RTW

RADIO-TECHNISCHE
WERKSTÄTTEN

INSTRUMENTS FOR
STUDIO APPLICATIONS

Operating Manual
Service Manual

Peakmeter 1036-40 SO

Serial Number:

Catalogue Number:

RTW

RADIO-TECHNISCHE WERKSTÄTTEN GmbH & Co. KG
Telefax 0221/7091332 · Telefon 0221/709 13-33
Hausadresse: Elbeallee 19 · D-**50765** Köln
Postfachadresse: Postfach 710654 · D-**50746** Köln

RADIO-TECHNISCHE WERKSTÄTTEN GmbH & Co. KG
Fax +49-221-709 1332 · Phone +49-221-709 13-33
Elbeallee 19 · D-**50765** Cologne · Germany
P.O.Box 710654 · D-**50746** Cologne · Germany

08101.01

RADIO-TECHNISCHE WERKSTÄTTEN GmbH&Co. KG

Hinweis

WARNUNG!



Das Öffnen des Gerätes birgt eine potenziell gefährliche Situation, denn es kann eine gefährliche Spannung mit dem Risiko eines elektrischen Schlags anliegen!

WEEE-Reg.-Nr.: **DE 90666819**

Kategorie: 9

Geräteart: Diese Geräte erfüllen als
ÜBERWACHUNGS- UND KONTROLLINSTRUMENTE
in der Kategorie 9, Anhang 1B,
die Vorschriften des Elektro- und Elektronikgesetzes
vom 16. März 2005 und der RoHS-Directive 2002/95/EC.

Note

WARNING!



Opening the unit bears a potentially hazardous condition. A dangerous voltage that could pose a risk of electrical shock can be present!

WEEE-Reg.-No.: **DE 90666819**

Category: 9

Device type: These instruments comply with
and fall under category 9
MONITORING AND CONTROL EQUIPMENT
of Annex 1B of the RoHS-Directive 2002/95/EC.

English Manual	Section	**2**
Zeichnungen/Drawings	Section	**3**
Stücklisten/Partlists	Section	**4**
Konformitätserklärung/Declaration of Conformity	Section	**5**

TECHNICAL SPECIFICATIONS

Supply voltage:	21.5 V - 30 V DC, nom. 24 V DC
Current drain:	max. 190 mA for 24 V
Ambient temperature:	+5° to +45° Celsius
Type of display:	Plasma bargraph display
Number of display segments:	201 Segments/Channel
Colour of display:	working range segments amber, headroom segments red
Scale length:	100 mm (4 inches)
Scale graduation:	acc. NORDIC
Brighter scale range:	-42, dB, -36 dB, -30 dB, -24 dB, -18 dB, -12 dB, -6 dB, 0 dB whole range between +6 dB and +12 dB
Brighter scale marks at:	between +39 dB and +12 dB in steps of 3 dB
Indication without signal input:	3 luminous segments per channel (termination with 30 Ω)
Automatic cutout:	after 3 minutes
Signal inputs:	transformer balanced
Input impedance 30 Hz-20 kHz:	min. 10 kW
Rejection factor:	min. 60 dB
Input sensitivity for 0 dB reading:	+6 dBu (1.55 V)
Switchable increase of input gain:	+40 dB
Max. input level:	+22 dBu
Overload display:	1 LED per channel
Overload detector range:	in steps of 1 dB between -2 dB and +12 dB
Measuring standard:	PPM acc. NORDIC
Frequency range 30 Hz - 20 kHz:	±0.5 dB
Roll off above 20 kHz:	12 dB/Octave
Switchable integration time:	10 ms, 1 ms
Fall back time:	1.7 s for 20 dB 3.5 s for 40 dB
Polarity error:	max. 0.5 dB
Difference in reading between both channels:	+/- 1 Segment
Memory accuracy:	+/- 1 Segment *)
Peak hold time:	ca. 2.5 s
Switching inputs:	TTL level, 'activ low'
Connector:	32 pol. acc. DIN 41612/C
Weight:	ca. 320 g (0.7 lbs) netto
Dimensions 1036-40 SO:	140 x 40 (front panel) x 59,5 mm 140 x 48,5 x 59,5 mm (with sidely fitted connector)
Items delivered:	1. Peakmeter 1036-40 SO fitted with a horizontal scale 2. Connector (counter plug) 3. Operating and service manual
	Technical changes reserved

*) Note for the user

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 the maximal level should be repeated if interference is suspected.

DESIGN AND FUNCTIONS

The RTW Peakmeter 1036-40 SO is fitted with a gas plasma display. The display unit and electronics are installed in a metal housing with 140 x 40 (front panel) x 59,5 mm resp. 140 x 48,5 (with sidely fitted connector) x 59,5 mm outside dimensions. The test points and adjustment controls can be accessed by removing the side panels.

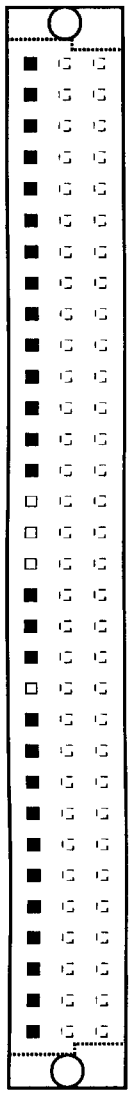
The meter is powered by an external power supply, which should have an output of between 21.5 V and 30 V. Three internal voltage converters provide the +18 V, +9 V and +5 V required for the analog and digital electronics. The approx. 220 V DC for the plasma display is generated by a power multivibrator coupled with a voltage multiplier.

The main components of the analog stage are the three op amps per input channel for balanced-to-unbalanced transformation, amplification and frequency weighting, and the two-way rectifiers in the downstream signal path. Comparators compare the rectified audio signals with a sawtooth signal generated by the microcontroller and DA converter. The shape of this ramp signal defines the scale and thus also the display mode of the instrument.

The microcontroller receives the comparator output signals, calculates the level and fallback values and passes them to the display driver transistors as a pulse-width modulated signal. It also generates the signals for controlling the display cathodes. I/O components connect the controller to the remote control inputs; when they are activated, it supplies the necessary instructions to the addressed circuit stages.

CONNECTION AND OPERATION

The RTW Peakmeter 1036-40 SO is fitted with a 32-pin connector. The pin assignments are shown in the following table:



Pin 32	audio input (+), upper or left display column (CH I)
Pin 31	case
Pin 30	audio input (-), upper or left display column (CH I)
Pin 29	case
Pin 28	-V
Pin 27	case
Pin 26	audio input (+), lower or right display column (CH II)
Pin 25	case
Pin 24	audio input (-), lower or right display column (CH II)
Pin 23	-V
Pin 22	"Solo" switching input CH I
Pin 21	"Solo" switching input CH II
Pin 20	"Solo" common
Pin 19	"Solo"/Mute switching input
Pin 18	not applicable
Pin 17	not applicable
Pin 16	not applicable
Pin 15	external function selection: Gain
Pin 14	external function selection: Memory Reset
Pin 13	external function selection: Memory
Pin 12	not applicable
Pin 11	case
Pin 10	indicator LED CH I
Pin 9	indicator LED CH II
Pin 8	external control: overload detector range "OVR-1"
Pin 7	external control: overload detector range "OVR-2"
Pin 6	external control: overload detector range "OVR-4"
Pin 5	external control: overload detector range "OVR-8"
Pin 4	case
Pin 3	-V (also common ground for external controls and function selection)
Pin 2	case
Pin 1	+24 V DC, $I_{max.}$ 190 mA

POWER SUPPLY

The RTW Peakmeter1036-40 SO requires a power supply of between 21.5 V and 30 V DC. Power consumption is around 4.6 watts (24 V/190 mA). Connect the power supply to the '-V' and '+V' terminals.

AF INPUTS

The AF signal inputs are transformer-balanced. Each channel has a spindle-operated potentiometer for adjusting sensitivity for input signals not matching the default setting. The potentiometers can be accessed by removing the side panels.

SPECIAL FUNCTIONS / SWITCHING INPUTS

The special functions and modes of the Peak Meter are activated by connecting the corresponding switching inputs to the negative pole of the power supply source (-V).

