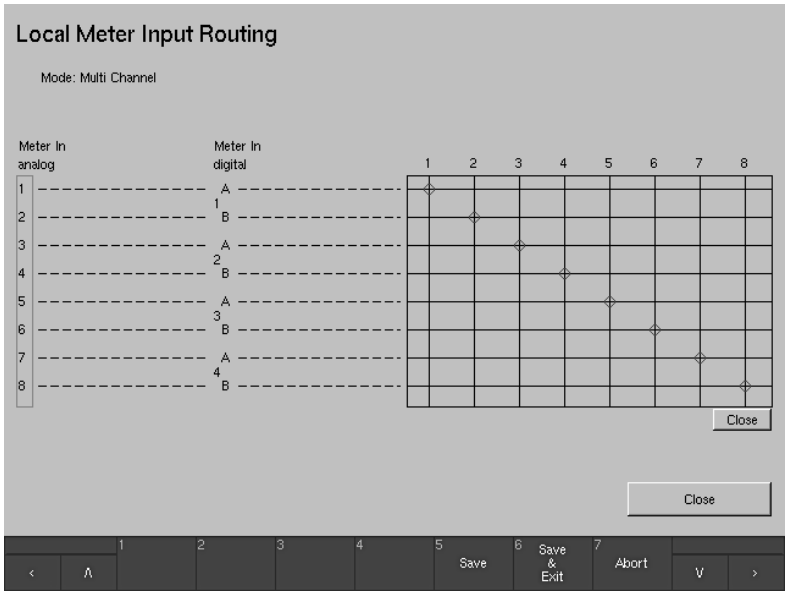


Fig. 4-13: Channel allocation matrix for the Input Routing in Multi Channel Mode

See also Chapters 4.2, 2.3.7, 2.3.8 and 1.6.7

- **Downmix** ☑

This check box activates the internal downmix matrix for outputting a stereo-compatible 2-channel downmix signal.

Only the signals of the digital inputs will be processed.

See also Chapter 2.3.9

- **Digital Output Routing**

This button opens a new menu page with the routing matrix in which the internal logical channels L, R and so on can be assigned to the physical outputs of the Digital Out connection (see Chapter 2.3.9 and Figs. 4-14 and 4-15).

→ Digital Output Routing (see Fig. 4-11)

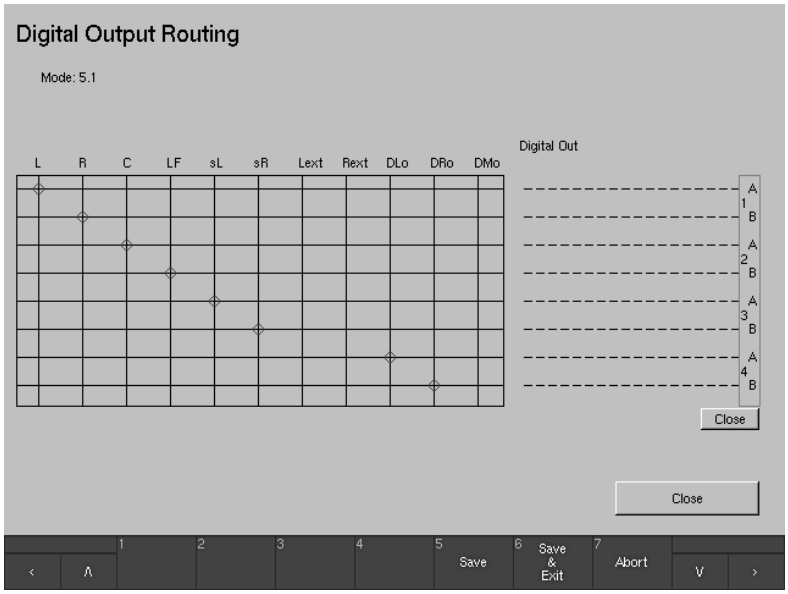


Fig. 4-14: Channel allocation matrix for the Digital Output Routing in Surround Mode (Example: 5.1 format)

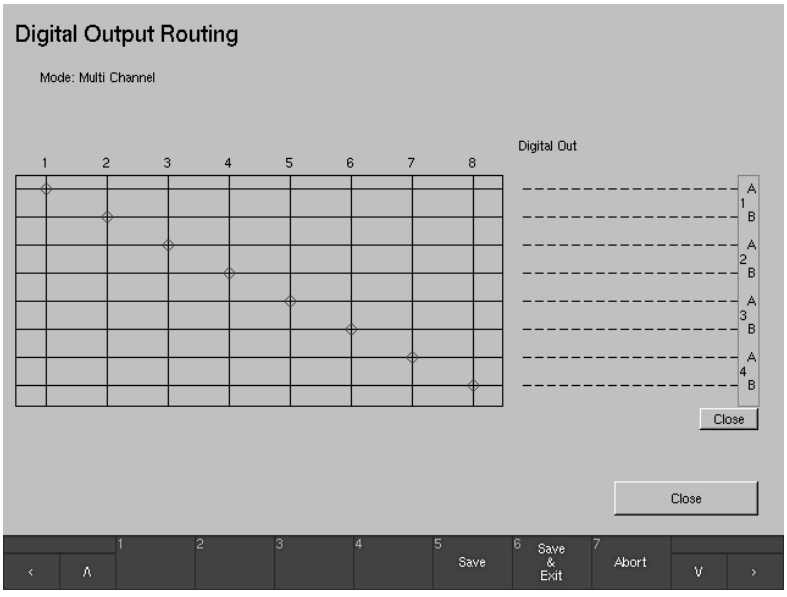


Fig. 4-15: Channel allocation matrix for the Digital Output Routing in Multi Channel Mode

See Fig. 4-14

- **Surround Mode**
  (see Fig. 4-14 on the previous page)

  The following internal channels can be routed to the outputs:
  5.1 format: L, R, C, LF, sL, sR, L_{ext}, R_{ext}, DL_0, DR_0, DM_0
  6.1 format: L, R, C, sL, sR, sC, LF, DL_0, DR_0, DM_0
  7.1 format: L, R, LC, C, RC, sL, sR, LF, DL_0, DR_0, DM_0

See Fig. 4-15

- **Multi Channel Mode**
  (see Fig. 4-15 on the previous page)

  The following internal channels can be routed to the outputs:
  1, 2, 3, 4, 5, 6, 7, 8

- **Close**
  This button closes the page and prompts you to save the preset (see Chapter 4.1) to one of the user presets (1 U to 14 U). You can also enter an individual name for the preset with the Change name button (6 characters).

Changing the routing in the matrixes

- Press the ∨ or ∧ cursor key until the input or output path for which you want to change the routing has the focus (dashed frame).
- Confirm with the SEL(ECT) key. A red frame is displayed around the selected input or output path.
- Now press the ∨ or ∧ cursor key until the matrix field has the focus (dashed frame).
- Confirm with the SEL(ECT) key. A blue circle is displayed around the topmost red node (red circle), indicating that it has the focus.
- You can now move the blue circle to one the intersections in the matrix with the cursor keys.
- Pressing SEL(ECT) key defines the new node at the selected intersection, thus also defining the new assignment of an input channel to an internal logical channel or an internal logical channel to an output channel.
  - In the **Input Routing** this deletes an existing node (red circle) on the **vertical** line and replaces it with a new one.
    You can route a single input signal to multiple internal channels.
  - In the **Output Routing** this deletes an existing node (red circle) on the **horizontal** line and replaces it with a new one.
    You can route a single internal signal to multiple output channels.
- If you move the cursor (blue circle) over an existing node (red circle) and press the SEL(ECT) key the node is deleted, cancelling the assignment and the signal routing.
- With the cursor keys ∨ or ∧ move to the small Close button until it has the focus (dashed frame), the blue circle disappears. Pressing the SEL(ECT) button selects the matrix settings.
- With the tall Close button you can return to the Routing Settings menu tab.
- Now you can use the ∨ and ∧ cursor keys to select the next menu option.

See Figs. 4-11 to 4-15 and Chapter 2.4.8

- Please note that the screenshots in this chapter and Chapter 2.4.8 show default configurations.

4.5 The General Settings Menu

(Global General Settings, see Fig. 4-16)

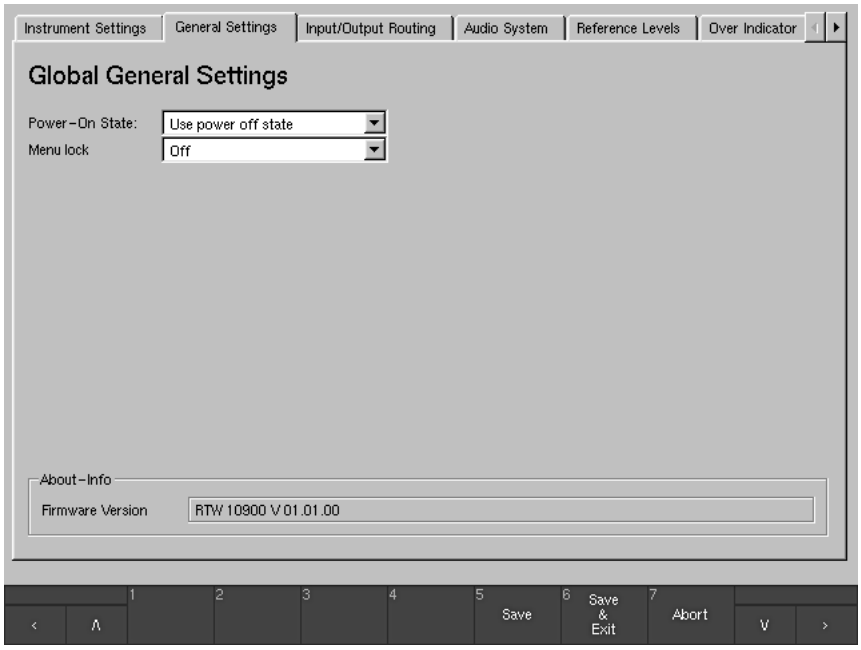


Fig. 4-16: The General Settings menu tab

- **Power-On State**

  This combo box selects the preset that is loaded and activated when the SurroundMonitor 10900 is switched on (Use Preset ...). You can select any of the fourteen user presets (1 U to 14 U) or the seven factory presets (15 F to 21 F). Selecting 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 menus are freely accessible (Off) or only accessible when the user enters one of the eight 4-digit numeric codes (PINs). If you activate the menu lock function by selecting 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 labelled with numbers to allow entry of the PIN code. The digits 1 to 6 are displayed on the first level and the digits 7 to 9, digit 0 and a backspace key (DEL) are displayed on the second level of the menu, which can be displayed by selecting the button/key **>**. Pressing the **<** key takes you back to the first level. On both levels the seventh button/key in the Toolbar is an Abort function, with which the procedure can be cancelled.

- **About - Info**

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

4.6 The Input/Output Routing Menu

(Global Routing Settings, see Fig. 4-17)

This menu page contains the **global** routing settings for all inputs, outputs and formats. You can define different routing settings for different formats. When the corresponding surround format is selected in the Peakmeter menu tab (see Chapters 4.4.2, 4.13 to 4.15) and the Use Local Routing Settings check box is **deactivated** in the General Presets menu tab (see Chapter 4.4.1) the SurroundMonitor 10900 uses the global settings configured here to allocate the physical inputs and outputs to the internal logical channels L, R and so on respectively 1, 2 and so on.

See Chapters 4.4.2, 4.13 to 4.15 and 4.4.1 (also 1.6.1)

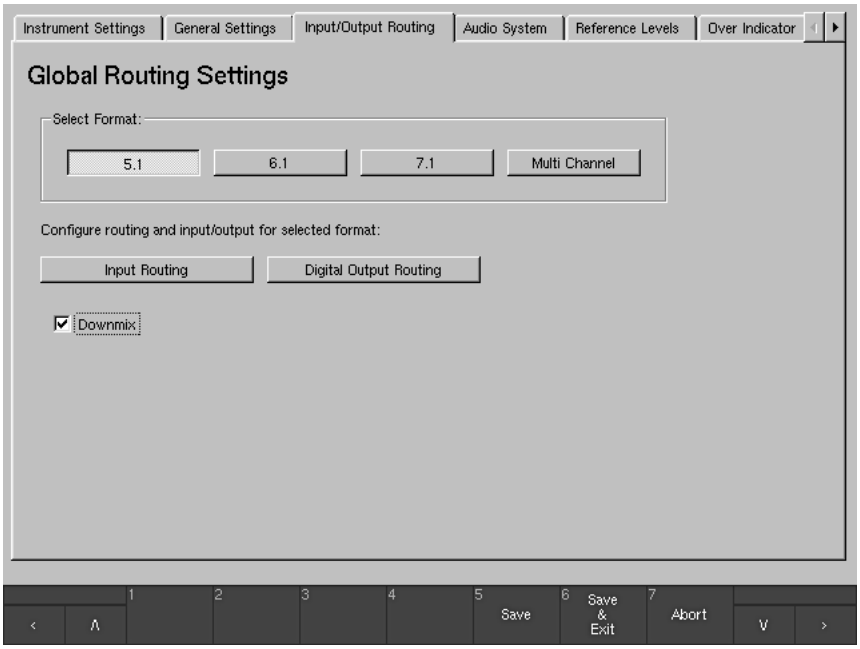


Fig. 4-17: The Input/Output Routing menu tab

- **Select Format: 5.1, 6.1, 7.1, Multi Channel**
  These three buttons select the surround format for which you wish to configure the global routing settings. They are toggle buttons and a separate set of settings is associated with each button.

