► **With Surround Sound Analyzer**

SurroundMonitor

Modell 10800X

This multi-channel display unit with integrated surround sound analyzer is ideal for all audio productions, from simple stereo to 3/2 or 5.1 surround projects. It is an invaluable aid for monitoring peak levels, loudness, channel balance and surround sound during live recordings, post processing and mastering.

- 8-channel peak level and loudness meters, analog and digital
- Surround sound analyzer for 3/1, 3/2 and 5.1 formats
- Sound balance and overall volume displays
- Indicators for centre presence and phantom sound sources
- 10-way correlator display with low-frequency analysis
- 31-band audio spectrum analyzer for individual channels or channel groups
- Real-time audio vector scope and AES/EBU status monitor

RTW

The centre base display shows the width of phantom sound sources between centre and left or centre and right. Also shows crosstalk between centre and the left or right channels.

Centre channel loudness. The coloured indicator highlights the degree to which the centre channel is contributing to centre localisation.

Total program volume display.

Position and base width of phantom sound sources calculated from the level and correlation values.

Display of mean volume level Lequ with A, C or CCIR-2k weighting.

Calibrated displays with reference marks for the listening sound pressure value.

Multi-channel peak level meter for analog and digital signals. Track layout can be modified by the user and is configurable for 2, 4 or 8 channel displays supporting all leading standards (total of 17 scales selectable).

Total program volume indicator: Shows the volumes of the individual channels and the overall programme. The enclosed area indicates the total volume, while balance information is provided by the relative distribution across the four fields of the display.

Correlation display for the surround channels with user-selectable low pass filter for frequencies below 300Hz.

Display of peak level, loudness or A, C, CCIR-2k weighted SPL for each channel.

All the information you need at a glance: Level and volume displays on the right, the graphical visualisation of the surround sound field on the left.

The new way to visualise surround sound!

Keeping tabs on all the parameters of surround sound projects is a lot of work for sound engineers – you have five channels contributing to the surround effect, and you have to constantly monitor their relative levels, loudness balance and correlation. To do this effectively you need an instrument that shows you more than the individual channels, one that provides an immediately-comprehensible representation the overall sound picture and the relationships between all its components. An instrument like the SurroundMonitor 10800X with its integrated surround sound analyzer.

The SurroundMonitor gives you access to all the important information about your surround programme at a glance: The multi-channel peak level meter monitors peaks and loudness levels of the individual channels for optimum recording levels. The surround sound analyzer calculates the dynamic relationships between the parameters of all channels and displays them in a graphical image of the surround sound space. You can see everything you need at a glance, including loudness relationships, the positions of dominant and phantom sound sources, centre channel presence and signal components with negative correlations.

With the SurroundMonitor 10800X you have a whole suite of powerful tools for comprehensive signal monitoring at your fingertips, including the 10-way multi-correlator, the 31-band RTA, the real-time audio vector scope and the AES/EBU status monitor. But don't take our word for it – see for yourself how the SurroundMonitor 10800X makes your life easier in all steps of the audio production process, from recording to post-processing and mastering!

Explore the possibilities on

www.rtw.de

# As you like it: Control recording levels by peak level or loudness!
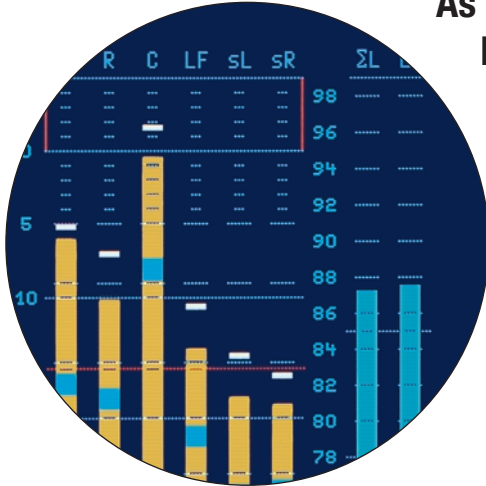
The SurroundMonitor display can be calibrated with a reference listening sound pressure value, for example for 78dB(A), on a single channel. If the studio monitoring system is also calibrated with a sound pressure level meter you can display the calculated total programme volume. The surround sound analyzer display also has corresponding reference marks, enabling you to use the value of the „total volume indicator" as a measure for the real total volume of the programme. You can also choose between A, C, CCIR-2k and RTW loudness weighting.

