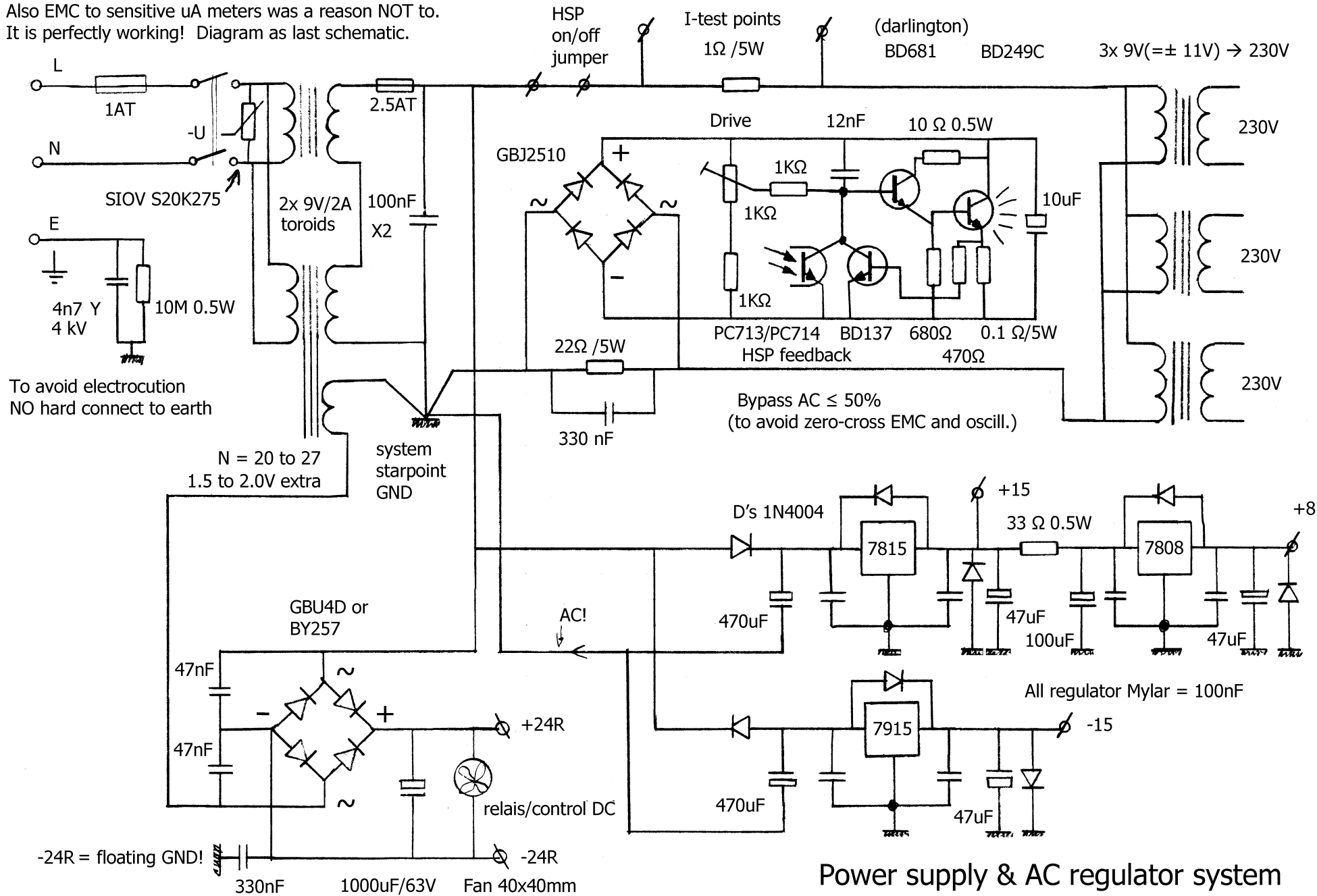


0 - 140 kOhm
Add to 10k internal
(= 10K - 150kΩ)