The functions can be activated by single-pole ON/OFF pushbuttons or switches. You can also connect the equivalent switching inputs of multiple RTW Series 1036-40 SO meters to single lines, so that only one switch per function is required for multi-channel displays. The available functions are explained below.

'Solo' CH1/2: Displays only the selected channel; the second channel/all other channels (with multi-channel displays) is/are switched off.

'Solo' Bus: In multi-channel displays the 'Solo' function described above cannot be activated unless the 'Solo' bus lines of all the connected instruments are connected to one another.

'Solo/Mute': Switches the 'Solo' function to 'Mute'. Activation of one or more 'Solo' inputs when the 'Solo/Mute' input is activated blanks the selected channel display(s).

'Gain': Increases the 0 dB display sensitivity by exactly 40 dB.

'Memory': Displays the signal peak values stored since the last reset. Please note that even temporary switching to 'Peak Hold' mode resets the long-term memory.

'Memory Reset': Resets the long-term memory, or signal peak values in 'Peak Hold' mode.

'Indicator' CH1/2: Switches on the channel indicator LEDs.

'OVR 1,2,4,8': Activates the internal overload detector. You can set the OVR detector trip value to between
-2 dB and +12 dB in steps of 1 dB by appropriate connection of the four inputs, preferably with a BCD stepping switch. Activation of the OVR detector disables the 'Indicator' inputs.

OVR - - - 1	=	+12 dB	OVR - 4 - 1	=	+4 dB
OVR - - 2 -	=	+11 dB	OVR - 4 2 -	=	+3 dB
OVR - - 2 1	=	+10 dB	OVR - 4 2 1	=	+2 dB
OVR - 4 - -	=	+9 dB	OVR - 8 - -	=	+1 dB
OVR 8 - - 1	=	+8 dB	OVR 8 4 - 1	=	0 dB
OVR 8 - 2 -	=	+7 dB	OVR 8 4 2 -	=	-1 dB
OVR 8 - 2 1	=	+6 dB	OVR 8 4 2 1	=	-2 dB
OVR 8 4 - -	=	+5 dB			

AUTOMATIC CUTOUT SYSTEM

If no signal is received for approx. 3 minutes an automatic cutout system switches the instrument to 'standby' mode. The instrument switches on again immediately as soon as a signal is received.

CALIBRATION

Calibration is only necessary when analog stage components are replaced. It consists only of precise adjustment of the input sensitivity and correction of any offset errors in the rectifiers and ramp generator. Use a precision level AF generator to produce the calibration signals.
The adjustment potentiometers are behind the side panels. Their location is shown in the 'Component Layout'.

Level Adjustment:
Connect a 1 kHz sinus signal with a level of +6 dBu / 1.55 V to the inputs and adjust the two display bars to +6dB with the potentiometers TP1 and TP2.

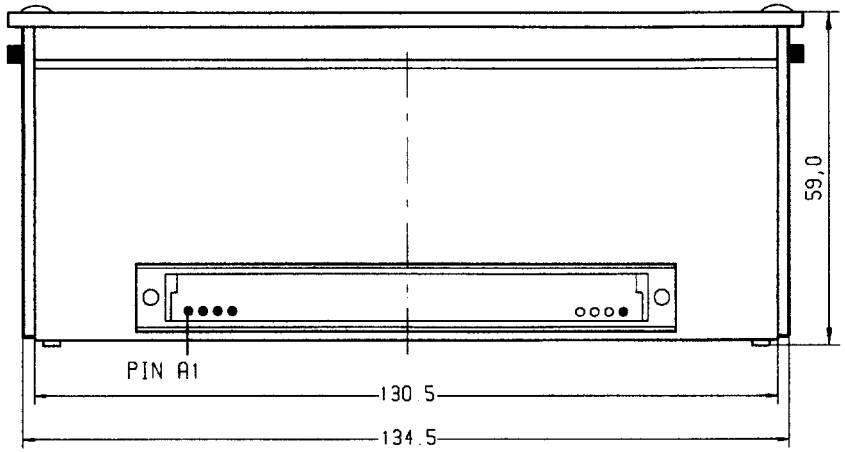
Zero and Offset Adjustment:
Connect a 1 kHz sinus signal with a level of +42 dBu to the inputs and adjust the two display bars to -42 dB with potentiometers TP3 and TP3.
Disconnect the signal from the inputs. Only the three zero point segments should remain on. If necessary, repeat the adjustment until both the -42 dB and the precise zero point display are achieved.

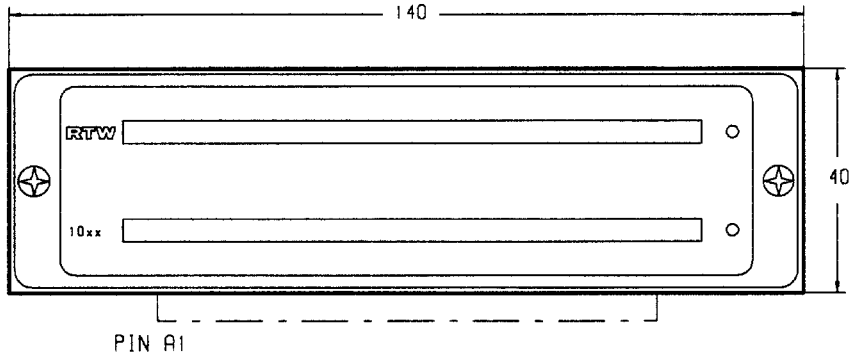
SCALE

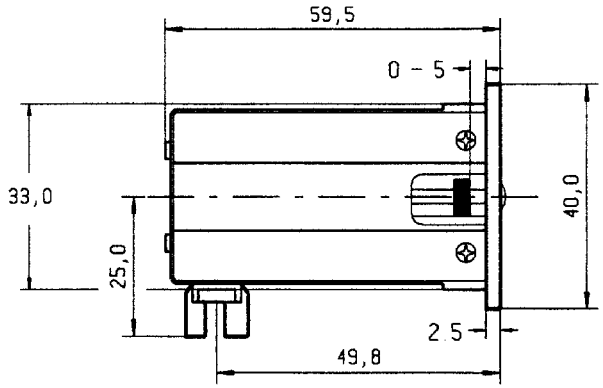
The unit is delivered with a visible horizontal scale.

