Operating manual

Peakmeter 1326 APHN9

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

CE

Manual version: 1.0
Issued: 2004-10-06
Software version: 1.3

Serial number:

_ _ _ _ _ _ _ _ _ _

RTW
RADIO-TECHNISCHE WERKSTÄTTEN GmbH & Co. KG
Fax: (02 21) 7 09 13-32 • Tel.: (02 21) 7 09 13-33
Hausadresse: Elbeallee 19 • **50765** Köln
Postfachadresse: Postfach 71 06 54 • **50746** Köln
Internet: www.rtw.de • E-Mail: rtw@rtw.de

Scope of this manual

This manual is the operating handbook for the RTW Peakmeter 1326 APHN9. Features and functionality of the instruments are described in detail.

Chapter one contains a basic description of the instruments.

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

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

Informations about setup for your specific installation needs and hints for troubleshooting can be found in chapter three.

Chapter four contains mechanical drawings.

The appendix covers all specifications and declarations of conformity.

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 symbols 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 symbols 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.

Content

1. Introduction 1-1

2. Getting started 2-1
2.1. First time operation. 2-1
2.2. Connecting 2-1
2.3. Safety symbols. 2-2
2.4. Safety information. 2-2
2.5. Connecting to a power supply 2-3
2.6. Audio connection 2-3
2.7. Mode switches and functions 2-3

3. Calibration and Troubleshooting 3-1
3.1. Calibration 3-1
3.2. Analog reference level change 3-1
3.3. Setup changes 3-1
3.4. DIP switch function 3-2
3.5 Troubleshooting 3-3

4. Drawings 4-1
4.1. Mechanical outlines 4-1
4.2. Exploded view and spare parts 4-2
4.3. Part list 4-3
4.3.1. Common parts 4-3
4.3.2. Display and scale 4-3

Appendix A: Specifications A-1

Appendix B: EC-Declaration of Conformity B-1

1. Introduction

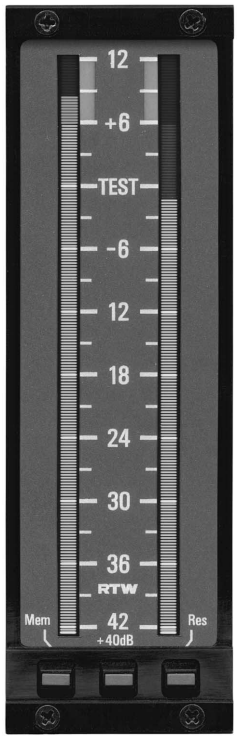


Fig 1-1: Peakmeter 1326 APHN9

The 1326 APHN9 peakmeters are housed in a compact metal case and feature analog XLR inputs. They support a couple of different operation modes.

Functions:

- Peak level display
- Memory
- Gain

The 1326 APHN9 peakmeters comprise a high resolution gas plasma display with 201 segments per channel.

The instruments will be delivered with a analog scale NORDIC N9 (-42 dB to +12 dB) and red filter starting at +6 dB.

2. Getting started

2.1. First time operation

The 1326 APHN9 peakmeters are designed for built-in mounting in 3U standard racks.

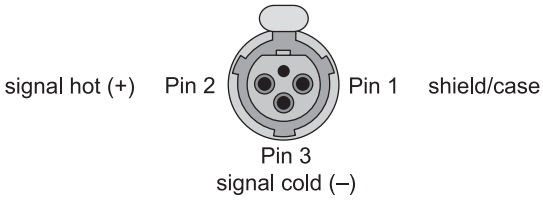
2.2. Connecting

Features of the 1326 APHN9 peakmeter are the built in XLR-F connectors as well as a built in DC-M connector.

These are wired as follows:

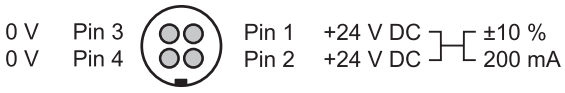
Analog input:

XLR-F connector (balanced)



Power supply:

DC-M connector



2.3. 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 symbols 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 symbols 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.

2.4. 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.

2.5. Connecting to a power supply

📖 **Connections: Page 2-1.**



The 1326 APHN9 peakmeter requires a single voltage supply (+24 V DC/200 mA) for operation.