## See it like this: The surround sound analyzer display

Here are a few examples of how different signals can be displayed by the surround sound analyzer. However, to really appreciate the effectiveness of this instrument you need to see it in action. How about a no-obligations demonstration? Give us a call!
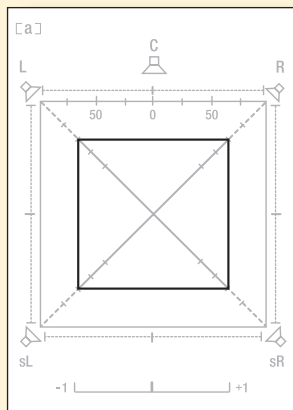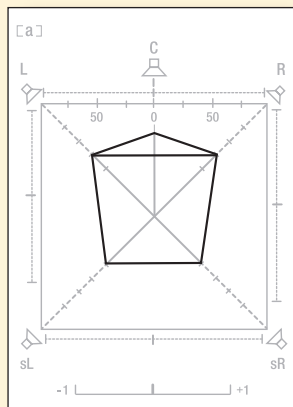

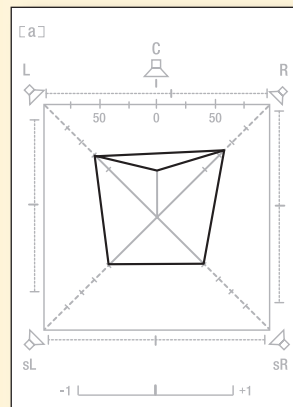Incoherent noise, same level in the channels L, R, LS, RS
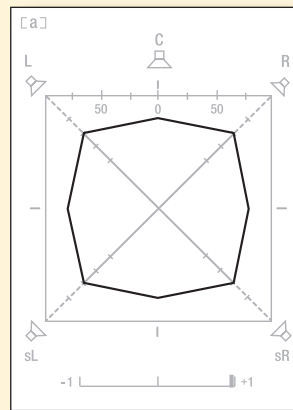
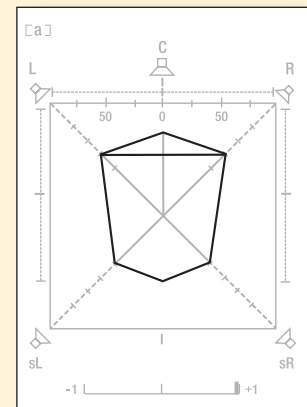Sine wave signal, same level in the channels L, R, LS, RS similar to mono
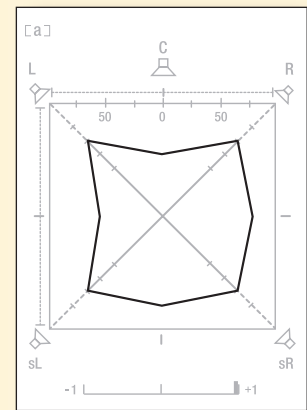
Same as left, but channel L with reversed phase

Surround signal with some center dominance

Surround signal with supporting center

Surround signal LS-RS mono

Digital: Get the full picture!

When you're getting pops and bangs, or when nothing seems to be working, the AES/EBU status monitor keeps tabs on all four AES/EBU inputs and displays information on the lock situation and general hardware status.

And when you need the details on what your audio data bits are really „doing" the status monitor can also show you their current activity (and thus also the actual word length). Nothing remains hidden!

Clearly-designed menus and extensive help texts make setting up the SurroundMonitor 10800X a quick and easy process.

It's all configurable

Unfortunately, the placement of surround tracks on multi-channel tapes is not standardised. This is no problem with the SurroundMonitor 10800X, however. In the user-friendly configuration matrix of the preset menu you can adjust the channel order on the display with a few keypresses. Several common „track layouts" are available as selectable presets. This menu also gives you access to all other important settings,

including analog/digital, display of the 2-channel L*/R* matrix signal, peak meter integration times and screen colours. You can then store your own personal configuration in one of the eight user preset profiles. Informative help texts are displayed on the right, explaining every step of the configuration process.

Just connect!

Connecting the SurroundMonitor couldn't be easier. There are just two 25-pin connectors on the rear panel, one for the analog signals and a second for the digital signals. Then you just connect the power supply unit and your SurroundMonitor is ready for action. The inner workings of the 10800X are more complicated: Three signal processors analyse the signals and calculate the values for the on-screen displays. The digital signals are all processed without sampling rate conversion, including signals with 96kHz sample rates!
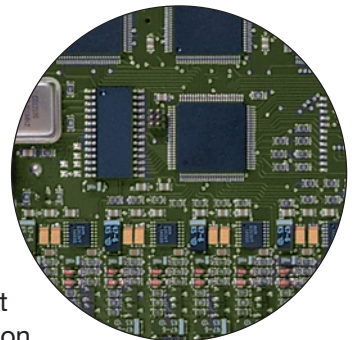
Two attractive alternatives: The 10800X in desktop and console versions

