Bedienungsanleitung
Operating manual
SurroundMonitor

RTW
RADIO-TECHNISCHE WERKSTÄTTEN GmbH & Co.KG
INSTRUMENTS FOR STUDIO APPLICATIONS

CE

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Über diese Anleitung

Diese Anleitung ist das Bedienungshandbuch für die Produktgruppe SurroundMonitor. Sie beschreibt ausführlich die Merkmale und Funktionalität dieses Anzeigeinstrumentes.

📖 **Dieses Symbol wird im gesamten Handbuch verwendet, um sie auf weiterführende Informationen zum betreffenden Thema hinzuweisen.**

Das erste Kapitel beinhaltet eine grundlegende Einführung zum Anzeigeinstrument.

Das zweite Kapitel erklärt, wie der SurroundMonitor für den Einsatz vorbereitet wird. Dort ist der richtige Startpunkt für das Studium des Handbuches, wenn sie das Gerät unmittelbar in Betrieb nehmen möchten. Dieses Kapitel enthält außerdem die Erklärung verschiedener Symbole, die für Hinweise zu ihrer Sicherheit verwendet werden.

Das dritte Kapitel beschreibt die Tastenfunktionen und Einstellmenüs zur Anpassung des SurroundMonitors an die Bedürfnisse in ihrer Anwendung.

Das vierte Kapitel enthält Hinweise zur Anpassung des Gerätes an ihre Systemumgebung und zur Lokalisierung von Fehlern.

Das neunte Kapitel enthält mechanische Zeichnungen.

Im Anhang finden sie die vollständigen technischen Daten des SurroundMonitors, die CE-Konformitätserklärung und die Menüstruktur (herausklappbar).

Scope of this manual

This manual is the operating handbook for the product series RTW SurroundMonitor. Features and functionality of the instrument is described in detail.

📖 **This symbol is used in the manual to draw your attention to related topics.**

Chapter five contains a basic description of the instrument.

Chapter six explains the setup of the SurroundMonitor. This would be the right point to start immediatly before operating the unit. This chapter also contains important information about safety.

Chapter seven describes all key functions and setup menus to adapt the SurroundMonitor to your personal area of application.

Informations about analog input adjustments and hints for troubleshooting can be found in chapter eight.

Chapter nine contains mechanical drawings.

The appendix covers all specifications, declarations of conformity and the menu structure (can be fold out).

Sicherheits-Symbole

Die folgenden Symbole sind auf dem Gehäuse des Gerätes oder auf einzelnen Modulen sowie in dieser Bedienungsanleitung zu finden:



WARNUNG! - Dieses Symbol warnt Sie vor einer potenziell gefährlichen Situation, etwa dem Anliegen einer gefährlichen Spannung mit dem Risiko eines elektrischen Schlags. Beachten Sie den begleitenden Warnhinweis und verhalten Sie sich besonders vorsichtig.



ACHTUNG! - Dieses Symbol weist Sie auf wichtige Bedienungsaspekte oder auf eine mögliche Betriebssituation hin, bei der Geräte beschädigt werden könnten. Wenn Sie dieses Zeichen auf einem Gerät sehen, suchen Sie im Handbuch nach entsprechenden Hinweisen zu Vorsichtsmaßnahmen.



FUNKTIONALER ERDUNGSANSCHLUSS - Dieses Symbol markiert einen Anschluss, der elektrisch mit dem Referenzpunkt einer Messschaltung oder eines Ausgangs verbunden ist und der für die Erdung aus beliebigen funktionalen Gründen mit Ausnahme von Sicherheitsgründen vorgesehen ist.



SCHUTZERDUNGS-ANSCHLUSS - Dieses Symbol markiert einen Anschluss, der mit leitenden Teilen des Anzeigeinstrumentes verbunden ist. Stellen Sie sicher, dass dieser Anschluss mit einem externen Schutzerdungs-System verbunden ist.

Safety symbols

The following symbols may be marked on the panels or covers of equipment or modules, and are used in this manual:



WARNING! - This symbol alerts you to a potentially hazardous condition, such as the presence of dangerous voltage that could pose a risk of electrical shock. Refer to the accompanying Warning Label or Tag, and exercise extreme caution.



ATTENTION! - This symbol allerts you to important operating considerations or a potential operating condition that could damage equipment. If you see this marked on equipment, consult the User´s manual or Operator manual for precautionary instructions.



FUNCTIONAL EARTH TERMINAL - This symbol marks a terminal that is electrically connected to a reference point and is intended to be earthed for any functional purpose other than safety.



PROTECTIVE EARTH TERMINAL - This symbol marks a terminal that is bonded to conductive parts of the instrument. Confirm that this terminal is connected to an external protective earthing system.

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Operating Manual english

SurroundMonitor

Studer and Vista are trademarks or registered trademarks of the company
Studer Professional Audio,
Regensdorf/Zürich, Schweiz

SSL and SL 9000+ series are trademarks or registered trademarks of the company
Solid State Logic Ltd.,
Oxford, England

This page should be fold out helping you to find information about your model.

Overview

The functions described in this operating manual basically apply to all models according to the design of their inputs. Please refer to the explanatory notes.

The following table shows in which section you will find special informations to your model:

<table>
<tr><th>Model</th><th>Connection</th><th>Open units/ Display exchange</th><th>Drawing dimensions</th><th>Accessories/- Spare parts</th></tr>
<tr><td></td><td colspan="4">see section:</td></tr>
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6.2.
6.3.
6.4.
6.5.
6.6.</td><td rowspan="8">8.4.
8.5.</td><td rowspan="2">9.1.</td><td rowspan="7">9.10.
9.12.
9.16.</td></tr>
<tr><td>10800X-PLUS</td></tr>
<tr><td>10804X-PLUS</td><td>9.2.</td></tr>
<tr><td>10808X</td><td rowspan="4">9.1.</td></tr>
<tr><td>10808X-PLUS</td></tr>
<tr><td>10809X</td></tr>
<tr><td>10809X-PLUS</td></tr>
<tr><td>10810-203</td><td rowspan="14">8.6.
8.7.</td><td>9.4.</td><td>9.11./9.13./9.16.</td></tr>
<tr><td>10815 STU</td><td>9.5.</td><td>9.13./9.16.</td></tr>
<tr><td>10818-203</td><td rowspan="2">9.4.</td><td rowspan="5">9.11.
9.13.
9.16.</td></tr>
<tr><td>10819-203</td></tr>
<tr><td>10820-203</td><td rowspan="3">9.6.</td></tr>
<tr><td>10828-203</td></tr>
<tr><td>10829-203</td></tr>
<tr><td>10830-218</td><td rowspan="2">9.7.</td></tr>
<tr><td>10830 SSL</td><td rowspan="2">9.13.
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<tr><td>10835 SSL</td><td>9.8.</td></tr>
<tr><td>10838-218</td><td>9.7.</td><td rowspan="2">9.11.
9.13.
9.16.</td></tr>
<tr><td>10839-218</td><td>9.8.</td></tr>
<tr><td>10860-VID</td><td rowspan="2">8.8.
8.9.</td><td rowspan="2">9.9.</td><td rowspan="2">9.11.
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9.16.</td></tr>
<tr><td>10869-VID</td></tr>
</table>

5. Introduction

5.1. Pictures

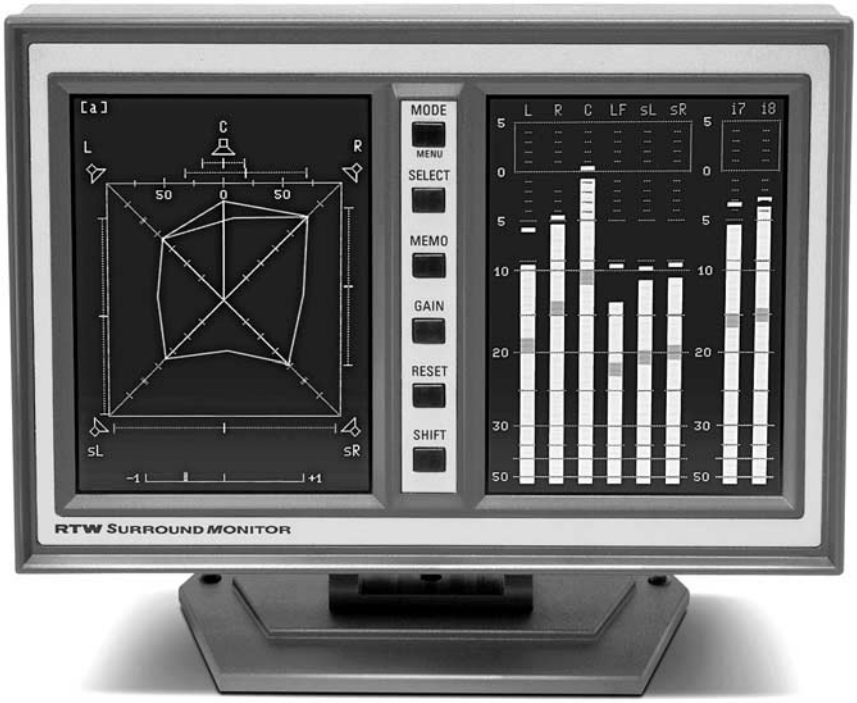


Fig. 5-1: SurroundMonitor table-top unit (example: 10800X-PLUS)

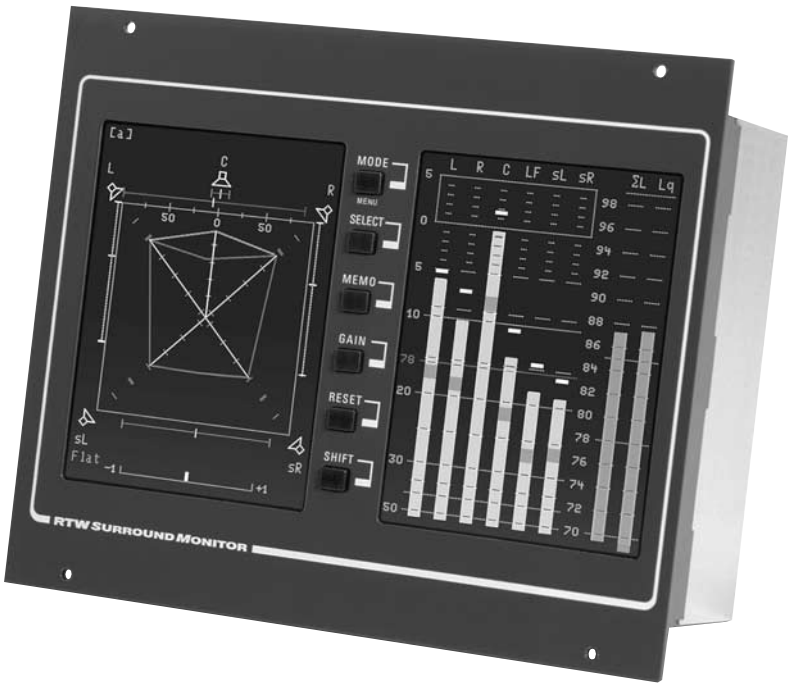


Bild 5-2: SurroundMonitor plug-in unit (example: 10810)

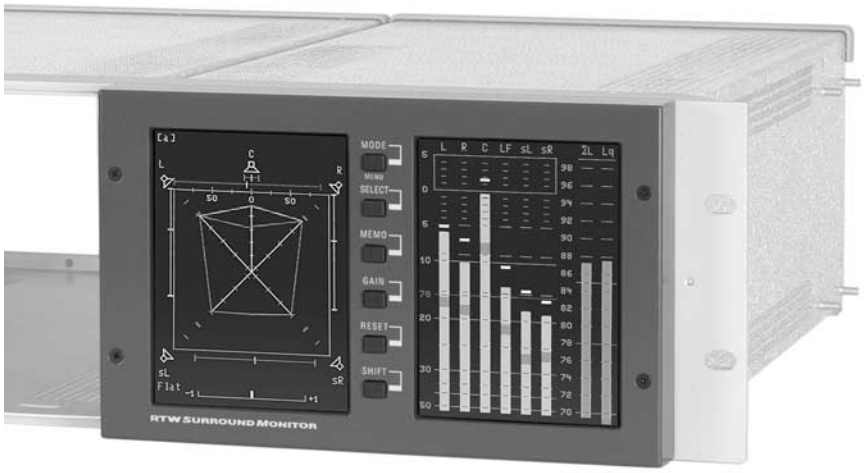


Fig. 5-3: SurroundMonitor for special 19" rack mount cabinets like those of the WFM7F05 of Tektronix® (example of application, rack mount cabinet not included!)

5.2. Description

The SurroundMonitor is a multifunctional display unit housed in a compact desktop cabinet and features alternatively analog-only, digital-only or analog and digital input versions. The unit is designed for pre- and postproduction, DVD-mastering and cinema surround sound. It also allows general multi-channel level control for up to 8 channels.

The SurroundMonitor is divided into two sections, one for an up to a 8-channel peakmeter and the other for an up to 5 channel audio vectorscope or surround analyzer and corresponding correlators.

The SurroundMonitor features a wide variety of setups for its various operation modes. Predefined factory presets can be modified and stored as user presets to meet the requirements of an application.

Further on the SurroundMonitor includes an online help system. In menu mode help information will be displayed on the right screen to assist the user.

5.3. Functions and model summary

The SurroundMonitor features numerous functions indicated on two coloured TFT displays:

- Vectorscope with 2.0, 3.1, 3.2 (5.1) mode (section 5.4
- Correlation display (phase)
- Peak level display
- Alternative +24 dBu max. analog input (10804X-PLUS only)
- Numerical display
- RTA - real time analyzer
- Loudness display
- AES/EBU status display
- Surround sound analyzer
- Dialnorm display

The following versions are available:

Analog and digital inputs:

- Desk-top unit RTW SurroundMonitor 10800X
- Desk-top unit RTW SurroundMonitor 10800X-PLUS
- Desk-top unit RTW SurroundMonitor 10804X-PLUS
- Plug-in unit RTW SurroundMonitor 10810-203
- Plug-in unit RTW SurroundMonitor 10820-203
- Plug-in unit RTW SurroundMonitor 10830-218
- Plug-in unit RTW SurroundMonitor 10860-VID

Analog inputs only:

- Desk-top unit RTW SurroundMonitor 10808X
- Desk-top unit RTW SurroundMonitor 10808X-PLUS
- Plug-in unit RTW SurroundMonitor 10818-203
- Plug-in unit RTW SurroundMonitor 10828-203
- Plug-in unit RTW SurroundMonitor 10838-218

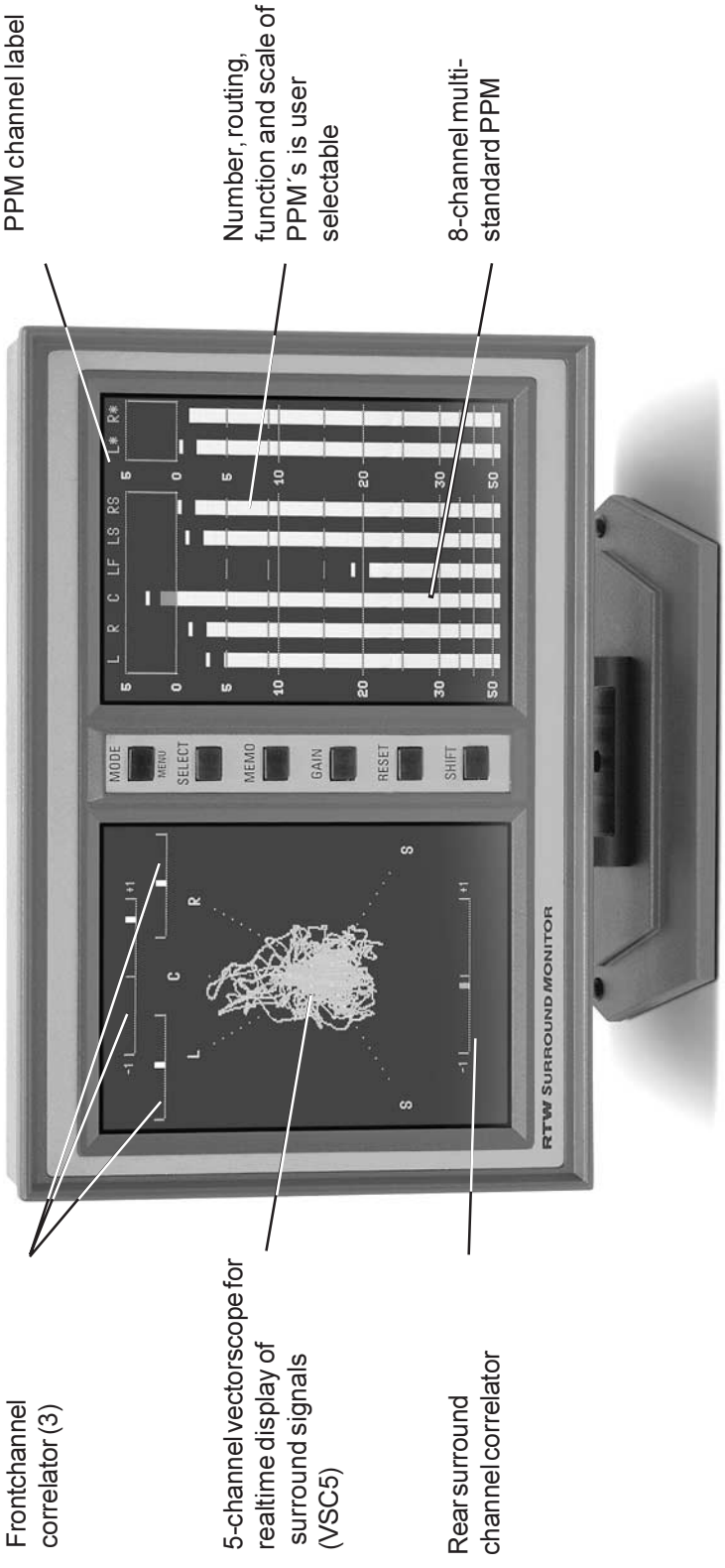
Digital inputs only:

- Desk-top unit RTW SurroundMonitor 10809X-PLUS
- Plug-in unit RTW SurroundMonitor 10819-203
- Plug-in unit RTW SurroundMonitor 10829-203
- Plug-in unit RTW SurroundMonitor 10839-218
- Plug-in unit RTW SurroundMonitor 10869-VID

The following special designed models with analog and digital inputs are only available from the respective manufacturer in conjunction with the corresponding console:

- Plug-in unit for Studer-Vista RTW SurroundMonitor 10815 STU
- Plug-in unit for SSL RTW SurroundMonitor 10830 SSL
- Plug-in unit for SSL SL 9000+ series RTW SurroundMonitor 10835 SSL

5.4. Functions for vectorscope and PPM mode



5.5. Mode: Surround Sound Analyzer

With the help of the Surround Sound Analyzer signals in 3/1 and 3/2 surround-format can be displayed as:

- Balance between front- and surround channels
- Balance of the front L-C-R channels
- Display of front, side and rear phantom sound sources
- Display of dominant sound events, with memory
- Adjustable coordinate system (SPL or loudness)
- Total sound volume indicator for the surround programme
- Surround channel phase meter for low frequencies
- 2 or 4 channel audiovectorscope (can be activated/deactivated)
- 10-fold phase correlation display for all channel pairs
- Peak level meters with additional loudness or SPL display
- Display of total loudness or SPL (sound pressure level) with separate bar graph

The Surround Sound Analyzer of the SurroundMonitor gives you an accurately-scaled visual representation of the relative volume relationships within the overall surround sound. The interactions of sound levels (loudness or sound pressure), phase correlation and level differences between all five channels contributing to the overall sound are converted into an immediately comprehensible visual image. In addition to this, the visual display of the Surround Sound Analyzers has been designed to ensure that the dynamic behaviour of the displays corresponds to the subjective acoustic impression, making it possible to understand the balance of your surround programme immediately, at a single glance. The Surround Sound Analyzer display is based on the loudness (RTW method) or the reference sound pressure level, when the SurroundMonitor and the studio monitoring system are properly calibrated. The axes of the 45° coordinate system use dB loudness or dB SPL scales, with a reference mark that is also shown in the loudness and SPL displays in the peak meters.

Graphical display of overall loudness

Multi-channel display devices often show the relationships between the individual sound levels that make up a surround signal with circular or pie-slice graphics. Despite the great popularity of round shapes we have chosen to use a combination of a polygon and bar graphs in the Surround Sound Analyzer, because this make it possible to display more parameters simultaneously and with greater clarity. The polygon is generated by combining the displayed level values on the scales of the 45° coordinate system. When all channels are set to the same level with a white noise signal the result is a square, the area of which is a measure of the total sound volume. The distribution of the four quadrants shows the volume distribution in the surround system. In addition to this the display also takes into account the phase correlation and the position of possible phantom sound sources.

The critical center channel

The balance between the center channel and the L and R channels is a critical factor in all types of surround sound productions. We have thus allocated a separate pair of display bars to this parameter to clearly show the volume differences between the center and the L and R channels. Another indicator makes it possible to identify the base width of the center sound source, which can be useful when there is crosstalk into the L or R channels.

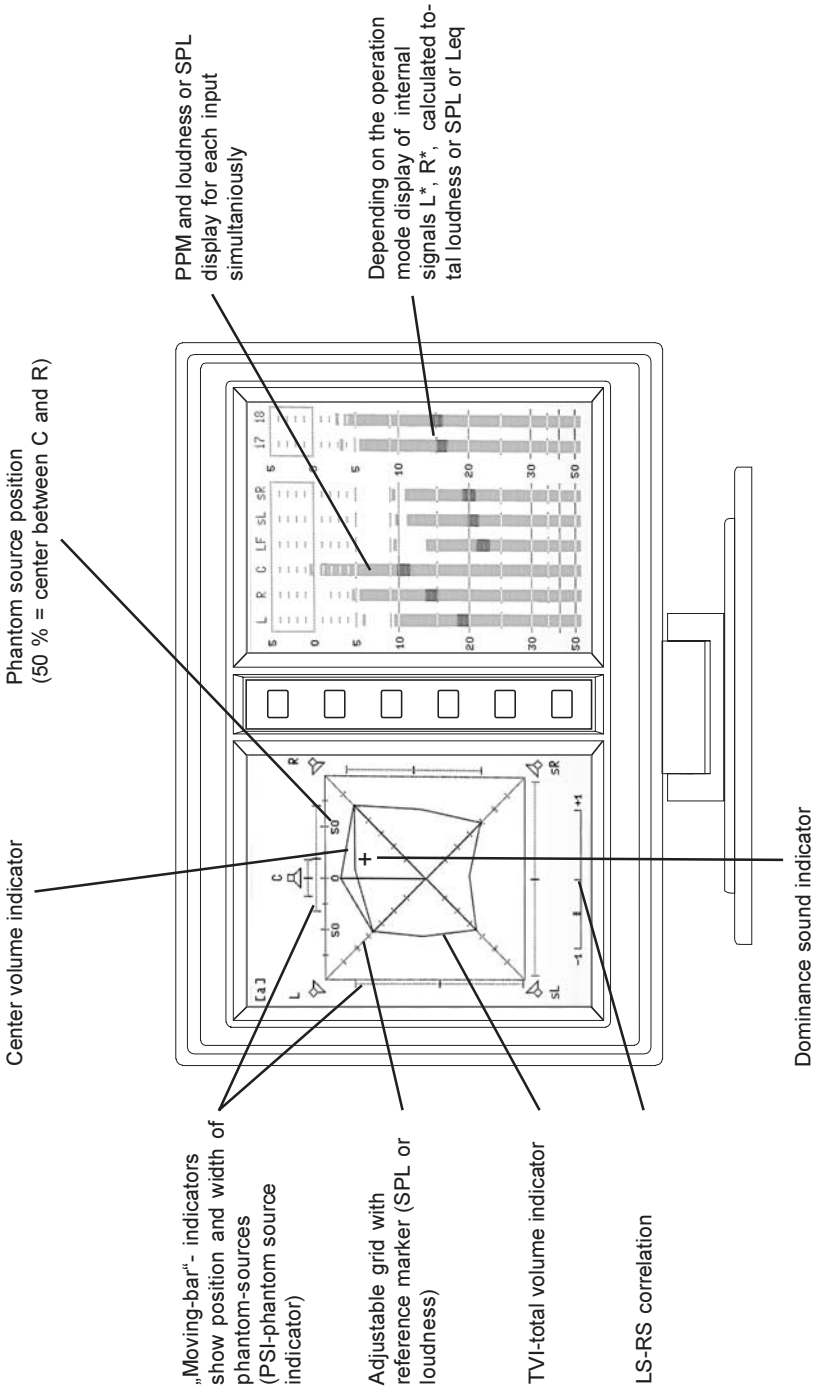
Phase meter for low frequencies

The “envelopping effect” of the surround channels can be evaluated with the help of a special separate display that shows the phase correlation of the LS and RS surround channels at low frequencies. Ideally, the low-frequency signals (e.g. reverberation) should be decorrelated as much as possible. The SurroundMonitor also features an additional 10-fold phase correlation display that enables you to check the correlation of all possible channel pairs.

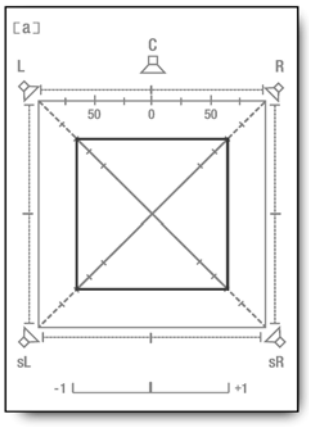
Loudness-based level control

Loudness-based level control has been recommended for some time now for optimal adjustment of the volumes of several individual programmes. The SurroundMonitor supports loudness-based level control on the basis of a defined reference sound pressure level. To use this feature, the studio’s monitoring system must first be calibrated against a reference listening sound pressure level (e.g. 85dB(A)) with a sound level meter. Loudness-based level control provides much more accurate and realistic monitoring of the balance between dialogue, effects and music.

