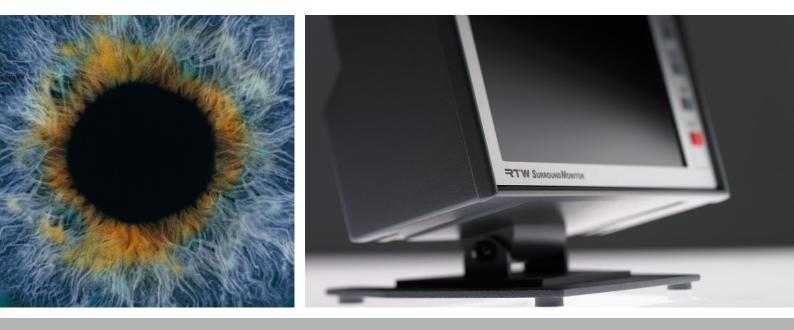
The first choice in digital surround SurroundMonitor 10600 Series





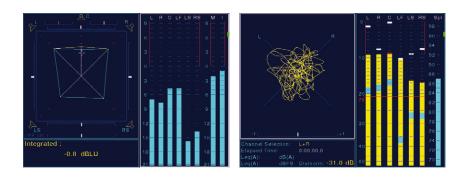
SurroundMonitor 10600 Series



Facts and Figures

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 such as broadcast, pre and post production, music production, mastering or video editing suites and workstations.





- Up to 6-ch. peak level and loudness meters (PPM)
- Additional SPL/Leq bargraph
- ITU BS.1771 Loudness Meter for stereo and 5.1 surround
- Selectable pair of additional bargraphs for display of momentary, integrated and longterm loudness values
- Easy toggle between PPM and Loudness Meter via programmed presets
- Surround Sound Analyzer for 3/1 and 5.1 formats
- Sound balance and overall volume displays
- Center presence and phantom sound source indicators

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
- AES3 status monitor
- Dialnorm measurement
- Stopwatch
- Numerical level display
- Remote control Interface
- VGA output for optional external VGA displays

Audio monitoring in digital environments

The SurroundMonitor was especially designed for monitoring DIGITAL stereo, multi-channel and surround audio signals. Being available as table-top unit (10600-PLUS) or half-19" plug-in module (10660-VID) for the installation next to other instruments in a video rack, the SurroundMonitor meets the requirements 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 other measuring functions can easily be switched with two fast access mode keys. The key functions 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 broadcast and TV production. Other features include status display for AES-3 signals, a numeric display of essential parameters and a stopwatch. All are presented in three sections of the large VGA display. An external VGA monitor can be connected.

