

# Multi-lead logic probe

**PM8820 / PM8821**

(9450 088 20000)

9450 088 21000

Instruction manual

9499 503 00701  
801120

**S&I**  
Scientific & Industrial Equipment Division

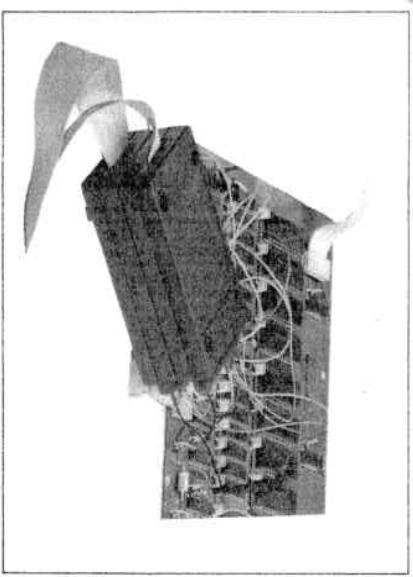


**PHILIPS**

**Multi-lead logic probe  
Mehrfach-Tastkopf  
Multisonde logique PM8820/PM8821**

Instruction manual   Gerätethandbuch   Notice d'emploi et d'entretien

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**PHILIPS**



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Fig. 1. PM 8820 / PM 8821

## 1.2. GENERAL

Unless otherwise stated the following data applies only to the Pods PM 8820 and PM 8821. (Excluding the possible effects of the instrument the Pod is being used with). The data expressed in numerical values with tolerances stated is guaranteed by the manufacturer, values without tolerances are typical and represent the characteristics of an average unit. All data is valid only after a 15 minute warm-up period.

## 2. CHARACTERISTICS

### 2.1. ELECTRICAL

Designation	Specification	Additional information
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#### Maximum ratings:

Supply voltages*:	Min. $U_p$ $U_{pp}$ $U_n$ $U_{nn}$	Max. 0 V 0 V - 6 V - 15 V 0 V
Reference voltage ( $U_{REF}$ )	-50 V	+ 6 V +15 V
Input voltages (at $D_{I0}$ to $D_{I7}$ )	-50 V	All voltages with reference to common ground ( $\perp$ )

#### Power:

Voltage*:	$U_p$ $U_{pp}$ $U_n$ $U_{nn}$	+ 5 ± 0.25 V +12 ± 0.6 V - 5 ± 0.25 V -12 ± 0.6 V
<hr/>		
Current:	drain from $U_p$ drain from $U_n$ drain from $U_{pp}$ drain from $U_{nn}$	Min. Typical Max. +110 mA +200 mA +200 mA
	-110 mA - 62 mA + 16 mA + 25 mA	- 25 mA - 16 mA

To be supplied by an instrument the Pod is used with

LOW HIGH transition min. 19 n sec.

HIGH LOW transition max. 26 n sec.

See Fig. 3.

Test leads excluded

Input voltage within range, otherwise input impedance slightly lower

At threshold level.

Symmetrical around threshold

#### Threshold

Threshold level ( $U_{THR}$ )

Reference range ( $U_{Ref}$ )

Input resistance of  $U_{Ref}$  input

Bias current  $U_{Ref}$  input

Propagation delay

Output	$U_{D,out} = "LOW"$ if $U_{D,in} < U_{THR}$ $U_{D,out} = "HIGH"$ if $U_{D,in} > U_{THR}$	$U_{Ref} \pm 22\% - 50 \text{ mV}$ $-3 \text{ V to } +12 \text{ V}$
<hr/>		

Output	$U_{D0} = "LOW"$	$D_0 \text{ to } D_7$
<hr/>		

Logic:	$U_{D,out} = "HIGH"$ $U_{D,out} = "HIGH"$	$(D_0 \text{ to } D_7 \text{ and } D_1 \text{ to } D_4 \text{ etc.})$
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**Accessories supplied with PM 8820 / PM 8821:**

