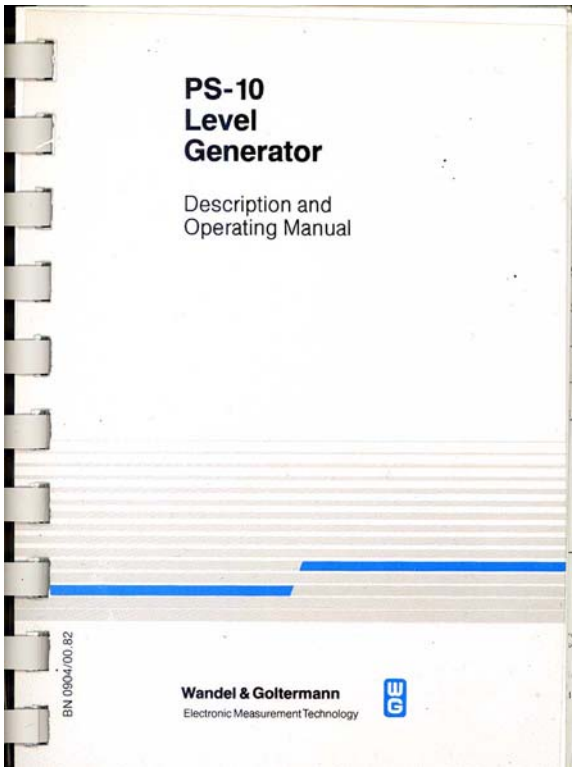

LEVEL GENERATOR PS-10

for the frequency range 200 Hz to 4 kHz

Description and Operating Manual BN 904
series L...

Order No. BN 0904/00.82
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CONTENTS PS-10

INTRODUCTION

The Level Generator PS-10 is designed to be a signal source for measurements on telephone and sound-programme transmission equipment. This handy instrument complements the Digital Level Meters PMP-20 and PM-20 so that complete AF level measuring configurations can be set up.

The low weight, the compact form, and the independence from other power sources afford this instrument a special capability for field service where maintenance and operation of AF communication equipment requires mobility for measuring instruments.

In stationary operation for instance laboratories or test departments in factories, the Level Generator can be operated from a power supply-charger unit (a.c. adaptor).

The send frequency can be switch selected in 10 fixed steps. And also the level can be adjusted in fixed steps of 10, 1, and 0.1 dB.

The particularly interesting characteristic of the PS-10 is the sweepable send frequency range, 200 Hz to 3.5 kHz.

1 LEVEL GENERATOR PS-10

Unless otherwise noted, the specified performance characteristics are valid unter rated operating conditions.

Frequency

Frequency range ..... 200 Hz to 4 kHz
Fixed frequencies .. 200, 300, 400, 600, 800, 1000, 1600, 2400, 3400, 4000 Hz
Error limits of send frequencies,
200 Hz to 4 kHz ..... ± 3%
800 Hz ..... ± 2%

Sweep mode

Sweep range ..... 200 Hz to 3.5 kHz
Rate of change with time ..... exponential
Sweep rate ..... Sweep-out 2 s, return 2 s

Send level

Signal wave shape ..... sinusoidal

The sweep is a function of an exponential rate of change with time, and the sweep-out is equal to the return-sweep.

Power is supplied by a 9 V battery, either dry or rechargeable. The feature of automatically switched off battery supply during pauses in measuring provides a longer life for the internal dry battery. For intermittent battery operation in a normal ambient temperature, an operating time of up to 80 hours is possible, according to the particular type of battery.

Level range
at $Z_{out} = Z_L = 600\ \Omega$ ..... -59.9 to 0.0 dBm
at $Z_{out} = 0$, $Z_L = 400\ \Omega$ ..... -59.9 to 0.0 dBm
Level setting ..... with 3 place thumb-wheel switch and sign,
0.1 dB smallest setting step
Error limits of send level
at $Z_{out} = Z_L = 600\ \Omega$; at $Z_{out} = 0$, $Z_L \geq 400\ \Omega$[1)]
Error limits at f = 700 to 1100 Hz ..... ± 0.15 dB
Variation of level with frequency
referred to 1 kHz, 300 Hz to 4 kHz ..... ± 0.1 dB
200 Hz to 4 kHz ..... ± 0.15 dB
Overall error, 200 Hz to 4 kHz..... ± 0.25 dB

Generator output

Balanced, floating, short-circuit proof, 3 pole CF jack connector contains an internal loop-holding circuit for holding the d.c. exchange loop
Output impedance, switchable ..... 600 Ω in series with C = 4.7 µF, and 0 Ω ($\leq$ 3 Ω)[2)]

1) only Series B: 600 Ω
2) only Series B: ($\leq$ 4 Ω)

Tolerable short-term ringing voltage 25 or 50 Hz,
max. 10 s duration, source impedance $\geq$ 500 Ω,
r.m.s. value ..... $\leq$ 100 V
Tolerable holding current
(at Z_{out} = 600 Ω) ..... $\leq$ 60 mA
Generator signal balance ratio conforming to
CCITT Rec. O.121 at
output level $\geq$ -40 dB ..... $\geq$ 40 dB
Tolerable d.c. voltage to earth (⊥) ..... $\leq$ 100 V

Spectal Purity of output voltage

at $Z_{out} = Z_L$ = 600 Ω or $Z_{out} = Z_L \geq$ 400 Ω
Intrinsic harmonic ratio, a_{k2} and a_{k3},
200 Hz to 4 kHz ..... $\geq$ 40 dB
Suppression of inharmonic spurious signals
in a frequency range 20 Hz to 20 kHz
at output level: $\geq$ -40 dB ..... $\geq$ 70 dB
$\geq$ -59.9 dB ..... $\geq$ 50 dB

Power supply

Battery or a.c. power line (buffer operation)

RFI/EMI suppression ..... Class K
Operating position ..... any
Dimensions (w x h x d in mm) ..... 98 x 164 x 54
Weight with batteries ..... approx. 0.5 kg

Ordering Information

Level Generator PS-10	BN 904/01

Accessories (at extra cost)

Power supply-charger unit with connecting cable	BN 904/00.01
2 pieces NiCad rechargeable batteries	BN 820/00.50
Suspension strap	BN 820/00.52
Transport Case TPK-20	BN 926/01

Internal, replaceable NiCad or
dry batteries ..... 2 pieces 9 V IEC 6 F 22
Recommended dry batteries ..... MALLORY MN 1604
or VARTA 438
rechargeable ..... DEAC Tr7/8
Rated range of use of battery voltage
(each battery) ..... 7 to 9.5 V
Separate, plug-in type power supply for charging
and buffer operation ..... BN 904/00.01
Operating time with intermittent operation at 23°C
at $Z_L \geq$ 600 Ω, output level $\leq$ 0 dBm
Dry batteries: Mallory MN 1604 ..... approx. 80 h
Varta ..... approx. 35 h
Rechargeable DEAC Tr7/8 ..... approx. 15 h
Charging time ..... approx. 40 h
Automatic switch-off battery
current supply after ..... approx. 4 min
(series M onwards 20 min)
(when operating from a.c. line, no switch-off)

General Specifications

Ambient temperature
Rated range of use ..... 0 to +50°C
Storage and transport range ..... -40 to +70°C

2 TECHNICAL FEATURES

The Level Generator PS-10 contains a voltage controlled function generator for producing frequencies. D.C. voltages, variable in switched steps, are applied to the control input of the function generator. The frequency selector switch varies the d.c. voltages. Thus the generated frequency is proportional to the d.c. control voltage applied.

When the PS-10 is in its sweep mode the function generator is fed from a triangular wave generator acting as a source of deviation voltage with an exponential rise and fall characteristic. Accordingly, the function generator's output frequency changes exponentially.

The sweep time is 2 seconds each for the sweep-out and the return. A triangular-sinusoidal function converter changes the triangular shaped voltage to a sinusoidal voltage.

Level settings on the PM-10 are performed with a thumb-wheel switch in 10 dB, 1 dB, and 0.1 dB steps. The stepped attenuators are associated with additional amplifiers placed in the signal path of the instrument.

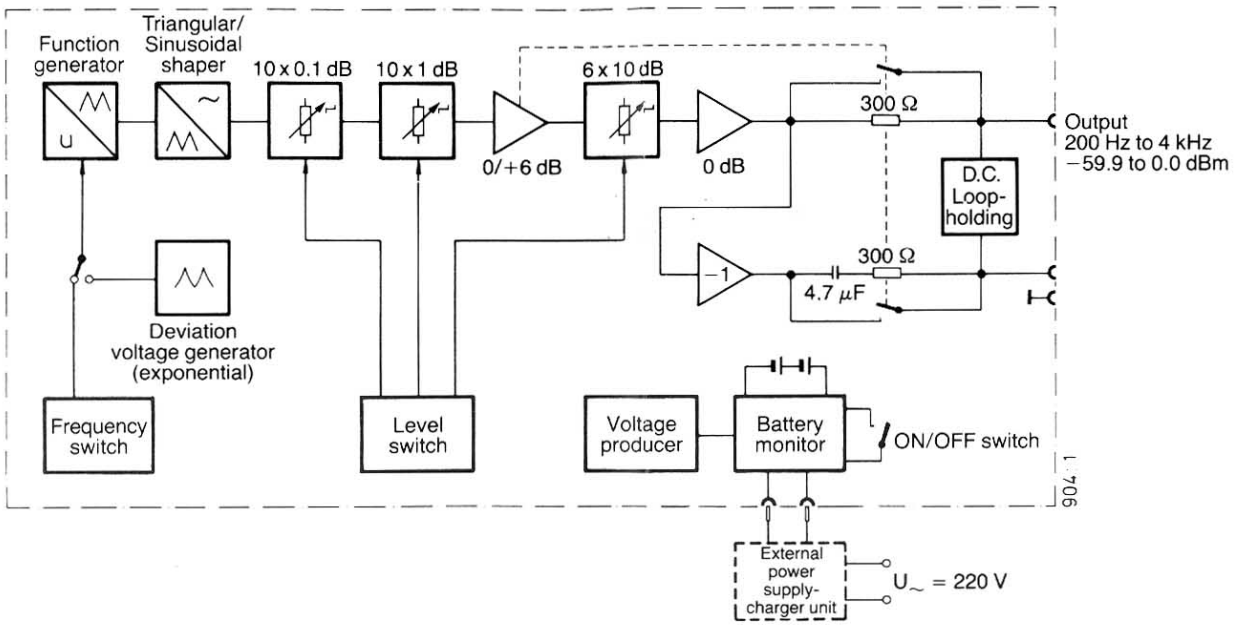


Fig. 2-1 Simplified Block Diagram of Level Generator PS-10

Output from the PS-10 is balanced, floating and short-circuit proof. Output impedance can be switch selected as either 600 Ω or≈0 Ω. For balancing the output signal, two amplifiers are used, whereby one operates as an inverter amplifier. The 600 Ω output impedance comprises two 300 Ω resistors in series. A capacitor protects the generator output against damage caused by d.c. voltage wich might be present on the terminals of the output sink. An internal d.c. loop-holding circuit provides for the maintenance of the d.c. exchange loop when the Generator operates on a subscriber line.

For the $Z_{out} \approx 0\ \Omega$ impedance, the series resistors are shunted by switch contacts and simultaneously the gain in the signal path is reduced by 6 dB.

The PS-10 is supplied with power from dry batteries or rechargeable NiCads. A monitoring circuit continuously observes the charged condition of the batteries and initiates a visual warning signal when the battery charge has dropped by approx. 10 % of the rated capacity.

With further lowering of the operating voltage the PS-10 switches itself off to prevent erroneous readings.

An external plugable a.c. adaptor (power supply-charger) permits permanent operation and recharges the NiCad batteries. But the 4 min (series M onwards: 20 min), automatic switch-off that functions with battery operation is inhibited when the a.c. adaptor is in use.

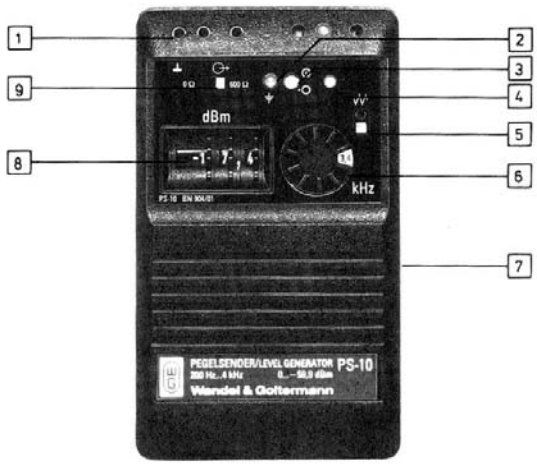


Fig. 3-1 Front view of Level Generator PS-10

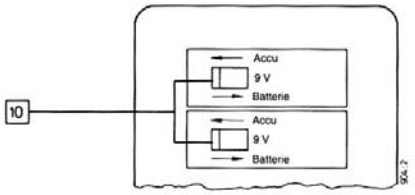


Fig. 3-2 Rear view with view into opened battery compartment

Identification number of operating control	Abbreviated designation in the diagrams	Function
7	3 Bu 1	Jack for power supply/battery charger
8	2 S 1	Level selector switch
9	2 S 3	Output impedance selector switch
10	3 S 2	Changeover switches battery/Ni-Cad (within battery compartment

Identification number of operating control	Abbreviated designation in the diagrams	Function
1	2 Bu 1	Generator output
2	3 Gl 10	Battery charge condition warning lamp flashes when battery voltage is not high enough
3	3 Gl 11	Operating indicator (flashes when PS-10 is switched ON)
4	3 S 1	ON/OFF push button
5	1 S 2	Sweep ON/OFF
6	1 S 1	Frequency selector switch

3 COMMISSIONING AND OPERATION

3.1 SENDING AT A FIXED FREQUENCY

Select output impedance, send frequency, and send level. Switch-on PS-10 by ON/OFF push button. The green operating condition lamp flashes.