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

Specifications

Functions

Up to 6-channel digital Peak Program Meter, TIU BS.1771 Loudness Meter, Surround Sound Analyzer, Multi Correlator, Diatal Over, Mute detection and AES3 status display, Stopwatch Digital Inputs Counstity 3 (Stereo), AES3, transformer balanced, 110 Ohm (internal detachable), Sampling frequency range 32 kHz – 96 kHz Digital Outputs Counstity 3 (Stereo), AES3, input signal looped through, unbuffered Program Meter: Digital Peak Program Meter (PPM) Counstity 3 (Stereo), AES3, input signal looped through, unbuffered Level display Up to 6 ch. vertical bargraphs, Peak Hold and loudness indicator switchable Counters Loudness meter Additional spot indicator on the bargraphs. RTW mode or A, C, Leq (M) (CCIR-21) weighting Counters and the status of the	i unctions	
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5.1 Surround, 3.1 Surround, Total Loudness bargraph switchable Peak value memory Peak Memory, Peak Hold Scales Digital 1 (0 dBFS to -60 dBFS), Digital 2 (0 dBFS to -20 dBFS), Digital 3 (-18 dB to +18 dB), Digital 4 (-2 dB to +18 dB), Digital 5 (+20 dB to -40 dB), Digital 5 (+20 dB to -20 dB in 1 dB steps 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 the 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 Of filter Off, 5 Hz, 10 Hz, 20 Hz Peak Hold indicator Integration time same as level display (see above) or 1 sample Digital Over indicator Red spot indicators above each bargraph Threshold Full Scale, Full Scale-1LSB, Full Scale-2LSB, -0.1 dBFS, -0.5 dBFS, -1 dBFS, -2 dBFS, -2 dBFS, -3 dBFS 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 or 5 to 80 Samples (selectable in steps of 5 samples) <td>Loudness meter</td> <td></td>	Loudness meter	
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Peak Hold indicator Integration time same as level display (see above) or 1 sample Digital Over indicator Red spot indicators above each bargraph Threshold Full Scale, Full Scale, Full Scale-2LSB, -0.1 dBFS, -0.5 dBFS, -1 dBFS, -2 dBFS, -3 dBFS 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 or 5 to 80 Samples (selectable in steps of 5 samples) Total Loudness Meter/Leq (PPM) Display L + R (2-ch. Stereo), surround mode for channels 1 to 6 Calibration SPL reference 72 to 80 dB (singel channel) Total loudness/SPL 70 to 98 dB (without LF channel) Weighting filters Linear, A, C, Leq(M)(CCIR-2k), ITU RLB, RTW mode, all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Surround signal, pair of additional bargraphs selectable: • "M" bargraph (mementary - summation of momentary loudness values of al channels for a short time span) • "I" bargraph (integrated - loudness value of an adjustable dynamic time frame, summation of Momentary values) • "Wargraph for each channel of the 2-ch. stereo and 5.1 surround signal, pa	Gain	
Digital Over indicator Red spot indicators above each bargraph Threshold Full Scale, Full Scale-1LSB, Full Scale-2LSB, -0.1 dBFS, -0.5 dBFS, -1 dBFS, -2 dBFS, -3 dBFS 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 or 5 to 80 Samples (selectable in steps of 5 samples) Total Loudness Meter/Leq (PPM) Display L + R (2-ch. Stereo), surround mode for channels 1 to 6 Calibration SPL reference 72 to 80 dB (singel channel) Total loudness/SPL 70 to 98 dB (without LF channel) Weighting filters Linear, A, C, Leq(M)(CCIR-2k), ITU RLB, RTW mode, all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Display Display Vertical bargraphs for each channel of the 2-ch. stereo and 5.1 surround signal, pair of additional bargraphs selectable: • "M" bargraph (integrated - loudness value of an adjustable dynamic time frame, summation of Momentary values) • "L" bargraph (integrated - loudness value of an adjustable dynamic time frame, summation of domentary values) • "L" bargraph (integrated - loudness value of a longterm reading, infinite or manual control)	DC filter	Off, 5 Hz, 10 Hz, 20 Hz
Threshold Full Scale, Full Scale, Full Scale-2LSB, -0.1 dBFS, -0.5 dBFS, -1 dBFS, -2 dBFS, -3 dBFS 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 or 5 to 80 Samples (selectable in steps of 5 samples) Total Loudness Meter/Leq (PPM) Display L + R (2-ch. Stereo), surround mode for channels 1 to 6 Calibration SPL reference 72 to 80 dB (singel channel) Total Loudness/SPL 70 to 98 dB (without LF channel) Weighting filters Linear, A, C, Leq(M)(CCIR-2k), ITU RLB, RTW mode, all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Display Display Vertical bargraphs for each channel of the 2-ch. stereo and 5.1 surround signal, pair of additional bargraphs selectable: • "M" bargraph (integrated - loudness value of an adjustable dynamic time frame, summation of Momentary loudness values of all channels for a short time span) • "I" bargraph (integraph (ongterm - loudness value of a longterm reading, infinite or manual control) Peak value memory max. Loudness value, max, peak Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "	Peak Hold indicator	Integration time same as level display (see above) or 1 sample
-0.5 dBFS, -1 dBFS, -2 dBFS, -3 dBFS 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 or 5 to 80 Samples (selectable in steps of 5 samples) Total Loudness Meter/Leq (PPM) Display L + R (2-ch. Stereo), surround mode for channels 1 to 6 Calibration SPL reference 72 to 80 dB (singel channel) Total Loudness/SPL 70 to 98 dB (without LF channel) Weighting filters Linear, A, C, Leq(M)(CCIR-2k), ITU RLB, RTW mode, all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Display Vertical bargraphs for each channel of the 2-ch. stereo and 5.1 surround signal, pair of additional bargraphs selectable: • "M" bargraph (integrated - loudness value of an adjustable dynamic time frame, summation of Momentary loudness values of all channels for a short time span) • "I" bargraph (integraph (integrated - loudness value of an adjustable dynamic time frame, summation of Momentary values) • "L" bargraph (integrated - loudness value of a longterm reading, infinite or manual control) Peak value memory max. Loudness value, max, peak Numeric level display selec	Digital Over indicator	Red spot indicators above each bargraph
