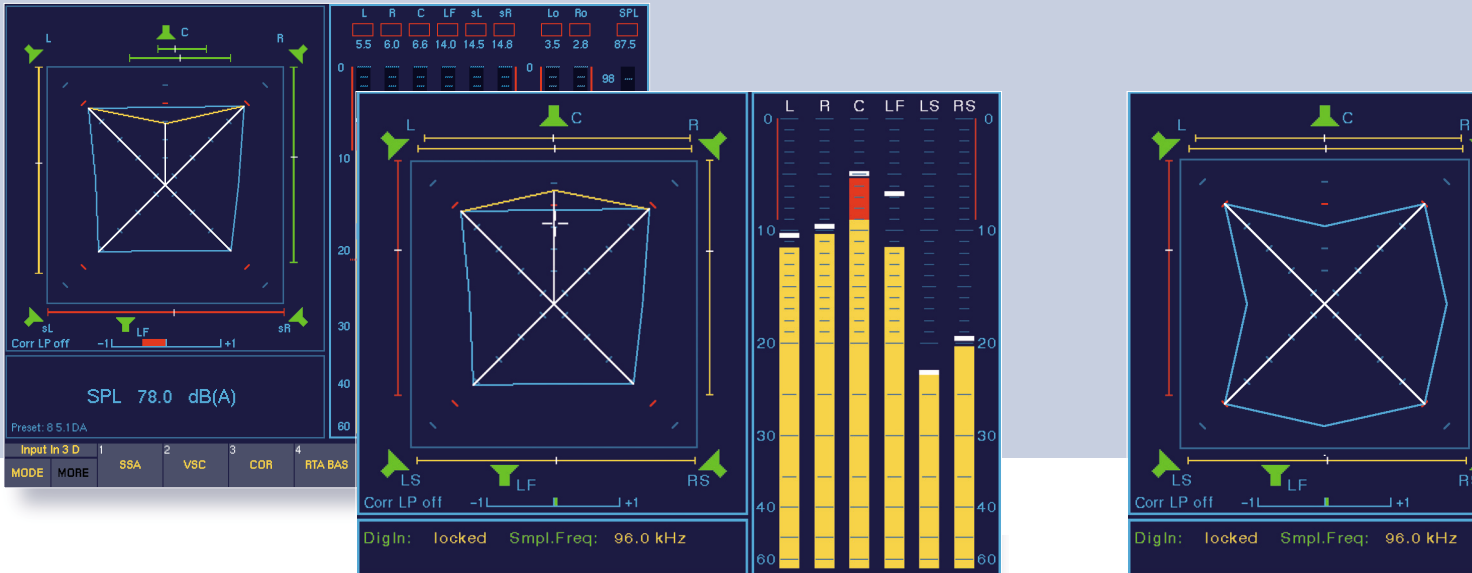


# See Surround in Action!

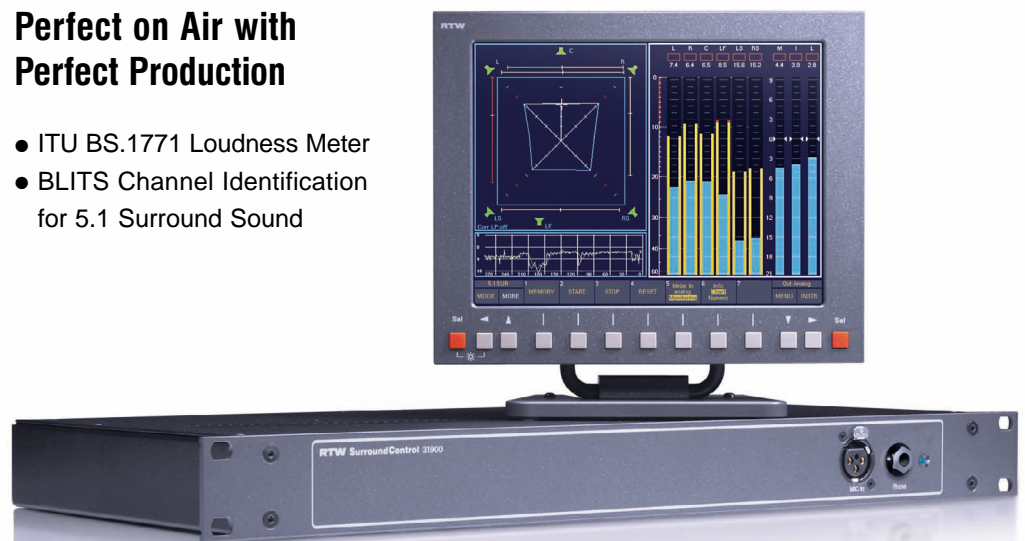


## RTW Surround Sound Analyzer

- A unique, innovative method for visualizing surround signals
- All important aspects of your surround mix at a glance – clear and concise
- Fast and precise evaluation even under difficult acoustical conditions
- Peak level, loudness and correlation of all individual channels
- Logical and intuitive visualization of the overall acoustic image
- Easy evaluation of the balance between Center and L/R
- Individual hardware solutions for seamless integration into your system environment

## Perfect on Air with Perfect Production

- ITU BS.1771 Loudness Meter
- BLITS Channel Identification for 5.1 Surround Sound



# RTW

# One visualization method – various models

The RTW Surround Sound Analyzer is a visualization tool available in a number of hardware versions – from the six-channel budget solution to our top-of-the-line model with integrated monitoring controller and remote control unit.



## SurroundMonitor 11900 Series

Our most comprehensive functional package for analyzing all current surround formats. Analog and digital inputs. Input for calibration microphone and VGA monitor output. Remote Display 30010 optional.



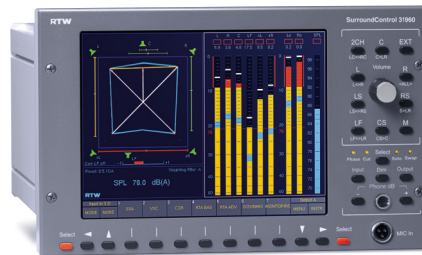
## SurroundControl 31900 Series

Your personal 'Surround-Control-Center' combines the functionality of the SurroundMonitor with those of an eight-channel monitoring controller into an exceptionally powerful system. Remote Display 30010 optional.



## Remote Display 30010

For desktop applications, we recommend the optional high-contrast 8.4" VGA remote-display with the keyboard installed just beneath, to further enhance the ergonomics of our SurroundMonitor 11900.