3.2 SENDING WITH SWEPT FREQUENCIES

After preselecting output impedance, send frequency, and send level, switch-on PS-10. Switch-on sweep mode. The swept frequency varies exponentially with time over the frequency band, 200 Hz to 3.5 kHz. The sweep rate is 2s each for sweeps, out and return.

3.3 POWER SUPPLY

The PS-10 is supplied with power by two commercially available 9 V dry batteries or Ni Cad rechargeable batteries (e.g. Varta Tr/7/8).

For changing the batteries, the battery compartment at the back should be opened, and each battery is pulled out of its compartment by each strap. Because a dry battery has a different discharge characteristic than a rechargeable battery, the switches in the two battery chambers must be reset according to the type of current source. Observe polarity when replacing batteries! The minus terminal must unconditionally point in the direction of the back of the instrument: The printed polarity sign "-", therefore, must be visible when the battery is in place.

The condition of the power supply is continuously under observation by a monitoring circuit. When the batteries' or NiCads' charge has dropped by approx. 10 % of the rated capacity, a red lamp begins to flash. After that, about 2 hours of operating time remain.

When the battery voltage drops further the instrument switches itself off and thereby prevents erroneous send signal output. After this switch-off the instrument is prevented from being switched on so that the batteries must be changed in any event.

The PS-10 has another automatic switch-off that actuates after approx. 4 minutes (series M onwards: 20 min) of operation so as to prevent unnecessary current consumption during pauses between measurements.

But the instrument is operationally ready immediately after the ON/OFF switch has again been switched-on. By another actuation of the ON/OFF push button, however, the PS-10 can also be immediately switched OFF again.

A.C. power line operation is also possible through an external power supply/charger (a.c. adaptor). If the PS-10 is equipped with rechargeable NiCads, then independent from the switched-on condition of the PS-10 the NiCads are recharged when the a.c. adaptor is plugged in and connected to the PS-10. This ought to be connected only as long as the time needed to recharge the NiCads because otherwise the life of the NiCads is shortened.

Inhaltsverzeichnis des Anhangs PS-10

Contents of Appendix PS-10

Sommaire de l'Annexe PS-10

Anmerkungen zu den Stromlaufplänen und den Schaltteillisten

Abkürzungsbeispiele

(4) = Stromlaufplan 4
820-B = Leiterplatte B
Pkt. 6 = Anschlußpunkt 6
TP 203 = Testpunkt 203

Farbkennzeichnung

bl = blau
blank = blank
br = braun
fl = farblos
ge = gelb
gn = grün
gr = grau
rs = rosa
rt = rot
Schirm = Schirm
sw = schwarz
vio = violett
ws = weiß

grrt = grau/rot

geschirmte Leitung
blanker Draht

BS = Bestückungsseite
NBS = nicht bestückte Seite

Alle angegebenen Spannungen sind mit einem Instrument 100 kΩ/V gegen 0 V gemessen.

Relais in Ruhestellung dargestellt

Sollten die Werte bestimmter Bauelemente in den Stromlaufplänen und Schaltteillisten differieren, so sind stets die Angaben in den Schaltteillisten als verbindlich anzusehen.

Notes for Circuit Diagram and the Parts Lists

Abbreviations examples

Circuit diagram 4
Circuit board B
Connection point 6
Test point 203

Colour coding

blue
bare wire
brown
transparent
yellow
green
grey
pink
red
screening
black
violet
white

grey/red

Screened lead
Bare wire

Components side
Soldering side

All voltage ratings measured with respect to 0 V with 100 kΩ/V meter.

Relays shown in rest position

If the values of individual components listed in the circuit diagrams and component lists should differ from another, those values given in the component lists are valid.

Notes sur les schémas de principe et les listes de composants

Examples d'abréviations

Schéma 4
Platine B
Point de raccordement 6
Point test 203

Code des couleurs

bleu
nu
brun
transparent
jaune
vert
gris
rose
rouge
blindage
noir
violet
blanc

gris/rouge

Conducteur blindé
Fil nu

Côté composants
Côté soudure

Toutes les tensions données sont mesurées par rapport à 0 V avec un instrument de 100 kΩ/V.

Les relais sont représentés en position repos

Lorsque les valeurs de certains composants diffèrent entre les schémas de principes et les listes de composants, les valeurs des listes de composants sont seules valables.

Bestellangaben

Bei Ersatzteilbestellungen unbedingt beachten:

Die genaue Bezeichnung ist der Schaltteilliste zu entnehmen.

Bauelemente mit BV bzw. WN sind im Werk anzufordern.

Neben der Bestellnummer (BN) ist die Gerätenummer mit Serienindex, die Positionsnummer des Bauelements und die Sachnummer anzugeben.

Beispiel: PM-20 BN 881/01
Nr. 0001 A

2 T 2
Schaltbild-Nr. Positions-Nr.
Sach-Nr. 0001-0015.836

Baugruppenverbindungen

Da die Stromlaufpläne für jede Baugruppe getrennt gezeichnet sind, müssen alle Zuleitungen zu anderen Baugruppen deutlich erkennbar sein. Die nachstehende Skizze erläutert die hier angewandten Verfahren zur Kennzeichnung.

Verfahren 1

Beim Anschlußpunkt einer Baugruppe steht die Adresse der anderen Anschlußpunkte, mit denen er verbunden ist.

Verfahren 2

Beim Anschlußpunkt steht nur eine Signalbezeichnung ohne Adresse. Dann sind alle Anschlußpunkte anderer Baugruppen mit der gleichen Signalbezeichnung untereinander verbunden.

Ordering Information

When ordering spare parts, the following instructions must be followed without fail:

The exact designation of the component shall be taken from the "Parts Lists".
Components prefixed with BV or WN should be ordered from the manufacturer, W&G.
Next to the order number (BN) the serial number of that particular instrument along with the position number of the component and the item number shall be given.

Example: PM-20 BN 881/01
No. 0001 A

2 T 2
Circuit diagram Position No.
Item number 0001-0015.836

Connections between subassemblies

Because of each subassembly having been drawn separately, all the interconnections with the other subassemblies must be clearly identifiable. The following sketch explains the method used here for identifying the connections.

Method 1

At a connection point of a subassembly, there are located the addresses of the other connection points with which it is connected.

Method 2

At the connection point, there is only located a signal designation without address. Then, all similarly designated connection points of other subassemblies are interconnected.

Données pour la commande

Pour la commande de composants de rechange il faut absolument observer:

La désignation exacte du composant qui est à prendre dans la liste des composants.
Les composants BV ou WN sont à réclamer à l'usine.

Outre le numéro de commande (BN) le numéro de l'appareil avec son index de série et le numéro de position du composant et numéro d'objet sont a donner.

Exemple: PM-20 BN 881/01
N° 0001 A

2 T 2
N° de schéma N° de position
N° d'objet 0001-0015.836

Raccordement des modules

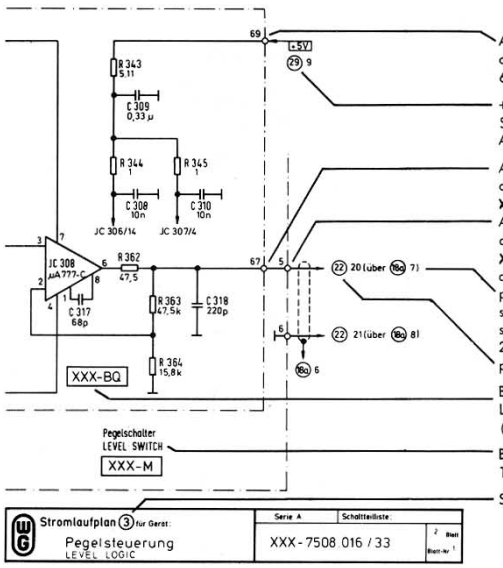
Les schémas de principe des modules étant représentés séparément les liaisons entre les différents modules doivent être facilement reconnues.
Le schéma suivant indique le système d'identification utilisé.

Système 1

Le point de raccordement du module comporte l'adresse de l'autre point de raccordement auquel il est relié.

Système 2

Le point de raccordement ne comporte qu'une indication de signal sans adresse. Tous les points de raccordement des autres modules comportant la même indication de signal sont alors reliés ensemble.



Anschlußpunkt 69 der Leiterplatte 697-BQ	Connection point 69 of printed circuit board (p.c.b.) 697-BQ	Point 69 du circuit imprimé 697-BQ
+ 5 V kommt von Stromlaufplan (29) Anschlußpunkt 9	+5 V coming from circuit diagram (29), connection point 9	le +5 V arrive du schéma (29), point 9
Anschlußpunkt 67 der Leiterplatte XXX-BQ geht auf Anschlußpunkt 5 der Trägerkarte XXX-M, von hier aus zu Stromlaufplan (18a) Anschlußpunkt 7 und schließl. zu Punkt 20 des Stromlaufplanes (22)	Connection point 67 of the p.c.b. XXX-BQ going to connection point 5 of mother board XXX-M, and from this point, to circuit diagram (18a), connection point 7, finally going to point 20 of circuit diagram (22).	le point 67 du circuit imprimé XXX-BQ va au point 5 de la carte support XXX-M, de là au schéma (18a), point 7 et pour terminer au point 20 du schéma (22)
Bezeichnung der Leiterplatte (Sandwichkarte)	Designation of p.c.b. (sandwich card)	Désignation du circuit imprimé (carte sandwich)
Bezeichnung der Trägerkarte	Designation of mother board	Désignation de carte support
Stromlaufplan Nr.	Circuit diagram No.	N° du schéma de principe

Bezeichnung der Anschlußpunkte

(30) 21: Anschlußpunkt 21 von Schaltbild (30)

(30) S 3010/a/5: Kontakt a/5 von Schalter 10 in Schaltbild (30)

Beispiel: Der Anschlußpunkt M des Schaltbildes (29) mit der Signalbezeichnung "Null-Verschiebung (0,4)" ist mit 2 weiteren Anschlußpunkten der gleichen Signalbezeichnung verbunden.

1) Kontakt a/5 von Schalter 10 in Schaltbild (30) (Verbindung läuft ganz oder teilweise außerhalb des Steckkartenträgers)

2) bBW/7 von Schaltbild (31) (Verbindung läuft innerhalb des Steckkartenträgers)

Designation of connection points

(30) 21: connection point 21 from circuit diagram (30)

(30) S 3010/a/5: contact a/5 from switch 10 in circuit diagram (30).

Example: Connection point M of circuit diagram (29) having the signal designation "zero offset (0,4)" is connected to two other connection points of the same signal designation.

1) Contact a/5 from switch 10 in circuit diagram (30) (connection passes completely, or partially, outside of the mother board)

2) bBW/7 from circuit diagram (31) (connection stays within the mother board)

Désignation des points de raccordement

(30) 21: point de raccordement 21 du schéma (30)

(30) S 3010/a/5: contact a/5 du commutateur 10 du schéma (30)

Exemple: Le point de raccordement M du schéma (29) avec l'indication de signal "décalage du zéro (0,4)" est relié à deux autres points de raccordement avec la même indication de signal.

1) Contact a/5 du commutateur 10 du schéma (30) (la liaison passe entièrement ou en partie hors de la carte support)

2) bBW/7 du schéma (31) (la liaison passe dans la carte support)

Bei Steckkartentechnik mit einem Steckkartenträger gibt eine Liste Auskunft über die Anschlußpunkte mit gleicher Signalbezeichnung.

With plug-in p.c.b. technology using plug-in mother boards, a list provides information concerning the connection points having the same signal designation.

Systême de cartes enfichables sur une carte support. Une liste informe des points de raccordement avec la même indication de signal.

