

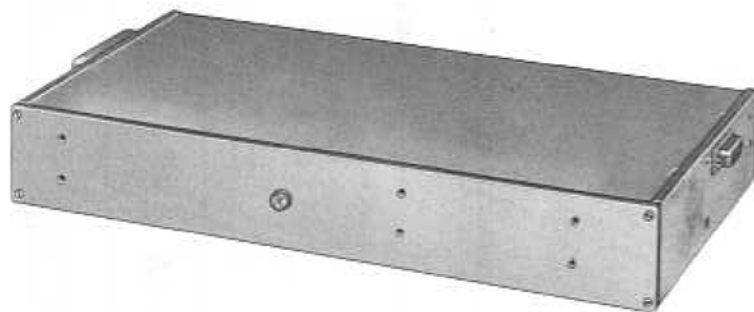
Power supply unit to operate radio link TWTs, such as RW 248, RW 289, RW 290, RW 1127, and RW 2135.

The unit is designed for a rated input voltage range between 24 V and 60 V (without switching), and includes all necessary safety, monitoring, and control functions.

The power supply can be adjusted to the individual tube operating voltages by internal switching.

The heat is dissipated by conduction via the mounting surface. With RWN 320 the grid 2 voltage is adjusted at the mounting side, with RWN 321 at the opposite side.

A plug-in control unit is additionally available, comprising power switch, standby switch, reset button, alarm and prealarm indicators, as well as outputs for remote prealarm, remote reset, cathode and helix current measurement.



Power supply unit RWN 320
Power supply unit RWN 321

Weight
Dimensions of power supply
Dimensions of packing
Low-voltage connector
High-voltage connector (female)
Mounting position

Ordering code Q87-X317
Ordering code Q87-X322

approx. 2.8 kg net, approx. 4.3 kg gross
approx. 340 mm × 50 mm × 190 mm
approx. 550 mm × 160 mm × 310 mm
D subminiature connector, 15 pins
MRAC 66SJ, Litton/Winchester
any

Characteristics, input

Rated voltage range	U_D	24 ... 60	V dc
Operating voltage range	U_B	20 ... 75	V dc
Power consumption	P_B	max 150	W
Internal input protection (pico fuse)		15	A

The input is ungrounded. Plus or minus U_B , and power supply housing have to be grounded.

Warning! Turning on without grounding destroys the device.

Characteristics, outputs

(operating voltages for the tube)

Heater voltage	U_F	6.3 ± 0.2	V
Heater current	I_F	0.5 ... 0.6	A
Grid 2 voltage	U_{G2}	2300 ... 4700	V ¹⁾
Grid 2 current	I_{G2}	-0.2 ... +0.5	mA
Helix voltage	U_H	3600 ... 5100	V ²⁾
Helix current	I_H	max 3	mA
Collector 1 voltage	U_{C1}	1600/1800/2000/2400	V ²⁾
Collector 1 current	I_{C1}	max 30	mA ³⁾
Collector 2 voltage	U_{C2}	270/300/330/400	V ²⁾
Collector 2 current	I_{C2}	max 140	mA ³⁾

A defective tube does not impair the power supply unit.

¹⁾ Continuously adjustable at the front panel (within sub-range steps that can be set according to tube type inside the device).

²⁾ Adjustable in steps inside the device.

³⁾ The sum of collector 1 current and collector 2 current may not exceed 140 mA.

Environmental conditions

Operating temperature at front panel
(see temperature reference point)

Continuous operation	0 ... 70	°C
Temporarily for max. 8 h and for max. 96 h annually	max 75	°C
Turn-on temperature	min -20	°C
Storage temperature	-40 ... +75	°C
Relative humidity (during operation)	max 95	%
Application altitude	(no dew precipitation) max 4500	m

Heat dissipation

The heat is dissipated by conduction via the mounting surface. Thereby, it has to be absolutely observed not to exceed the maximum permissible temperature of 70°C (hot spot) – not even at maximum ambient temperature – at the mounting surface of the power supply.

To obtain a long service life and high reliability it is, however, advisable to keep the power supply temperature as far below its maximum value as possible.

As regards reliability, a thermally conductive connection between tube and power supply has to be avoided.

Response of the protective devices

The power supply unit is automatically cut off upon exceeding the maximum permissible helix load of the tube.

After the protective devices (used against helix overload) have responded, the turn-on procedure for the power supply is repeated 8 times. Only if the overload exists still after that, the final disconnection will be carried out.

A new check cycle is started by pressing the reset button. Every two hours an automatic reset command sets the error counter to zero.

If an automatic disconnection due to excess helix current or line failure lasts 5 seconds or less, the tube will be ready for operation immediately after the automatically repeated turn-on.

Should the failure or disconnection last longer than 5 seconds, a delay of grid 2 voltage becomes effective.

Pins at high-voltage side

	Pin
+Heater/cathode	+F/K 21
-Heater	-F 22
Grid 2	G2 38
Helix/ground	H/⊥ 64/65
Collector 1	C1 51
Collector 2	C2 34
Interlock circuit	54-60
Temperature compensation	61

Pins at low-voltage side

Ground or Com: The grounding pin connection to housing is electrically conductive. It is exclusively intended as reference potential for I_k and I_h measurement, **not** for grounding the unit.

U_B : Voltage supply (ungrounded)

+ pins 7, 14
- pins 6, 13

Stby/Trm: At this input a dc voltage of 6 to 30 V switches the grid 2 voltage to the tube after the preheating period. The input is ungrounded and has an impedance of approx. 3.3 k Ω .

Reset: At this input a dc voltage of 6 to 30 V is shortly applied to set the error counter to zero and to turn on the power supply again after automatic disconnection. The input is ungrounded and has an impedance of 3.3 k Ω .

Aux.: Positive output voltage with respect to $-U_B$, approx. 15 V to 25 V (R_i approx. 47 Ω) to operate functions Stby/Trm, Reset, Indic.

