SurroundMonitor 10600/10660-VID

Digital 6-Channel Audio Vectorscope with Surround-Sound-Analyzer, PPM and ITU BS.1771 Loudness Meter

For monitoring level, correlation, loudness, volume and balance of DIGITAL surround signals in fully-digital studio environments like broadcast, pre and postproduction, music production, mastering or video editing suites and workstations.

- Up to 6-channel peak level and loudness meters (PPM)
- Additional SPL/Leq bargraph
- ITU BS.1771 Loudness Meter for stereo and 5.1 surround
- Additional selectable pair of bargraphs for the display of the momentary, integrated and longterm loudness values
- Easy change between PPM and Loudness Meter via programmed presets
- Surround Sound Analyzer for 3/1 and 5.1 formats
- Sound balance and overall volume displays
- Indicators for center presence and phantom sound sources
- 10-fold correlator display with low-frequency analysis
- 2 channel real-time audio vectorscope
- 31-band audio spectrum analyzer for individual channels or channel groups
- AES/EBU status monitor
- Dialnorm measurement
- Stopwatch
- Numerical level display
- Remote control Interface
- VGA-output for optional external VGA displays

Audio monitoring in digital production environments

The SurroundMonitor is designed especially for monitoring DIGITAL stereo, multi-channel and surround audio signals. Available as table-top unit (10600) or half-19" plug-in module (10660-VID) for the installation next to other instruments in a video rack it will satisfy the wishes of even the most demanding studio engineers.

Features

The SurroundMonitor features comprehensive display capabilities for digital Stereo, Multi-Channel and Surround signals including PPM and ITU BS.1771 Loudness meter. These and all the other measuring functions can easily be switched with two fast access operating mode keys. Their functionality can be defined by an easy to use setup menu or presets.

Up to six multi-standard peak meters, the ITU BS.1771 Loudness Meter, the Surround Sound Analyzer providing a highly informative display for monitoring sound balance and the surround effect of surround programmes, the SPL(A), Leq(A)/(C) display, the RTA and the Dialnorm meter make the unit very attractive for use in DVD productions and film soundtrack mixing as well as in the production process of broadcast and TV. Status display for AES-3 signals, a numeric display of essential parameters and a stopwatch complete the functionality of the instrument. All are presented in three sections of the large VGA display. An external VGA monitor can be connected.

The SurroundMonitor 10600 and SurroundMonitor 10660-VID are particularly budget-friendly members of RTW's Surround-Monitor family and of RTW's Loudness Family.

RTW

Specifications:

Functions	
	Up to 6 channals, digital peakmeter, Surround Sound Analyzer, multi corre-lator, RTA - real time analyzer, Dialnorm, audio vectorscope, stopwatch, AES/EBU status display, Digital Over and Mute detection

Digital Inputs	
Quantity	3 (Stereo), AES3, transformer balanced, 110 Ω (internal detachable)
Sampling frequency range	32 kHz – 96 kHz

Digital Outputs	
Quantity	3 (Stereo), AES3, input signal looped through, unbuffered

Program Meter: Digital Peak Program Meter (PPM)	
Level display	Up to 6 channels, Peak Hold indicator selectable, vertical display
Length of bargraph	90 mm
Display modes	2-channel Stereo, 2 x 2-channel Stereo, 3 x 2-channel Stereo, 2-channel, 4-channel, 6-channel, 5.1 Surround, 3.1 Surround
Peak value memory	Peak Memory, Peak Hold
Numeric level display	Selectable, shown on the lower left side of the display
Correlator spot indicator	Switchable, in 6-channel mode for up to 3 channel pairs
Loudness meter	Additional spot indicator displayed on the bargraphs of the level display, RTW mode or A-, C-, CCIR-2k weighting, RMS
Scales	Digital 1 (0 dB FS to –60 dB FS), Digital 2 (0 dB FS to –20 dB FS), Digital 3 (–2 dB to +18 dB), Digital 4 (–18 dB to + 18 dB), Digital 5 (+20 dB to –40 dB), Digital 6 (+9 dB to 0 dB to –60 dB), quasi analog: DIN-5, DIN-10, Nordic, British IIa, IIb, Zoom 2, Zoom 20
Headroom	Adjustable from –5 dB to –20 dB, selectable in steps of 1 dB
Integration time (Attack)	Digital 1 - 6: Sample, 0.1 ms, 1 ms, 10 ms / quasi analog: Norm, Sample, 0.1 ms, 1 ms
Fall back time	According to selected standard (1,5 s/20 dB for DIN)
Gain	Digital 1 - 6: +40 dB; quasi analog scales: DIN, Zoom 2, Zoom 20: +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 bargraph
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
Attack time	1 – 15 samples
Word length	16 – 24 bit
Mute indicator	Red spot indicators below each bargraph
Threshold	All bits digital "0"
Attack time	50, 100, 200, 300 ms oer 5 – 80 samples (selectable in steps of 5 samples)

Total Loudness Meter/Leq (PPM)	
Display	in surround mode for channels 1 to 6
Calibration	SPL reference 72 to 80 dB (single channel)
Total loudness/SPL	70 – 98 dB (without LF channel)
Weighting filters	Linear, A, C, CCIR-2k, RTW loudness (fast or slow), all RMS
Leq	Range 70 – 98 dB with weighting as selected above)