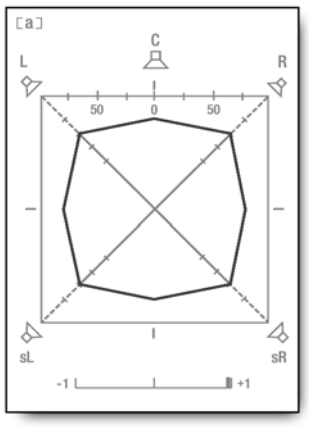
5.6. Functions for surround sound analyzer and PPM mode



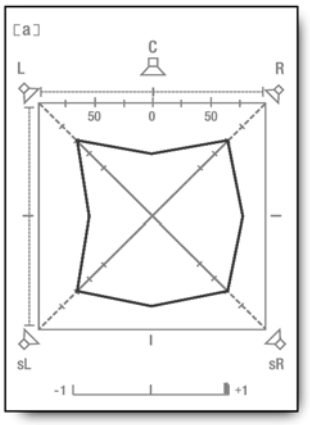
5.7. Examples for Surround Sound Analyzer Displays



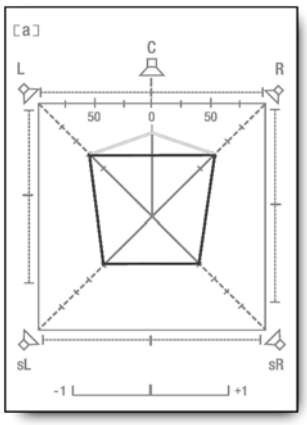
Incoherent noise, same level in the channels L, R, sL and sR



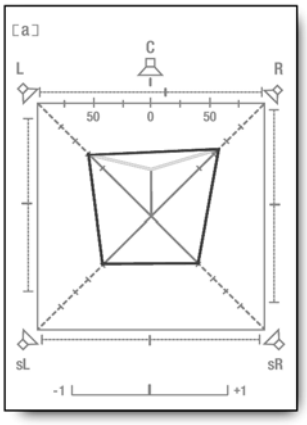
Sine wave signal, same level in the channels L, R, sL, sR, similar to mono



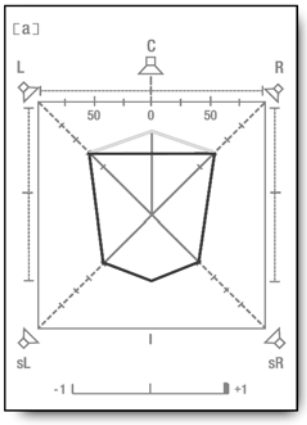
Same as above right, but channel L with reversed phase



Surround signal with some center dominance



Surround signal with supporting center



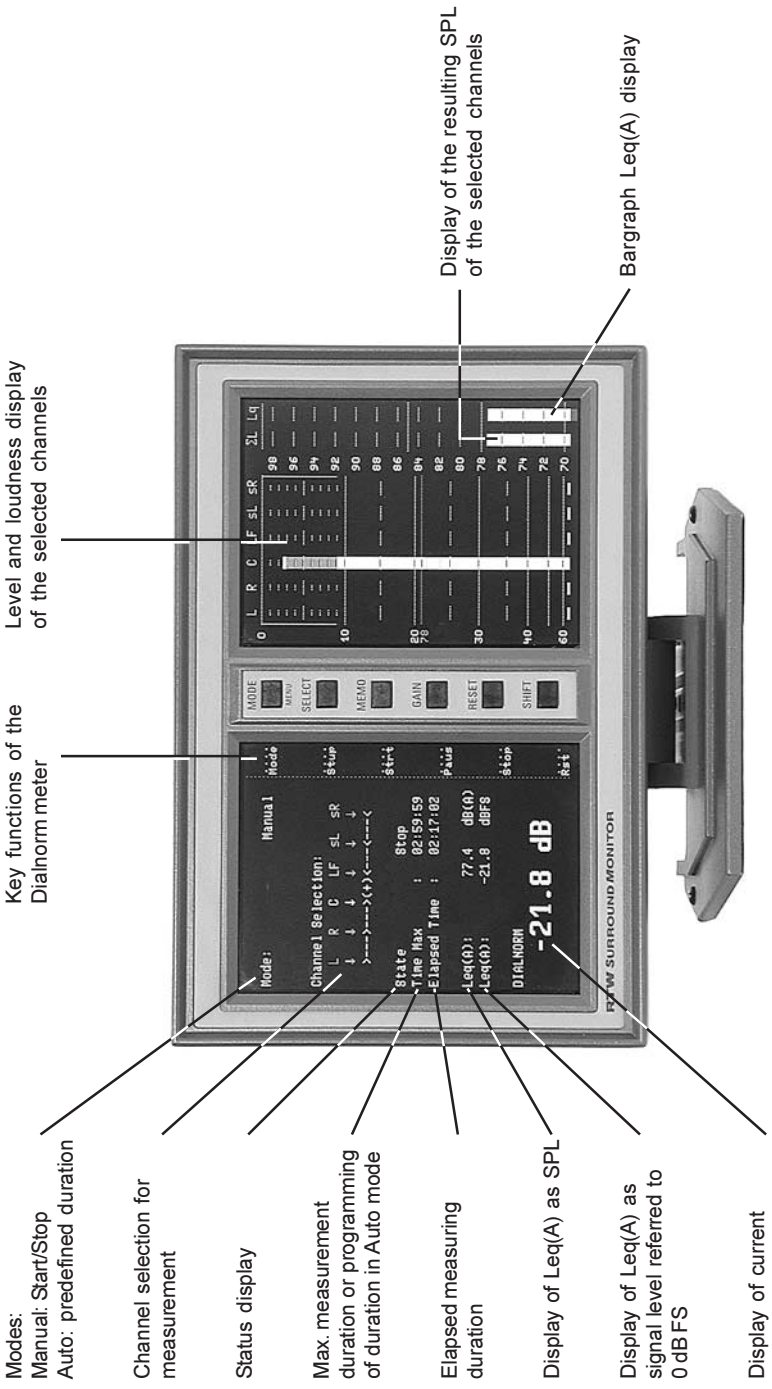
Surround signal sL-sR mono

5.8. Mode: Dialnorm

Dialnorm has its origins in film sound mixing. The term is an abbreviation of „dialogue normalisation“. Dialnorm describes the normalisation of the dialogue loudness level with respect to a reference value of –31 dB FS in surround applications. The idea behind this scheme is that the perceived total loudness of a mixed audio signal may be determined and kept constant at the listening end by using the dialogue level (optimised for a combination of good intelligibility and minimal nuisance through excessive volumes) with its fixed loudness ratio in relation to music and sound effects as a reference. ATSC standard A/52 specifies the transmission of the Dialnorm parameter as part of the meta data. This Dialnorm value is determined by means of a method normally used in noise pollution measurement, i.e. by measuring Leq(A), the energy-equivalent A-weighted sound pressure level as defined in IEC 60804. Dialnorm makes use of this standard with the exception that it measures the electrical signal level with reference to 0 dB FS instead of using the sound pressure level with a value of 20 µPa as a reference. The Dialnorm value with 0 dB FS as a reference corresponds to the measured Leq(A) value. The concept uses a threshold value of -31 dB FS. In the decoder, Dialnorm values above –31 dB FS lead to a level reduction of the total audio signal by (31 dB + (Dialnorm)) [dB].

Dialnorm has no effect on the dynamics of the overall audio programme or the loudness ratios of dialogue, music, and effects. Only the overall level of the programme is controlled in relation to a reference value. The overall level of the programme is reduced if the Dialnorm value exceeds this reference value. To this end, the Dialnorm value is used by the decoder at the receiving end to control the average overall volume in order to achieve a constant perceived loudness. This correction operates very smoothly and will not be noticed by the listener.

5.9 Functions for Dialnorm mode



6. Getting started

6.1. First time operation

The SurroundMonitor 1080nX and 1080nX-PLUS has been designed for „Stand-alone“ operation. Nevertheless mounting into i.e. mixing consoles can be achieved by the use of an optional front panel mounting kit.

Types 1081n-203, 10815 STU, 1082n-203, 1083n-218, 10830 SSL and 10835 SSL have been specially created for built-in operation in consoles or other frames. Please note: Models 10815 STU, 10830 SSL and 10835 SSL are only available from the respective manufacturer in conjunction with the corresponding console.

SurroundMonitor 1086n-VID is designed for special 19'' rack mount cabinets like those of the WFM7F05 of Tektronix®.

6.2. Connecting the SurroundMonitor

Inputs			
Model	**Analog**	**Analog +24 dBu**	**Digital**
10800X	**x**	**–**	**x**
10800X-PLUS	**x**	**–**	**x**
10804X-PLUS ***)**	**x *)**	**x *)**	**x**
10808X	**x**	**–**	**–**
10808X-PLUS	**x**	**–**	**–**
10809X	**–**	**–**	**x**
10809X-PLUS	**–**	**–**	**x**
10810-203	**x**	**–**	**x**
10815 STU	**x**	**–**	**x**
10818-203	**x**	**–**	**–**
10819-203	**–**	**–**	**x**
10820-203	**x**	**–**	**x**
10828-203	**x**	**–**	**–**
10829-203	**–**	**–**	**x**
10830-218	**x**	**–**	**x**
10830 SSL	**x**	**–**	**x**
10835 SSL	**x**	**–**	**x**
10838-218	**x**	**–**	**–**
10839-218	**–**	**–**	**x**
10860-VID	**x**	**–**	**x**
10860-VID	**–**	**–**	**x**
See section:	**6.2.3.**		
See section:			**6.2.4.**

***) Two analog input connectors can be used alternatively with either studio standard level or high level (+24 dBu max.). Please do not connect or operate both inputs simultaniously as this would lead to misreadings!**

6.2.1 Power supply

Power supply connector:

Pin:	Function:
1-2	+24 V DC
3-4	0 V

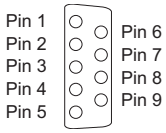


6.2.2. Remote control

📖 **Please note further informations on the setup of this connector in the remote menu section 7.5.2. before connecting or wiring.**

The remote connector can be progammed to support two different function modes or to be turned off. All setups can be found in the **remote menu**. After the first initial startup of the SurroundMonitor the remote menu will be set to ***Keys*** in the **INPUTS** line meaning that the remote connector can be used as function control parallel to the front panel keys. It is wired like this:

Pin:	Function:
1	common potential for external 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 and menu
7	external function selection: memo
8	external function selection: reset
9	for future use



Once the SurroundMonitor is set to ***Preset 1-6*** in the remote menu section **INPUTS**, the remote connector can act for remote preset recalls. A subsection of the remote menu allows to link an external preset control line to the desired factory or user preset.

Pin:	Function:
1	common potential for external switches - Gnd
2	external function selection: Preset 2
3	external function selection: Preset 4
4	external function selection: Preset 6
5	for future use
6	external function selection: Preset 1
7	external function selection: Preset 3
8	external function selection: Preset 5
9	for future use

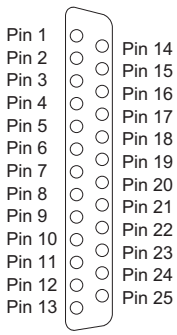
The selection ***Off*** in the remote menu disables the remote connector.

📖 **The following types do <u>not</u> support this connector: 10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID**

6.2.3. Analog Inputs

Sub-D-25-pin.:

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





Please note: The SurroundMonitor 10804X-PLUS features two analog input connectors to be used alternatively with either studio standard or high level (+24 dBu) analog input signals. Wiring for both inputs is as shown above. Please do not connect or operate both inputs simultaniously as this would lead to misreadings.

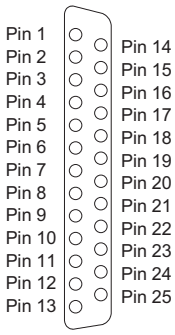
🕮 **The following types do <u>not</u> support this connector: 10808X, 10808X-PLUS, 10818-203, 10828-203, 10838-218**

Digital input signals must be in sync to each other.

6.2.4. Digital Inputs

Sub-D-25-pin.:

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



Note: Digital I/O´s are in parallel, not active buffered. The termination can be switched off (see section 8.3.).

6.3. Safety symbols

The following symbols may be marked on the panels or covers of equipment or modules, and are used in this manual:



WARNING! - This symbol alerts you to a potentially hazardous condition, such as the presence of dangerous voltage that could pose a risk of electrical shock. Refer to the accompanying Warning Label or Tag, and exercise extreme caution.



ATTENTION! - This symbol allerts you to important operating considerations or a potential operating condition that could damage equipment. If you see this marked on equipment, consult the User´s manual or Operator manual for precautionary instructions.



FUNCTIONAL EARTH TERMINAL - This symbol marks a terminal that is electrically connected to a reference point and is intended to be earthed for any functional purpose other than safety.



PROTECTIVE EARTH TERMINAL - This symbol marks a terminal that is bonded to conductive parts of the instrument. Confirm that this terminal is connected to an external protective earthing system.

6.4. Safety information

Please read this safety information before using the instrument:

Do not service or repair this product unless properly qualified. Servicing should be peformed only by a qualified technician.



There are no user servicable parts inside the unit. Do not open the case while the unit is connected to power. High voltage exists inside the instrument.

The device has been designed for indoor use only.

Do not substitute parts or make any modifications without the written approval of RTW. Doing so may create safety and EMI hazards.

6.5. Connecting to a power supply

📖 **Connections: Page 6-1 to 6-3.**



Supply voltage for the SurroundMonitor is +24 V DC.

6.6. Audio connection

📖 **Connections: Page 6-1 to 6-3.**



Audio inputs of the SurroundMonitor are balanced.

6.7. External function control

📖 **Connections: Page 6-1 to 6-3.**



External function control can be achieved by the use of pushbuttons. We recommend the use of the common switching potential on pin1 (0 V) for remote mode ***Keys*** (external function cotrol parallel to the internal buttons).

📖 **Please note further informations on the setup of this connector in the remote menu section 7.5.2. before connecting or wiring.**

The subselection **Logic** for remote operation mode ***Preset 1-6*** (external preset recall) allows to define the determination of logical level changes on the remote inputs.

The subselection ***Off*** will disable the remote connector.

You can also connect the equivalent switching inputs of multiple RTW SurroundMonitors to single lines so that only one switch per function is required.

6.8. Modes switches and indicators

The RTW SurroundMonitor features two backlight TFT displays. The front panel also houses six pushbuttons. The operation mode of the SurroundMonitor after the initial startup or a factory reset will be eight channel analog peakmeter plus surround analyzer (ALZ). The functions of the front pushbuttons is as follows. These functions may be different in other modes of operation. Please refer to chapter 7 for more details.



- GAIN key: The use of this pushbutton or its equivalent external function control boosts the input sensitivity according to the measuring standard used (IEC/DIN +20 dB, British, Nordic and digital +40 dB). The use of the Gain function will automatically erase all stored max values from memory (Memo). This will be indicated by red letters in memo mode and the note „Gain pressed ->Autoreset“.

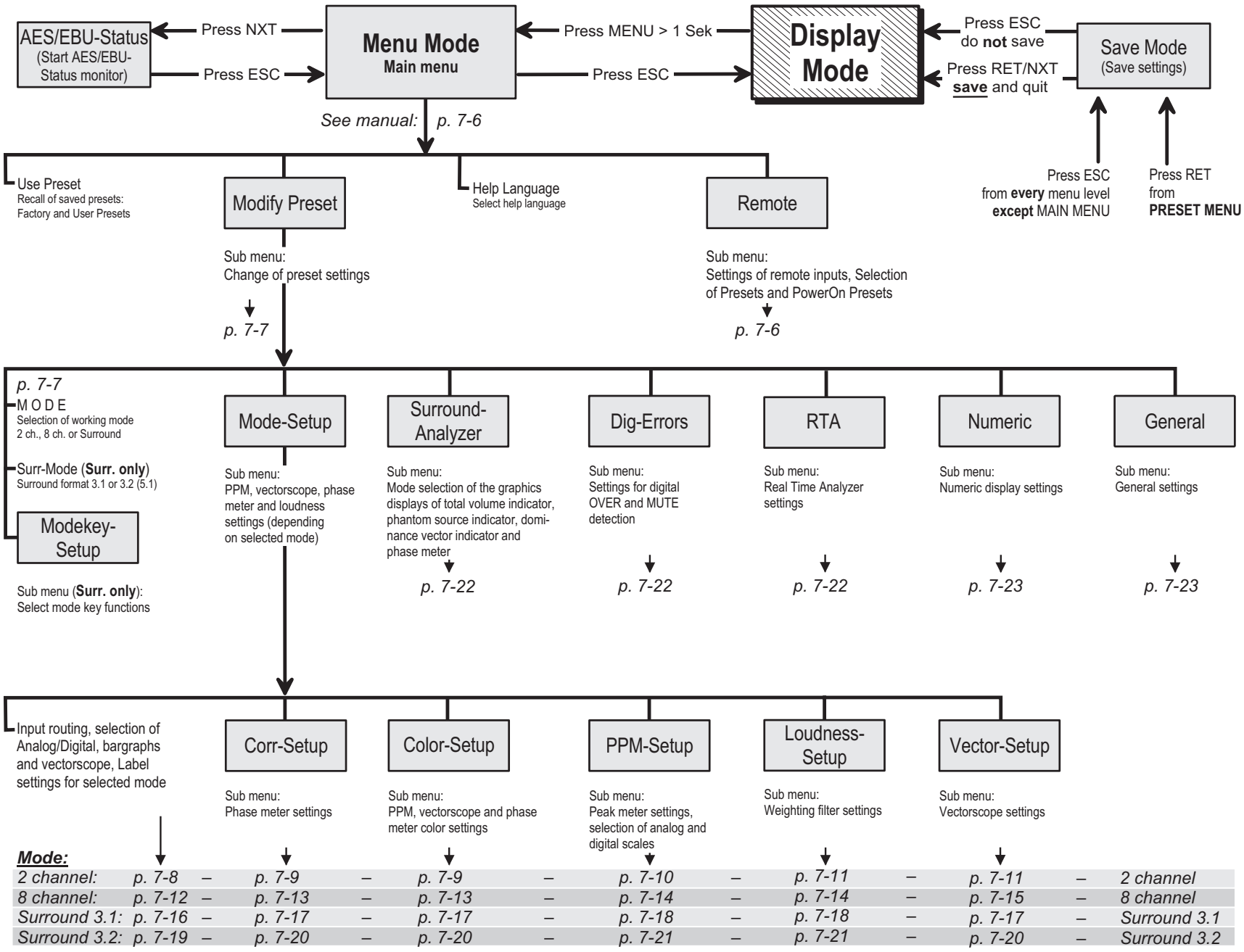


- MEMO key: The use of this pushbutton or its equivalent external function recalls the highest level value and the most negative correlation reading since the last time a memory reset has been proceeded. Please keep attention to the fact that memory accuracy can be affected by interferenced signals (ESD- or Burst). This may cause misreadings from the memory or meter if you are using the instrument in an interferenced environment. A specific measurement of maximum level should be repeated if interference is suspected.
- RESET key: The use of this pushbutton or its equivalent external function resets the memory.

- SELECT key: The use of this pushbutton or its equivalent external function will toggle between the various input signal source pairs for 2 channel peakmeter display, 2 channel stereo vectorscope and RTA.
- MODE key: The use of this pushbutton or its equivalent external function changes the operation mode. Holding down the key for more than 2 seconds will call setup menus to adapt the SurroundMonitor to the needs in your special area of application.
- SHIFT key: The use of this pushbutton or its equivalent external function expands the selection to a second level.

Overview of the menu structure v4.3

Folded out this page would like to give
a better orientation while reading chapter 7.



Mode:												
2 channel:	p. 7-8	–	p. 7-9	–	p. 7-9	–	p. 7-10	–	p. 7-11	–	p. 7-11	– 2 channel
8 channel:	p. 7-12	–	p. 7-13	–	p. 7-13	–	p. 7-14	–	p. 7-14	–	p. 7-15	– 8 channel
Surround 3.1:	p. 7-16	–	p. 7-17	–	p. 7-17	–	p. 7-18	–	p. 7-18	–	p. 7-17	– Surround 3.1
Surround 3.2:	p. 7-19	–	p. 7-20	–	p. 7-20	–	p. 7-21	–	p. 7-21	–	p. 7-20	– Surround 3.2

7. Switches and menus

7.1. Power on

The SurroundMonitor will be active with a delay of approximately 3 to 5 seconds after applying supply voltage. The first initial startup or a startup after a program eprom change may take about 30 sec.

7.2. Switches

7.2.1. Mode key

MODE

The use of this key or its equivalent external function control calls various functions of the left display depending on the general operating mode of the SurroundMonitor.

Left display function	Operating mode			
	2-Chan	8-Chan	Surr 3.1	Surr 3.2
2-ch Vectorscope	X	X	X	X
4-ch Vectorscope			X	
5-ch Vectorscope				X
Real Time Analyzer	X	X	X	X
Multi Correlator		X	X	X
Surround Sound Analyzer			X	X
Dialnorm			X	X

Holding the button for more than two seconds calls the menu mode. After power up this will allways be the main menu. Starting from here a variety of submenus for presetting the way of indication or measuring functions, the AES/EBU status display and more can be reached.

The upper line in the display shows the exact type of the unit and its installed software version.

A function description of the center keys during setup mode is given in the right display column of the left display next to the switches.

The menu function can be locked for any user preset by the use of the menu lock function. This function can be activated in the GENERAL menu. Once it is enabled a four digit code has to be entered to access the menu mode.

7.2.2. Select key

SELECT

The use of this pushbutton or its equivalent external function control in ***vectorscope*** or ***RTA*** mode allows the selection of an input signal pair as source for vectorscope and 2ch PPM display. The left display reads the information on the selected input pair. Example: [a1:2].

SHIFT + SELECT

A combination of the SHIFT and SELECT keys can be used in ***RTA and 2 or 8ch vectorscope*** mode to pick LEFT, RIGHT or L+R of the selected input pair for RTA analysis.

SELECT

The SELECT key in ***RTA and SURROUND*** mode allows to choose Front.Channels, Surround.Channels or LowFreq.Channel for RTA analysis. Required RTA menu preset: SURR-INPUT: GROUPS.

The use of this key allows allows a 2ch vectorscope like anaylsis of selectable signal pairs of the surround signal. The vectorscope x-axis will vary depending on the selected signal pair. The selection front right in combination with surround right will create a 2-ch vectorscope display with the x-axis rotated by 90° clockwise.

SHIFT + SELECT

The SHIFT + SELECT key combination in ***SURROUND*** mode allows to choose each one of the six input signals for RTA analysis. Required RTA menu preset: SURR-INPUT: SINGLE Cha.

7.2.3. MEMO key

MEMO

The use of this pushbutton or its equivalent external function control in ***Vectorscope*** mode calls the graph memory for maximum PPM level, maximum loudness, the most negative correlation and digital errors and if activated displays the numerical max values stored.

The ***RTA*** mode will read the maximum PPM level and the maximum amplitude of each frequency band in the RTA analyzer graphically or numerical depending on the preset in the RTA menu.

7.2.4. GAIN key

GAIN

The use of this pushbutton or its equivalent external function control boosts the input sensitivity according to the measuring standard in use. It also changes the PPM scale by a factor of the added gain. Here is a list of the gain for the different standards:

Please note: If the GAIN key has been used stored numerical values will be shown in red. The memory can be cleared by the use of the RESET key.

Mode or standard:	Gain:
Digital scales	40 dB
DIN	20 dB
NORDIC	40 dB
BRITISH IIa + IIb	40 dB
VU	20 dB
ZOOM 20	20 dB
ZOMM 2	20 dB
+24 dBu	20 dB (10804X only)
+20 dBr	20 dB (10804X only)

SHIFT + **GAIN**
REF+

A combination of the SHIFT and GAIN keys allows to increase the sensitivty (0 dB reference) for the RTA in **RTA** mode.



Please note: References for ZOOM 20 and ZOOM 2 scales differ depending on the signal domain. In the analog domain the ZOOM 20 scale is referenced to the absolute input level which causes the 0 dB reading on the PPM. Default: +6 dBu. ZOOM 2 scale is not available for analog signals.

In the digital domain the reference level for both ZOOM, DIN+5, DIN+10, Nordic, BrIIa and BRIIb scales is defined by the HEADROOM preset value. Default: -9 dB FS.

7.2.5. RESET key

RESET

The use of this pushbutton or its equivalent external function control resets the PPM-, correlator- and digital error memory.

SHIFT + **RESET**
REF-

A combination of the SHIFT and RESET keys allows to decrease the sensitivty (0 dB reference) for the RTA in **RTA** mode.

7.2.6. SHIFT key

SHIFT

Depending on the operation mode of the SurroundMonitor additional menus or functions can be selected by the use of the SHIFT key.

7.3. Key functions in mode: Menu

7.3.1. Esc key

Escape - Quit menu mode without storing changes.

7.3.2. Ret key

Return - Step back from submenu to main menu.

7.3.3. Rgt key

Right - Move cursor to the right.

7.3.4. Up key

Up - Move cursor up.

7.3.5. Dwn key

Down - Move cursor down.

7.3.6. Nxt key

Next - Change setting marked by the cursor position or branch to selected submenu.

📖 **Please note: The following units of analog-only type allow the selection of this function, but <u>without</u> usefulness: 10808X, 10808X-PLUS, 10818-203, 10828-203, 10838-218**

7.4. Key functions in mode: AES/EBU Status

After seleceting status display mode via MENU, ..STATUS..., NXT the AES/EBU status information will be displayed. If in DCS or BIN moperation mode the AES signal is invalid or not present the user will be prompted: RECEIVER UNLOCKED !

Key function are now as follows:

7.4.1. Esc key

Escape - Quit status mode.

7.4.2. Cha key

Channel - Toggle key to display channel 1 to 8 status information.

7.4.3. Dcs key

Decoded channel status - Key to display the decoded channel status and additional information like origin, destination, local adress and time of the selected channel.

7.4.4. Hws key

Hardware status:- Digital interface status information for all eight channels:

Legend:
. = ok
E = Error
equ = equivalent (no difference channel A/B)
dif = different (A/B channel different)

Chan	**1.2**	**3.4**	**5.6**	**7.8**	signal pair
CRC	. .	. .	. .	. .	CRC
VAL	. .	**E** .	. .	. .	validity
PAR	. .	. .	. .	. .	parity
A/B	**equ**	**dif**	**equ**	**equ**	AES status
CONF	.	.	.	.	AES signal
CODE	.	.	.	.	AES code
LOCK	.	.	.	.	AES-sync
RESU	**24**	**20**	**16**	**16**	resolution in bit Ch A
-BITS	**24**	**20**	**16**	**16**	resolution in bit Ch B

SYNC-REF CHANNELS: 1.2 Automatically choosen input pair for sync

MEAS.FREQ. [Hz]: 48000 (measured sample frequency)

7.4.5. BIN key

Hex or Binary display for bytes 0-23 of the selected channel.

7.4.6. AUD key

Audio - Bit pattern display of the actual audio data and active bits of the selected channel.

📖 **Appendix E (can be fold out) shows an overview of the menu structure.**

7.5. Menu description

7.5.1. Main Menu

📖 **See section 7.4.**

📖 **See section 7.6.**

📖 **See section 7.5.2.**

AES-EBU-Status	AES/EBU statusbit display(via Nxt)
Use Preset	preset selection (via Nxt)
Modify Preset	preset modification (via Nxt)
Help Language	help language
Remote	remote connector setup menu

7.5.2. Remote menu

Factory presets for units with analogue and digital inputs: (10800X, 10800X-PLUS, 10804X-PLUS, 10810-203, 10815STU, 10820-203, 10830-218, 10830 SSL, 10835 SSL and 10860-VID):

***F1**: 2ch analog PPM + 2ch Vectorscope*
***F2**: 2ch digital PPM + 2ch Vectorscope*
***F3**: 8ch analog PPM + 2ch Vectorscope*
***F4**: 8ch digital PPM + 2ch Vectorscope*
***F5**: 4+4ch analog PPM + 3.1 Vectorscope*
***F6**: 4+4ch digital PPM + 3.1 Vectorscope*
***F7**: 6+2ch analog PPM + 3.2 Vectorscope*
***F8**: 6+2ch digital PPM + 3.2 Vectorscope*

Inputs	remote connector operating mode (via Nxt)
	Keys: function control (parallel to the internal pushbuttons)
	Preset 1-6: preset recall mode (F1-F8, U1-U8)
	Off: remote disable
Preset	preset recall to preset selection line assignment (F1 - F8, U1 - U8)
Logic	logical function for external preset recalls
	Lvl.Low a preset will be active as long as the input is low (0 V).
	Lvl.High a preset will be active as long as the input is low (+5 V).
	Act.Low ↓ preset recall will be executed after an external level transition from +5 V to 0 V
	Act.High ↑ preset recall will be executed after an external level transition from 0 V to +5 V
Power On	power on preset definition (F1 - F8, U1 - U8)
	***Please note:* The presence of a continous external control signal will override this function or setting.**
	Last Remote preset recall mode disabled. Last active preset will be loaded.