Indic.: An NPN transistor ($U_{CE\ max} 35\ V / I_{C\ max} 100\ mA$) conducts (ungrounded - open collector) if

+ pin 2
- pin 10

- the power supply is automatically checked for the last time,
- the power supply has turned off completely,
- the helix current exceeds $2.5 \pm 0.3\ mA$.

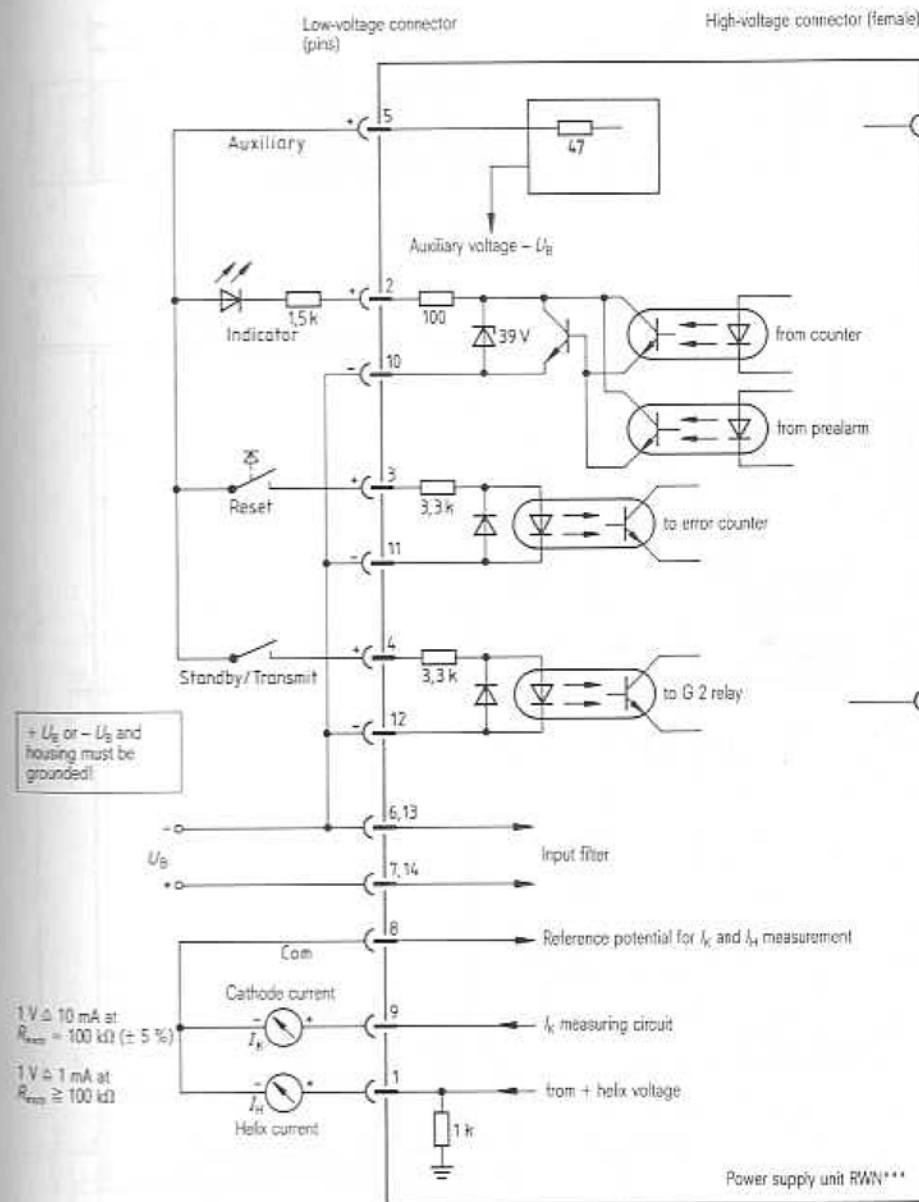
I_k : Pin to measure the cathode current with respect to ground. 1 V measuring voltage corresponds to a 10 mA cathode current with an external load of 100 k Ω (error max. $\pm 3\ mA$ at $I_k = 100\ mA$).

The impedance of the measuring output is approx. 2.2 k Ω . Control unit BT 300 has another calibration of the I_k measuring output. The manufacturer is responsible for adjusting the I_k measuring output in the power supply unit.

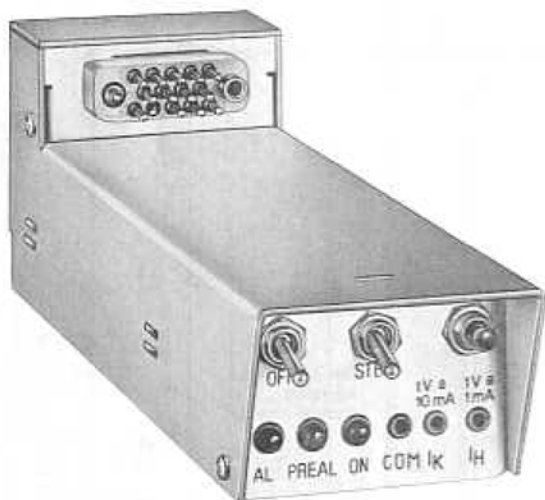
I_h : Pin to measure the helix current with respect to ground. 1 V measuring voltage corresponds to 1 mA helix current with an external load of $\geq 100\ k\Omega$. Due to the temperature compensation the indicated helix current level may be up to 0.3 mA too high.

The impedance of the measuring output is 1 k Ω .

Circuit example for low-voltage connector



Control unit BT 300 is suitable for TWT power supplies of the series RWN 1**, RWN 2** and RWN 3**: it contains all control elements, indicators, measuring and alarm outputs necessary for operating these power supply units. The control unit is plugged in the power supply unit and fixed by two clamps.