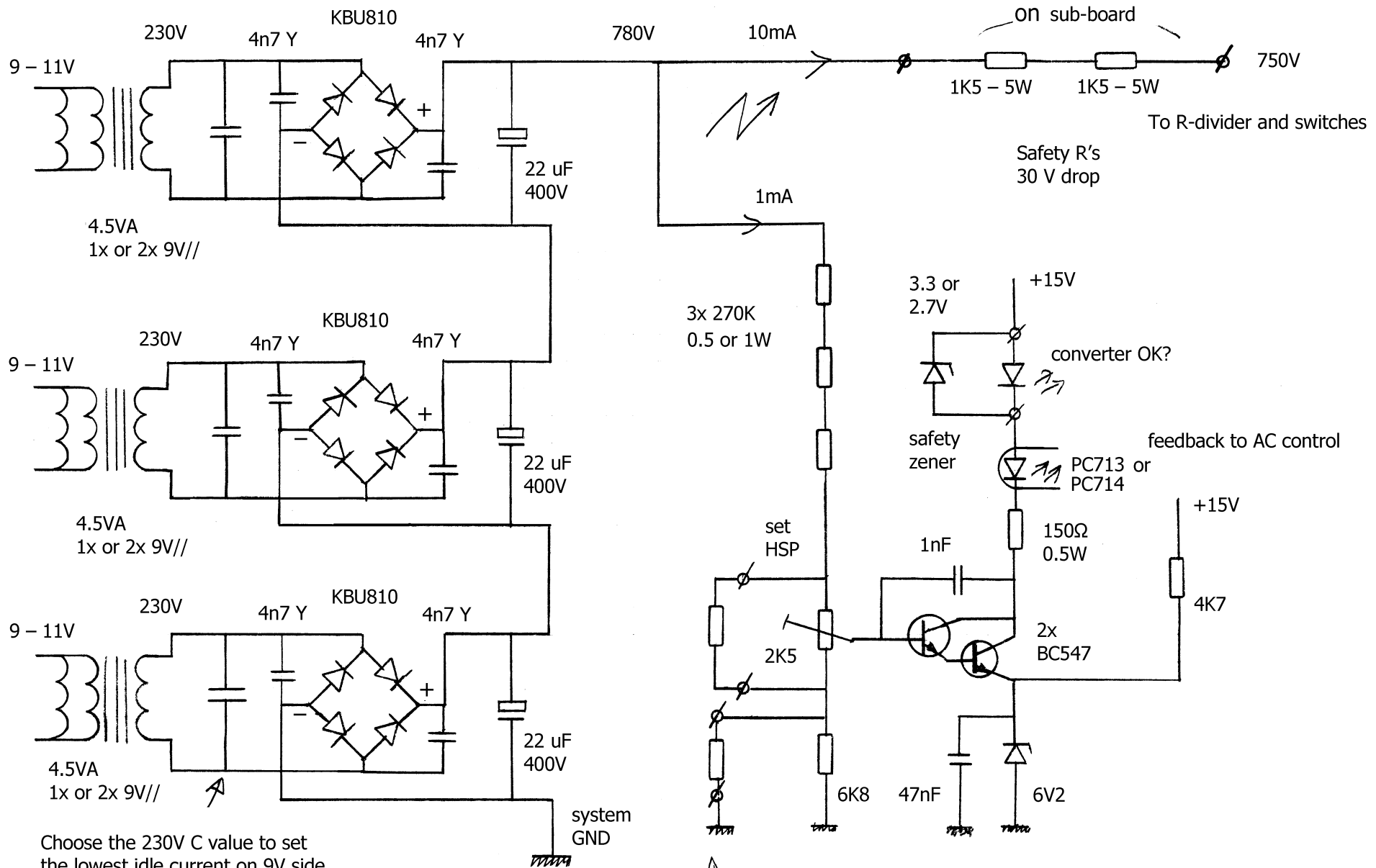
30/300V/3kV

Basic working overview diagram
Capacitor Leakage tester 1

Also a switching dissipation poor TRIAC supply has been designed. This is NOT implemented due to complexity and available space. Also EMC to sensitive uA meters was a reason NOT to. It is perfectly working! Diagram as last schematic.



Power supply & AC regulator system
Capacitor Leakage tester 2



Choose the 230V C value to set the lowest idle current on 9V side
100nF to 470 nF "X2"

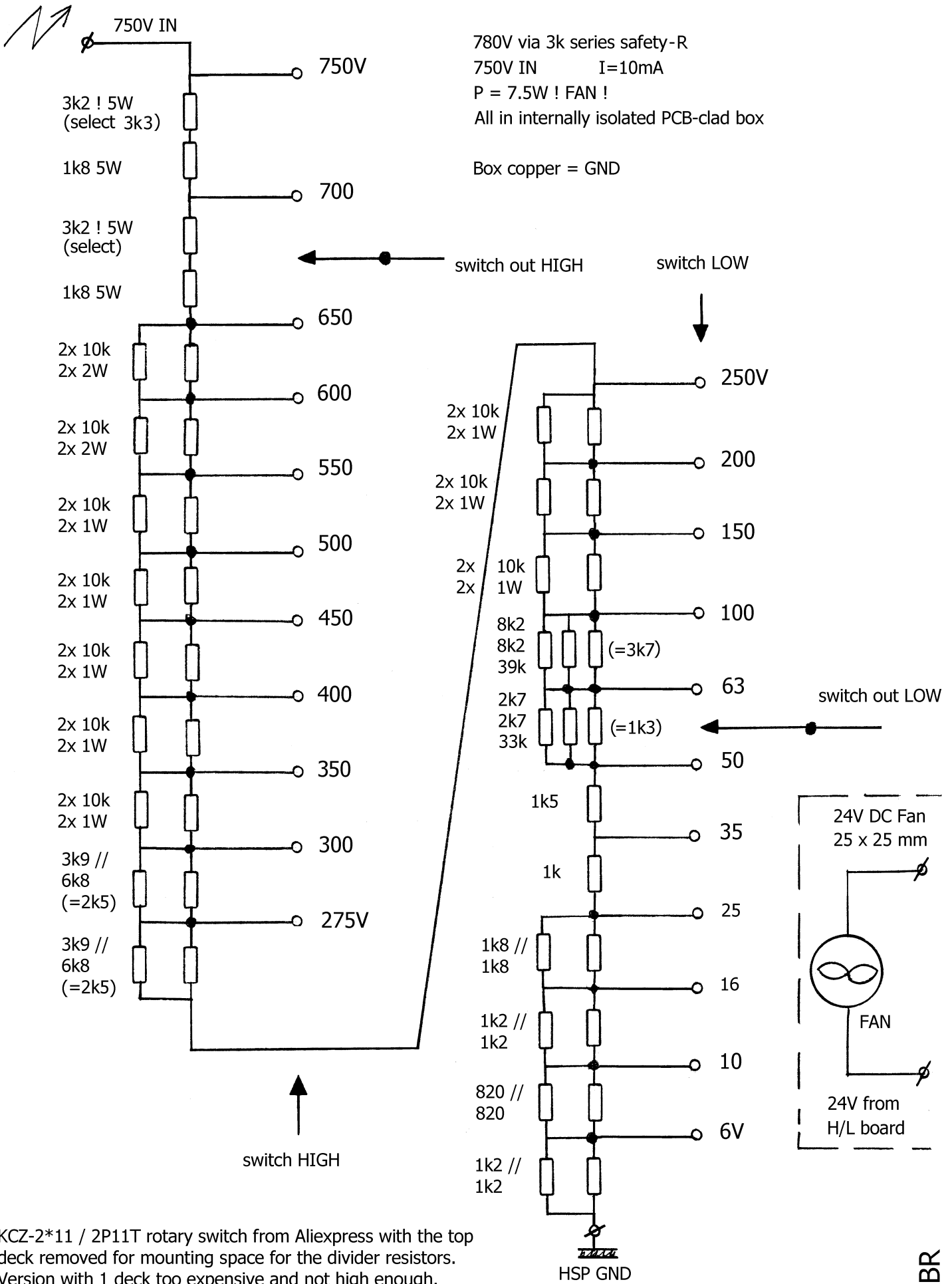
(NO 10 mA load of the 780 V)