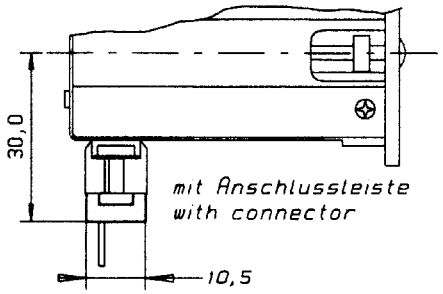
Drawings

MECHANICAL OUTLINES MILLIMETER

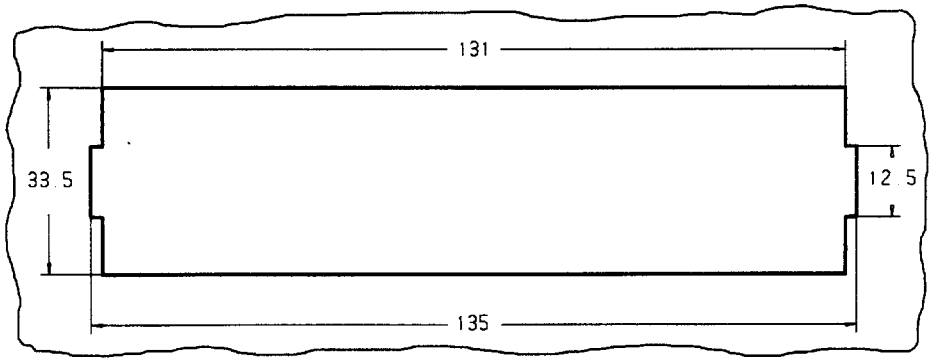




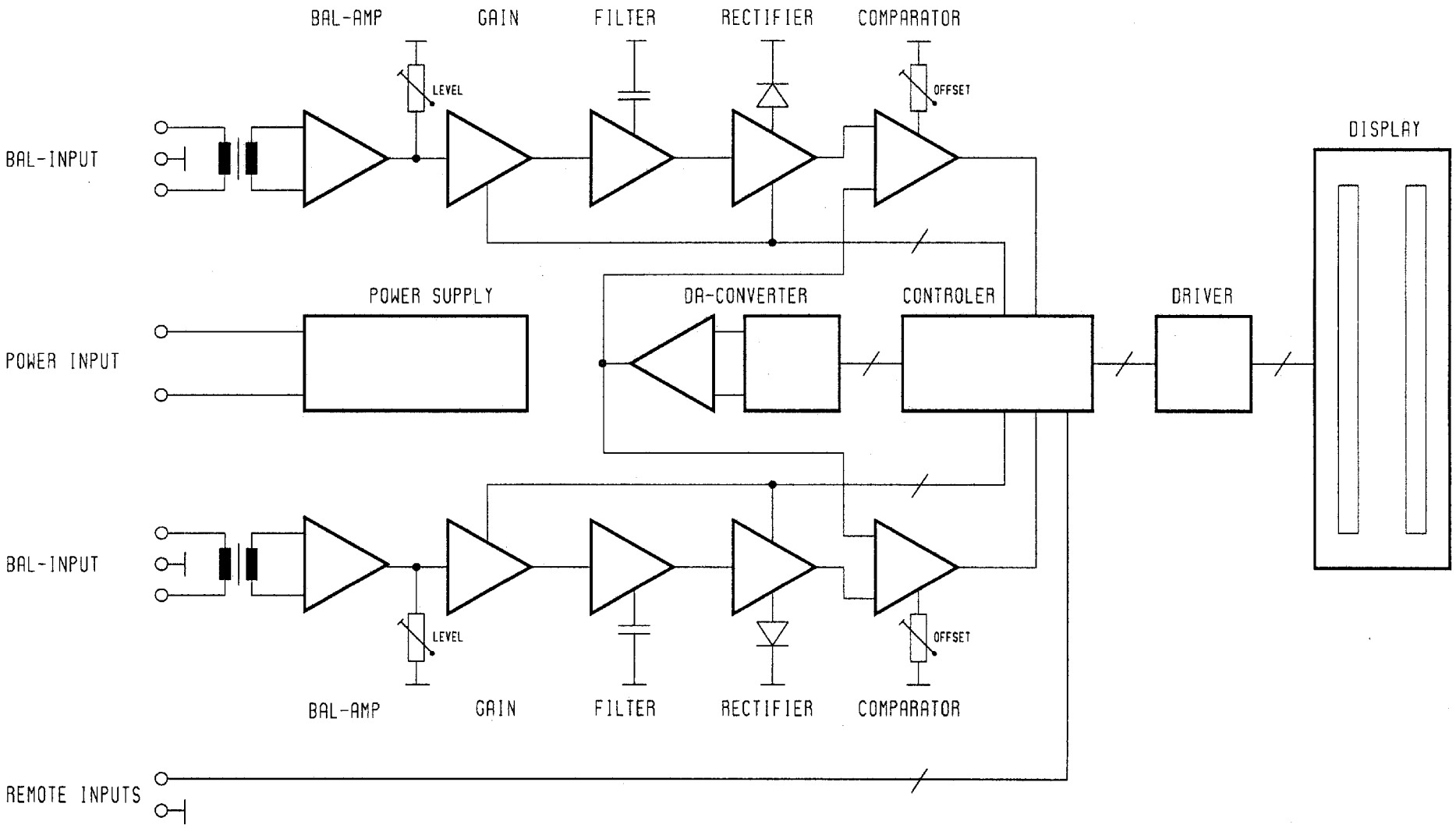




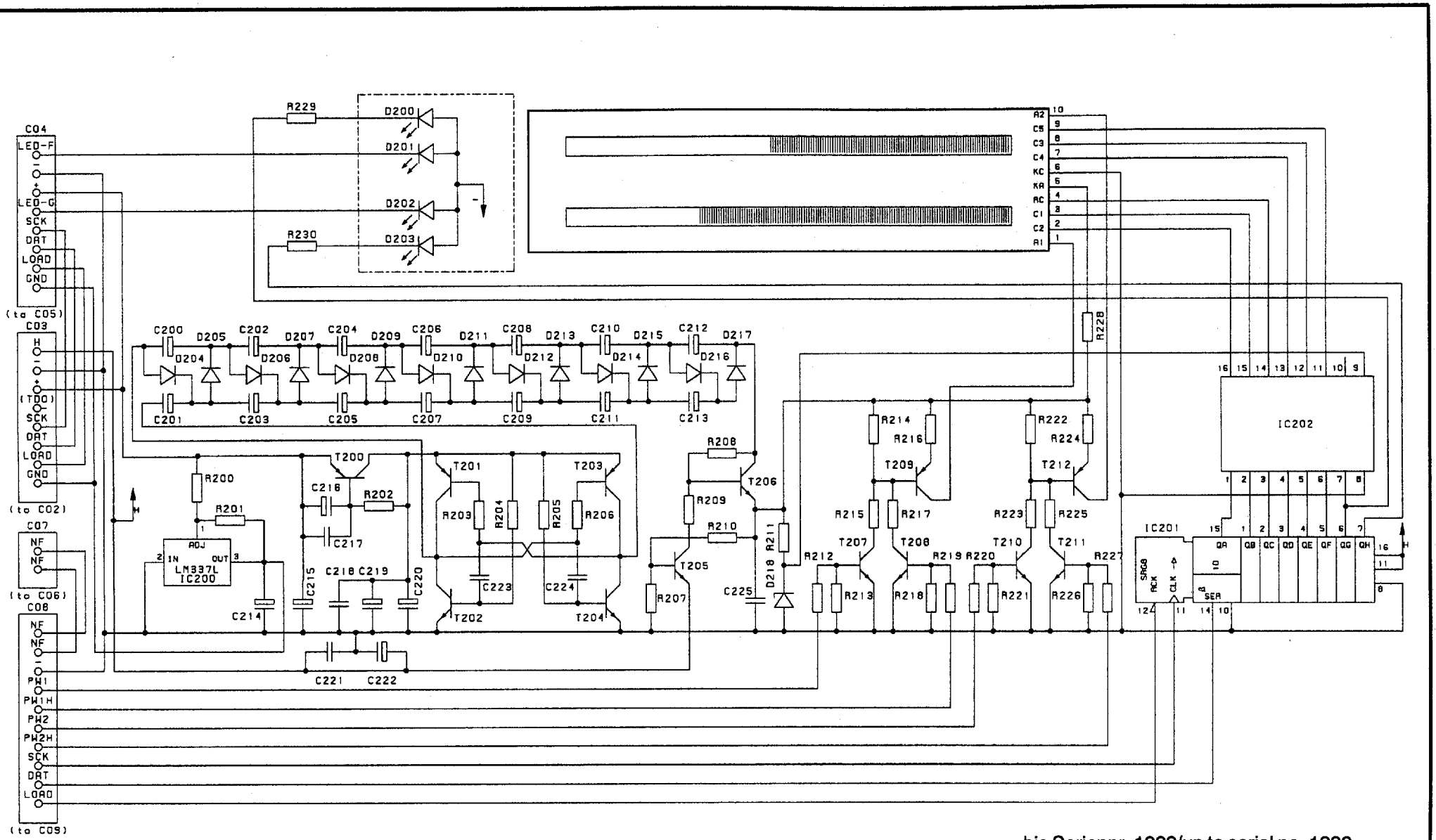
FRONT PANEL MOUNTING DIAGRAM MILLIMETER



Name	Date	PPM 10xx-40 S0
Bo	08,2002	