See also Chapter 2.3.7 and 2.3.8

- **Input Routing**
  This button opens a new menu page with the routing matrix in which you can assign the internal logical channels L, R and so on to the physical inputs of the Meter In analog connection (see Chapter 2.3.7) and the Meter In digital connection (see Chapter 2.3.8). See Figs. 4-18 and 4-19 on the following page.

→ Meter Input Routing
(see Fig. 4-17)

- **Surround Mode**
  Input signals can be routed to the following internal channels:
  5.1 format: L, R, C, LF, sL, sR, L_{ext}, R_{ext}
  6.1 format: L, R, C, sL, sR, sC, LF
  7.1 format: L, R, LC, C, RC, sL, sR, LF

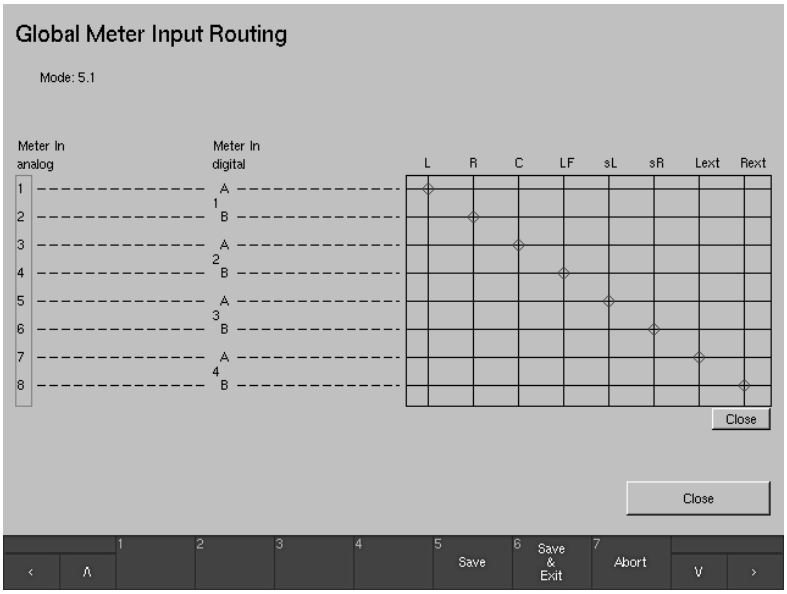


Fig. 4-18: Channel allocation matrix for the Input Routing in Surround Mode (Example: 5.1 mode)

- **Multi Channel Mode**
  Input signals can be routed to the following internal channels:
  1, 2, 3, 4, 5, 6, 7, 8

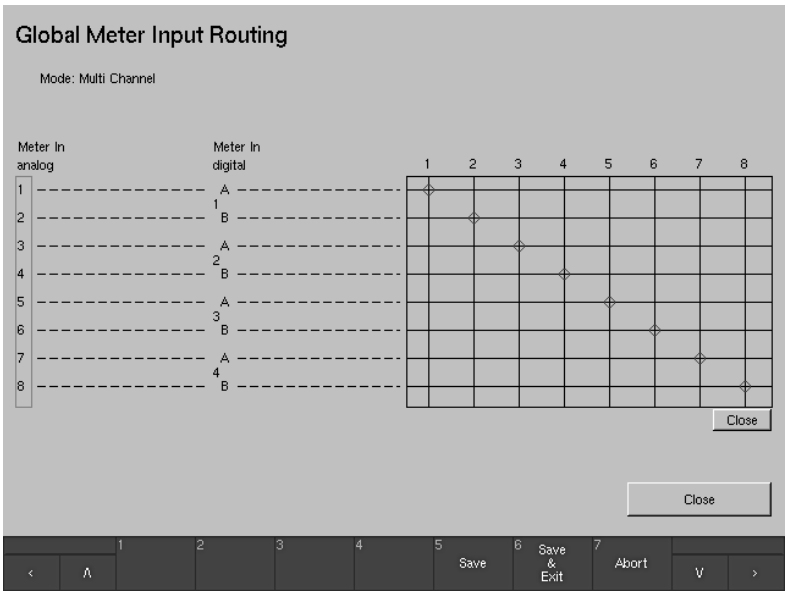


Fig. 4-19: Channel allocation matrix for the Input Routing in Multi Channel Mode

See also Chapters 4.2, 2.3.7, 2.3.8 and 1.6.7

- **Downmix** ☑

This check box activates the internal downmix matrix for outputting a stereo-compatible 2-channel downmix signal.

Only the signals of the digital inputs will be processed.

See also Chapter 2.3.9

- **Digital Output Routing**

This button opens a new menu page with the routing matrix in which the internal logical channels L, R and so on can be assigned to the physical outputs of the Digital Out connection (see Chapter 2.3.9 and Figs. 4-20 and 4-21).

→ Digital Output Routing (see Fig. 4-17)

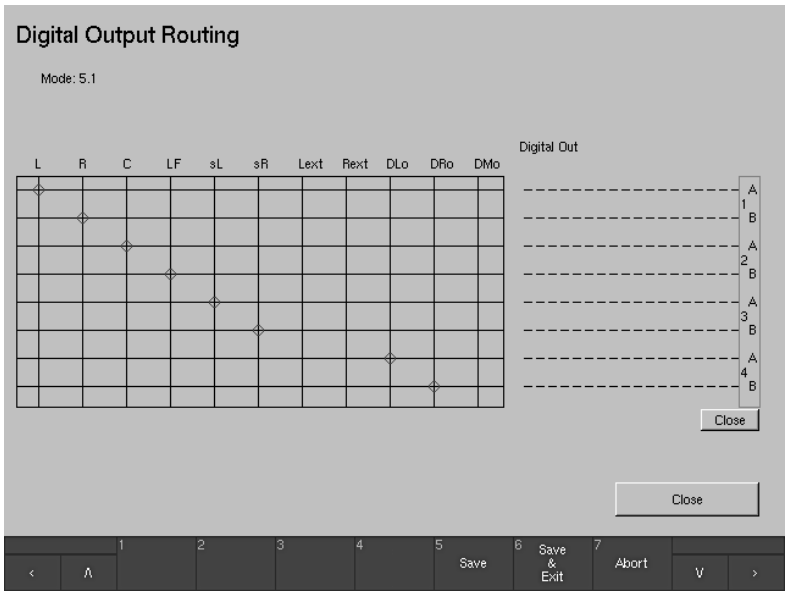


Fig. 4-20: Channel allocation matrix for the Digital Output Routing in Surround Mode (Example: 5.1 mode)

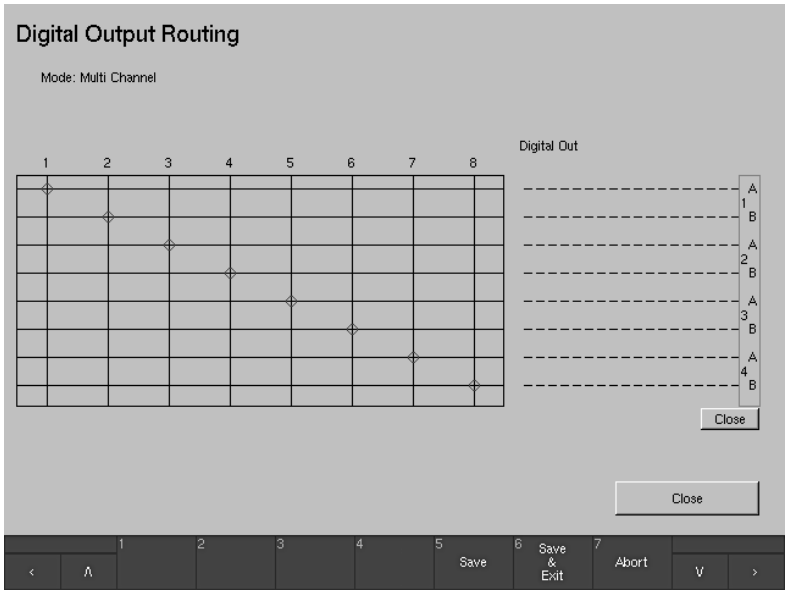


Fig. 4-21: Channel allocation matrix for the Digital Output Routing in Multi Channel Mode

See Fig. 4-20

- **Surround Mode**
  (see Fig. 4-20 on the previous page)

  The following internal channels can be routed to the outputs:
  5.1 format: L, R, C, LF, sL, sR, L_{ext}, R_{ext}, DL_0, DR_0, DM_0
  6.1 format: L, R, C, sL, sR, sC, LF, DL_0, DR_0, DM_0
  7.1 format: L, R, LC, C, RC, sL, sR, LF, DL_0, DR_0, DM_0

See Fig. 4-21

- **Multi Channel Mode**
  (see Fig. 4-21 on the previous page)

  The following internal channels can be routed to the outputs:
  1, 2, 3, 4, 5, 6, 7, 8

- **Close**
  This button closes the page and prompts you to save the preset (see Chapter 4.1) to one of the user presets (1 U to 14 U). You can also enter an individual name for the preset with the Change name button (6 characters).

Changing the routing in the matrixes

- Press the ∨ or ∧ cursor key until the input or output path for which you want to change the routing has the focus (dashed frame).
- Confirm with the SEL(ECT) key. A red frame is displayed around the selected input or output path.
- Now press the ∨ or ∧ cursor key until the matrix field has the focus (dashed frame).
- Confirm with the SEL(ECT) key. A blue circle is displayed around the topmost red node (red circle), indicating that it has the focus.
- You can now move the blue circle to one the intersections in the matrix with the cursor keys.
- Pressing SEL(ECT) key defines the new node at the selected intersection, thus also defining the new assignment of an input channel to an internal logical channel or an internal logical channel to an output channel.
  - In the **Input Routing** this deletes an existing node (red circle) on the **vertical** line and replaces it with a new one.
    You can route a single input signal to multiple internal channels.
  - In the **Output Routing** this deletes an existing node (red circle) on the **horizontal** line and replaces it with a new one.
    You can route a single internal signal to multiple output channels.
- If you move the cursor (blue circle) over an existing node (red circle) and press the SEL(ECT) key the node is deleted, cancelling the assignment and the signal routing.
- With the cursor keys ∨ or ∧ move to the small Close button until it has the focus (dashed frame), the blue circle disappears. Pressing the SEL(ECT) button selects the matrix settings.
- With the tall Close button you can return to the Routing Settings menu tab.
- Now you can use the ∨ and ∧ cursor keys to select the next menu option.

See Figs. 4-17 to 4-21 and Chapter 2.4.8

- Please note that the screenshots in this chapter and Chapter 2.4.8 show default configurations.

4.7 The Audio System Menu

(Global Audio Settings, see Fig. 4-22)

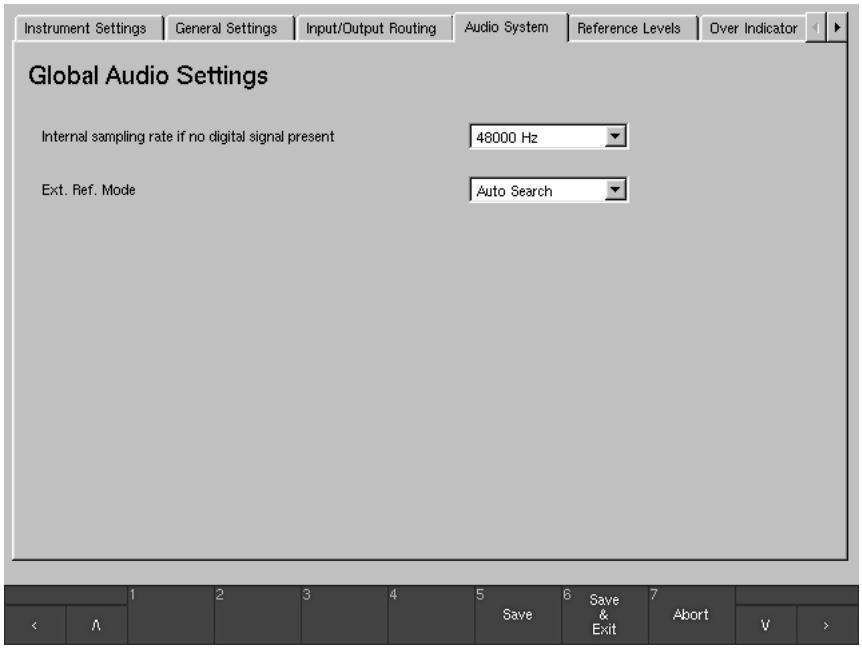


Fig. 4-22: The Audio System menu tab

- **Internal sampling rate if no digital signal present**
  This combo box is used to set the internal sampling rate (44100Hz, 48000Hz, 96000Hz) 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 SurroundControl 30900 or a valid external reference signal is available and is selected as the sync source with the Ext. Ref. Mode combo box (see below) the internal A/D converter and the digital outputs will always use the sampling rate of the digital signal or reference sync signal.

- **Ext. Ref. Mode**
  This combo box is for setting the mode for the external reference sync signal:
  - 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.

See Chapter 2.3.10

- Use Ref Input: Presets the system to the Ref Sync IN input (see Chapter 2.3.10), which can be used to input the reference sync signal.
  Important:
  No automatic search is performed!
- Use Dig ... Input ...: One of the eight available digital inputs can be selected so that its digital signal can be used as the reference sync signal.
  Important:
  No automatic search is performed!

4.8 The Reference Levels Menu

(See Fig. 4-23)

See Chapter 3.11

The options in this menu tab preset the reference levels of the analog inputs and outputs and the calibration levels of the test signal generator (see Chapter 3.12).
The Analog Metering Reference Level Offset list box can be used to adjust the analog inputs to the local applications.