## SurroundControl 31960 Series

The ideal solution for retrofitting video studios with surround sound. The half-width 19" module offers the complete functionality of the RTW SurroundControl, including the control panel and the 6.5" TFT display.

**Dolby® E Partnership**



In 2007, RTW joined the Dolby® E Partner family. Since then, all versions of SurroundControl 31900/31960 series and SurroundMonitor 11900 series can be factory installed with a Dolby® E and Dolby® AC-3 decoder option, enabling direct access to data streams for analysis and control – no need for external decoding. The Dolby® option is available for the standard as well as the SDI version, the latter coming with a SDI interface that supports HD as well as SD formats.

# The RTW Surround Sound Analyzer translates all the important details of surround signals into a graphical display suited for instant evaluation. See everything you should know about your mix at a single glance!

Successful mixing of surround signals is no black magic. Besides the artistic and aesthetical aspects, there are fundamental technical preconditions for obtaining professional results. Ideally, all surround mixing work should be done with ample time and under optimum monitoring conditions.

Reality is often enough far from this ideal, particularly during live broadcasts and in audio production for video or TV. This makes it even more important to know, even in the most hectic working environment, how your surround mix will be perceived by the listener.

## Detailed, yet comprehensive

RTW has developed the Surround Sound Analyzer as a unique tool showing all the important parameters of a surround signal at a glance. It gives detailed information for all individual channels as well as the overall effect of your mix – even under less than optimum monitoring conditions.