RTW		RADIO-TECHNISCHE WERKSTATTEN GMBH

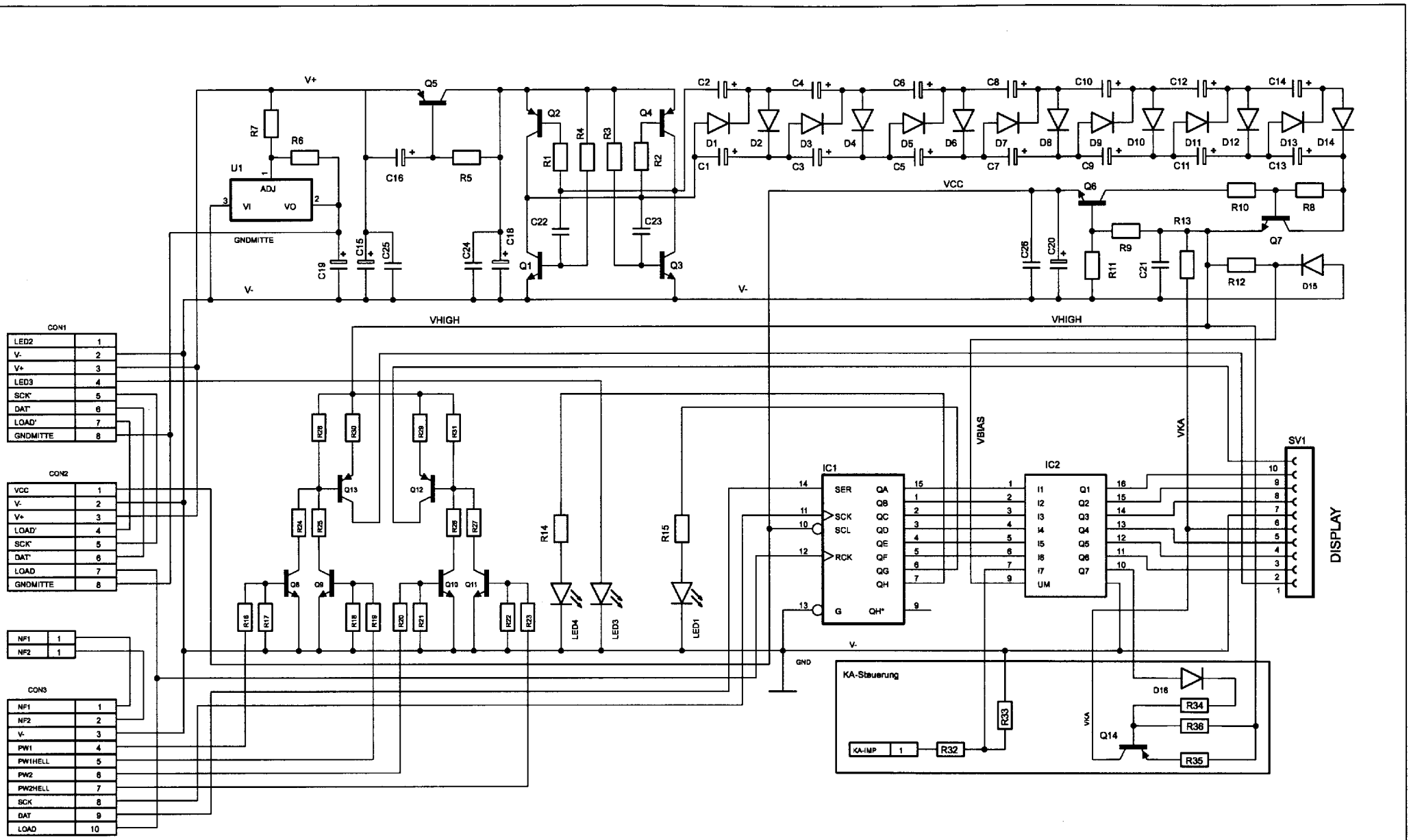


Name	Datum	RTW PPM 1036-40 SO
Kü	11 2002	
RTW		Block Diagram



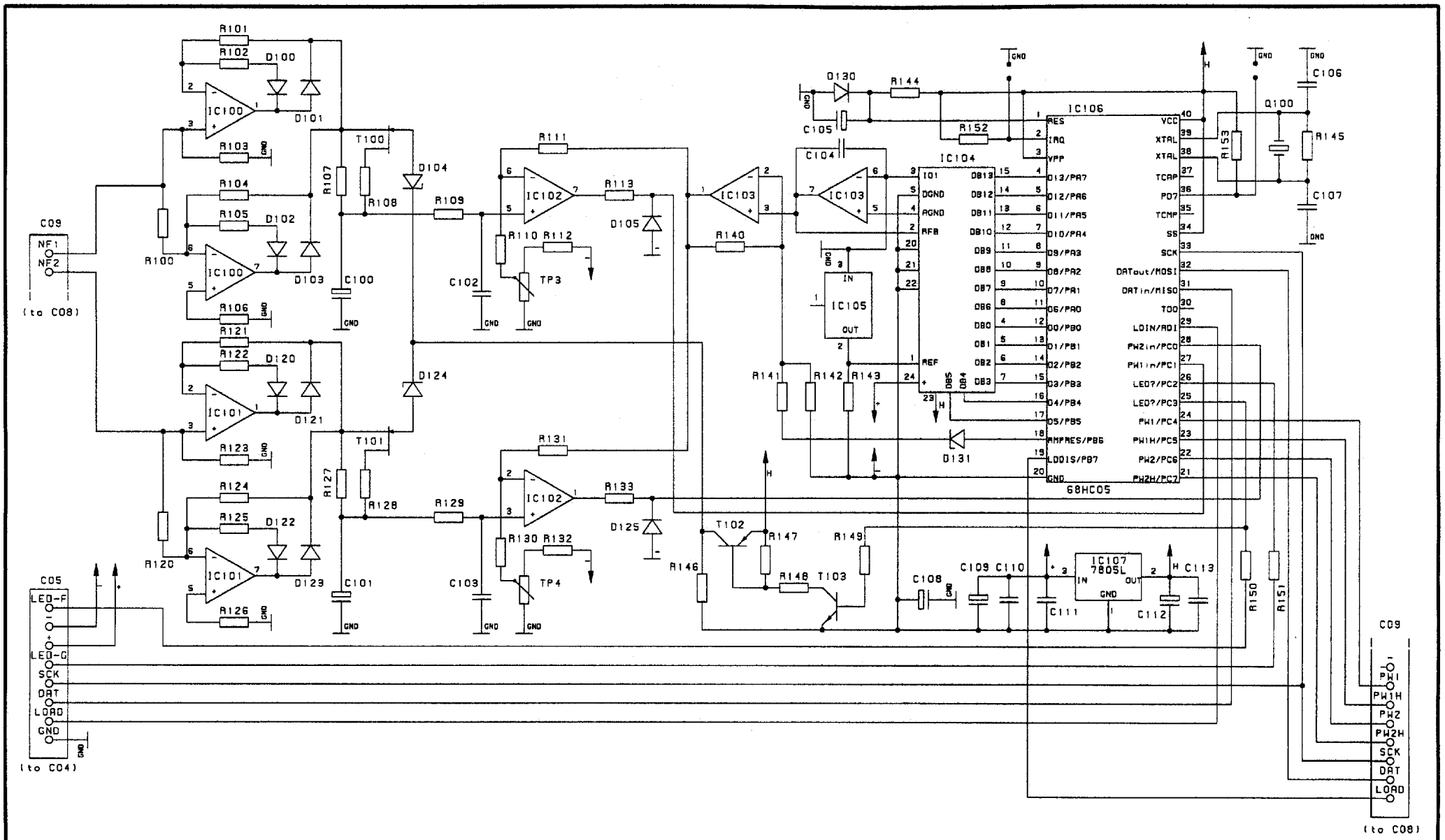
bis Seriennr. 1999/up to serial no. 1999

Name	Datum	RTW PPM 1036-40 SO
Ku	11.2002	
RTW		Schematic Layout 'Driver'