Control unit BT 300

Weight
Dimensions of the control unit
Dimensions of packing
Connectors to the
TWT power supply unit

Input connector

Ordering code Q87-X355

approx. 0.2 kg net. approx. 0.35 kg gross
approx. 50 mm × 55 mm × 180 mm
approx. 95 mm × 105 mm × 305 mm
2 D subminiature connectors, 15 pins,
connection optionally to power supply unit
for front or for rear mounting
MRAC 14 PJ, Litton/Winchester

Control elements, LED indicators and measuring outputs on front panel

ON/OFF power switch

Main switch for disconnecting the supply voltage.

TRANS/STBY switch

Switch for changing from standby to RF operation.

RESET button

Button for resetting the error counter in the power supply unit and for renewed turning on after disconnection.

ON indicator

The green LED lights up when a cathode current $\geq 20 \pm 5$ mA flows in the tube.

PREAL indicator

The yellow LED lights up when the helix current reaches the prealarm threshold set in the power supply unit or when the last automatic switch-on cycle is initiated.

AL indicator

The red LED lights up

- a) during the preheating period
- b) during standby operation
- c) when the cathode current falls below 20 ± 5 mA
- d) when the power supply is cut off for helix overload or after 8 short disconnections of the supply voltage within 2 hours (the error counter registers short disconnections of the supply voltage).

In case d) the yellow LED PREAL also lights up.

Test jack for I_k (+)

1 V test voltage corresponds to 10 mA cathode current at an external load resistance of 100 k Ω ($\pm 5\%$). Impedance of the measuring output is approx. 2.2 k Ω .

The control unit BT 300 has another calibration of the I_k measuring output. The manufacturer is responsible for adjusting the I_k output in the power supply unit.

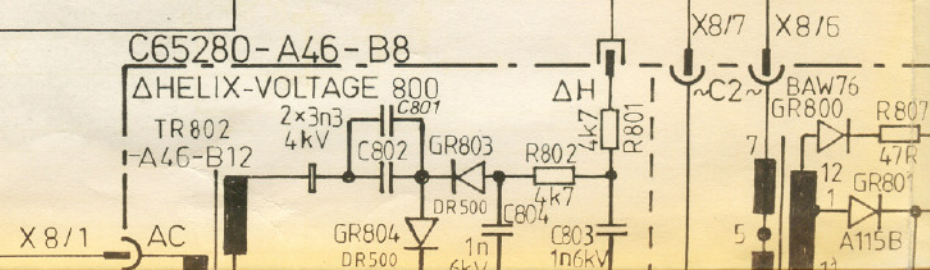
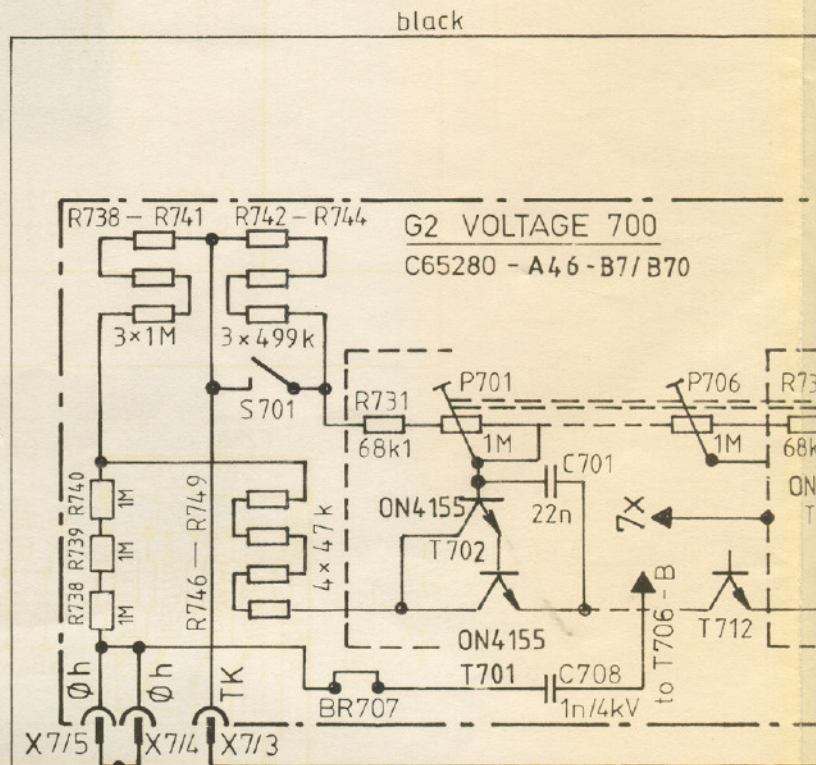
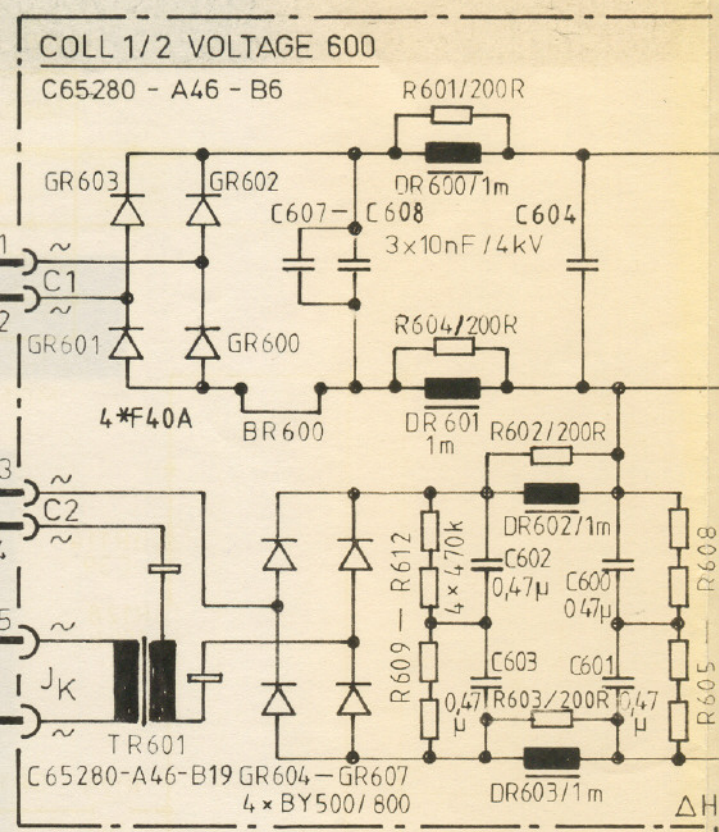
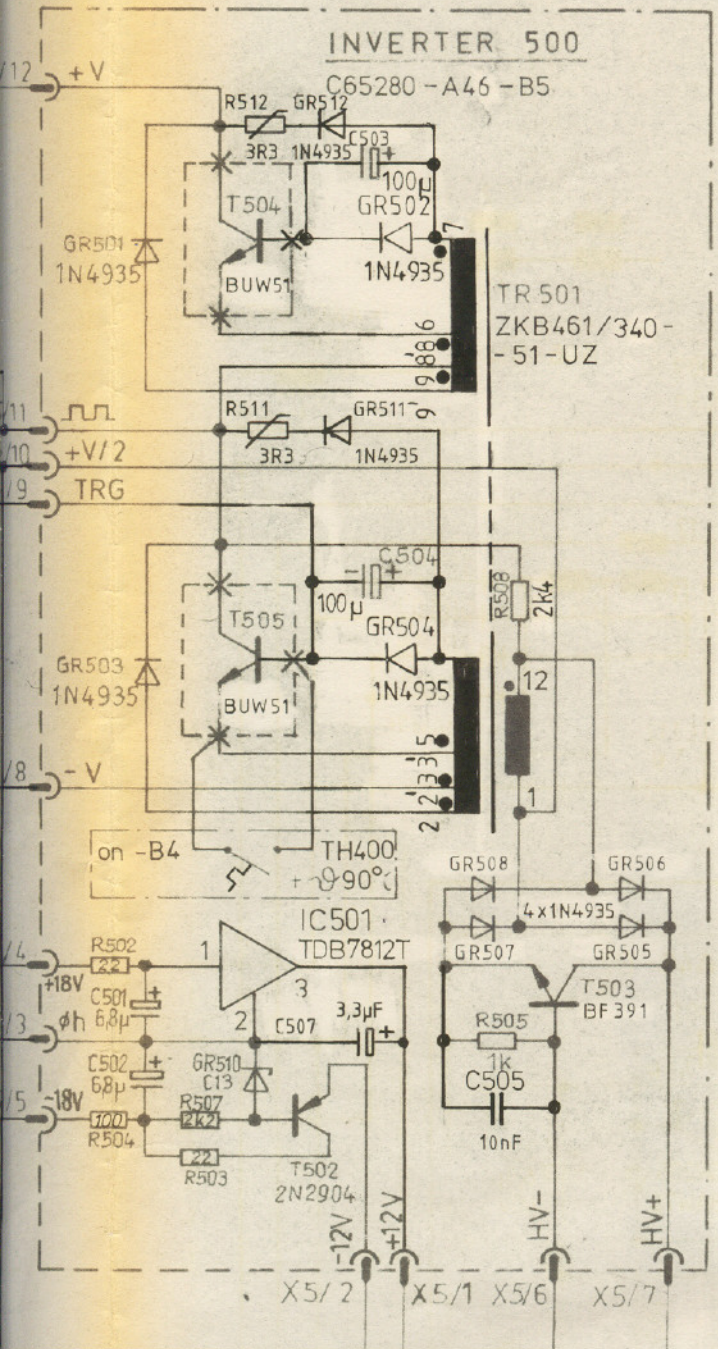
Test jack for I_H (+)