***Please note:* The external preset recall mode is hierarchic from input 6 to input 1. In the absence of an input signal preset recall line 1 will be selected. This allows to recall two different operation modes by the use of one switch only. Example: Input 3 is hardwired to 0 V and input 5 can be set to 0 V by an external switch. Preset recall 5 will be used when the external switch is closed and Logic ist set to Lvl.Low. Opening the external switch causes the unit to recall preset selection line 3.**

All external input lines are equiped with a 1kΩ resistor in series to guard the input. There is also a 10 kΩ resistor connected to +5 V inside the unit as pull up. The conrol input can handle external voltages up to +24 V DC. However the Act.High and Lvl.High Logic modes require external pull down resistors <1 kΩ.

7.6. Sub menu: Modify Preset

The modify preset command calls the preset-menu. The preset menu gives access to all following features and settings. Modifications can be stored to a user preset (U1 to U8) when leaving the submenus with multiple use of the Ret key. Leaving a sub menu with the Esc key terminates any changes made and returns to display mode without saving possible modifications to memory.

Please note: Storing can only be made if the desired user preset is selectable. A user preset locked with the menu lock function will regret storing modifications as long as menu lock is active. Writing data to the factory presets (F1-F8) is impossible.

7.6.1. Sub menu: ..M O D E.....

Operation mode:

..M O D E.....	2-Channel
	8-Channel
	Surround

In Surround mode an additional selection will be visible:

Surr-Mode	**3.1**
	3.2 (5.1)

7.6.2. Sub menu: Modekey-Setup:

This sub menu allows the user to modify settings for the operation mode selected with .. M O D E .....

Vectorscope	**On**	Multi channel vectorscope On or Off
RTA	**On**	RTA-Analyzer On or Off
VSC-L*R*	**Off**	Two channel vectorscope L*-R* On or Off
SurroundAnalyzer	**On**	Surround-Analyzer On or Off
Multi.Correlator	**On**	Multi Correlator On or Off
Dialnorm	**Off**	Dialnorm Anzeige On oder Off

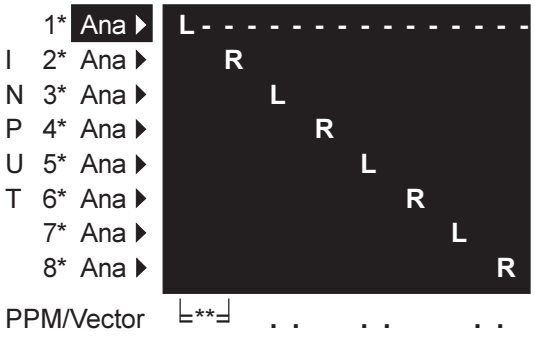
📖 **Dialnorm display can only be selected if digital domain inputs are in use.**

7.7. Sub menu: Mode-Setup: 2-Channel

For the following types with digital-only inputs the input setting in preset F1 is set to: „digital <dig>“. The input domain however can be changed to analog but <u>without</u> usefulness: 10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID

All following graphs refer to factory preset F1:

Input routing:



Assignment of eight analog or digital inputs (one input domain at a time only) to four internal pairs. Pair selection for display can be made by the use of the SELECT key.

Load Label	PPM label: **Left/Right** - standard label Clear - clear label Manual - user label as defined at channel -1 and channel-2
Corr-Setup	Call sub menu correlator-setup: Setup via Nxt key
Color-Setup	Call sub menu color-setup: Setup via Nxt key
PPM-Setup	Call sub menu PPM settings: Setup via Nxt key
Loudness-Setup	Call sub menu loudness settings: Setup via Nxt key
Vector-Setup	Call sub menu vectorscope settings: Setup via Nxt key

7.7.1. Sub menu: Corr-Setup

Corr-Response	**Slow** -	Correlator ballistics: slow (2.5 sec) or fast (1.0 sec)
Mode	**Spot -**	display style bar or spot
Surr.Corr.LPass	**Off**	not available in 2ch mode
Multi.Corr.LPass	**Off**	not available in 2ch mode

7.7.2. Sub menu: Color-Setup

	Peakmeter:	
PPM-Color-Phold	**WHITE** -	Color for peakhold display
-Hdroom,>Ref	**RED** -	Headroom color (digital) or above reference (analog)
-Opfield	**GREEN** -	Color for operation field
-Norm operation	**YELLOW** -	Bargraph color below reference or field
-Grid	**BLUE** -	Color for grid
-Label	**BLUE** -	Color for PPM label
-Loudness	**Cyan** -	Color for loudness display
	Vectorscope:	
Vector-Color	**Green** -	Color for vectorscope
-Grid	**Red** -	Color for grid
	Correlator:	
Color '+'	**Green** -	Color for positive readings
Color '-'	**Red** -	Color for negative readings
Color '0'	**White** -	Color for display 0
Grid	**Blue-**	Correlator grid color

7.7.3. Sub menu: PPM-Setup

🕮 **For the following types with digital-only inputs an analog scale is selectable, but <u>without</u> usefulness:** **10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID**	<u>Analog-Scale</u>	**DIN+5** -	Standard selection: DIN+5, NORDIC, BRIIa, BRIIb, VU, ZOOM 20, DIN+10, (+24 dBu or +20 dBr - 10804X only)
	OP-Field [dB]	**0** -	Operation field definition below reference (color change). Adjustable in a range of 0 dB to -15 dB in 1 dB steps.
	Attack	**NORM** -	Integration time constant: NORM (according to scale standard), 1ms, 0,1ms
🕮 **For the following types with analog-only inputs a digital scale is selectable, but <u>without</u> usefulness:** **10808X, 10808X-PLUS, 10818-203, 10828-203, 10838-218**	<u>Digital-Scale</u>	**0..60dB** -	Standard selection Digital (absolute) scales: 0..-60 dB, 0..-20 dB, Analog (equivalent) scales: DIN+10, DIN+5, NORDIC, BRIIa, BRIIb, VU, Special scales: ZOOM20, ZOOM2 +18 .. 0 dB, +18 .. -18 dB (0dB FS = +18 dB) -40 .. +20 dB (0 dB FS = +20 dB)
	Headroom [dB]	**9** -	Headroom field definition above reference (color change). Adjustable in a range of 5 dB to 20 dB in 1 dB steps.
	OP-Field [dB]	**0** -	Operation field definition below reference (color change). Adjustable in a range of 0 dB to -15 dB in 1 dB steps.
	Attack	**SAMPLE** -	Integration time constant for PPM-display: SAMPLE, 0.1 ms, 1 ms, 10 ms, NORM (according to scale standard)
	PH-Attack	**ATTACK** -	Integration time constant for (PH) peakhold display: SAMPLE or ATTACK (according to scale standard)
	DC-Filter	**5 Hz** -	DC-filter selection: 5 Hz, 10 Hz, 20 Hz, OFF
	VU-Lead [dB]	**6** -	Preset for VU lead value: Range 0 dB to 10 dB in 1 dB steps.
	Peakhold-Mode	**2.5s** -	Peakhold reset time: OFF, 2.5 s, 4.0 s, MAN (clear by use of RESET key).

7.7.4. Sub menu: Loudness-Setup

Channel-Display Mode	**On** -	Loudness display On or Off
	RTW.Loud -	Operation mode for loudness: Linear+RMS - no filter/RMS RTW.Loud - RTW weighting Awt+RMS - A weighting / RMS Cwt+RMS - C weighting / RMS CCIR+RMS - CCIR weighting / RMS
A/C-wt-Response	**FAST** -	Operation mode for loudness gain FAST, SLOW
SPL.Reference	**78** -	SPL reference for loudness display: 70 to 85 dB

7.7.5. Sub menu: Vector-Setup

Grid	**L/R** -	Vectorscope display mode selection: L/R, M/S, CAL90, CAL20
AGC	**AUTO** -	Operation mode for vectorscope gain: AUTO, FIX, CALIBR.
-Auto	**FAST** -	Operation mode for vectorscope gain switching: FAST, SLOW
-Fixed[dB]	**0** -	Gain selection in AGC-FIX mode: 0, 5, 10, 15, 20, 25, 30, 35 dB
Hold	**MEDIUM** -	Vectorscope refresh rate: FAST, MEDIUM, SLOW

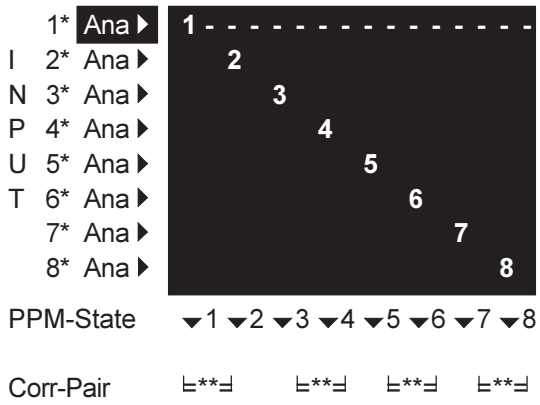
7.8. Sub menu: Mode-Setup: 8-Channel

For the following types with digital-only inputs the input setting in preset F3 is set to: „digital <dig>“. The input domain however can be changed to analog but <u>without</u> usefulness: 10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID

All following graphs refer to factory preset F3:

	PPM label:	
Load Label	**Cha 1..8** -	PPM Label:
	Cha 1..8 -	PPM Label: 1 to 8
	Cha 9..16 -	PPM Label: 9 to 16
	Cha 17..24 -	PPM Label: 17 to 24
	Cha 25..32 -	PPM Label: 25 to 32
	Manual -	user label as defined in the following line by the use of the cursor and NXT keys
	Clear -	clear label

Input routing:



Assignment of eight analog or digital inputs to the eight bargraphs or to four internal pairs for vectorscope display. Pair selection for display can be made by the use of the SELECT key. Mixed mode operation (analog and digital domain) is possible (example: 1-4 analog and 5-8 digital). Other then that the input routing cannot be modified.

	Bargraph order	
Bar-Organ.	#1 - - - 8#	block of eight
	1-2# 3-8#	block of two plus block of six
	1-4 # 5-8	Two blocks of four
	1-6# 7-8#	Block of six plus block of two
	#2. 2. 2. 2#	Four blocks of two

Corr-Setup	Call sub menu correlator-setup: Setup via Nxt key
Color-Setup	Call sub menu color-setup: Setup via Nxt key
PPM-Setup	Call sub menu PPM settings: Setup via Nxt key
Loudness-Setup	Call sub menu loudness settings: Setup via Nxt key
Vector-Setup	Call sub menu vectorscope settings: Setup via Nxt key

7.8.1. Sub menu: Corr-Setup

Corr-Response	**Slow** -	Correlator ballistics: slow (2.5 sec) or fast (1.0 sec)
Mode	**Spot -**	display style bar or spot
Surr.Corr.LPass	**Off**	not available in 8ch mode
Multi.Corr.LPass	**Off**	Multi correlator low pass filter On or Off

7.8.2. Sub menu: Color-Setup

A separate color selection for Peakhold, Headroom, Operationfield, Reference (Norm) and grid can be made for each bargraph (1-8). Place the cursor at the desired subselection by the use of the RGT key to the referring bargraph field. Select the color by the use of the NXT key.

	Peakmeter:	
PPM-Color-Phold	**WHITE** -	Color for peakhold display
-Hdroom,>Ref	**RED** -	Headroom color (digital) or above reference (analog)
-Opfield	**GREEN** -	Color for operation field
-Norm	**YELLOW** -	Bargraph color below reference or operation field
-Grid	**BLUE** -	Color for grid
-Label	**BLUE** -	Color for PPM label
-Loudness	**Cyan** -	Color for loudness display
	Vectorscope:	
Vector-Color	**Green** -	Color for vectorscope
-Grid	**Red** -	Color for grid
	Correlator:	
Color '+'	**Green** -	Color for positive readings
Color '-'	**Red** -	Color for negative readings
Color '0'	**White** -	Color for display 0
Grid	**Blue-**	Correlator grid color

7.8.3. Sub menu: PPM-Setup

🕮 **For the following types with digital-only inputs an analog scale is selectable, but <u>without</u> usefulness:** **10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID**	<u>Analog-Scale</u>	**DIN+5** -	Standard selection: DIN+5, NORDIC, BRIIa, BRIIb, VU, ZOOM 20, DIN+10, (+24 dBu, +20 dBr - 10804X only)
	OP-Field [dB]	**0** -	Operation field definition below reference (color change). Adjustable in a range of 0 dB to 15 dB in 1 dB steps.
	Attack	**NORM** -	Integration time constant: NORM (according to scale standard), 1ms, 0,1ms
🕮 **For the following types with analog-only inputs a digital scale is selectable, but <u>without</u> usefulness:** **10808X, 10808X-PLUS, 10818-203, 10828-203, 10838-218**	<u>Digital-Scale</u>	**0..60dB** -	Standard selection Digital (absolute) scales: 0..-60 dB, 0..-20 dB, Analog (equivalent) scales: DIN+10, DIN+5, NORDIC, BRIIa, BRIIb, VU, Special scales: ZOOM20, ZOOM2 +18 .. 0 dB, +18 .. -18 dB (0dB FS = +18 dB) -40 .. +20 dB (0 dB FS = +20 dB)
	Headroom [dB]	**9** -	Headroom field definition above reference (color change). Adjustable in a range of 5 dB to 20 dB in 1 dB steps.
	OP-Field [dB]	**0** -	Operation field definition below reference (color change). Adjustable in a range of 0 dB to 15 dB in 1 dB steps.
	Attack	**SAMPLE** -	Integration time constant for PPM-display: SAMPLE, 0.1 ms, 1 ms, 10 ms, NORM (according to scale standard)
	PH-Attack	**Attack** -	Integration time constant for (PH) peakhold display: Sample or Attack (according to scale standard)
	DC-Filter	**5 Hz** -	DC-filter selection: 5 Hz, 10 Hz, 20 Hz, Off
	VU-Lead [dB]	**6** -	Preset for VU lead value: Range 0 dB to 10 dB in 1 dB steps.
	Peakhold-Mode	**2.5s** -	Peakhold reset time: Off, 2.5 s, 4.0 s, Man (clear by use of RESET key).

7.8.4. Sub menu: Loudness-Setup

Channel-Display	**On** -	Loudness display On or Off
Mode	**RTW.Loud** -	Operation mode for loudness: Linear+RMS - no filter/RMS RTW.Loud - RTW weighting Awt+RMS - A weighting / RMS Cwt+RMS - C weighting / RMS CCIR+RMS - CCIR weighting / RMS
A/C-wt-Response	**FAST** -	Operation mode for loudness gain FAST, SLOW
SPL.Reference	**78** -	SPL reference for loudness display: 70 to 85 dB

7.8.5. Sub menu: Vector-Setup

Grid	**L/R** -	Vectorscope display mode selection: L/R, M/S, Cal90, Cal20
AGC	**Auto** -	Operation mode for vectorscope gain: Auto, Fix, Calibr.
-Auto	**Fast**-	Operation mode for vectorscope gain switching: Fast, Slow
-Fixed[dB]	**0** -	Gain selection in AGC-Fix mode: 0, 5, 10, 15, 20, 25, 30, 35 dB
Hold	**Medium** -	Vectorscope refresh rate: Fast, Medium, Slow

7.9. Sub menu: Mode-Setup: Surround 3.1

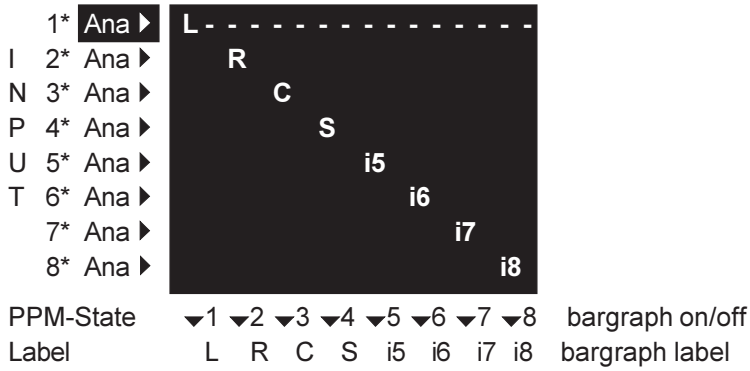
📖 **For the following types with digital-only inputs the input setting in preset F5 is set to: „digital <dig>“. The input domain however can be changed to analog but <u>without</u> usefulness: 10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID**

All following graphs refer to factory preset F5:

Surround configuration:

Load Config.	**1.4 : LCRS**	L, R, C, S, i5, i6, i7, i8
	1.4 : LCRS	L, C, RC, S, i5, i6, i7, i8
	1.4 : LCSR	L, C, S, R, i5, i6, i7, i8
	Manual	user definable

Inputrouting:



📖 **An alternatively or mixed use of analog and digital inputs is only feasible with the following types:
10800X, 10800X-PLUS, 10804X-PLUS, 10810-203, 10815 STU, 10820-203, 10830-218, 10830 SSL, 10835 SSL and 10860-VID.
With analog-only units the digital domain is selectable as is with digital-only units and analog domain, but <u>without</u> usefulness.**

The input routing allows the selection of the desired common input domain for the surround signal and the domain for the additional channels. Additional channels can show either an analog, a digital or an internal (Int) calculated signal. The internal signal calculates the L* and R* value from the active front and surround channels in respect to the math choosen in the next subselection. With the SPL selection bargraph 7 (Σ7) will read weighted loudness as defined in the loudness submenu and bragraph 8 (Lq) will measure accumulated loudness (Leq) for a manually defined time span. The Leq measurement can be started and terminated by the use of the key combination Shift and Lq-S. A red marker below bargraph 8 indicates the ongoing measurement process.

L*R* Math	**Surr*0.7** -	Calculation factor for internal math Surr • 1, Surr • 0.5, Surr off
Vector-Setup		Call sub menu vectorscope settings: Setup via Nxt key
Corr-Setup		Call sub menu correlator-setup: Setup via Nxt key
Color-Setup		Call sub menu color-setup: Setup via Nxt key
PPM-Setup		Call sub menu PPM settings: Setup via Nxt key
Loudness-Setup		Call sub menu loudness settings: Setup via Nxt key

7.9.1. Sub menu: Vector-Setup

Grid	**65** -	Vectorscope display mode selection: 65 deg or 77 deg
Graphics Hold	**Medium** -	Vectorscope refresh rate: Fast, Medium, Slow

7.9.2. Sub menu: Corr-Setup

Corr-Response	**Slow** -	Correlator ballistics: slow (2.5 sec) or fast (1.0 sec)
Mode	**Spot -**	display style bar or spot
Surr.Corr.LPass	**Off**	not available in 8ch mode
Multi.Corr.LPass	**Off**	Multi correlator low pass filter On or Off

7.9.3. Sub menu: Color-Setup

A separate color selection for Peakhold, Headroom, Operationfield, Reference (Norm) and grid can be made for each bargraph (1-8). Place the cursor at the desired subselection by the use of the RGT key to the referring bargraph field. Select the color by the use of the NXT key.

	Peakmeter:	
PPM-Color-Phold	**WHITE** -	Color for peakhold display
-Hdroom,>Ref	**RED** -	Headroom color (digital) or above reference (analog)
-Opfield	**GREEN** -	Color for operation field
-Norm	**YELLOW** -	Bargraph color below reference or operation field
-Grid	**BLUE** -	Color for grid
-Label	**BLUE** -	Color for PPM label
-Loudness	**Cyan** -	Color for loudness display
	Vectorscope:	
Vector-Color	**Green** -	Color for vectorscope
-Grid	**Red** -	Color for grid
	Correlator:	
Color '+'	**Green** -	Color for positive readings
Color '-'	**Red** -	Color for negative readings
Color '0'	**White** -	Color for display 0
Grid	**Blue-**	Correlator grid color

7.9.4. Sub menu: PPM-Setup

🕮 **For the following types with digital-only inputs an analog scale is selectable, but without usefulness: 10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID**	Analog-Scale	**DIN+5** -	Standard selection: DIN+5, NORDIC, BRIIa, BRIIb, VU, ZOOM 20, DIN+10, (+24 dBu, +20 dBr - 10804X only)
	OP-Field [dB]	**0** -	Operation field definition below reference (color change). Adjustable in a range of 0 dB to 15 dB in 1 dB steps.
	Attack	**NORM** -	Integration time constant: NORM (according to scale standard), 1ms, 0,1ms
🕮 **For the following types with analog-only inputs a digital scale is selectable, but without usefulness: 10808X, 10808X-PLUS, 10818-203, 10828-203, 10838-218**	Digital-Scale	**0..60dB** -	Standard selection Digital (absolute) scales: 0..-60 dB, 0..-20 dB, Analog (equivalent) scales: DIN+10, DIN+5, NORDIC, BRIIa, BRIIb, VU, Special scales: ZOOM20, ZOOM2 +18 .. 0 dB, +18 .. -18 dB (0 dB FS = +18 dB) -40 .. +20 dB (0 dB FS = +20 dB)
	Headroom [dB]	**9** -	Headroom field definition above reference (color change). Adjustable in a range of 5 dB to 20 dB in 1 dB steps.
	OP-Field [dB]	**0** -	Operation field definition below reference (color change). Adjustable in a range of 0 dB to 15 dB in 1 dB steps.
	Attack	**SAMPLE** -	Integration time constant for PPM-display: SAMPLE, 0.1 ms, 1 ms, 10 ms, NORM (according to scale standard)
	PH-Attack	**Attack** -	Integration time constant for (PH) peakhold display: Sample or Attack (according to scale standard)
	DC-Filter	**5 Hz** -	DC-filter selection: 5 Hz, 10 Hz, 20 Hz, Off
	VU-Lead [dB]	**6** -	Preset for VU lead value: Range 0 dB to 10 dB in 1 dB steps.
	Peakhold-Mode	**2.5s** -	Peakhold reset time: Off, 2.5 s, 4.0 s, Man (clear by use of RESET key).

7.9.5. Sub menu: Loudness-Setup

Channel-Display	**On** -	Loudness display On or Off
Mode	**RTW.Loud** -	Operation mode for loudness: Linear+RMS - no filter/RMS RTW.Loud - RTW weighting Awt+RMS - A weighting / RMS Cwt+RMS - C weighting / RMS CCIR+RMS - CCIR weighting / RMS
A/C-wt-Response	**FAST** -	Operation mode for loudness gain FAST, SLOW
SPL.Reference	**78** -	SPL reference for loudness display: 70 to 85 dB

7.10. Sub menu: Mode-Setup: Surround 3.2

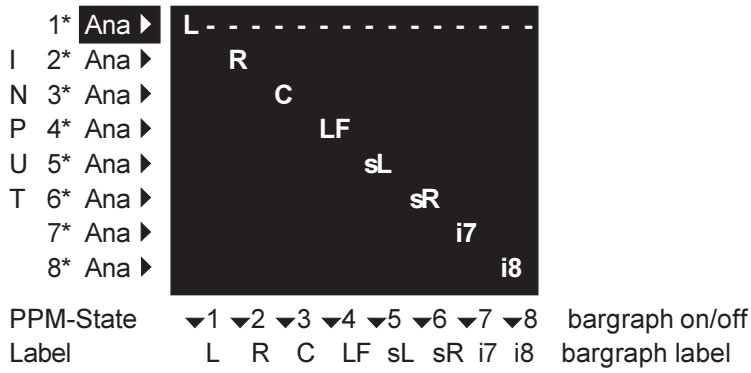
For the following types with digital-only inputs the input setting in preset F7 is set to: „digital <dig>“. The input domain however can be changed to analog but without usefulness: 10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID

All following graphs refer to factory preset F7:

Surround configuration:

Load Config.	**SMPTE.TV**	L, R, C, LF, sL, sR, i7, i8
	SMPTE.Film	L, sL, C, sR, R, LF, i7, i8
	DTS	L, R, sL, sR, C, LF, i7, i8
	Film	L, C, R, sL, sR, LF, i7, i8
	Manual	user definable

Inputrouting:



An alternatively or mixed use of analog and digital inputs is only feasible with the following types:
10800X, 10800X-PLUS, 10804X-PLUS, 10810-203, 10815 STU, 10820-203, 10830-218, 10830 SSL, 10835 SSL and 10860-VID.
With analog-only units the digital domain is selectable as is with digital-only units and analog domain, but without usefulness.

The input routing allows the selection of the desired common input domain for the surround signal and the domain for the additional channels. Additional channels can show either an analog, a digital or an internal (Int) calculated signal. The internal signal calculates the L* and R* value from the active front and surround channels in respect to the math choosen in the next subselection. With the SPL selection bargraph 7 (Σ7) will read weighted loudness as defined in the loudness submenu and bragraph 8 (Lq) will measure accumulated loudness (Leq) for a manually defined time span. The Leq measurement can be started and terminated by the use of the key combination Shift and Lq-S. A red marker below bargraph 8 indicates the ongoing measurement process.

L*R* Math	**Surr*0.7** -	Calculation factor for internal math Surr • 1, Surr • 0.5, Surr off
Vector-Setup	Call sub menu vectorscope settings: Setup via Nxt key	
Corr-Setup	Call sub menu correlator-setup: Setup via Nxt key	
Color-Setup	Call sub menu color-setup: Setup via Nxt key	
PPM-Setup	Call sub menu PPM settings: Setup via Nxt key	
Loudness-Setup	Call sub menu loudness settings: Setup via Nxt key	

7.10.1. Sub menu: Vector-Setup

Grid	**65** -	Vectorscope display mode selection: 65 deg or 77 deg
Graphics Hold	**Medium** -	Vectorscope refresh rate: Fast, Medium, Slow

7.10.2. Sub menu: Corr-Setup

Corr-Response	**Slow** -	Correlator ballistics: slow (2.5 sec) or fast (1.0 sec)
Mode	**Spot -**	display style bar or spot
Surr.Corr.LPass	**Off**	Surround correlator low pass filter On or Off
Multi.Corr.LPass	**Off**	Multi correlator low pass filter On or Off

7.10.3. Sub menu: Color-Setup

A separate color selection for Peakhold, Headroom, Operationfield, Reference (Norm) and grid can be made for each bargraph (1-8). Place the cursor at the desired subselection by the use of the RGT key to the referring bargraph field. Select the color by the use of the NXT key.

	Peakmeter:	
PPM-Color-Phold	**WHITE** -	Color for peakhold display
-Hdroom,>Ref	**RED** -	Headroom color (digital) or above reference (analog)
-Opfield	**GREEN** -	Color for operation field
-Norm	**YELLOW** -	Bargraph color below reference or operation field
-Grid	**BLUE** -	Color for grid
-Label	**BLUE** -	Color for PPM label
-Loudness	**Cyan** -	Color for loudness display
	Vectorscope:	
Vector-Color	**Green** -	Color for vectorscope
-Grid	**Red** -	Color for grid
	Correlator:	
Color '+'	**Green** -	Color for positive readings
Color '-'	**Red** -	Color for negative readings
Color '0'	**White** -	Color for display 0
Grid	**Blue-**	Correlator grid color

7.10.4. Sub menu: PPM-Setup

🕮 **For the following types with digital-only inputs an analog scale is selectable, but <u>without</u> usefulness:** **10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID**	<u>Analog-Scale</u>	**DIN+5** -	Standard selection: DIN+5, NORDIC, BRIIa, BRIIb, VU, ZOOM 20, DIN+10, (+24 dBu, +20 dBr - 10804X only)
	OP-Field [dB]	**0** -	Operation field definition below reference (color change). Adjustable in a range of 0 dB to 15 dB in 1 dB steps.
	Attack	**NORM** -	Integration time constant: NORM (according to scale standard), 1ms, 0,1ms
🕮 **For the following types with analog-only inputs a digital scale is selectable, but <u>without</u> usefulness:** **10808X, 10808X-PLUS, 10818-203, 10828-203, 10838-218**	<u>Digital-Scale</u>	**0..60dB** -	Standard selection Digital (absolute) scales: 0..-60 dB, 0..-20 dB, Analog (equivalent) scales: DIN+10, DIN+5, NORDIC, BRIIa, BRIIb, VU, Special scales: ZOOM20, ZOOM2 +18 .. 0 dB, +18 .. -18 dB (0 dB FS = +18 dB) -40 .. +20 dB (0 dB FS = +20 dB)
	Headroom [dB]	**9** -	Headroom field definition above reference (color change). Adjustable in a range of 5 dB to 20 dB in 1 dB steps.
	OP-Field [dB]	**0** -	Operation field definition below reference (color change). Adjustable in a range of 0 dB to 15 dB in 1 dB steps.
	Attack	**SAMPLE** -	Integration time constant for PPM-display: SAMPLE, 0.1 ms, 1 ms, 10 ms, NORM (according to scale standard)
	PH-Attack	**Attack** -	Integration time constant for (PH) peakhold display: Sample or Attack (according to scale standard)
	DC-Filter	**5 Hz** -	DC-filter selection: 5 Hz, 10 Hz, 20 Hz, Off
	VU-Lead [dB]	**6** -	Preset for VU lead value: Range 0 dB to 10 dB in 1 dB steps.
	Peakhold-Mode	**2.5s** -	Peakhold reset time: Off, 2.5 s, 4.0 s, Man (clear by use of RESET key).