2.6. Audio connection

📖 **Connections: Page 2-1.**



The audio inputs of the1326 APHN9 peakmeter are balanced. We recommend that the screen of the AF line is connected to the source end only to avoid ground loops.

2.7. Mode switches and functions

- GAIN KEY - The use of this pushbutton boosts the input sensitivity by +40 dB.
- MEMO-KEY - The use of this pushbutton recalls the highest level value, 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 resets the memory.
- B/S SWITCH - The B/S switch is on the rear side of the instrument and selects the operation mode:

  B: bargraph mode

  S: spot mode.

3. Calibration and Troubleshooting

3.1. Calibration

The PPM 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.

3.2. Analog reference level change

If it is necessary to operate the unit with a reference level other than set by the factory, proceed as follows (for input level range 0 dBu to +10 dBu):

Apply a 1 kHz signal with reference level and adjust this pots for reading reference (i.e. 0 dB or test).

P3 (left channel)	CMR optimization: P1
P4 (right channel)	CMR optimization: P2

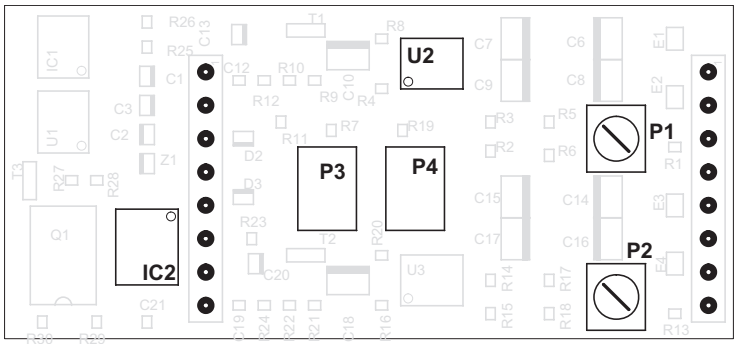


Fig. 3-1 Partitial view of AD-Settle-board

WARNING:

Modification inside the unit must be carried out by qualified service personal with appropriate SMD-tools only.
Power must have been shut down. When servicing it is very important to observe all standard ESD (electrostatic discharge) protection procedures.

3.3. Setup changes

The selection of the scale in use must be defind by the adjustment of the DIP switch (displayed in fig 6-2). The DIP switch gives also control about settings for peakhold and standby mode.

3.4. DIP switch function

DIP switch position and functions:

Switch position: Value:				**Function:**
Switch	**1**	**switch**	**2**	**Scale type in use**
Value:	0		0	for service only
	0		1	Nordic N9 (factory preset)
	1		0	for service only
	1		1	for service only
Switch	**3**	**switch**	**4**	**peakhold time** (only in SPOT mode)
Value:	0		0	off
	0		1	4.0 s
	1		0	2.5 s (factory preset)
	1		1	manual
Switch	**5**	**switch**	**6**	**not used**
Switch	**7**			**service**
Value:	0			off (factory preset)
	1			on
Switch	**8**			**standby**
Value:	0			on (factory preset)
	1			off