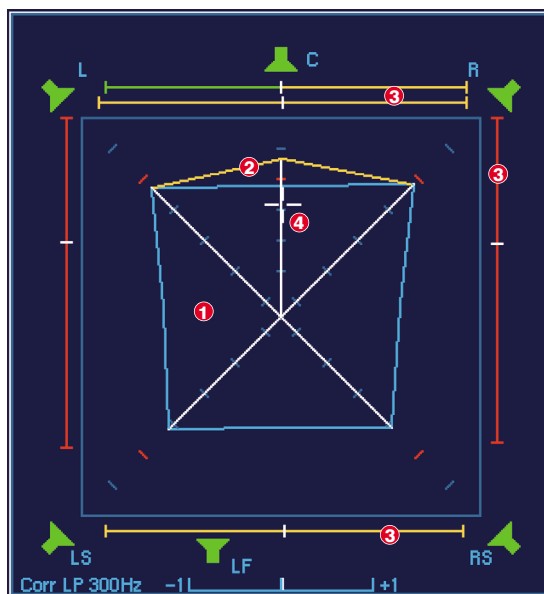
## Fast and concise

The visual display of the Surround Sound Analyzer provides a concise and easily readable visualization of the level and phase relations of all channels. The dynamic response of the display elements is a direct representation of the acoustic image and the balance of the surround program can be judged intuitively, at a single glance.

**1** The volumes of the four channels L, R, LS and RS are displayed as diagonal white level bars originating from a common center point. Their tips are connected through cyan lines.

The square formed by this figure – the Total Volume Indicator (TVI) - is a direct measure of the total volume and the balance of the acoustic image.

The curvature of these lines shows the channel correlation – positive values through an outward deflection (roof), negative values through an inward deflection (funnel).



**3** Direction and width of front, side, and rear phantom sources are represented by lines between the loudspeaker symbols – the Phantom Source Indicators (PSI). Their color changes with channel correlation.

Phase meters (correlation indicators) can be displayed next to or instead of the PSIs.

**2** The volume of the Center channel is indicated by another upwards-pointing level bar with yellow connecting lines, showing the perceptibility and dominance of the Center in relation to L and R at a single glance.

**4** A cross representing the dominance vector indicates the position of the subjectively perceived center of gravity of the mix.

Detailed explanations on the function of the various display

elements are available on our web site under: [www.rtw.de/english/special/index.html](http://www.rtw.de/english/special/index.html)

# One visualization method – various models

The RTW Surround Sound Analyzer is a visualization tool available in a number of hardware versions – from the six-channel budget solution to our top-of-the-line model with integrated monitoring controller and remote control unit.



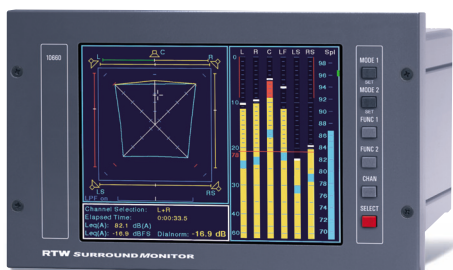
## SurroundMonitor 10600

The junior SurroundMonitor features a 6-channel peak-meter for digital system environments. It analyzes stereo and surround signals up to 5.1 and provides status display and output connector for an external VGA monitor.



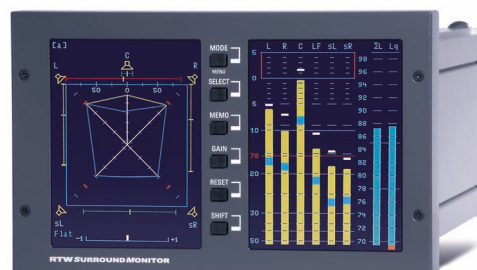
## SurroundMonitor 10800X

In world-wide use for stereo and surround production up to 5.1. Eight-channel peak level and loudness meter, 10-fold correlation display, RTA. Analog and digital inputs. Also available model 10809X: AES/EBU digital inputs only.



## SurroundMonitor 10660-VID

This powerful, budget-friendly monitoring instrument is particularly suitable for multichannel radio and TV audio in fully-digital studio environments (half-width 19" module).



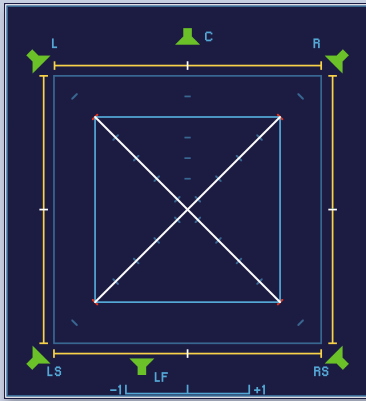
## SurroundMonitor 10860X-VID

Predestinated for the comprehensive analysis of surround programs and for the **mounting into video racks** (half-width 19" module).