Buchsenleisten - Kontaktbezeichnung ≙ Anschlußpunkt-Bezeichnung } von Schaltbild (29)

Edge connectors - contact designation ≙ connection point designation } from Circuit diagram (29)

Prise - désignation du contact ≙ désignation du point de raccordement } du schéma (29)

Signalbezeichnung	außerhalb Prüfbereich	Anschlußpunkte innerhalb Prüfbereich	I	II			II	I	innerhalb Prüfbereich	Anschlußpunkte außerhalb Prüfbereich	Signalbezeichnung	Leiste (29) 376-CG Bl.33
- 12 V		Stromversorgung siehe 81.16		36	V	18	18		Stromversorgung siehe 81.16		+ 12 V	
		frei		35	U	17	17	2	(31) Bu 3101 / 4		8×10^{-2}	
4×10^{-2}		(31) Bu 3001 / 3	2	34	T	16	16	2	(31) DQ / 8 xxx (30) 19		$2^3 \times 0{,}01$ B	
$2^2 \times 0{,}01$ B	(30) 18 xxx	(31) bBW / K	2	33	S	15	15	2	(31) bBW / J xxx (30) 17		$2^1 \times 0{,}01$ B	
$2^0 \times 0{,}01$ B	(30) 16 xxx	(31) bBW / H	2	32	R	14	14	5	(18) R / B, (19) E / B, (20) A / B, (22) B / B		Bereich Digital	
1×10^{-2}		(31) Bu 3101 / 1	2	31	P	13	13	2	(31) Bu 3101 / 2		2×10^{-2}	
Null - Verschiebung (0,2)	(30) S 3010 / a / 3 xxx	(31) bBW / 6	2	30	N	12	12	2	(31) bBW / 5 xxx (30) S 3010 / a / 2		Null - Verschiebung (0,1)	
Null - Verschiebung (0,4)	(30) S 3010 / a / 5 xxx	(31) bBW / 7	2	29	M	11	11	2	(31) bBW / 4 xxx (30) S 3010 / a / 4		Null - Verschiebung (0,3)	
Null - Verschiebung (0,6)	(30) S 3010 / a / 7 xxx	(31) bBW / 8	2	28	L	10	10	2	(31) bBW / 3 xxx (30) S 3010 / a / 6		Null - Verschiebung (0,5)	
Null - Verschiebung (0,8)	(30) S 3010 / a / 9 xxx	(31) bBW / 9	2	27	K	9	9	2	(31) bBW / 2 xxx (30) S 3010 / a / 8		Null - Verschiebung (0,7)	
Masse (hoch)		Stromversorgung siehe 81.16		26	J	8	8		Stromversorgung siehe 81.16		Masse (hoch)	
Verschiebung 2^0	(19) E / 6, (22) B / 2, (23) U / 7		4	25	H	7	7	2	(31) bBW / 1 xxx (30) S 3010 / a / 10		Null - Verschiebung (0,9)	
Verschiebung 2^2	(19) E / 5		2	24	F	6	6	2	(19) E / H		Verschiebung 2^1	
Verschiebung 2^3 ±	(22) B / A		2	23	E	5	5	2	(19) E / 10		Verschiebung 2^3	
Vorzeichen ± / -	(30) 21 xxx	(31) bBW/17, (19) E/N	3	22	D	4	4	2	(22) B / 4		Verschiebung 2^2 ±	
Verschiebung 2^1 ±	(22) B / C		2	21	C	3	3	3	(20) A / F, (21) G / F		$2^3 \times 0{,}1$ A	
$2^2 \times 0{,}1$ A	(20) A / K, (21) G / K		3	20	B	2	2	3	(20) A / L, (21) G / L		$2^1 \times 0{,}1$ A	
+ 5 V	Stromversorgung siehe 81.16			19	A	1	1	3	(20) A / M, (21) G / M		$2^0 \times 0{,}1$ A	

Anschlußpunkte mit gleicher Signalbezeichnung für diese Buchsenreihe

Connection points with the same signal designation for this connector row of contacts

Points de raccordement avec même indication de signal pour cette rangée de prises

außerhalb Prüfbereich xxx innerhalb Prüfbereich

außerhalb Prüfbereich ≙ diese Anschlußpunkte sind durch Leitungen verbunden, die teilweise oder ganz außerhalb des Steckkartenträgers verlaufen.

outside of test region xxx within test region

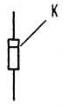
outside of test region ≙ these connection points are connected by lines which partially, or completely, pass outside of the mother board.

hors gamme de contrôle xxx dans la gamme de contrôle

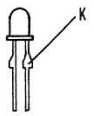
hors gamme de contrôle ≙ ces points de raccordement sont reliés par des conducteurs qui passent en partie ou entièrement hors de la carte support.

ELEKTRODENKENNZEICHNUNG
ELECTRODE DESIGNATION / DESIGNATION d'ELECTRODE

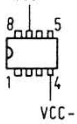
Sofern nicht anders vermerkt, alle Anschlußschemas von oben gesehen
Unless otherwise noted, all connection plans are seen from above
Sans autres indications tous les schémas de raccordement sont vus de dessus



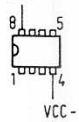
1 N 4448



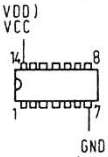
CQX 23 II
CQX 13 II



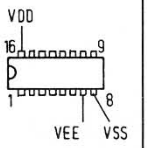
OP 20
TL 066



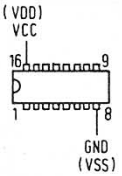
TL 062CP
MC 1458 CPI
LF 442 CH



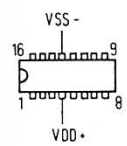
CD 4066
CD 4013



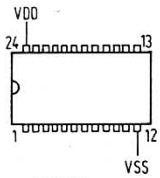
MC 14 051



CD 4060

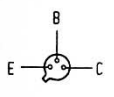


LM 346

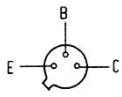


CD 4067

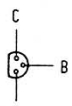
Draufsicht/Seen from above/Vue de dessus



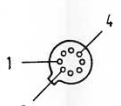
BCY 59 D
BCY 78 D



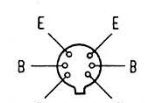
2 N 2905



MPS - A 13



CA 3130
µA 766



MP 311

MPS 5010 A

Serie A ...

Bv. 904 - 9480.006 / 4 | 1 Blatt

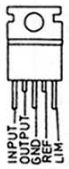
ELEKTRODENKENNZEICHNUNG
ELECTRODE DESIGNATION / DESIGNATION d'ELECTRODE

Sofern nicht anders vermerkt, alle Anschlußschemas von oben gesehen
Unless otherwise noted, all connection plans are seen from above
Sans autres indications tous les schémas de raccordement sont vus de dessus

ZPY 16

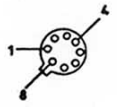
LD 37

BY 256



L 200

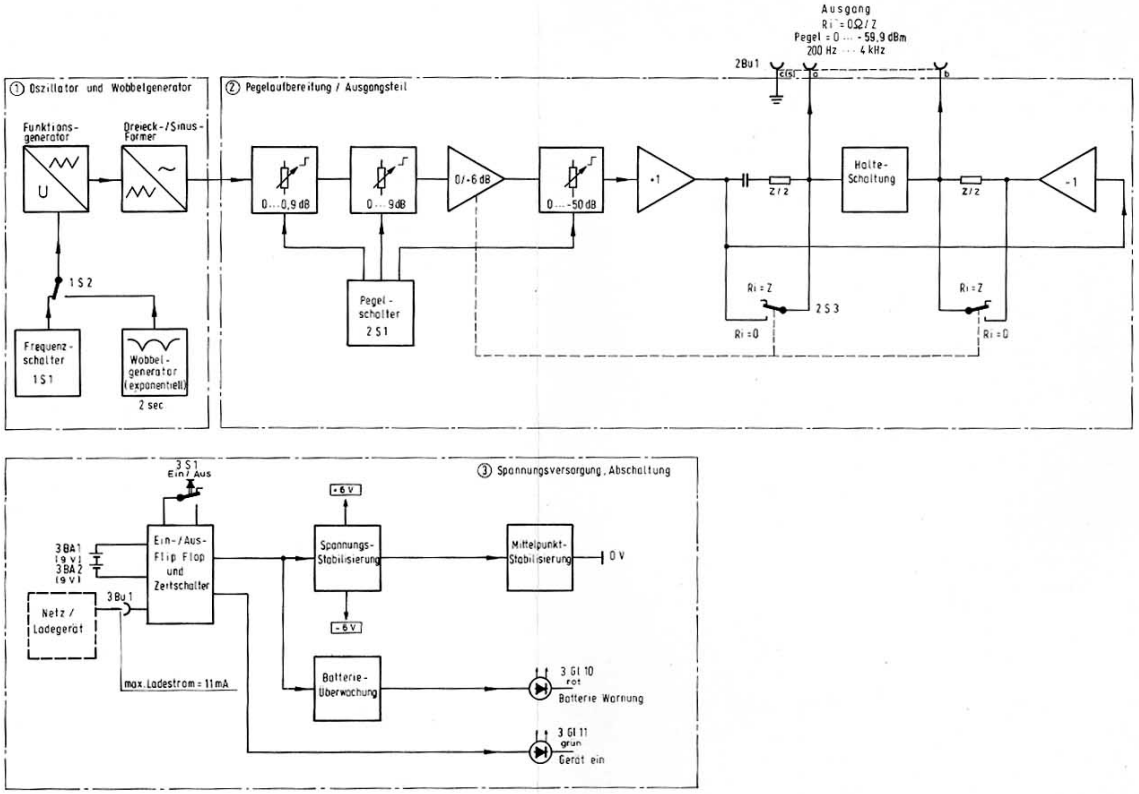
Draufsicht/Seen from above/Vue de dessus



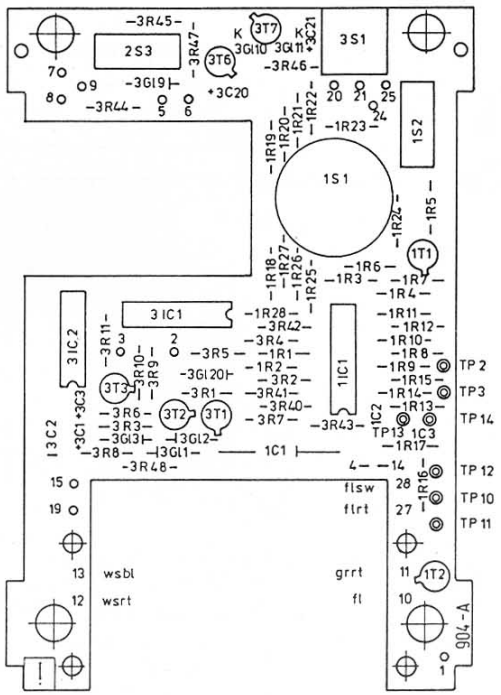
LM 358

Serie A...	
Bv. 964-9480.008 1a	1 Blatt

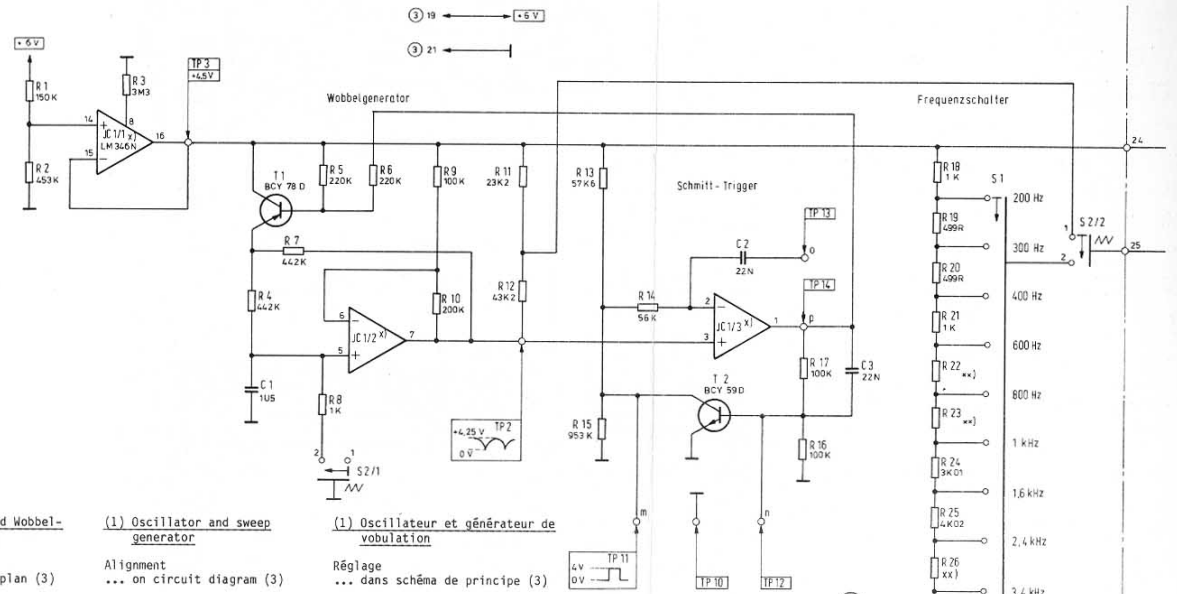
(0) Blockschaltplan	(0) Block diagram	(0) Schéma synoptique
(1) Oszillator und Wobbelgenerator	(1) Oscillator and sweep generator	(1) Oscillateur et générateur de vobulation
(2) Pegelaufbereitung/Ausgangsteil	(2) Level conditioning and output section	(2) Conditionnement du niveau/section sortie
(3) Spannungsversorgung, Abschaltung	(3) Voltage supply, auto cutoff	(3) Alimentation, coupure automatique
Ausgang	Output	Sortie
Batterie: Warnung Batterie-Überwachung	Battery: flat Battery monitor	Batterie: alarme Contrôle de batterie
Dreieck-/Sinusformer	Triangular/sinusoidal former	Convertisseur triangle/sinus.
Ein/Aus Ein-/Aus-Flip-Flop und Zeitschalter	On/off On/off flip-flop and time switch	Marche/arrêt Bistable marche/arrêt et temporisation
Frequenzschalter Funktionsgenerator	Frequency switch Function generator	Commutateur de fréquence Générateur de fonctions
Gerät ein grün	Device on green	Appareil en service vert
Halteschaltung	Holding circuit	Circuit de maintien
Max. Ladestrom = 11 mA Mittelpunkt-Stabilisierung	Max. charging current = 11 mA Centre point stabilisation	Courant de charge max. = 11 mA Stabilisation point milieu
Netz-/Ladegerät	Mains adaptor/charger	Alimentation/chargeur
Pegel Pegelschalter	Level Level switch	Niveau Commutateur de niveau
Rot	Red	rouge
Spannungsstabilisierung	Voltage stabiliser	Stabilisation de tension
Wobbelgenerator (exponentiell)	Sweep generator (exponential)	Générateur de vobulation (exponentiel)



Blockschaltplan Gerät: PS-10 / BN 904	Serie A...	Schaltteilliste:	
Pegelsender 200 Hz bis 4 kHz	904 - 7500.014 / 3		1 Blatt Blatt-Nr. 2