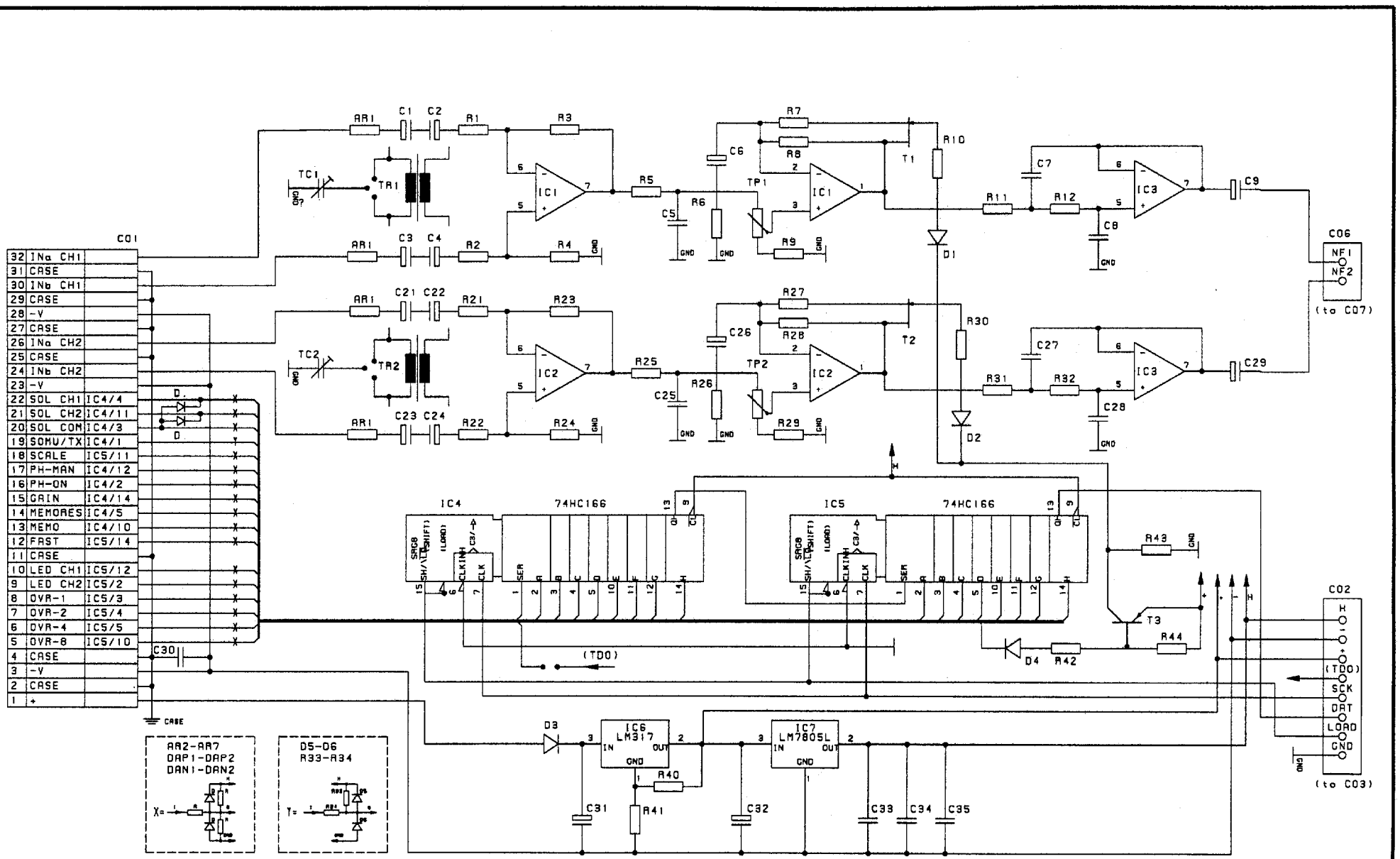


VCC IC1P GND

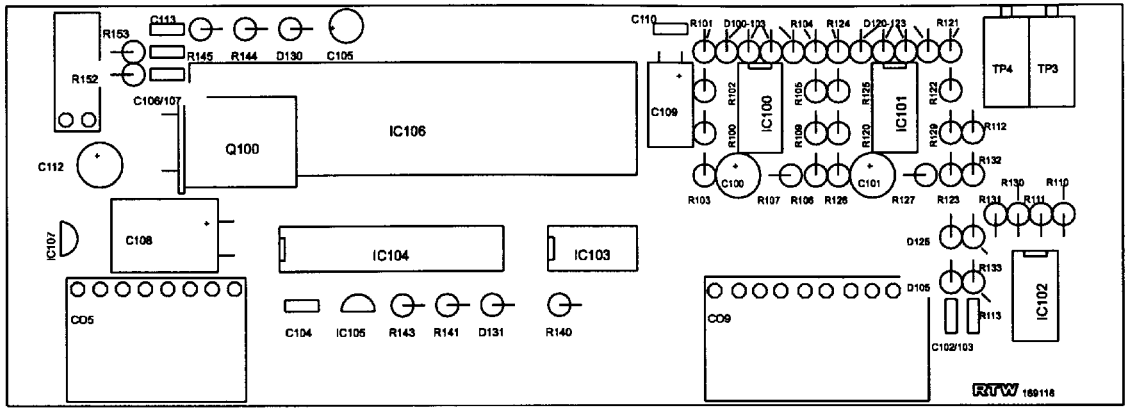
Name	Datum	RTW PPM 1036-40 SO
Kü	02.2004	
RTW		Schematic Layout Driver ab Seriennr. 2000/with serial no. 2000 and higher

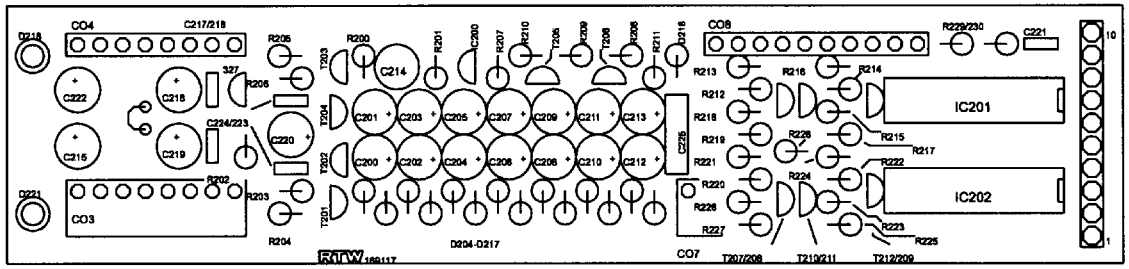


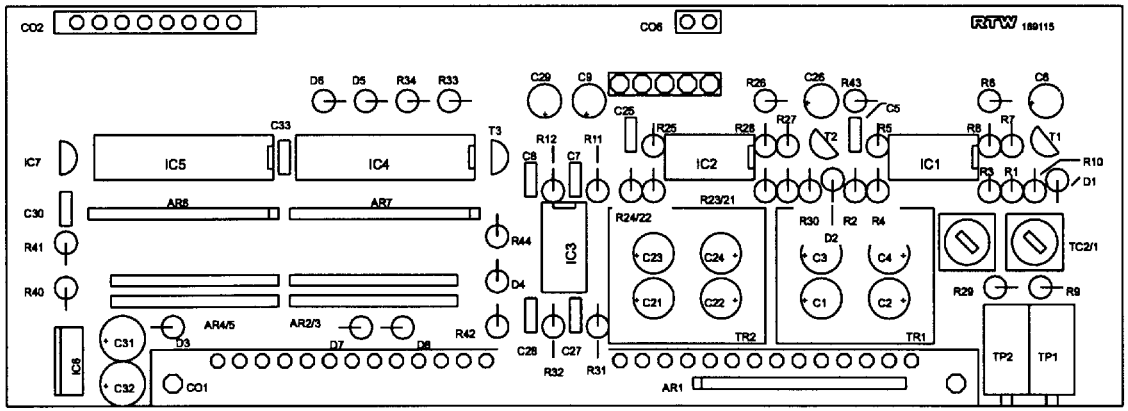
Name	Datum	RTW PPM 1036-40 SO
Ku	11.2002	
RTW		Schematic Layout 'Proc'