1 V test voltage corresponds to 1 mA helix current at an external load resistance ≥ 100 k Ω . Impedance of the measuring output is 1 k Ω .

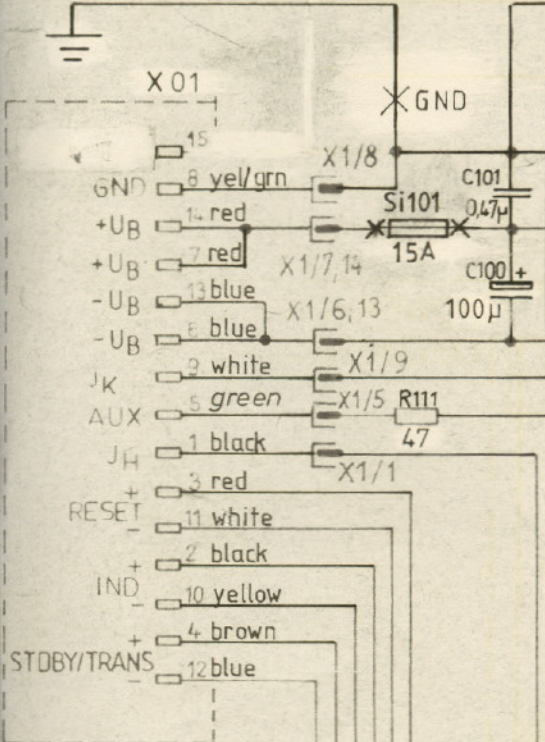
For TWTs with temperature compensation the helix current indicated is up to 0.3 mA higher than the actual value.