Benennung	
Wobbelgenerator	
bestückt	904-A
904-7000.00614	≠



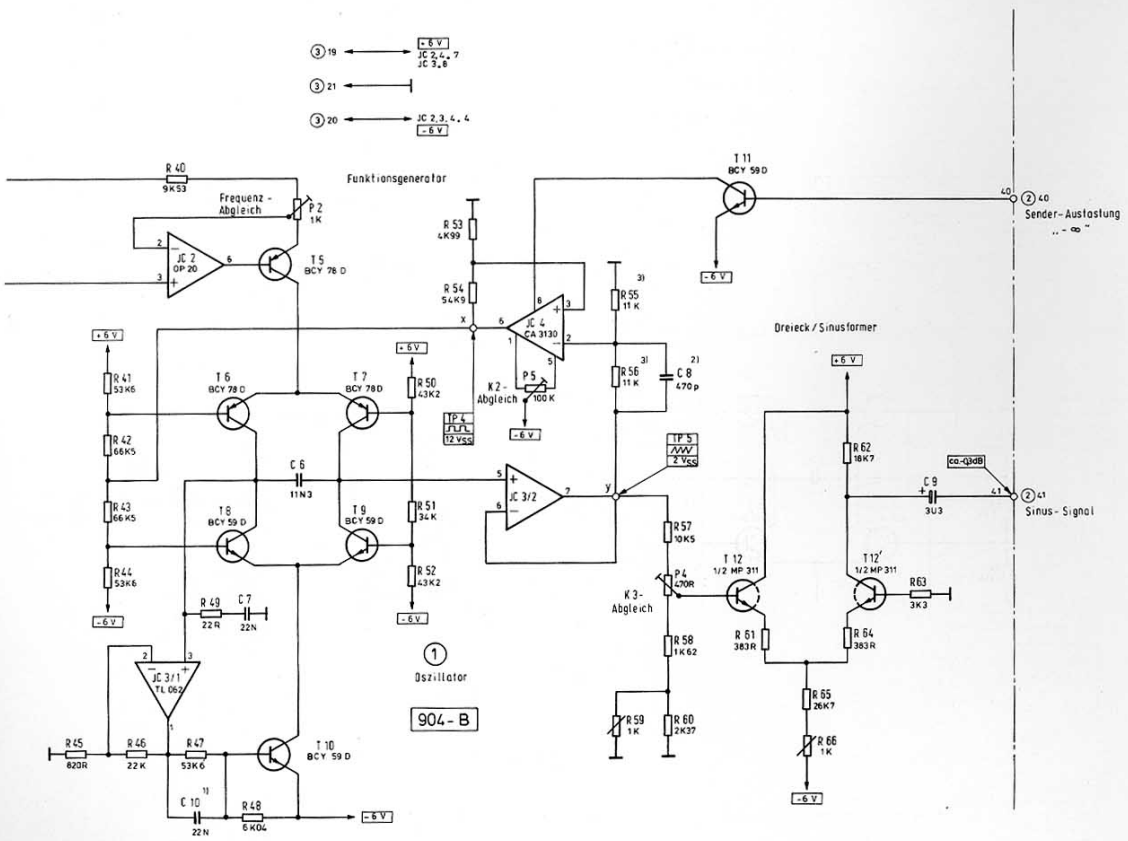
(1) Oszillator und Wobbelgenerator	(1) Oscillator and sweep generator	(1) Oscillateur et générateur de vobulation
Abgleich ... auf Stromlaufplan (3)	Alignment ... on circuit diagram (3)	Réglage ... dans schéma de principe (3)
Dreieck/Sinusformer	Triangular/sinusoidal former	Convertisseur triangle/sinus.
Frequenzabgleich Frequenzschalter Funktionsgenerator	Frequency alignment Frequency switch Function generator	Réglage de fréquence Commutateur de fréquence Générateur de fonctions
Oszillator	Oscillator	Oscillateur
Pegelangaben bei Einstellung	Level settings	Valeurs de niveau au réglage
Schmitt-Trigger Sender-Austastung Serienänderungen: Serie A und B: C10 entfällt Serie A ... teilweise C: ...	Schmitt trigger Generator blanking Series modification: C10 no longer in series A and B Series A and some series C devices	Bascule de Schmitt Coupure du générateur Modifications de séries: Séries A et B: C10 supprimée Séries A ... en partie C:
Sinus-Signal	Sinusoidal signal	Signal sinus.
Wobbelgenerator	Sweep generator	Générateur de vobulation

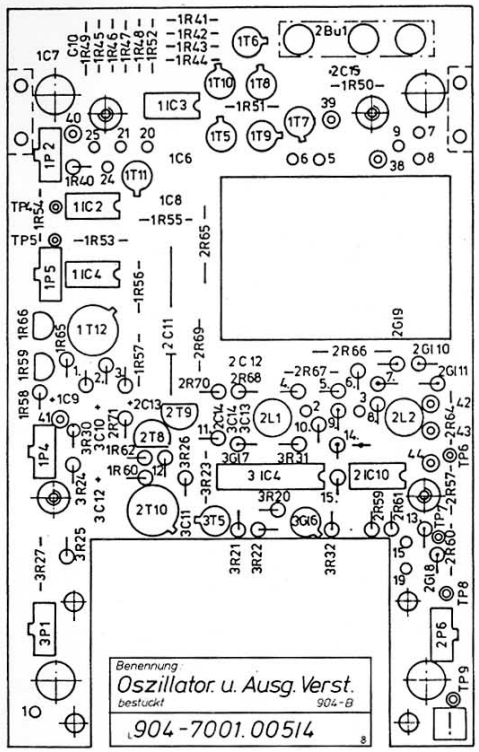
x) 1 IC 1/4 auf Stromlaufplan (3)

xx)

BN	Index	R 26	R 27	R 22	R 23
904/01	904-A	4K99	3K01	1K	1K
904/02	904-D	3K01	4K99	1K	1K
904/03	904-A	4K99	3K01	1K	1K
904/04	904-AA	4K99	3K01	1K09	909
904/20	904-A	4K99	3K01	1K	1K

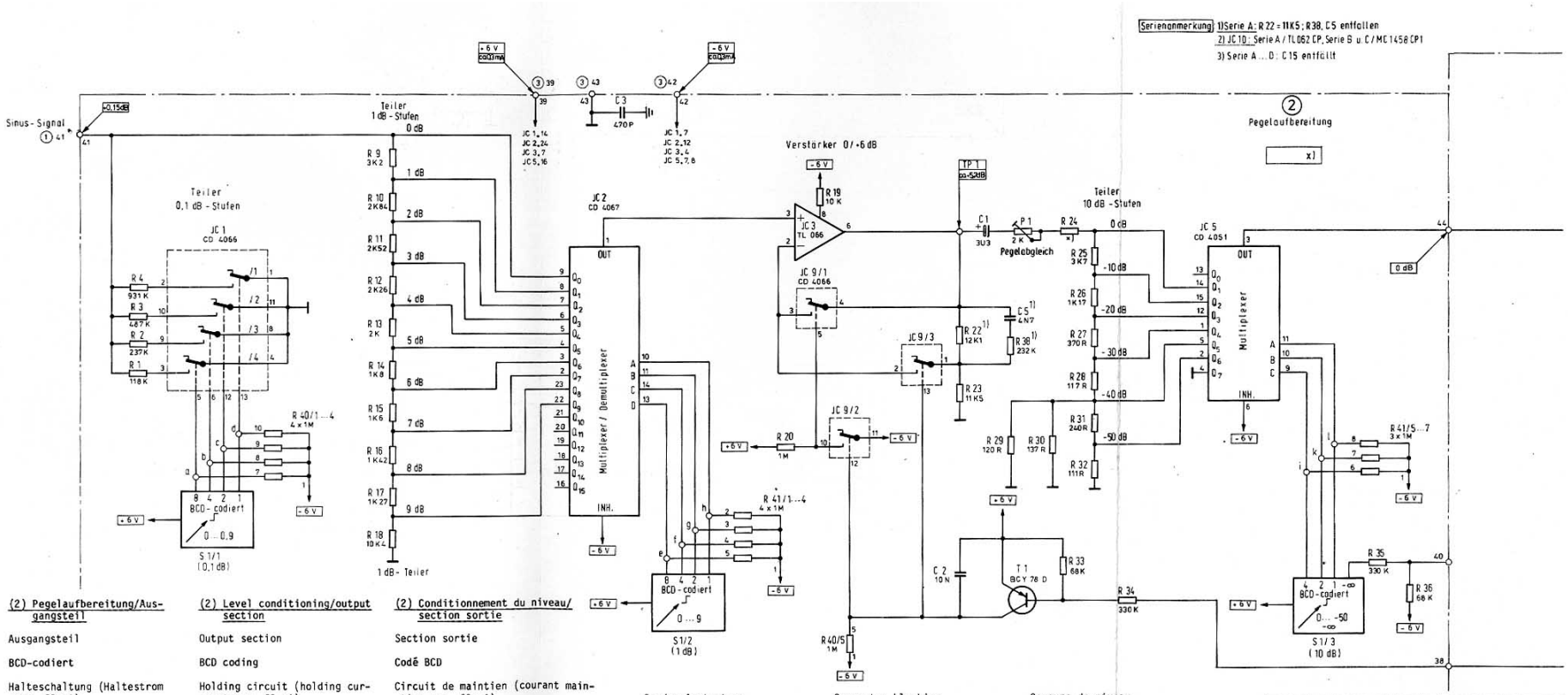
Serienänderungen: 1) Serie A u. B: C10 entfällt
2) Serie A ... teilw. C: C8/560p
3) Serie A ... D: R55 u. 56/10k





1. 1R61
2. 1R64
3. 1R63
4. 2R63
5. 3R28
6. 3R34
7. 2GI12
8. 2R62
9. 2GI5
10. 3R33
11. 3R29
12. 2R72
13. 2GI7
14. 2GI6
15. 2R58

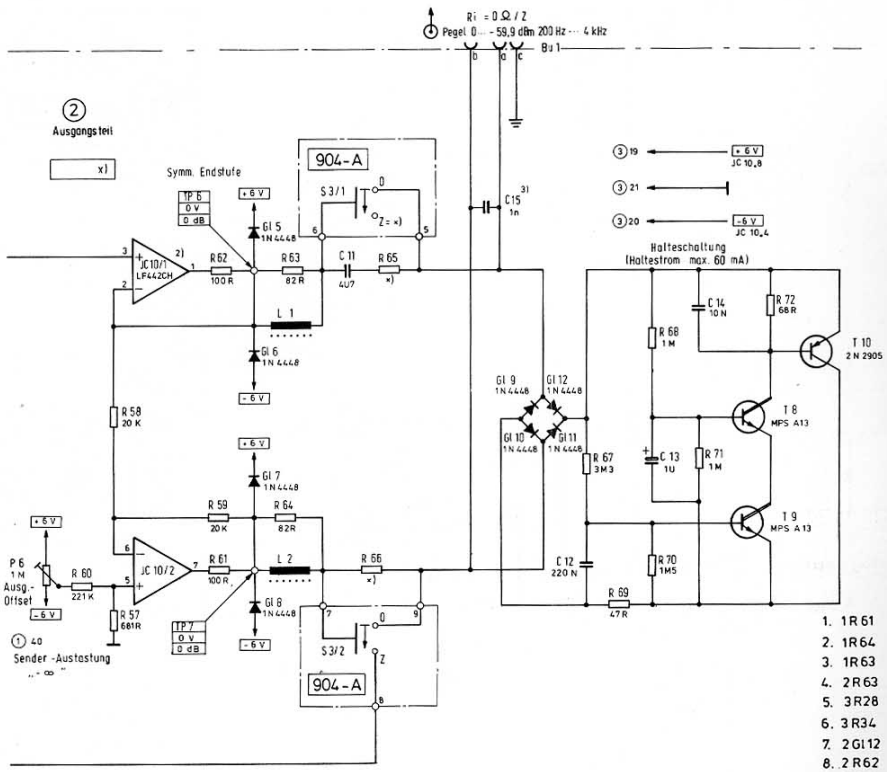
Stromlaufplan ① für Gerät: PS-10 / BN 904
Oszillator und Wobbelgenerator
Serie A
904 - 7501.013 / 33
Blatt 1
Blatt-Nr. -



(2) Pegelaufbereitung/Ausgangsteil	(2) Level conditioning/output section	(2) Conditionnement du niveau/section sortie
Ausgangsteil	Output section	Section sortie
BCD-codiert	BCD coding	Codé BCD
Halteschaltung (Haltestrom max. 60 mA)	Holding circuit (holding current max. 60 mA)	Circuit de maintien (courant maintien max. 60 mA)
Pegel	Level	Niveau
Pegelabgleich	Level adjustment	Réglage de niveau
Pegelangaben bei Einstellung	Level setting	Valeurs de niveau au réglage
Pegelaufbereitung	Level conditioning	Conditionnement du niveau
Sender-Austastung	Generator blanking	Coupure de niveau
Serienanmerkung: Serie ... entfallen/entfällt	Series note: Series ... omitted	Remarques de séries: séries ... supprimé
Sinus-Signal	Sinusoidal signal	Signal sinus.
Symm. Endstufe	Balanced output stage	Etage de sortie symétrique
Teiler, 1-dB-Stufen	Attenuator, 1 dB steps	Diviseur, bonds de 1 dB
Verstärker	Amplifier	Amplificateur

