



PHILIPS

SERVICE

Scientific &
Industrial
Equipment
Division

850801

TEST AND MEASURING EQUIPMENT

SGS26

PM 5133 S

Already published: -

C O N T E N T S

- A. GENERAL
- B. MODIFICATIONS IN INSTRUCTION MANUAL

A. GENERAL

The function generator PM 5133 S is an extended version of PM 5133. Additional features give the possibility to measure semiautomatically amplitude-frequency characteristics at tape cassette recorders and record players related to DIN 45541. Special requirements as normalized 50S sweep and 26 dB attenuation are taken into account. A synchronizing circuit provides efficient combination between x-y plotter, logarithmic converter and instrument under test. The generator controls the x-y plotter by producing PEN LIFT signals and the deflecting voltage for the X-axis (logarithmic frequency axis) at INT MOD OUTPUT.

This information adapts and complements the instruction manual PM 5133, 9499 453 00302, to the special version PM 5133S.

B. MODIFICATIONS IN INSTRUCTION MANUAL

Chapter of the manual:

1.2.2. Output

attenuation

-fixed

0, 6, 10, 20, 30 dB, selectable in any combination

1.2.4. Sweep, internal; additional functions

50 s sweep

mode

- single sweep with fixed period and 1 kHz burst, started by pushbutton TRIG
- single sweep with fixed period, electronically started by an external 1 kHz signal applied at input TRIG & BURST

characteristic

logarithmic

start frequency

20 Hz

} set by means of potmeters FREQUENCY

stop frequency

20 kHz

burst frequency

1 kHz, (depending on the accuracy of the start frequency)

burst period

6 s

sweep period

50 s ± 0.2 s, when

- SWEEP PERIOD in pos. 100 (S)
- PERIOD in pos. "S"

trigger signal

1 kHz ± 100 Hz

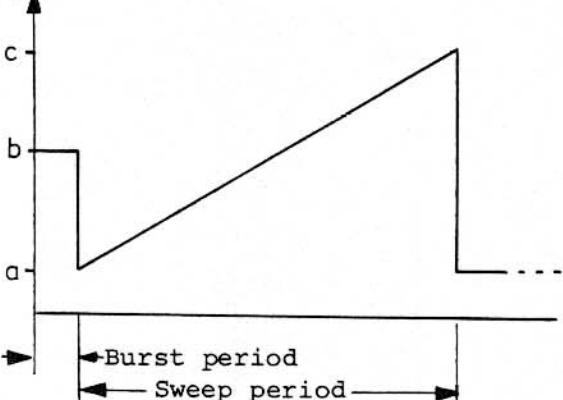
trigger sensitivity

<0.5 Vrms

reset trigger

by a 1 kHz signal, possible after 40 s sweep period

log f



a = log f START

b = log f BURST

c = log f STOP

to 3.2.4. and 3.2.5.

