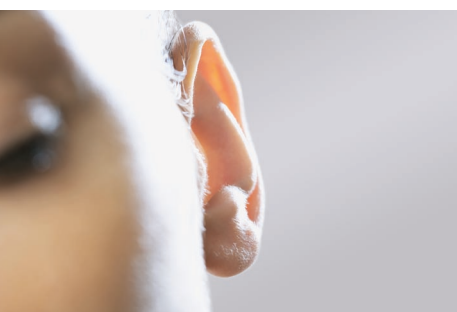
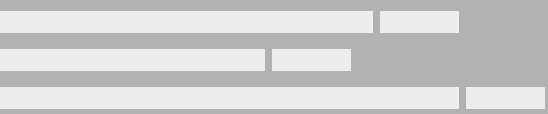


The All-In-One Solution
SurroundControl 31900/31960 Series



The All-In-One Solution





SurroundControl is our flagship product line with comprehensive all-in-one solutions for total control of stereo, surround and multichannel audio signals. These systems for professional production, post-production, and broadcast feature True Peak as well as full loudness metering compliant to all rele-

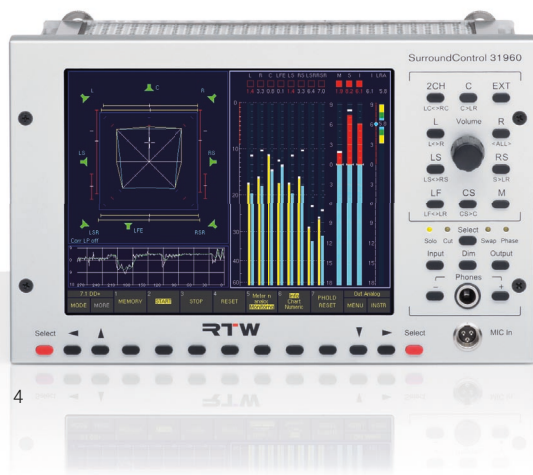
vant standards including ITU BS.1770-2/1771, EBU R128, ATSC A/85 and ARIB. They are the result of more than 45 years of experience in developing advanced audio analyzing and visualization tools by RTW. **The Peak of Performance.**

Your Personal Surround Control Center



In full Control

- Unique eight-channel combination of powerful surround sound metering and analyzing, monitoring controller and router – fully integrated in one easy-to-use system
- RTW's unparalleled Surround Sound Analyzer for fast in-depth evaluation of any surround program up to 7.1 (incl. 7.1 Cinema and 7.1 DD+ formats)
- True Peak Metering (incl. TP Max)
- Multi-standard loudness metering for stereo and surround signals (single channel and summed)
- Loudness Range (LRA) measurement (incl. unique MagicLRA display)



4

- 1 | Remote Control 30050
- 2 | SurroundControl 31900
- 3 | Remote Display 30010 (optional accessory)
- 4 | SurroundControl 31960

- Full complement of audio and signal analyzing tools
- Extended BLITS/EBU channel identification with intelligent analyzer
- Powerful preset management for ultra-fast switching between configurations and I/O setups
- Dolby® DD+, Dolby® AC-3, Dolby® E decoder option
- 3G/HD/SD compatible SDI deembedding option (16 channels)
- Two hardware flavours – 19" rack-mount unit with desktop controller and external VGA display or fully integrated half 19" plug-in module with TFT for TV/video studios

Controlling, Metering and Analyzing Surround Sound



Metering

- Multistandard PPM for 5.1, 6.1 and 7.1 surround formats
- Additional 2-channel Peak Program Meter
- True Peak Metering
- Loudness metering conforming to ITU BS.1770-2/1771, EBU R128, ATSC A/85, ARIB, and Custom
- Summing loudness bargraphs for momentary, short term and integrated loudness
- LRA instrument with unique "MagicLRA" mode
- Surround Sound Analyzer
- 1/3 and 1/6 octave spectrum analyzer
- Surround multicorrelator with LFE mode
- Downmix meter and Dialnorm meter
- Two- and four-channel audio vectorscope
- Various status monitors for AES/EBU interface, SDI channel / interface, and more
- Advanced BLITS Surround channel identification
- Dolby® Meta Data Monitor

