

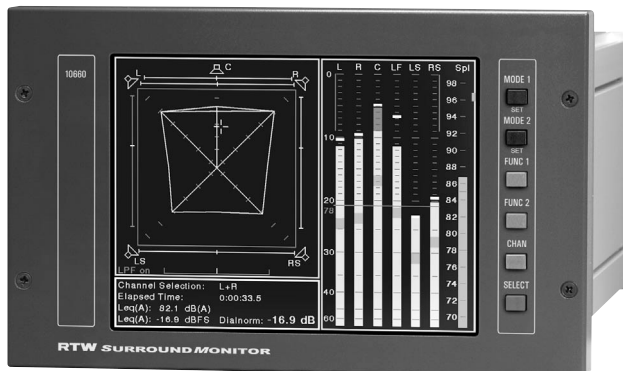
## SurroundMonitor 10660-VID

### GENERAL DESCRIPTION

The RTW SurroundMonitor 10660-VID contains in a half-19" plug-in module for standard 19" rack-mount cabinets for wave form monitors a digital 6-channel surround display unit with Peak Program Meter, ITU BS.1771 Loudness Meter and Surround Sound Analyzer especially for digital multi-channel and surround applications in video studios.

- 6-channel multi-standard peakmeter
- ITU BS.1771 Loudness Meter
- Loudness/Leq display
- Surround Sound Analyzer
- Audio Vectorscope
- 10-fold Correlator
- Real Time Analyzer
- Dialnorm Meter
- AES/EBU Status display
- Stop Watch

The RTW SurroundMonitor 10660-VID features three AES-3 digital inputs. Comprehensive menus allow a user defined configuration of the instrument to meet with the requirements of the application. This settings may be saved to or recalled from memory as User Presets.



**6-ch. Peakmeter • ITU BS.1771 Loudness • Loudness/Leq • Surround Sound Analyzer • 10-fold Correlator • RTA Vectorscope • Dialnorm • AES/EBU Status • Stop Watch**

### TECHNICAL SPECIFICATIONS

#### General

Supply voltage:	+24 V DC
Current drain nominal:	290 mA (power-up current is much higher)
Operating temperature range:	0° to +45° celsius
Weight:	approx. 750 g
Connectors:	2 x 25-pin Sub-D-F 1 x 15-pin Sub-D (Remote) 1 x 15-pin Sub-D (VGA) 1 x 4-pin low voltage connector Binder 710 (DC)
Dimensions:	213,8 x 132,6 x 242,5 mm (half-19"/3U)

#### Digital Inputs

Digital inputs:	3 (Stereo), AES3, transformer balanced
Input impedance:	110 Ω or Hi-Z
Sample rate:	32 kHz to 96 kHz

#### Digital Outputs

Digital output:	3 (Stereo), AES3, input signal looped through, unbuffered
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#### Display

Display:	VGA color TFT, 640 x 480 pixel, 132 x 99 mm
Colors:	8
Reversal direction:	12 o'clock
Viewing angle:	horizontal 60° typ., vertical 60° typ.
Contrast:	250 at reversal direction

#### Program Meter: Digital Peakmeter (PPM)

Level display:	up to 6 channels, peak hold indicator switchable, vertical display orientation
Viewing area:	50 x 98 mm (W x H)
Bargraph length:	90 mm
Display modes:	5.1 surround, 3.1 surround, 1 x Stereo, 2 x Stereo, 3 x Stereo, 2-channel, 4-channel, 6-channel
Peak value memory:	maximum peak level, peak hold
Numeric level display:	selectable, shown on the lower left side of the display
Correlator spot indicator:	switchable, in 6-ch. mode for up to 3 channel pairs (at the bottom of each bargraph pair on the left)