Block 5VA transf. ECO 2003-5,0DD9 (used) = 390 nF

Gerth transf. 421.18.2 2x9V 4,8VA (tested) = 100 + 33 nF
(transf. EMK = ± 11.3V)

if needed to set or Limit range

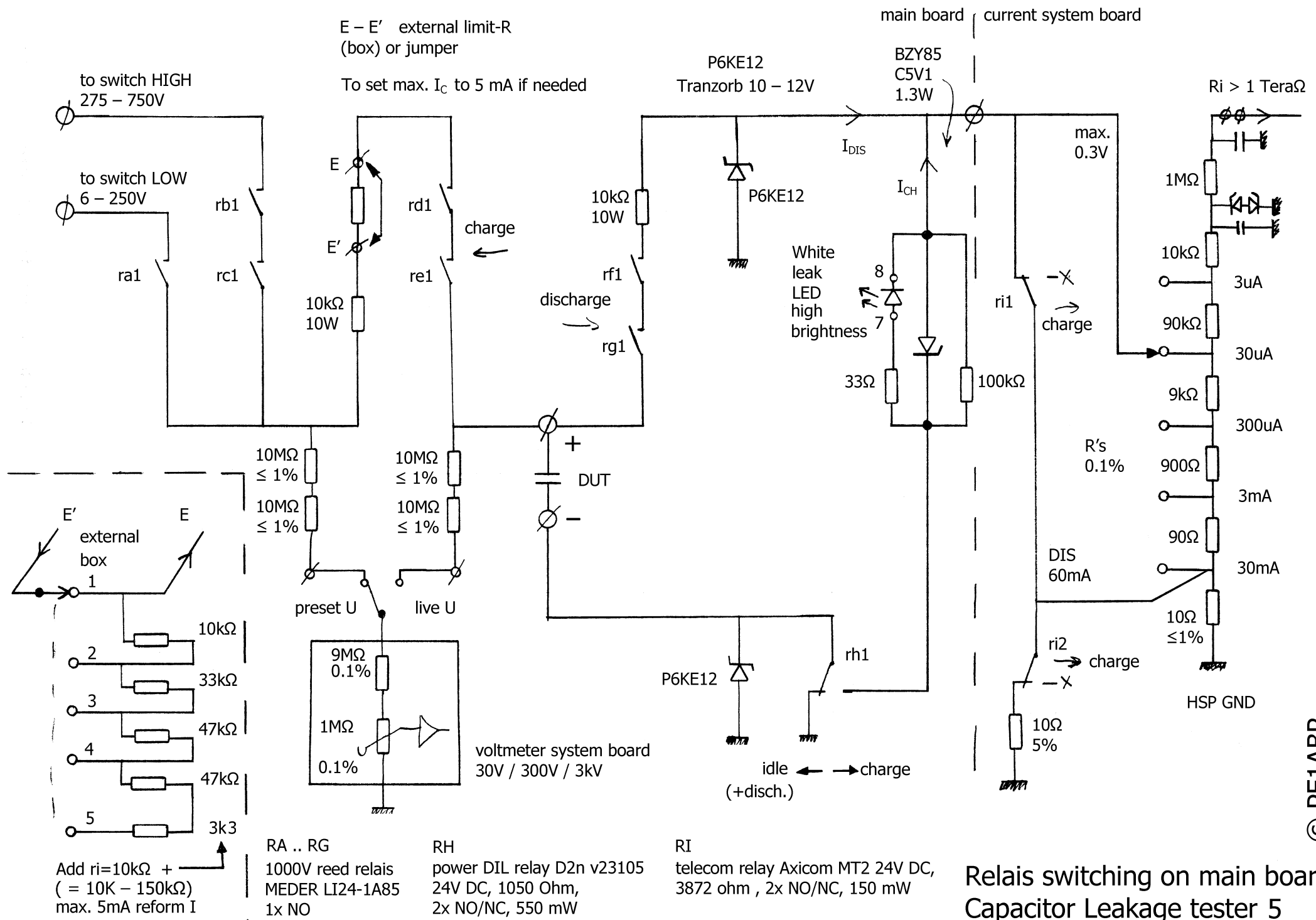
Power supply
High voltage generation and feedback
Capacitor Leakage tester 3