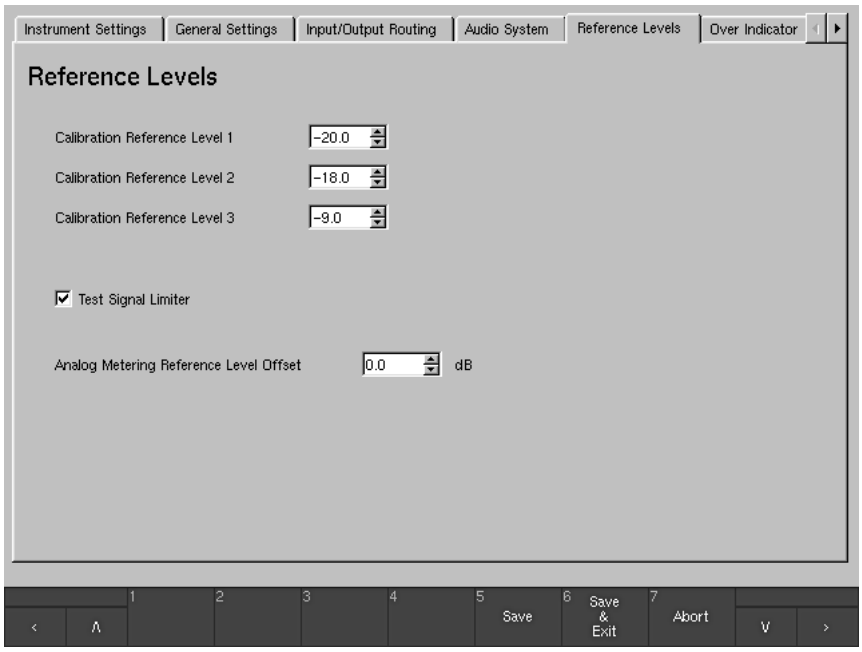


Fig. 4-23: The Reference Levels menu tab

- **Calibration Reference Level ...**
  These list boxes are for the preset of the different output levels for the test signal generator. The factory defaults are -20 dB FS, -18 dB FS and -9 dB FS. You can adjust the values in 0.5 dB steps. .

See Chapter 3.11.3

- **Test Signal Limiter** ☑
  The levels of the sine wave signals of the test signal generator (see Chapter 3.11.3) have an automatic limiter to protect the monitoring system:
  - to -9 dB FS up to 1 kHz
  - to -18 dB FS above 1 kHz

  The Test Signal Limiter is always activated by default. You can deactivate it by deselecting this check box.

- **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 SurroundMonitor 10900 is preset by factory to „0 dB“ display at +6 dBu input level for analog signals using the DIN scale.
    Selecting +1 dB in Analog Metering Reference Level Offset list box delays the „0 dB“ mark of the Metering on the scale up with a value of 1 dB.
    Viewed in an other way a signal damping of 1 dB is made. This means that an input signal level of +6 dBu is displayed not yet as „0 dB“ but as „-1 dB“.
    Inversely the selection of -1 dB in Analog Metering Reference Level Offset list box delays the „0 dB“ mark on the scale down with a value of 1 dB. This means that a signal amplification of 1 dB is made.

4.9 The Over Indicator Menu

(See Fig. 4-24)

This menu tab contains options for setting the response of the digital Over indicator.

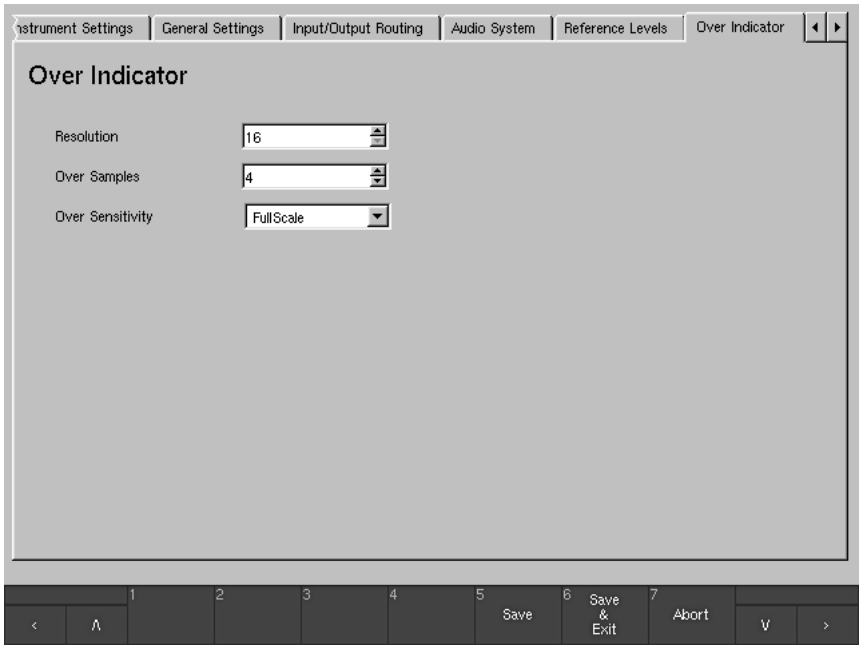


Fig. 4-24: The Over Indicator menu tab

See Figs. 1-4 and 1-5 in Chapter 1.6.1

- **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.

4.10 The Communication Menu

(Global Communication Settings, see Fig. 4-25)

This menu tab is used to set an IP address for operation of the unit in a network. this adress is essential for i. e. software upgrades (see Chapter 5 for details).

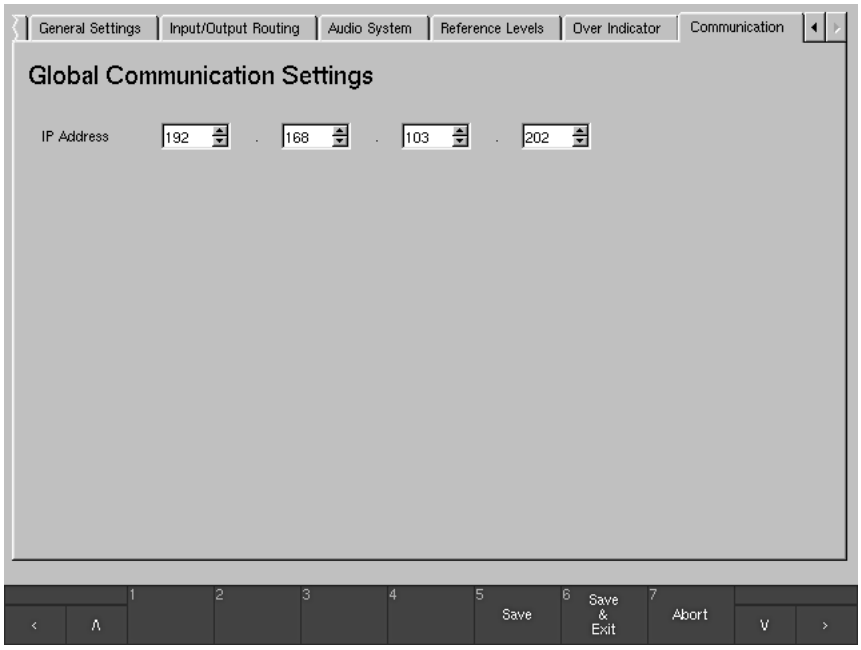


Fig. 4-25: The Communications menu tab

- **IP Address**
  The SurroundMonitor 10900 can be accessed in a network via an IP address. You must set all four 3-digit blocks of the address in the four list boxes.

4.11 The Alarm Configuration Menu

(Global Alarm Settings, see Figs. 4-26 and 4-27)

The options in this menu tab preset the display or output of alarm events for the modes.

- **Surround Mode:**



Bild 4-26: The Alarm Configuration menu tab with Surround Mode selected

- **Multi Channel Mode:**



Bild 4-27: The Alarm Configuration menu tab with Multi Channel Mode selected

4.11.1 Alarms General Settings

Frame

(See Figs. 4-26 and 4-27)

- **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 bar graphs of the peakmeter. The identified events are displayed in the display areas of the Digital Over indicator (see Figs. 4-28 and 4-29 on the next page) for each channel without any weighting. The alarm events also can be output via the outputs of the GP IO interface (see Chapter 2.3.11).

See Figs. 4-28 and 4-29
See Chapter 2.3.11

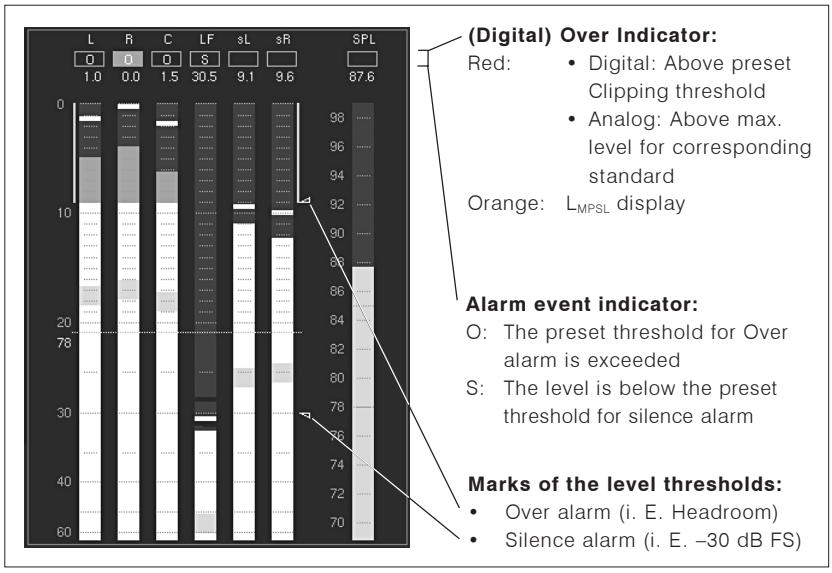


Fig. 4-28: Display elements of the Peakmeter instruments (PPM) alarm functions in Surround Mode

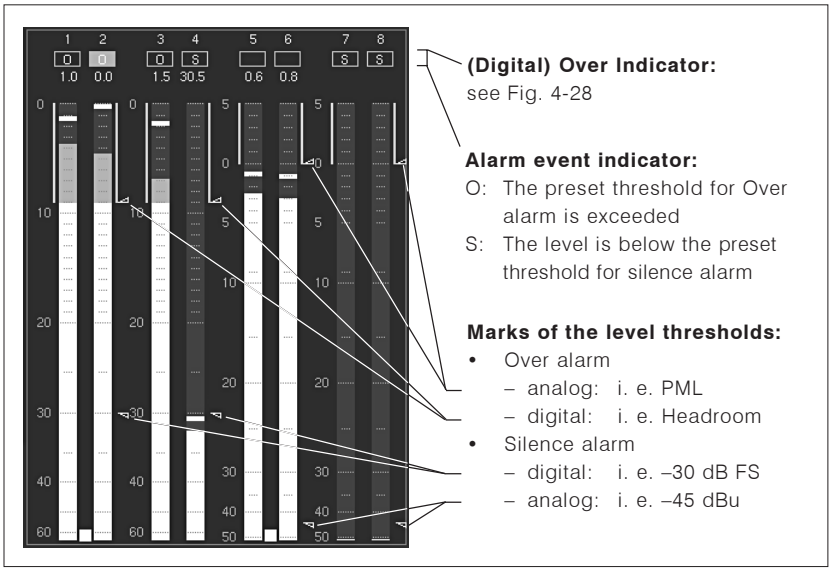


Fig. 4-29: Display elements of the Peakmeter instruments (PPM) alarm functions in Multi Channel Mode (respectively in 2 Channel Stereo Mode)

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.

- The event output remains active after the time period (0.1, 0.5, 1, 2, 4 s) has passed when the conditions for the alarm event are still or again complied.
- Selecting Hold the active state is kept until a reset with the Reset button/key 2 of the PPM instrument (see Chapter 3.4) is made.
- Selecting Event keeps the output active as long as the condition for the alarm event is complied.

See Chapter 3.4

Using the Alarm-Event Type Selection function (see Chapter 4.11.4) the impulses can be put out.

- **Output Logic**

  With this combo box you can define the logical state of the active event outputs: Active Low or Active High.

4.11.2 Alarms Threshold Settings

Frame

(See Figs. 4-26 and 4-27)

- **Analog Threshold Over Alarm**

  This list box is 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 4.11.3).
  Values in the range from +18 dBu to –55 dBu can be selected in 0.5 dB steps.

- **PML**

  This check box activates the Permitted Maximum Level, the full conduction of "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. 4-29).
  With activated PML check box the selected value for Analog Threshold Over Alarm has no function.

See example in Fig. 4-29

- **Analog Silence Alarm**

  This list box is for setting the Silence level threshold in dBu. **Falling below** this threshold will activate the alarm event Silence for the time period selected with Alarms Timing (see Chapter 4.11.3).
  Values in the range from 0 dBu to –60 dBu can be selected in 0.5 dB steps.



- **Please 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 4.8) has no effect to the supplied threshold values.

See Chapter 4.8

- **Digital Threshold Over Alarm**

  This list box is 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 4.11.3).
  Values in the range from 0 dB FS to –55 dB FS can be selected in 0.5 dB steps.

- **Headroom** ☑
  With this check box activated the alarm event Over will be activated when the Headroom value of the displayed peakmeter is exceeded (see examples in Figs. 4-28 and 4-29).
  With activated Headroom check box the selected value for Analog Threshold Over Alarm has no function.

See examples in Figs. 4-28 and 4-29

- **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 4.11.3).
  Values in the range from –10 dB FS to –55 dBu can be selected in 0.5 dB steps.