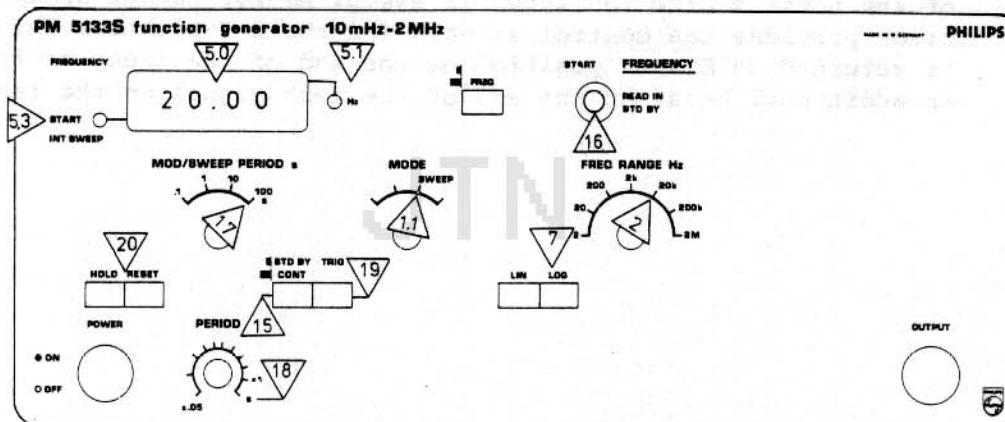
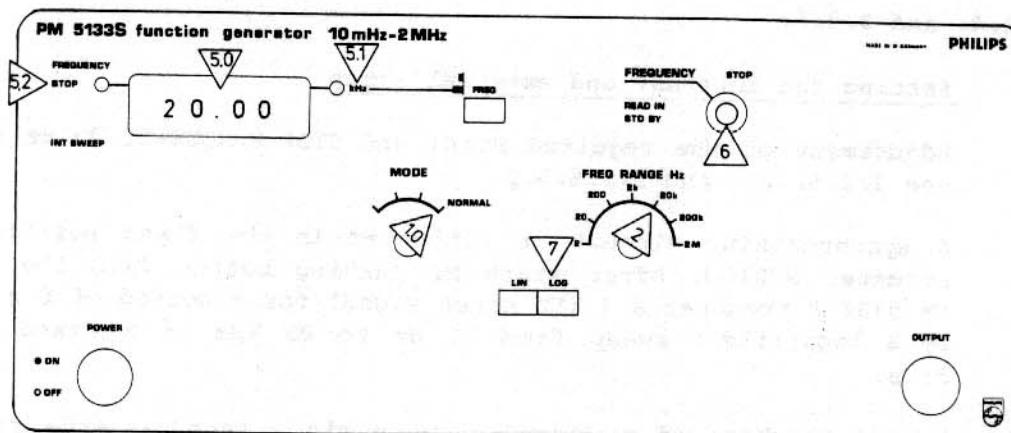
Setting the internal and external sweep

Adjustment of the required START and STOP FREQUENCY 20 Hz and 20 kHz see 3.2.6.3.1. and 3.2.6.3.2.

A synchronizing circuit is activated in the fixed position "S" of potmeter PERIOD. After start by pushing button TRIG the OUTPUT of PM 5133 S produces a 1 kHz burst signal for a period of 6 s, followed by a logarithmic sweep from 20 Hz to 20 kHz at a fixed period of 50 s.

During playback of a recorded sweep via a tape/cassette recorder or playback of a test record via a record player the linear amplified output signal is fed to the input TRIG & BURST. The burst at the start of the test signal triggers the modulation oscillator. The end of the burst starts the internal sweep. As for normal sweep the generator provides the control signals for the X-Y-plotter. The generator is returned to STD BY position at the end of the sweep or by means of an additional burst at the end of the test signal on the test record.

JTN



3.2.6.3.1. 50 s sweep mode according to DIN 45541

Adjust STOP-frequency in NORMAL and LOG mode to 20 kHz, see 3.2.6.1.

- 1.1 set to SWEEP
- 15 set sweep generator to STD BY
- 16 adjust start frequency of 20 Hz by coarse/fine START control
- 17 choose SWEEP PERIOD range 100 s (S)
- 18 turn potmeter PERIOD to fixed position "S"
- 19 start the burst signal by pushing the button TRIG, whereafter the 50 s sweep starts
- 20 if required, RESET the sweep

3.2.6.3.2. Synchronized mode

- apply synchronizing signal to the input TRIG & BURST (see technical data 1.2.1.)
- at 1 kHz burst end the internal modulation oscillator is started,
- followed by one internal sweep; resetting the modulation oscillator is possible after ca. 40 s by a new 1 kHz burst signal.