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Threshold All bits digital "0" Attack time 50, 100, 200, 300 ms or 5 to 80 Samples (selectable in steps of 5 samples) Total Loudness Meter/Leq (PPM) Display L + R (2-ch. Stereo), surround mode for channels 1 to 6 Calibration SPL reference 72 to 80 dB (singel channel) Total Loudness/SPL 70 to 98 dB (without LF channel) Weighting filters Linear, A, C, Leq(M)(CCIR-2k), ITU RLB, RTW mode, all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Display Display Vertical bargraphs for each channel of the 2-ch. stereo and 5.1 surround signal, pair of additional bargraphs selectable: • "M" bargraph (integrated - loudness value of an adjustable dynamic time frame, summation of Momentary values) • "" bargraph (integraph (ongterm - loudness value of a longterm reading, infinite or manual control) Peak value memory max. Loudness value, max, peak Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "L"	Word length	16 - 24 bit
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(selectable in steps of 5 samples) Total Loudness Meter/Leq (PPM) Display L + R (2-ch. Stereo), surround mode for channels 1 to 6 Calibration SPL reference 72 to 80 dB (singel channel) Total loudness/SPL 70 to 98 dB (without LF channel) Weighting filters Linear, A, C, Leq(M)(CCIR-2k), ITU RLB, RTW mode, all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Display Vertical bargraphs for each channel of the 2-ch. stereo and 5.1 surround signal, pair of additional bargraphs selectable: • "M" bargraph (integrated - loudness value of an adjustable dynamic time frame, 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 (ongterm - loudness value of a longterm reading, infinite or manual control) Peak value memory max. Loudness value, max, peak Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "L"	Threshold	All bits digital "0"
Display L + R (2-ch. Stereo), surround mode for channels 1 to 6 Calibration SPL reference 72 to 80 dB (single channel) Total loudness/SPL 70 to 98 dB (without LF channel) Weighting filters Linear, A, C, Leq(M)(CCIR-2k), ITU RLB, RTW mode, all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Display Vertical bargraphs for each channel of the 2-ch. 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 (integrated - loudness value of a longterm reading, infinite or manual control) Peak value memory max. Loudness value, max, peak Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "L"	Attack time	
Calibration SPL reference 72 to 80 dB (singel channel) Total loudness/SPL 70 to 98 dB (without LF channel) Weighting filters Linear, A, C, Leq(M)(CCIR-2k), ITU RLB, RTW mode, all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Display Vertical bargraphs for each channel of the 2-ch. 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) Peak value memory max. Loudness value, max. peak Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "L"	Total Loudness Meter/Leo	(PPM)
Total loudness/SPL 70 to 98 dB (without LF channel) Weighting filters Linear, A, C, Leq(M)(CCIR-2k), ITU RLB, RTW mode, all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Display Vertical bargraphs for each channel of the 2-ch. stereo and 5.1 surround signal, pair of additional bargraphs selectable: "M" bargraph (integrated - loudness value of an adjustable dynamic time frame, summation of Momentary values) "I" bargraph (integrated - loudness value of a longterm reading, infinite or manual control) Peak value memory max. Loudness value, max. peak Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "L"	Display	L + R (2-ch. Stereo), surround mode for channels 1 to 6
Weighting filters Linear, A, C, Leq(M)(CCIR-2k), ITU RLB, RTW mode, all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Display Vertical bargraphs for each channel of the 2-ch. stereo and 5.1 surround signal, pair of additional bargraphs selectable:	Calibration	SPL reference 72 to 80 dB (singel channel)
all RMS (fast/slow) Leq Range 70 to 98 dB (with weighting as selected above) Program Meter: ITU BS.1771 Loudness Meter Display Vertical bargraphs for each channel of the 2-ch. stereo and 5.1 surround signal, pair of additional bargraphs selectable: • "M" bargraph (integrated - loudness value of an adjustable dynamic time frame, summation of Momentary values) • "L" bargraph (Integrated - loudness value of an adjustable dynamic time frame, summation of Momentary values) • "L" bargraph (Integrated - loudness value of a longterm reading, infinite or manual control) Peak value memory Max. Loudness value, max. peak Numeric level display	Total loudness/SPL	70 to 98 dB (without LF channel)
Program Meter: ITU BS.1771 Loudness Meter Display Vertical bargraphs for each channel of the 2-ch. 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) Peak value memory max. Loudness value, max, peak Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "L"	Weighting filters	
Display Vertical bargraphs for each channel of the 2-ch. 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) Peak value memory max. Loudness value, max, peak Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "L"	Leq	Range 70 to 98 dB (with weighting as selected above)
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) • "I" bargraph (integrated - loudness value of an adjustable dynamic time frame, summation of Momentary values) • "L" bargraph (integrated - loudness value of a longterm reading, infinite or manual control) Peak value memory max. Loudness value, max. peak Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "L"	Program Meter: ITU BS.17	71 Loudness Meter
Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "L"	Display	 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,
Numeric level display selectable, readout of "I" or/and "L" bargraphs, if selected, "L"	Peak value memory	max. Loudness value, max. peak
	Numeric level display	selectable, readout of "I" or/and "L" bargraphs, if selected, "L"