4.11.3 Alarms Timing

Frame

(See Figs. 4-26 and 4-27)

- **Threshold Over Attack Time**
  This combo box is for the selection of the time period for the threshold condition (see Chapter 4.11.2) before the alarm event Over is activated. Available are:
  - 0.1, 0.5, 1, 2 or 4 seconds
  - PPM-Integration, this means that the current integration time of the displayed peakmeter is used without any weighting.

- **Silence Attack Time**
  This combo box is for the selection of the time period for the threshold condition (see Chapter 4.11.2) before the alarm event Silence is activated. Available are the values 0.1, 0.5, 1, 2, 4 or 8 seconds.

4.11.4 Alarm-Event Type Selection

(See Figs. 4-26 and 4-27)

The following eight combo boxes are for the defintion of which alarm event type routed to which output of the GP IO interface (see Chapter 2.3.11).
The following tables show the assignments for the Surround Mode (see Fig. 4-30 on the next page) and the Multi Channel Mode (see Fig. 4-31 on the page after next).

See Figs. 4-30 and 4-31 on the next two pages

Thereby means:

- **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.

See Fig. 4-26

- **Surround Mode:**
  (Selection of the alarm event type, see Fig. 4-26)

Output	Options selectable	Function
Output 1		
	None Front Threshold Over Front Digital Over Front Silence	Alarm release, when the level of the front channels reaches the threshold marks
Output 2		
	None Rear Threshold Over Rear Digital Over Rear Silence	Alarm release, when the level of the rear channels reaches the threshold marks
Output 3		
	None Any Surround Ch Threshold Over Any Surround Ch Digital Over Any Surround Ch Silence	Alarm release, when the level of any surround channel reaches the threshold marks
Output 4		
	None 2 Ch Downmix Threshold Over 2 Ch Downmix Digital Over 2 Ch Downmix Silence	Alarm release, when the level of the internal downmix channels reaches the threshold marks
Output 5		
	None Ext Threshold Over Ext Digital Over Ext Silence	Alarm release, when the level of the external signals reaches the threshold marks
Output 6		
	None L/R Threshold Over L/R Digital Over L/R Silence	Alarm release, when the level of the L and R channels reaches the threshold marks
Output 7		
	None LF Threshold Over LF Digital Over LF Silence	Alarm release, when the level of the LF channel reaches the threshold marks
Output 8		
	None Digital Over Channel 1 - 8 "ored" Digital Over Surround Ch "ored"	Alarm release, when the level of one channel reaches the digital over mark

Fig. 4-30: Selection of the alarm event type options (Alarm-Event Type Selection) in Surround Mode

Siehe Bild 4-27

- **Multi Channel Mode:**
  (Selection of the alarm event type, see Fig. 4-27)

Output	Options selectable	Function
Output 1		
	None Group 1 Threshold Over Group 1 Digital Over Group 1 Silence	Alarm release, when the level of the front channels reaches the threshold marks
Output 2		
	None Group 2 Threshold Over Group 2 Digital Over Group 2 Silence	Alarm release, when the level of the rear channels reaches the threshold marks
Output 3		
	None Group 3 Threshold Over Group 3 Digital Over Group 3 Silence	Alarm release, when the level of any surround channel reaches the threshold marks
Output 4		
	None Group 4 Threshold Over Group 4 Digital Over Group 4 Silence	Alarm release, when the level of the internal downmix channels reaches the threshold marks
Output 5		
		no selection available
Output 6		
		no selection available
Output 7		
		no selection available
Output 8		
	None Digital Over Channel 1 - 8 "ored"	Alarm release, when the level of one channel reaches the digital over mark

Fig. 4-31: Selection of the alarm event type options (Alarm-Event Type Selection) in Multi Channel Mode

4.12 The Key Settings Menu

(See Fig. 4-32)

See Chapters 3.1. and 2.3.11.

The options in this menu tab preset which single keys, key groups (see Chapter 3.1.) or control inputs of the GP IO interface (see Chapter 2.3.11.) can be locked or configured with different functions.

Please note: The operation of the SurroundMonitor 10900 with an optional computer mouse is always possible.



Fig. 4-32: The Key Settings menu tab

4.12.1 Preset Recall Mode

Frame

(See Fig. 4-32)

- **Off**

  With this option button activated all keys and control inputs have normal functions as described in the several chapters of this operating manual (see Chapters 3.1 and 2.3.11).

See Chapters 3.1 and 2.3.11

- **All Keys**

  With this option button activated the buttons/keys 1 to 7 (see Chapter 3.1) of the main unit, of the Remote Display 30010 and the corresponding control inputs of the GP IO interface (see Chapter 2.3.11) assigned to the buttons/keys can be used for the selection of the User Presets 1 U to 7 U. The control keys MODE, MORE and INSTR are then locked (grey font, see Fig. 4-33).

See Chapter 3.1

See Chapter 2.3.11



Fig. 4-33: Toolbar with All Keys option in Key settings menu activated

- **GPI only**
  With this option button activated the corresponding control inputs of the GP IO interface (see Chapter 2.3.11) assigned to the buttons/keys 1 to 7 (see Chapter 3.1) can be used only for the selection of the User Presets 1 U to 7 U. The keys of the main unit, of the Remote Display 30010 and the corresponding buttons of the Toolbar assigned to the keys keep their normal function.

4.12.2 Disable Keys/GPI

(See Fig. 4-32)

Keys, key groups or control inputs of the GP IO interface (see Chapter 2.3.11) selectively can be locked.

- **Remote Display Keys**
  Activating this check box locks the function and control keys of the Remote Display 30010 (see Chapter 3.1). The message “Remote display keys disabled” is displayed in the Toolbar of the display when using one of the deactivated keys.

- **Main Unit Keys**
  Activating this check box locks the function and control keys of the main unit (see Chapter 3.1). The message “Main Unit keys disabled” is displayed in the Toolbar of the display when using one of the deactivated keys.

- **GPI (Parallel Remote)**
  Activating this check box locks the control inputs of the GP IO interface (see Chapter 2.3.11) except the DIM function control input. The message “GPI disabled” is displayed in the Toolbar of the display when using one of the deactivated control inputs.4.13 Channel Group Settings in Channel mode Surround

→ Instrument Settings
→ Edit selected preset
→ Peakmeter
→ Channel Mode Surround:
- → Channel Group 1 - 3
- → Two Channel Downmix
  → Channel Group

4.13 Channel Group Settings in Channel mode Surround

(Instrument Settings/Peakmeter - see Chapter 4.4.2
Instrument Settings/Two Channel Downmix – see Chapter 4.4.3)

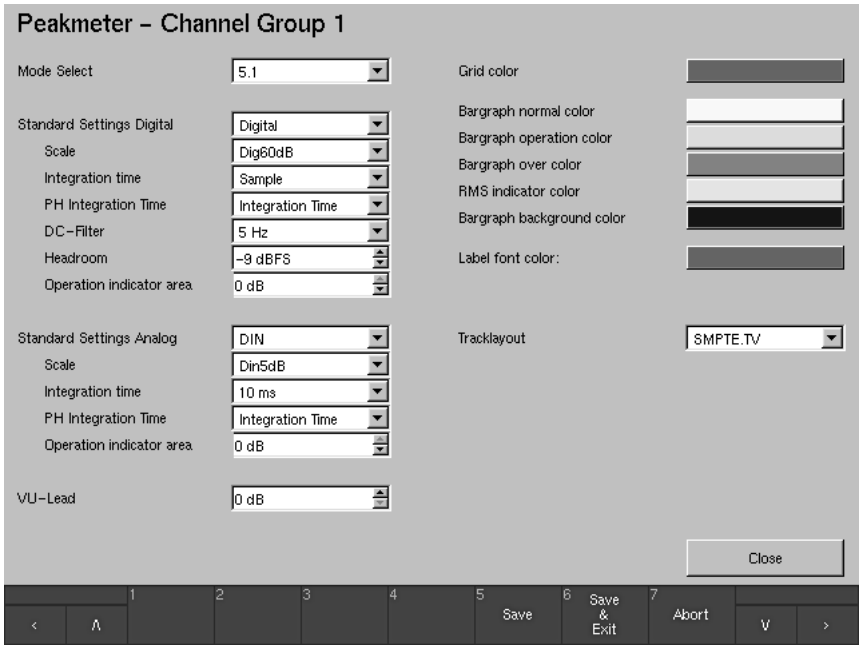


Fig. 4-34: The Peakmeter - Channel Group 1 menu page in Surround Mode

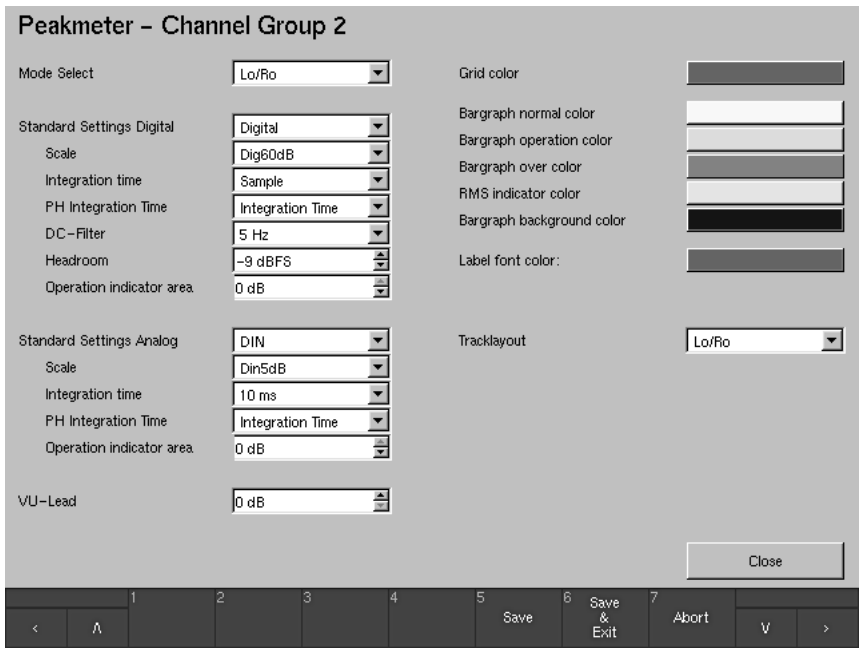


Fig. 4-35: The Peakmeter - Channel Group 2 menu page in Surround Mode

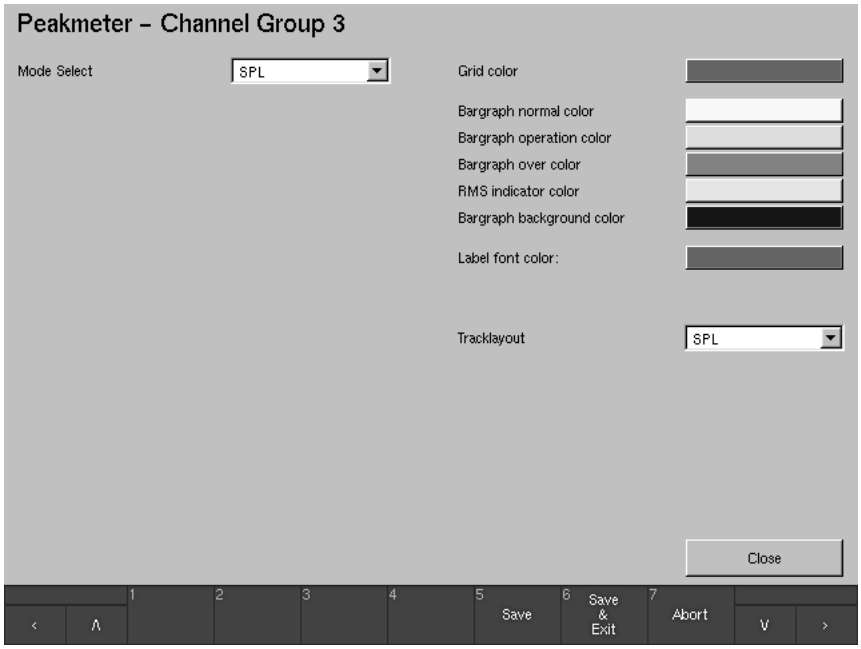


Fig. 4-36: The Peakmeter - Channel Group 3 menu page in Surround Mode

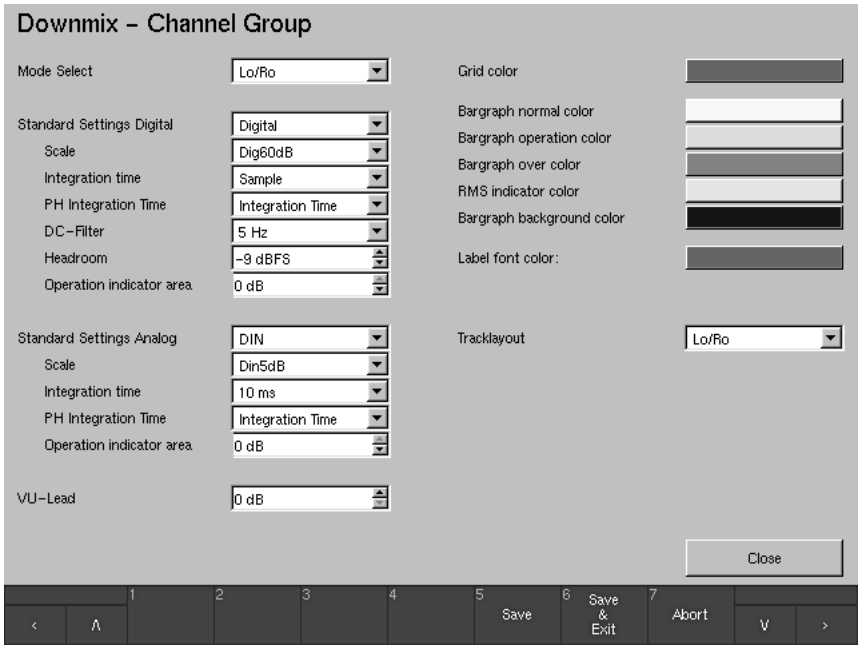


Fig. 4-37: The Downmix - Channel Group menu page in Surround Mode

See Chapters 4.4.2 and 4.4.3

In the Peakmeter menu tab there are three buttons labelled Channel Group 1, Channel Group 2 and Channel Group 3. In the Two Channel Downmix menu tab there is one button labelled Channel Group. These buttons display the peak meter display settings menu pages for the corresponding channel

groups. These pages, which all have more or less the same structure (see Figs. 4-34 to 4-37), contain the settings for the operating modes, standard settings for the digital and analog signal paths, VU Lead and the display colors for the individual elements.