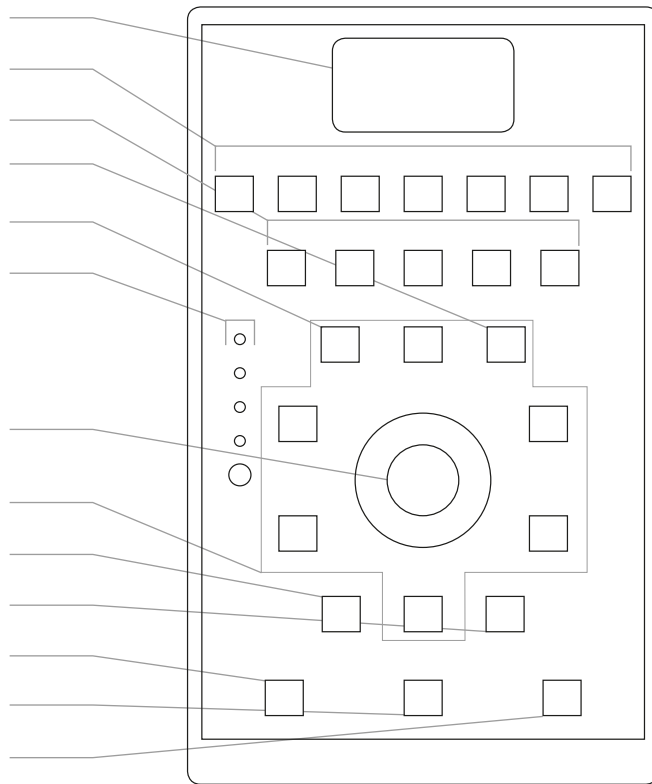
Monitoring controller

- Up to eight-channel digital volume control with calibrated reference level
- Solo, cut, phase, side switch, mono, rear-to-front, centre-to-LR and LF-to-front channel functions
- Level trim for each channel and domain
- Dim function, can also be controlled externally
- Downmix matrix with monitoring and recording output
- Individual signal routing for each surround format
- Channel status shown on display
- Easy operation via remote control
- Test signal generator and SPL meter for calibration
- Built-In Dolby® DD+/E/AC-3 decoding (option)

Hardware

- Two eight-channel analog and two eight-channel digital monitoring inputs
- Separate eight-channel analog metering input
- Analog and digital eight-channel monitoring outputs
- Powerful routing system
- High-quality digital audio
- 44.1, 48 and 96 kHz sampling rates, internal or external synchronization
- 16 GPIO inputs, 8 GPIO outputs
- Ethernet, USB
- VGA output
- Measuring microphone input
- Up to 3 Remote Control 30050 units can be connected
- Headphones output
- 3G/HD/SD-capable SDI deembedder (option)

- Listening level setting display
- Metering and analyzer function keys
- Control and cursor keys
- Extern-to-front when in 5.1 mode
- 2CH-Downmix-to-front when in 5.1-mode
- Channel function select:
 1. Solo
 2. Cut
 3. Swap, Rear-to-Front
 4. Phase invert
- Volume knob with preset function
- Speaker channel keys for the 5.1, 6.1, 7.1 Cinema, and 7.1 DD+ surround formats
- LF channel key
- Mono key
- Input selector
- DIM
- Output selector

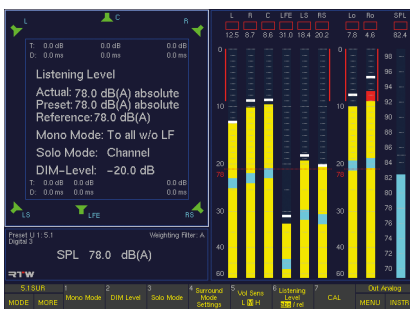


Comprehensive monitoring controller

The monitoring controller is an integral part of the Surround Control system concept. At its core is the volume control for up to eight channels with channel functions including rear-to-front, mono, phase and side switching, solo, mute and dim. The volume control can be calibrated using a reference sound level, enabling the user to set the correct preset monitoring volume at any time with a simple touch of a button. The system incorporates a surround test signal generator and an SPL meter for calibration of the studio monitoring system. The settings for level trim, delay, dim attenuation, volume control response and many other parameters can be configured to fit your individual needs. Additional monitoring inputs for external stereo signals and comprehensive calibration tools complete this package.

