# Data Sheet

## SurroundMonitor 10830-218

### GENERAL DESCRIPTION

The RTW SurroundMonitor as panel-mount unit 10830-218 for e. g. SSL consoles contains seven instruments visible on two colour-TFT-displays.

- 8-channel multi-standard peakmeter
- Surround Sound Analyzer
- 2-, 4-, and 5-channel audio vectorscopes
- ITU Loudness/Loudness/Leq display
- Correlator
- Real Time Analyzer
- Dialnorm meter
- AES/EBU Status display

The SurroundMonitor 10830-218 features balanced analog inputs as well as AES/EBU 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. ITU Loudness measurement functions are available with software version V6.0 and higher.



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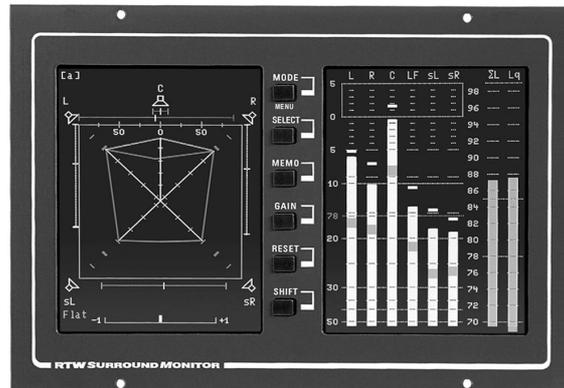
**Surround Sound Analyzer • ITU Loudness • Loudness Leq • Audio Vectorscope • Peakmeter • Correlator • RTA AES/EBU Status • Analog • Digital • 8-Channel • Mixed mode**

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### TECHNICAL SPECIFICATIONS

#### General

| | |
|---|---|
| Supply voltage: | +24 V DC |
| Current drain (nominal): | 920 mA (power-up current is much higher) |
| Operating temperature: | 0° to +45° celsius |
| Weight: | approx. 1300 g net |
| Connector: | 1 x 9-pin Sub-D-F (remote) |
| | 1 x 4-pin flange connector type 710 (DC) |
| | 2 x 25-pin Sub-D-F |
| Dimensions: | 218 x 160 x 60.2 mm (W x H x D) |

#### Analog Inputs:

| | |
|---|---|
| Inputs: | 8 x analog, electronically balanced |
| Maximum input level: | +24 dBu |
| Adjustable range for reading reference: | –2 dBu to +13 dBu |
| CMRR: | min. 60 dB |
| Input impedance: | min. 10 kΩ (30 Hz to 20 kHz) |

#### Digital Inputs:

| | |
|---|---|
| Digital input: | 4 x AES/EBU |
| Input impedance: | 110 Ω or Hi-Z |
| Sample rate: | 32 kHz to 96 kHz |

#### Digital Outputs:

| | |
|---|---|
| Digital Output: | 4 x AES/EBU, input signal looped through |

#### Display

| | |
|---|---|
| Display: | 2 x Color TFT 75 x 102 mm |
| Resolution: | 240 x 320 pixel each |
| Colors: | 8 |
| Viewing area: | horizontal +40°/-65° |
| | vertical +/-65°, contrast >=5 |
| Viewing direction: | 3 o' clock |
| Contrast: | typical 1 : 60 |

#### Peakmeter

| | |
|---|---|
| PPM display vertical: | up to 8 channels, peak hold indicator switchable, additional correlator with spot indicator |

| | |
|---|---|
| Bargraph length: | 95 mm |
| Modes and bargraph configuration: | • 2-channel stereo (inputs 1-2, 3-4, 5-6, 7-8 selectable) |
| | • 8-channel (8 x 1 ch., 4 x 2 ch. or groups of 2 + 6, 4 + 4, 6 + 2 ch. with individual selectable standard and domain) |
| | • Surround 3/1 |
| | • Surround 3/2 (5.1) |
| Peak memory: | additional peak hold indicators |
| Numerical 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 diplayed, when the MEMO key is pressed |
| Correlation spot indicator: | switchable (but only available in the 8-channel mode with 4 stereo channels) |
| Loudness meter: | Additional spot indicator displayed on the bargraphs: acc. to ITU BS.1770, RTW mode or A, C or CCRIR-2k weighting, RMS |