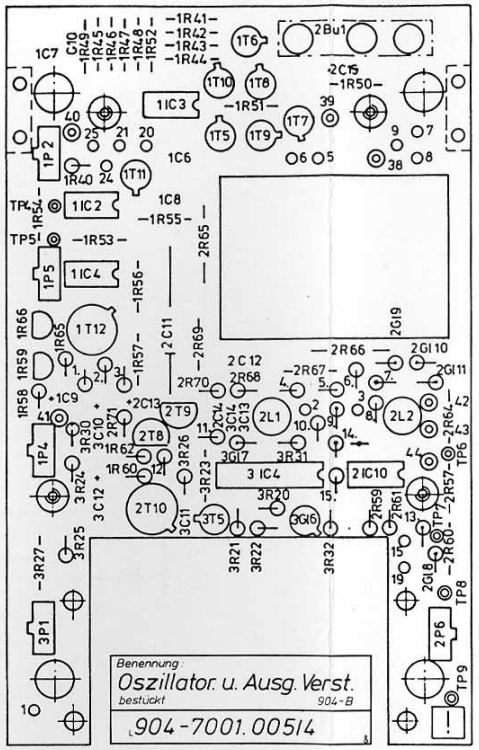
x)

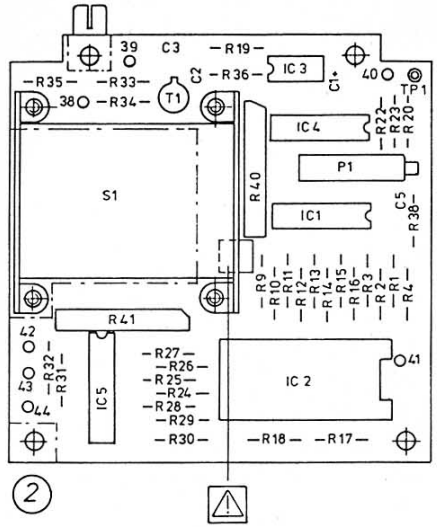
BN	Index	R65	R66	Index	R 24	Z
904/01	904-B	298	301	904-C	3 K65	600
904/02	904-B	298	301	904-C	3 K65	600
904/03	904-BA	397	397	904-CA	2 K32	800
904/04	904-B	298	301	904-C	3 K65	600
904/20	904-B	298	301	904-C	3 K65	600



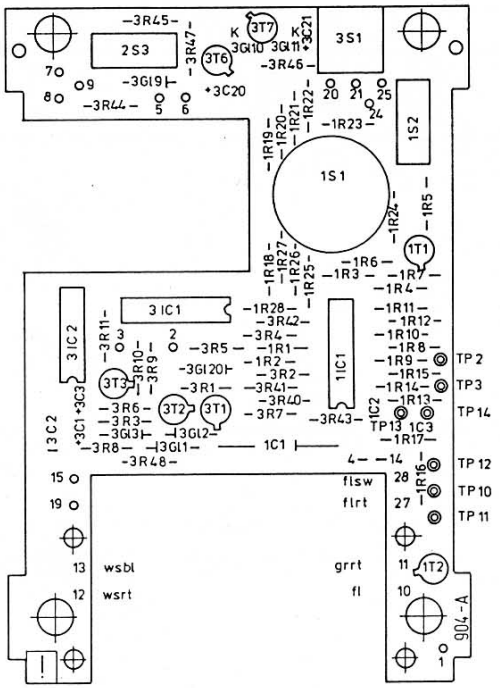
Pegelangaben bei Einstellung 2 S1 = - 0,0 dB, 2 S3 = Z

1. 1 R 61
2. 1 R 64
3. 1 R 63
4. 2 R 63
5. 3 R 28
6. 3 R 34
7. 2 Gl 12
8. 2 R 62
9. 2 Gl 5
10. 3 R 33
11. 3 R 29
12. 2 R 72
13. 2 Gl 7
14. 2 Gl 6
15. 2 R 58



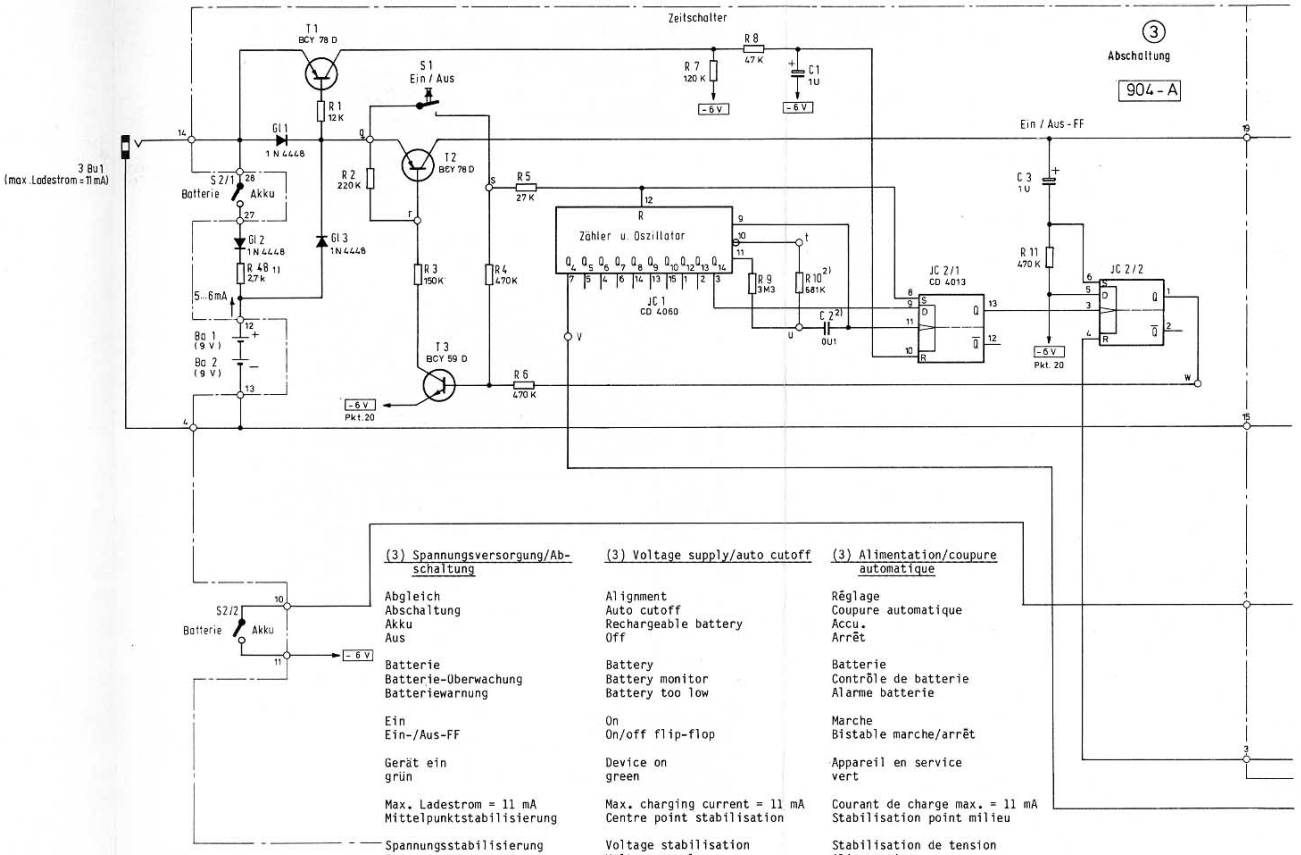


Stromlaufplan 2 für Gerät: PS-10 / BN 904 Pegelaufbereitung / Ausgangsteil	Serie A ... 904 - 7502.012/33	1 Blatt Blatt-Nr. -

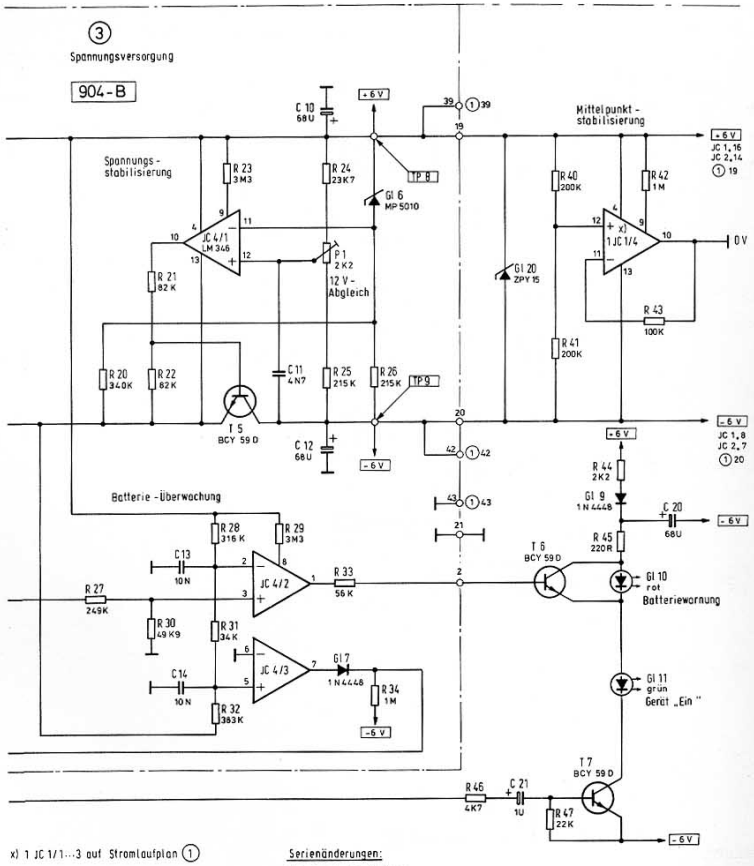


(1) (3)

Benennung
Wobbelgenerator
bestückt 904-A
904-7000.00614

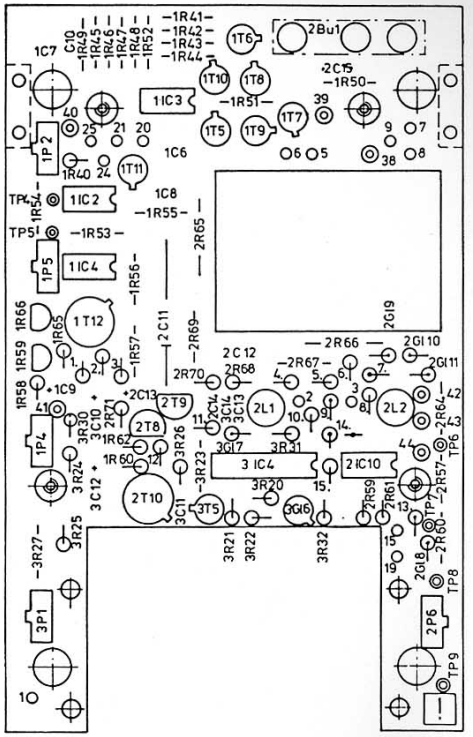


(3) Spannungsversorgung/Abschaltung	(3) Voltage supply/auto cutoff	(3) Alimentation/coupure automatique
Abgleich	Alignment	Réglage
Abschaltung	Auto cutoff	Coupure automatique
Akku	Rechargeable battery	Accu.
Aus	Off	Arrêt
Batterie	Battery	Batterie
Batterie-Überwachung	Battery monitor	Contrôle de batterie
Batteriewarnung	Battery too low	Alarme batterie
Ein	On	Marche
Ein-/Aus-FF	On/off flip-flop	Bistable marche/arrêt
Gerät ein	Device on	Appareil en service
grün	green	vert
Max. Ladestrom = 11 mA	Max. charging current = 11 mA	Courant de charge max. = 11 mA
Mittelpunktstabilisierung	Centre point stabilisation	Stabilisation point milieu
Spannungsstabilisierung	Voltage stabilisation	Stabilisation de tension
Spannungsversorgung	Voltage supply	Alimentation
Zähler und Oszillator	Counter and oscillator	Compteur et oscillateur
Zeitschalter	Timer	Temporisation



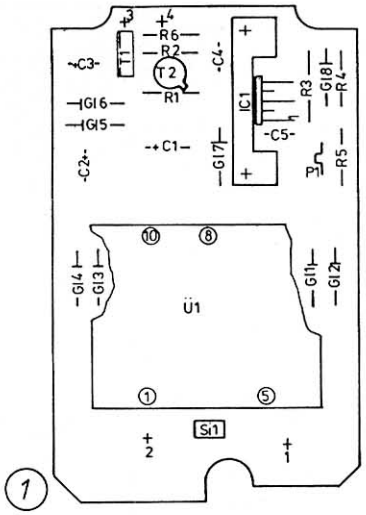
Benennung:
Oszillator. u. Ausg. Verst.
bestückt 904-B
904-7001.00514 8

1. 1R61
2. 1R64
3. 1R63
4. 2R63
5. 3R28
6. 3R34
7. 2Gl12
8. 2R62
9. 2Gl5
10. 3R33
11. 3R29
12. 2R72
13. 2Gl7
14. 2Gl6
15. 2R58



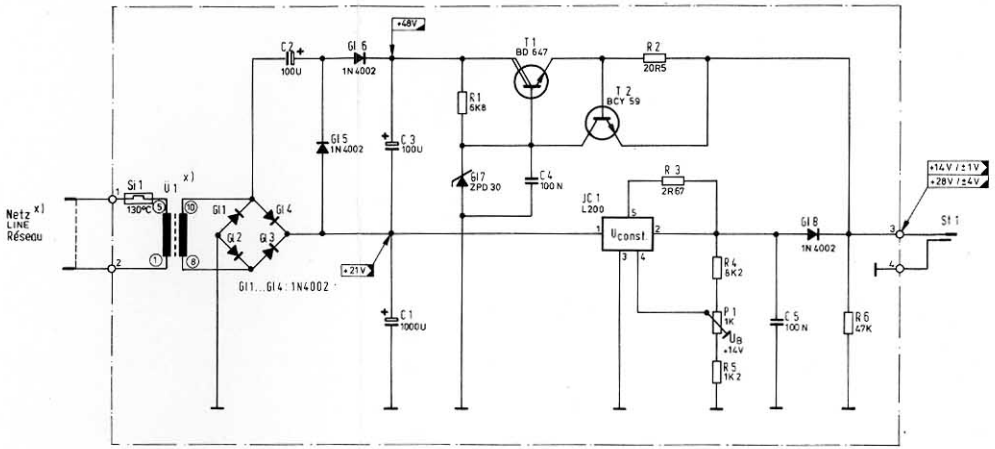
① ② ③

Stromlaufplan ③ für Gerät: PS-10 / BN 904/0102.03.20
Spannungsversorgung/Abschaltung
Serie A ...
904 - 7503.011 / 33
1 Blatt
Blatt-Nr. 5