7.10.5. Sub menu: Loudness-Setup

Channel-Display	**On** -	Loudness display On or Off
Mode	**RTW.Loud** -	Operation mode for loudness: Linear+RMS - no filter/RMS RTW.Loud - RTW weighting Awt+RMS - A weighting / RMS Cwt+RMS - C weighting / RMS CCIR+RMS - CCIR weighting / RMS
A/C-wt-Response	**FAST** -	Operation mode for loudness gain FAST, SLOW
SPL.Reference	**78** -	SPL reference for loudness display: 70 to 85 dB

7.11. Sub menu: SurroundAnalyzer

TVI	**On** -	Total Volume Indicator On or Off
PSI	**On** -	Phantom Source Indicator On or Off
Dominanz	**Off** -	Dominance vector display On or Off
Correlator.sLsR	**On**-	Surround Correlator On or Off:

7.12. Sub menu: DIGITAL-ERRORS

Resolution	**16** -	Word width for analysis from MSB: 16 - 24 Bit
Over-Samples	**4** -	Number of consecutive samples with a value defined by -Sens for over-display: 1 - 15 samples
-Sens	**Fscale**-	Threshold for overload detector sense: **Fscale**, FS-1 LSB, FS-2 LSB, -0.1 dB, -0.5 dB, -1.0 dB, -2.0 dB, -3.0 dB
Mute-Check	**Off** -	Mute- check condition (digital zero) Off, Time, Sample
-Time	**100ms** -	Sequence length for digital zeros before activating MUTE display: 50 ms, 100 ms, 200 ms, 300 ms
-Samples	**40** -	Number of consecutive samples with a value zero before activating Mute display: 5 to 80 samples in steps of 5 samples
Indication	**1.0s** -	Hold time for digital error display: 1.0 s or Manual (permanent display until manual reset).

7.13. Sub menu: RTA

Ballistik	**AVG**	(Average) or Peak
-Response	**Medium** -	Response time RTA-display: Fast, Medium, Slow
Peakhold		**2.5s** - Peakhold reset time: Off, 2.5 s, 4.0 s, Man (clear by use of Reset key).
Span	**45dB** -	Display range selection 15, 30 oder 45 dB
Freq-Range	**20Hz-20kHz**-	RTA frequency range 20Hz-20kHz, 5Hz-5kHz or Auto.SurLF (autorange change for LF surround signals)
Reference	**8** -	0 dB Reference
2/8 Input	**L+R** -	RTA input selection from preselected input pair. Left, Right or L+R

Surr-Input	**Groups** -	RTA signal source selection(1) in surround mode. Groups (front or surround) or Single-Cha
-Channels	**Front-**Chan-	RTA signal source selection(2) in surround mode. Front-Chan= L+R+C Surr-Chan= LS+RS LF-Chan = LF or **Single** -Cha 1-6
-Grid	**Std-**	Grid Std (standard) or Fine
Bar-Organ.	**Single** -	Bargraph order for RTA display. Single - single bargraphs at an equal distance, Group-Terz - bargraph in blocks of three or Block-Terz
Color-Bar<0	**Yellow -**	color below 0 dB reference
Color-Bar>0	**Red -**	color above 0 dB reference
Color-Phold	**White -**	color for peakhold
Color-Info	**Yellow -**	color for additional information

7.14. Sub menu: NUMERIC

Permanent.Disp	**None** -	off
Hold-Time	**Fast** -	reset time for numerical values Fast, Medium (approx. 2,5 sec), Slow, (approx. 10sec), Maximum (reset off, long time measurement)
Memory Pressed		
Field1	Selection for numerical display field 1 (#1)	
Field2	Selection for numerical display field 2 (#1)	
Field3	Selection for numerical display field 3 (#1)	
	(#1) Selection:	
	memLevel -	maximum level
	memMargin -	remaining level below clip (0 dB FS)
	memLoud -	maximum loudness
	Over -	number of overloads counts
Color	Yellow -	Color for numerical display

Please note: If the GAIN key has been used stored numerical values will be shown in red. The memory can be cleared by the use of the RESET key.

7.15. Sub menu: GENERAL

Serial-No		Unit serial number.
Menu-Lock	**Off** -	Enable/disable menu-lock-function.
-Code	**1351** -	Code selection to enable menu when menu-lock is activated: Code table: 1351, 4214, 2132, 3542, 4251, 3512, 4231, 4311
Standby	**10 Min** -	Time value until dimming of backlight display after input signal falls below an internal defined threshold: 10 Min., 60 Min., Off
Brightness	**60%** -	Display brightness control in steps of 10%: 30% ... 100%.

7.16. Sub menu: DIALNORM

📖 **see also section 5.4.**

Please note: Dialnorm display can only be selected if digital domain inputs are in use. Input channels 7 and 8 must be set to SPL-display in the sub menu mode-setup surround (7.9 and 7.10).

📖 **see also section 7.6.2.**

The operation mode „Dialnorm“ allows measurement of the dialnorm value, the leq(A) value refered to 0 dB FS as well as the leq(A) SPL value (this value is only valid if your system has been calibrated to a reference monitoring sound pressure level). Select the desired channels for the measurement and define a measuring period. The actual dialnorm value will be displayed continously. This will give a good approximation to the final result even after a few minutes. Peaklevel can be read simultaniously to the dialnorm measurement on the right hand side display of the SurroundMonitor.

Dialnorm mode must have been enabled in the sub menu modekey before it can be selected by the use of multiple operations of the MODE key.

Stup		Call Dialnorm setup menu
Mode	**Auto**	auto or manual; automatic termination of the measurement after a predetermind time period or manual.
Intervall Time		Time period definition for automatic measurement termination. Max span 2:59:59.
Channel Select		
Left	**(*)**	(*) Off or (+) On
Right	**(*)**	(*) Off or (+) On
Center	**(*)**	(*) Off or (+) On
LowFreq	**(*)**	(*) Off or (+) On
Surr-Left	**(*)**	(*) Off or (+) On
Surr-Right	**(*)**	(*) Off or (+) On
Strt		start measurement
Paus		pause measurement, allready recorded measurement values will be kept in memory and used as the measurement resumes by the the use of the „*Strt*“ key
Stop		measurement termination
Rst		reset time counter

8. Calibration and Service

8.1. Calibration

The SurroundMonitor uses state of the art DSP technology. Scale and ballistics are defined in software. Based on this facts long term stability is guaranteed. Adjustment and calibration are not required.

8.2. Analog reference level change

Open the unit see 8.4.

This adjustment cannot be proceeded with digital-only types like:
10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID

If it is necessary to operate the unit with a reference level other than set by the factory it can be changed. Please note that the correct reading of the SurroundMonitor 10804X-PLUS scales +24 dBu and 0 dBr requires the 0 dB reference setting for the DIN+5 scale to be adjusted to +6 dBu input signal feed through the standard analog input connector. Other than that proceed as follows:

1. Input level range 0 dBu to +10 dBu:
   Apply a 1 kHz signal with reference level and adjust these potentiometers for reading reference (i. e. 0 dB or Test)

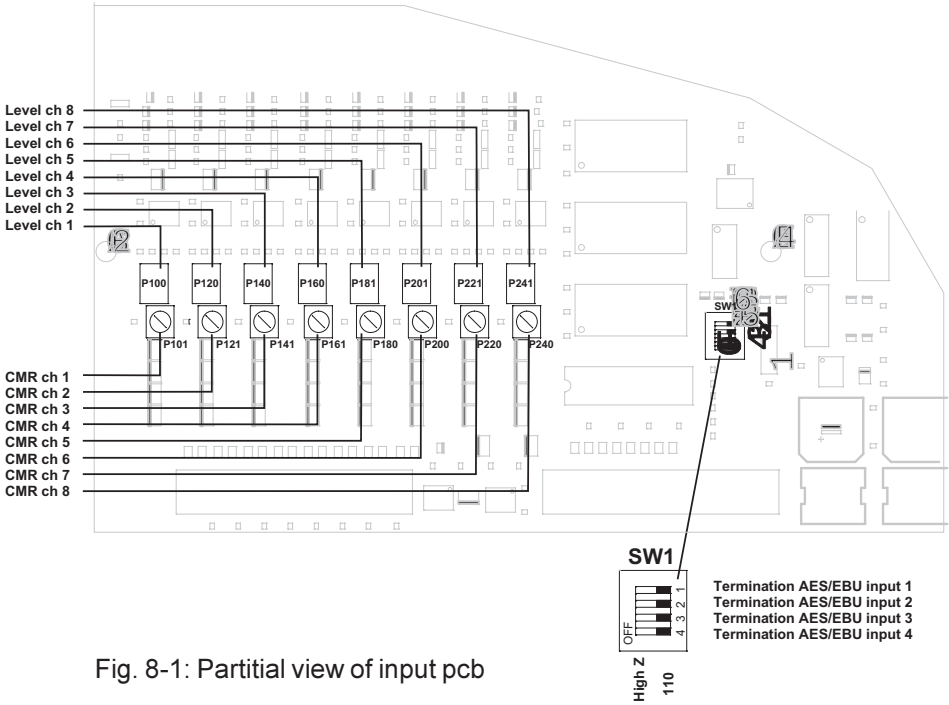


Fig. 8-1: Partitial view of input pcb

This switches are <u>without</u> function with analog-only types like:
10808X, 10808X-PLUS, 10818-203, 10828-203, 10838-218

8.3. Digital input termination

The AES inputs termination can be set to high-Z if required. We do not recommend standard use of the instrument in high-Z mode.

8.4. Open the unit type 1080nX/1080nX-PLUS

Important: This description is not intended to be used as a service manual. These are guidelines for an expierenced service engineer to proceed adjustments or exchange parts of our instrument. However, we strongly recommend repair of faulty units in our factory.

Please refer to the safety instruction in chapter 6 before continuing.

1. Disconnect all cables from the SurroundMonitor.

2. Place the SurroundMonitor face down on the work bench. Asure not to scratch or damage the displays.

3. Open the backplane cover (four screws). Store screws and metal plate. (fig. 8-2)

8.5. Display exchange type 1080nX/1080nX-PLUS

In case of a faulty display this has to be exchanged completely including the mainframe. Special tools would be required to mount a display in the frame. Thats why only preproduced display units are available as a spare part. Proceed as follows to exchange displays:

1. Disconnect all cables from the SurroundMonitor.

2. Place the SurroundMonitor face down on the work bench. Asure not to scratch or damage the displays.

3. Open the backplane cover (four screws). Store screws and metal plate. (fig. 8-2)

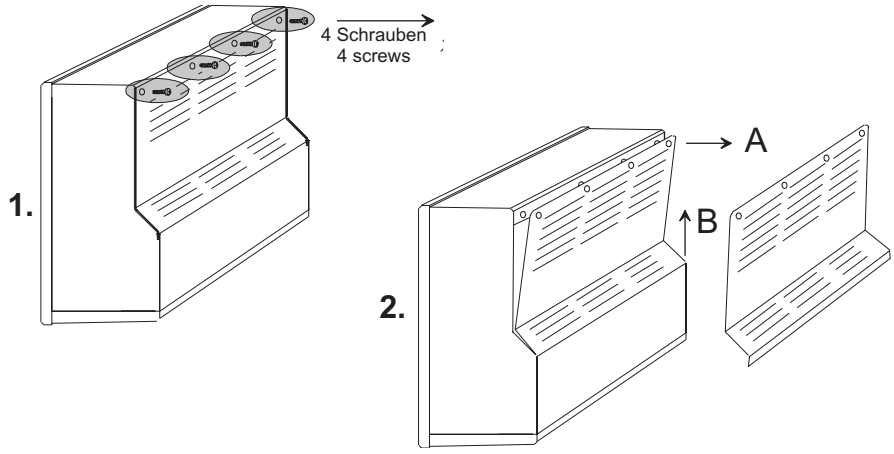


Fig. 8-2: Remove rear cover

4. Remove an optional standoff.

5. Take out the four screws fixing the main pcb. Remove the screws at the bottom of the SurroundMonitor which hold the connector panel in place. Carefully remove connector panel and main pcb. (Fig. 8-3)

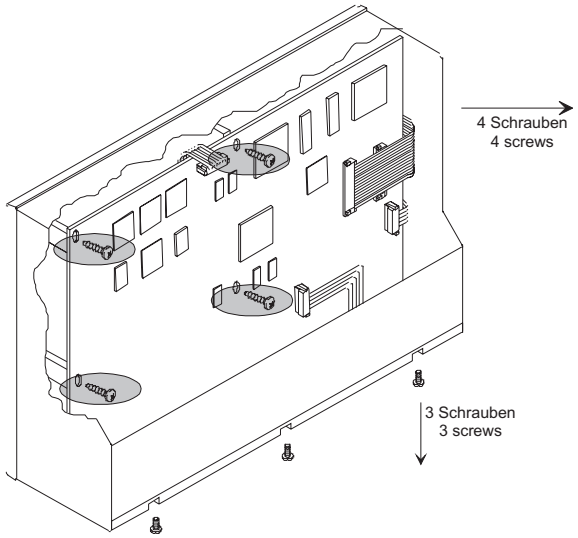


Fig. 8-3: Unscrew and removal of main pcb and connector panel

6. Take out flat cables after carefully loosing the locker. Take out all other flat cables as well. (fig. 8-4)

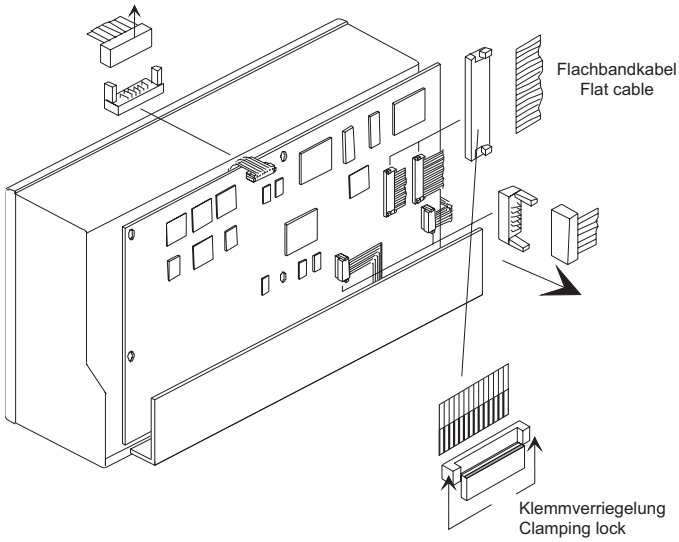




Fig 8-4: Loosen the flat cables

7. Store main pcb at a safe place. When servicing it is very important to observe all standard ESD (electrostatic discharge) protection procedures.

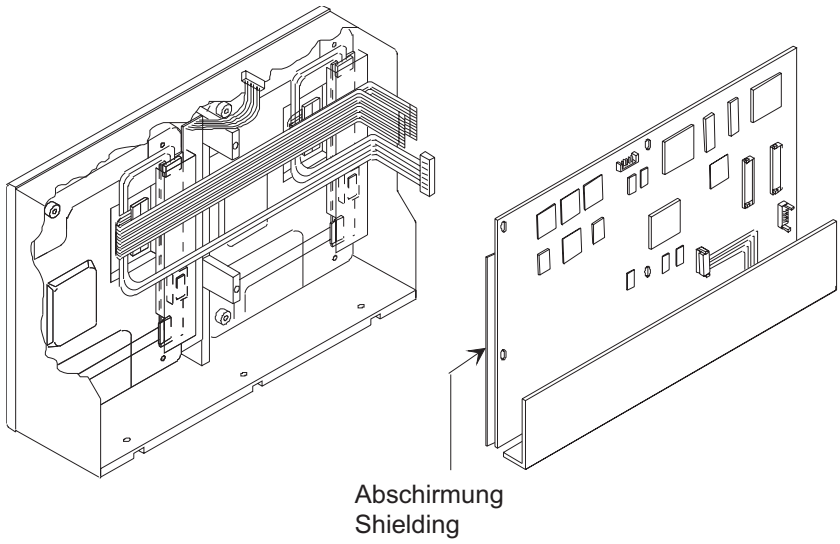


Fig. 8-5: Removal of main pcb

8. Loose the locker of the flexible flat cables at the display units. Remove flat cables. Avoid damage of the flat cables because of canting. (fig. 8-6)

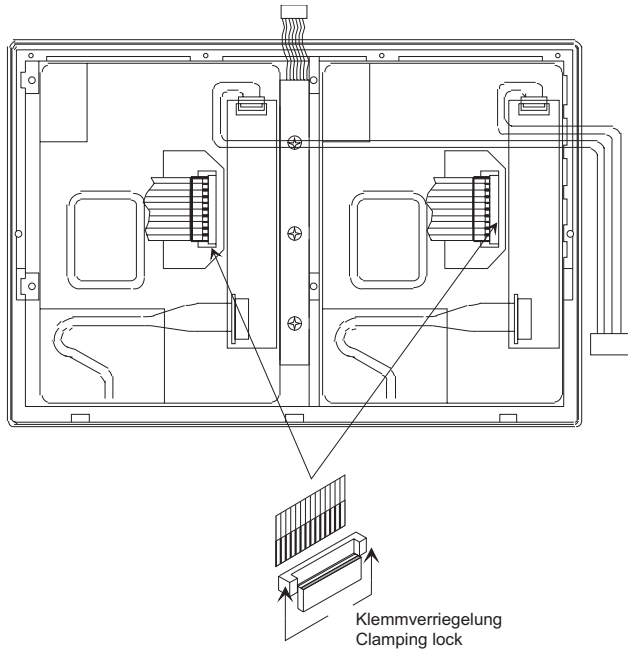


Fig. 8-6: Removal of the flat cable from the display unit

9. Remove the fixing srews for the switch pcb and take board out of the frame. (fig. 8-7)

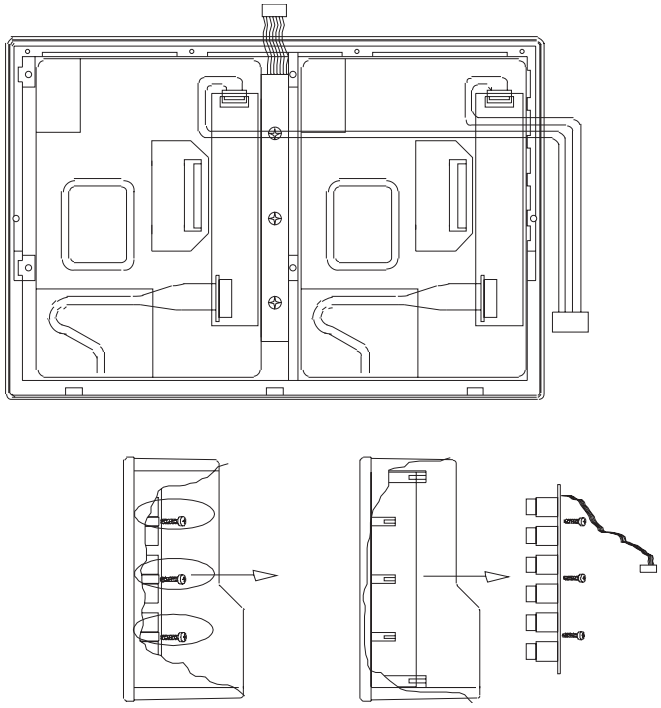


Fig. 8-7: Removal of switch pcb

10. Dispose faulty display unit according to the regulations in your country or district or return it to RTW.

11. Place switch pcb inside the new display unit and fix them by the use of stored screws. (fig. 8-8)

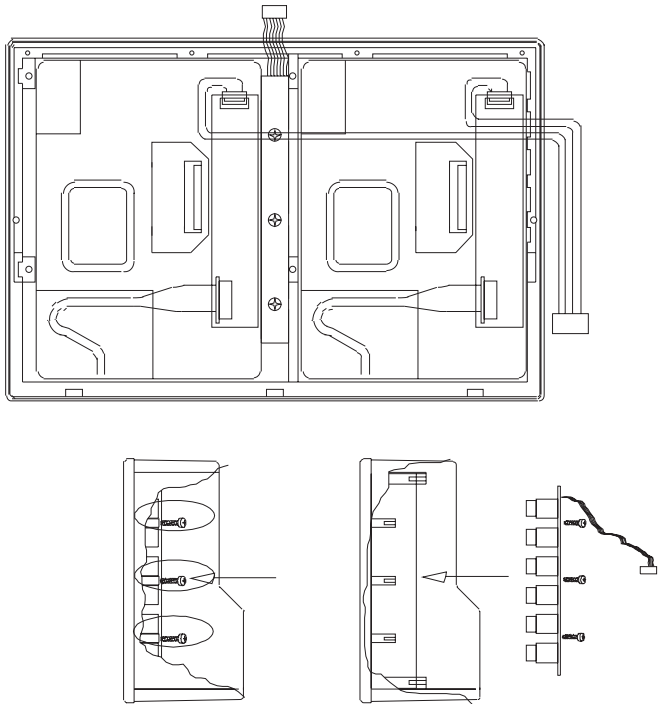


Fig. 8-8: Installation of switch pcb

12. Connect flat cables to display unit. Avoid damage of the flat cables because of canting. (fig. 8-9)

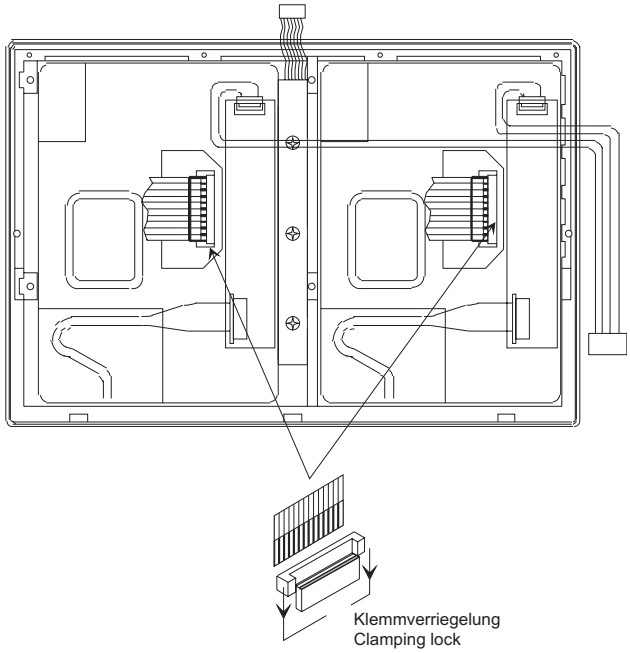


Fig. 8-9: Connecting the display

13. Place main pcb and connecting panel carefully inside the frame. Adjust position of pcb and flat cables and reconnect flat cables (fig. 8-10).

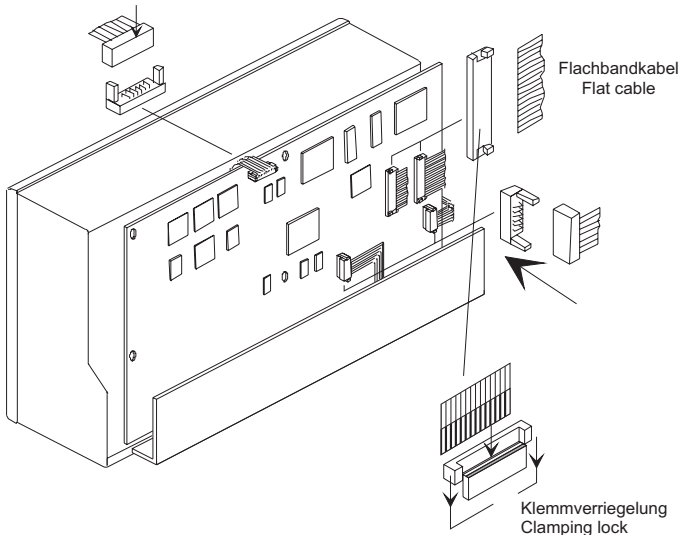


Fig. 8-10: Connecting main pcb

14. Fix main pcb with four screws. Be sure not to damage the flat cables. Install and fix connector panel with three screws (fig. 8-11).

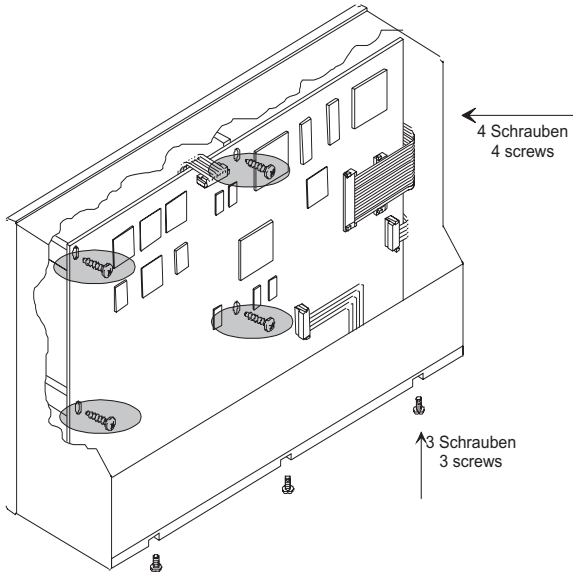


Fig. 8-10: Fixing main pcb and connector panel

15. Check wiring and connections.

16. Reinstall rear cover and remount an optional stand-off. (fig. 8-12)

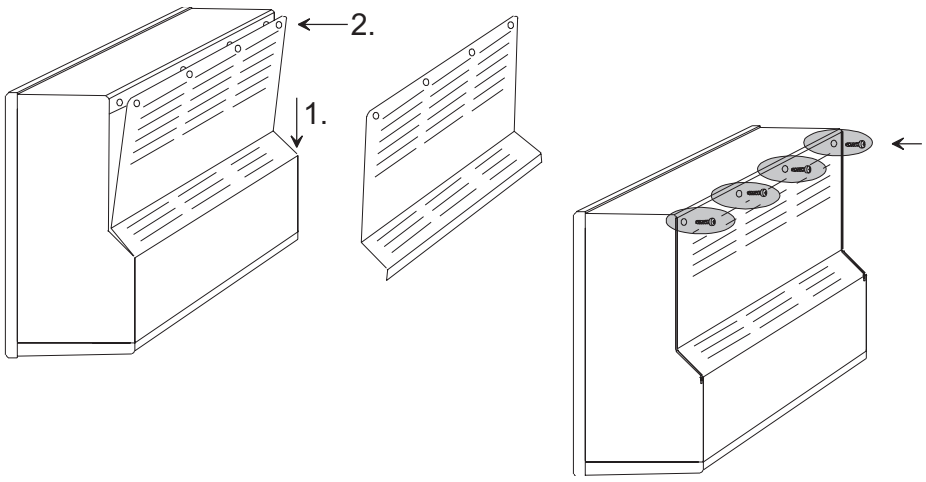


Fig. 8-12: Mounting of rear cover

17. Connect SurroundMonitor to DC-supply and signal sources. Check function.

8.6. Open the units type 1081n-203, 10815 STU, 1082n-203, 1083n-218, 1083n SSL

Important: This description is not intended to be used as a service manual. These are guidelines for an expierenced service engineer to proceed adjustments or exchange parts of our instrument. However, we strongly recommend repair of faulty units in our factory.