Test leads	9
Test hooks	4
Blank stickers	1
Pouch	

Optional accessories  
(not supplied with PM 8820/  
PM 8821)

**PM 8819**

Contains:  
1 eight pin interface connector,  
9 test hooks

9 test leads  
4 blank stickers

**PM 8810**

Trigger qualifier extension probe

45 test leads  
35 testhooks

**PM 8820/10**

Storage and transport conditions

Recovery time

+ 5 °C to +40 °C  
-40 °C to +70 °C

Probe withstands 21 cycles of  
damp heat test: temp. 25 °C to  
45 °C, Rel. humidity 90 %  
to 100 %.

Cycle duration 24 hours.

Test procedure conforming to  
IEC 68, Ab & Bb

If temperature of the POD is  
raised from -40 °C to +20 °C  
at 60 % relative humidity

Test procedure conforming to  
IEC 68 Db

**Humidity**

Limit of operation

Limit of transport

5000 m (in open air)  
15000 m (in open air)

Probe withstands 21 cycles of  
damp heat test: temp. 25 °C to  
45 °C, Rel. humidity 90 %  
to 100 %.

Cycle duration 24 hours.

**Altitude**

Limit of operation

Limit of transport

Is 475 mbar or 47.5 kPa  
Is 100 mbar or 10.0 kPa

PM 8820/PM 8821 withstands 1000  
bumps of 100 m/S<sup>2</sup>, 1/2 sine  
6 ms duration in each of 3  
directions.

**Bump**

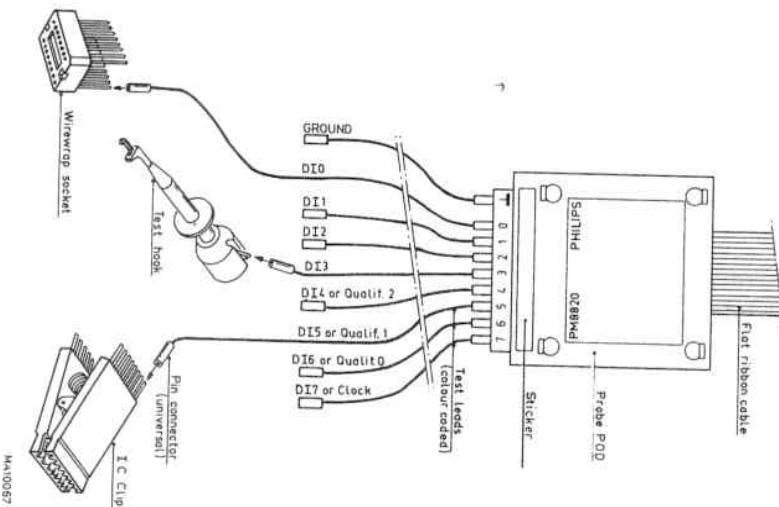
In accordance with IEC 68 Fc

**Vibration**

PM 8820/PM 8821 withstands in each  
of 3 direction, 30 min. vibration of  
10-150 Hz, 0.7 mm peak to peak  
amplitude or 50 m/S<sup>2</sup> acceleration,  
which ever is greater.

**2.3. ENVIRONMENTAL**

These characteristics are valid only if the instrument is checked in accordance with the official checking procedure. Details of these procedures and failure criteria are supplied on request by the PHILIPS organisation in your country, or by N.V. PHILIPS GLOEILAMPENFABRIEKEN, TEST AND MEASURING DEPARTMENT, EINDHOVEN, THE NETHERLANDS.