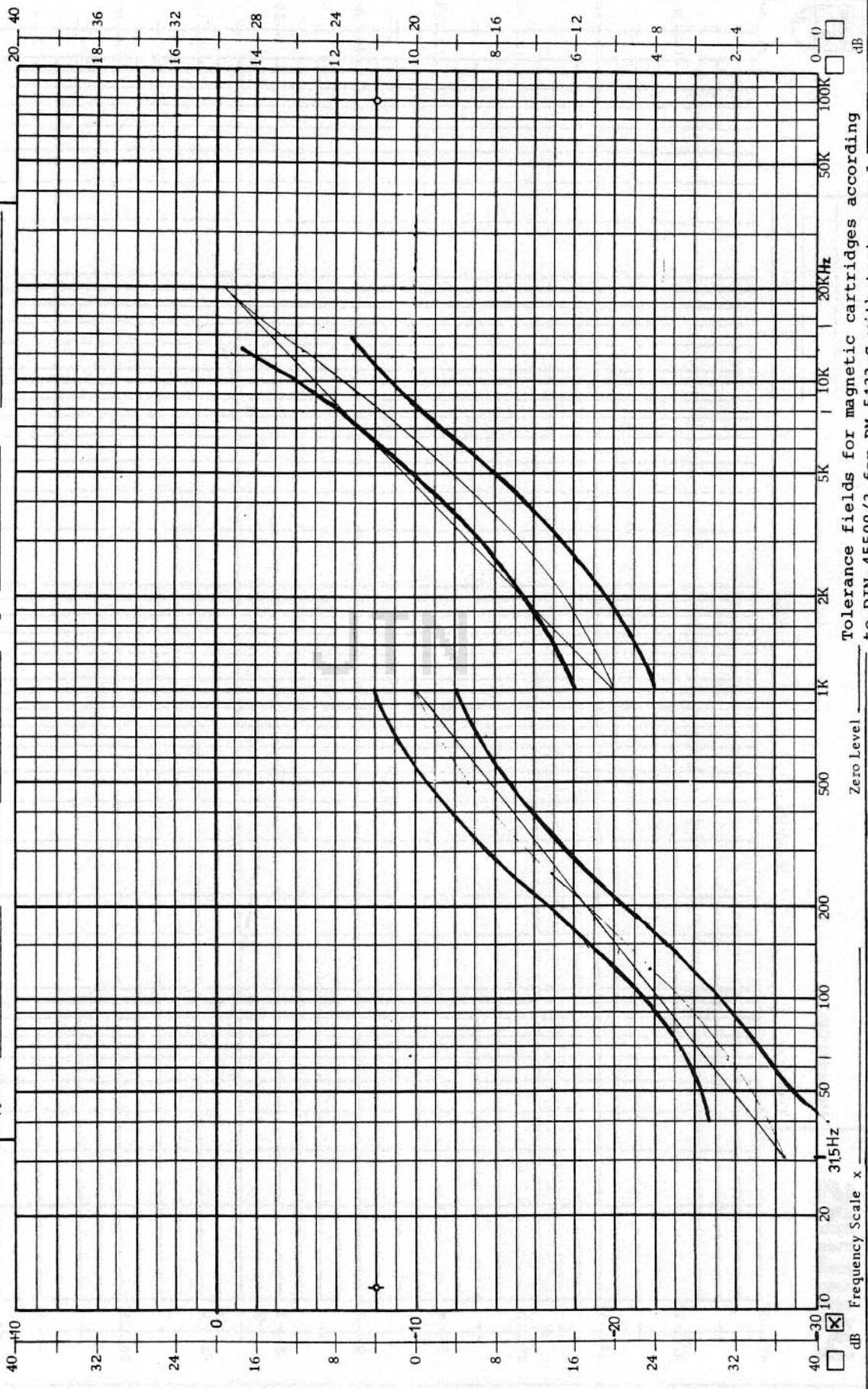
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Measuring Obj.: _____

Type nr.: _____ Serial No.: _____

Date: _____

Sign.: _____



11.5.17 (77-12) PM 9949/A4

Zero Level _____
Tolerance fields for magnetic cartridges according
to DIN 45500/3 for PM 5133 S with test record.