Test jack COM and GND

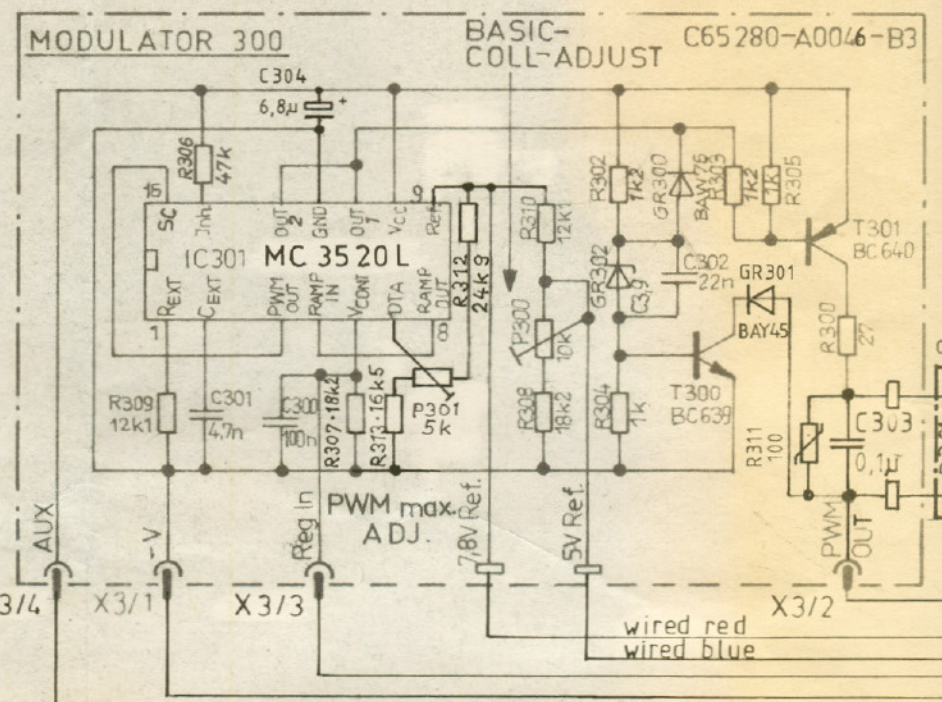
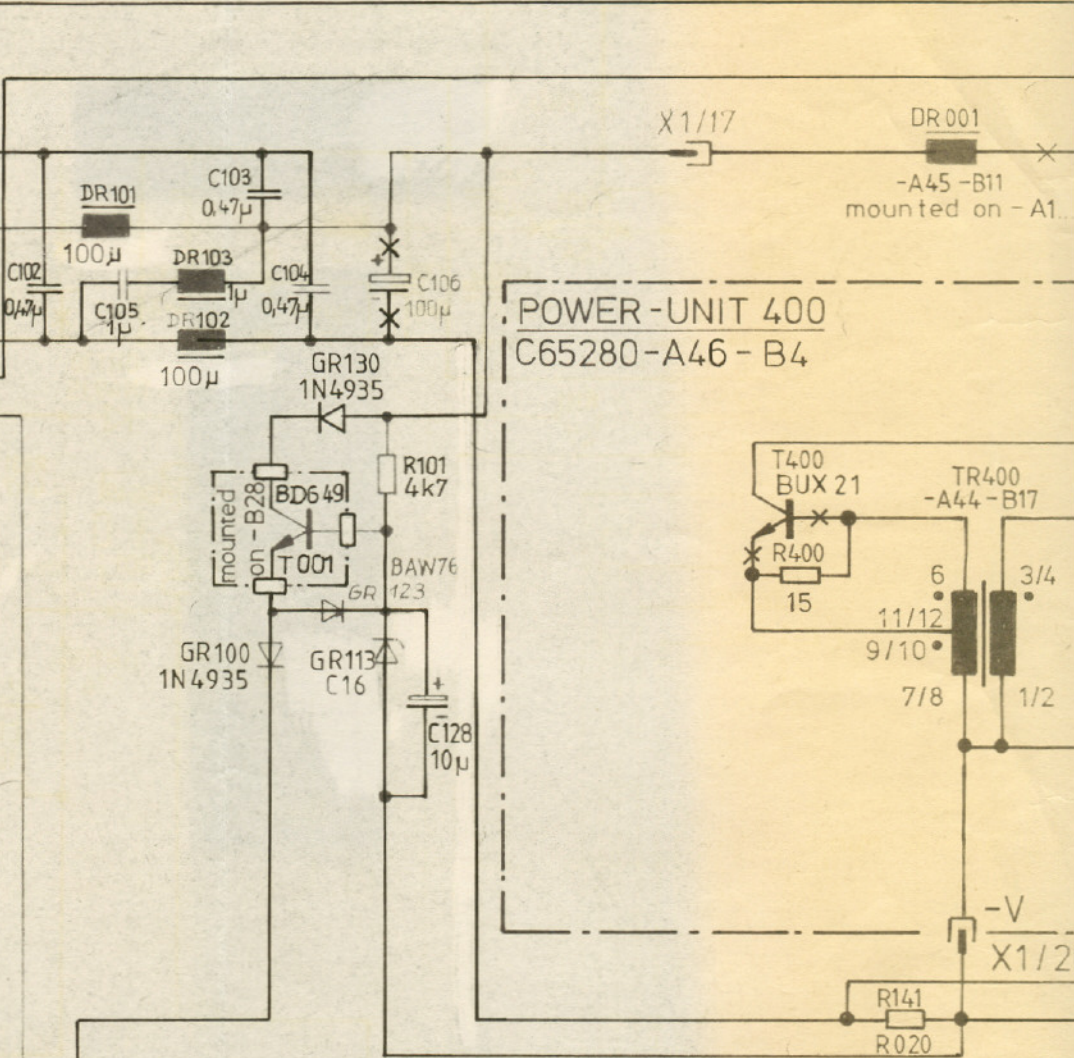
Reference potential for I_k and I_H measurement, must **not** be used for grounding the device.