1

Benennung:
Netz-Ladegerät
964-7002.00614 1

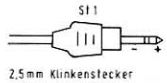


x) Netz / LINE / Réseau

		Ü1
964/00.02	193 ... 242 V / 47,5 ... 63 Hz	964-7702.005/4
964/00.03	105 ... 132 V / 57 ... 63 Hz	964-7703.004/4
964/00.04		
964/00.05	211 ... 264 V / 47,5 ... 63 Hz	964-7704.003/4

Ausgang (St 1) 28 V / 20 mA und Netznennspannung

Ausgang (St 1) 14 V / 150 mA und Netznennspannung



2,5 mm Klinkenstecker
„+" am Innenleiter

(11) Netz-/Ladegerät

Ausgang (St 1) 28 V/20 mA
und Netznennspannung
Ausgang (St 1) 14 V/150 mA
und Netznennspannung

2,5 mm Klinkenstecker
"+" am Innenleiter

(11) AC adaptor/charger

Output (St 1) 28 V/20 mA and
nominal mains voltage
Output (St 1) 14 V/150 mA
and nominal mains voltage

2.5 mm jack plug
"+" to inner conductor

(11) Alimentation/chargeur

Sortie (St 1) 28 V/20 mA et
tension nominale réseau
Sortie (St 1) 14 V/150 mA et
tension nominale réseau

Jack 2,5 mm
"+" au conducteur interne

Stromlaufplan für Gerät: 964/00.02...00.05	Serie A...	Schaltteilliste: 964-7611.015/4
Netz-/Ladegerät	964-7511.018/3 3	1 Blatt, Blatt-Nr. 1

Anmerkungen zu den Schaltteil-Listen in EDV-Ausdruck Notes for EDV-Parts Lists Remarques sur les listes des composants

Erklärung der wichtigsten Abkürzungen und der Darstellung der Daten

Benennung	Bezeichnung 1	Bezeichnung 2	
R-KOHLE	100 5% 0309		Kohleschicht-Widerstand 100 Ω 5% D x L = 3 x 9 mm Carbon Film Resistor Résistance à couche de carbone
R-METALL	2,77 K 0,1% 0207	TK 50	Metall-Schichtwiderstand 2,77 kΩ 0,1% TK 50 D x L = 2 x 7 mm Metal Film Resistor Résistance à couche métal
R-DRAHT	47 10% 2 W	WM 50 SKA 2	Drahtwiderstand 47 Ω 10% 2 Watt Mat.: WM 50, Typ SKA-2 Wirewound Resistor Résistance bobinée
R-TRIMM-CERMET	470 20% 0,5 W 1	150	Trimm-Widerstand Cermet 470 Ω 20% 0,5 W 1 Umdrehg. TK 150 PPM Adjustment Potentiometer Cermet 1-Turn Potentiomètre d'ajustment Cermet 1 tour
R-TRIM DRAHT SPINDEL	5 K 5% 0,7 W 22	70	Spindel-Trimmer Draht 5 kΩ 5% 0,7 Watt 22 Umdrehungen TK 70 Rectangular Wirewound adjustment Potentiometer 22 Turns Potentiomètre d'ajustment bobiné 22 tours
R-TRIM DRAHT SQUARE	20 K 5% 0,7 W 25	70	Square-Trimmer Draht 20 kΩ 5% 0,7 Watt 25 Umdrehungen TK 70 PPM Square Wirewound adjustment Potentiometer 25 Turns Potentiomètre d'ajustment bobiné Square 25 tours
R-VAR KOHLE	100 10/20 0,2 W LIN	260	Kohleschicht-Pot. 100 Ω - 10/+20 % 0,2 W linear, Drehwinkel 260° Carbonfilm Potentiometer Potentiomètre à couche de carbone
R-VAR DRAHT	5 K 3% 2 WLIN	3600 0,25%	Drahtpotentiometer 5 kΩ 3% 2 W Linear 3600° = 10-Gang Linearitätstoleranz 0,25% Wirewound Potentiometer 10-Turns Potentiomètre bobiné 10 tours
ELKO-AL	470 U 10/50 70 V		Aluminium-Elko 470 µF - 10/+50% 70 V, gepolt Aluminium Electroytic Capacitor, polarized Condensateur électrolytique à l'aluminium polarisé
ELKO-AL UNGEPOLT	100 U 40 V	EU 100/40	Aluminium-Elko ungepolt (bipolar) 100 µF 40 V Typ EU 100/40 Aluminium Electrolytic Capacitor, unpolarized Condensateur électrolytique à l'aluminium non polarisé
ELKO-TA SINT FEST	6,8 U 20% 6,3 V		Tantal-Elko Sinteranode, fester Elektrolyt 6,8 µF 20% 6,3 V Tantalum Electrolytic Capacitor, Sintered Anode dry Condensateur au tantale à électrolyte solide
C-KERAMIK EDPU	120 P 2% 63 V	N 150 1 B	Keramik-Kondensator 120 pF 2% 63 V Keramik: N 150 Typ 1 B EDPU = Kennzeichnung nach DIN 41930 Ceramic Capacitor Condensateur céramique
C-KERAMIK RDLL	88,7 P 1% 25 VEF	N 075 1 B KZK4	Keramik-Kondensator kurzzeitkonstant (10-4) 88,7 pF 1% 25 V_{eff} Material N 075 Typ 1 B Ceramic Capacitor Short-Term-Stability Condensateur céramique de stabilité de lourte durée
C-GLIMMER	487 P 0,5% 500 V	BF 48.10	Glimmer-Kondensator 487 pF 0,5% 500 V Bauform 48.10 Mica Capacitor Type 48.10 Condensateur au mica argenté
C-GLIMMER KNOPF	3900 P 5% 100 V	BF 49.25-3	Glimmer-Knopf-Kondensator 3,9 nF 5% 100 V 49.25-3 Mica Button Capacitor Condensateur bouton au mica argenté
C-KF KS	316 P 0,5% 63 V	KSM	Kunststoff-Folienkondensator Styroflex 316 pF 0,5 % 3 V Polystyrene Capacitor Condensateur polystyrène
C-KF MKT	0,068 U 10% 100 V		Metallisierter Polyester Kondensator 68 nF 10% 100 V Metallized Polyester Capacitor Condensateur polyester métallisé
C-DREH	9,0-25,0 P 1-Fachc-LIN 2222 805 90123		Drehkondensator 9-25 pF 1-fach C-Linear Typ... Variable Capacitor, Single-Section, SLC, Type... Condensateur variable, Variation linéaire en capacité
C-DREH SCHMETTERLING			Schmetterling-Kondensator Butterfly variable Capacitor Condensateur papillon

S-DREH	Werksinterne Daten Ersatz per Sach-Nr. bestellen		Drehschalter Rotary switch Commutateur rotatif
S-KIPP	"		Kippschalter Toggle switch Interrupteur à touche basculante
S-SCHIEBE	"		Schiebeschalter Slide switch Interrupteur à glissière
S-TASTE	"		Tastenschalter Push-button switch Commutateur à touches
S-SCHNAPP	"		Schnappschalter Micro switch Interrupteur à déclic
S-KODIER	"		Kodierschalter Thumb-Wheel switch Roue codeuse
RELAIS			
IC-... TRANS...	"	Mos	mit " Mos" sind alle Halbleiterbauelemente gekennzeichnet, die durch elektrostatische Aufladung gefährdet sind. Die hierfür gültigen Verarbeitungsvorschriften sind unbedingt einzuhalten. All semiconductors subject to damage caused by electrostatic discharge are identified with the letters "Mos". The existing regulations applied to handling these devices are to be unconditionally complied with. Tous les semi-conducteurs pouvant être détériorés par une charge électrostatique sont identifiés avec "MOS". Les consignes concernants la manipulation de ces éléments sont absolument à respecter.

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BN 904/01

TEILE-NR PART NO	SACH-NR ITEM NO	BENENNUNG DESIGNATION	BEZEICHNUNG 1 MARKING 1			BEZEICHNUNG 2 MARKING 2			MG QU	WERKNORM REF.DESIG	BEMERKUNG NOTE	SERIE AF VERSION	C
1C 1	0001-0013.676	C-KF MKC	1U5	5%	63V	MKC1860	21		1	ROEDERST.			L
1C 2	0001-0004.821	C-KERAMIK EDPT	22N	20/ 80	40V	R10000 2	56		1	110/02/10			L
1C 3	0001-0004.821	C-KERAMIK EDPT	22N	20/ 80	40V	R10000 2	56		1	110/02/10			L
1C 6	0000-7579.343	C-KF KP	11N3	1%	63V	B33531	56		1	110/03/13			L
1C 7	0001-0004.821	C-KERAMIK EDPT	22N	20/ 80	40V	R10000 2	56		1	110/02/10			L
1C 8	0001-0004.669	C-KERAMIK EDPT	470P	10%	63V	R 2000 2	56		1	110/02/10		D-..	L
1C 9	0001-0040.775	ELKO-TA SINT FEST	3U3	20%	16V	ETR-1	56		1	110/05/61			L
1C 10	0001-0004.821	C-KERAMIK EDPT	22N	20/ 80	40V	R10000 2	56		1	110/02/10		C-..	L
1IC 1	0000-7574.393	IC-QUAD OP.-VERST.	LM 346 N		DIP 16				1	NSC			L
1IC 2	0000-7576.650	IC-OP.-VERST.	OP 20 HP		DIP 8				1	PMI			L
1IC 3	0000-7576.935	IC-DUAL OPVERST. FET	TL 062 CP		DIP 8				1	TEXAS			L
1IC 4	0001-0069.918	IC-OP.-VERST. FET	CA 3130 T		TO 99			MOS	1	RCA			L
1P 2	0001-0008.429	R-TRIM CERMET STEH	1K	20%	OW5 1	TK 100	(ALT 17/02/08)		1	017/02/15			L
1P 4	0001-0008.416	R-TRIM CERMET STEH	470R	20%	OW5 1	TK 100	(ALT 17/02/08)		1	017/02/15			L
1P 5	0001-0008.500	R-TRIM CERMET STEH	100K	20%	OW5 1	TK 100	(ALT 17/02/08)		1	017/02/15			L
1R 1	0001-0003.110	R-METALL	150K	1%	0207	TK 50	56		1	DRALORIC			L
1R 2	0001-0006.492	R-METALL	453K	1%	0207	TK 50	56		1	DRALORIC			L
1R 3	0001-0007.336	R-KOHLE	3M3	5%	0207		56		1	DRALORIC			L
1R 4	0001-0003.961	R-METALL	442K	1%	0207	TK 50	56		1	DRALORIC			L
1R 5	0001-0007.190	R-KOHLE	220K	5%	0207		56		1	018/03/01			L
1R 6	0001-0007.190	R-KOHLE	220K	5%	0207		56		1	018/03/01			L
1R 7	0001-0003.961	R-METALL	442K	1%	0207	TK 50	56		1	DRALORIC			L
1R 8	0001-0006.913	R-KOHLE	1K	5%	0207		56		1	DRALORIC			L
1R 9	0001-0002.991	R-METALL	100K	1%	0207	TK 50	56		1	DRALORIC			L
1R 10	0001-0003.181	R-METALL	200K	1%	0207	TK 50	56		1	DRALORIC			L
1R 11	0001-0002.454	R-METALL	23K2	1%	0207	TK 50	56		1	DRALORIC			L
1R 12	0001-0002.690	R-METALL	43K2	1%	0207	TK 50	56		1	DRALORIC			L
1R 13	0001-0002.807	R-METALL	57K6	1%	0207	TK 50	56		1	DRALORIC			L
1R 14	0001-0007.129	R-KOHLE	56K	5%	0207		56		1	018/03/01			L
1R 15	0000-7519.031	R-METALL	953K	1%	0207	TK 50	56		1	DRALORIC			L
1R 16	0001-0007.158	R-KOHLE	100K	5%	0207		56		1	018/03/01			L
1R 17	0001-0007.158	R-KOHLE	100K	5%	0207		56		1	018/03/01			L
1R 18	0001-0001.219	R-METALL	1K	1%	0207	TK 50	56		1	DRALORIC			L
1R 19	0001-0000.980	R-METALL	499R	1%	0207	TK 50	56		1	DRALORIC			L
1R 20	0001-0000.980	R-METALL	499R	1%	0207	TK 50	56		1	DRALORIC			L
1R 21	0001-0001.219	R-METALL	1K	1%	0207	TK 50	56		1	DRALORIC			L
1R 22	0001-0001.219	R-METALL	1K	1%	0207	TK 50	56		1	DRALORIC			L
1R 23	0001-0001.219	R-METALL	1K	1%	0207	TK 50	56		1	DRALORIC			L
1R 24	0001-0001.620	R-METALL	3K01	1%	0207	TK 50	56		1	DRALORIC			L
1R 25	0001-0001.743	R-METALL	4K02	1%	0207	TK 50	56		1	DRALORIC			L
1R 26	0001-0001.840	R-METALL	4K99	1%	0207	TK 50	56		1	DRALORIC			L
1R 27	0001-0001.620	R-METALL	3K01	1%	0207	TK 50	56		1	DRALORIC			L
1R 28	0001-0002.564	R-METALL	30K1	1%	0207	TK 50	56		1	DRALORIC			L
1R 40	0001-0002.111	R-METALL	9K53	1%	0207	TK 50	56		1	DRALORIC			L
1R 41	0001-0065.365	R-METALL	53K6	1%	0207	TK 50	56		1	DRALORIC			L
1R 42	0001-0002.865	R-METALL	66K5	1%	0207	TK 50	56		1	DRALORIC			L
1R 43	0001-0002.865	R-METALL	66K5	1%	0207	TK 50	56		1	DRALORIC			L
1R 44	0001-0065.365	R-METALL	53K6	1%	0207	TK 50	56		1	DRALORIC			L