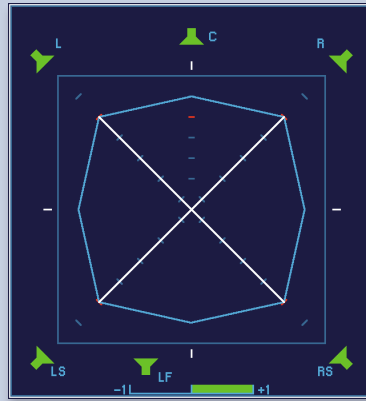
### ITU BS.1771 Loudness Meter

- Loudness meter according to ITU BS.1771 with versatile adjustable parameters
- Loudness bargraphs for each channel of digital Stereo and 5.1 surround signals
- Scale calibrated in dB LU (Loudness Units) from -21 to +9 or LKFS from -31 to 0
- Easy change between Loudness display and PPM via programmed presets
- Additional PPM bargraphs for the Loudness display selectable
- Bargraphs for display of momentary ("M"), integrated ("I") and longterm ("L") Loudness values
- Chart recorder documents the "I" and "L" readings for a dynamic time period
- The Surround Sound Analyzer can be used with the Loudness meter

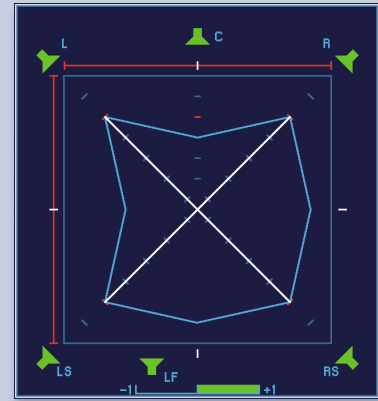
# Typical display patterns and their interpretation – a few examples:



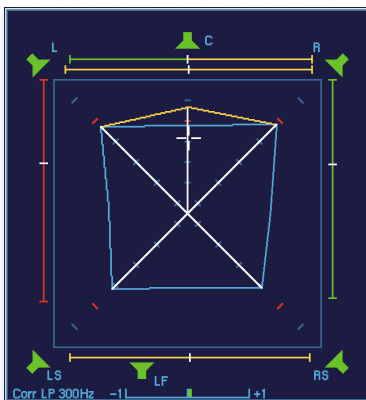
Incoherent noise with same levels in the channels L, R, LS and RS, set to the reference monitoring sound pressure level. In each case the correlation is  $r = 0$  (straight TVI lines, yellow PSI lines and maximum spread of the PSI lines), phantom sound sources are not locatable.



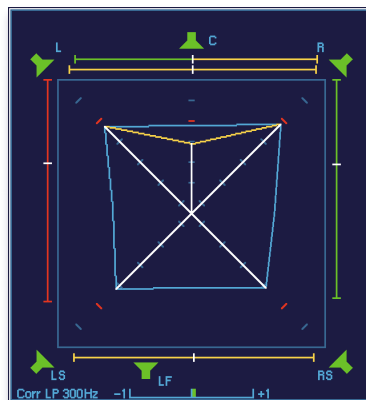
Identical sine wave signal with same level in the channels L, R, LS and RS, set to the reference monitoring sound pressure level. In each case the correlation is  $r = +1$  (hard outward broken TVI lines), the phantom sound sources are exactly in the middle, similar to Mono signals.



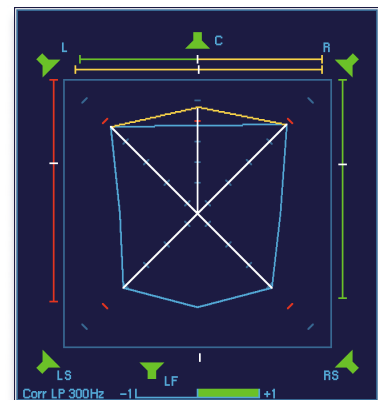
Same as the display on the left but with the phase of the left channel rotated through  $180^\circ$ . In the channel pairs L - R and L - LS each the correlation is  $r = -1$  (hard inward broken TVI lines, red PSI lines and maximum spread of the PSI lines), a phantom sound source is not locatable.