CHASSIS

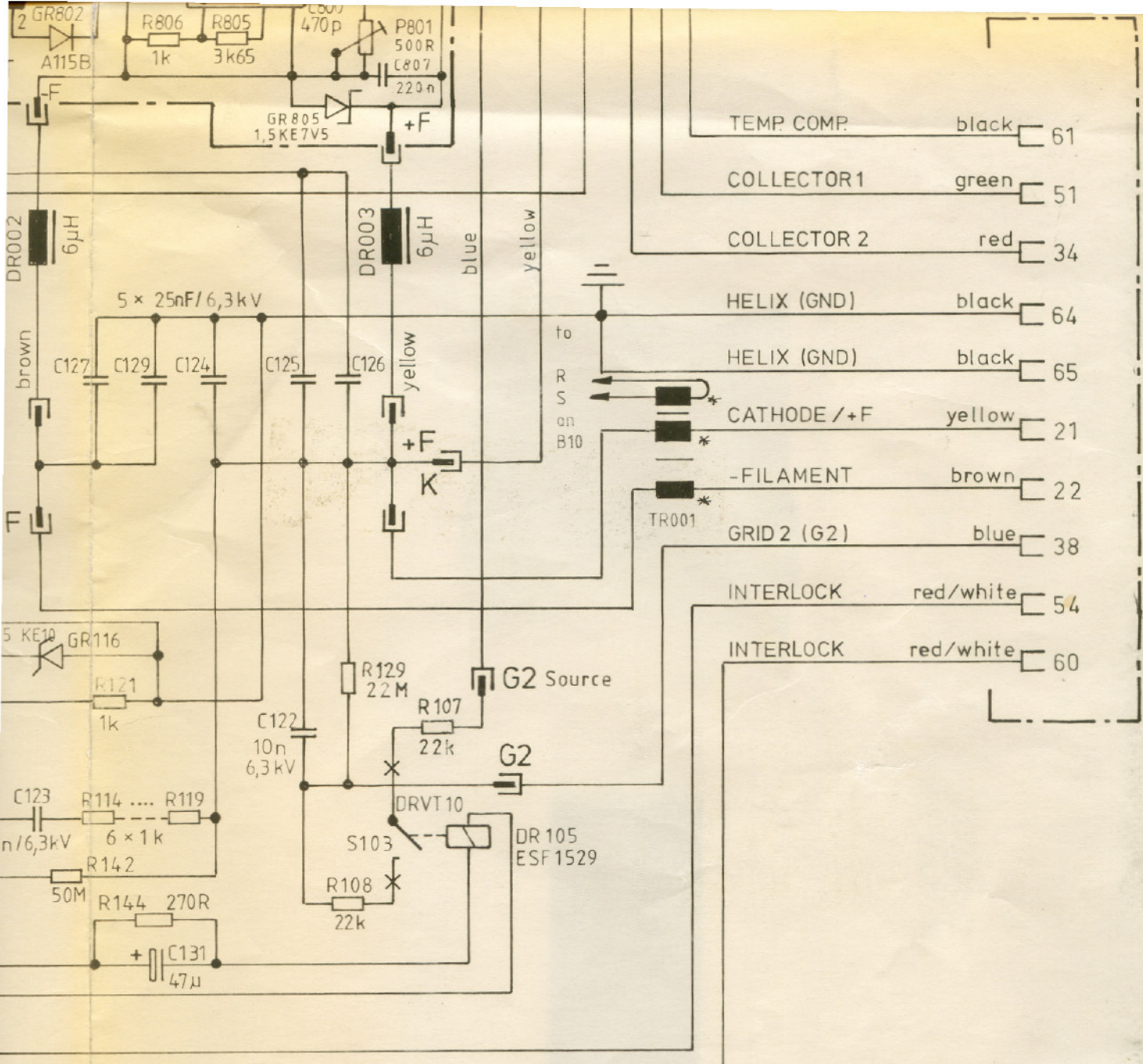


Input Conn.
Q- Sub. min.



wired

wired red
wired blue



- TEMP. COMP. black 61
- COLLECTOR 1 green 51
- COLLECTOR 2 red 34
- HELIX (GND) black 64
- HELIX (GND) black 65
- CATHODE /+F yellow 21
- FILAMENT brown 22
- GRID 2 (G2) blue 38
- INTERLOCK red/white 54
- INTERLOCK red/white 60

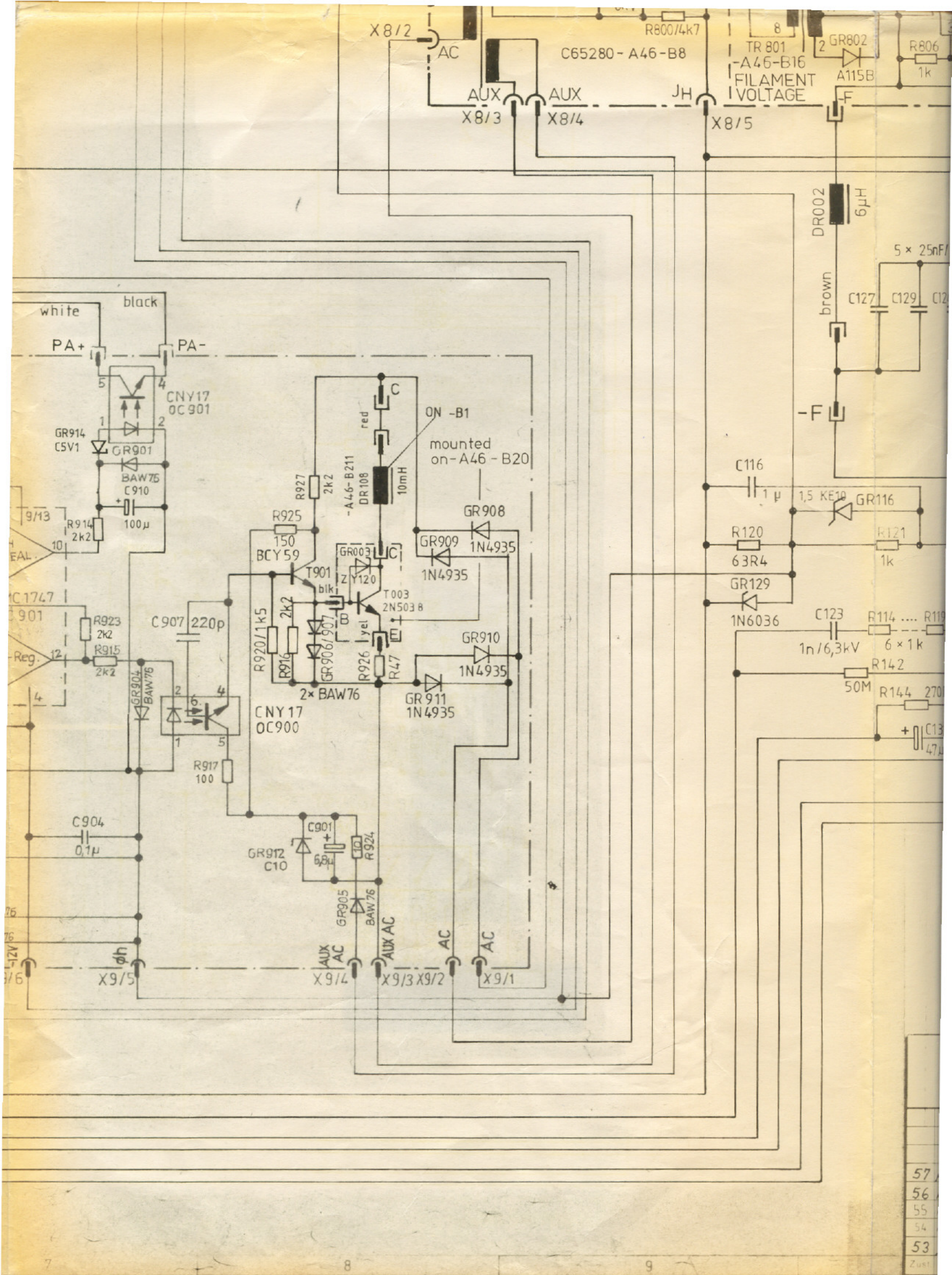
REMARKS:

- plug in PC-board - faston ended wire (colored)
- plug/socket - PCB connection
- solder pin
- wire directly soldered to PC-board

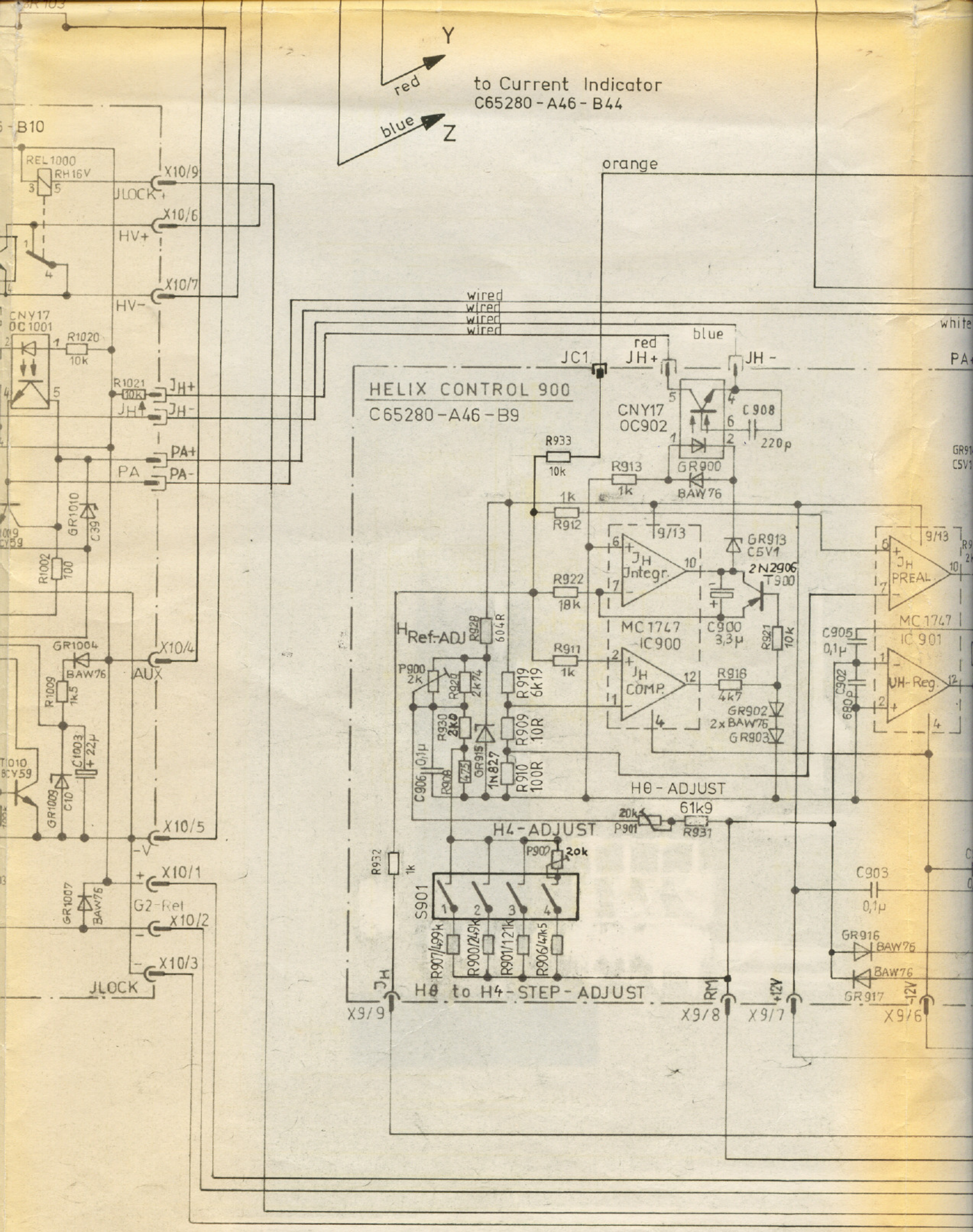
PCB		
Component side		
12	34	56 7

plug/socket number of each PC-board must be counted from the left to the right

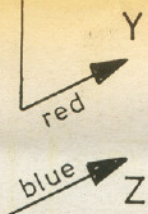
				Maßstab	
				Datum	7. 4. 83
				Bearb.	
				Gepr.	<i>W. B. am</i>
				Norm	
57	A86C65A66	23.10.85	<i>W.B.</i>	Stromlaufplan RWN320,321,323 Circuit diagram RWN320,321,323	
56	A85C65A276	12.8.85	<i>W.B.</i>		
55	A84C65A418	12.9.84	<i>W.B.</i>		
54	A84C65A266	16.3.84	<i>W.B.</i>		
53	geändert	22.9.83	<i>W.B.</i>		
Zust	Mitteilung	Datum	Name	Siemens AG C65280-A46-A1- * -11	