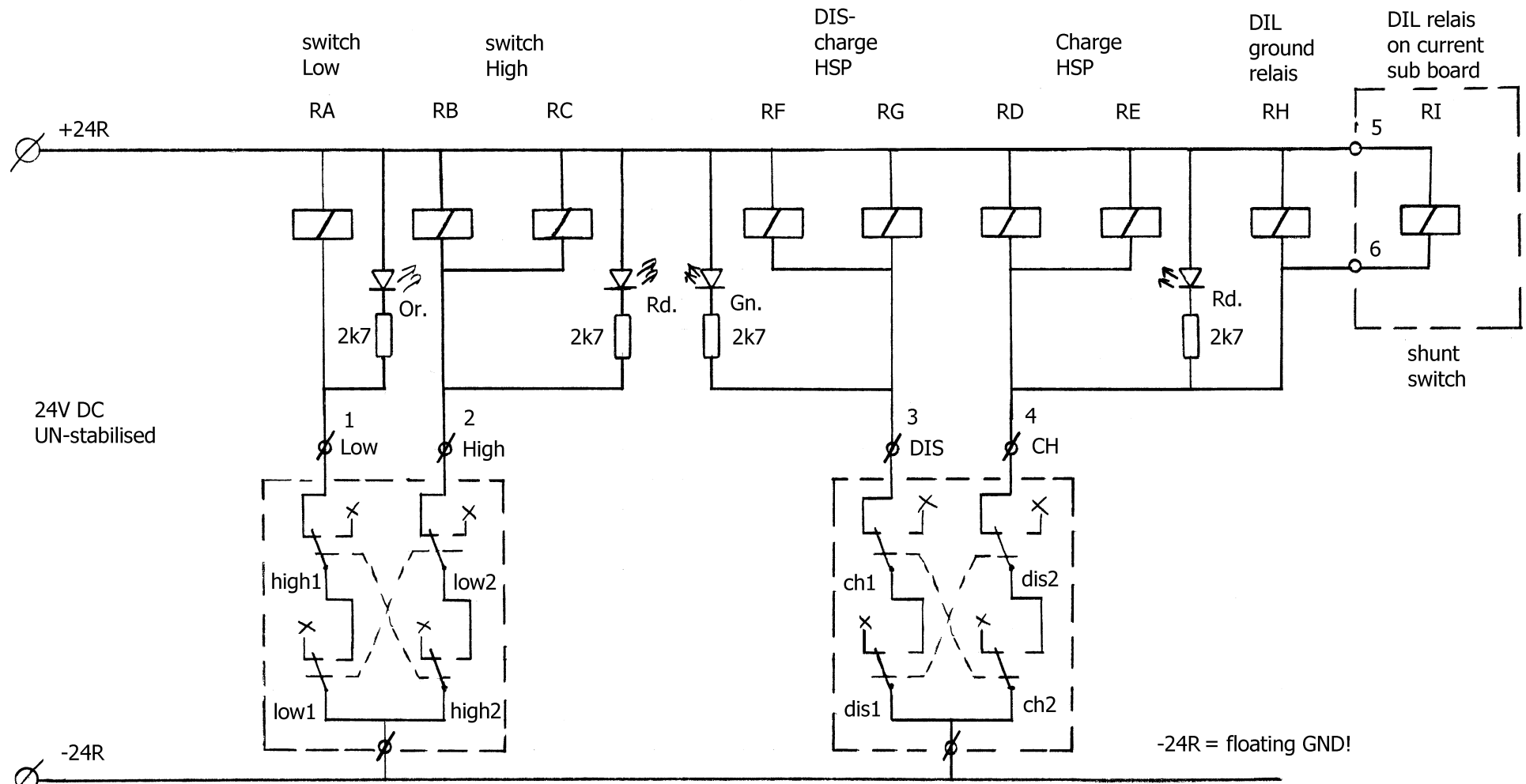


KCZ-2*11 / 2P11T rotary switch from Aliexpress with the top deck removed for mounting space for the divider resistors. Version with 1 deck too expensive and not high enough.

1 and 2 watt power resistors from Reichelt.

R-divider and HSP switches Capacitor Leakage tester 4





High/Low control
sub-board
safety interlock

Charge/DIScharge
sub-board
safety interlock

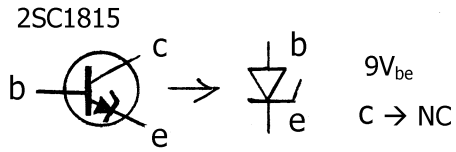
-24R = floating GND!

RA .. RG
1000V reed relays
MEDER LI24-1A85
1x NO

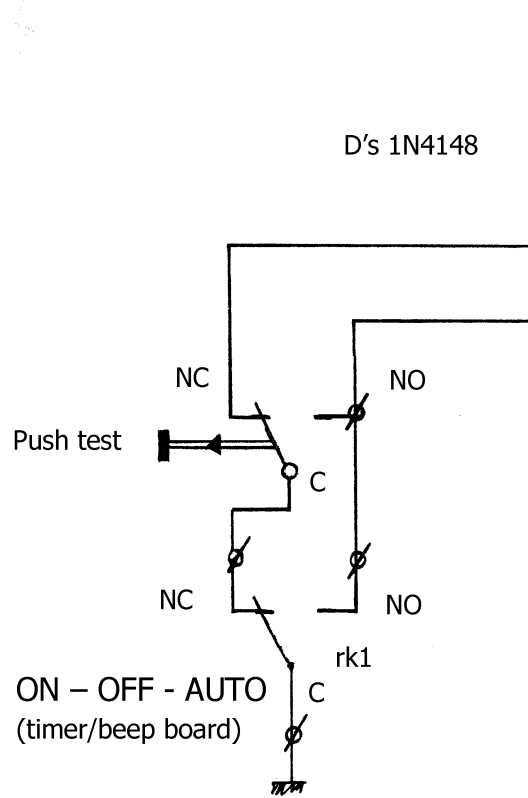
RH
power DIL relay D2n v23105
24V DC, 1050 Ohm,
2x NO/NC, 550 mW