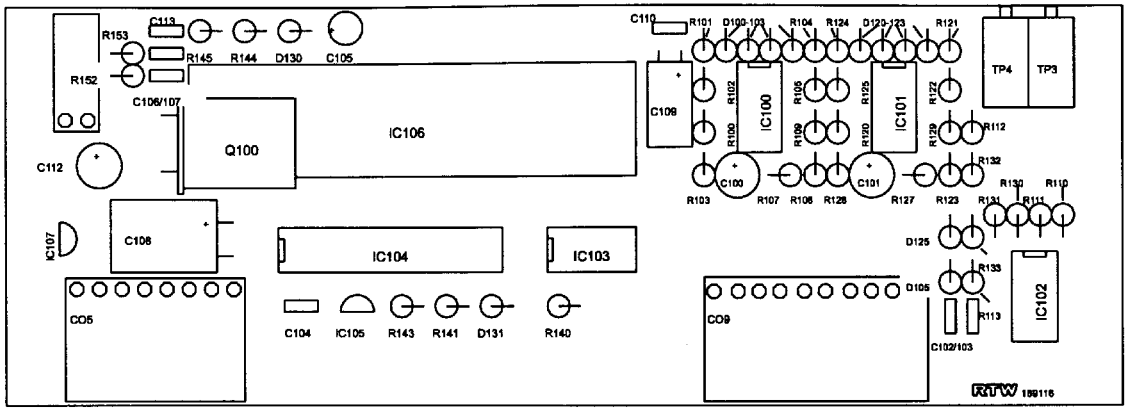
Name	Datum	RTW PPM 1036-40 SO
Ku	02.2002	
RTW		Schematic Layout 'Ana/IO'

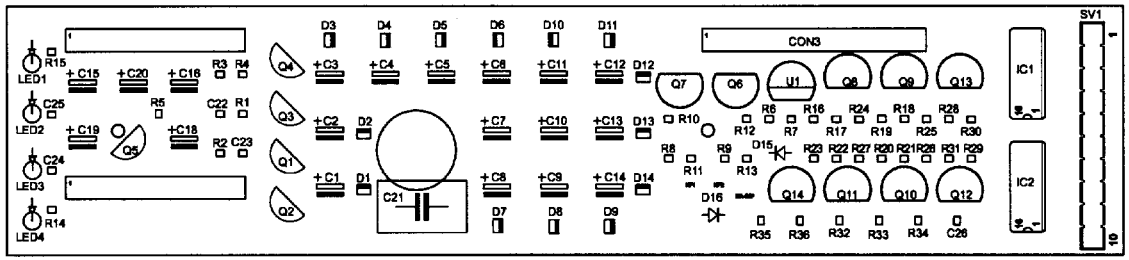


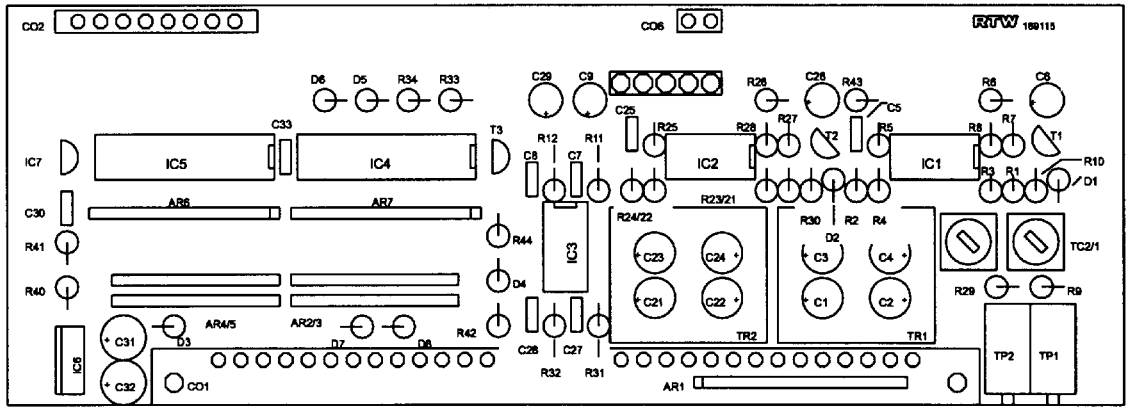




Name	Datum	RTW PPM 1036-40 SO
Kü	11.2002	
RTW		Component Layouts bis Seriennr. 1999/up to serial no. 1999







Name	Datum	RTW PPM 1036-40 SO
Kü	05.2003	
RTW		Component Layouts ab Seriennr. 2000/with serial no. 2000 and higher

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GmbH & Co. KG

Stücklisten / Partlists

Beschreibung/ Description	Stückliste/ Partlist	Seite/ Page
PCB ASSY DISPLAY DRIVER **bis Serien-Nr. 1999/ up to serial no. 1999**	129773	2
PCB ASSY DISPLAY DRIVER **ab Serien-Nr. 2000/ with serial no. 2000 and higher**	129780	4
PCB ASSY CPU DIGITAL	129771 MOD	6
PCB ASSY ANALOG	129860	8

Weitere Ersatzteile/Other spare parts:

Front Panel	13786 (komplett mit Driver/complete with driver)
Scale, sandwich 1035-40/1036-40	167177
Screen plate 10xx-40	165723**
LED, yellow HLMP 1719	18533
LED, red HLMP 1700	19402
Isolation strip	166597
Isolation cap, high volt	166599**

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GmbH & Co. KG

POS	BESCHREIBUNG	WERT			TYPE	HERSTELLER	ARTIKEL
IC200	Voltage,Regulator				LM337LZ	National	18113
IC201	IC-HC				74HC595	Motorola	18039
IC202	IC-ULN				ULN2023A/SN 75468N	Texas Instruments	18056
T200	Transistor				BC327-40	Intermetall	17461
T202	Transistor				BC618	Motorola	19013
T203	Transistor				BC327-40	Intermetall	17461
T204	Transistor				BC618	Motorola	19013
T205 , T206	Transistor				MPSA 42	Motorola	17455
T207 , T208	Transistor				MPSA 42	Motorola	17455
T209	Transistor				MPSA 92	Motorola	17456
T210 , T211	Transistor				MPSA 42	Motorola	17455
T212	Transistor				MPSA 92	Motorola	17456
D204 - D217	Diode,Silicon				1N4148	ITT	17492
D218	Diode,Zener	82V			ZY 82/ZPY 82	ITT	17499
R200	Resistor,Metalfilm	1,0K	50ppm	1%	0207 MK2	Resista	170957S
R201	Resistor,Carbon	220E		5%	0207	Resista	17007S
R202 , R203	Resistor,Metalfilm	3,3K	50ppm	1%	0207 MK2	Resista	17073S
R204 , R205	Resistor,Metalfilm	33K	50ppm	1%	0207 MK2	Resista	17060S
R206	Resistor,Metalfilm	3,3K	50ppm	1%	0207 MK2	Resista	17073S
R207	Resistor,Metalfilm	27K	50ppm	1%	0207 MK2	Resista	17049S
R208	Resistor,Metalfilm	100K	50ppm	1%	0207 MK2	Resista	170960S
R209	Resistor,Metalfilm	220K	50ppm	1%	0207 MK2	Resista	17054S
R210	Resistor,Metalfilm	1M	50ppm	1%	0207 MK2	Resista	17055S
R211	Resistor,Carbon	2,2M		5%	0207	Resista	17036S
R212	Resistor,Metalfilm	2,2K	50ppm	1%	0207 MK2	Resista	17052S
R213	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R214	Resistor,Metalfilm	15K	50ppm	1%	0207 MK2	Resista	17046S
R215	Resistor,Metalfilm	1M	50ppm	1%	0207 MK2	Resista	17055S
R216	Resistor,Metalfilm	1,0K	50ppm	1%	0207 MK2	Resista	170957S
R217	Resistor,Metalfilm	1,2M	50ppm	1%	0207 MK2	Resista	170976S
R218	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R219 , R220	Resistor,Metalfilm	2,2K	50ppm	1%	0207 MK2	Resista	17052S
R221	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R222	Resistor,Metalfilm	15K	50ppm	1%	0207 MK2	Resista	17046S
R223	Resistor,Metalfilm	1M	50ppm	1%	0207 MK2	Resista	17055S
R224	Resistor,Metalfilm	1,0K	50ppm	1%	0207 MK2	Resista	170957S
R225	Resistor,Metalfilm	1,2M	50ppm	1%	0207 MK2	Resista	170976S
R226	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R227	Resistor,Metalfilm	2,2K	50ppm	1%	0207 MK2	Resista	17052S
R228	Resistor,Metalfilm	1M	50ppm	1%	0207 MK2	Resista	17055S
R229 , R230	Resistor,Carbon	1K		5%	SK1	Resista	17093S
C200 - C213	Capacitor,Elect	10uF	50V		SRA-VB	Chemi-Con	17318
C214	Capacitor,Elect	10uF	50V		SRA-VB	Chemi-Con	17318
C215	Capacitor,Elect	10uF	50V		SRA-VB	Chemi-Con	17318
C216	Capacitor,Elect	100uF	25V		SM-VB	Chemi-Con	17306
C217 , C218	Capacitor,Ceramic	0,1uF	63V		Z5U	Sprague	17422
C219	Capacitor,Elect	10uF	50V		SRA-VB	Chemi-Con	17318
C220	Capacitor,Elect	100uF	25V		SM-VB	Chemi-Con	17306