Downmix matrix

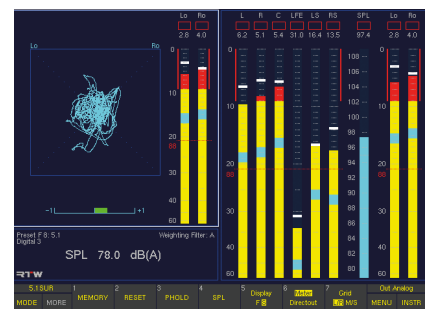
The built-in downmix matrix lets you check and output a two-channel stereo version of your 5.1 surround mix and allows simultaneous broadcasts of both versions. The two-channel monitoring signal generated by the matrix can be switched to the front loudspeakers or to an alternative stereo set such as a near field system. On top of this, the matrix delivers an additional signal for recording or broadcast use, which is completely independent of the monitoring settings. SurroundControl features a separate downmix meter with a peak meter, two-channel vectorscope and correlator to check this signal as well as externally generated two-channel signals.



Setting of the Monitoring Controller



The Surround test signal generator in calibration mode



Downmix meter with surround peakmeter

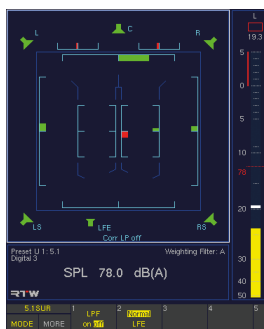
The Graphical User Interface

SurroundControl's display sections

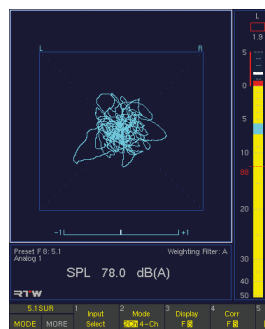
Always on call: the program meter sections. The surround meters in the screen area to the right clearly display the peak program level, standards compliant loudness, RMS level (A, C, M or unweighted), headroom and digital over. The peak meters support the 5.1, 6.1, and 7.1 surround formats as well as all established international measuring standards, both analog and digital. For the left-side screen section, one of the advanced graphical display instruments RTW is known for can be selected. This includes the Surround Sound Analyzer displaying the volume balance and correlation, RTA, advanced BLITS/EBU analyzer for channel identification, surround multi-correlator, and a two- or four-channel audio vectorscope.

This feature set is complemented by a variety of specialized status and measuring displays including the Dialnorm meter, status monitors for AES/EBU interface and SDI channel/interface, and the Dolby® Meta Data Monitor. For desktop environments we recommend using our optional 8.4 inch Remote Display 30010 or a TFT monitor connected to the VGA output.

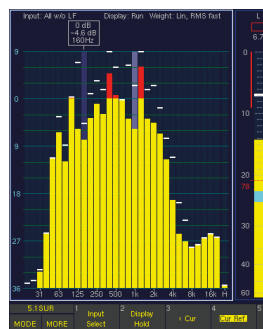
You will find that RTW's metering technology – tested on the ground a thousands of times – will support you throughout the production process, from on-site sound recording, through mixing and mastering, to quality control in audio, video, and multimedia production and broadcast.



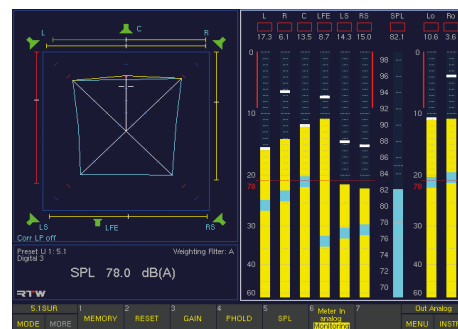
10-fold multi correlator



Vectorscope with 2 or 4 channel mode



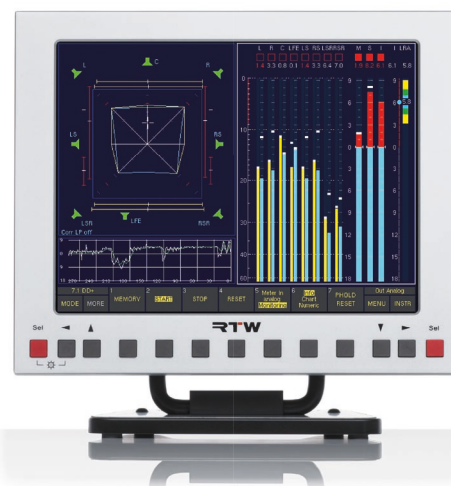
1/3 octave spectrum analyzer



5.1 peak meter with additional 2 channel and SPL meter and surround sound analyzer on the left