#### Peakmeter analog

| | |
|---|---|
| Scales: | DIN+5, DIN+10, Nordic, British (Br) IIa, British (Br) IIb, VU, Zoom 20, Zoom 2, +24 dBu, +20 dBr |
| Reference level: | • +6 dBu for: |
| | DIN (0 dB display) |
| | Nordic (+6 dB display) |
| | Zoom 20 (0 dB display) |
| | VU (adjustable lead from 0 to 10 dB) |
| | • +8 dBu for: |
| | Br IIa („6" display) |
| | Br IIb („8" display) |
| Integration time: | according to selected standard or selectable (1 ms, 0.1 ms) |
| Fall back time: | acc. to standards (i. e. DIN: 1.5 s/20 dB) |
| Gain: | according to standards: |
| | +20 dB (DIN, Zoom) or |
| | +40 dB (Nordic, IIa, IIb) |
| Memory: | Maximum level, peak hold |

**RTW**

## SurroundMonitor 10830-218

### Peakmeter digital

| | |
|---|---|
| Word width: | 16 to 24 bit |
| Scales digital: | 0 dB FS to –60 dB FS, 0 dB FS to –20 dB FS |
| Scale quasi analog: | [ARD+9], [DIN+5], [DIN+10], [Nordic], British [Br IIa], British [Br IIb], [VU] |
| Special scales: | Zoom 20, Zoom 2, +18..0 dB, +18..–18 dB (0 dB FS @ +18 dB) –40..+20 dB (0 dB FS @ +20 dB) |
| Headroom: | –5 dB to –20 dB, adjustable in steps of 1 dB |
| Integration time (Attack): | acc. to corresponding standards (Norm) or selectable: sample, 0.1 ms, 1 ms, 10 ms |
| Fall back time: | acc. to standards (i. e. DIN: 1.5 s/20 dB) |
| Gain: | according to standards: +20 dB (Zoom, quasi DIN) or +40 dB (all digital scales, quasi scales [ARD+9], [Nordic], [Br IIa], [Br IIb]) |
| High pass filter: | OFF, 5, 10 or 20 Hz |
| Peak hold indicator: | integration time same as level display or sample (selectable) |
| Memory: | Maximum level, peak hold |
| Digital over indicator: | red spot indicator above each bargraph |
| Threshold: | FS, FS-1LSB, FS-2LSB, –0.1 dB FS, –0.5 dB FS, –1 dB FS, –2 dB FS or –3 dB FS |
| Attack time: | 1 – 15 samples |
| Word width: | 16 – 24 bit |
| Mute indicator: | red spot indicators below each bargraph |
| Threshold: | All bits digital „0" |
| Attack time: | 50, 100, 200 oder 300 ms or 5 to 80 samples (adjustable in steps of 5) |

### Total Loudness Meter/Leq

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

### ITU Loudness Meter

| | |
|---|---|
| Display: | • additional spots on each level display bargraph |
| | • "M" bargraph (momentary): sum of all single channels for a short span of time |
| | • "I" bargraph (short term): summed integrated Loudness value of a dynamic time frame |
| Weighting filter: | RLB (K) acc. to ITU BS.1770, RMS |
| Scale: | –21 to +9 dB LU (Loudness Units) |
| Reference value for "0 dB LU" display: | adjustable in the range from –25 to –10 dB FS in steps of 1 dB |
| Integration time "M": | 125 ms (IEC), 250 ms (IRT), 500 ms, 750 ms, 1 s (IEC), 1.5 s |
| Integration time "I": | 1 to 12 s, low level modulation can be eliminated |

### Surround Sound Analyzer

| | |
|---|---|
| Surround formats: | 3/1 or 3/2 (5.1), display of LF channel in peakmeters only |
| Function: | weighted loudness display (A, C, CCIR-2k, RTW loudness, RLB, all RMS) |
| Indicators: | • graphics display indicating the single channel and total program loudness (Total Volume Indicator - TVI) |
| | • correlation display of adjacent channels |
| | • position of dominant sound event (Dominance Vector - DMI) |
| | • position and with of phantom (virtual) sound sources (Phantom Source Indicator -PSI) |
| | • low frequency sL (LS)/sR (RS) phase meter |
| | • additional 2-channel or 4-channel vectorscope selectable |

### Multi-Correlator

| | |
|---|---|
| in surround modes: | up to 10 phase meters for all channel pairs |
| in 8-channel mode: | up to 4 phase meters for up to 4 stereo channel pairs |
| Display mode: | spot indicator or bargraph |
| 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 |
| Color: | adjustable |
| Attack-/release time: | 1.0 s, 2.5 s |
| Memory: | most negative value |
| Memory accuracy: | better 0.1 r |
| Weighting filter: | 300 Hz first order low pass (switchable) for sL/sR phase meter in 3/2 (5.1) surround mode |