Value 0 corresponds to switch position OFF, value1 switch position ON

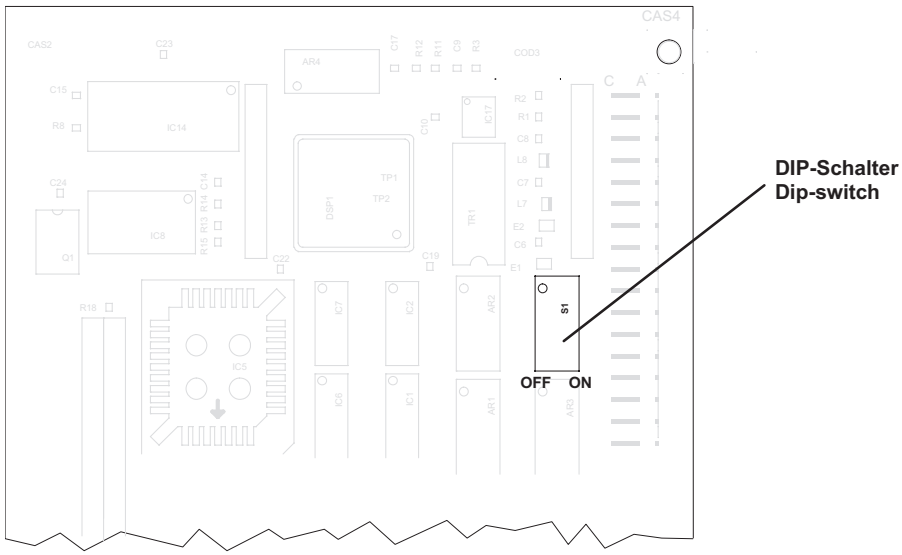


Fig 3-2 Partitial view of the basic board

3.5. Troubleshooting

Important: This description is not intended to be used as a service manual. These are guidelines for an expierenced service engineer to proceed a basic check up of our meter. However, we strongly recommend repair of faulty meters in our factory.

Please refer to the safety instruction before continuing.

If there is the assumption of a fault in our meter please proceed the following steps:

1. Open the upper meter cover. Store screws and metal plate.

2. Supply power and signal to the unit.

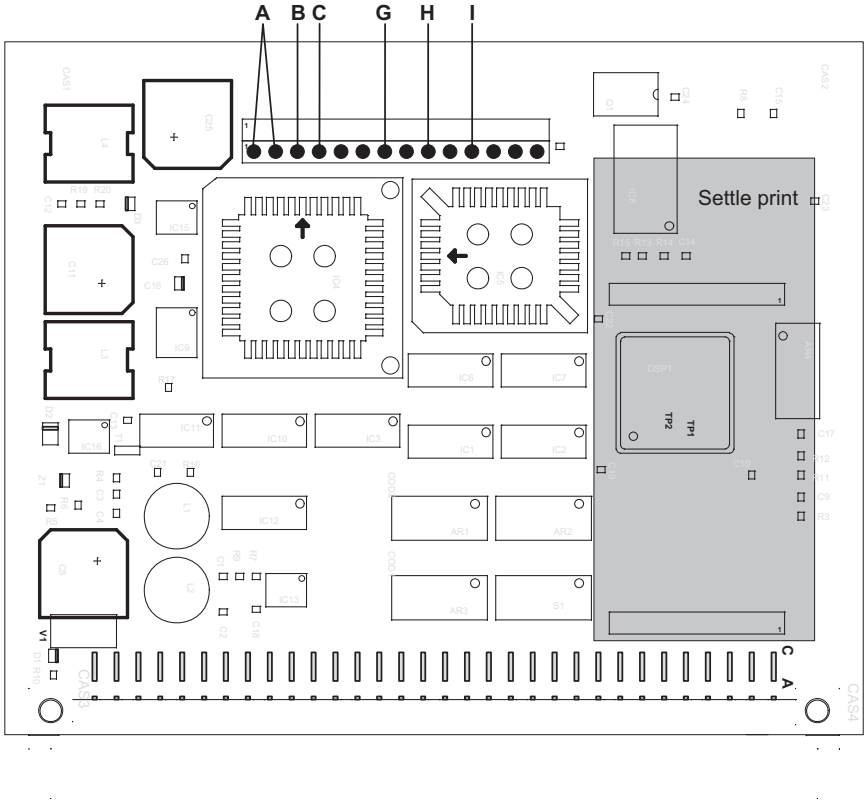


Fig 3-3 Testpoints on main pcb (component side)

3. Measure for +18.3 V DC between point A (reference) and point B. If this voltage is missing the power supply on the main circuit board is broken. We recommend repair at the factory or exchange of the main pcb.

4. Measure for +5 V DC between point A (reference) and point C. If this voltage is missing the power supply on the main circuit board is broken. We recommend repair at the factory or exchange of the main pcb.

5. Use a scope to monitor between point A (reference) and point IC-2 (on the A/D settle board - fig 6-1), Pin 8 (left channel) or IC-2 Pin 5 (right channel) if the incomming signal is present. If this signal is faulty the input circuitry on the main circuit board is broken. We recommend repair at the factory or exchange of the main pcb.