RI
telecom relay Axicom MT2 24V DC,
3872 ohm , 2x NO/NC, 150 mW

HSP Relais on main board
Capacitor Leakage tester 6



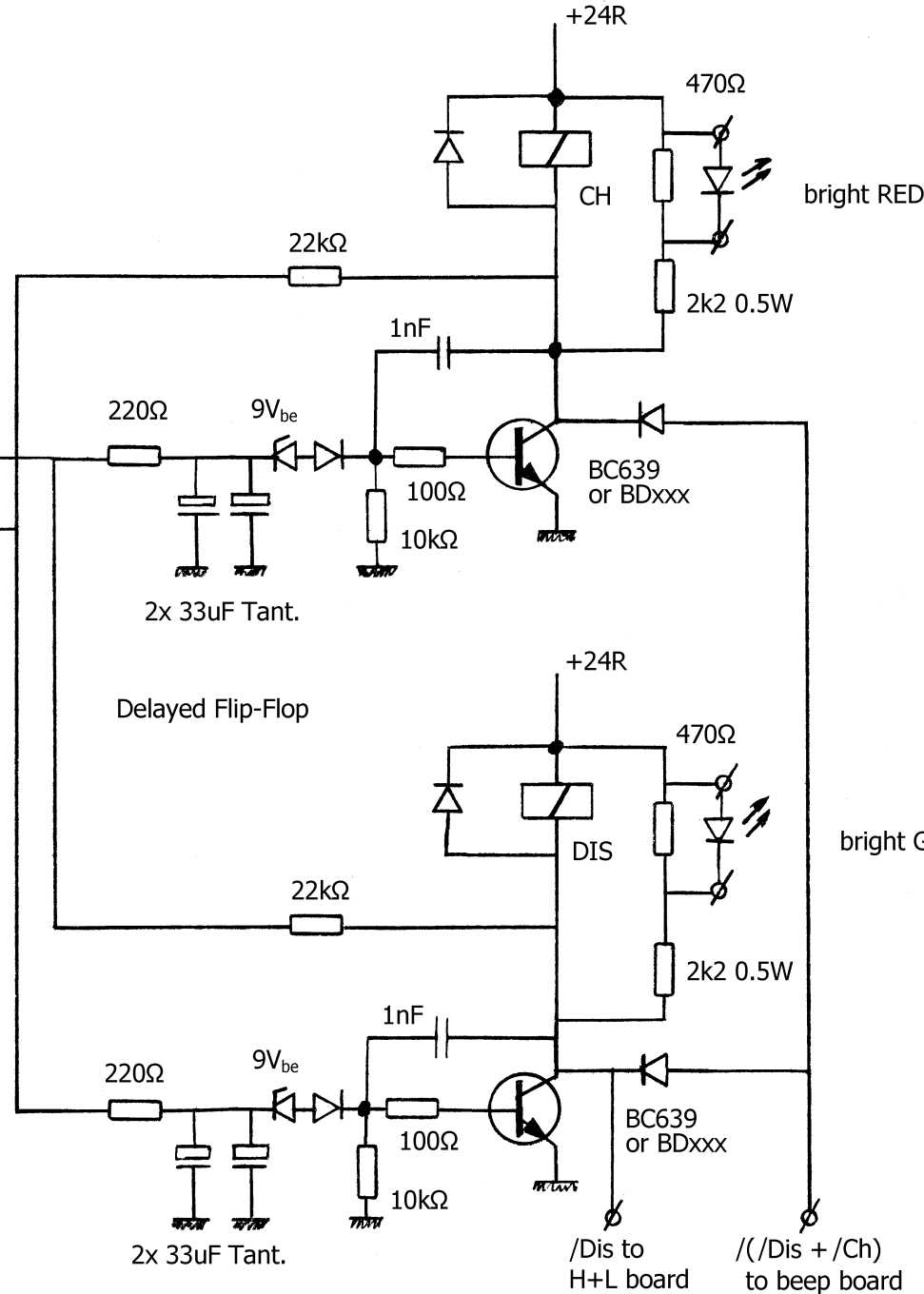
Very low leak, very hard knee



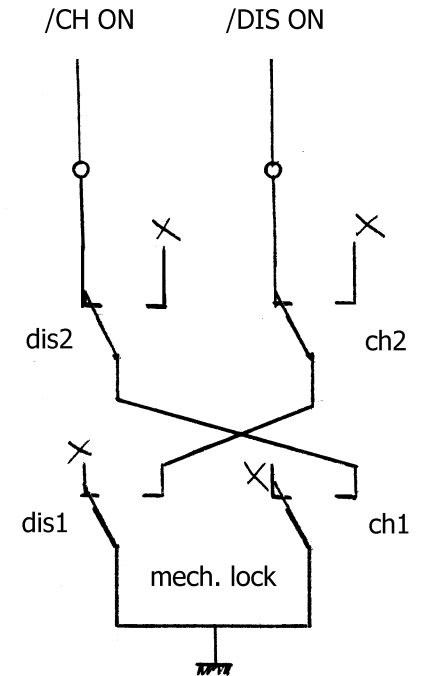
idiot proof switch circuit
Switching 750V ! to Cap
or Cap to GND