**Designation****Specification****Additional information**

NA10057

Fig. 4. Probing with Pod PM 8820 / PM 8821

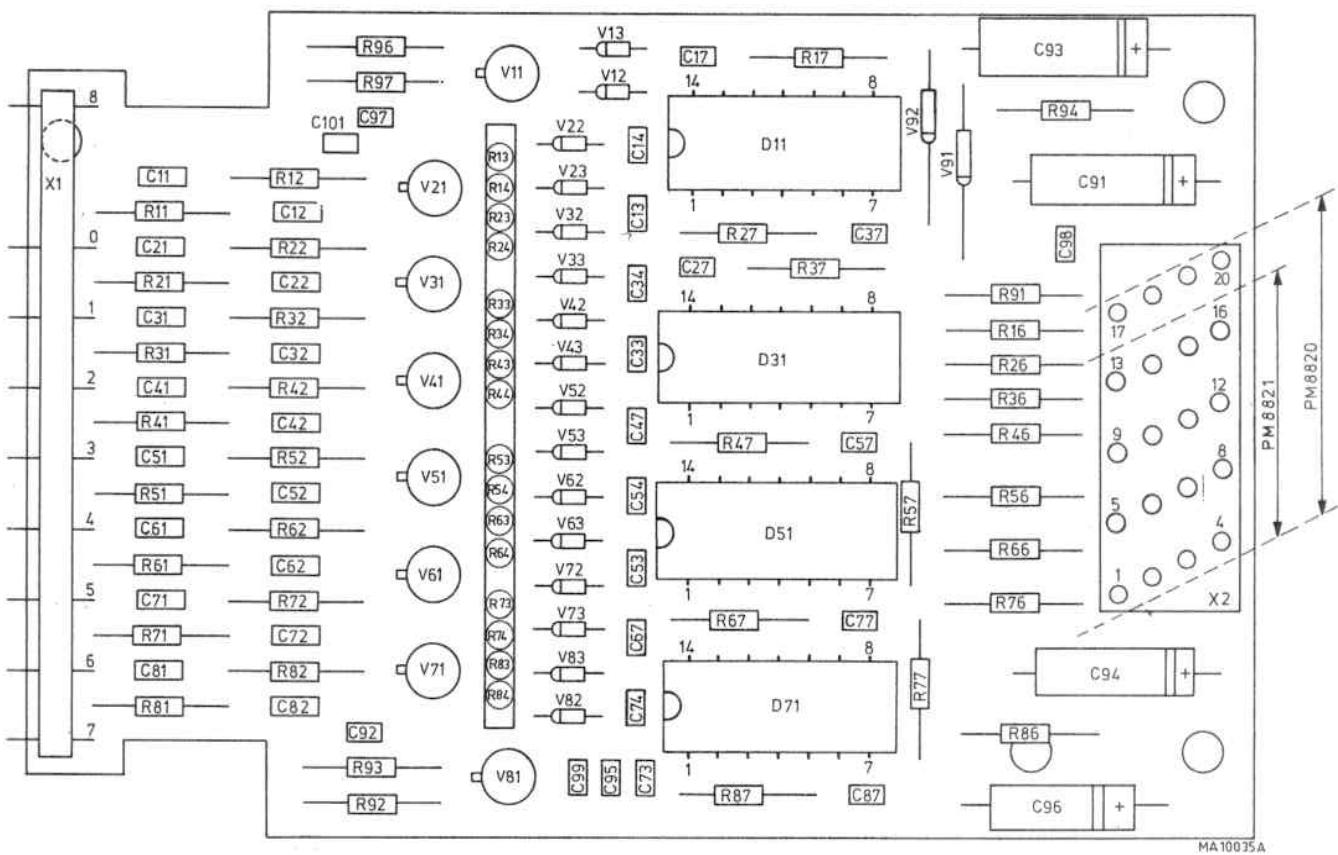


Fig. 5. Printed circuit board of the PM 8820/PM 8821