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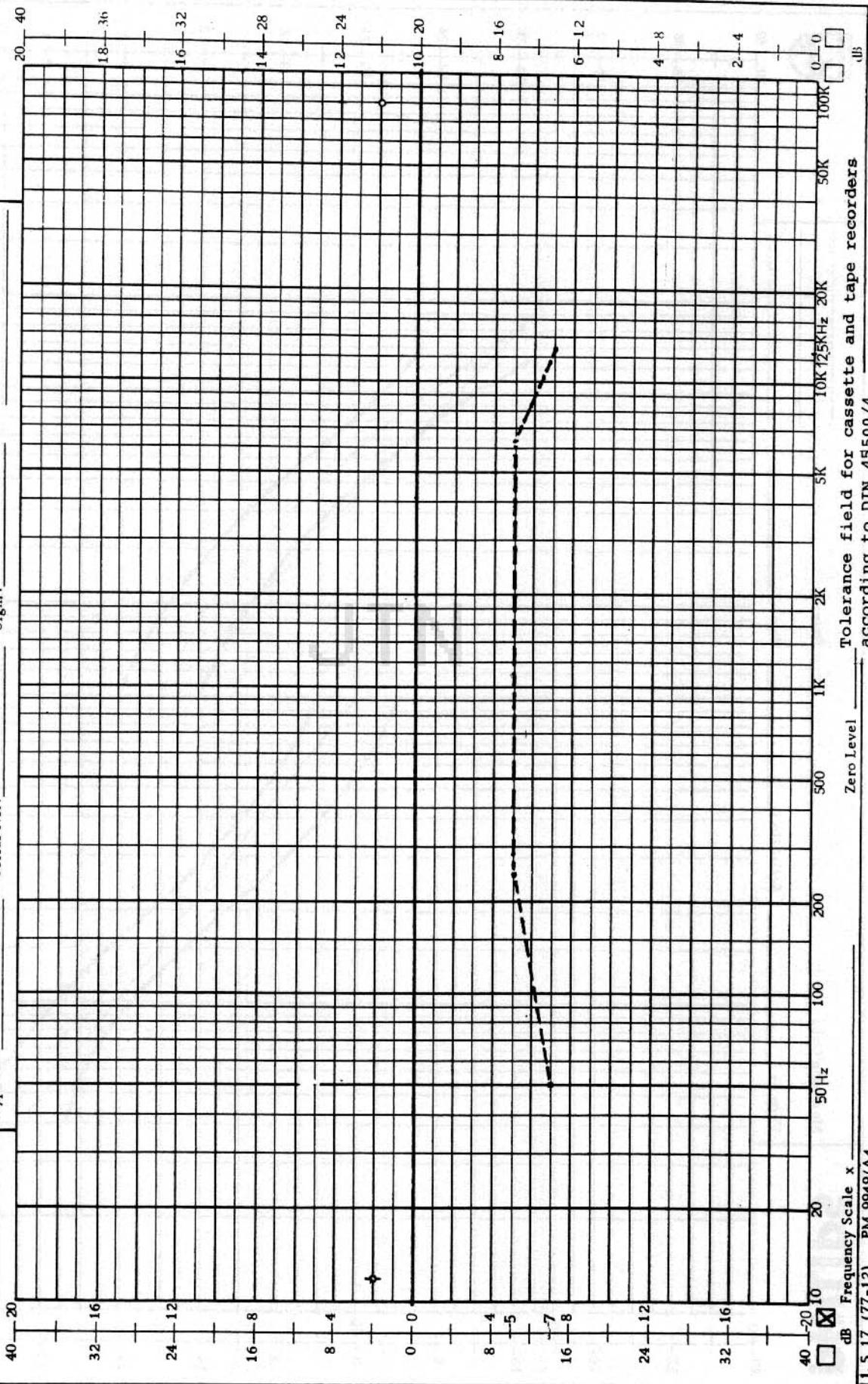
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Type nr.:

Sign.:

Serial No.:



Modifications in parts list chapter 4.5.

Mechanical parts, miscellaneous, parts not on unit

Item 780 A, code no. 5322 101 50253 potmeter PERIOD
4K7 neg./log + switch

UNIT 1

All components are added in pos. 201-259.

INTEGRATED CIRCUITS/U1

201	5322 209 10277	HEF4528BP
202	4822 209 10247	HEF4011BP
203	5322 209 14104	HEF4066BP
204	4822 209 81349	MC1458N

TRANSISTORS/U1

211,212	4822 130 40937	BC548B
213	4822 130 44197	BC558B

DIODES/U1

221	4822 130 34297	BZX79-C10
222-224	5322 130 34321	1N4151
225	5322 130 32161	AA 144

CAPACITORS/U1

231	4822 124 20989	22UF/6.3V	ELECTROLYTIC
232,233	4822 122 30103	22NF/63V	-20+80 CERAMIC PLATE
234,235	5322 121 50845	68NF/250V	5 % POLYESTER FOIL
236	4822 124 20941	68UF/6.3V	ELECTROLYTIC

RESISTORS/U1

All metal film resistors not listed are of type MR 25 $\pm 1\%$ 0.4 W.