Please refer to the safety instruction in chapter 6 before continuing.
1. Disconnect all cables from the SurroundMonitor.

2. Place the SurroundMonitor face down on the work bench. Asure not to scratch or damage the displays.

3. Open the backplane cover (six screws). Store screws and metal plate. (fig. 8-13)

8.7. Display exchange type 1081n-203, 10815 STU, 1082n-203, 1083n-218, 1083n SSL

Proceed as follows to exchange displays:

1. Disconnect all cables from the SurroundMonitor.

2. Place the SurroundMonitor face down on the work bench. Asure not to scratch or damage the displays.

3. Open the backplane cover (six screws). Store screws and metal plate. (fig. 8-13)

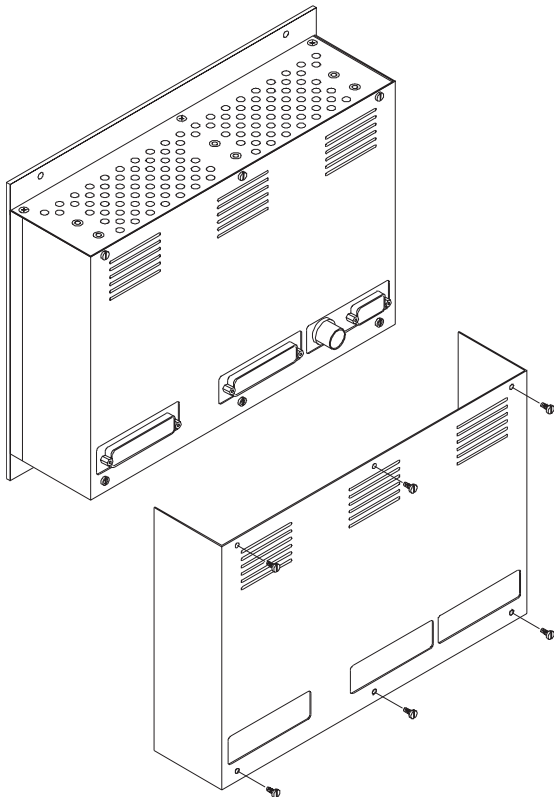


Fig. 8-13: Remove rear cover

4. Take out the screws fixing the main pcb. Remove the screws at the bottom of the SurroundMonitor which hold the connector panel in place. Carefully remove connector panel and main pcb. (Fig. 8-14)

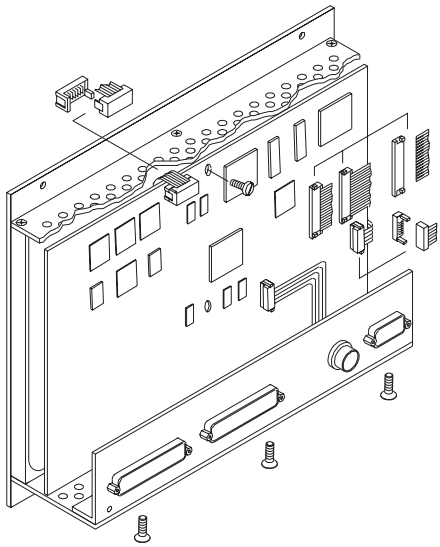


Fig. 8-14: Unscrew and removal of main pcb and connector panel

5. Take out flat cables after carefully loosing the locker. Take out all other flat cables as well (fig. 8-15).

6. Store main pcb at a safe place. When servicing it is very important to observe all standard ESD (electrostatic discharge) protection procedures.

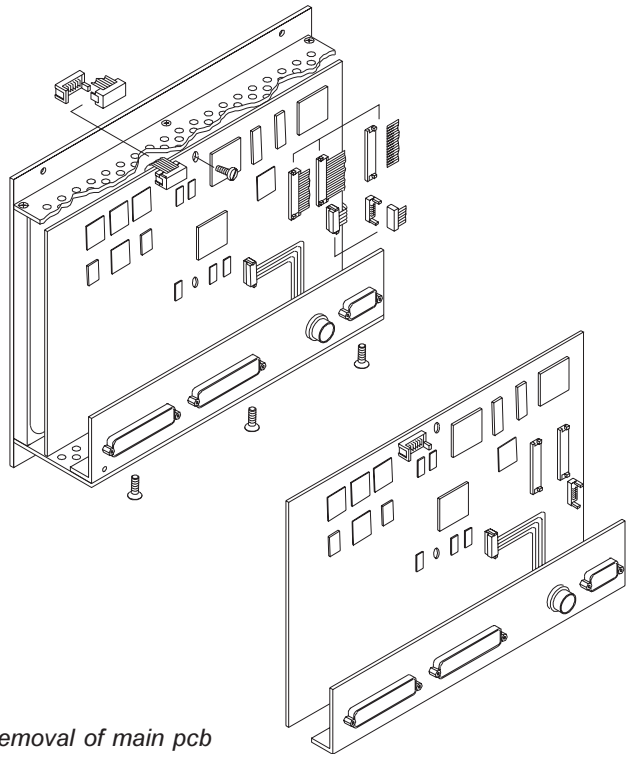


Fig. 8-15: Removal of main pcb

7. Loose the locker of the flexible flat cables at the display units. Remove flat cables. Avoid damage of the flat cables because of canting. (fig. 8-16)

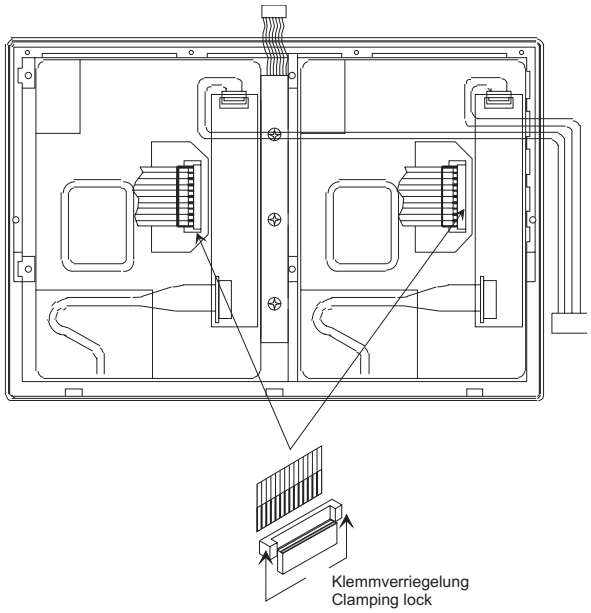


Fig. 8-16: Removal of the flat cable from the display unit

8. Remove the fixing srews for the switch pcb and take board out of the frame. (fig. 8-17)

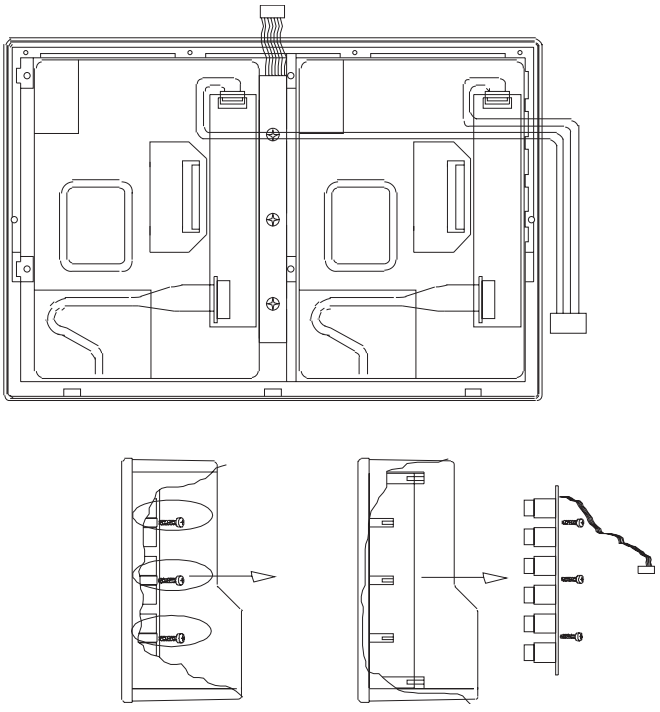


Fig. 8-17: Removal of switch pcb

9. Disassembling the broken display (fig. 4-18)

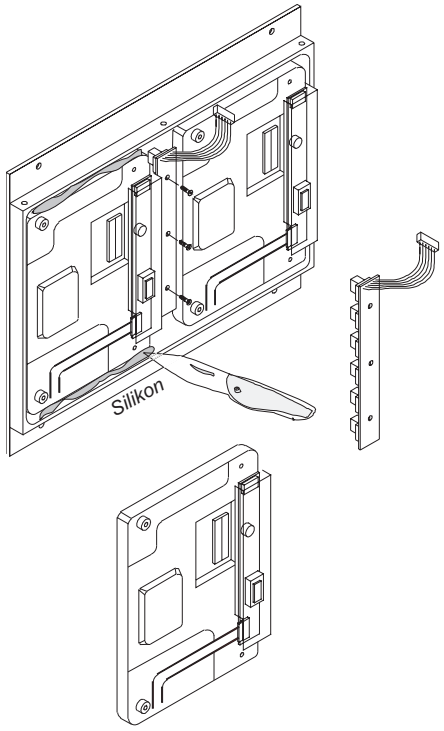


Fig. 4-18: Disassembling a broken display

10. Dispose faulty display unit according to the regulations in your country or district or return it to RTW.

11. Place switch pcb inside the new display unit and fix them by the use of stored screws. (fig. 8-19)

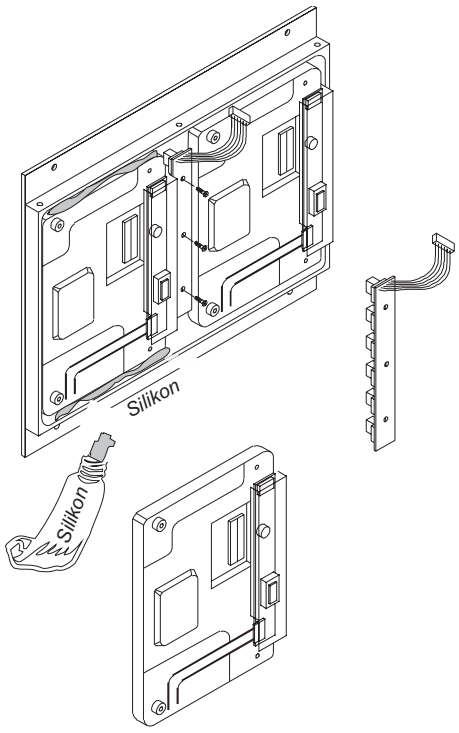


Fig. 8-19: Assembling the display unit

12. Connect flat cables to display unit. Avoid damage of the flat cables because of canting. (fig. 8-20)

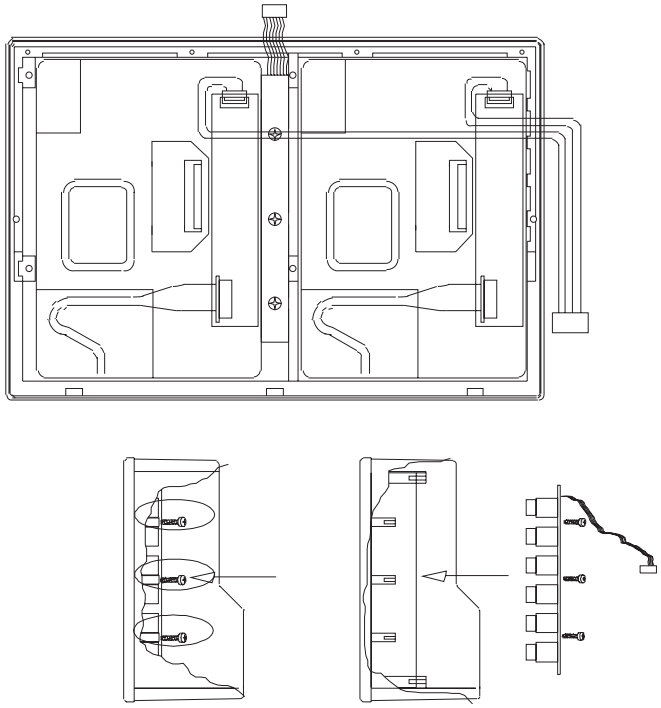


Fig. 8-20: Connecting the display

13. Place main pcb and connecting panel carefully inside the frame. Adjust position of pcb and flat cables and reconnect flat cables (fig. 8-21).

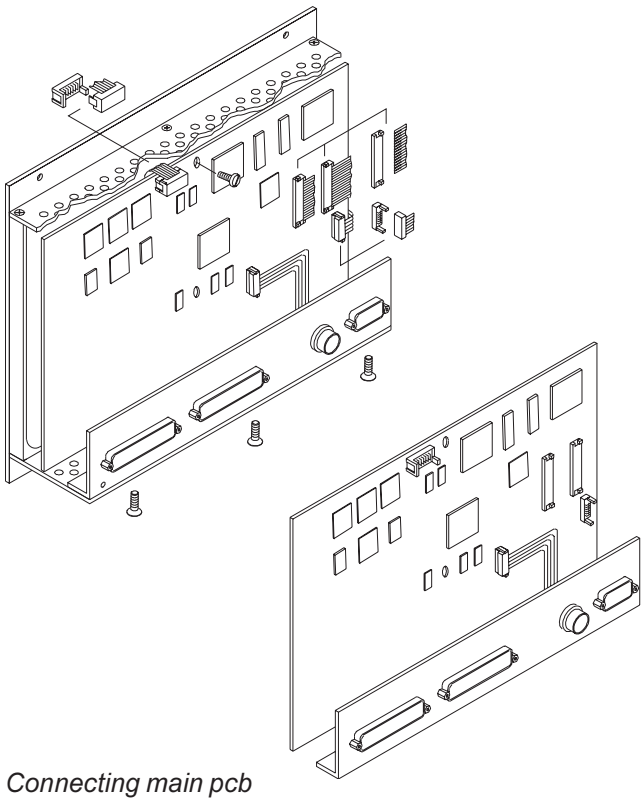


Fig. 8-21: Connecting main pcb

14. Fix main pcb with screws. Be sure not to damage the flat cables. Install and fix connector panel with three screws (fig. 8-21).

15. Check wiring and connections.

16. Reinstall rear cover.

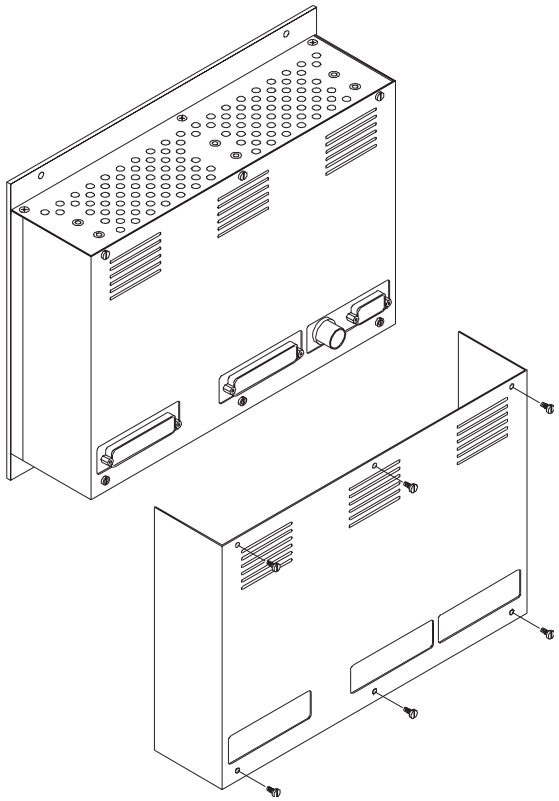


Fig. 4-22: Reinstalling the rear cover

17. Connect SurroundMonitor to DC-supply and signal sources. Check function.

8.8. Open the unit type 10860-VID

Important: This description is not intended to be used as a service manual. These are guidelines for an expierenced service engineer to proceed adjustments or exchange parts of our instrument. However, we strongly recommend repair of faulty units in our factory.

Please refer to the safety instruction in chapter 6 before continuing.

1. Disconnect all cables from the SurroundMonitor.

2. Remove the screws at the rear side of the 19'' special rack mount cabinet and remove the unit from the front.

3. Asure not to scratch or damage the displays.

4. Open the unit's rear cover panel (four screws) and store them.

8.9. Display exchange type 10860-VID

Proceed as follows to exchange displays:

1. Disconnect all cables from the SurroundMonitor.

2. Remove the screws at the rear side of the 19'' special rack mount cabinet and remove the unit from the front.

3. Asure not to scratch or damage the displays.

4. Open the unit's rear cover panel (four screws) and store them (fig. 8-23).

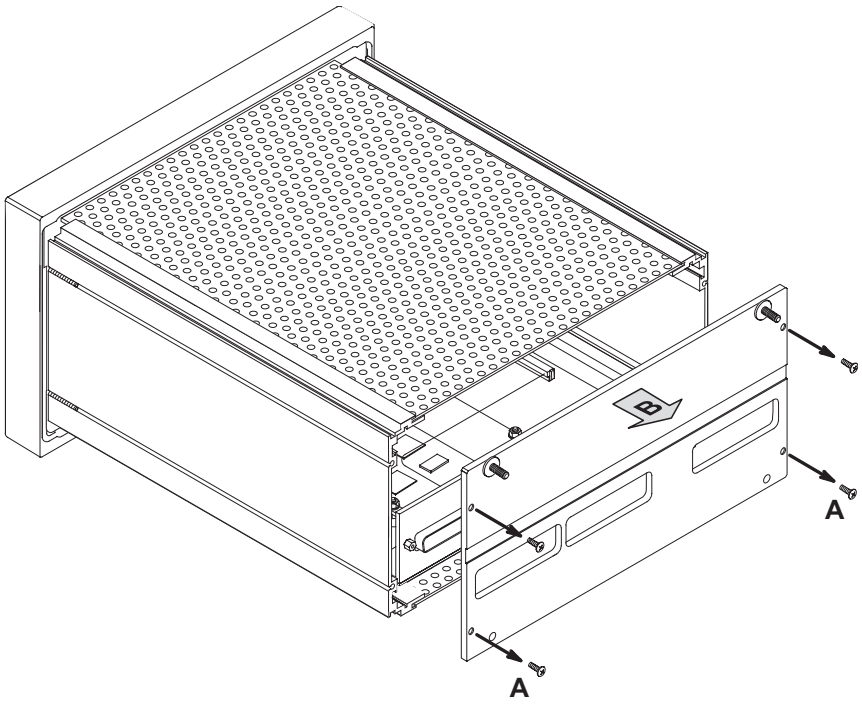


Fig. 8-23: Removing the rear cover panel

5. Carefully remove the ground cables from upper and lower perforated cover metal plates and pull these plates out of the frame (fig. 8-24).

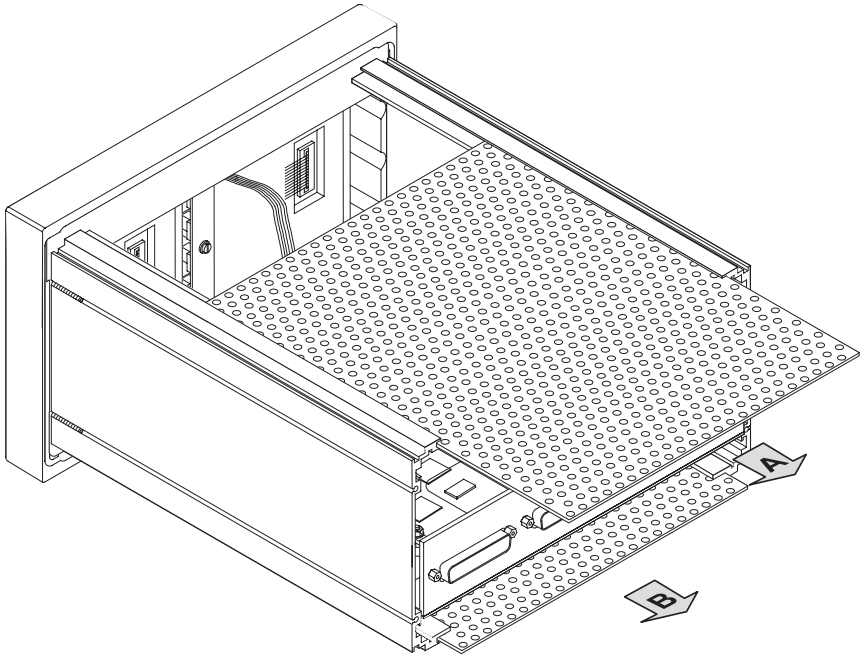


Fig. 8-24: Removing the perforated cover metal plates

6. Take out the display connecting cables at the bottom side (fig. 8-25, A). Then loose the locker of the display's data cables at the upper side of the main pcb (fig. 8-25, B) and remove them carefully. Avoid damage of the flat cables because of canting.

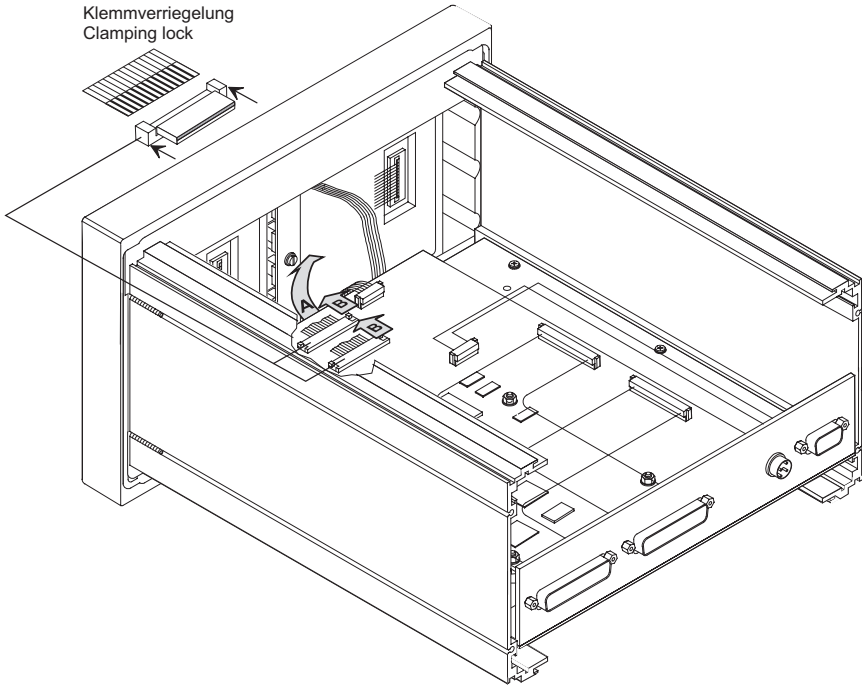


Fig. 8-25: Removing connecting cables and data cables

7. Remove with a suitable screw driver the Philips screws from the front side of the unit (fig. 8-26, A).

8. Upend the front panel on the work bench (fig. 8-26, B). Asure not to scratch or damage the displays. **Note: Do NOT drag the key pad cable splice and do NOT damage it!**

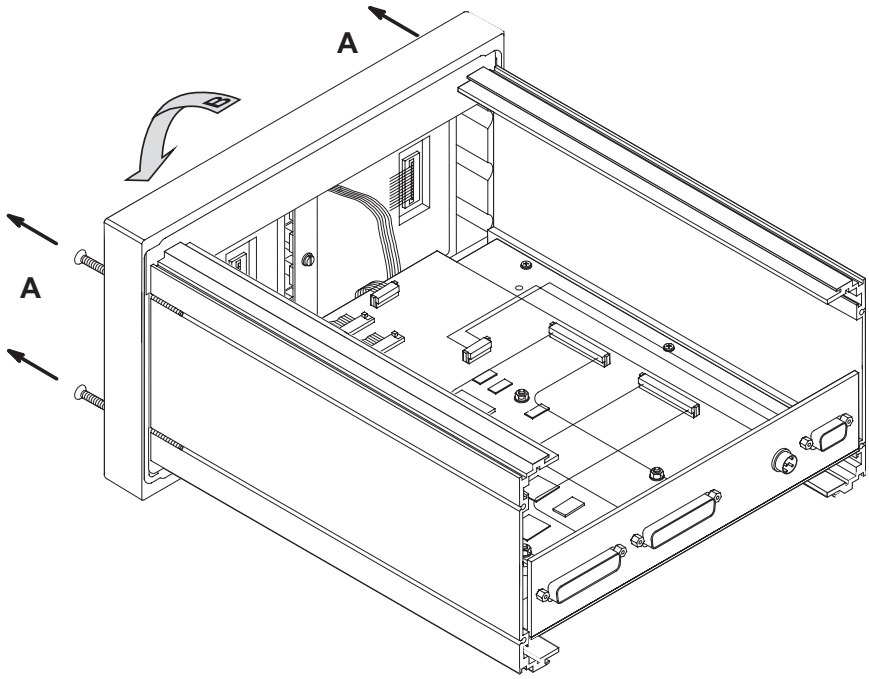


Fig. 8-26: Removing and upending the front panel

9. Loose the locker of the flat cable at the damaged display unit (fig. 8-27, A). Remove flat cables. Avoid damage of the flat cables because of canting.