6. Use a scope to monitor a waveform between point A (reference) and point G (left channel) and H (right channel). The waveform should show a pulse width modulation of the incomming signal. If this wave-form is faulty the processing on the main circuit board is broken. We recommend repair at the factory or exchange of the main pcb.

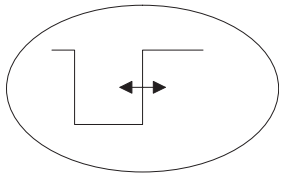


Fig 3-4 Example of pulse width modulation waveform

7. Use a scope to monitor a waveform between point A (reference) and point I. The waveform should show a periodic pulse train. If this waveform is faulty the processing on the main circuit board is broken. We recommend repair at the factory or exchange of the main pcb.

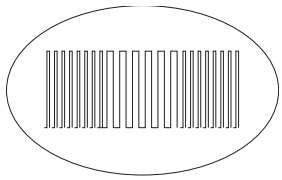


Fig 3-5 Example of a periodic pulse train

8. If all the above mentioned tests are o. k. the main pcb is working proper. Check for +130 V and +150 V between point A (reference) and L (high voltage) on the display driver PCB. If this voltage is faulty the display driver circuit board is broken. We recommend repair at the factory or exchange of the complete display panel.

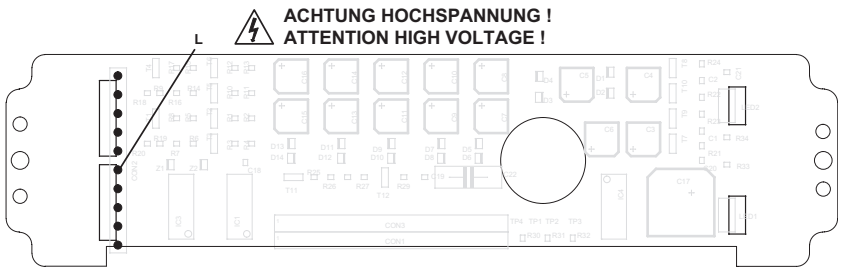
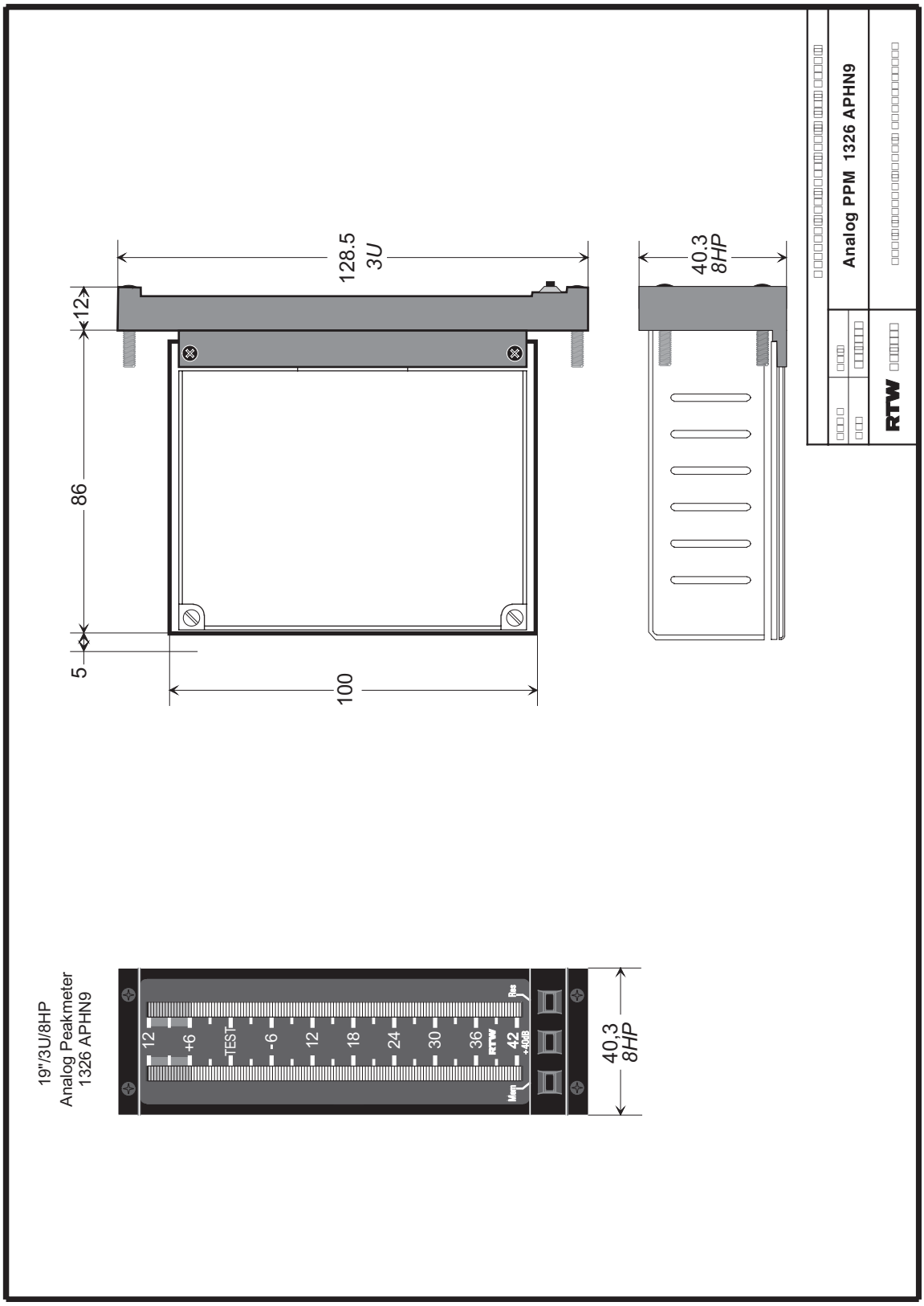