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GmbH&Co.KG

POS	BESCHREIBUNG	WERT		TYPE	HERSTELLER	ARTIKEL
C221	Capacitor,Ceramic	0,1uF	63V	Z5U	Sprague	17422
C222	Capacitor,Elect	10uF	50V	SRA-VB	Chemi-Con	17318
C223 , C224	Capacitor,Ceramic	3,3nF	100V	C320 C332K2R5	Kemet	17393
C225	Capacitor,Polyester	10nF	250V	MKS 3	Wima	17401

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GmbH&Co.KG

POS	BESCHREIBUNG	WERT		TYPE	HERSTELLER	ARTIKEL
C1 - C14	Capacitor,Elect	10uF	50V	KMA-VB	Chemi-Con	173414
C15	Capacitor,Elect	27uF	35V	LXY-VB	Chemi-Con	17348
C16	Capacitor,Elect	27uF	35V	LXY-VB	Chemi-Con	17348
C18	Capacitor,Elect	27uF	35V	LXY-VB	Chemi-Con	17348
C19	Capacitor,Elect	10uF	50V	KMA-VB	Chemi-Con	173414
C20	Capacitor,Elect	27uF	35V	LXY-VB	Chemi-Con	17348
C21	Capacitor,Polyester	10nF	250V	MKS 3	Wima	17401
C22 , C23	Capacitor,Ceramic	1,5nF	50V	SMD 0805	Chemi-Con	173952
C24 - C26	Capacitor,Ceramic	0,1uF	50V	SMD 0805	Chemi-Con	173937
CON01 8p	Connector			BL1/1/Z	RTW	14346
CON02 8p	Connector			BL1/1/Z	RTW	14346
CON03 10p	Connector			BL1/1/Z	RTW	14346
D01 - D14	Diode,Silicon			IN 4148	ITT	19422
D15	Diode,Zener	82V		ZY 82/ZPY 82	ITT	17499
IC1	IC-SMD			MM74HC595M	Motorola	18161
IC2	IC-SMD			75468 D	Texas Instruments	18250
LED01	LED,red			HLMP 1700	Hewlett Packard	19402
LED02 , LED03	LED,yellow			HLMP 1719	Hewlett Packard	18533
LED04	LED,red			HLMP 1700	Hewlett Packard	19402
Q01	Transistor			BC618	Motorola	19013
Q02	Transistor			BC327-40	Intermetall	17461
Q03	Transistor			BC618	Motorola	19013
Q04	Transistor			BC327-40	Intermetall	17461
Q05	Transistor			BC327-40	Intermetall	17461
Q06 - Q09	Transistor			MPSA 42	Motorola	17455
Q10 , Q11	Transistor			MPSA 42	Motorola	17455
Q12 - Q14	Transistor			MPSA 92	Motorola	17456
R01	Resistor,Metalfilm	3,3K	5%	0805	Resista	170221
R02	Resistor,Metalfilm	3,3K	5%	0805	Resista	170221
R03 , R04	Resistor,metalfilm	33K	1%	0805	Resista	170209
R05	Resistor,Metalfilm	470E	1%	0805	Resista	170202
R06	Resistor,metalfilm	180E	1%	0805	Resista	170225
R07	Resistor,Metalfilm	1K	1%	0805	Resista	170203
R08	Resistor,Metalfilm	100K	1%	0805	Resista	170219
R09	Resistor,Metalfilm	1M	1%	0805	Resista	170212
R10	Resistor,Metalfilm	220K	1%	0805	Resista	170223
R11	Resistor,Metalfilm	24,3K	1%	0805	Resista	170239
R12	Resistor,Metalfilm	1M	1%	0805	Resista	170212
R13	Resistor,Metalfilm	1M	1%	0805	Resista	170212
R14	Resistor,Metalfilm	1K	1%	0805	Resista	170203
R15	Resistor,Metalfilm	1K	1%	0805	Resista	170203
R16	Resistor,Metalfilm	2,2K	1%	0805	Resista	170204
R17	Resistor,Metalfilm	10K	1%	0805	Resista	170206
R18	Resistor,Metalfilm	10K	1%	0805	Resista	170206
R19 , R20	Resistor,Metalfilm	2,2K	1%	0805	Resista	170204

RADIO-TECHNISCHE WERKSTÄTTEN GmbH&Co.KG

POS	BESCHREIBUNG	WERT		TYPE	HERSTELLER	ARTIKEL
R21	Resistor,Metalfilm	10K	1%	0805	Resista	170206
R22	Resistor,Metalfilm	10K	1%	0805	Resista	170206
R23	Resistor,Metalfilm	2,2K	1%	0805	Resista	170204
R24	Resistor,Metalfilm	1M	1%	0805	Resista	170212
R25	Resistor,Metalfilm	1M	1%	0805	Resista	170212
R26	Resistor,Metalfilm	1M	1%	0805	Resista	170212
R27	Resistor,Metalfilm	1M	1%	0805	Resista	170212
R28	Resistor,Metalfilm	15K	1%	0805	Resista	170208
R29 , R30	Resistor,Metalfilm	1K	1%	0805	Resista	170203
R31	Resistor,Metalfilm	15K	1%	0805	Resista	170208
R32	Resistor,Metalfilm	2,2K	1%	0805	Resista	170204
R33	Resistor,Metalfilm	10K	1%	0805	Resista	170206
R34	Resistor,Metalfilm	1M	1%	0805	Resista	170212
R35	Resistor,Metalfilm	1K	1%	0805	Resista	170203
R36	Resistor,Metalfilm	5,6K	1%	0805	Resista	170235
SVI	Connector	10p		PO AZ 10	Fischer	14449
U1	Voltage,Regulator			LM337LZ	National	18113