10. Remove carefully both cover strips from the displays (fig. 8-27, B).

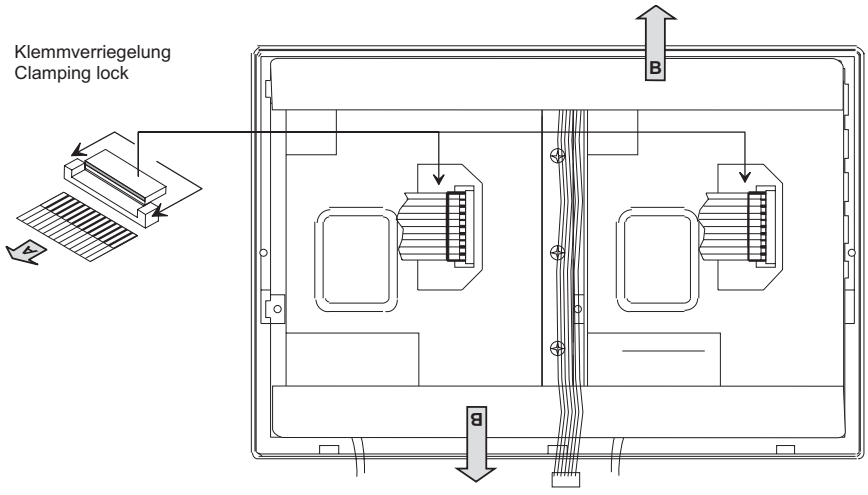


Fig. 8-27: Removing of the flat cables and cover strips from the display

11. Remove carefully the fixing silicone (fig. 8-28, A) and disassemble the broken display (fig. 8-28, B).

12. Dispose faulty display unit according to the regulations in your country or district or return it to RTW.

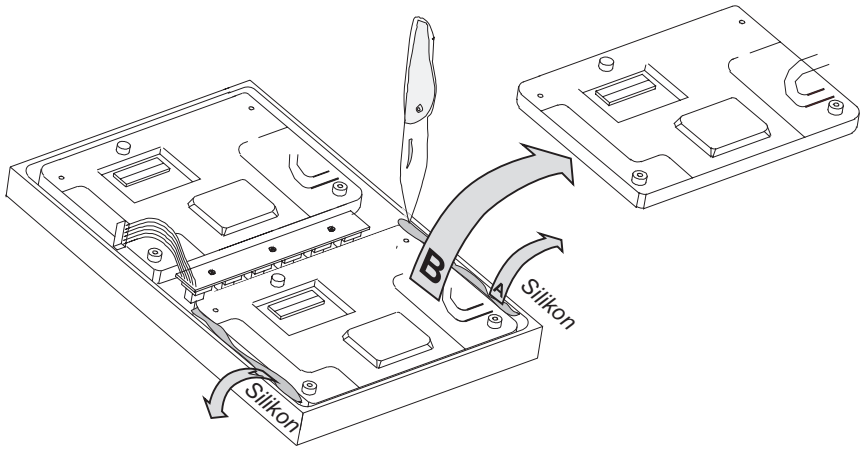


Fig. 8-28: Removing the broken display

13. Place the new display unit (fig. 8-29, A) and fix it with silicone (fig. 8-29, B).

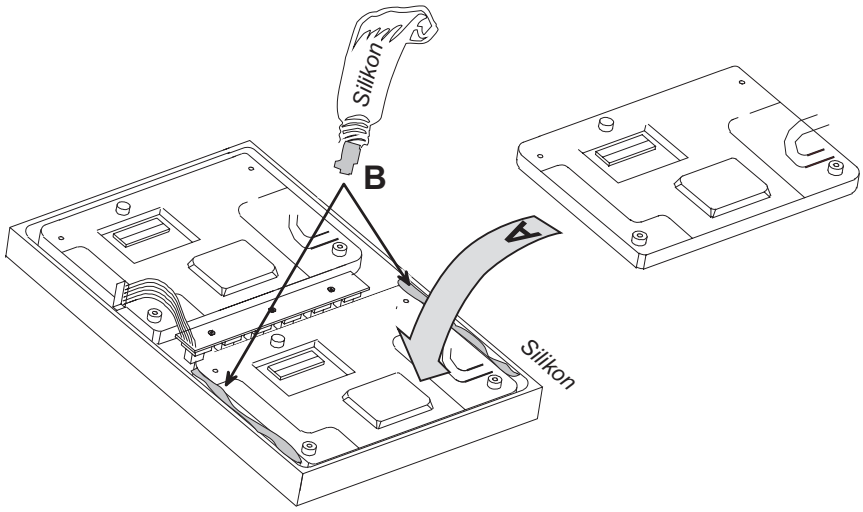


Fig. 8-29: Mounting the new display

14. Fix the cover plates with suitable adhesive tape back to their place (fig. 8-30, A).

15. Connect flat cables to display unit (fig. 8-30, B). Avoid damage of the flat cables because of canting.

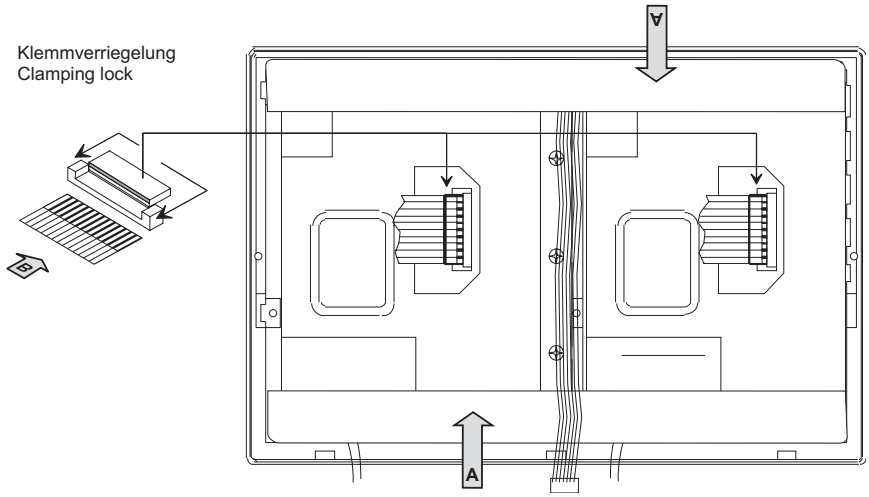


Fig. 8-30: Mounting the cover plates and reconnecting the displays

16. Upend the front panel back to its position at the frame (fig. 8-31, A) and fix it with the four Philips screws fig. 8-31, B).

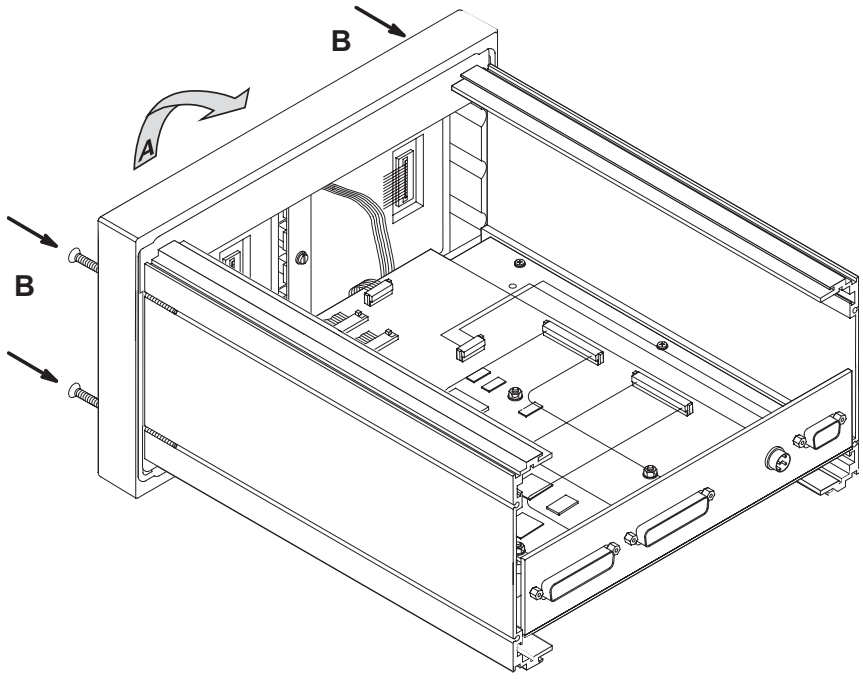


Fig. 8-31: Mounting the front panel

17. Reconnect the flat cables on the upper side (fig. 8-32, A), then on the bottom side (fig. 8-32, B). Avoid damage of the flat cables because of canting.

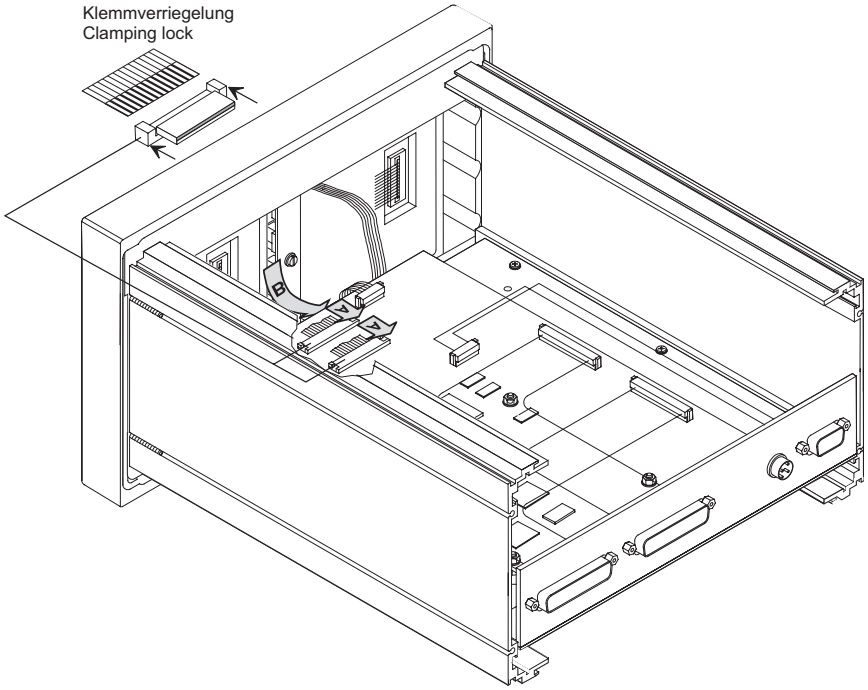


Fig. 8-32: Reconnecting the connecting cables and the data cables

18. Securely check again wiring and connections.

19. Put the perforated cover metal plates into their guideways (fig. 8-33, A) and move them back to their place (fig. 8-33, B). Fasten the ground cables.

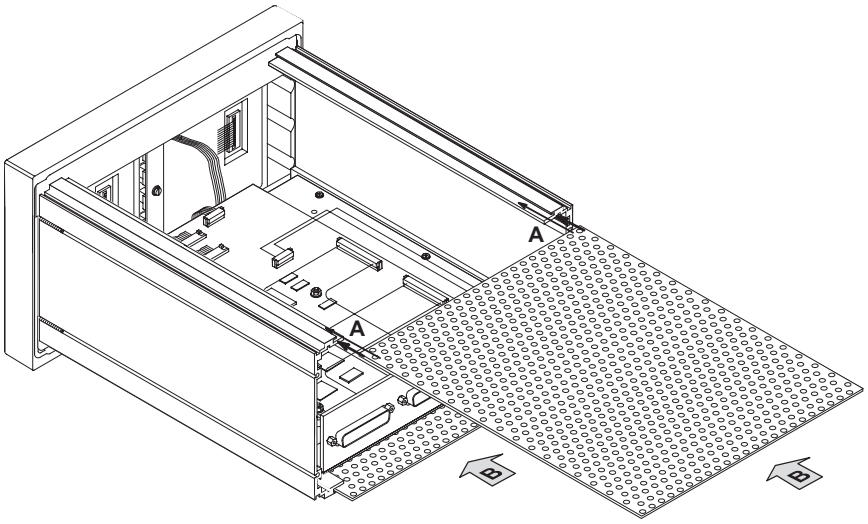


Fig. 8-33: Moving back the perforated cover metal plates

20. Reinstall the rear cover plate at the rear side of the unit (fig. 8-34).

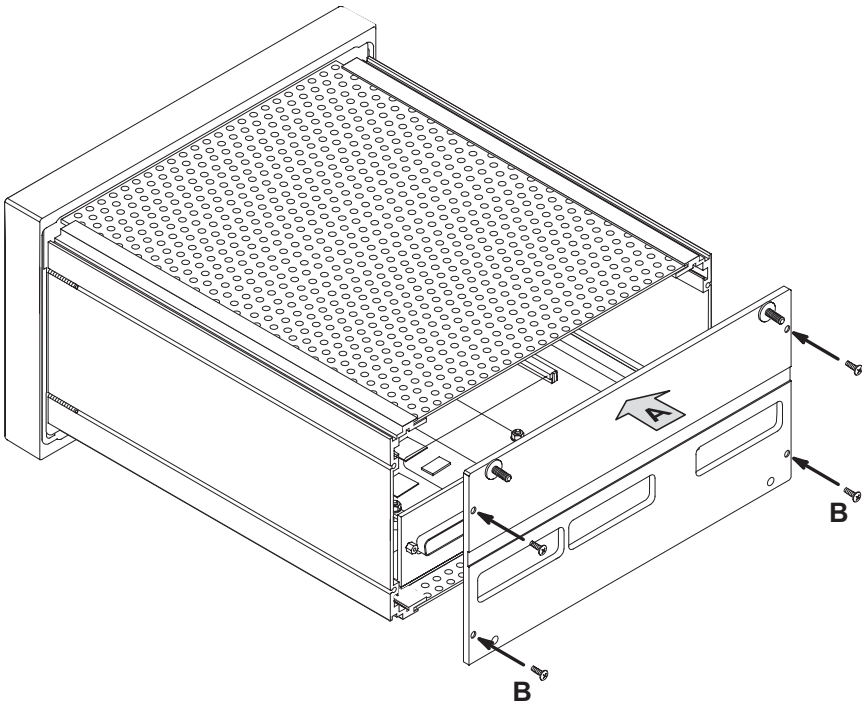


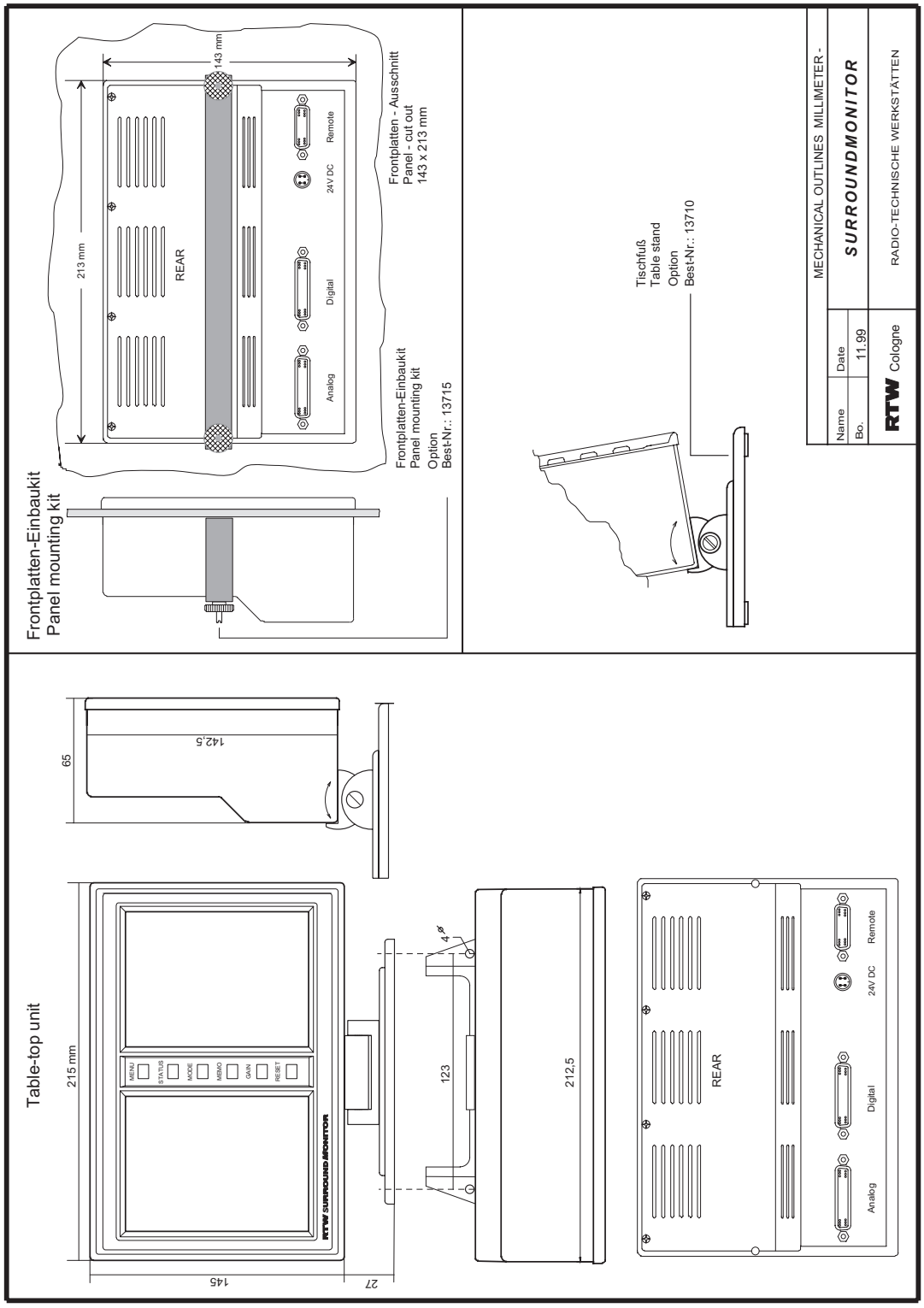
Fig. 8-34: Mounting the rear cover plate

21. Move back the unit into the 19'' special rack mount cabinet and fasten it with the fastening rods and fastening screws.

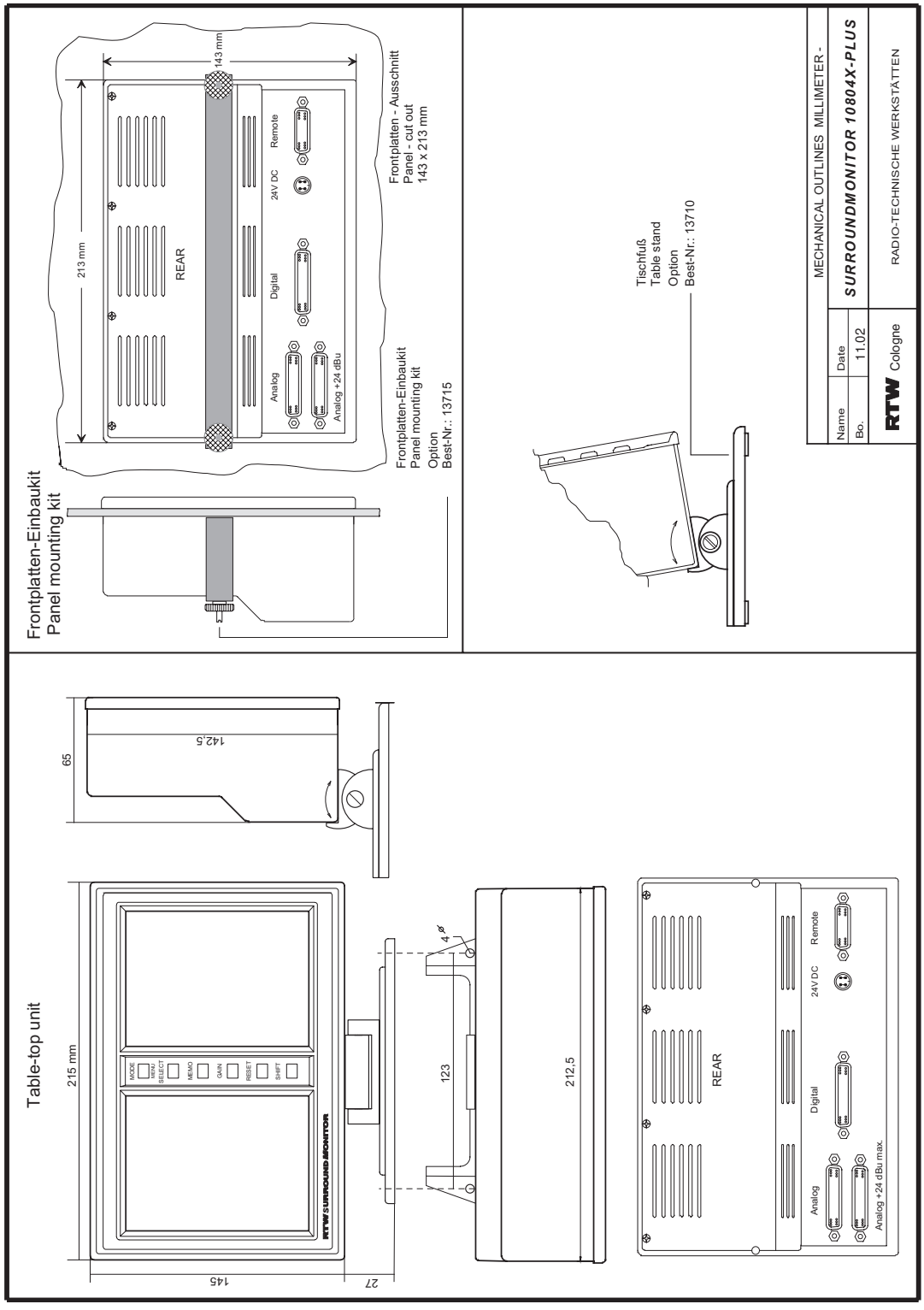
22. Connect SurroundMonitor to DC-supply and signal sources. Check function.

9. Zeichnungen/Drawings

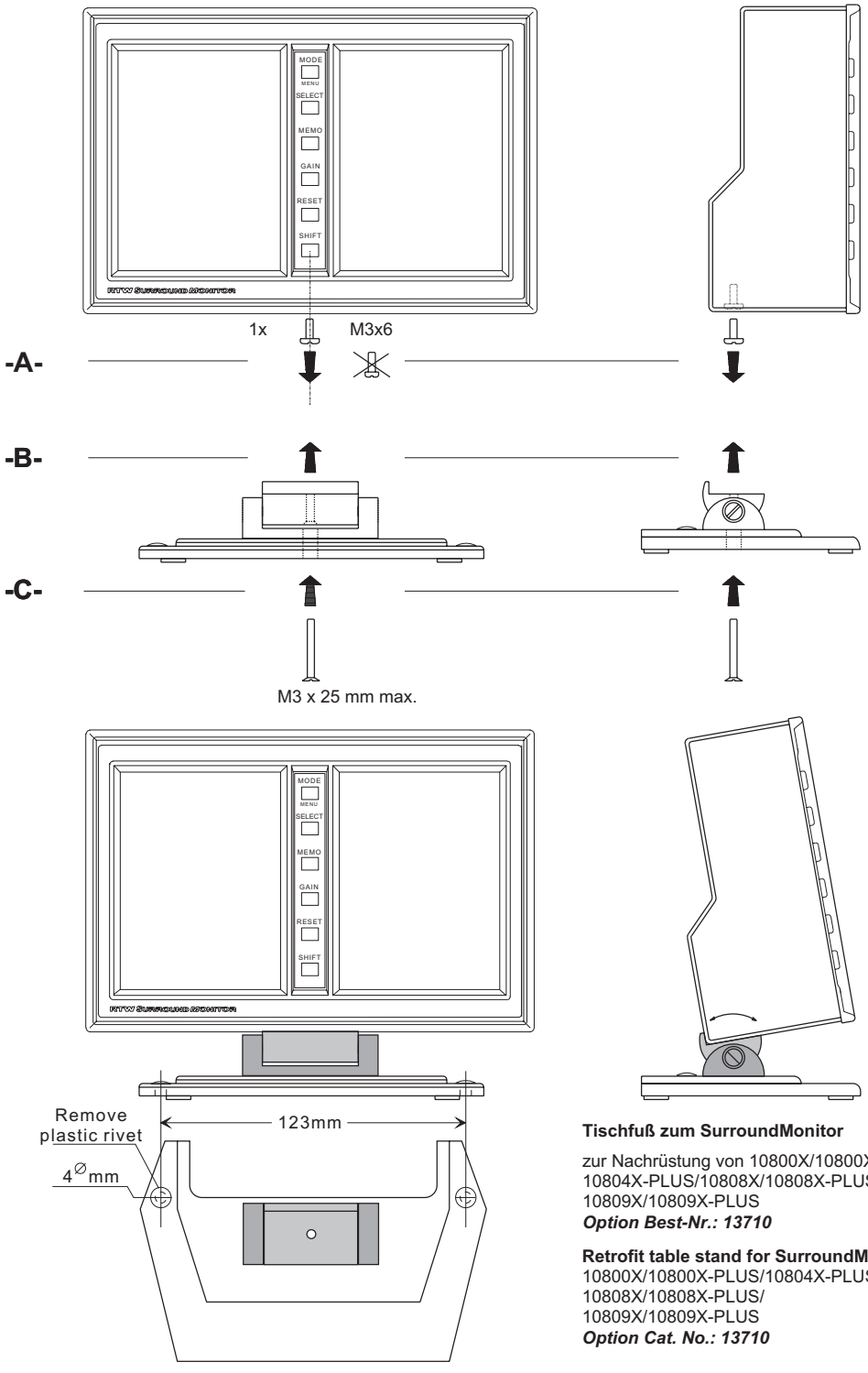
9.1. Abmessungen/Mechanical Outlines 10800X, 10800X-PLUS, 10808X, 10808X-PLUS, 10809X, 10809X-PLUS



9.2. Abmessungen/Mechanical Outlines
10804X-PLUS



9.3. Tischfuß/Table Stand



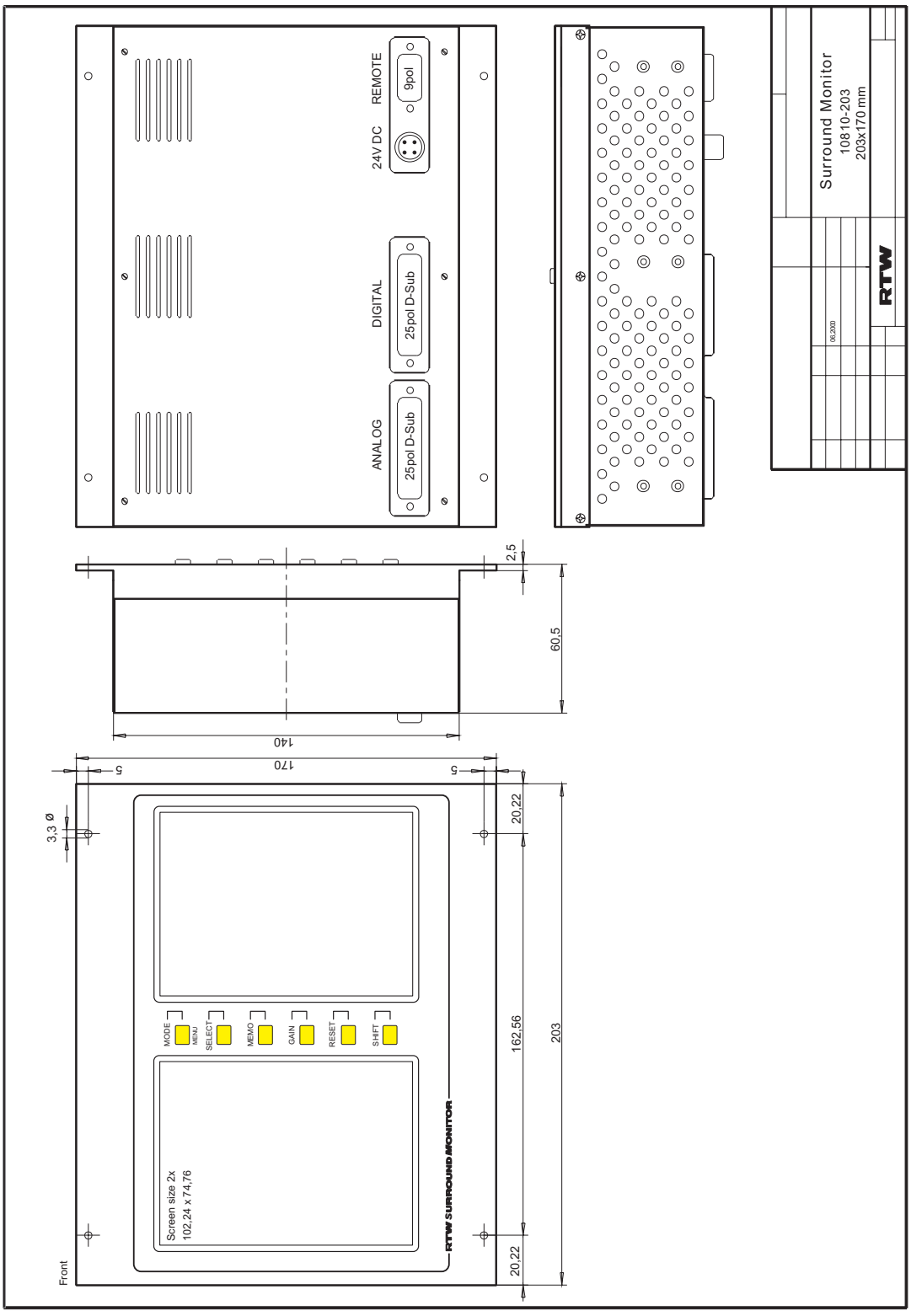
Tischfuß zum SurroundMonitor

zur Nachrüstung von 10800X/10800X-PLUS/
10804X-PLUS/10808X/10808X-PLUS/
10809X/10809X-PLUS
Option Best-Nr.: 13710