Loudness meter:	additional spot indicator displayed on the bargraphs of the level display, RTW mode or A-, C-, RLB, CCIR-2k weighting, RMS
Scales digital:	Dig60dB: -60 to 0 dB FS, Dig20dB: -20 to 0 dB FS, Dig+18...-2 dB (+18 dB = 0 dB FS), Dig+18...-18dB (+18 dB = 0 dB FS), Dig+20...-40dB (+20 dB = 0 dB FS), ARD+9...-60dB (+9 dB = 0 dB FS)
Scales quasi analog:	qARD+9...-60dB, qDIN+10, qDIN+5, qNordic, qBR IIa, qBR IIb, qZoom +/-10 dB), qZoom +/-1 dB)
Headroom:	-5 to -20 dB, adjustable in steps of 1 dB
Integration time (Attack):	Scales digital: Sample, 0.1 ms, 1 ms, 10 ms; Scales quasi analog: according to standard or sample, 0.1 ms, 1 ms
Fall back time:	according to selected standard (1.5 s/20 dB for DIN)
Gain:	<ul style="list-style-type: none"> <li>• Scales digital: +40 dB;</li> <li>• Scales quasi analog: +20 dB (qDIN scales, qZoom scales), +40 dB (qBritish, qNordic)</li> </ul>
High pass filter:	OFF, 5 Hz, 10 Hz, 20 Hz
Peak hold indicator:	integration time same as level display or 1 sample (selectable)

#### Total Loudness Meter (PPM)

Display:	in 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, RLB, CCIR-2k, RTW loudness, all RMS (fast or slow)
Leq:	range 70 to 98 dB (with weighting as selected above)

#### Digital Errors (PPM)

Digital Over indicator:	red spot indicators above each bargraph
Threshold:	FS, FS-1LSB, FS-2LSB, -0.1, -0.5, -1.0, -2.0 or -3.0 dB FS
Attack time:	1 to 15 samples
Word width:	16 to 24 bit

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Mute indicator: red spot indicators below each bargraph  
Threshold: all bits digital „0“  
Attack time: 50, 100, 200, 300 ms  
Threshold level: 5 to 80 samples, adjustable in steps of 5 samples

### Program Meter: ITU BS.1771 Loudness Meter

ITU BS.1771 Loudness display:

- bargraphs vertical for up to 6 channels
- M bargraph (Momentary - summation of momentary loudness values of all channels for a short span of time)
- I bargraph (Integrated - Loudness value of an adjustable dynamic time frame, summation of Momentary values)
- L bargraph (Longterm - Loudness value infinite or with manual control)

Weighting filter: RLB (K)  
Viewing area: 50 x 98 mm (W x H)  
Bargraph length: 90 mm  
Display modes: Surround 5.1, 2-Channel Stereo  
Peak value memory: max. Loudness-value/max. peak  
Numeric level display: switchable, displayed in the lower left area of the display (Multi Instrument 2) showing a combination of two of M, I, L Loudness values displayed with the Stereo channel pair (at the bottom of the bargraph pair on the left)

Correlator spot indicator: Loudness scale according to ITU BS.1771: -21 to +9 dB LU or -31 to 0 LKFS

Scale: Loudness scale according to ITU BS.1771: -21 to +9 dB LU or -31 to 0 LKFS

Reference value for 0 dB LU: -24 dB FS, selectable in steps of 1 dB in the range of -25 dB FS to -10 dB FS

Offset for LKFS scale: 0 or -3 dB  
Headroom: 0 to +9  
Integration time for Momentary: 125 ms (IEC), 250 ms (IRT), 500 ms, 750 ms, 1 s (IEC), 1.5 s, 2 s

Integration time for Integrated: 20 s, time frame selectable between 1 s and 20 s

Threshold for adoption of M values into the I and L reading: -20, selectable between 0 and -39, Off  
Alarm threshold: +8, selectable between 0 and +9  
Alarm period: 1 s, selectable between 1 s and 9 s, Off

Level adjustment for the summation of the Stereo signal L + R: 0.0 dB, selectable between -3 dB and +3 dB in steps of 0.5 dB

Level adjustment for the summation of the Center-Signal L + R: 0.0 dB, only for 5.1 Surround signals selectable between -3 dB and +3 dB in steps of 0.5 dB

Level adjustment for the summation of the Signal LS + RS: 1.5 dB, only for 5.1 Surround signals selectable between -3 dB and +3 dB in steps of 0.5 dB

Inclusion and Level adjustment for summation of LFE-Signal: off (not included), 0.0 dB (included), +10.0 dB (included and adjusted), only for 5.1 Surround signals selectable

**Digital Errors (ITU BS.1771)**  
Digital Over indicator: red spot indicators above each bargraph  
Threshold: FS, FS-1LSB, FS-2LSB, -0.1, -0.5, -1.0, -2.0 or -3.0 dB FS  
Attack time: 1 to 15 samples  
Word width: 16 to 24 bit

Mute indicator: red spot indicators below each bargraph  
Threshold: all bits digital „0“  
Attack time: 50, 100, 200, 300 ms  
Threshold level: 5 to 80 samples, adjustable in steps of 5 samples