Loudness metering

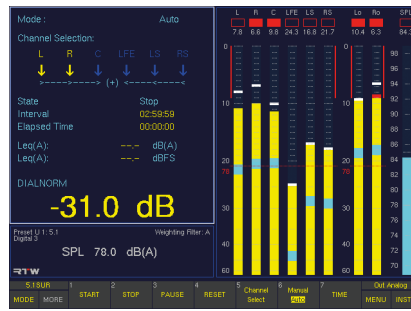
Being the flagship products of RTW's line-up, all SurroundControl units incorporate comprehensive integrated loudness measurement conforming to all relevant standards and recommendations as a standard feature. The program meter bargraphs can be set to show PPM, loudness or both. As with all RTW instruments, scaling, colors and other display parameters can be configured to suit individual needs. Additionally, three bargraphs for the summed loudness of all connected channels are available: Momentary ("M"), Short Term ("S") and Integrated ("I"). On top of this, all SurroundControl versions feature RTW's new LRA instrument for fast and intuitive Loudness Range measurements. Other features include numerical loudness displays, and a chart recorder used for loudness data logging.



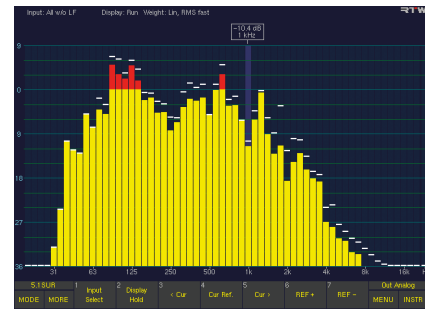
Loudness meter on Remote Display 30010



BLITS generator and extended BLITS analyzer



Dialnorm meter



1/6 octave spektrum analyzer

Special functions

The advanced BLITS analyzer is used for fast and easy channel identification in 5.1 surround signals. Incoming sequences sent by the internal or any external BLITS generator are automatically identified. At the same time, channel swapping, delays between channels, phase and polarity changes, and level variations are checked. On top of this, an audio file intro containing a station identification signal can be prepended to the BLITS sequence in each channel of the 5.1 signal.

The Dialnorm meter is used to measure the average loudness, as well as the dialnorm factor of individual channels or

channel groups. The measurement can be carried out manually or automatically at preset measuring intervals.

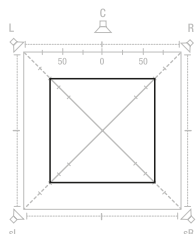
High-resolution frequency analysis: the SurroundControl's 1/6 octave spectrum analyzer is a precise full screen RTA complementing the half screen 1/3 octave version. The analyzer's input can be routed to each surround channel, a channel group or the SPL metering input and can be used to calibrate your monitoring setup. The AES/EBU status monitor shows the bits and bytes at the interface, including the active audio bits. This lets you verify that 24 bits really means 24 bits. Additional information on the sync and channel status helps this tracking errors at the digital interfaces.



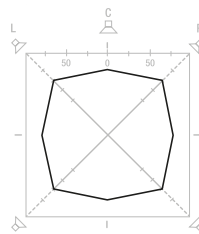
Surround Sound Analyzer

Developed by RTW, the Surround Sound Analyzer is the "house"-shaped display known throughout the industry because of its ingeniously easy-to-read, visual manifestation of overall sound, including loudness and sound pressure level, phase correlation, and level differences among channels. The relationship between the center channel and the L-R

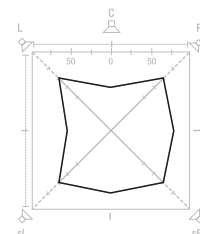
front channels is shown in a particularly striking manner. The graphics show the Surround Sound Analyzer display for various input signals in 5.1 format. For 7.1 DD+, a special version of the Surround Sound Analyzer translates the instrument's excellent readability to this extended channel format.