Retrofit table stand for SurroundMonitor
10800X/10800X-PLUS/10804X-PLUS/
10808X/10808X-PLUS/
10809X/10809X-PLUS
Option Cat. No.: 13710

MECHANICAL OUTLINES MILLIMETER		
Name	Date	*SurroundMonitor*
Bo.	12-11-02	Tischfuß/Retrofit table stand
RTW Cologne		RADIO-TECHNISCHE WERKSTÄTTEN

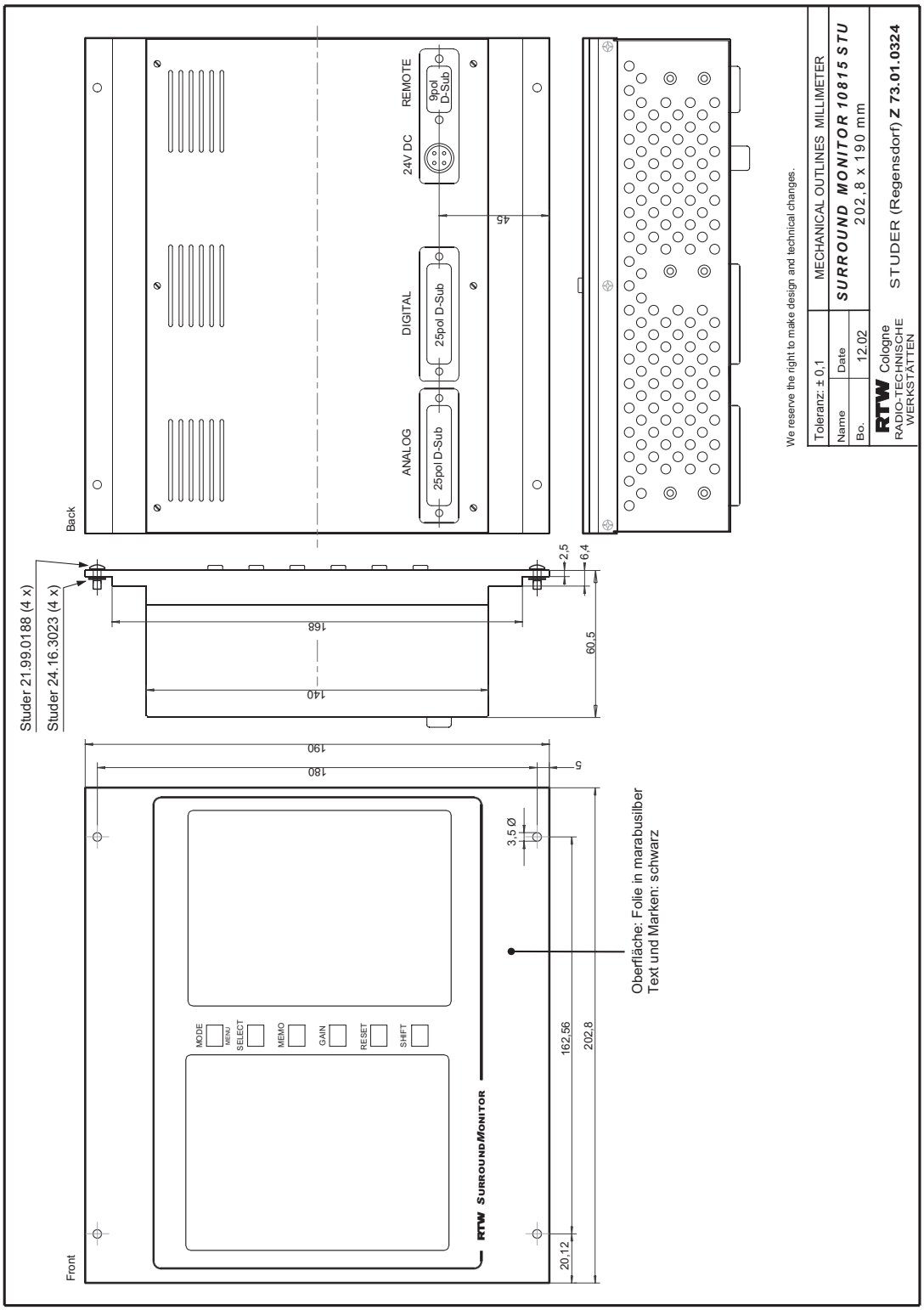
9.4. Abmessungen/Mechanical Outlines
1081n-203



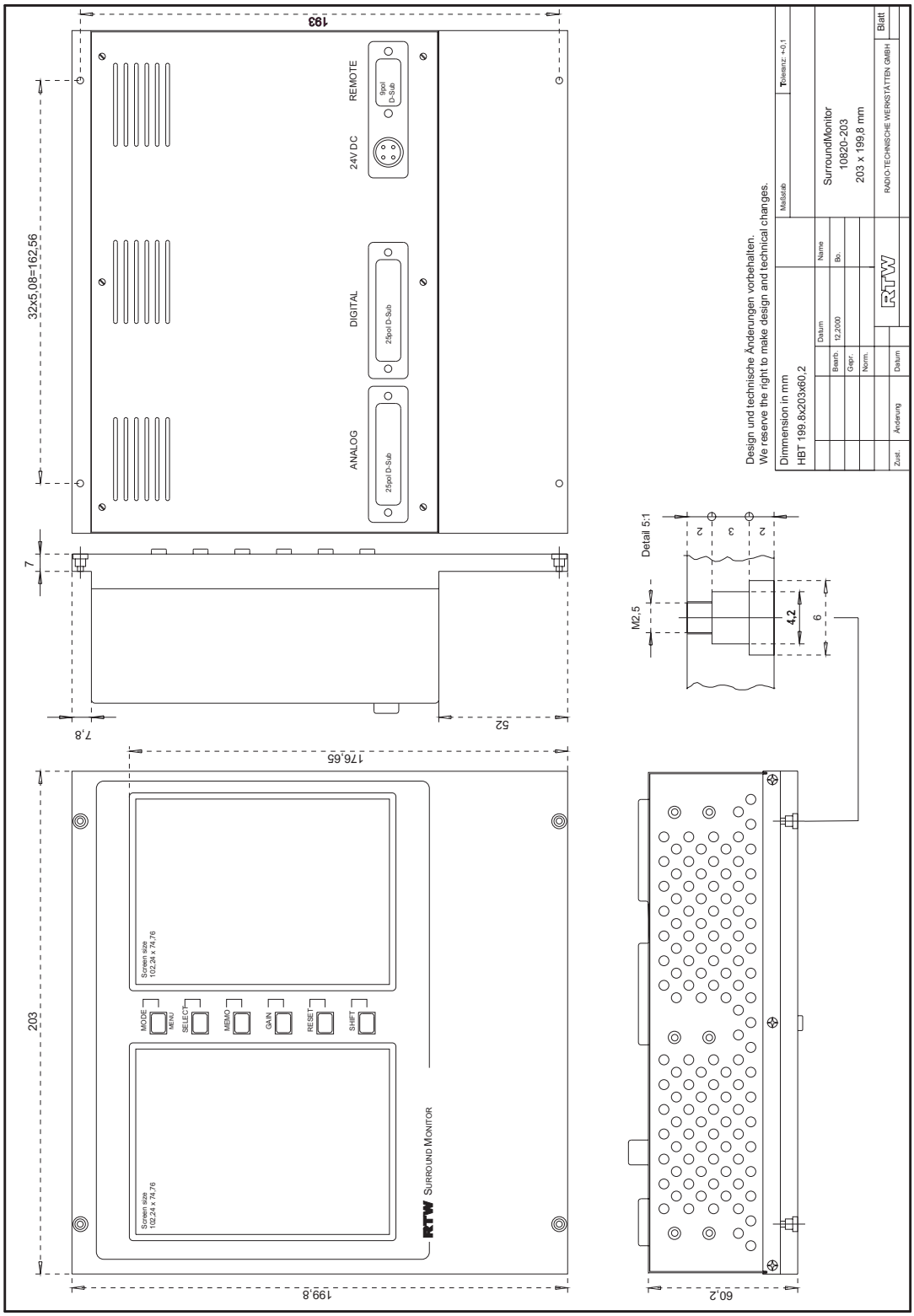
9.5. Abmessungen/Mechanical Outlines 10815 STU

Hinweis: Das Modell 10815 STU ist nur über die Firma Studer und nur mit einer Vista-Konsole erhältlich!

Note: Model 10815 STU is only available from Studer in conjunction with a Vista console!



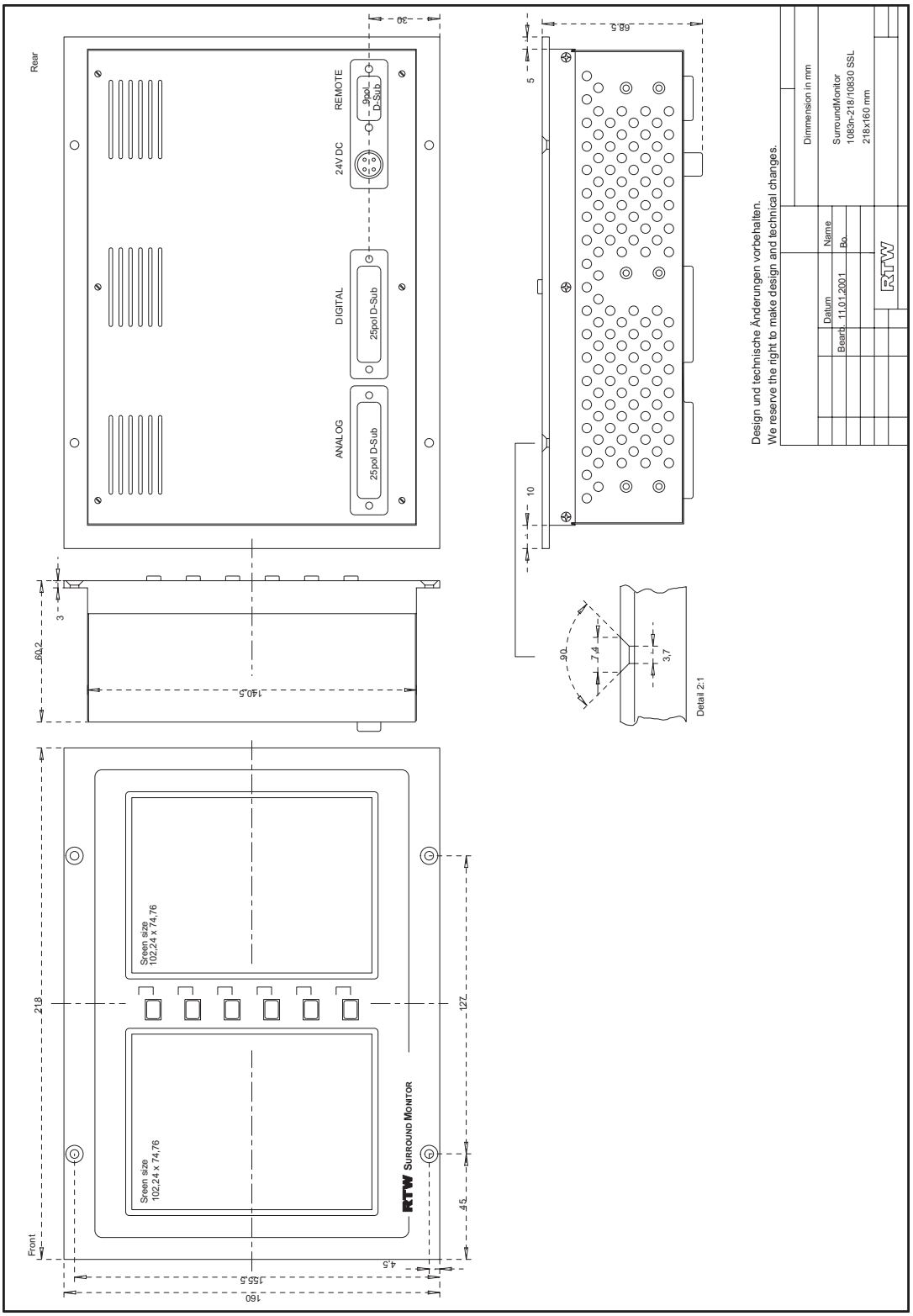
9.6. Abmessungen/Mechanical Outlines
1082n-203



9.7. Abmessungen/Mechanical Outlines 1083n-218/10830 SSL

Hinweis: Das Modell 10830 SSL ist nur über die Firma SSL und nur mit einer Konsole erhältlich!

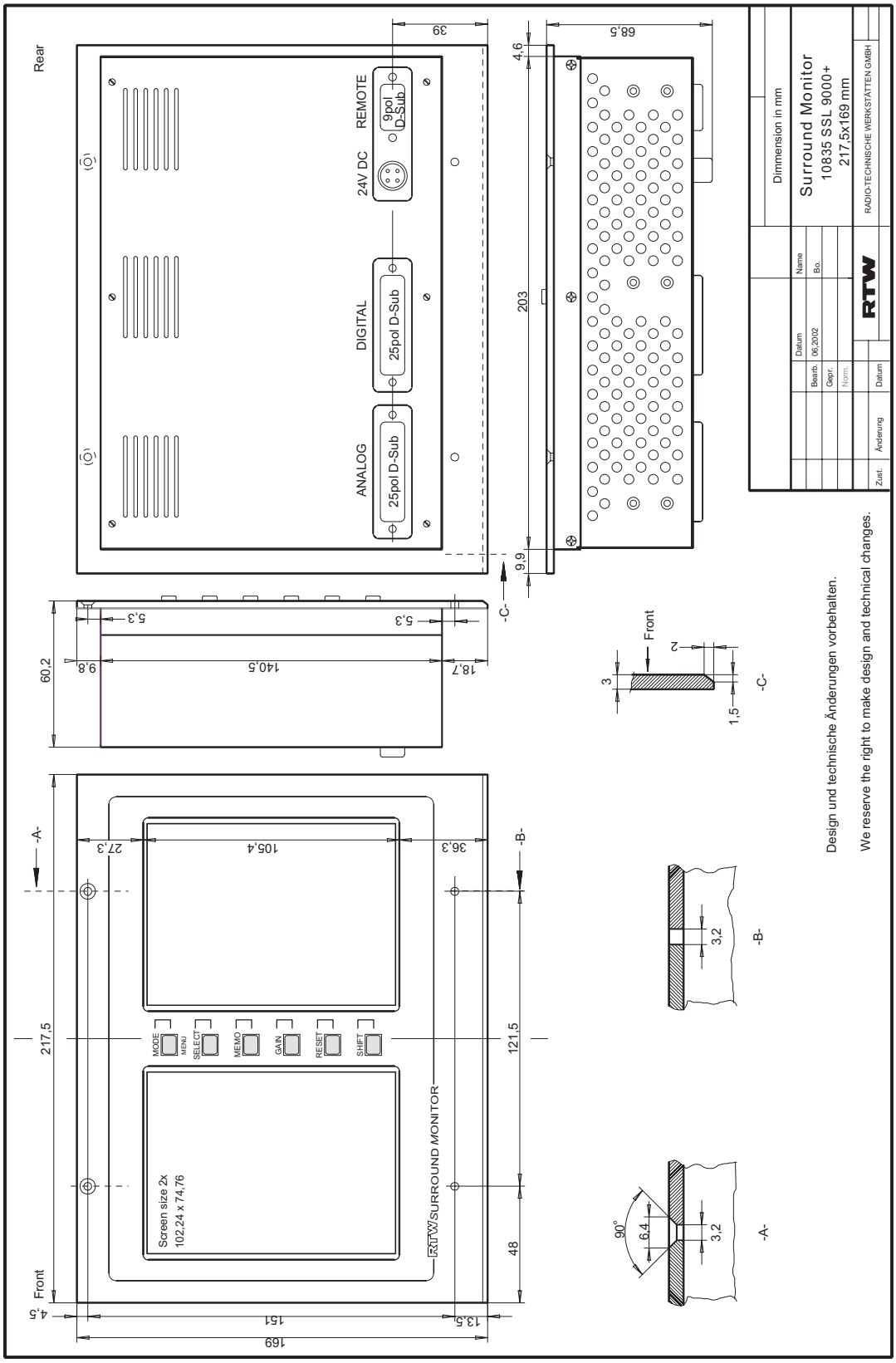
Note: Model 10830 SSL is only available from SSL in conjunction with a corresponding console!



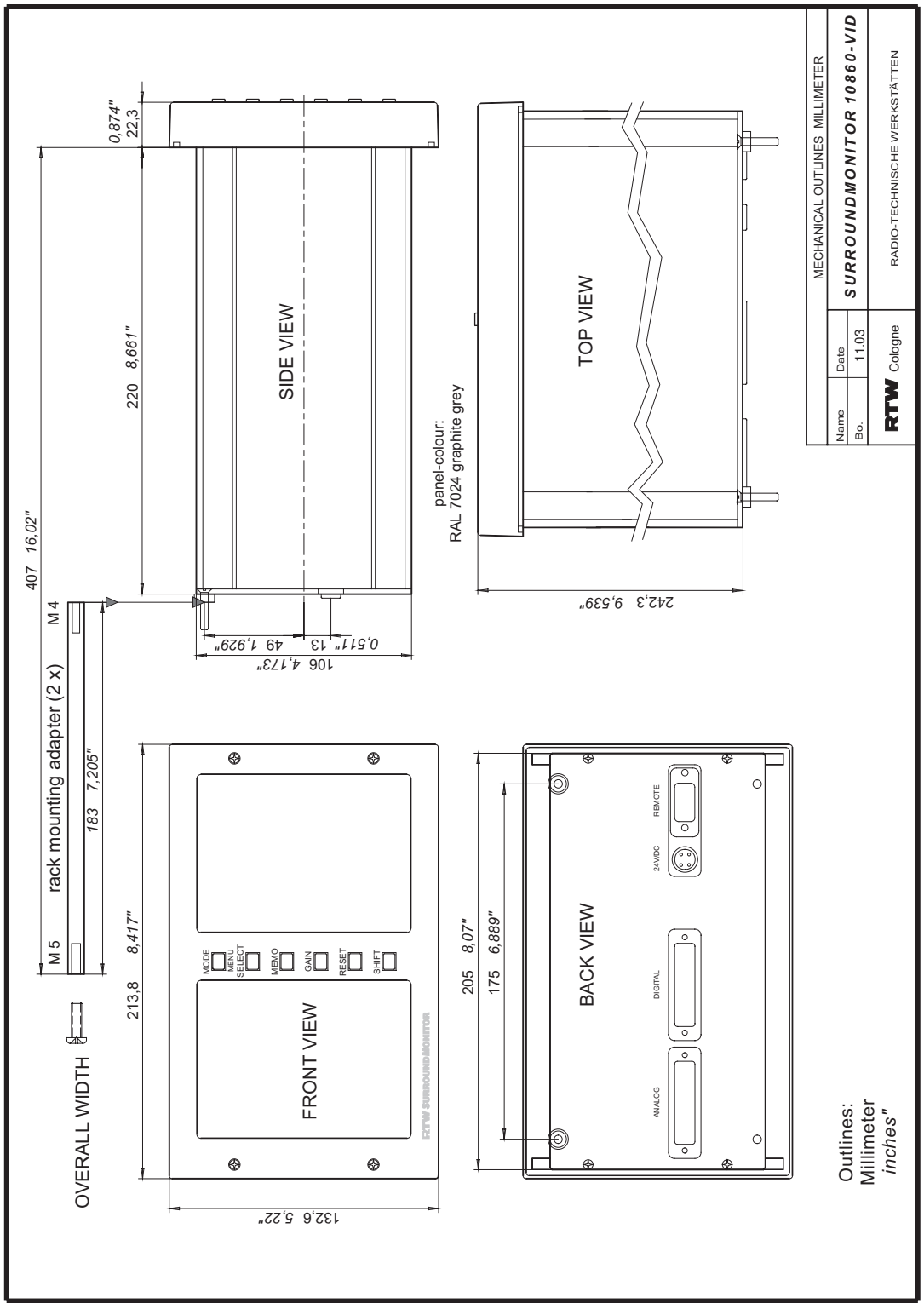
9.8. Abmessungen/Mechanical Outlines 10835 SSL

Hinweis: Das Modell 10835 SSL ist nur über die Firma SSL und nur mit einer Konsole der Serie SL 9000+ erhältlich!

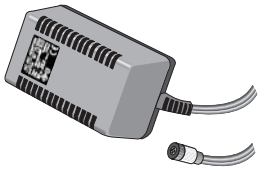
Note: Model 10835 SSL is only available from SSL in conjunction with a series SL 9000+ console!



9.9. Abmessungen/Mechanical Outlines 1086n-VID

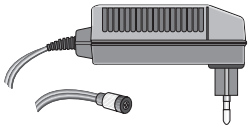


9.10. Zubehörkombination/Accessory combination 1080nX/1080nX-PLUS



Steckernetzteil/Mains adapter **1169-R**
- Eurostecker/Euro plug
- Kleinspannungsstecker 4-pol./
  Locking 4-pin low voltage connector

230 V AC/24 V DC, 1,05 A



Weitspannungsnetzteil/Wide voltage power supply **1174-R**
- Netzstecker für/Plugs for
  Euro, UK, US, AUS
- Kleinspannungsstecker 4-pol./
  Locking 4-pin low voltage connector

90 - 240 V AC/24 DC, 1,25 A



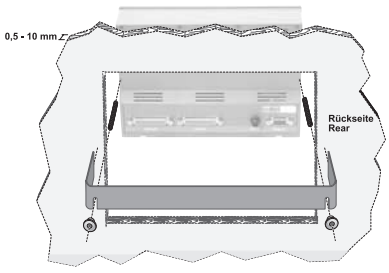
Beispiel/Example: 10800X

SurroundMonitor
Tischgerät/Desk-top unit



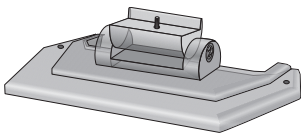
Adapterkabel/8-pair snake cable **1186**, 4 m
- Verteilung von 25-pol. Sub-D-Stecker auf 8 XLR-F-Kabelkupplungen/
  Distributes 25-pin Sub-D connector to 8 XLR-F cable connector

Je zwei Kabel sind erforderlich für:
Two cables are needed for:
10800X, 10800X-PLUS
and 10804X-PLUS

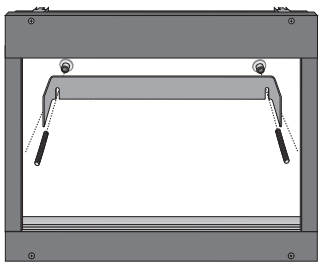


Einbaukit **13715** für den Frontplatteneinbau/
Panel mounting kit **13715** for front panel installation
- Erforderlicher Frontplattenausschnitt/
  Panel cut out:
  213 x 143 mm (B x H)/(W x H)
- Plattendicke/Panel thickness: 0,5 bis 10 mm

(Instrument nicht enthalten/Instrument not included)

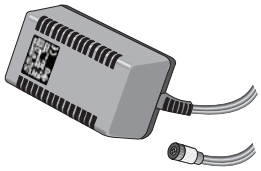


Tischfuß/Retrofit table stand **13710**
(Bei Geräten mit Index „-PLUS“ bereits enthalten!)/
(Supplied with instruments with „-PLUS“ index code!)