### Surround Sound Analyzer

Surround mode: 3/1, 3/2 or 5.1, display of LF channel in Program Meter only  
Function: weighted loudness display:

- PPM mode: A, C, Leq(M) CCIR-2k, ITU RLB, RTW loudness
- ITU BS.1771 mode: RLB

Indicators:

- graphics display indicating the single channel and total program loudness (Total Volume Indicator - TVI),
- switchable displays of position and width of phantom sources (Phantom Source Indicator - PSI)
- switchable displays of correlation of adjacent channels,
- position of dominant sound event (Dominance Vector - DMI)
- switchable low pass filter with additional correlator for the LS/RS channels

### Multifold Phase Meter (Multi Correlator)

in surround mode: 10 phase meters for all channel pairs  
in 6-channel mode: up to 3 phase meters for up to 3 ch. pairs  
Display mode: spot indicator or bargraph  
Display length: 50 mm width  
Scale range: -1 r to +1 r  
Standard color setting: red: -1 r to -0.1 r  
yellow: 0 r  
green: 0.1 r to +1 r  
selectable  
Colors: fast: 1.0 s, slow 2.5 s  
Attack time: fast: 1.0 s, slow 2.5 s  
Negative peak correlation memory: included in Peak Memory  
Memory accuracy: better 0.1 r  
Weighting filter: 300 Hz first order low pass (switchable) for LS/RS phase meter in 5.1 surround mode

### Audio Vectorscope (Lissajous)

Viewing area: 45 x 45 mm (W x H)  
Display colors: 8  
AGC: auto  
Modes: x/y or M/S  
Time of persistence: fast, medium, slow

### Real Time Analyzer

Bands: 31, 1/3 octave  
Frequency range: 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 display

Visible area: 72 x 18 mm or 72 x 80 (W x H)  
Status information: locked, decoded AES/EBU status, parity, validity

### Controls and Display Elements

Keys: MODE 1 (SET), MODE 2 (SET), FUNC 1, FUNC 2, CHAN, SELECT

### ITEMS DELIVERED

SurroundMonitor 10660-VID:

- SurroundMonitor (half-19"/3U plug-in module for standard 19" rack-mount cabinets for waveform monitors)
- Rack-mounting adapters (two pieces) for cases with 407 mm mounting depth
- Counter plug for power supply
- Operating manual

**Order number: 10660-VID**

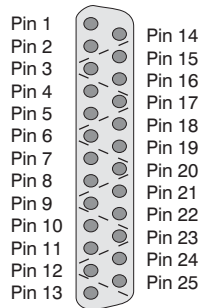
## SurroundMonitor 10660-VID

### CONNECTION

#### Input and Output connector (25-pin Sub-D-F)

Pin: Function:

21	in- resp. output digital 3 (+, hot)
9	in- resp. output digital 3 (-, cold)
22	shield/chassis
10	in- resp. output digital 2 (+, hot)
23	in- resp. output digital 2 (-, cold)
11	shield/chassis
24	in- resp. output digital 1 (+, hot)
12	in- resp. output digital 1 (-, cold)
25	shield/chassis



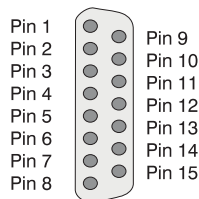
(External view of the connector)

**Note:** The incoming AES-3 signals are passive looped through from the input connector to the output connector.

#### Remote connector (15-pin Sub-D-F)

Pin: Function:

1	common potential for ext. switches - Gnd
9	external function selection: „FUNC 1“
2	external function selection: „FUNC 2“
3	external function selection: „CHAN“
6	external function selection: „MODE 1/SET“
7	external function selection: „MODE 2/SET“
8	external function selection: „SELECT“

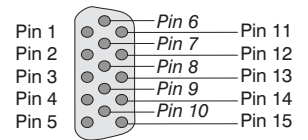


(External view of the connector)

#### VGA connector (15-pin Sub-D-F)

Pin: Function:

1	R   Video signal
2	G
3	B
4	don't wire, for future use
5	GND
6	GND
7	GND
8	GND
9	don't wire, for future use
10	GND
11	don't wire, for future use
12	don't wire, for future use
13	H-sync
14	V-sync
15	don't wire, for future use



(External view of the connector)