GND = -24R local only NOT HSP GND

power DIL relay D2n v23105
24V DC, 1050 Ohm,
2x NO/NC, 550 mW

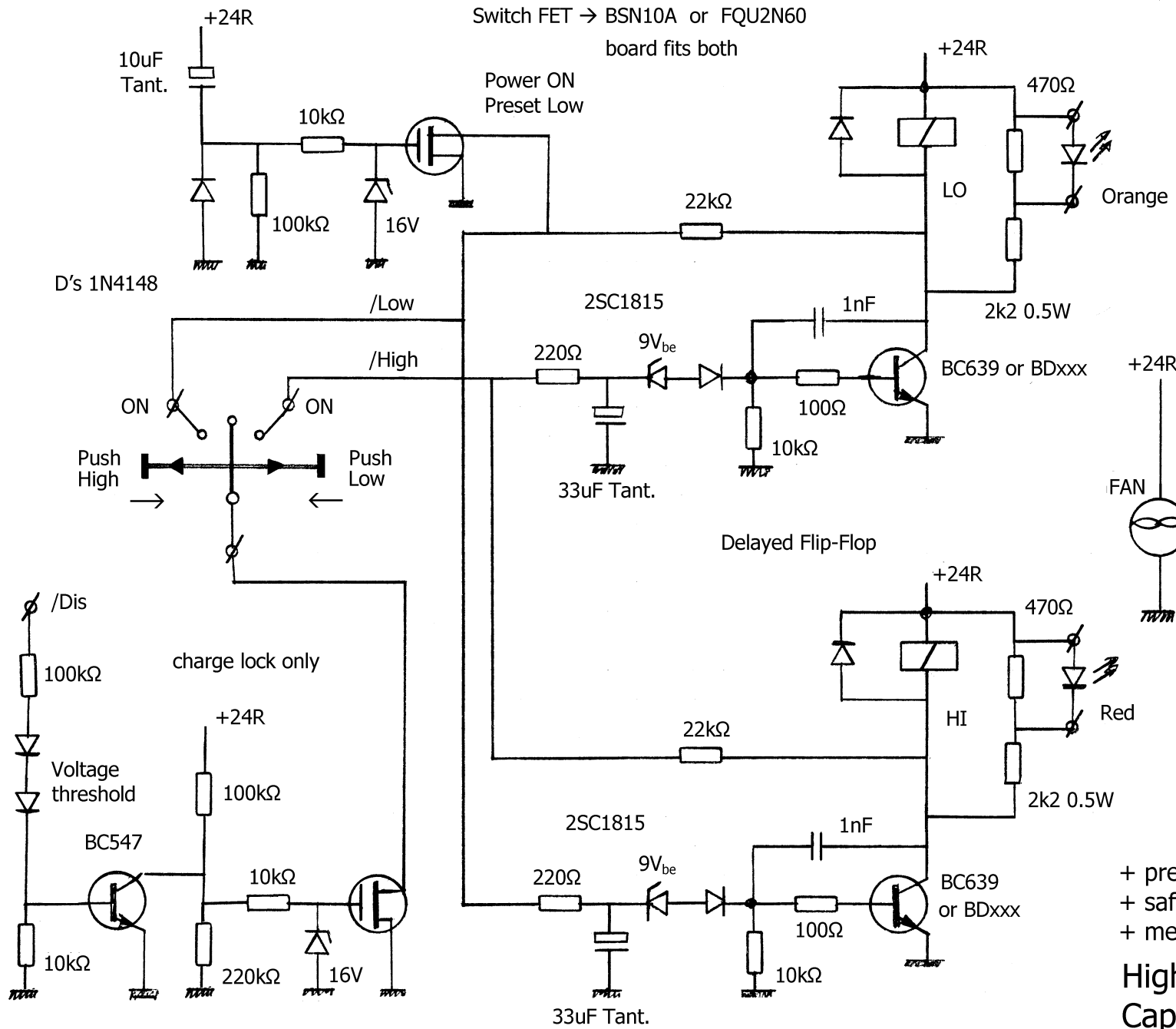


To 24V coils 1000V
reed relays on main board

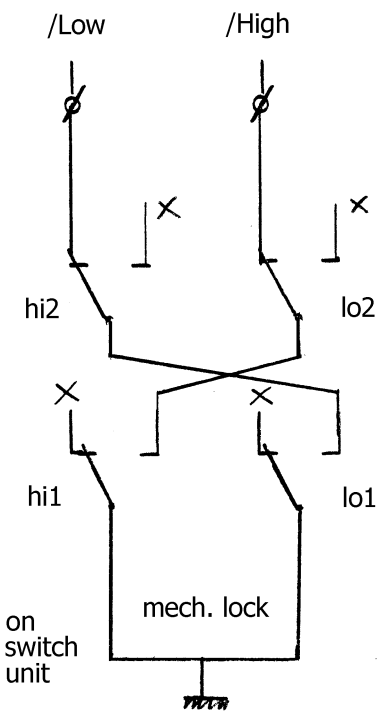


Charge / discharge control
Capacitor Leakage tester 7

+ safety delay sequence