Program Meter: ITU BS.1771 Loudness Meter	
Display	Bargraphs vertical for each channel of the 2-channel stereo and 5.1 surround signal
	Pair of additional bargraphs selectable:
	• "M" bargraph (momentary - summation of momentary loudness values of all channels for a short time span) • "I" bargraph (integrated - loudness value of an adjustable dynamic time frame, summation of Momentary values) • "L" bargraph (longterm - loudness value of a longterm reading, infinite or manual control)
Bargraph length	90 mm
Peak value memory	max. Loudness value, max. peak
Numeric level display	selectable, readout of "I" or/and "L" bargraphs, if selected, "L" value additonaly with running measuring time period
Correlator spot indicator	displayed with stereo channel pair, left at the bottom of the bargraphs
Scale	Loudness scale according to ITU BS.1771: –21 to +9 dB LU or –31 to 0 LKFS
Weighting filter	RLB (K)
Reference value for "0"	–24 dB FS, range: –25 dB FS to –10 dB FS, selectable in steps of 1 dB
Headroom	0 to 9
Integration time for "M"	125 ms (IEC), 250 ms (IRT), 500 ms, 750 ms, 1 s (IEC), 1.5 s, 2 s
Integration time for "I"	20 s, time frame selectable between 1 s and 20 s
Integration time for "L"	infinite or manual
Threshold for adoption of "M" values into "I"/"L" reading	–20, selectable between 0 and –39

Alarm threshold	+8, selectable between 0 and +9
Alarm period	1 s, selectable between 1 s and 9 s, can also be disabled
Level adjustment for the sum-mation of the stereo signal	0.0 dB, selectable between –3 dB and + 3 dB in steps of 0.5 dB

Surround Sound Analyzer	
Surround mode	3/1, 3/2 or 5.1, display of LF channel in peakmeters only
Function	Weighted loudness display: • PPM: A, C, Leq(M) CCIR-2k, ITU RLB, RTW mode) • ITU BS.1771: RLB
Indicators	• Graphics display indicating the single channel and total program loudness (Total Volume Indicator - TVI), • Switchable display of position and width of phantom sound sources (Phantom Source Indicator - PSI) • Switchable display of correlation meters of adjacent channels, • Position of dominant sound event (Dominance Vector - DMI)

Multifold Phase Meter	
in surround mode	10 phase meters for all possible pairs of channels
in 6-channel mode	up to 3 phase meters for up to 3 channel pairs
Display mode	Spot indicator or bargraph
Attack time	Fast: 1 s, Slow: 2,5 s
Negative peak correlation memory	yes, included in Peak Memory
Weighting filter	300 Hz first order low pass (switchable) for each phase meter

Audio Vectorscope	
Modes	X/Y or M/S
Visible area	45 x 45 mm
AGC	Auto

Real Time Analyzer	
Bands/frequency range	31, 1/3-octave, 20 Hz to 20 kHz (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	switchable

AES/EBU Status Monitor	
Status information	locked, decoded AES/EBU status, parity, validity
Visible area	18 x 72 mm or 80 x 72 mm

General	
Supply voltage	24 V DC (21 V - 30 V DC)
Current consumption	290 mA (24 V DC) nominal, switch-on current is considerably higher
Power consumption	6,5 W maximum
Temperature ranges	Operating: 0° to 45° C, storage: –30° C to +85° C

Display	
Type	1 color TFT display, 6.5", VGA (640 x 480 pixel), 131.5 x 98.6 mm

Connectors	
Digital inputs	25-pin Sub-D-F socket
Digital outputs	25-pin Sub-D-F socket
Monitor output	15-pin Sub-D-F socket (VGA)
Remote output	15-pin Sub-D-F socket
DC connector	Type „Binder 710" locking 4-pin low voltage connector

Design, Dimensions	
Table-top unit 10600/10600-PLUS	Case: graphite grey semi gloss RAL 7024 scale: front: silver, labelling: black
Dimensions	176.5 x 125.5 x 61.5 mm (W x H x D without table-stand)
Weight	approx. 750 g without table-stand, approx. 1050 g with table-stand
Plug-in module 10660-VID	Case: graphite grey semi gloss RAL 7024 scale/labelling: grey white
Dimensions	half-19"/3U: 213.8 x 132.6 x 242.5 mm (W x H x D without mounting adapter)
Weight	approx. 1200 g

Items delivered	
10600	DC connector (counter plug) for power supply, operating manual
10600-PLUS	Table-stand, mains adapter, operating manual
10660-VID	Half-19"/3U plug-in module for standard 19" installation cabinets , DC connector (counter plug) for power supply, operating manual, rack mounting adapters for standard 19" installation cabinets for waveform monitors with 407 mm depth

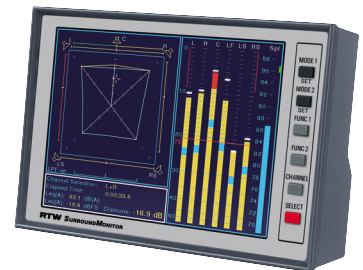| Optional Accessories	
	1163 snake cable 25-pin Sub-D-M to XLR-M, 4 m for output connector 1186 snake cable 25-pin Sub-D-M to XLR-F, 4 m for input connector 13719 table stand (10600) 13711 adapter frame for mounting into 190 mm- systems (10600/10600-PLUS) 13713 Panel mounting kit for front panel cut-outs (10600/10600-PLUS) 1171-R wide voltage power supply 90 – 264 V AC/24 V DC

Examples for display modes:

10660-VID displaying the Surround Sound Analyzer, Dialnorm Meter and Peak Program Meter

10600-PLUS displaying Surround Sound Analyzer, numerical loudness value and ITU BS.1771 Loudness Meter

10600 displaying Surround Sound Analyzer, Dialnorm Meter and Peak Program Meter