Surround signal with some Center presence, visible at the roof of the yellow line. A support microphone would be too dominant, a dialog in relation to music too quiet. The width of the PSI lines of the C channel is a sign of coherent signal parts in L and/or R (crosstalk).  
The correlation: for L - C is  $r > +0,25$  (green), for C - R is  $r$  about 0 (yellow)





Surround signal with a low level of Center presence, visible at the downward broken yellow line. When recording music, the intermixture of a support microphone may enhance the perceptibility of the C channel in relation to the channels L and R.  
The correlation: for L - C is  $r > +0,25$  (green), for C - R is  $r$  about 0 (yellow)



The widely outward broken TVI line between the channels LS and RS, no spread of the PSI line and the correlation level  $r = +1$  in the lower phase meter indicate that an identical mono signal is applied in both surround channels. With these indicator elements also backward panned front channel parts can be detected.

**Functions of the various models:**

Model	31900 31900S 31900D 31900SD	31960 31960S 31960D 31960SD	11900 11900S 11900D 11900SD	10800X	10809X	10810-203 10820-203 10830-218	10860X-VID	10600	10660-VID
<b>Display</b>									
• active area in mm	(VGA external)	TFT 132,5 x 99,4	(VGA external)	2 x TFT 74,8 x 102,2	2 x TFT 74,8 x 102,2	2 x TFT 74,8 x 102,2	2 x TFT 74,8 x 102,2	TFT 131,5 x 98,6	TFT 131,5 x 98,6
<b>Inputs</b>									
• analog (monitoring)	2 x 8	2 x 8	–	–	–	–	–	–	–
• analog (metering)	1 x 8	1 x 8	8	8	–	8	8	–	–
• AES/EBU (monitoring)	2 x 4	2 x 4	–	–	–	–	–	–	–
• AES/EBU (metering)			4	4	4	4	4	3	3
<b>Outputs</b>									
• analog (monitoring)	1 x 8	1 x 8	–	–	–	–	–	–	–
• AES/EBU (monitoring)	2 x 4	2 x 4	–	–	–	–	–	–	–
• AES/EBU			4	4	4	4	4	3	3
• VGA output	•	•	•	–	–	–	–	•	•
<b>AES/EBU-Ref. Sync inputs</b>									
	1 x	1 x	1 x	–	–	–	–	–	–
<b>GP IO (parallel)</b>									
	16 x IN	16 x IN	16 x IN	IN	IN	IN	IN	–	–
	8 x OUT	8 x OUT	8 x OUT						
<b>Monitoring-Controller, user interface</b>									
	Remote Control 30050	via integrated key panel	–	–	–	–	–	–	–
<b>Calibration, test signal generator</b>									
		•	•	–	–	–	–	–	–
<b>Display formats</b>									
• Surround		•	•	•	•	•	•	•	•
• Multichannel	•	•	•	•	•	•	•	•	•
• 2 Ch Stereo	•	•	•	•	•	•	•	•	•
<b>Multi-standard peakmeter</b>									
		•	•	•	•	•	•	•	•
<b>ITU BS.1771 Loudness Meter</b>									
		•	•	–	–	–	–	•	•
<b>Surround Sound Analyzer</b>									
• Formats	5.1, 6.1, 7.1	5.1, 6.1, 7.1	5.1, 6.1, 7.1	5.1, 3.1	5.1, 3.1	5.1, 3.1	5.1, 3.1	5.1, 3.1	5.1, 3.1
<b>Correlation meter</b>									
• 10-fold		•	•	•	•	•	•	•	•
• 2-/4-fold	•	•	•	•	•	•	•	2-fold	2-fold
<b>Downmix matrix</b>									
		•	•	–	–	–	–	–	–
<b>Audio vectorscope</b>									
• 5-channel		–	–	•	•	•	•	–	–
• 4-channel	–	•	•	•	•	•	•	–	–
• 2-channel	•	•	•	•	•	•	•	•	•
<b>RTA</b>									
• 1/6-octave		•	•	–	–	–	–	–	–
• 1/3-octave	•	•	•	•	•	•	•	•	•
<b>AES/EBU status monitor</b>									
		•	•	•	•	•	•	•	•
<b>Dialnorm</b>									
		•	•	•	•	•	•	•	•
<b>VGA output connector</b>									
		•	•	–	–	–	–	•	•
<b>SDI HD/SD deembedder installed in:</b>									
	31900S	31960S 31960SD	11900S 11900SD						
<b>Dolby® E / Dolby® AC-3 decoder installed in:</b>									
 DOLBY E  DOLBY DIGITAL	31900D	31960D 31960SD	11900D 11900SD						

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Technical changes without prior notice 01/2009


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