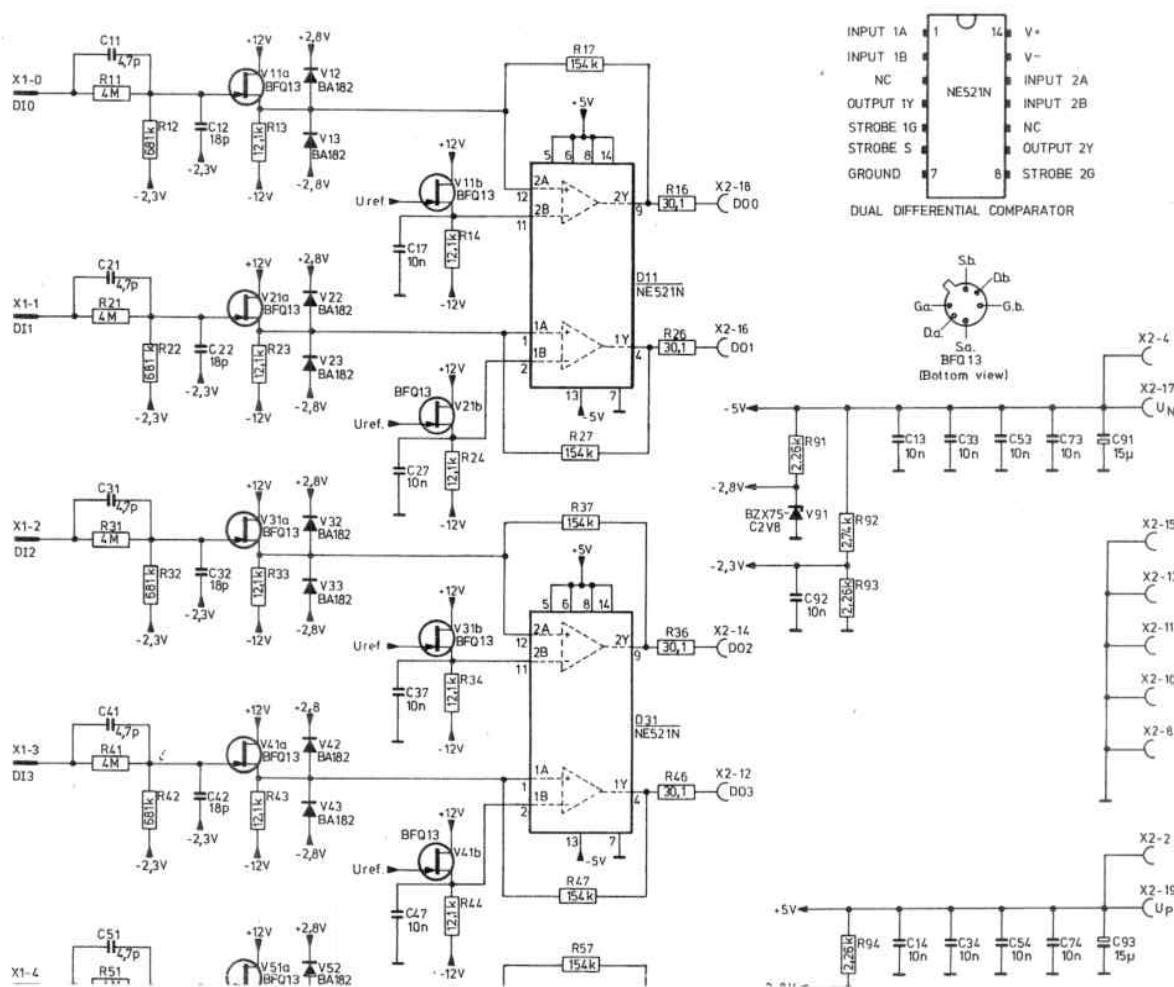
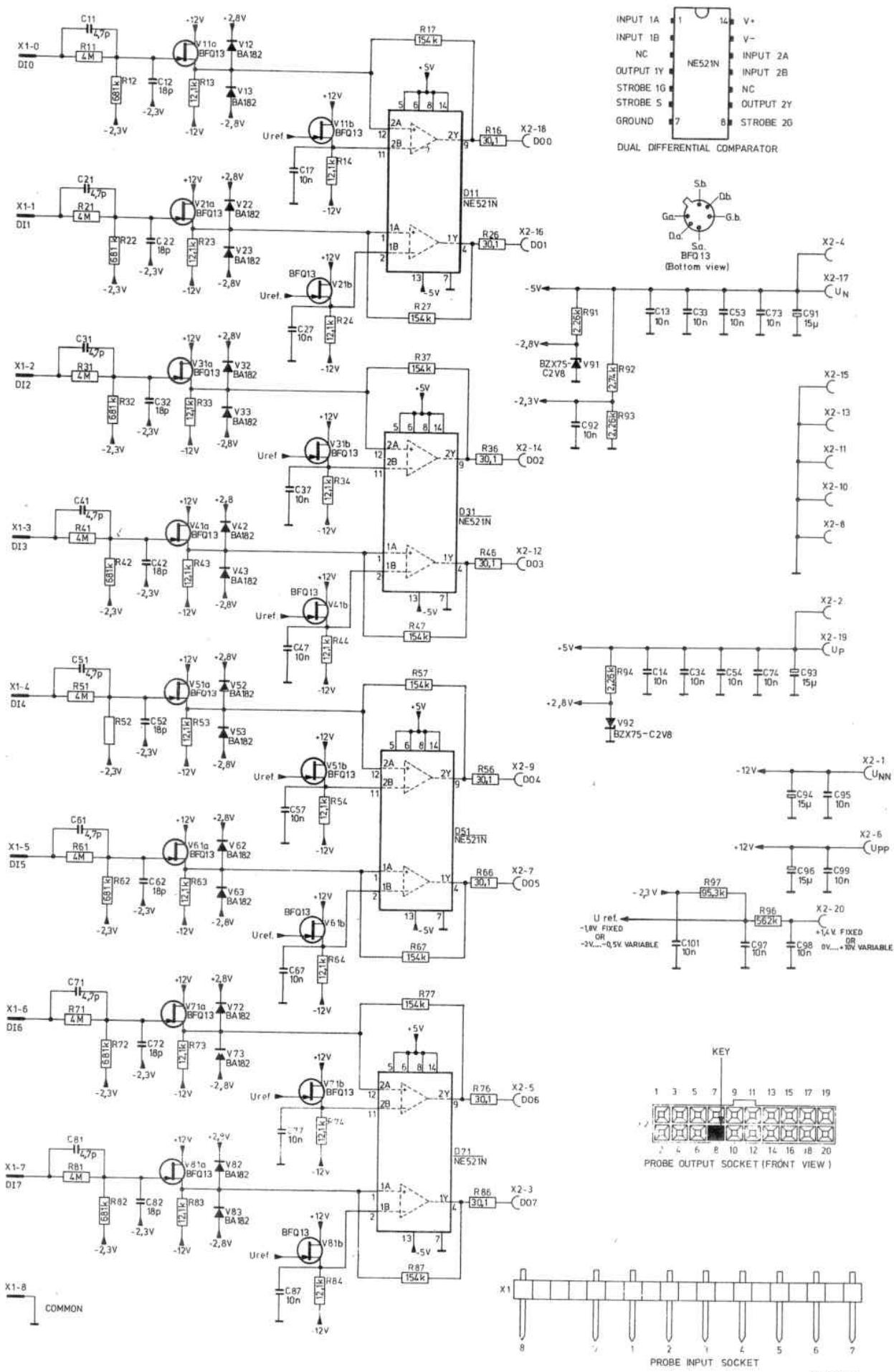