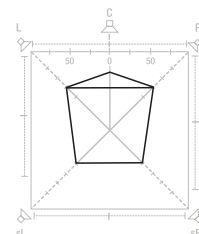
Incoherent noise, same level in the channels L, R, LS, RS



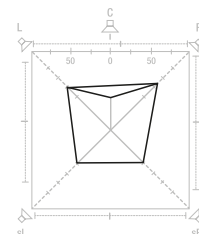
Sine wave signal, same level in the channels L, R, LS, RS similar to mono



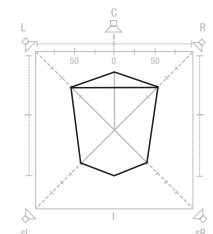
Same as left, but channel L with reversed phase



Surround signal with some center dominance



Surround signal with supporting center



Surround signal LS-RS mono

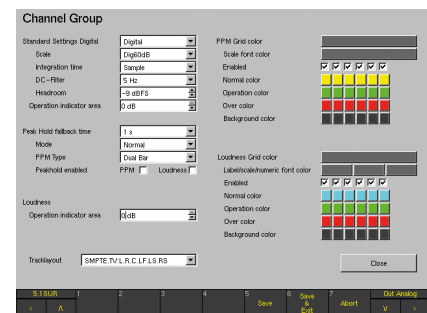
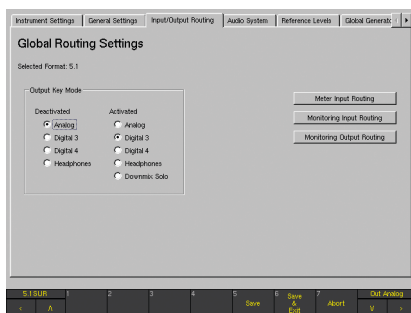
Adaptable to your individual Needs

SurroundControl 31960

A compact all-in-one solution offering the full SurroundControl feature set, specially designed for video studios using rack adaptors with 407 mm depth and 19" system environments. The compact rack module includes a 6.5" TFT and a full set of controls for the analyzer as well as the monitor controller. However, unlike the SurroundControl 31900 series, this unit comes with an external 24 V mains power adaptor.

Remote Display 30010

The perfect addition to the SurroundControl 31900 series. Its 8.4" VGA display offers the ideal size for desktop operation. Its function keys are located beneath the display, so it is particularly easy to operate. Commercially available TFT monitors can be used, if greater viewing distances are needed.



Input/output routing

Exceptionally flexible - it can be set globally or as part of individual presets. For each preset, the user can define whether an individual routing or the global routing should be used.

Bargraph configuration

The bargraphs of the program meter section can be configured to precisely mirror your preferred measuring standards and scales, colour schemes, track layouts, and much more.

Menu

All SurroundControl systems are highly configurable through an in-depth configuration menu for many details including I/O routing, audio formats, display options, measuring standards, reference levels, alarm configuration, and many more. In daily use the units can be switched to different applications, users and input sources by means of simple pre-programmed presets with the touch of a button. Each SurroundControl is delivered with a full complement of factory

presets to cater for many standard applications. These factory presets can be adapted to your individual needs and stored as user presets. Navigation in the GUI menu is possible with a USB mouse, as the buttons of the Remote Control 30050 unit or the Remote Display 30010. When connected to a LAN, SurroundControl uses its own integrated web server for communication with a PC through a standard web browser. Among others, this is used to transfer and install software updates or to store user presets.



Dolby® E Partnership



Dolby® DD+/E/AC-3 Decoder

RTW is a member of the Dolby® E Partner program. All versions of SurroundControl 31900/31960 can be factory supplied or upgraded with a Dolby® DD+, Dolby® E and Dolby® AC-3 decoder and a 3G/HD/SD-SDI deembedder option for direct analysis and control of data streams – without any need for external decoding.

3G-SDI Interface

SurroundControl 31900SD/31960SD feature a 3G-, HD-, and SD- capable SDI deembedder interface in addition to the analog and digital audio inputs and outputs. The SDI interface can access all audio channels implemented in SDI streams and use them for both visual display and audio monitoring.

Block Diagram