See Chapter 4.4.2 (also 1.6.1)

There is also a special function on the **Peakmeter - Channel Group 1** (always active) menu page: The **Mode Select** combo box in this page (see Fig. 4-34) sets the **Surround Mode** for the operation of the peak meters and thus also the display modes for the individual instruments. The display uses the channel assignments set in the routing settings.
If you have connected the optional mouse to the SurroundMonitor 10900 you can display the Peakmeter Settings menu tab directly by clicking in Window 2 with the right mouse button when the unit is in normal mode. You can then change the surround format quickly by clicking on the Channel Group 1 button and selecting a different format with the Mode Select combo box.

The individual options are listed below. With some exceptions they apply for all groups. The exceptions and individual differences are all explained explicitly where applicable.

See oben and Chapter 4.4.2 (also 1.6.1)

- **Mode Select**
  These combo boxes are used to select the display mode for the corresponding channel groups. The available options vary depending on the channel group:

See Fig. 4-34

- **Peakmeter - Channel Group 1**: (always active) In this group you can select the surround formats 5.1, 6.1 and 7.1. **The setting in this group defines the basic operating mode of the SurroundMonitor 10900** (see the explanations above and in Chapters 4.4.2 and 1.6.1).

See Fig. 4-35

- Peakmeter - Channel Group 2: In this group you can select the downmix signals that are either generated from the surround formats set in the menu Peakmeter - Channel Group 1 or input from an external source. The available signals you can select for display are L_0/R_0, Ext L/Ext R, L_0/R_0 + Sum/Diff and Ext L/Ext R + Sum/Diff.

See Fig. 4-36

- Peakmeter - Channel Group 3: This peak meter group is reserved for the SPL display.

See Fig. 4-37

- Downmix - Channel Group: This channel group is displayed in the Two Channel Downmix Meter (see Chapters 1.6.7 and 3.9) in Window 3 of the screen display, in addition to the peak meter groups of the PPM instrument (Window 2). Signals: DL_0/DR_0, Ext L/Ext R

- **Standard Settings Digital**
  (Does NOT apply for Peakmeter - Channel Group 3)

  This combo box applies to the four combo boxes and two list boxes grouped directly below it (see Figs. 4-34, 4-35 and 4-37).
  When you select Digital all these boxes are automatically set to values corresponding to the digital standard. If you then change any of the settings of these boxes manually the text Non Standard is displayed in the Standard Settings Digital combo box. Reselecting Digital automatically resets all six boxes grouped below to the standard values.

- **Scale**
  (Does NOT apply for Peakmeter - Channel Group 3)

  This combo box allows you to select the available scales:
  - Dig 60dB (digital standard setting)
  - Dig 20dB
  - Dig +18dB .. 0 dB
  - Dig +18dB .. 0 .. -18 dB
  - Dig +20dB .. 0 .. -40 dB
  - <q> DIN 5dB (quasi-DIN scale)
  - <q> DIN 10dB (quasi-DIN scale)
  - <q> Zoom +/- 10dB (quasi-DIN scale)
  - <q> Zoom +/- 1dB (quasi-DIN scale)
  - <q> Nordic (quasi-Nordic scale)

- **Integration time**
  (Does NOT apply for Peakmeter - Channel Group 3)

  This combo box allows you to select the integration time of the level display:
  - 10ms
  - 20ms
  - 1ms
  - 0.1ms
  - Sample (digital standard setting)
  - 300ms

- **PH Integration Time**
  (Does NOT apply for Peakmeter - Channel Group 3)

  This combo box sets the integration time for the peak hold display:
  - Integration Time: Uses the same integration time as for the level display (digital standard setting).
  - Sample: Uses a sample-precise integration time that is independent of the level display.

- **DC-Filter**
  (Does NOT apply for Peakmeter - Channel Group 3)

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

- **Headroom**
  (Does NOT apply for Peakmeter - Channel Group 3)

  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)

  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)

  This combo box applies to the three combo boxes and the one list box grouped directly below it (see Figs. 4-34, 4-35 and 4-37).
  If you select one of the standards listed below the boxes are automatically set to the values corresponding to the selected standard. If you then change any of the boxes manually the text Non Standard is displayed in the Standard Settings Analog combo box. If you then reselect one of the standards all the four 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
  - SMPTE
  - VU

- **Scale**
  (Does NOT apply for Peakmeter - Channel Group 3)

  This combo box allows you to select the scale you want to use:
  - Din 5dB (DIN standard setting)
  - DIN 10dB
  - Nordic (Nordic standard setting)
  - British IIa (British IIa standard setting)
  - British IIb (British IIb & SMPTE standard setting)
  - Vu (VU standard setting)
  - Zoom +/– 10dB
  - Zoom +/– 1dB

- **Integration time**
  (Does NOT apply for Peakmeter - Channel Group 3)

  This combo box sets the integration time for the level display:
  - 10ms (DIN, Nordic & SMPTE standard setting)
  - 20ms (British IIa & British IIb standard setting)
  - 1ms
  - 0.1ms
  - 300ms (VU standard setting)

- **PH Integration Time**
  (Does not apply for Peakmeter - Channel Group 3)

  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.

- **Operation indicator area**
  (Does not apply for Peakmeter - Channel Group 3)

  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)

  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 bar graph display.

- **Bargraph normal color**
  This button displays the color selector so that you can change the color of the bar graphs in the peak meter display.

- **Bar graph operation color**
  This button displays the color selector so that you can change the color of the working range of the bar graphs in the peak meter display.

- **Bar graph over color**
  This button displays the color selector so that you can change the color of the over range of the bar graphis in the peak meter display.

- **RMS indicator color**
  This button displays the color selector so that you can change the color of the RMS indicator of the bar graphs in the peak meter display.

- **Bar graph background color**
  This button displays the color selector so that you can change the background color of the bar graphs in the peak meter display.

- **Label font color**
  This button displays the color selector so that you can change the color of the text font used in the peak meter display.

- **Track layout**
  This combo box is for selecting the channel sequences of the bar graphs for the individual channel groups. The selection options available vary depending on the channel group:
  - Peakmeter - Channel Group 1: SMPTE.TV
    SMPTE.FILM
    DTS
    FILM
  - Peakmeter - Channel Group 2: L_0/R_0
  - Peakmeter - Channel Group 3: SPL
  - Downmix - Channel Group: L_0/R_0

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

→ Instrument Settings
→ Edit selected preset
→ Peakmeter
→ Channel Mode Multi Channel:
- → Channel Group 1 - 4
- → Two Channel Downmix
  → Channel Group

4.14 Channel Group Settings in Channel mode Multi Channel

(Instrument Settings/Peakmeter - see Chapter 4.4.2



Fig. 4-38: The Peakmeter menu tab with different numbers of channel groups (Channel Group) in Multi Channel Mode

See Chapter 4.4.2 and Fig. 4-38

In the Peakmeter menu tab there are up to four buttons labelled Channel Group 1, Channel Group 2, Channel Group 3 and Channel Group 4. Their quantity depends on the channel configuration (see Mode Select on the next page).

These buttons display the peak meter display settings menu pages for the corresponding channel groups. These pages, which all have the same structure (see Fig. 4-39), contain the settings for the operating modes, standard settings for the digital and analog signal paths, VU Lead and the display colors for the individual elements.

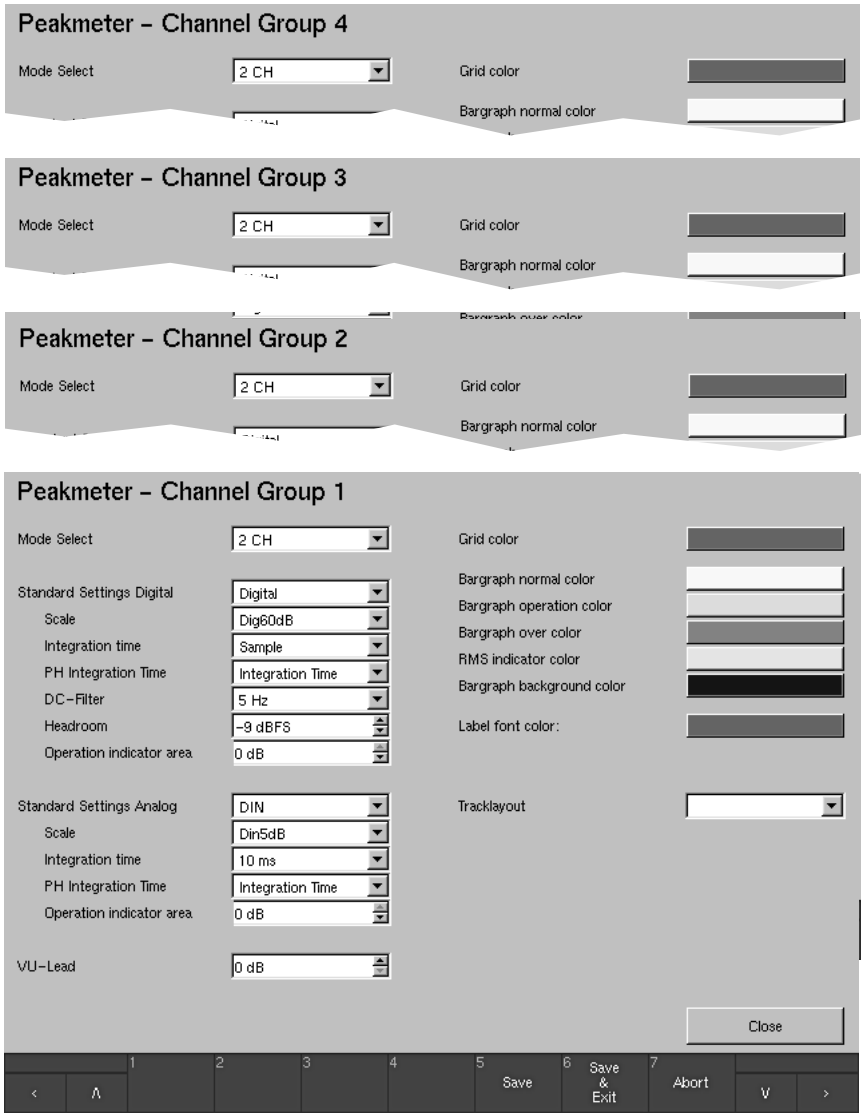


Fig. 4-39: The menu pages of the channel groups (Channel Group) available in Multi Channel Mode

→ Mode Select

See Chapter 4.4.2 (also 1.6.1)

There is also a special function on the **Peakmeter - Channel Group 1** (always active) menu page: The **Mode Select** combo box in this page (see Fig. 4-39) sets the **Multi Channel Mode** for the operation of the peak meters and thus also the display modes for the individual instruments. The display uses the channel assignments set in the routing settings.
If you have connected the optional mouse to the SurroundMonitor 10900 you can display the Peakmeter Settings menu tab directly by clicking in Window 2 with the right mouse button when the unit is in normal mode. You can then change the Multi Channel format quickly by clicking on the Channel Group 1 button and selecting a different format with the Mode Select combo box.

The individual options are listed below. With some exceptions they apply for all groups. The exceptions and individual differences are all explained explicitly where applicable.

See oben and Chapter 4.4.2 (also 1.6.1)

- **Mode Select** 
  These combo boxes are used to select the display mode for the corresponding channel groups. The number of channel groups, their combination and the available options vary depending on the settings in the previous channel group. The detailed combinations are shown in Fig. 4-40 on the next page. At first the essential points:

See Fig. 4-39

- **Peakmeter - Channel Group 1:** (always active) In this group you can select the Multi Channel formats 8 CH, 4 CH and 2 CH (and other versions of 2 CH, see Figs. 4-38 and 4-40). **The setting in this group defines the basic operating mode of the Surround-Monitor 10900** (see the explanations above and in Chapters 4.4.2 and 1.6.1).



See Fig. 4-39

- Peakmeter - Channel Group 2: This group is available when 4 CH or one of the 2 CH versions is selected in Channel Group 1 (see Figs. 4-38 and 4-40).

See Fig. 4-39

- Peakmeter - Channel Group 3: This channel group is available when one of the 2 CH versions is selected in Channel Group 1 or in Channel Group 2 (see Figs. 4-38 and 4-40).

See Fig. 4-39

- Peakmeter - Channel Group 4: This channel group is available when one of the 2 CH versions is selected in Channel Group 1 (see Figs. 4-38 and 4-40).