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TEILE-NR PART NO	SACH-NR ITEM NO	BENENNUNG DESIGNATION	BEZEICHNUNG 1 MARKING 1	BEZEICHNUNG 2 MARKING 2	MG QU	WERKNORM REF.DESIG	BEMERKUNG NOTE	SERIE AF VERSION	C
1R 45	0001-0006.900	R-KOHLE	820R 5% 0207	56	1	DRALORIC			L
1R 46	0001-0007.077	R-KOHLE	22K 5% 0207	56	1	DRALORIC			L
1R 47	0001-0065.365	R-METALL	53K6 1% 0207	TK 50 56	1	DRALORIC			L
1R 48	0001-0001.921	R-METALL	6K04 1% 0207	TK 50 56	1	DRALORIC			L
1R 49	0001-0006.683	R-KOHLE	22R 5% 0207	56	1	DRALORIC			L
1R 50	0001-0002.690	R-METALL	43K2 1% 0207	TK 50 56	1	DRALORIC			L
1R 51	0001-0003.602	R-METALL	34K 1% 0207	TK 50 56	1	DRALORIC			L
1R 52	0001-0002.690	R-METALL	43K2 1% 0207	TK 50 56	1	DRALORIC			L
1R 53	0001-0001.840	R-METALL	4K99 1% 0207	TK 50 56	1	DRALORIC			L
1R 54	0001-0002.784	R-METALL	54K9 1% 0207	TK 50 56	1	DRALORIC			L
1R 55	0001-0002.179	R-METALL	11K 1% 0207	TK 50 56	1	DRALORIC		E-..	L
1R 56	0001-0002.179	R-METALL	11K 1% 0207	TK 50 56	1	DRALORIC		E-..	L
1R 57	0001-0002.153	R-METALL	10K5 1% 0207	TK 50 56	1	DRALORIC			L
1R 58	0001-0001.387	R-METALL	1K62 1% 0207	TK 50 56	1	DRALORIC			L
1R 59	0000-7559.208	R-PTC	1K 2% 0W1	TSP 102 G	1	TEXAS			L
1R 60	0001-0001.523	R-METALL	2K37 1% 0207	TK 50 56	1	DRALORIC			L
1R 61	0001-0000.883	R-METALL	383R 1% 0207	TK 50 56	1	DRALORIC			L
1R 62	0001-0002.373	R-METALL	18K7 1% 0207	TK 50 56	1	DRALORIC			L
1R 63	0001-0006.971	R-KOHLE	3K3 5% 0207	56	1	DRALORIC			L
1R 64	0001-0000.883	R-METALL	383R 1% 0207	TK 50 56	1	DRALORIC			L
1R 65	0001-0002.519	R-METALL	26K7 1% 0207	TK 50 56	1	DRALORIC			L
1R 66	0000-7559.208	R-PTC	1K 2% 0W1	TSP 102 G	1	TEXAS			L
1S 1	0902-0114.003	RASTRAD VORM			1				A
1S 2	0001-0069.442	S-SCHIEBE	2 AU 2-POL 16X 7X11	EKMF-2U AU DICHTFOLIE	1	013/04/02			L
1T 1	0001-0016.550	TRANS SI PNP	BCY 78 X (D) A TO 18		1	TFK			L
1T 2	0001-0016.518	TRANS SI NPN	BCY 59 X (D) A TO 18		1	TFK			L
1T 5	0001-0016.550	TRANS SI PNP	BCY 78 X (D) A TO 18		1	TFK			L
1T 6	0001-0016.550	TRANS SI PNP	BCY 78 X (D) A TO 18		1	TFK			L
1T 7	0001-0016.550	TRANS SI PNP	BCY 78 X (D) A TO 18		1	TFK			L
1T 8	0001-0016.518	TRANS SI NPN	BCY 59 X (D) A TO 18		1	TFK			L
1T 9	0001-0016.518	TRANS SI NPN	BCY 59 X (D) A TO 18		1	TFK			L
1T 10	0001-0016.518	TRANS SI NPN	BCY 59 X (D) A TO 18		1	TFK			L
1T 11	0001-0016.518	TRANS SI NPN	BCY 59 X (D) A TO 18		1	TFK			L
1T 12	0904-9301.004	MPS 311 GEALTERT			1				A
2BU 1	0820-0000.064	STECKERBUCHSE	1 M E		3				L
2C 1	0001-0040.775	FLKO-TA SINT FEST	3U3 20% 16V	ETR-1 56	1	110/05/61			L
2C 2	0001-0004.818	C-KERAMIK EDPT	10N 20/100 40V	R10000 2 56	1	110/02/10			L
2C 3	0000-7578.399	C-KERAMIK EDPU 5	470P 10% 500V	R 2000 2 21	1	VALVO			L
2C 5	0001-0004.795	C-KERAMIK EDPT	4N7 10% 63V	R 2000 2 56	1	110/02/10		B-..	L
2C 11	0000-7513.189	C-KF MKU	4U7 10% 63V	B32110 56	1	SIEMENS			L
2C 12	0001-0010.417	C-KF MKT	220N 20% 100V	MKT1822 56	1	110/03/07			L
2C 13	0001-0040.704	FLKO-TA SINT FEST	1U 20% 35V	ETR-1 56	1	110/05/61			L
2C 14	0001-0004.818	C-KERAMIK EDPT	10N 20/100 40V	R10000 2 56	1	110/02/10			L
2C 15	0000-7604.001	C-KERAMIK EDPU 5	1N 10% 500V	R 2000 2 21	1	VALVO		E-..	L
2GL 5	0001-0018.493	DIODE SI	1 N 4448 00 35		1	ITT			L

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TEILE-NR PART NO	SACH-NR ITEM NO	BENENNUNG DESIGNATION	BEZEICHNUNG 1 MARKING 1	BEZEICHNUNG 2 MARKING 2	MG QU	WERKNORM REF.DESIG	BEMERKUNG NOTE	SERIE AF VERSION	C
2GL 6	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
2GL 7	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
2GL 8	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
2GL 9	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
2GL 10	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
2GL 11	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
2GL 12	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
2IC 1	0001-0067.554	IC-CMOS	MC 14066 BCP DIP 14	MOS	1	MOTOROLA			L
2IC 2	0001-0070.677	IC-CMOS	MC 14067 BCB DIP 24	MOS	1	MOTOROLA			L
2IC 3	0000-7579.097	IC-OP.-VERST. FET	TL 066 CP DIP 8		1	TEXAS			L
2IC 4	0001-0067.554	IC-CMOS	MC 14066 BCP DIP 14	MOS	1	MOTOROLA			L
2IC 5	0001-0070.648	IC-CMOS	MC 14051 BCP DIP 16	MOS	1	MOTOROLA			L
2IC 10	0000-7592.715	IC-DUAL OPVERST. FET	LF 442 CH TO 99		1	NSC		D-..	L
2L 1	0001-0042.773	L-FUNKENTSTOER	BR B82114-R-D3	60 1A	1	117/01/01			L
2L 2	0001-0042.773	L-FUNKENTSTOER	BR B82114-R-D3	60 1A	1	117/01/01			L
2P 1	0001-0007.530	R-TRIM DRAHT SPINDEL	2K 10% 0W7 20	TK 100	1	017/04/04			L
2P 6	0001-0008.539	R-TRIM CERMET STEH	1M 20% 0W5 1	TK 100 (ALT 17/02/08)	1	017/02/15			L
2R 1	0001-0062.287	R-METALL	118K 1% 0207	TK 50 56	1	DRALORIC			L
2R 2	0000-7518.896	R-METALL	237K 1% 0207	TK 50 56	2	DRALORIC			L
2R 3	0001-0018.613	R-METALL	487K 1% 0207	TK 50 56	1	DRALORIC			L
2R 4	0000-7519.028	R-METALL	931K 1% 0207	TK 50 56	1	DRALORIC			L
2R 9	0000-7608.324	R-METALL	3K2 0%1 0207	TK 15 56	1	018/04/01		G-..	L
2R 10	0000-7521.126	R-METALL	2K84 0%1 0207	TK 15 56	1	018/04/01		G-..	L
2R 11	0000-7600.526	R-METALL	2K52 0%1 0207	TK 15 56	1	018/04/01		G-..	L
2R 12	0000-7555.053	R-METALL	2K26 0%1 0207	TK 15 56	1	018/04/01		G-..	L
2R 13	0000-7519.620	R-METALL	2K 0%1 0207	TK 15 56	1	018/04/01		G-..	L
2R 14	0000-7549.166	R-METALL	1K8 0%1 0207	TK 15 56	1	018/04/01		G-..	L
2R 15	0000-7608.379	R-METALL	1K6 0%1 0207	TK 15 56	1	018/04/01		G-..	L
2R 16	0000-7546.596	R-METALL	1K42 0%1 0207	TK 15 56	1	018/04/01		G-..	L
2R 17	0000-7608.405	R-METALL	1K27 0%1 0207	TK 15 56	1	018/04/01		G-..	L
2R 18	0000-7579.301	R-METALL	10K4 0%1 0207	TK 15 56	1	018/04/01			L
2R 19	0001-0007.035	R-KOHLE	10K 5% 0207	56	1	DRALORIC			L
2R 20	0001-0007.284	R-KOHLE	1M 5% 0207	56	1	DRALORIC			L
2R 22	0000-7590.393	R-METALL	12K1 0%1 0207	TK 15 56	1	018/04/01		G-..	L
2R 23	0000-7579.314	R-METALL	11K5 0%1 0207	TK 15 56	1	018/04/01			L
2R 24	0001-0001.701	R-METALL	3K65 1% 0207	TK 50 56	1	DRALORIC			L
2R 25	0000-7579.291	R-METALL	3K7 0%1 0207	TK 15 56	1	018/04/01			L
2R 26	0000-7579.194	R-METALL	1K17 0%1 0207	TK 15 56	1	018/04/01			L
2R 27	0000-7579.181	R-METALL	370R 0%1 0207	TK 15 56	1	018/04/01			L
2R 28	0000-7517.677	R-METALL	117R 0%1 0207	TK 15 56	1	018/04/01			L
2R 29	0000-7579.152	R-METALL	120R 0%1 0207	TK 15 56	1	018/04/01			L
2R 30	0000-7579.165	R-METALL	137R 0%1 0207	TK 15 56	1	018/04/01			L
2R 31	0000-7511.657	R-METALL	240R 0%1 0207	TK 15 56	1	018/04/01			L
2R 32	0000-7520.185	R-METALL	111R 0%1 0207	TK 15 56	1	018/04/01			L
2R 33	0001-0007.132	R-KOHLE	68K 5% 0207	56	1	018/03/01			L
2R 34	0001-0007.213	R-KOHLE	330K 5% 0207	56	1	018/03/01			L
2R 35	0001-0007.213	R-KOHLE	330K 5% 0207	56	1	018/03/01			L