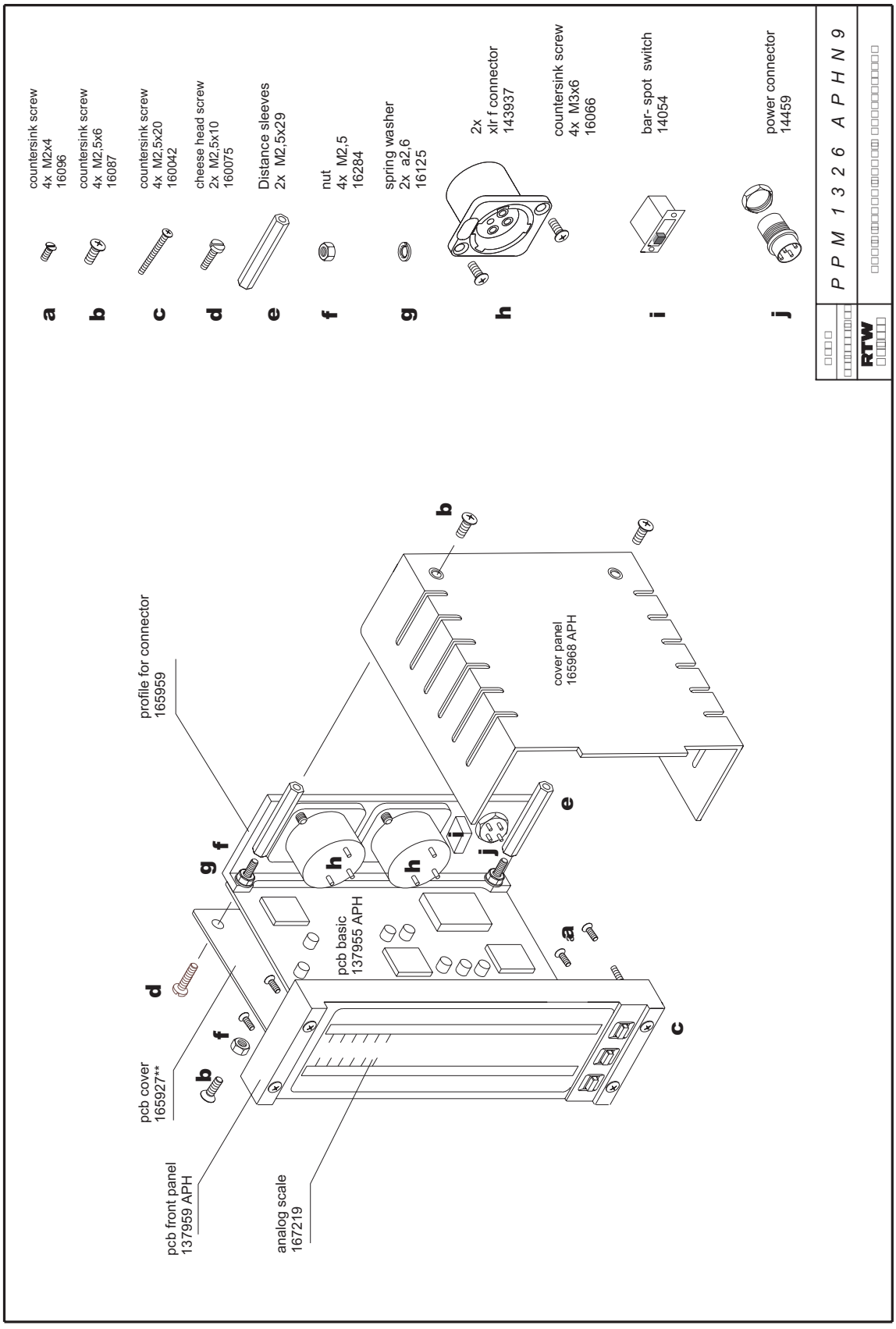
Fig 3-6 Display driver pcb (component side)