Channel configuration in Multi Channel mode			
Channel Group 1	**Channel Group 2**	**Channel Group 3**	**Channel Group 4**
8 CH			
4 CH	4 CH		
4 CH	2 CH 2 CH+Sum/Diff 2 CH+SpCor 2 CH+Sum/Diff+SpCor	2 CH 2 CH+SpCor	
2 CH 2 CH+Sum/Diff 2 CH+SpCor 2 CH+Sum/Diff+SpCor	2 CH 2 CH+Sum/Diff 2 CH+SpCor 2 CH+Sum/Diff+SpCor	2 CH 2 CH+SpCor	2 CH 2 CH+SpCor
Note: 8-channel mode (8 CH) in Channel Group 1 only, 2 x 4-channel mode (4 CH) in Channel Groups 1 and 2 only. Note: 2-channel mode with Spot Correlator (2 CH+SpCor): defines Stereo channel pair with clear allocation to the sides. Note: The Spot Correlator (SpCor) can be selected for each Channel Group. Note: There is no Sum and Difference display (Sum/Diff) available in Channel Group 3 and 4.			

Fig. 4-40: Survey of the Multi Channel Modes (Mode Select) and the numbers of channel groups

- **Standard Settings Digital** 
  This combo box applies to the four combo boxes and two list boxes grouped directly below it (see Fig. 4-39).
  When you select Digital all these boxes are automatically set to values corresponding to the digital standard. If you then change any of the settings of these boxes manually the text Non Standard is displayed in the Standard Settings Digital combo box. Reselecting Digital automatically resets all six boxes grouped below to the standard values.

- **Scale** 
  This combo box allows you to select the available scales:
  - Dig 60dB (digital standard setting)
  - Dig 20dB
  - Dig +18dB .. 0 dB
  - Dig +18dB .. 0 .. -18 dB
  - Dig +20dB .. 0 .. -40 dB
  - <q> DIN 5dB (quasi-DIN scale)
  - <q> DIN 10dB (quasi-DIN scale)
  - <q> Zoom +/- 10dB (quasi-DIN scale)
  - <q> Zoom +/- 1dB (quasi-DIN scale)
  - <q> Nordic (quasi-Nordic scale)

- **Integration time** 
  This combo box allows you to select the integration time of the level display:
  - 10ms
  - 20ms
  - 1ms
  - 0.1ms
  - Sample (digital standard setting)
  - 300ms

- **PH Integration Time**

  This combo box sets the integration time for the peak hold display:
  - Integration Time: Uses the same integration time as for the level display (digital standard setting).
  - Sample: Uses a sample-precise integration time that is independent of the level display.

- **DC-Filter**

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

- **Standard Settings Analog**

  This combo box applies to the three combo boxes and the one list box grouped directly below it (see Fig. 4-39).
  If you select one of the standards listed below the boxes are automatically set to the values corresponding to the selected standard. If you then change any of the boxes manually the text Non Standard is displayed in the Standard Settings Analog combo box. If you then reselect one of the standards all the four 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
  - SMPTE
  - VU

- **Scale**

  This combo box allows you to select the scale you want to use:
  - Din 5dB (DIN standard setting)
  - DIN 10dB
  - Nordic (Nordic standard setting)
  - British IIa (British IIa standard setting)
  - British IIb (British IIb & SMPTE standard setting)
  - Vu (VU standard setting)
  - Zoom +/– 10dB
  - Zoom +/– 1dB

- **Integration time**
  This combo box sets the integration time for the level display:
  - 10ms (DIN, Nordic & SMPTE standard setting)
  - 20ms (British IIa & British IIb standard setting)
  - 1ms
  - 0.1ms
  - 300ms (VU standard setting)

- **PH Integration Time**
  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.

- **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. A setting of 0 dB corresponds to 0 dBr. The standard setting is 0 dB.

- **VU Lead**
  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 bar graph display.

- **Bargraph normal color**
  This button displays the color selector so that you can change the color of the bar graphs in the peak meter display.

- **Bar graph operation color**
  This button displays the color selector so that you can change the color of the working range of the bar graphs in the peak meter display.

- **Bar graph over color**
  This button displays the color selector so that you can change the color of the over range of the bar graphis in the peak meter display.

- **RMS indicator color**
  This button displays the color selector so that you can change the color of the RMS indicator of the bar graphs in the peak meter display.

- **Bar graph background color**
  This button displays the color selector so that you can change the background color of the bar graphs in the peak meter display.

- **Label font color**
  This button displays the color selector so that you can change the color of the text font used in the peak meter display.

- **Track layout**
  This combo box is for selecting the channel sequences of the bar graphs for the individual channel groups. The selection options available vary depending on the channel group:

  - Peakmeter - Channel Group 1: 8 Channel (the layout suits the channel assignment of the routing matrix)
  - Peakmeter - Channel Group 2: 8 Channel (the layout suits the channel assignment of the routing matrix)
  - Peakmeter - Channel Group 3: 8 Channel (the layout suits the channel assignment of the routing matrix)
  - Peakmeter - Channel Group 4: 8 Channel (the layout suits the channel assignment of the routing matrix)

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

→ Instrument Settings
→ Edit selected preset
→ Peakmeter
→ Channel Mode 2 Channel Stereo
• → Channel Group 1

4.15 Channel Group Settings in Channel mode 2 Channel Stereo

(Instrument Settings/Peakmeter - see Chapter 4.4.2)

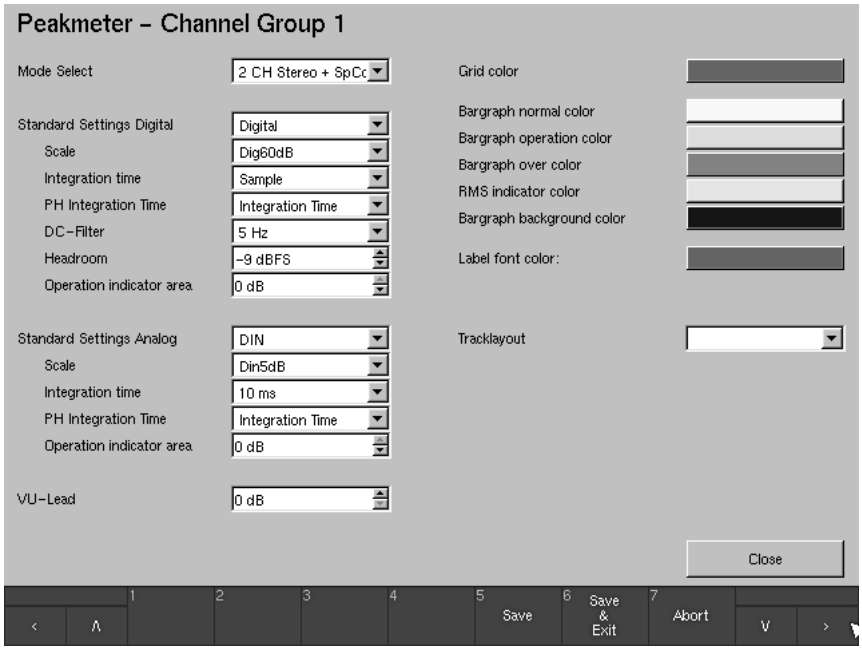


Fig. 4-41: The menu page of the channel group available in 2 Channel Stereo mode

Siehe Abschnitt 4.4.2. (auch 1.6.1.)

In the Peakmeter menu tab there is one button labelled Channel Group 1.

This button displays the peakmeter display settings menu page for thi channel group. The page contains the settings for the operating modes, standard settings for the digital and analog signal paths, VU Lead and the display colors for the individual elements.

There is also a special function on this **Peakmeter - Channel Group 1** (always active) menu page: The **Mode Select** combo box in this page (see Fig. 4-41) displays **2 CH Stereo + SpCor**. It shows that the **2 Channel Stereo mode** is selected for the operation of the peak meters and thus also presets the display modes for the individual instruments. The display uses the channel assignments set in the routing settings.
If you have connected the optional mouse to the SurroundMonitor 10900 you can display the Peakmeter Settings menu tab directly by clicking in Window 2 with the right mouse button when the unit is in normal mode. You can then change the surround format quickly by clicking on the Channel Group 1 button and selecting a different format with the Mode Select combo box.

The individual options are listed below.

- **Mode Select**
  These combo boxes are used to select the display mode for the corresponding channel groups:

  - **Peakmeter - Channel Group 1:** 2 CH Stereo + SpCor is displayed (2 channel stereo with spot correlator). **The setting in this group defines the basic operating mode of the SurroundMonitor 10900** (see the explanations above and in Chapters 4.4.2 and 1.6.1).

- **Standard Settings Digital**
  This combo box applies to the four combo boxes and two list boxes grouped directly below it (see Fig 4-41).
  When you select Digital all these boxes are automatically set to values corresponding to the digital standard. If you then change any of the settings of these boxes manually the text Non Standard is displayed in the Standard Settings Digital combo box. Reselecting Digital automatically resets all six boxes grouped below to the standard values.

- **Scale**
  This combo box allows you to select the available scales:
  - Dig 60dB (digital standard setting)
  - Dig 20dB
  - Dig +18dB .. 0 dB
  - Dig +18dB .. 0 .. -18 dB
  - Dig +20dB .. 0 .. -40 dB
  - <q> DIN 5dB (quasi-DIN scale)
  - <q> DIN 10dB (quasi-DIN scale)
  - <q> Zoom +/- 10dB (quasi-DIN scale)
  - <q> Zoom +/- 1dB (quasi-DIN scale)
  - <q> Nordic (quasi-Nordic scale)

- **Integration time**
  This combo box allows you to select the integration time of the level display:
  - 10ms
  - 20ms
  - 1ms
  - 0.1ms
  - Sample (digital standard setting)
  - 300ms

- **PH Integration Time**
  This combo box sets the integration time for the peak hold display:
  - Integration Time: Uses the same integration time as for the level display (digital standard setting).
  - Sample: Uses a sample-precise integration time that is independent of the level display.

- **DC-Filter**
  This combo box sets the DC filter. You can switch the filter off (Off) or set it to 5 Hz (digital standard setting), 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.

- **Standard Settings Analog**
  This combo box applies to the three combo boxes and the one list box grouped directly below it (see Fig. 4-41).
  If you select one of the standards listed below the boxes are automatically set to the values corresponding to the selected standard. If you then change any of the boxes manually the text Non Standard is displayed in the Standard Settings Analog combo box. If you then reselect one of the standards all the four 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
  - SMPTE
  - VU

- **Scale**
  This combo box allows you to select the scale you want to use:
  - Din 5dB (DIN standard setting)
  - DIN 10dB
  - Nordic (Nordic standard setting)
  - British IIa (British IIa standard setting)
  - British IIb (British IIb & SMPTE standard setting)
  - Vu (VU standard setting)
  - Zoom +/– 10dB
  - Zoom +/– 1dB

- **Integration time**
  This combo box sets the integration time for the level display:
  - 10ms (DIN, Nordic & SMPTE standard setting)
  - 20ms (British IIa & British IIb standard setting)
  - 1ms
  - 0.1ms
  - 300ms (VU standard setting)

- **PH Integration Time**
  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.

- **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. 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)
  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 bar graph display.

- **Bargraph normal color**
  This button displays the color selector so that you can change the color of the bar graphs in the peak meter display.

- **Bar graph operation color**
  This button displays the color selector so that you can change the color of the working range of the bar graphs in the peak meter display.

- **Bar graph over color**
  This button displays the color selector so that you can change the color of the over range of the bar graphis in the peak meter display.

- **RMS indicator color**
  This button displays the color selector so that you can change the color of the RMS indicator of the bar graphs in the peak meter display.

- **Bar graph background color**
  This button displays the color selector so that you can change the background color of the bar graphs in the peak meter display.

- **Label font color**
  This button displays the color selector so that you can change the color of the text font used in the peak meter display.

- **Track layout**
  This combo box is for selecting the channel sequences of the bar graphs for the individual channel groups. The selection options available vary depending on the channel group:
  - Peakmeter - Channel Group 1: 8 Channel (the configuration is equal to standard channel allocation)

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

5 Software Update

5.1 General

With the SurroundMonitor 10900 it is possible to update the operating system and the application by the use of a standard web-browser. It is also possible to import or export user preset data. The required software is available from RTW by request.

Please note:
Basically any software update will delete and replace the user and factory presets by the initial presets predefined from RTW. **Please make a note of all user specific settings you have made to be able to reprogram them after the software update of the SurroundMonitor 10900.**

Prepare for the software update as follows:

1. Copy all files that you have received into a folder (i. e. C:\10900_update) on your PC that is assigned to be used for the update sequence.

See Chapter 2.3.4 and Figs. 2-1 and 2-2

2. Connect the SurroundMonitor 10900 by the use of a standard cat-5 LAN network cable with RJ-45 connectors to your network environment.

   If you decide to update the software not through the network but by the use of a directly connected PC to the SurroundMonitor 10900, a cat-5 crossover cable with RJ-45 connectors must be used. Internet browser software must also be installed and ready to use on the PC.

3. Run the internet browser software and make sure that all necessary settings required for your networking setup are made.

   If you decide to update the software not through the network but by the use of a directly connected PC to the SurroundMonitor 10900, it is necessary to define the connection settings of your internet browser for not using a proxy server and not using scripts.
   - Settings for the Microsoft Internet explorer have to be made in the menu:
     Extras/Internet options/Connections/LAN settings/Presets
   - Settings for Netscape navigator (mozilla) have to be made in the menu:
     Edit/Presets/Advanced/Proxy

IP-Adress:
→ MENU → Communication
see Chapter 4.10

4. Look up the IP address of the SurroundMonitor 10900 you like to update. This information can be found in the menu on the communications page (also see 4.10).