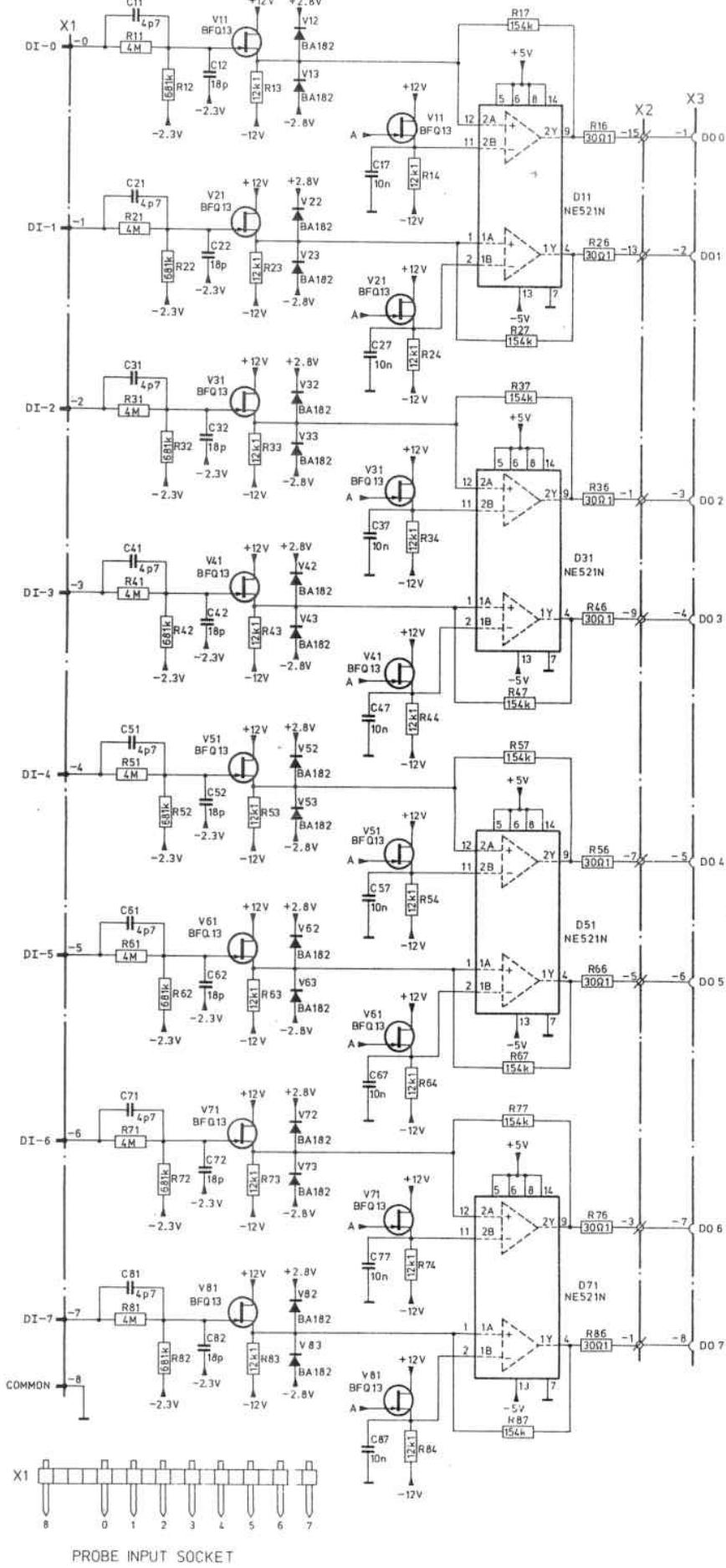
Fig. 6. Circuit diagram of the PM 8820

Fig. 6. Circuit diagram of the PM 8820

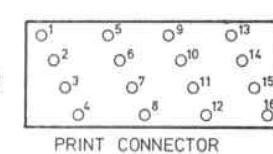
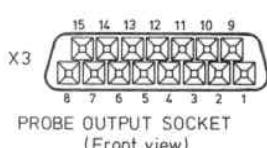
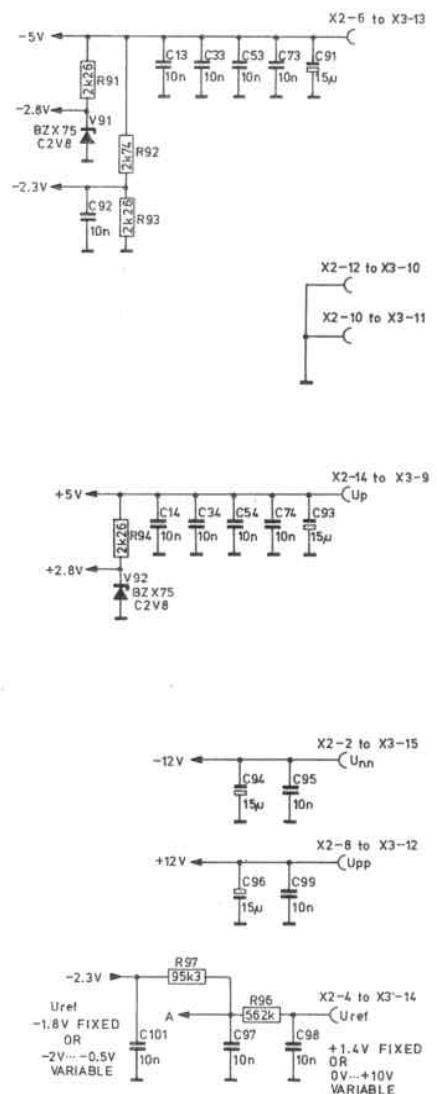
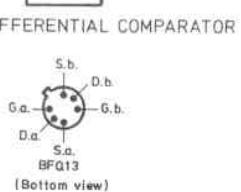
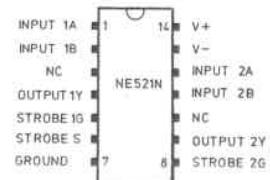


PM8821

Fig. 7. Circuit diagram of the PM 8821



PROBE INPUT SOCKET



### 3. PARTS LIST

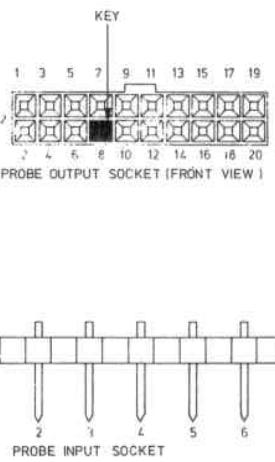
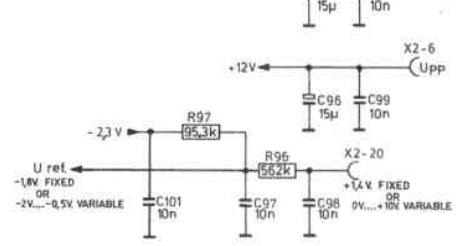
#### 3.1. CAPACITORS

Ordering number	Value	Quantity
4822 122 31045	4.7 pF	8
4822 122 31061	18 pF	8
4822 122 30043	10 nF	22
4822 122 20687	15 $\mu$ F	4

MA 10034 A

3.2. RESISTERS
5322 116 64025
5322 116 55284
5322 116 50904
5322 116 54714
5322 116 50675
5322 116 50636
4822 116 51169
5322 116 50567
5322 209 86217

4	MOhm	8
681	pOhm	8
30.1	Ohm	8
154	kOhm	8
2.26	kOhm	3
2.74	kOhm	1
562	kOhm	1
95.3	kOhm	1
12.1	kOhm array	1
R13, R14, R23, R24 . and so on		



KEY  
1 3 5 7 9 11 13 15 17 19  
2 4 6 8 10 12 14 16 18 20  
PROBE OUTPUT SOCKET (FRONT VIEW)