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GmbH&Co.KG

POS	BESCHREIBUNG	WERT			TYPE	HERSTELLER	ARTIKEL
IC100 , IC101	OP-AMP				NE5532	Texas-Instruments	17529
IC102	OP-AMP				LF412	Motorola	18077
IC103	OP-AMP				AD 712 JN	Linear	18081
IC104	DA-Convertor				AD7538	Analog Devices	18142
IC105	Diode,Reference	2,5V			LM336Z	National	18538
IC106	Mirco controller				68HC705C8	RTW	18128
IC107	Voltage,Regulator				LM78L05	National	18015
T100 , T101	Transistor FET				J108	Siliconix	19014
T102	Transistor				BC559C	Intermetall	17452
T103	Transistor				BC239C	Intermetall	17450
D100 - D103	Diode,Silicon				1N4148	ITT	17492
D104	Diode,Zener	15V			BZX 55 C15	ITT	19411
D105	Diode,Zener	5,6V			ZPD5,6/BZX83-C5V6	ITT	17494
D120 - D123	Diode,Silicon				1N4148	ITT	17492
D124	Diode,Zener	15V			BZX 55 C15	ITT	19411
D125	Diode,Zener	5,6V			ZPD5,6/BZX83-C5V6	ITT	17494
D130	Diode,Silicon				1N4148	ITT	17492
D131	Diode,Zener	5,6V			ZPD5,6/BZX83-C5V6	ITT	17494
D132	Diode,Zener	3,0V			ZPD3,0	ITT	19413
R100 , R101	Resistor,Metalfilm	47K	50ppm	1%	0207 MK2	Resista	17047S
R102 , R103	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R104	Resistor,Metalfilm	47K	50ppm	1%	0207 MK2	Resista	17047S
R105 , R106	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R107	Resistor,Metalfilm	110E	50ppm	1%	0207 MK2	Resista	170913S
R108	Resistor,Carbon	2,2E		5%	0207 1/4W	Resista	170908S
R109 - R111	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R112	Resistor,Metalfilm	3,3K	50ppm	1%	0207 MK2	Resista	17073S
R113	Resistor,Metalfilm	22K	50ppm	1%	0207 MK2	Resista	17053S
R120 , R121	Resistor,Metalfilm	47K	50ppm	1%	0207 MK2	Resista	17047S
R122 , R123	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R124	Resistor,Metalfilm	47K	50ppm	1%	0207 MK2	Resista	17047S
R125 , R126	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R127	Resistor,Metalfilm	110E	50ppm	1%	0207 MK2	Resista	170913S
R128	Resistor,Carbon	2,2E		5%	0207 1/4W	Resista	170908S
R129 - R131	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R132	Resistor,Metalfilm	3,3K	50ppm	1%	0207 MK2	Resista	17073S
R133	Resistor,Metalfilm	22K	50ppm	1%	0207 MK2	Resista	17053S
R140	Resistor,Metalfilm	4,7K	50ppm	1%	0207 MK2	Resista	17074S
R141	Resistor,Metalfilm	470K	50ppm	1%	0207 MK2	Resista	17076S
R143	Resistor,Metalfilm	4,7K	50ppm	1%	0207 MK2	Resista	17074S
R144	Resistor,Carbon	560K		5%	SK1	Resista	17078S
R145	Resistor,Carbon	1M		5%	SK1	Resista	170934S
R146	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R147 - R149	Resistor,Carbon	560K		5%	SK1	Resista	17078S
R150 , R151	Resistor,Metalfilm	1,0K	50ppm	1%	0207 MK2	Resista	170957S
R152 , R153	Resistor,Metalfilm	47K	50ppm	1%	0207 MK2	Resista	17047S
TP3 , TP4	Potentiometer,Trim	100E			T93XB 100E	Sfernice	17152
C100 , C101	Capacitor,Elect	10uF	50V		SRA-VB	Chemi-Con	17318

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GmbH&Co.KG

POS	BESCHREIBUNG	WERT		TYPE	HERSTELLER	ARTIKEL
C102 , C103	Capacitor,Ceramic	0,1uF	63V	Z5U	Sprague	17422
C104	Capacitor,Ceramic	47pF	63V	ROU744.11	Roederstein	17354
C105	Capacitor,Ceramic	0,1uF	63V	Z5U	Sprague	17422
C106 , C107	Capacitor,Ceramic	22pF	200V	COG	AVX	17364
C108	Capacitor,Elect	470uF	25V	AL01-NV	SGS	17325
C109	Capacitor,Elect	100uF	25V	SM-VB	Chemi-Con	17306
C110 , C111	Capacitor,Ceramic	0,1uF	63V	Z5U	Sprague	17422
C112	Capacitor,Elect	100uF	10V	SRA-VB	Chemi-Con	17327
C113	Capacitor,Ceramic	0,1uF	63V	Z5U	Sprague	17422
Q100	X-TAL			4 MHz	RTW	17541

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GmbH&Co. KG

POS	BESCHREIBUNG	WERT			TYPE	HERSTELLER	ARTIKEL
CO1	Connector	64p			41612		143164
IC1 - IC3	OP-AMP				TL082CP	Texas-Instruments	17530
IC4 , IC5	IC-HC				74HC166N	National	18120
IC6	Voltage,Regulator				LM317T	National	17527
IC7	Voltage,Regulator				LM78L05	National	18015
D1 , D2	Diode,Silicon				1N4148	ITT	17492
D3	Diode,Silicon				1N4005	ITT	17482
D4	Diode,Zener	15V			BZX 55 C15	ITT	19411
D5 , D6	Diode,Silicon				1N4148	ITT	17492
DAP1 , DAP2	Diode,Array				DAP801	RTW	18529
DAN1 , DAN2	Diode,Array				DAN801	RTW	18528
T1 , T2	Transistor,FET				J 113	Siliconix	19006
T3	Transistor				BC559C	Intermetall	17452
AR1	Resistor,Array	4,7K			4610X-102-472	Bourns	170951
AR2 - AR5	Resistor,Array	470E			4608X-102-471	Bourns	170924
AR6 , AR7	Resistor,Array	47K			4609X-101-473	Bourns	170921
R1 - R4	Resistor,Metalfilm	4,7K	50ppm	1%	0207 MK2	Resista	17074S
R5	Resistor,Metalfilm	330E	50ppm	1%	0207 MK2	Resista	17077S
R6	Resistor,Metalfilm	1,0K	50ppm	1%	0207 MK2	Resista	170957S
R7	Resistor,Carbon	68E		5%	0207	Resista	17039S
R8	Resistor,Metalfilm	100K	50ppm	1%	0207 MK2	Resista	170960S
R9	Resistor,Metalfilm	1,0K	50ppm	1%	0207 MK2	Resista	170957S
R10	Resistor,Metalfilm	47K	50ppm	1%	0207 MK2	Resista	17047S
R11 , R12	Resistor,Metalfilm	22K	50ppm	1%	0207 MK2	Resista	17053S
R21 - R24	Resistor,Metalfilm	4,7K	50ppm	1%	0207 MK2	Resista	17074S
R25	Resistor,Metalfilm	330E	50ppm	1%	0207 MK2	Resista	17077S
R26	Resistor,Metalfilm	1,0K	50ppm	1%	0207 MK2	Resista	170957S
R27	Resistor,Carbon	68E		5%	0207	Resista	17039S
R28	Resistor,Metalfilm	100K	50ppm	1%	0207 MK2	Resista	170960S
R39	Resistor,Metalfilm	1,0K	50ppm	1%	0207 MK2	Resista	170957S
R30	Resistor,Metalfilm	47K	50ppm	1%	0207 MK2	Resista	17047S
R31 , R32	Resistor,Metalfilm	22K	50ppm	1%	0207 MK2	Resista	17053S
R40	Resistor,Metalfilm	270E		1%	0207 MK2	Resista	17087S
R41	Resistor,Metalfilm	3.9K	50ppm	1%	0207 MK2	Resista	17086S
R42	Resistor,Metalfilm	47K	50ppm	1%	0207 MK2	Resista	17047S
R43	Resistor,Metalfilm	10K	50ppm	1%	0207 MK2	Resista	17059S
R44	Resistor,Metalfilm	100K	50ppm	1%	0207 MK2	Resista	170960S
TP1 , TP2	Potentiometer,Trim	10K			T93XB 10K	Sfernice	17153
C1 - C4							optional
C5	Capacitor,Ceramic	22nF	40V			Roederstein	17352
C6	Capacitor,Elect	22uF	6,3V		SRA-VB	Chemi-Con	17321
C7	Capacitor,Ceramic	6,8nF		10%		Thomson	17428
C8	Capacitor,Ceramic COG	1.2nF		5%		Siemens	17427

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GmbH&Co.KG

POS	BESCHREIBUNG	WERT			TYPE	HERSTELLER	ARTIKEL
C9	Capacitor,Elect	22uF	6,3V		SRA-VB	Chemi-Con	17321
C21 - C24							optional
C25	Capacitor,Ceramic	22nF	40V			Roederstein	17352
C26	Capacitor,Elect	22uF	6,3V		SRA-VB	Chemi-Con	17321
C27	Capacitor,Ceramic	6,8nF		10%		Thomson	17428
C28	Capacitor,Ceramic COG	1.2nF		5%		Siemens	17427
C29	Capacitor,Elect	22uF	6,3V		SRA-VB	Chemi-Con	17321
C30	Capacitor,Ceramic	0,1uF	63V		Z5U	Sprague	17422
C31 , C32	Capacitor,Elect	10uF	50V		SRA-VB	Chemi-Con	17318
C33 - C35	Capacitor,Ceramic	0,1uF	63V		Z5U	Sprague	17422
TC1 , TC2	Capacitor,Trim	70pF			VCT51H	ALPS	17432

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 PPM Series 1036-40 SO

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:

15.02.2001