Panel installation components for the desktop version are available from RTW. Special fitted versions are also available for installation in a range of popular mixing consoles, with dimensions and colour schemes matched to the individual consoles. SurroundMonitor
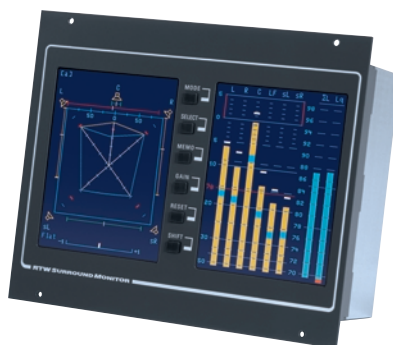
operating modes can be switched remotely from the console via the control interface – for example you can switch between stereo and surround modes. Ask us for information about the console versions currently available!

RTW

See your sound in action!

L - R

C - L

C - R

L - RS

R - LS

L - LS

R - RS

C - LS

C - RS

LS - RS
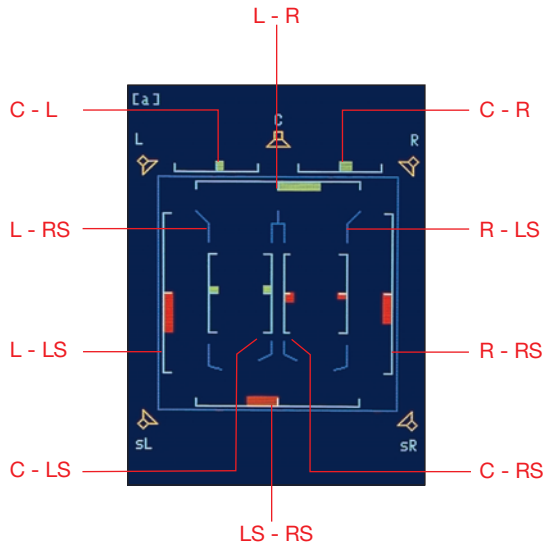
The multi-correlator display

The 10-way correlator provides an instantly-comprehensible display of the correlation relationships between all channel pairs. It is an extremely useful aid, and not just for live recordings with surround microphones.

For analysis of the „surround envelopment effect" you can also activate a 300Hz low-pass filter upstream from every correlator. This enables you to identify the low-frequency correlation that can detract from the spaciousness of the surround sound.

During mastering you can also identify low-frequency phase errors, for example of the type caused by the use of effect devices on the bass range.
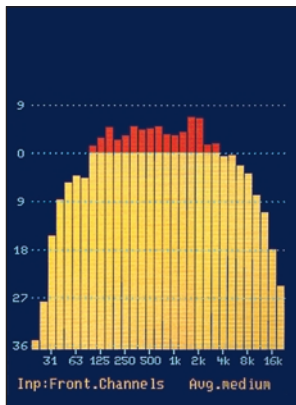
## Shows you the full spectrum: The 31-band RTA

The real-time analyzer is a really useful tool in critical situations. Its 31 bands show you the spectral distribution of a single channel, the "front channels" or the "surround channels".

During LF channel measurements the system can automatically switch the frequency range to 5Hz – 5kHz – a useful feature if your surround production makes intensive use of the LF-channel.

The full picture: The multi-channel audio vector scope
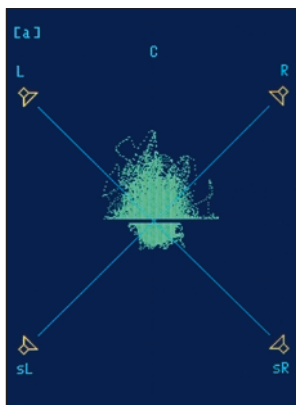
The 4-channel audio vector scope mode is used to compare the front L and R channels with the LS and RS surround channels.
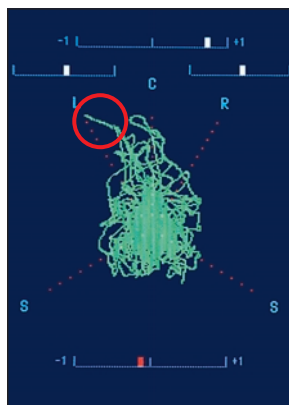
One common use of the audio vector scope is to identify distortions present in the source material.