242	5322 101 14277	4.7M	LIN	POTM.TRIMMING
244	4822 100 10035	1OK	LIN	" "
810	4822 116 30114	4.7K	10%	NTC resistor *

* R810, R820 /1K/MR25) in series connection is set parallel to resistor 613/U1.

UNIT 2

Following resistors are replaced by:

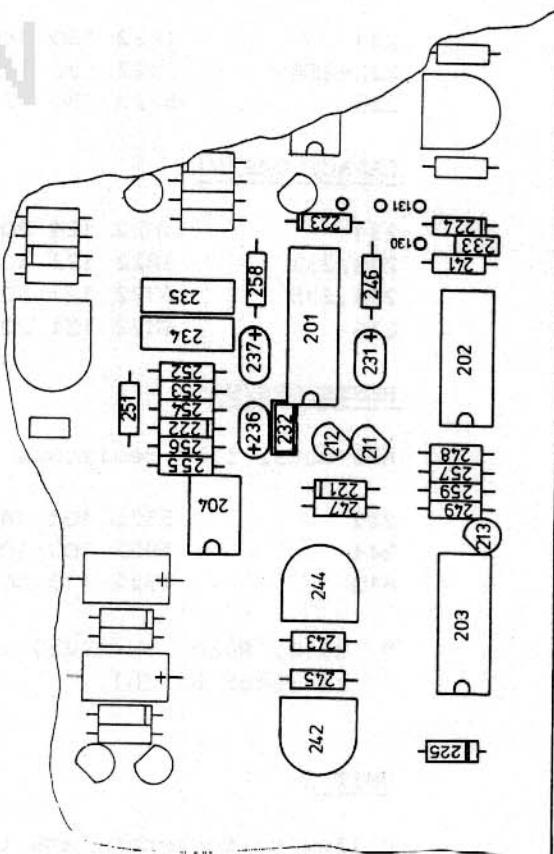
688	5322 116 54466	90.9E	1 %	MR25	METAL FILM
689	5322 116 54474	110E	1 %	MR25	METAL FILM
691	5322 116 50669	205E	1 %	MR25	METAL FILM
692	5322 116 50676	196E	1 %	MR25	METAL FILM

Table of checks and adjustments

Seq.	Mode	Freq.		Frequency		Mod/Sweep control		Sweep control		outputs		internal measurement		measuring point		measured instrument value (see 4.3.1.)		adjustment, control pos.		remarks	
		range	Hz	range	Hz	start/stop	s	period		duty cycle	ampl.-out	dc	ampl.-out	internal	output	point	measured value				
86		87	610	630	821/82/85	LOG			650	760	807	80	807								
									650	760	807	50	807								
10.4.1	NORMAL	2kHz		87	20kHz	x	x	10s	S	x	x	-	-								
11.1.	<u>SWEEP</u>	20kHz	20kHz							x	x	-	-								
11.2.		20kHz	20kHz							x	x	-	-								
11.3.										x	x	-	-								
11.4.										x	x	-	-								