### Audio Vectorscope

| | |
|---|---|
| Modes: | 2/0 (stereo), 3/1, 3/2 |
| Channel configuration: | • 2-channel and 8-channel mode: displays the channel pairs 1 - 2, 3 - 4, 5 - 6, 7 - 8, the odd channel is displayed as left |
| | • surround modes: channel configuration is set automatically according to the presets |
| Viewing area: | 70 x 70 mm |
| Display color: | 8 |
| AGC: | Auto/manual |
| Calibration mode: | available, 20° and 90° grids are available in 2-channel mode only |
| M/S mode: | available |
| Presistence: | fast, medium, slow |

### Real Time Analyzer

| | |
|---|---|
| Filter: | 31, 1/3 octave |
| Frequency range: | • 20 Hz to 20 kHz in normal mode |
| | • 5 Hz to 5 kHz in LF mode |
| Standard: | according to 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: | selectable |

### AES/EBU Status Monitor

| | |
|---|---|
| Status display: | digital channels 1 - 2, 3 - 4, 5 - 6, 7 - 8 |
| Audio data bit display: | activity of digital audio data bits |
| Display modes: | hex, binary, plain text |

### Remote control

| | |
|---|---|
| Parallel interface: | • external function control: Mode, Select, Memo, Gain, Reset, Shift |
| | • external preset recall: Preset 1 - 6 |

### Controls and additional display elements

| | |
|---|---|
| Keys: | Mode, Select, Memo, Gain, Reset, Shift |

### ITEMS DELIVERED

| | |
|---|---|
| **SurroundMonitor 10830-218** | • SurroundMonitor (panel-mount unit for e. g. SSL consoles) |
| | • Counter plug for power supply |
| | • Operating manual |
| | **Order number: 10830-218** |

## SurroundMonitor 10830-218

## CONNECTION

**Analog Connector** (25-pin Sub-D-F)

Pin:     Function:

| Pin | Function |
|---|---|
| 1 | audio input analog 8 (+, hot) |
| 14 | audio input analog 8 (-, cold) |
| 2 | screen/case |
| 15 | audio input analog 7 (+, hot) |
| 3 | audio input analog 7 (-, cold) |
| 16 | screen/case |
| 4 | audio input analog 6 (+, hot) |
| 17 | audio input analog 6 (-, cold) |
| 5 | screen/case |
| 18 | audio input analog 5 (+, hot) |
| 6 | audio input analog 5 (-, cold) |
| 19 | screen/case |
| 7 | audio input analog 4 (+, hot) |
| 20 | audio input analog 4 (-, cold) |
| 8 | screen/case |
| 21 | audio input analog 3 (+, hot) |
| 9 | audio input analog 3 (-, cold) |
| 22 | screen/case |
| 10 | audio input analog 2 (+, hot) |
| 23 | audio input analog 2 (-, cold) |
| 11 | screen/case |
| 24 | audio input analog 1 (+, hot) |
| 12 | audio input analog 1 (-, cold) |
| 25 | screen/case |

Pin 1, Pin 2, Pin 3, Pin 4, Pin 5, Pin 6, Pin 7, Pin 8, Pin 9, Pin 10, Pin 11, Pin 12, Pin 13
Pin 14, Pin 15, Pin 16, Pin 17, Pin 18, Pin 19, Pin 20, Pin 21, Pin 22, Pin 23, Pin 24, Pin 25

**Remote Control Connector** (9-pin Sub-D-F)

Pin:     Function:

| Pin | Function |
|---|---|
| 1 | common potential for ext. switches-Gnd |
| 2 | external function selection: select |
| 3 | external function selection: gain |
| 4 | external function selection: shift |
| 5 | for future use |
| 6 | external function selection: mode - menu |
| 7 | external function selection: memo |
| 8 | external function selection: memo reset |
| 9 | for future use |

Pin 1, Pin 2, Pin 3, Pin 4, Pin 5, Pin 6, Pin 7, Pin 8, Pin 9

**Digital Connector** (25-pin Sub-D.F)

Pin:     Function:

| Pin | Function |
|---|---|
| 1 | audio output digital 4 (+, hot) |
| 14 | audio output digital 4 (-, cold) |
| 2 | screen/case |
| 15 | audio output digital 3 (+, hot) |
| 3 | audio output digital 3 (-, cold) |
| 16 | screen/case |
| 4 | audio output digital 2 (+, hot) |
| 17 | audio output digital 2 (-, cold) |
| 5 | screen/case |
| 18 | audio output digital 1 (+, hot) |
| 6 | audio output digital 1 (-, col) |
| 19 | screen/case |
| 7 | audio input  digital 4 (+, hot) |
| 20 | audio input  digital 4 (-, cold) |
| 8 | screen/case |
| 21 | audio input  digital 3 (+, hot) |
| 9 | audio input  digital 3 (-, cold) |
| 22 | screen/case |
| 10 | audio input  digital 2 (+, hot) |
| 23 | audio input  digital 2 (-, cold) |
| 11 | screen/case |
| 24 | audio input digital 1 (+, hot) |
| 12 | audio input  digital 1 (-, cold) |
| 25 | screen/case |