+ mech. interlock relays



power DIL relay D2n v23105
 24V DC, 1050 Ohm,
 2x NO/NC, 550 mW

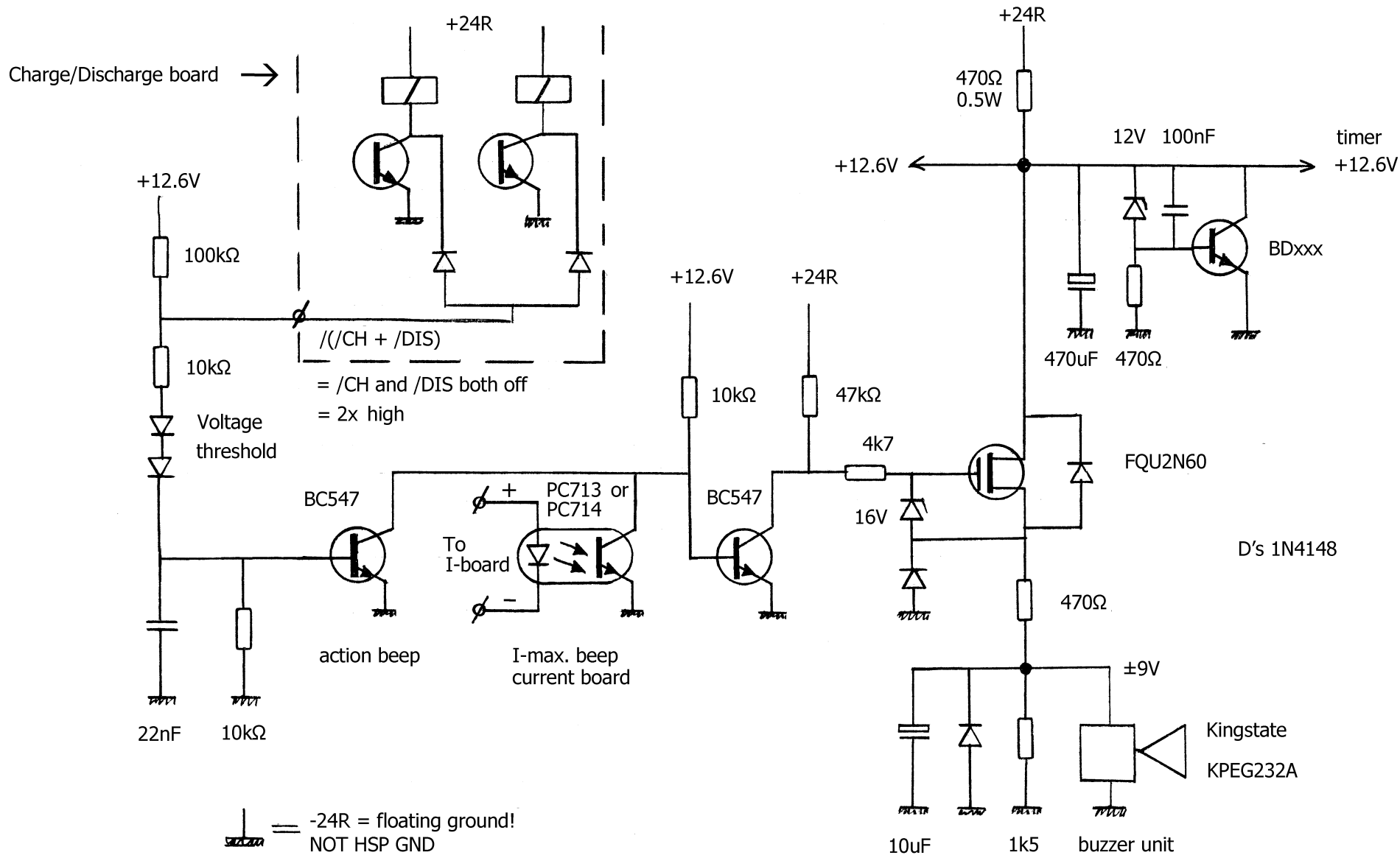


-24R = floating ground!
 NOT HSP GND

- + preset low
- + safety delay sequence
- + mech. interlock relais

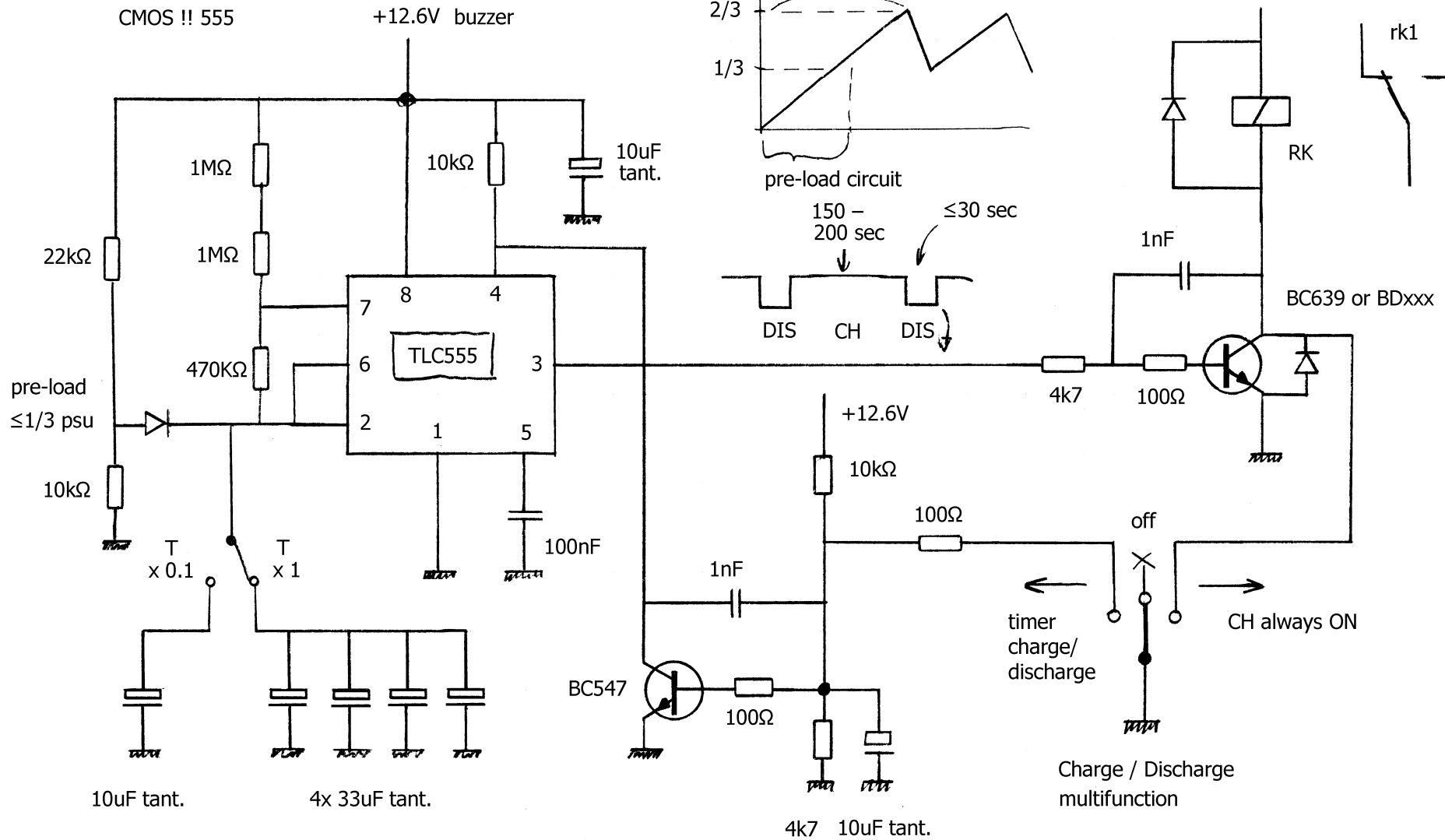
High / Low control
 Capacitor Leakage tester 8