5. Close the menu mode of the SurroundMonitor 10900 by the use of the Abort function.

5.2 Proceeding a Software Update

Version number:
→ MENU → General Settings
see Chapter 4.5

A complete software update requires **four** files to be replaced in the SurroundMonitor 10900. **All four files must be used in the following order.** Also the use of mixed version codes is not permitted. Malfunctioning of the SurroundMonitor 10900 may result. (xxxxxx represents the current software version code - also see 4.5 for details)

- „p10900_xxxxxx_**BSYS**“
- „p10900_xxxxxx_**FSYS**“
- „p10900_xxxxxx_**RDIS**“
- „p10900_xxxxxx_**CONF**“

After you have downloaded the first **three** files, the SurroundMonitor 10900 must be restarted.

The following figures show the software update sequence in more detail. For the following example sequence we assume that the IP address of your SurroundMonitor 10900 is 192.168.103.202.

1. Start your internet browser and enter http://192.168.103.202 in the address field (see Fig. 5-1) followed by the hit of the return (Enter) key.

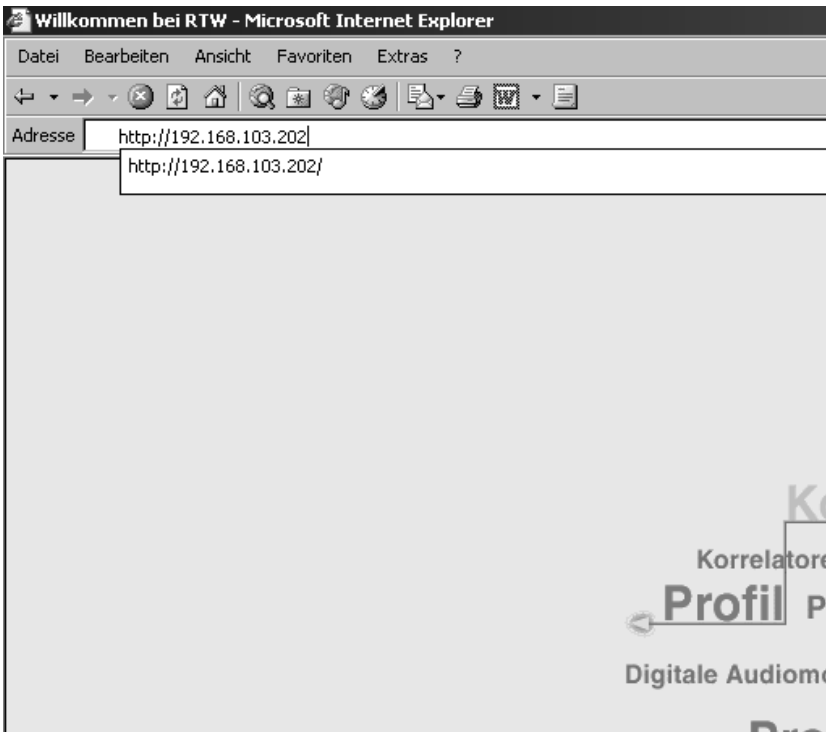


Fig. 5-1: Entering the IP-Adress

2. The Surround Control 309090 should respond with a screen like the one shown in Fig. 5-2.
   (Please note that very early units may not respond with this screen but with a some more cryptical display. This does not prevent the software update. Just follow the given instructions.)

   Choose Software update.

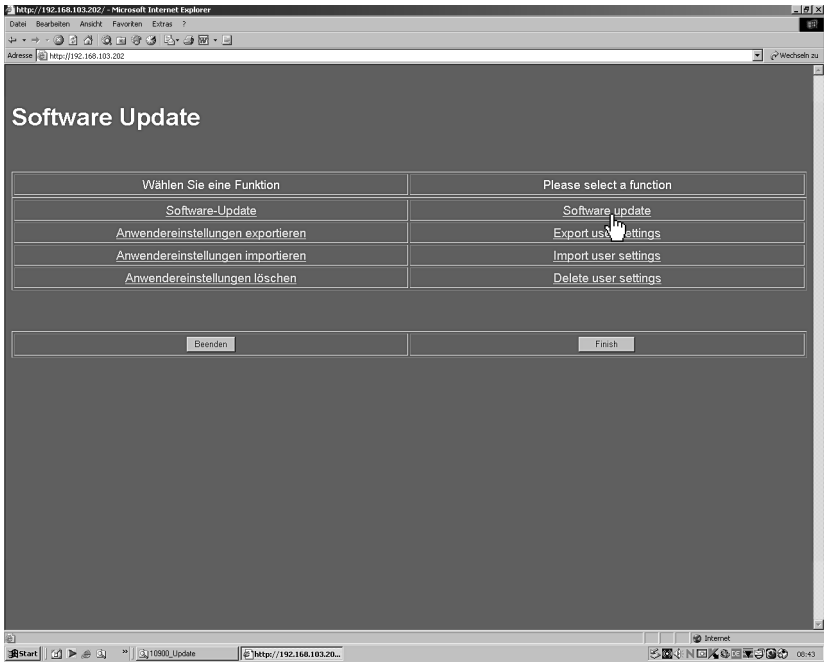


Fig. 5-2: Software Update Program menu in web browser

3. Select “Durchsuchen”

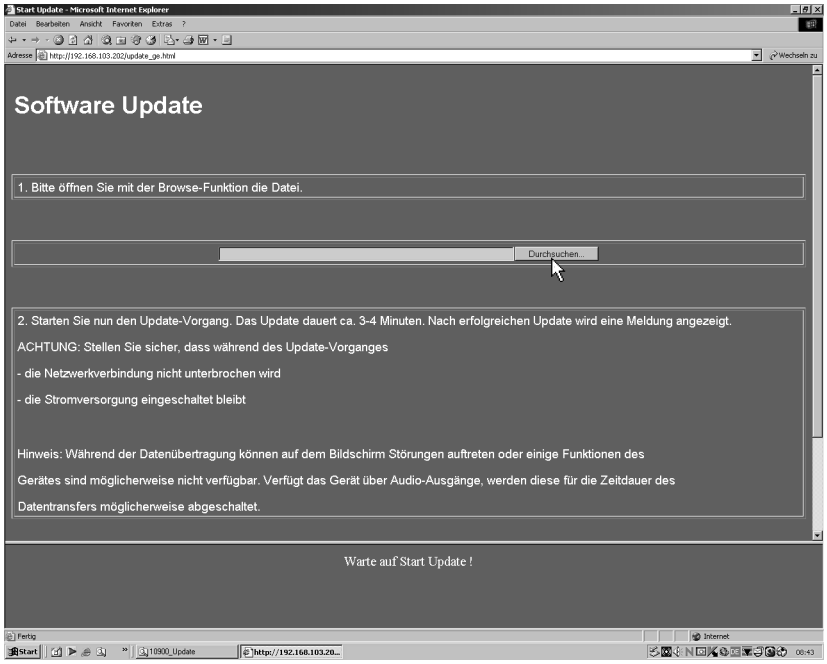


Fig. 5-3: Display of the Software Update side („Durchsuchen“)

Version number:
→ MENU → General Settings
see Chapter 4.5

4. Use the displayed dialog to select the directory path where you have stored the **four** update files. Select the file **p10900_xxxxxx_BSYS** first (xxxxxx represents the current software version code - also see 4.5 for details).

Please note:
The use of mixed version codes is not permitted. Malfunctioning of the Surround Control 10900 may result.

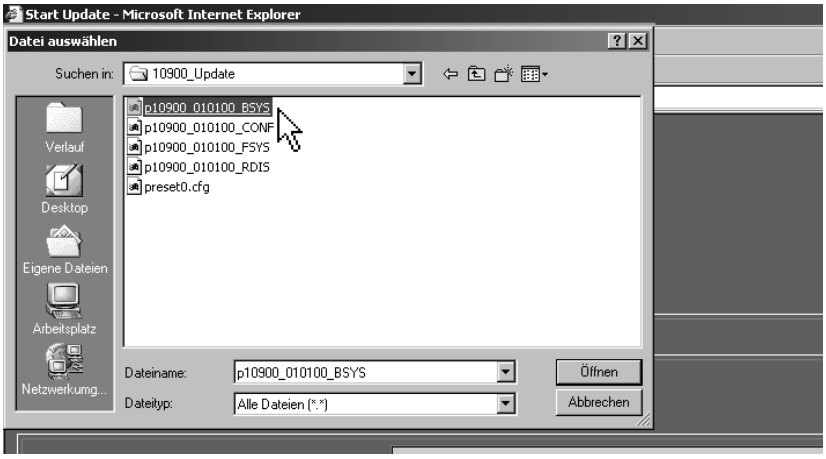


Fig. 5-4: The update file selection dialog box

5. Press Start update to start the update process. **Please make sure that no interruption of the network access or supply power occurs during the download sequence.**

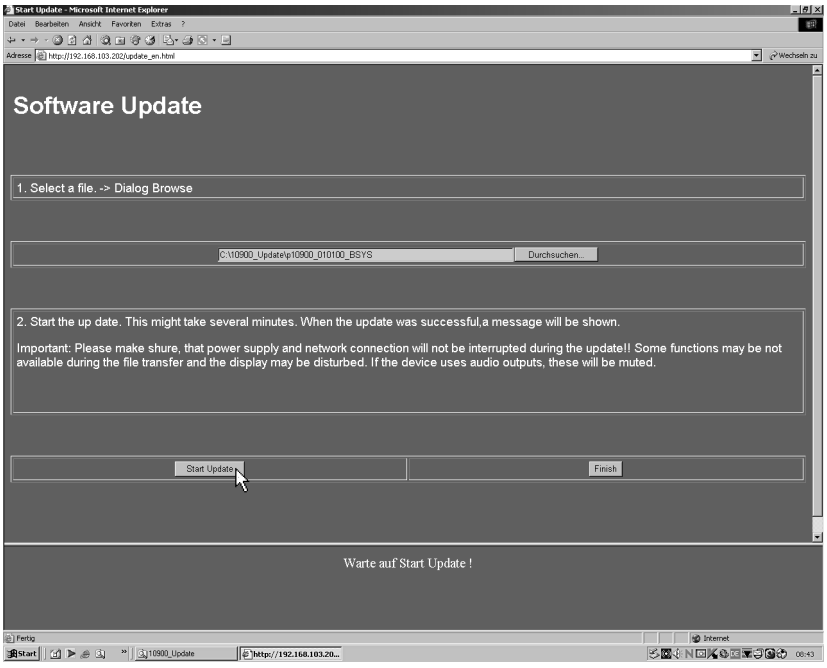


Fig. 5-5: Starting the update process with the selected update file

6. A bar on the lower end of the update window on the PC reads the data transfer progress.

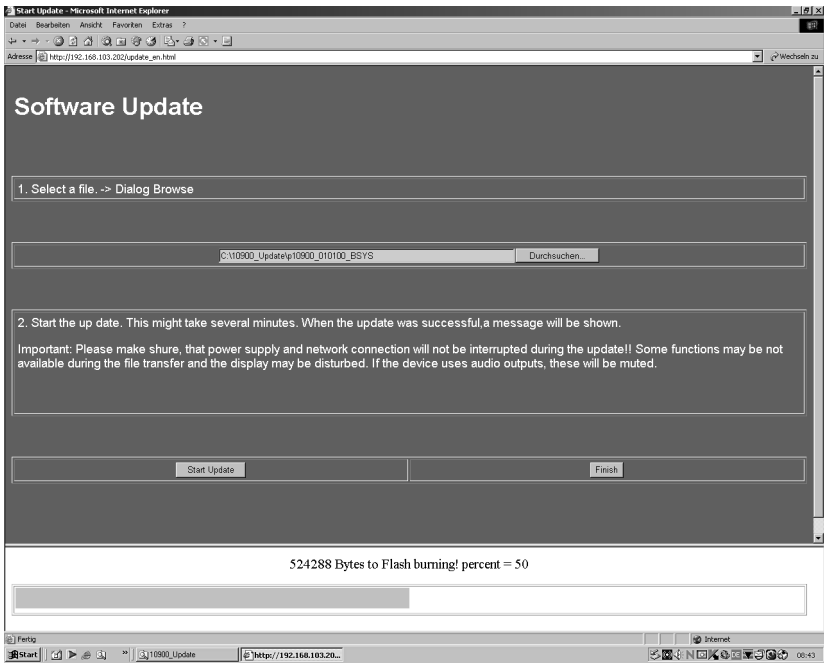


Fig. 5-6: Progress of the data transfer of the selected update file

7. The download is finished when the message ”Please make power off“ is displayed.
   It is not necessary to switch the SurroundMonitor 10900 off and on again. However it can be done.

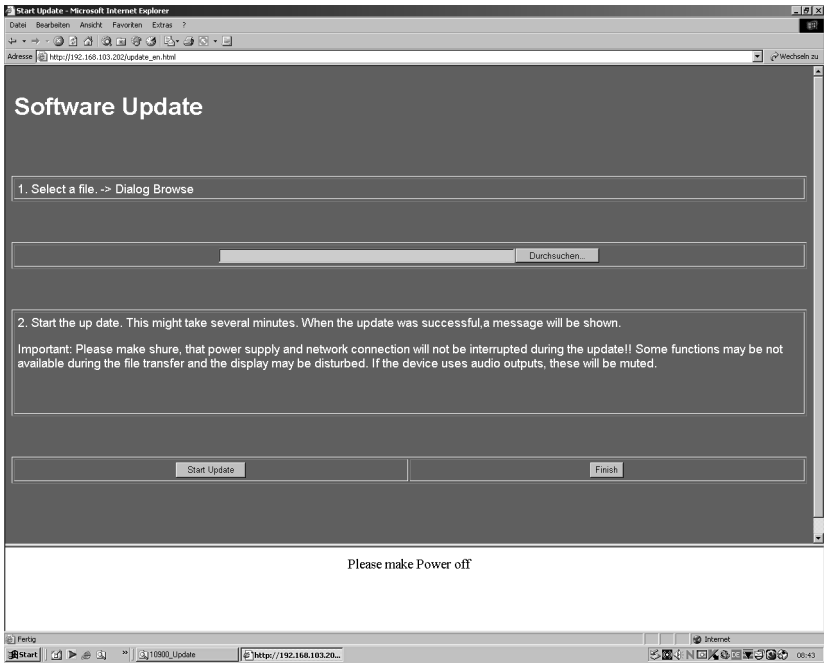


Fig. 5-7: End of the data transfer of the selected file

8. Use the displayed dialog to select the **second** of the four update files. Select the file **p10900_xxxxxx_FSYS**. Repeat steps 4 to 8.