The multi-channel audio vector scope is the instrument of choice when you want to analyse your surround signal in real time. It analyses and displays every signal peak in the resulting signal for sources with sample rates up to 96kHz.

Using the audio vector scope you can easily identify hidden distortion and the directions of very brief, impulse-type signal components. A special 4-channel audio vector scope mode also enables you to perform direct signal and phase comparisons between the front L and R channels and the LS and RS surround channels.

RTW

Specifications

Functions	
	2 or 8 channel peak meter, analogue and /or digital • Surround sound analyzer for 3/1 and 3/2 (5.1) formats • Audio vector scope with 2, 4 and 5 channel mode • 10-way multi correlator display, digital over and mute detector • Numeric level display, weighted loudness display, Lequ measurement • Real-time 1/3rd octave analyzer and AES/EBU status monitor

Analogue Inputs	
Number of inputs	8 (mono)
Reference level	+ 6 dBu, adjustable from −2 dBu to + 13 dBu
Impedance	> 10 kOhm
Frequency range	Analogue: 30 Hz – 20 kHz or 30 Hz to 0.9xfs/2 in the mixed mode

Digital Inputs	
Number of inputs	4 (stereo), AES/EBU, transformer balanced, 110 Ohm (disconnectible)
Sampling frequency range	32 kHz – 96 kHz, real-time processing without SRC

Digital Outputs	
Number of outputs	4 (stereo), AES/EBU, input signal looped through

Peak Meters, General	
Level display	2 or 8 channels, peak hold indicator switchable, vertical bargraph display, additional correlator with spot indicator
Length of bargraph	95 mm
Display modes and bargraph configuration	2 channel stereo (inputs 1-2, 3-4, 5-6, 7-8 selectable) • 8 channel (8 x 1 channel, 4 x 2 channels or 2 groups of 2+6, 4+4 6+2 channels with individual selectable standard and domain) • Surround 3/1, 3/2 (5.1)
Peak memory	Yes, additional peak hold indicators
Numeric level display	Available for level, peak level, loudness, over count. A single value can be selected to be displayed permanently, a list of all values is displayed when the MEMO key is pressed
Correlation spot indicator	Switchable (available only in the 8 channel mode with 4 stereo channels)
Loudness meter	Additonal spot indicator displayed on the bargraphs, RTW mode or A, C or CCIR-2k weighting, RMS

Analogue Peak Meters	
Standards	DIN-5, DIN-10, NORDIC, BRITISH IIa, BRITISH IIb, ZOOM 20, VU
Reference level	+ 6 dBu for: DIN (display 0 dB), NORDIC (display +6 dB), ZOOM20 (display 0 dB), VU (adjustable lead from 0 to 10 dB) +8 dBu for: British IIa (display "6"), British IIb (display "8")
Integration time	According to the standard or selectable 1 ms, 0.1 ms
Fall back time	According to the standard (DIN 1.5 s/20 dB)
Gain	+ 20 dB (DIN, ZOOM), + 40 dB (NORDIC, BRITISH IIa, IIb)

Digital Peak Meters	
Word length	16 - 24 Bit
Scales	Digital 1 (0 dB FS to -60 dB FS), Digital 2 (0 dB FS to −20 dB FS), Digital 3 (-18 dB to +18 dB), Digital 4 (- 4 dB to + 18 dB) Quasi-DIN: DIN-5, DIN-10, Nordic, British IIa, IIb, Zoom 20
Headroom	Adjustable from -5 dB FS to −20 dB FS, 1 db increment
Integration time (Attack)	Digital 1-4: Sample, 0,1 ms, 1 ms, 10 ms, Quasi-DIN: Norm, Sample, 0,1 ms, 1 ms
Fall back time	According to the standard (DIN: 1.5 s/20 dB)
Gain	Digital 1-4: +40 dB, semi-DIN, Zoom +20 dB, British, Nordic +40 dB
DC filter	Off, 5 Hz, 10 Hz, 20 Hz
Peak hold indicator	Integration time same as level display or 1 sample (selectable)
Digital over indicator	Red spot indicators above each bar graph
Threshold	Full Scale, Full Scale-1LSB, Full Scale-2LSB, -0,1 dB FS, -0,5 dB FS, -1 dB FS, -2 dB FS, -3 dB FS, selectable
Attack time	1 – 15 Samples
Word length	16 - 24 Bit
Mute indicator	Red spot indicators below each bar graph
Threshold	All bits digital "0"
Attack time	50, 100, 200, 300 ms or 5 - 80 Samples (selectable, increment 5 samples)