4. Drawings

4.1. Mechanical outlines



4.2. Exploded view



4.3. Part list

4.3.1. Common parts

Part No.	Description	Type
Mechanical parts		
166599**	isolation cap	
160042	screw, countersunk M 2.5 x 20	
16096	screw, countersunk M 2 x 4	
16087	screw, countersunk M 2.5 x 6	
16075	screw, cylinder head M 2.5 x 10	
161802	screw, countersunk M 3 x 6 (for connector)	
16284	nut M 2,5	
16125	washer 2.6	
165968 APH	cover sheet (case)	APH
165959	angle profile (for connector)	APH
16267 APH	hexagon bolt M 2.5 x 29	
165927**	pcb cover, shielded	
Common electronical parts		
175614	bargraph display	SP-410-003
143937	XLR-f connector	
14459	power connector	
14054	mini switch	
PCB's		
137955 APH	main pcb	APH
137954	display driver pcb	
137958	pushbutton pcb	

4.3.2. Display and scale

Part No.	Description	
137959 APH	frontpanel 1326 APHN9 including display driver pcb	APH
167219	analog scale Nordic N9 vertical	

Appendix A: Specifications

General

Supply voltage:	24 V DC ±10 %
Current drain:	max. 190 mA
Operating temperature range:	0° to +50° celsius
Scale length:	102 mm (5 inch)
Number of display segments:	201 segments / channel
Type of display:	Neon-plasma-bargraph display
Colour of display:	up to reference point orange, above reference point red
Maximum input level:	+22 dBu
Adjustable range for reading reference:	-3 dBu to +16 dBu
Inputs:	electronically balanced
CMMR:	min. 60 dB
Input impedance (30 Hz to 20 kHz):	min. 10 kΩ
Memory accuracy (Memo):	±1 segment
Weight:	approx. 260 g net
Dimensions:	3 HE/8 TE
Depth:	86 mm
Connector:	2 x XLR-F 1 x DC-M

Analog scale

Scale range:	-42 dB to + 12 dB
Input sensitivity for reference +6:	+6 dBu
Brighter scale marks:	-42, -36, -30, -24, -18, -12, -6, 0 dB
Brighter scale range:	+6 dB to +12 dB (red filter)
Scale graduation; integration time:	according Nordic N9 recommendation
Gain:	+40 dB

Controls

Keys:	Gain Memo: memory recall Reset: memory reset
Switch (on the rear side):	B/S: bargraph or spot mode

Items delivered

- Peakmeter 1326 APHN9
- DC-F connector counter plug
- Operating manual

Subject to technical changes without prior notice

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 peakmeter based on hardware E504 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:

20.02.2001



Trennseite