#### 3.3. SEMICONDUCTORS

5322 130 44404	BFQ13	8
5322 130 30644	BA182	16
4822 130 34048	BZX75-C2V8	2

#### 3.4. INTEGRATED CIRCUITS

5322 209 14441	NE521N	
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#### 3.5. MECHANICAL PARTS

##### 3.5.1. PM 8820

Cabinet complete

Flat cable 20 pins, 1.5 mm

probe input socket, 9 pins

probe output socket, 20 pins

Pull relief bracket for output socket

Interface connector

cable/board socket, 20 pins

Wrap pin wire-set

Test hook

##### 3.5.2. PM 8821

Cabinet complete

Flat cable 15 pins, 1.5 mm

probe input socket, 9 pins

probe output socket, 15 pins

cable/board socket, 16 pins

Interface connector

Wrap pin wire-set (test leads)

Test hook

#### 3.5.3. OTHER

##### 3.5.4. TEST EQUIPMENT

None

The information contents of the coded failure description is necessary for our computerized processing of quality data.  
Since the reporting of repair and maintenance routines must be complete and exact, we give you an example of a correctly filled-out PHILIPS SERVICE Job sheet.

① Country	② Day Month Year	③ Type/number	④ Version
3   2	1   5   0   4   7   5	0   P   M   3   2   6   0   0   2	D   0   0   7   8   3
CODED FAILURE DESCRIPTION			
⑤ Nature of call	Location	Component/sequence no.	Category
<input type="checkbox"/> Installation	T   S   0   6   0   7	5	⑦ Job completed
<input type="checkbox"/> Pre-sale repair	P   O   0   6   3   2	2	
<input type="checkbox"/> Preventive maintenance	O   0   2   1	4	
<input checked="" type="checkbox"/> Corrective maintenance	9   9   0   0   1		
<input type="checkbox"/> Other			
Detailed description of the information to be entered in the various boxes:			
① Country: 3   2 = Switzerland	② Day Month Year: 1   5   0   4   7   5 = 15 April 1975	③ Type number/V/Version: 0   P   M   3   2   6   0   0   2 = Oscilloscope PM 3260, version 02 [in later oscilloscopes this number is placed in front of the serial no]	④ Factory/Serial no.: D   0   0   7   8   3
④ Factory/Serial no.: D   0   0   7   8   3 = DO 783. These data are mentioned on the type plate of the instrument			
⑤ Nature of call: Enter a cross in the relevant box			
⑥ Coded failure description			
Location	Component/sequence no.	Category	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
These four boxes are used to isolate the problem area. Write the code of the part, in which the fault occurs, e.g. unit no or mechanical item no of this part (refer to 'PARTS LISTS' in the manual).			
Example: 0001 for Unit 1, 000A for Unit A. If units are not numbered, do not fill in the four boxes; see Example Job sheet.			
These six boxes are intended to pinpoint the faulty component. A. Enter the component designation as used in the circuit diagram. If the designation is alphanumeric, the letters must be written (starting from the left) in the two left-hand boxes and the figures must be written (in such a way that the last digit occupies the rightmost box) in the four right-hand boxes. B. Parts not identified in the circuit diagram:			
999000 Unknown/Not applicable			
999001 Cabinet or rack (text plate, emblem, grp, rail, graticule, etc.)			
999002 Knob (incl. dial knob, cap, etc.)			
999003 Probe (only if attached to instrument)			
999004 Leads and associated plugs			
999005 Holder (valve, transistor, fuse, board, etc.)			
999006 Complete unit (a.w. board, h.t. unit, etc.)			
999007 Accessory (only those without type number)			
999008 Documentation (manual, supplement, etc.)			
999009 Foreign object			
999009 Miscellaneous			

⑦ Job completed: Enter a cross when the job has been completed.

⑧ Working time: Enter the total number of working hours spent in connection with the job (excluding traveling, waiting time, etc.), using the last box for tenths of hours.

□ □ □ 1 | 2 = 1.2 working hours (1 h 12 min.)

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