**Note:** The connecting VGA cable has to be of 10 to 15 **maximum** length!

#### Power supply connector (4-pin low voltage type Binder 710)

Pin: Function:

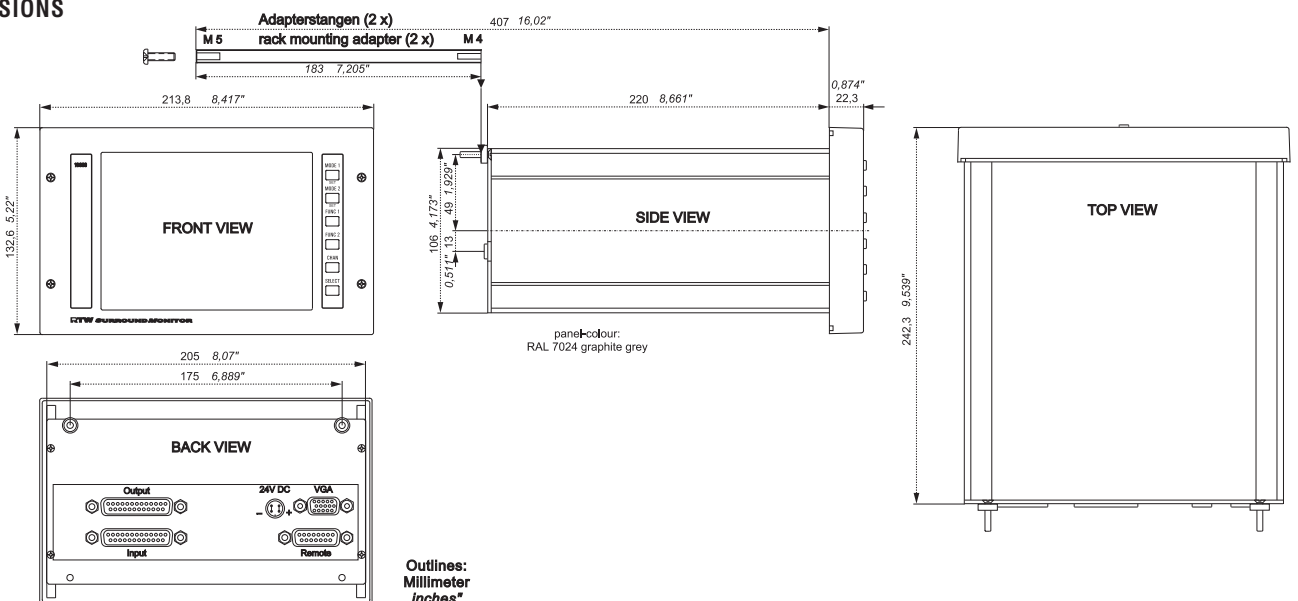
1-2	+24 V	3	2
3-4	0 V	4	1



### COLORS

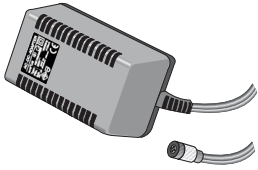
Case: graphite grey RAL 7024,  
Scale: white grey RAL 9002

### DIMENSIONS

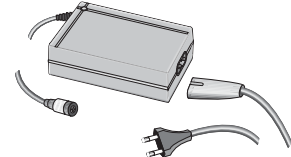


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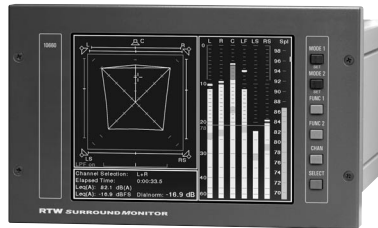
### ACCESSORY COMBINATION



- Wide voltage power supply **1171-R**  
 90 - 240 V AC/24 DC, 630 mA
- Euro plug
  - Locking 4-pin low voltage connector



- Wide voltage power supply **1175-R**  
 100 - 240 V AC/24 DC, 2.7 A
- Corresponding power cable
  - Locking 4-pin low voltage connector



SurroundMonitor 10660-VID  
 Half-19" plug-in module



- 8-pair snake cable **1186**, 4 m
- Distributes 25-pin Sub-D connector to 8 XLR-F cable connectors
  - For connecting to "Input" connector



- 8-pair snake cable **1163**, 4 m
- Distributes 25-pin Sub-D connector to 8 XLR-M cable connectors
  - For connecting to "Output" connector

Subject to changes without prior notice 02/2010