Correlator spot indicator	displayed with stereo channel pair, left at the bottom
	of the bargraphs
Scales	Loudness scale according to ITU BS.1771: -21 to +9 dBLU or -31 to 0 LKFS
Weighting filter	K-filter acc. to ITU BS.1770
Reference value for "0"	-24 dBFS, range: -25 to -10 dBFS, selectable in 1 dB steps
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 summation of the stereo signal	0.0 dB, selectable between -3 dB and + 3 dB in 0.5 dB steps
Other Instruments	
	Surround Sound Analyzer
	Multi Correlator
	Real Time Analyzer
	Audio Vectorscope
	AES3 Statusmonitor
General	
Supply voltage	24 V DC (21 V - 30 V DC)
Current consumption	290 mA (24 V DC) nominal, switch-on current is much higher
Power consumption	6,5 W maximum
Operating temperature range	0° to 45° C
Storage temperature range	-30° C to +85° C
Display	
Туре	color TFT, 6.5", VGA (640 x 480 pixel), visible area 132 x 99 mm
Connectors	
Digital input, Digital output	25-pin Sub-D-F socket each
Monitor output	15-pin Sub-D-F socket (VGA)
Remote	15-pin Sub-D-F socket
DC connector	Type "Binder 710" locking 4-pin low voltage connector
Design, Dimensions	·/F=
10600-PLUS (table-top unit)	Case: graphite grey (RAL 7024), Scale, front: silver, labeling: black
Dimensions	176.5 x 125.,5 x 61.5 mm (W x H x D excl. table stand)
Weight	approx. 1050 g incl. table stand
10660-VID (half-19"/3U module)	
Dimensions	213.8 x 132.6 x 242.5 mm (W x H x D, without adapter bars)
Weight	approx. 1200 g
Items delivered	appiox. 1200 g
	10600-PLUS: manual, table stand, mains adapter
	10660-VID: manual, mounting adapter bars, DC counter plug
Optional Accessories	
	1163 Snake cable 25-pin Sub-D-M to 8 XLR-M (output fan-out)
	1186 Snake cable 25-pin Sub-D-M to 8 XLR-F (input fan-out)
	13711 Adapter frame for mounting into 190 mm systems
	13713 Panel mounting kit (for mounting 10600 in panel cut-outs
	1171-R wide voltage power supply 90 - 264 V AC/24 V DC, 0.63 A
	1175-R wide voltage power supply 100 - 240 V AC/24 V DC, 2.7 A

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