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TEILE-NR PART NO	SACH-NR ITEM NO	BENENNUNG DESIGNATION	BEZEICHNUNG 1 MARKING 1	BEZEICHNUNG 2 MARKING 2	MG QU	WERKNORM REF.DESIG	BEMERKUNG NOTE	SERIE AF VERSION	C
2R 36	0001-0007.132	R-KOHLE	68K 5% 0207	56	1	018/03/01			L
2R 38	0001-0063.325	R-METALL	232K 1% 0207	TK 50 56	1	DRALORIC		B-..	L
2R 40	0000-7580.662	R-MODUL	9X 1M 10% 0W13	TK200 EXB-R89-105K	1	MATSUSHITA			L
2R 41	0000-7580.662	R-MODUL	9X 1M 10% 0W13	TK200 EXB-R89-105K	1	MATSUSHITA			L
2R 57	0001-0001.086	R-METALL	681R 1% 0207	TK 50 56	1	DRALORIC			L
2R 58	0001-0002.409	R-METALL	20K 1% 0207	TK 50 56	1	DRALORIC			L
2R 59	0001-0002.409	R-METALL	20K 1% 0207	TK 50 56	1	DRALORIC			L
2R 60	0001-0003.217	R-METALL	221K 1% 0207	TK 50 56	1	DRALORIC			L
2R 61	0001-0006.793	R-KOHLE	100R 5% 0207	56	1	DRALORIC			L
2R 62	0001-0006.793	R-KOHLE	100R 5% 0207	56	1	DRALORIC			L
2R 63	0001-0006.777	R-KOHLE	82R 5% 0207	56	1	DRALORIC			L
2R 64	0001-0006.777	R-KOHLE	82R 5% 0207	56	1	DRALORIC			L
2R 65	0000-7579.178	R-METALL	298R 0%5 0411S	TK 50 56	1	018/04/01			L
2R 66	0000-7519.772	R-METALL	301R 0%5 0411	TK 50 56	1	018/04/01			L
2R 67	0001-0007.336	R-KOHLE	3M3 5% 0207	56	1	DRALORIC			L
2R 68	0001-0027.507	R-METALL	1M 1% 0207	TK 50 56	1	DRALORIC			L
2R 69	0001-0006.722	R-KOHLE	47R 5% 0207	56	1	DRALORIC			L
2R 70	0001-0007.307	R-KOHLE	1M5 5% 0207	56	1	DRALORIC			L
2R 71	0001-0027.507	R-METALL	1M 1% 0207	TK 50 56	1	DRALORIC			L
2R 72	0001-0006.751	R-KOHLE	68R 5% 0207	56	1	DRALORIC			L
2S 1	0904-0120.006	SCHALTER KPL			1				A
2S 3	0001-0069.442	S-SCHIEBE	2 AU 2-POL 16X 7X11	EKMF-2U AU DICHTFOLIE	1	013/04/02			L
2T 1	0001-0016.550	TRANS SI PNP	BCY 78 X (D) A TO 18		1	TFK			L
2T 8	0000-7513.231	TRANS SI NPN DARLING	MPS-A 13 B TO 92		1	MOTOROLA			L
2T 9	0000-7513.231	TRANS SI NPN DARLING	MPS-A 13 B TO 92		1	MOTOROLA			L
2T 10	0001-0017.287	TRANS SI PNP	2 N 2905 A TO 39		1	MOTOROLA			L
3BA 1	0001-0068.553	PRIMAERZELLE	9V	MN 1604	1	MALLORY			L
3BA 2	0001-0068.553	PRIMAERZELLE	9V	MN 1604	1	MALLORY			L
3C 1	0001-0040.704	ELKO-TA SINT FEST	1U 20% 35V	ETR-1 56	1	110/05/61			L
3C 2	0000-7579.356	C-KF MKT	33N 5% 400V	MKT1822 56	1	ROEDERST.		--- L	L
3C 3	0001-0040.704	ELKO-TA SINT FEST	1U 20% 35V	ETR-1 56	1	110/05/61			L
3C 10	0001-0041.114	ELKO-TA SINT FEST	68U 20% 16V	ETR-4 56	1	110/05/61			L
3C 11	0001-0004.795	C-KERAMIK EDPT	4N7 10% 63V	R 2000 2 56	1	110/02/10			L
3C 12	0001-0041.114	ELKO-TA SINT FEST	68U 20% 16V	ETR-4 56	1	110/05/61			L
3C 13	0001-0004.818	C-KERAMIK EDPT	10N 20/100 40V	R10000 2 56	1	110/02/10			L
3C 14	0001-0004.818	C-KERAMIK EDPT	10N 20/100 40V	R10000 2 56	1	110/02/10			L
3C 20	0001-0041.114	ELKO-TA SINT FEST	68U 20% 16V	ETR-4 56	1	110/05/61			L
3C 21	0001-0040.704	ELKO-TA SINT FEST	1U 20% 35V	ETR-1 56	1	110/05/61			L
3GL 1	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
3GL 2	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
3GL 3	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
3GL 6	0000-7574.115	IC-SPGS.-REFERENZ	AD 589 KH TO 52	(MP5010KT) HZ 1851LM	1	ANAL. DEV.			L
3GL 7	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
3GL 9	0001-0018.493	DIODE SI	1 N 4448 DO 35		1	ITT			L
3GL 10	0000-7579.369	LED ROT 5MM	LS 5180-H PD 28	FRUEHER: COX 23 V	1	SIEMENS			L

Bei Bestellung Sach-Nr. angeben!
When ordering, quote Item No.

SERIE L 0904-8401.002 PS 10 904/01 AUSF: 01

TEILE-NR PART NO	SACH-NR ITEM NO	BENENNUNG DESIGNATION	BEZEICHNUNG 1 MARKING 1	BEZEICHNUNG 2 MARKING 2	MG QU	WERKNORM REF.DESIG	BEMERKUNG NOTE	SERIE AF VERSION	C
3GL 11	0000-7579.372	LED GRUEN 5MM	LG 5180-H PD 28	FRUEHER: COX 13 IV	1	SIEMENS			L
3GL 20	0001-0068.524	DIODE SI Z-	ZPY 15 DO 41		1	ITT			L
3IC 1	0000-7541.847	IC-CMOS	MC 14060 BCP DIP 16	MOS	1	MOTOROLA			L
3IC 2	0001-0015.991	IC-CMOS	MC 14013 BCP DIP 14	MOS	1	MOTOROLA			L
3IC 4	0000-7574.393	IC-QUAD OP.-VERST.	LM 346 N DIP 16		1	NSC			L
3P 1	0001-0008.445	R-TRIM CERMET STEH	2K2 20% DW5 1	TK 100 (ALT 17/02/08)	1	017/02/15			L
3R 1	0001-0007.048	R-KOHLE	12K 5% 0207	56	1	DRALORIC			L
3R 2	0001-0007.190	R-KOHLE	220K 5% 0207	56	1	018/03/01			L
3R 3	0001-0007.174	R-KOHLE	150K 5% 0207	56	1	018/03/01			L
3R 4	0001-0007.239	R-KOHLE	470K 5% 0207	56	1	018/03/01			L
3R 5	0001-0007.080	R-KOHLE	27K 5% 0207	56	1	018/03/01			L
3R 6	0001-0007.239	R-KOHLE	470K 5% 0207	56	1	018/03/01			L
3R 7	0001-0007.161	R-KOHLE	120K 5% 0207	56	1	018/03/01			L
3R 8	0001-0007.116	R-KOHLE	47K 5% 0207	56	1	018/03/01			L
3R 9	0001-0007.336	R-KOHLE	3M3 5% 0207	56	1	DRALORIC			L
3R 10	0001-0006.492	R-METALL	453K 1% 0207	TK 50 56	1	DRALORIC		--- L	L
3R 11	0001-0007.239	R-KOHLE	470K 5% 0207	56	1	018/03/01			L
3R 20	0001-0003.301	R-METALL	340K 1% 0207	TK 50 56	1	DRALORIC			L
3R 21	0001-0007.145	R-KOHLE	82K 5% 0207	56	1	018/03/01			L
3R 22	0001-0007.145	R-KOHLE	82K 5% 0207	56	1	018/03/01			L
3R 23	0001-0007.336	R-KOHLE	3M3 5% 0207	56	1	DRALORIC			L
3R 24	0001-0002.467	R-METALL	23K7 1% 0207	TK 50 56	1	DRALORIC			L
3R 25	0001-0003.204	R-METALL	215K 1% 0207	TK 50 56	1	DRALORIC			L
3R 26	0001-0003.204	R-METALL	215K 1% 0207	TK 50 56	1	DRALORIC			L
3R 27	0001-0003.246	R-METALL	249K 1% 0207	TK 50 56	1	DRALORIC			L
3R 28	0001-0003.288	R-METALL	316K 1% 0207	TK 50 56	1	DRALORIC			L
3R 29	0001-0007.336	R-KOHLE	3M3 5% 0207	56	1	DRALORIC			L
3R 30	0001-0002.755	R-METALL	49K9 1% 0207	TK 50 56	1	DRALORIC			L
3R 31	0001-0003.602	R-METALL	34K 1% 0207	TK 50 56	1	DRALORIC			L
3R 32	0001-0034.260	R-METALL	383K 1% 0207	TK 50 56	1	DRALORIC			L
3R 33	0001-0007.129	R-KOHLE	56K 5% 0207	56	1	018/03/01			L
3R 34	0001-0007.284	R-KOHLE	1M 5% 0207	56	1	DRALORIC			L
3R 40	0001-0003.181	R-METALL	200K 1% 0207	TK 50 56	1	DRALORIC			L
3R 41	0001-0003.181	R-METALL	200K 1% 0207	TK 50 56	1	DRALORIC			L
3R 42	0001-0007.284	R-KOHLE	1M 5% 0207	56	1	DRALORIC			L
3R 43	0001-0007.158	R-KOHLE	100K 5% 0207	56	1	018/03/01			L
3R 44	0001-0006.955	R-KOHLE	2K2 5% 0207	56	1	DRALORIC			L
3R 45	0001-0006.832	R-KOHLE	220R 5% 0207	56	1	DRALORIC			L
3R 46	0001-0006.997	R-KOHLE	4K7 5% 0207	56	1	DRALORIC			L
3R 47	0001-0007.077	R-KOHLE	22K 5% 0207	56	1	DRALORIC			L
3R 48	0000-7558.380	R-METALL	2K7 1% 0207	TK 50 56	1	DRALORIC		F---	L
3S 1	0000-7550.702	S-TASTE	100 AG TAST	MDP	1	ITT			L
3T 1	0001-0016.550	TRANS SI PNP	BCY 78 X (D) A TO 18		1	TFK			L
3T 2	0001-0016.550	TRANS SI PNP	BCY 78 X (D) A TO 18		1	TFK			L
3T 3	0001-0016.518	TRANS SI NPN	BCY 59 X (D) A TO 18		1	TFK			L
3T 5	0001-0016.518	TRANS SI NPN	BCY 59 X (D) A TO 18		1	TFK			L

Bei Bestellung Sach-Nr. angeben!
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SERIE L 0904-8401-002 PS 10 904/01 AUSF: 01

TEILE-NR PART NO	SACH-NR ITEM NO	BENENNUNG DESIGNATION	BEZEICHNUNG 1 MARKING 1	BEZEICHNUNG 2 MARKING 2	MG QU	WERKNORM REF.DESIG	BEMERKUNG NOTE	SERIE AF VERSION	C
3T 6	0001-0016.518	TRANS SI NPN	BCY 59 X (D) A TO 18		1	TFK			L
3T 7	0001-0016.518	TRANS SI NPN	BCY 59 X (D) A TO 18		1	TFK			L

Bei Bestellung Sach-Nr. angeben!
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Teil	Stck.	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
R 1	1	Widerstand	6K8 / 5 % / 0,25 W		
R 2	1	Widerstand	2085 / 1 % / 0,25 W		
R 3	1	Widerstand	2K67 / 1 % / 0,25 W		
R 4	1	Widerstand	8K2 / 5 % / 0,25 W		
R 5	1	Widerstand	1K2 / 5 % / 0,25 W		
R 6	1	Widerstand	47K / 5 % / 0,25 W		
P 1	1	Trimmpott	1 K		
C 1	1	Elko	1000 U / 40 V		
C 2	1	Elko	100 U / 35 V		
C 3	1	Elko	100 U / 35 V		
C 4	1	Ker.Kond.	100 N / 63 V		
C 5	1	Ker.Kond.	100 k / 63 V		
IC 1	1	IC	L 200		SGS
G1 1	1	Si-Diode	1N4002		
G1 2	1	Si-Diode	1N4002		
G1 3	1	Si-Diode	1N4002		
G1 4	1	Si-Diode	1N4002		
G1 5	1	Si-Diode	1N4002		

BN 964/00.02.../00.05

Schaltteilliste
Netz-/Ladegerät
964 - 7611.015/4

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Teil	Stck.	Bezeichnung	Elektrische Werte	Bestellangaben Benennung	Hersteller, Anmerkgn
G1 6	1	Si-Diode	1N4002		
G1 7	1	Z-Diode	ZPD 30		
G1 8	1	Si-Diode	1N4002		
T 1	1	Si-Transistor	BD 647		
T 2	1	Si-Transistor	BCY 59 (andere NPN-Transistoren mit B ≥ 100 gehen auch)		
			Bv. 964-7702.005/4		(964/00.02)
Ü 1	1	Netztrafo	Bv. 964-7703.004/4		(964/00.03)
			Bv. 964-7704.003/4		(964/00.04) (964/00.05)
Si 1	1	Thermosicherung	130° C		

Schaltteilliste
Netz-/Ladegerät
964 - 7611.015/4

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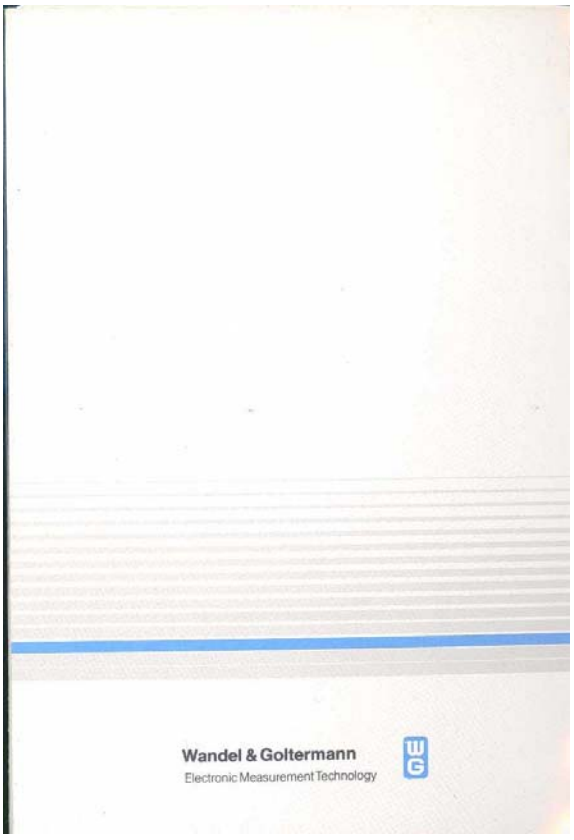

This Digital Edition
of the Description & Operating manual
for the W&G PS-10 Level Generator
was prepared in Australia

by

Gary Edwards

On 18th September, 2006

Note: The Servicing instructions are in a separate manual, however all the schematics are contained within this document.