Total Loudness Meter/Lequ	
Display	2 bargraphs, only available in the surround mode
Calibration	SPL reference 72 – 80 dB (single channel)
Total loudness / SPL	70 – 98 dB (without LF channel)
Weighting filters	A, C, CCIR-2k, (fast or slow) RTW loudness, all RMS
Lequ	Range 70 – 98 dB

Surround Sound Analyzer	
Surround format	3/1 or 3/2 (5.1)
Function	Weighted loudness display (A, C, CCIR-2k, RTW loudness, RMS)
Indicators	TVI, Total volume indicator: graphics display indicating the single channel and total program loudness Dominance vector indicator Position and width of phantom (virtual) sound sources (Phantom source indicator, PSI) 2 channel real-time audio vector scope 4 channel real-time audio vector scope (L-R and LS-RS) Low frequency LS-RS phase meter

Multi-way Phase Meter	
Surround mode	10 phase meters for all possible pairs of channels
8 channel mode	4 phase meters for the channel pairs 1-2, 3-4, 5-6, 7-8
Display mode	Spot indicator or bargraph
Attack time	Fast: 1 second, slow: 2,5 seconds
Negative peak correlation memory	yes (included in the peak memory)
Weighting filter	300 Hz 1st order low pass (switchable) for each phase meter

RTA	
Filter	1/3rd octav, 31 bands
Frequency range	Normal mode: 20 Hz – 20 kHz, LF mode: 5 Hz - 5 kHz
Standard	IEC-225 ANSI Class 2
Measuring/display range	Selectable 15 dB, 30 dB, 45 dB
Integration time	Fast/medium/slow, RMS or peak
Peak hold indicator	Yes, selectable

Audio Vector Scope	
Modes	2/0, (stereo), 3/1, 3/2
Channel configuration	2, 8 channel mode: displays the channel pairs 1-2, 3-4, 5-6, 7-8, the odd channel is displayed as left. Channel configuration in the surround mode is set automatically according to the presets
Visible area	70 x 70 mm
AGC	Auto/manual
Calibration mode	Yes, 20° and 90° grids are available (only in the 2 channel mode)

AES/EBU Status Monitor	
Status display	Digital channels 1-2, 3-4, 5-6, 7-8
Audio data bit display	Displays the activity of the digital audio data bits
Display modes	Hex, binary, plain text

Remote Interface	
Parallel interface	Functions of the MODE, SELECT, MEMO, GAIN, RESET and SHIFT keys or preset recall
Logic	Selectable pos/neg, level or edge-triggered, (all TTL, active low)

General	
Supply voltage	24V (21V - 30V)
Supply current	800 mA (@24 V), peak 1400 mA during power on
Power dissipation	19 W max
Temperature range (working)	0° - 45° C
Temperature range (storage)	- 30°C to + 85°C

Display	
Technology	2 pcs. Color-TFT-displays, visible area 2 x 75 mm x 120 mm

Connectors	
Analogue inputs	25-pin D-Sub, female
Digital inputs, outputs	25-pin D-Sub, female
Remote	9-pin D-Sub, female
DC-connector	Type "Binder 710"

Housings and Dimensions	
10800X, 10800XPLUS	Desk top unit
Dimensions	215 x 145 x 65 mm (W x H x D, excl. stand) height with stand 172 mm
Weight	approx. 1200 g (excluding stand)
Color	Case: RAL 7024 (dark grey), Scale: RAL 7000 (light grey)
10810-203	Panel mount, fits into Studer D950
Dimensions	202,8 x 170 x 60,5 mm (W x H x D)
Weight	approx. 1250 g
Color	RAL 7016, matched to color of the console
10820-203	Panel mount, fits into different consoles made by LAWO
Dimensions	202,8 x 199,8 x 60,5 mm (W x H x D)
Weight	approx. 1300 g
Color	RAL 7035 light grey
10830-218	Panel mount, fits into SSL Aysis, Avant series
Dimensions	218 x 160 x 60.2 mm (W x H x D)
Weight	approx. 1250 g
Color	RAL 7016 (dark grey)

Items supplied	
	10800X, 10810-203, 10820-203, 10830-218: Manual, DC-connector 10800XPlus: Manual, tilt-adjustable stand, mains adapter

Optional Accessories (10800X, 10800XPLUS only)	
	13710 Stand (SurroundMonitor 10800X) 13715 Adapter for 190 – mm front panels 13716 Front panel adapter kit 1174-R Mains adapter 100 – 240V (SurroundMonitor 10800X) 1186 Snake cable 4m, distributes 25 pin D-Sub to 8 x XLR-F

Specifications are subject to change without notice

(0835.07)