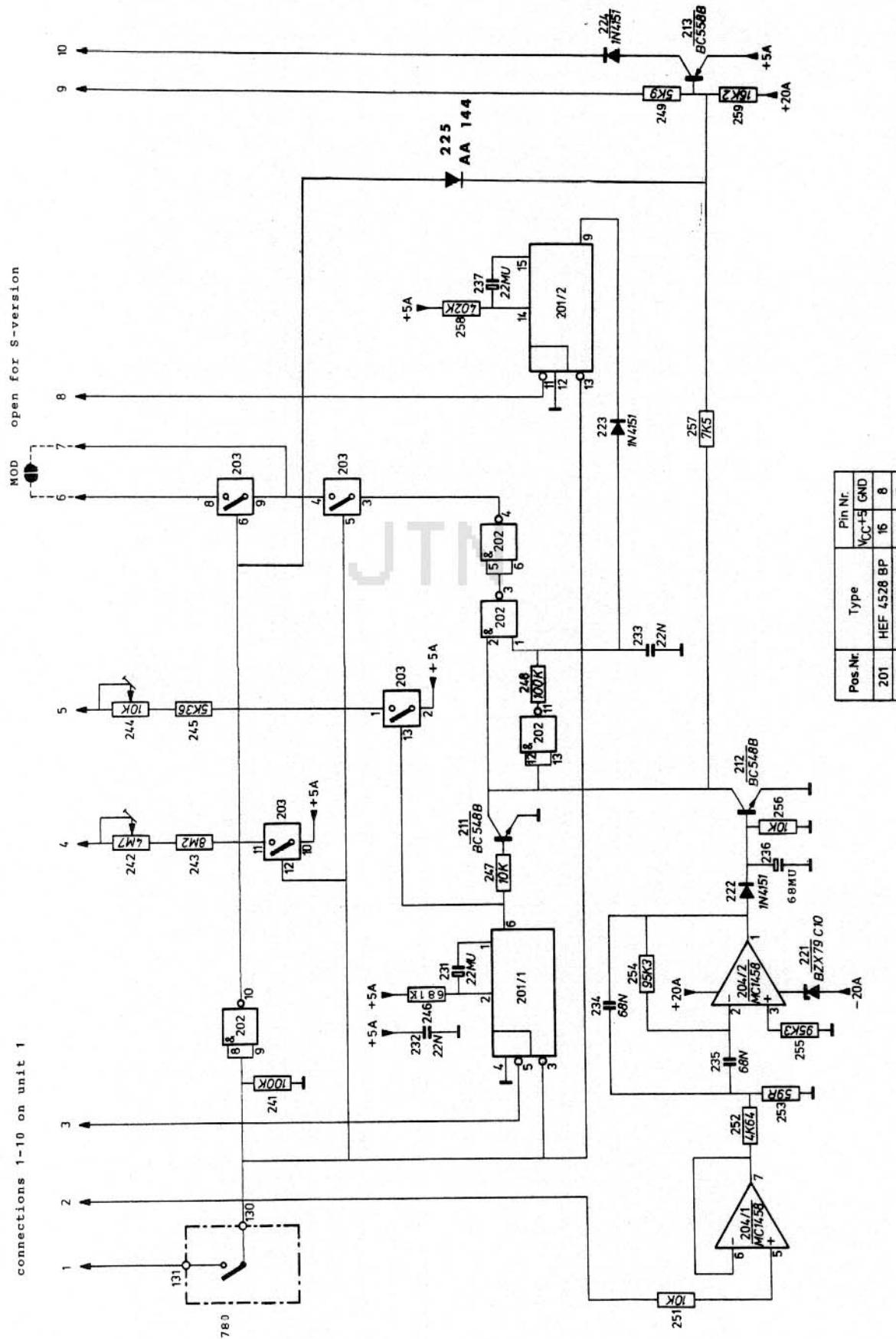
10.4.1: HOLD/RESET/HOLD/TIMER
11.1.: INT MOD OUT/PEN LEFT/INT MOD OUT/PEN LIFT OUT
11.2.: INT MOD OUT/PEN LEFT/INT MOD OUT/PEN LIFT OUT
11.3.: INT MOD OUT/PEN LEFT/INT MOD OUT/PEN LIFT OUT
11.4.: INT MOD OUT/PEN LEFT/INT MOD OUT/PEN LIFT OUT

control ATTENUATOR
start single 50 s sweep by button TRIG: 6 s burst (~ 1 kHz) followed by sweep 20 Hz - 20 kHz.
adjust burst frequency while pushing button TRIG < every 5 sec.
start single sweep by button TRIG



PM 5133 S Option unit 1; component lay-out

connections 1-10 on unit 1



PM 5133S option U1, sync. circuit

Pos. Nr.	Type	Pin Nr. V _{CC} +5 GND
201	HEF 4528 BP	16 8
202	HEF 4011 BP	14 7
203	HEF 4066 BP	14 7

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Measuring Obj.: _____

Date: _____

Type nr.: _____

Serial No.: _____

Sign.: _____