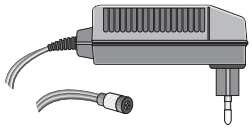
Adapterrahmen/Adapter frame **13716**, 240 x 190 mm
- zum Einbau von PortaMonitoren in Montageumgebungen mit 190 mm Höhe/for installation of PortaMonitors in environments with 190 mm vertical dimension
- incl. Einbaukit 13713 für den Frontplatteneinbau/
  incl. panel mounting kit 13715

9.11. Zubehörkombination/Accessory combination 1081n-203, 1082n-203, 1083n-218, 1086n-VID



Steckernetzteil/Mains adapter **1169-R**
- Eurostecker/Euro plug
- Kleinspannungsstecker 4-pol./ Locking 4-pin low voltage connector

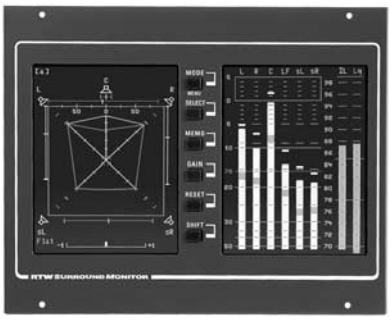
230 V AC/24 V DC, 1,05 A



Weitspannungsnetzteil/Wide voltage power supply **1174-R**
- Netzstecker für/Plugs for Euro, UK, US, AUS
- Kleinspannungsstecker 4-pol./ Locking 4-pin low voltage connector

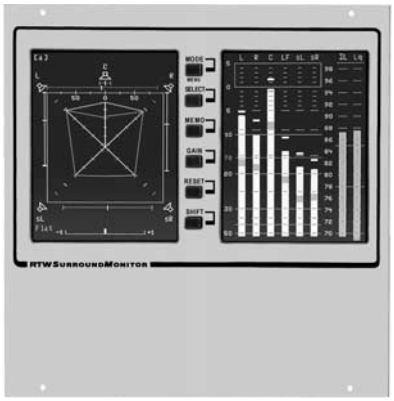
90 - 240 V AC/24 DC, 1,25 A

SurroundMonitor
Einbaugeräte/Plug-in unit



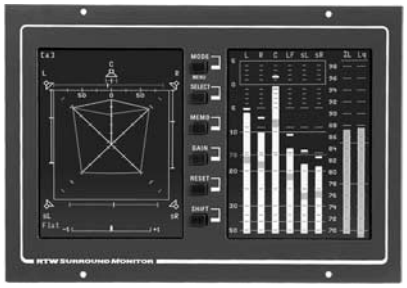
Beispiel/Example: 10810

z. B. für Studer-Mischpulte/
i. e. for Studer consoles



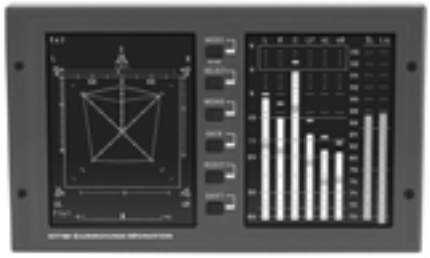
Beispiel/Example: 10820

z. B. für Lawo-Mischpulte/
i. e. for Lawo consoles



Beispiel/Example: 10830

z. B. für SSL-Mischpulte/
i. e. for SSL consoles



Beispiel/Example: 10860-VID

für Waveform-Monitor-Einbaugehäuse wie
z. B. WFM7F05 von Tektronix®/
for special 19'' rack mount cabinets like
those of the WFM7F05 of Tektronix®

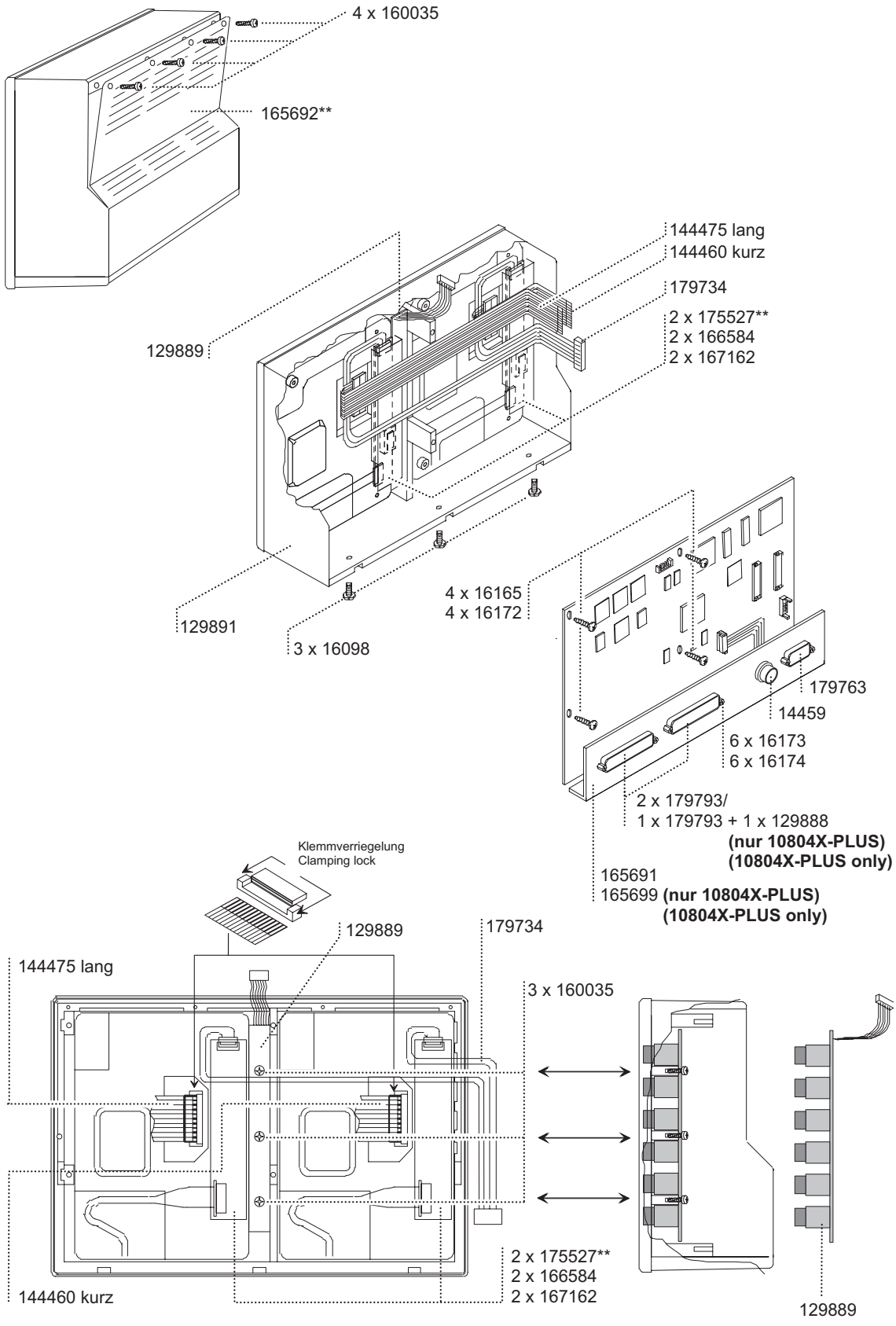


Adapterkabel/8-pair snake cable **1186**, 4 m
- Verteilung von 25-pol. Sub-D-Stecker auf 8 XLR-F-Kabelkupplungen/ Distributes 25-pin Sub-D connector to 8 XLR-F cable connector

Je zwei Kabel sind erforderlich für:
Two cables are needed for:
10810-203, 10820-203, 10830-218 and 10860-VID

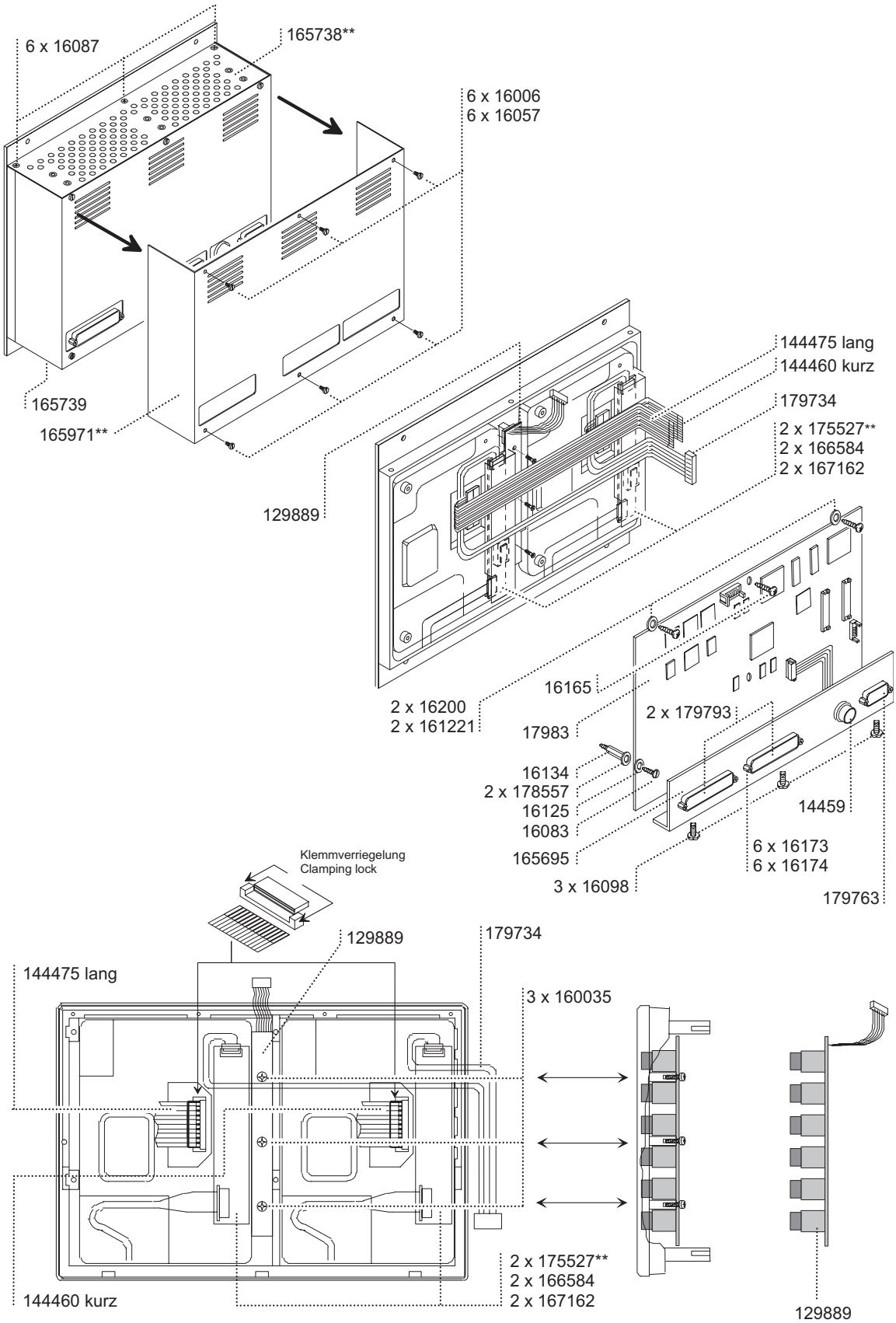
9.12. Ersatzteile/Spare parts 1080nX/1080nX-PLUS

Bestellnummern sind in der Ersatzteilliste Abschnitt 9.15. aufgeführt.
Please refer to partlist section 9.16. for spare part ordering information.



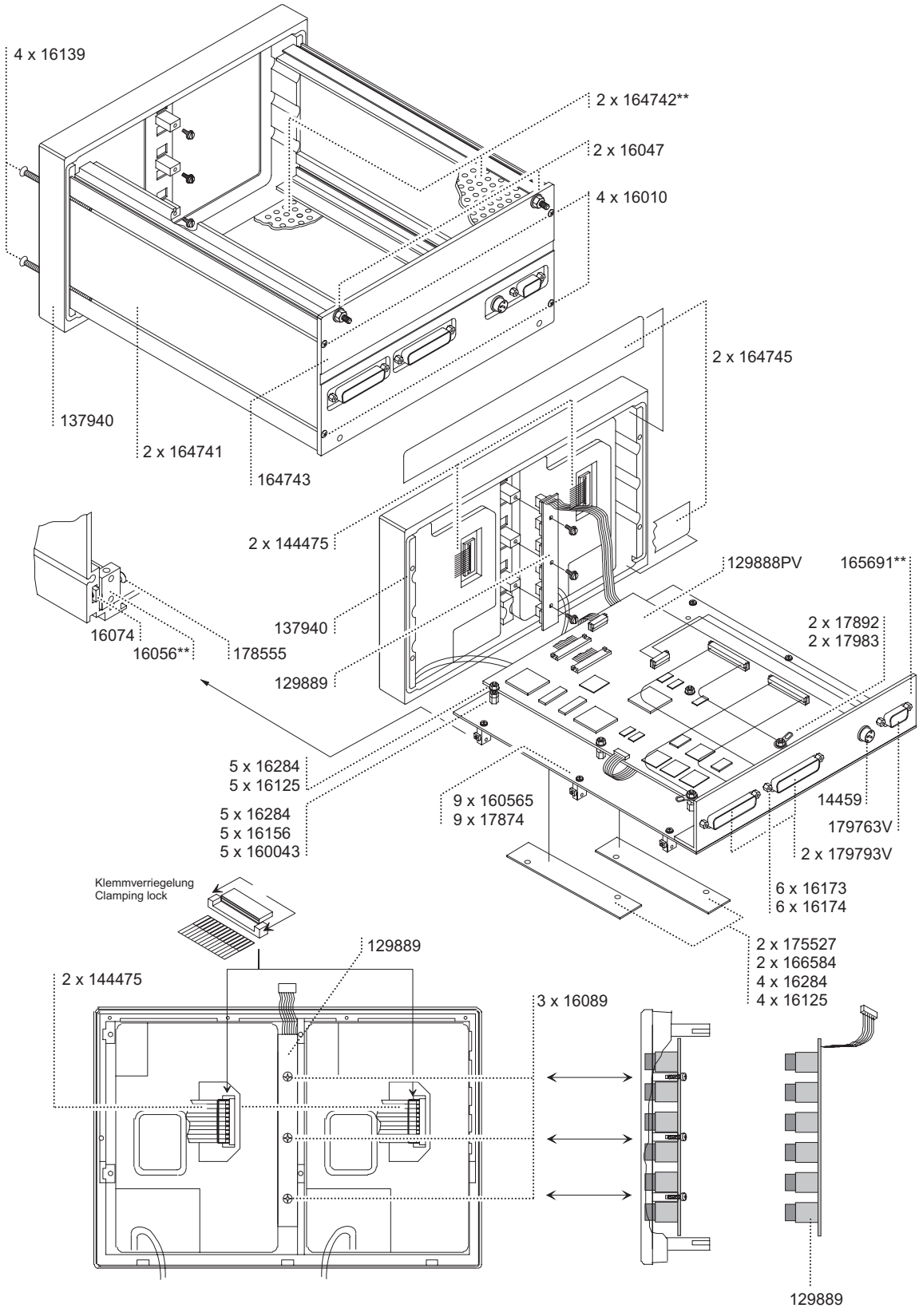
9.13. Ersatzteile/Spare parts
1081n-203, 1082n-203, 1083n-218

Bestellnummern sind in der Ersatzteilliste Abschnitt 9.15. aufgeführt.
Please refer to partlist section 9.16. for spare part ordering information.



9.14. Ersatzteile/Spare parts 1086n-VID

Bestellnummern sind in der Ersatzteilliste Abschnitt 9.15. aufgeführt.
Please refer to partlist section 9.16. for spare part ordering information.



9.16. Partlist

9.16.1. Common Parts

Part No.	Description	Type/Standard
Mechanical parts		
(For all models, parts for the individual units see the tables in section 9.16.3.)		
16173	hexagon bolt UNC (for Sub-D connector)	
16174	U-Clip (for Sub-D connector)	
16270	heat insulation (for Sub-D connector)	WK-220
16271	insulation nipple	IB4
Common electronical parts		
(For all models, parts for the individual units see the tables in section 9.16.3.)		
129889	PCB assembly push-button	
14458	DC connector female	series 710
14459	DC connector male	series 710
14712	ferrit internal	
14713	ferrit internal	
175414	quartz oscillator, 20.00 MHz	
175416	quartz oscillator, 32.00 MHz	
144475	Data flex jumper, 258 mm	
179734	crossover link cable Sub-D 25-pin internal	
19018	transistor, TIP 117	
18209	voltage regulator T-ADJ	
175527**	inverter	
166584	cap for inverter	
167162	label „Attention Voltage!“	
PCB's		
(Parts for the individual units see the tables in section 9.16.3.)		
Table stand 13710		
(Accessory for 10800X, 10808X and 10809X, included in 10800X-PLUS, 10804X-PLUS, 10808X-PLUS and 10809X-PLUS parts for the individual units see the tables in section 9.16.3.)		

9.16.2. Displays

(Parts for the individual units see the tables in section 9.16.3.)

A serial number of the defective SurroundMonitor must be given to RTW to asure correct display replacement delivery.

	Mechanical parts:		10800X	10800XPLUS	10804XPLUS	10808X	10808XPLUS	10809X	10809XPLUS	10810-203	10815 STU	10818-203	10819-203	10820-203	10828-203	10829-203	10830-218	10830 SSL	10835 SSL	10838-218	10839-218	10860-VID	10869-VID
160035	screw self-taping		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
160043	screw pan head	M 2,5 x 16																				•	•
16043	washer	M 2,5																				•	•
16047	screw countersunk	M 4 x 16																				•	•
16057	washer	2,2 mm								•	•	•	•	•	•	•	•	•	•	•	•		
16006	screw pan head	M 2 x 4 mm								•	•	•	•	•	•	•	•	•	•	•	•		
16074	square nut	M 2,5																				•	•
16075	screw pan head	M 2,5 x 10 mm																				•	•
16083	screw pan head	M 2,5 x 6 mm								•	•	•	•	•	•	•	•	•	•	•	•	•	•
16087	screw countersunk	M 2,5 x 6 mm								•	•	•	•	•	•	•	•	•	•	•	•		
16089	screw pan head	M 2,5 x 4 mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
16098	screw flat headed	M 3 x 6 mm	•	•	•	•	•	•	•														
161221	screw countersunk self-taping	2,9 x 6,5 mm								•	•	•	•	•	•	•	•	•	•	•	•		
16139	screw countersunk	M 3 x 35 mm																				•	•
16123	screw self-taping	2,9 x 6,5 mm								•	•	•	•	•	•	•	•	•	•	•	•		
16125	locking washer	M 2,5								•	•	•	•	•	•	•	•	•	•	•	•	•	•
16165	screw self-taping	2,9 x 9,5 mm	•	•	•	•	•	•	•														
16172	contact disc	M 3,0	•	•	•	•	•	•	•														
16200	rosette									•	•	•	•	•	•	•	•	•	•	•	•		
16284	nut	M 2,5																				•	•
178557	nylon disc	M 2,5								•	•	•	•	•	•	•	•	•	•	•	•		
178566	screw self-taping	M 2,5 x 6 mm								•	•	•	•	•	•	•	•	•	•	•	•		
178555	screw	M 2,5 x 12 mm																				•	•
17874	lock washer	M 3																				•	•
17892	soldering tag	3,2 mm																				•	•
16056**	mounting element processed	15 x 10 x 5 mm																				•	•
16134	standoff	M 2,5 x 15 mm								•	•	•	•	•	•	•	•	•	•	•	•		
16156	standoff	M 2,5 x 6 mm																				•	•
165692**	rear panel 108xx		•	•	•	•	•	•	•														
17950	pad																					•	•
164742**	cover plate 10860-VID																					•	•
164743	rear panel 10860-VID																					•	•
164745	cover sheet 10860-VID																					•	•
165691	take-up angle plate 108xx		•	•	•	•	•	•	•														
165691**	take-up angle plate 10860-VID																					•	•
165695	take-up angle plate 10810/10820/10830									•	•	•	•	•	•	•	•	•	•	•	•		
165699	take-up angle plate 10804X-PLUS				•																		
165738**	site frame above									•	•	•	•	•	•	•	•	•	•	•	•		
165739	site frame below									•	•	•	•	•	•	•	•	•	•	•	•		
165971**	casing pot 10810/10820/10830									•	•	•	•	•	•	•	•	•	•	•	•		

	Common electronical parts:		10800X	10800XPLUS	10804XPLUS	10808X	10808XPLUS	10809X	10809XPLUS	10810-203	10815 STU	10818-203	10819-203	10820-203	10828-203	10829-203	10830-218	10830 SSL	10835 SSL	10838-218	10839-218	10860-VID	10869-VID
14607	transformer AES/EBU 4-fold		•	•	•			•	•	•	•		•	•		•	•	•	•		•	•	•
144460	data flex jumper	120 mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
179763	crossover link cable 10-pin		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
179763V	crossover link cable 10-pin 10860-VID																					•	•
179793	crossover link cable 25-pin		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
179793V	crossover link cable 25-pin 10860-VID																					•	•
17983	earth cable internal									•	•	•	•	•	•	•	•	•	•	•	•		

	PCB's:	10800X	10800XPLUS	10804XPLUS	10808X	10808XPLUS	10809X	10809XPLUS	10810-203	10815 STU	10818-203	10819-203	10820-203	10828-203	10829-203	10830-218	10830 SSL	10835 SSL	10838-218	10839-218	10860-VID	10869-VID
129888KIT	main PCB complete with rear panel part	•	•							•												
129888P	PCB basic 10800X/108xx	•	•						•	•			•			•	•	•				
129888PA	PCB basic 10808X10808X-PLUS				•	•					•			•					•			
129888PD	PCB basic 10809X/10809X-PLUS						•	•				•			•					•			
129888PU	PCB basic 10804XPLUS			•																		
129888PV	PCB basic 10860-VID																				•	
134697	PCB attenuator 10804X-PLUS			•																		

	Retrofit table stand:		10800X	10800XPLUS	10804XPLUS	10808X	10808XPLUS	10809X	10809XPLUS	10810-203	10815 STU	10818-203	10819-203	10820-203	10828-203	10829-203	10830-218	10830 SSL	10835 SSL	10838-218	10839-218	10860-VID	10869-VID
13710	**table stand**	**accessory for:**	•			•		•															
		included in:		•	•		•		•														
165931	base plate		•	•	•	•	•	•	•														
165932	hinge		•	•	•	•	•	•	•														
165933	socket for hinge		•	•	•	•	•	•	•														
16035	screw countersunk black	M 3 x 20 mm	•	•	•	•	•	•	•														
161801	screw countersunk black	M 3 x 12 mm	•	•	•	•	•	•	•														
165708	rivet		•	•	•	•	•	•	•														
17873	toothed washer	M 4	•	•	•	•	•	•	•														
17895	screw pan head	M 4 x 10 mm	•	•	•	•	•	•	•														
179582	pad		•	•	•	•	•	•	•														

	Displays:		10800X	10800XPLUS	10804XPLUS	10808X	10808XPLUS	10809X	10809XPLUS	10810-203	10815 STU	10818-203	10819-203	10820-203	10828-203	10829-203	10830-218	10830 SSL	10835 SSL	10838-218	10839-218	10860-VID	10869-VID
129891	housing with display and PCB push-button		•	•	•	•	•	•	•														
137946	front panel with display and PCB push-button	RAL 2016								•		•	•										
137947	Frontpanel with display and PCB push-button													•	•	•							
137949	Frontpanel with display and PCB push-button	Marabu-Silber									•												
139747	Frontpanel with display and PCB push-button	RAL 2016															•			•	•		
139747 SSL	Frontpanel with display and PCB push-button																	•					
139748 SSL	Frontpanel with display and PCB push-button																		•				
137940	Frontpanel with display and PCB push-button																					•	•

Appendix B: Specifications

General

Supply voltage:	24 V DC ±10 %
Current drain permanent:	max. 800 mA
Current drain start up:	max. 1500 mA
Operating temperature range:	0° to +45° celsius
Weight:	approx. 1300 g net
Connector:	1 x 9pin sub-D (remote)
	1 x flange connector type 710 (DC)
– 10800X, 10800X-PLUS 10810-203, 10815 STU, 10820-203, 10830-218, 10830 SSL, 10835 SSL 10860-VID:	2 x 25 pin sub-D
– 10804X-PLUS:	3 x 25 pin sub-D
– all other types:	1 x 25 pin sub-D
Dimensions	
– 1080nX, 1080nX-PLUS:	215 x 145 x 65 mm
– 1081n-203:	203 x 170 x 61 mm
– 10815 STU:	202,8 x 190 x 61 mm
– 1082n-203:	203 x 199,8 x 60,2 mm
– 1083n-218, 1083n SSL:	218 x 160 x 60,2 mm
– 10835 SSL:	217,5 x 169 x 60,5 mm
– 1086n-VID:	231,8 x 132,6 x 242,3 mm

Analog Standard inputs:
(**not** supported with 10809X, 10809X-PLUS, 10819-203, 10829-203, 10839-218, 10869-VID)

Maximum input level:	+21 dBu
Adjustable range for reading reference:	-2 dBu to +13 dBu
Inputs:	electronically balanced
CMRR:	min. 60 dB
Input impedance (30 Hz and 20 kHz):	min. 10 kΩ

Analoge high level inputs:
(10804X-PLUS only)

Maximum input level:	+24 dBu
Inputs:	electronically balanced
Input impedance (30 Hz and 20 kHz):	min. 10 kΩ

Digital Inputs:
(**not** supported with 10808X, 10808X-PLUS, 10818-203, 10828-203, 10838-218)

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

Display

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

Note:
The built-in displays have a very high resolution. Even with the most advanced techniques, a small number of pixel defects is inevitable. The manufacturer of the displays specifies a maximum of 6 active or passive pixel defects for each. RTW guarantees these specifications to be met by their products.

Audio Vectorscope

Viewing area:	70 x 70 mm
Display color:	8
AGC - Auto	yes
AGC - manual	yes
Calibration mode:	yes, 20°, 90 °
M/S mode.	yes
Presistence: fast, medium, slow	

Peakmeter

PPM display horizontal:	up to 8 channel, peakhold plus phase
Bargraph length:	95 mm

Peakmeter analog

Scales:	DIN+5, DIN+10, Nordic, BR IIa, BR IIb, VU, Zoom 20
Sensitivity for reference DIN:	+6 dBu
Sensitivity for reference Nordic:	+6 dBu
Sensitivity for reference BR II:	+8 dBu
VU Lead:	adjustable 0 to 10 dB
Integration time:	according to standards
Gain:	according to standards +20 dB or +40 dB
Memory:	Maximum level, peakhold

Peakmeter digital

Scale digital:	0 dB to -60 dB, 0 dB to -20 dB
Scale quasi analog:	DIN+5, DIN+10, Nordic, BR IIa, BR IIb, VU
Special scale:	Zoom20, Zoom2, +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:	according to standards or sample, 0.1 ms, 1 ms, 10 ms, Norm
Gain:	according to standards +20 dB or +40 dB

High pass filter:	OFF, 5, 10 or 20 Hz
Memory:	Maximum level, peakhold
Overload display:	Indication on top of peakmeter
Threshold:	FS, FS-1LSB, FS-2LSB, -0.1, -0.5, -1,-2 or -3 dBFS
Word width:	16 to 24 bit
Mute display:	red indicator below PPM bar
Threshold time:	50, 100, 200 oder 300 ms
Threshold level:	5 to 80 sample, adjustable in steps of 5

Correlator section

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

AES/EBU Statusmonitor

Statusinformation	Channel 1 to 8, plain text or Hex active bits and audio bits

Remote control

Parallel interface:	Gain, Reset, Memo, Mode, Select, Shift or Preset 1 - 6

Controls and additional display elements

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

Items delivered

Surround Monitor 1080nX	• Surround Monitor • Counter plug for power supply • Users manual
Surround Monitor 1080nX-Plus	• Surround Monitor • Plug in power supply • Table stand • Users manual
Surround Monitor 1081n-203	• Surround Monitor • Counter plug for power supply • Users manual
Surround Monitor 1082n-203	• Surround Monitor • Counter plug for power supply • Users manual
Surround Monitor 1083n-218	• Surround Monitor • Counter plug for power supply • Users manual
Surround Monitor 1089n-VID	• Surround Monitor • Counter plug for power supply • Users manual

The following special designed models are only available from the respective manufacturer in conjunction with the corresponding console:

Surround Monitor 10815 STU	• Surround Monitor • Counter plug for power supply • Users manual
Surround Monitor 10830 SSL	• Surround Monitor • Counter plug for power supply • Users manual
Surround Monitor 10835 SSL	• Surround Monitor • Counter plug for power supply • Users manual

Subject to technical changes without prior notice

EG-Konformitätserklärung nach Artikel 10.1 der Richtlinie 89/336/EWG

und der Richtlinie 73/23/EWG

Wir,

RTW GmbH & Co.KG
Elbeallee 19 · 50765 Köln · Germany

erklären in alleiniger Verantwortung, dass das Produkt:

RTW Surround Monitor 1080nX/1080nX-PLUS/10804X-PLUS/1081n-203/10815 STU/ 1082n-203/1083n-218/10830 SSL/10835 SSL/1086n-VID einschl. aller Optionen

auf das sich diese Erklärung bezieht, mit den folgenden Normen bzw. normativen Dokumenten übereinstimmt:

EMV	**89/336/EWG**
EN 50081-1 (März 1993):	EN 55022 B, gestrahlt EN 55022 B, leitungsgeführt
EN 50082-1:	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6
Sicherheit	**73/23/EWG**
EN 60950 (1992 + A1/1993)	

Geprüft und dokumentiert von nachfolgend aufgeführten Firmen:

ELEKLUFT GmbH, Bonn, akkreditiertes Prüflabor
RTW GmbH & Co.KG, Köln

Datum und Unterschrift des Verantwortlichen:

16.12.2002



EC-Declaration of Conformity Directive 89/336/EEC

and Directive 73/23/EEC

We,

RTW GmbH & Co.KG
Elbeallee 19 · 50765 Köln · Germany

declare under sole responsibility that the product:

RTW Surround Monitor 1080nX/1080nX-PLUS/10804X-PLUS/1081n-203/10815 STU/ 1082n-203/1083n-218/10830 SSL/10835 SSL/1086n-VID incl. all options

meets the intend of the Directive 89/336/EEC and Directive 73/23/ECC. Compliance was demonstrated to the following specifications as listed in the official journal of the European Communities:

EMC	**89/336/EEC**
EN 50081-1 Emissions (march 1993):	EN 55022 Radiated, Class B EN 55022 Conducted, Class B
EN 50082-1 Immunity:	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6
Safety	**73/23/EEC**
EN 60950 (1992 + A1/1993)	

Tested and documented by the following companies:

ELEKLUFT GmbH, Bonn, accredited EMC laboratory
RTW GmbH & Co.KG, Köln

Date and signature of the responsible person:

16.12.2002