Pin 1, Pin 2, Pin 3, Pin 4, Pin 5, Pin 6, Pin 7, Pin 8, Pin 9, Pin 10, Pin 11, Pin 12, Pin 13
Pin 14, Pin 15, Pin 16, Pin 17, Pin 18, Pin 19, Pin 20, Pin 21, Pin 22, Pin 23, Pin 24, Pin 25

**Note:** Digital I/O´s are in parallel, not active buffered.

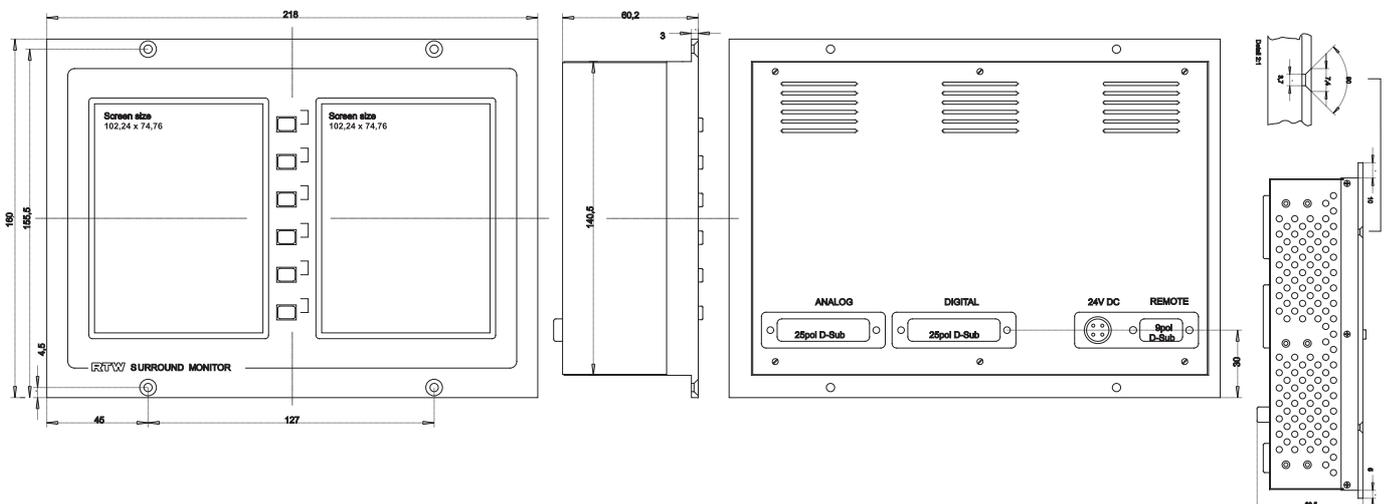**Power Supply Connector** (4-pin low voltage type Binder 710)

Pin:     Function:

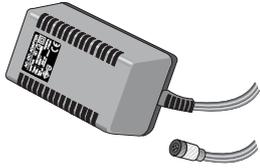| Pin | Function |
|---|---|
| 1-2 | +24 V |
| 3-4 | 0 V |

3, 2, 4, 1

### COLORS

Front panel: Anthracite grey RAL 7016, Scale: Grey white RAL 9002

## DIMENSION

**RTW**

# Data Sheet
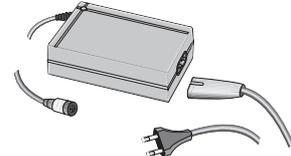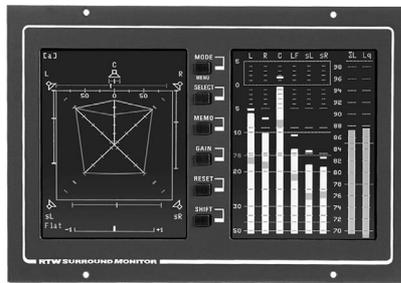
## ACCESSORY COMBINATION

Mains adapter **1169-R**
90 - 240 V AC/24 V DC, 1.05 A
• 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 10830-218
Panel-mount unit, e. g. fits to SSL consoles

8-pair snake cable **1167**, 4 m
• Distributes 25-pin Sub-D
  connector to 4 XLR-F and 4
  XLR-M cable connectors
• For connecting to "Digital"
  connector

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

Technical changes without prior notice 02/2010