9. Use the displayed dialog to select the **third** of the four update files. Select the file **p10900_xxxxxx_RDIS**. Repeat steps 4 to 8.

Restart after the **third** file download must be processed!



10. **Now** its time to **restart** the SurroundMonitor 10900. Please wait approx. 5 sec. after shut down of the unit before you power it up again.

11. After the SurroundMonitor 10900 has rebooted re-establish the connection between your web browser and the SurroundMonitor 10900 as described with steps 1 to 3.

12. Use the displayed dialog to select the **fourth** of the four update files. Select the file **p10900_xxxxxx_CONF**. Repeat steps 4 to 8.

13. If the download of the p10900_xxxxxx_CONF file is completed you must **reboot** the SurroundMonitor 10900 again. Please wait approx. 5 sec. after shut down of the unit before you power it up again.

Version number:
→ MENU → General Settings
see Chapter 4.5

14. After the SurroundMonitor 10900 has rebooted its ready to use with the new software version. You will find the current used version code of the application in the About-info frame of the General settings menu.

15. Shut down the software update page using the Finish button (see Fig. 5-6).

16. Then shut down the software update program using using the Finish button on the start page (see Fig. 5-2).

Appendix A: Specifications

Functions

- multi format surround peakmeter (5.1, 6.1, 7.1) in Surround mode
- 8-channel peakmeter in Multi Channel mode
- 2-channel peakmeter in 2 Channel Stereo mode
- selectable 2-channel peakmeter and SPL meter, analog and digital
- Surround sound analyzer
- 10-way multi phase meter display
- 1/3- and 1/6-octave spectrum analyzer
- 2- and 4-channel audio vector scope
- Dialnorm meter
- Downmix meter
- AES/EBU status monitor
- Surround test signal generator
- SPL meter
- Alarm functions

Analog Input

- Metering: 8 analog inputs, Sub-D-F connector, 25-pin
  - Nominal input level: +6 dBu
  - Adjustment range: Level Offset via software: ±8 dB
  - Maximum input level: +19 dBu
  - Impedance: > 10 kΩ, electr. balanced
  - Frequency response: 20 Hz to 22 kHz, ±0.25 dB @ 48 kHz
  - THD+N: < 105 dB @ 48 kHz
  - Crosstalk: < 105 dB (Frequency range 22 Hz to fs/2)
- Measuring microphone input: balanced, phantom power supply, XLR-F connector for measuring microphones with open circuit voltage of 15 mV/Pa @ 1 kHz

Digital Input

- Metering: 4 AES/EBU inputs, 110 Ω, transformer balanced, Sub-D-F connector, 25-pin
- External clock signal: AES/EBU signal, transformer balanced, Sub-D-F connector, 25-pin
- Sampling rates: 44.1, 48, 96 kHz, synchronisation via digital input signal or Ref Sync input

Digital Output

- Outputs: 4 AES/EBU outputs, transformer balanced, 110 Ω, Sub-D-F connector, 25-pin
- Sampling rates: same as digital inputs or internal, 44.1, 48, 96 kHz

Peakmeters, General

- Input sources: analog or digital
- Surround peakmeter: 5.1, 6.1 or 7.1 surround, track layout selectable:
  - SMPTE-TV(ITU, SSF),
  - SMPTE-Film,
  - DTS,
  - Film
- Multi-channel peakmeter: 2, 4 or 8 channels selectable, stereo channel pairs can be defined
- 2-Channel Stereo peakmeter: for the stereo channel pairs L and R
- additional 2-Ch. peakmeter: switchable, for external signals or internal generated L_0/R_0 signals (2Ch-Downmix), L+R and L-R indication switchable
- SPL meter: switchable, indication of the total sound pressure level calculated from the individual channels
- Indicators:
  - peak level, -
  - RMS level (linear, A-, C-weighted),
  - peak hold,
  - numerical value of the peak hold level,
  - Digital Over
- Functions:
  - Gain (+20 dB, +40 dB acc. to standard),
  - Peak hold on,
  - RMS on,
  - Memory,
  - Reset,
  - Alarm (threshold over, silence)

Analog Peakmeters

- Analog scales:
  - DIN,
  - DIN+10,
  - IEC 268 Type I (Nordic N9),
  - IEC 268-10A (Type IIa, Type IIb),
  - VU,
  - Zoom ±10 dB,
  - Zoom ±1 dB
- Integration time: according to standard or 300 ms, 20 ms, 10 ms, 1 ms, 0.1 ms
- Reference level (PML): according to standard
  - DIN, Nordic: +6 dBu;
  - British: +9 dBu

  or selectable offset (± 8 dB)

Digital Peakmeters

- Word width: 24 bit
- Digital scales:
  - Digital 1 (0 dB FS to -60 dB FS absolute)
  - Digital 2 (0 dB FS to -20 dB FS absolute)
  - Digital 3 (18 dB to 0 dB relative, 0 dB @ -18 dB FS)
  - Digital 4 (18 dB to -18 dB relative, 0 dB @ -18 dB FS)
  - Digital 5 (20 dB to -40 dB relative, 0 dB @ -20 dB FS)
  - Q-DIN5,
  - Q-DIN10,
  - Zoom ±10 dB
  - Zoom ±1 dB (0 dB @ headroom setting)
  - Q-Nordic
- Headroom: selectable in 1 dB steps from -5 dB FS to -20 dB FS
- Integration time (Attack): sample or 300 ms, 20 ms, 10 ms, 1 ms, 0.1 ms
- Additional Gain: 40 dB
- High-pass filter: Off, 5 Hz, 10 Hz, 20 Hz
- Peak Hold indicator: integration time sample or same as level indication
- Over indicator (Clip):
  - Operating threshold: FS, FS-1LSB, FS-2LSB, -0.1 dB FS, -0.5 dB FS, -1 dB FS, -2 dB FS, -3 dB FS
  - Attack time: 1 to 15 samples
  - Word width: 16 to 24 bit selectable

SPL Meter

- Measuring range: Low: 50 – 78 dB(SPL)
Mid: 70 – 98 dB(SPL)
High: 90 – 118 dB(SPL)
- Input sources: internal (mix of the surround channels), external (measuring input)
- Weighting: linear, A, C
- Integration time: F (125 ms), S (1 s)

Surround-Sound-Analyzer

(available in Surround mode only)

- Indicators:
  - graphics display indicating the single channel and total program loudness (Total Volume Indicator)
  - correlation of adjacent channels
  - position and width of phantom sound sources
- Measuring method: A-weighted RMS level (SPL) refering to the reference monitoring sound pressure level

Multi-fold Phase Meter

- Surround mode
  - Display mode: for each channel pair in 5.1 format
  - Filter: low pass filter switchable (300 Hz)
- Multi Channel mode
  - Display mode: for each defined stereo channel pair
- 2 Channel Stereo mode
  - Display mode: for the defined stereo channel pair L and R

Audio Vector Scope

- Surround mode
  - Modes:
    - 2-channel
    - 4-channel (fixed: L-R upper part, sL-sR lower part)
  - Input sources: in 2-channel mode selectable: L-R, sL-sR, L-sL, R-sR, L-C, C-R, L_{ext}-R_{ext}, L_0-R_0
  - Auto Gain: fast/slow
  - Functions:
    - Indication: Fast - Slow
    - Display: Normal - M/S
  - Phase meter: in 2- and 4-channel mode for displayed channel pairs
- Multi Channel mode
  - Input sources: 1-2, 3-4, 5-6, 7-8 when defined as stereo channel pairs
  - Auto Gain: fast/slow
  - Functions:
    - indication: Fast - Slow
    - display: Normal - M/S
  - Phase meter: for defined and displayed stereo channel pairs
- 2 Channel Stereo mode
  - Input sources: 1-2 (L and R)
  - Auto Gain: fast/slow
  - Functions:
    - indication: Fast - Slow
    - display: Normal - M/S
  - Phase meter: for the defined stereo channel pair L and R

Spectrum Analyzer (RTA)

- Input sources: selectable: all channels without LF, Rear, L/R, single channels, measuring input
- Frequency range:
  - Norm: 20 Hz to 20 kHz, add-on band > 20 kHz to fs/2
  - LF: 5 Hz to 5 kHz
- Number of bands:
  - 1/3-octave: 31 bands, Filter acc. to IEC 225 class 2,
  - 1/6-octave: 61 bands
- Measuring range: 45 dB
- Resolution: 1, 2, 3 dB

- Functions:
  - Input select
  - Peak hold on
  - Display hold
  - Cursor readout
  - A-, C-weighting
  - Integration time
  - Set reference
  - Scaling
  - Frequency range
- Integration time: I (impulse), F, S, peak (10 ms)

Downmix Meter

(available in surround mode only)

- Input sources: internal generated downmix signals or external 2-channel signals
- Indicators:
  - peak level
  - peak hold
  - RMS
  - audio vector scope
  - phase meter

  for scales and standards see analog/digital peakmeter

Test Signal Generator

- Signals:
  - pink noise: 20 Hz to 20 kHz
    200 Hz to 20 kHz
  - octave-band noise
  - sine wave
- Level:
  - 3 selectable levels:
    -9, -18 , -20 dB FS RMS
  - variable in 1 dB steps:
    from 0 dB FS to -99 dB FS
- Outputs: digital, signal is switched to the active channel or to all channels

AES/EBU Status Monitor

- Indicators:
  - channel data are displayed as plain text, hex or binary
  - channel selectable
  - audio bit activity
  - hardware status

System

- GP IO (parallel):
  - 16 inputs, functions internal adjustable
  - 8 outputs for indication of alert events (threshold over, silence, Digital Over)

  Sub-D-F connector, 25-pin
  - GP IO inputs: active low, pulse or momentary function internal adjustable
  - GP IO outputs: internal adjustable active high or low (0.1 s, 0.5 s, 1 s, 2 s, manual)

- USB: for connecting a computer mouse, USB 1.1, I_{max} 0.5 A
- Network: software update, other functions on request
- Video: VGA, 640 x 480, 256 colours, 60 Hz, for connecting a CRT or TFT monitor or the optional 8.4-inch Remote Display 30010

General

- Operating temperature range: 0° to +45° C

SurroundMonitor 10900

- Power requirements: 85 to 264 V AC, 40 VA
- Dimensions: 19-inch/1U rack mount housing, depth 225 mm
- Weight: 3,7 kg
- Items supplied:
  - main unit 10900 (processor)
  - mains supply cable
  - operating manual

Optional accessories for 10900

- Remote Display 30010
- snake cable 1186 (8 x XLR-f connector to Sub-D-m connector, 25-pin, length 4 m)
- snake cable 1163 (8 x XLR-m connector to Sub-D-m connector, 25-pin, length 4 m)

Subject to changes without prior notice

Appendix B: Declaration of Conformity

EC Declaration of Conformity
Directive 89/336/EEC and Directive 73/23/EEC

We,

RTW GmbH & Co.KG
Elbeallee 19 · 50765 Köln · Germany

declare under sole responsibility that the product:

RTW SurroundMonitor 10900

meet the intend ot the Directive 89/336/EEC and Directive 73/23/EEC. Compliance was demonstrated to the following specifications as listed in the official Journal of the European Communities:

EMC	**89/336/EEC**
EN 50103-1 Emissions:	EN 55022 Class B, radiated EN 55022 Class B, conducted
EN 50082-1 Immunity:	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 EN 61000-4-11
Safety	**73/23/EEC**

EN 60950 (1992 + A1/1993)

Tested and documented by the following companies:

SERCO GmbH, Bonn, accredited EMC laboratory
RTW GmbH & Co.KG, Köln

Date and signature of the responsible person:

2004-11-18



Appendix C: Licenses

Information on the licenses that apply to the software supplied with the product

In addition to the hardware the RTW SurroundMonitor 10900 product also includes a software package for which a variety of licenses apply:

A. Software produced by RTW GmbH & Co.KG, which may only be used for the proper operation of the product as described in the documentation (application, DSP programs, boot loader). This software is the property of RTW GmbH & Co.KG and is protected by German and international copyrights.

B. Third-party software (the Qt library from Trolltech AS), which is linked with the software described under A, and which also may only be used for the proper operation of the product. Qt® is a registered trademark of the Norwegian company Trolltech AS.

C. Open source software, released under the GPL (General Public License) of the Free Software Foundation (FSF):

1. Linux Kernel 2.4.19
2. TinyLogin 1.4
3. GDB 6.0
4. s1811 USB Host Driver (by Cypress)
5. Apache web server 1.3.6

The original English version of the GPL is included in appendix D. Only the original English version is legally binding, however.

Some changes have been made to the open-source software packages 1 - 5 listed above. On request you can have the source code of the altered software sent to you within three years of purchasing the product.

Cologne, October 2004

Also see:
www.gnu.org/copyleft/gpl.html

Appendix D:
GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

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