57
56
55
54
53
Zust
S 6260



to Current Indicator
C65280 - A46 - B44

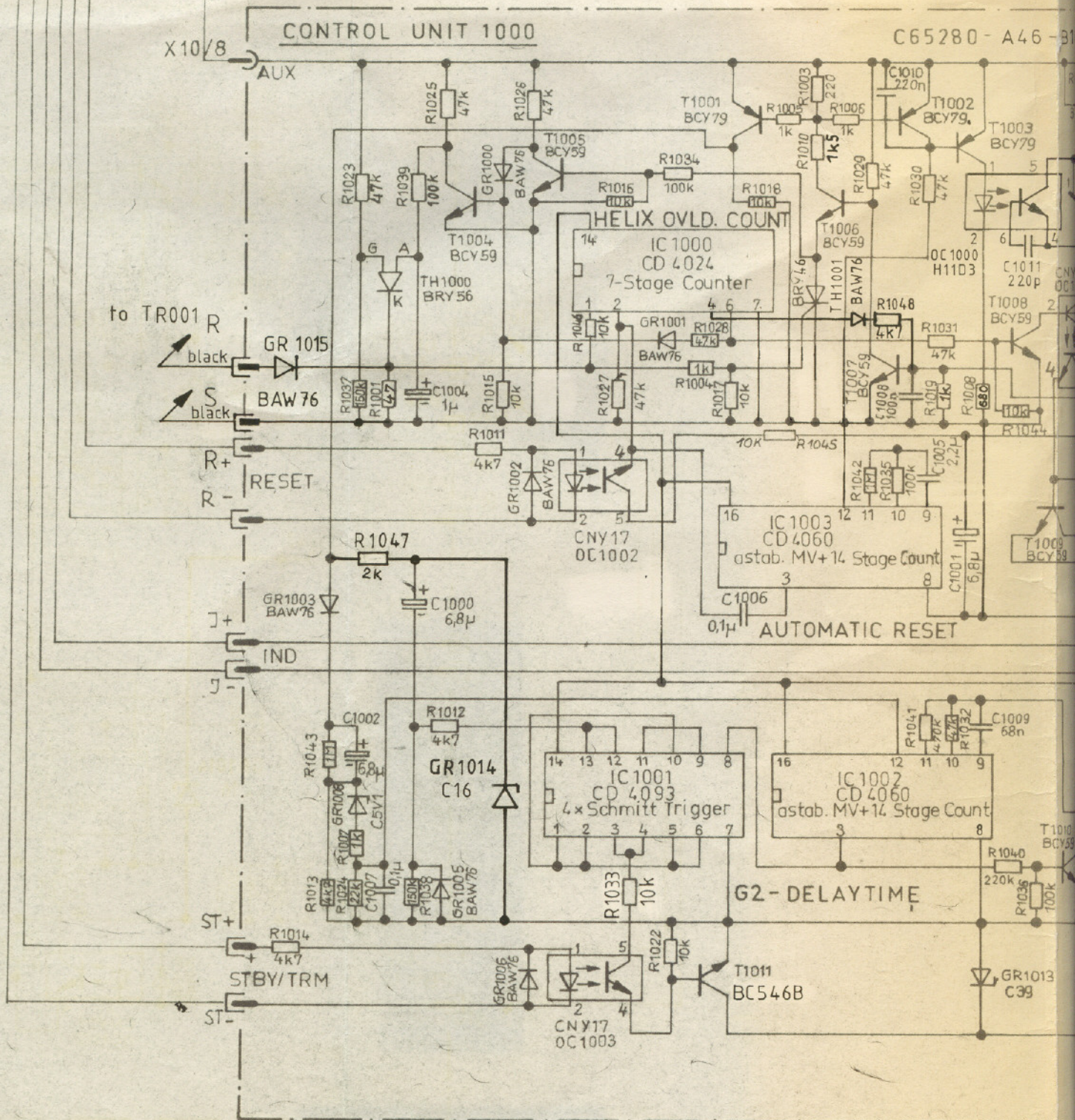


orange

white

PA

GR91
CSV1



expresă autorizație, poate formalmente în pu-
 lication totală a parțial de este document, sau în
 vreun fel de publicitate, comercială sau în alt
 scop, și orice altă reproducere sau distribuție
 de orice fel, în orice formă, în orice limbă,
 și în orice mod, este strict interzisă fără
 autorizație scrisă de către compania de proiectare
 și producție de echipamente de control de Model Industrial

this document and giving it to others and the
 reproduction of the contents thereof, are forbidden
 without the express authority of the design
 authority. Offenders are liable to the law
 of their country. All rights are reserved in the event of the
 patent or the registration of a utility model or design.

sowie Verfertigung dieser Darlegung
 und Mitteilung ihres Inhalts nicht gestattet
 ausdrückliche Zustimmung der Firma
 Schenck & Co. AG. Alle Rechte für den
 Fall der Patentierung oder G.M. Eintragung vorbehalten.

deutsch	englisch
weiß - ws	white - wht
gelb - ge	yellow - yel
braun - br	brown - brn
grau - gr	gray - gra
blau - bl	blue - blu
rot - rt	red - red
violett - vio	violet - vio
grün - gn	green - grn
lila - lila	lila - lil
orange - or	orange - org
rosa - rs	pink - pnk

schwarz - sw black - bik