© PE1ABR



Buzzer control
Capacitor Leakage tester 9
on buzzer/timer board

telecom relay Axicom MT2 24V DC,
3872 ohm , 2x NO/NC, 150 mW



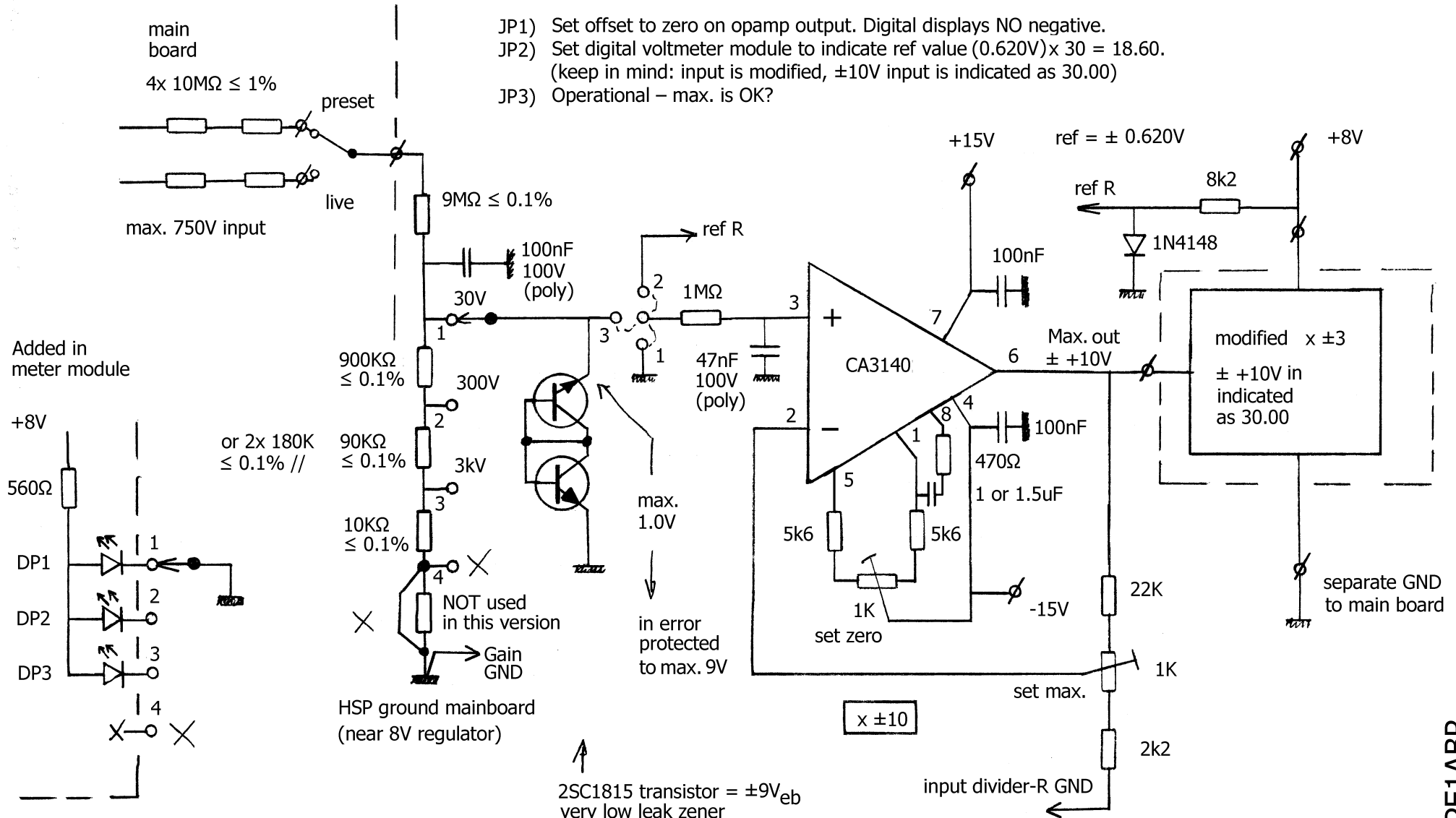
-24R = floating ground!
NOT HSP GND

D's 1N4148

Timer control on buzzer/timer board
Capacitor Leakage tester 10

Jumpers set sequence

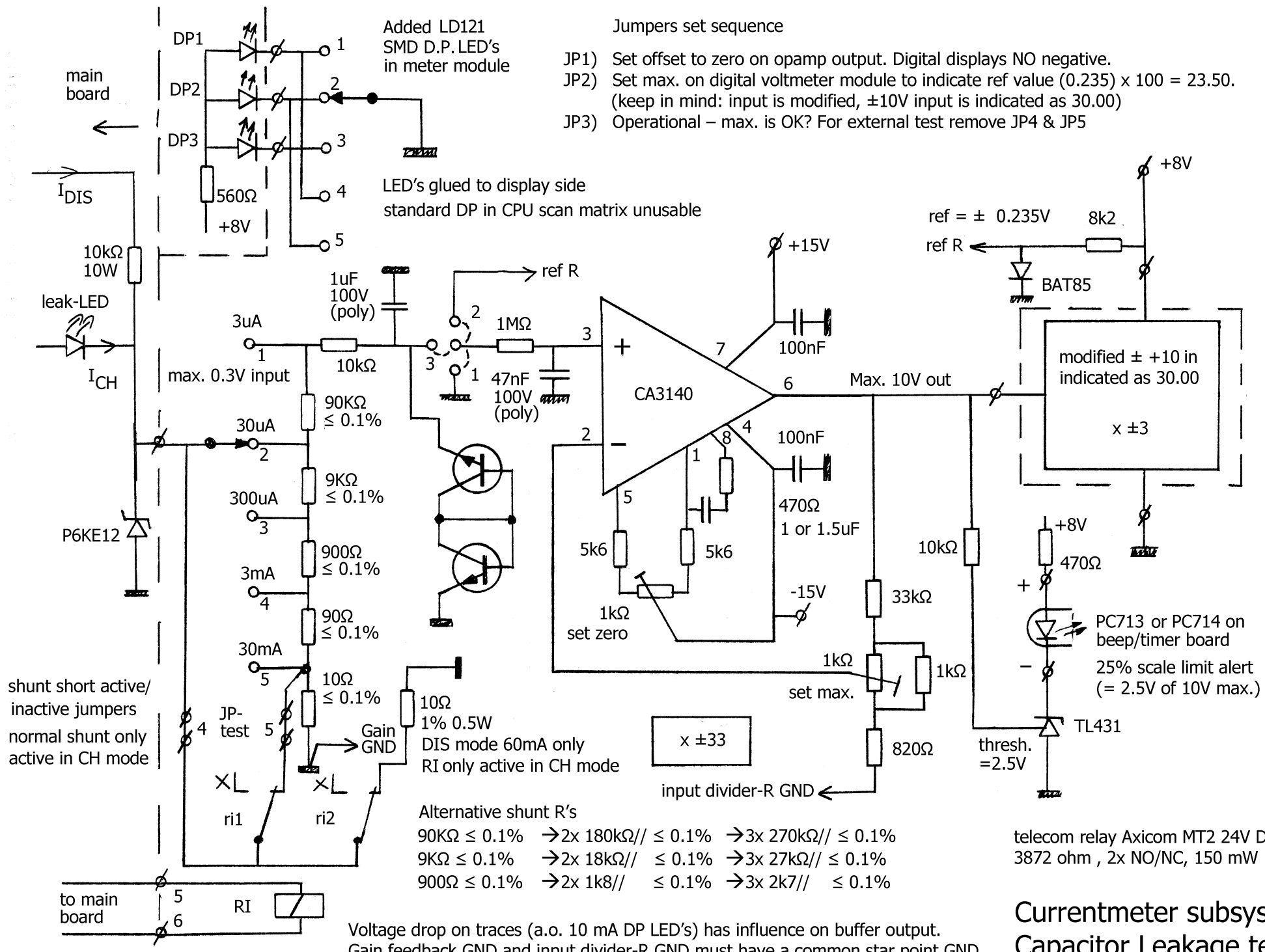
- JP1) Set offset to zero on opamp output. Digital displays NO negative.
- JP2) Set digital voltmeter module to indicate ref value $(0.620V) \times 30 = 18.60$.
(keep in mind: input is modified, $\pm 10V$ input is indicated as 30.00)
- JP3) Operational – max. is OK?



Added LD121 SMD D.P. LED's glued to display side standard DP in CPU scan matrix unusable

Voltage drop on traces (a.o. 10 mA DP LED's) has influence on buffer output. Gain feedback GND and input divider-R GND must have a common star point GND

Voltmeter subsystem
Capacitor Leakage tester 11
Very high Z_{in} - screened



Added LD121 SMD D.P. LED's in meter module

Jumpers set sequence

- JP1) Set offset to zero on opamp output. Digital displays NO negative.
- JP2) Set max. on digital voltmeter module to indicate ref value $(0.235) \times 100 = 23.50$. (keep in mind: input is modified, $\pm 10V$ input is indicated as 30.00)
- JP3) Operational – max. is OK? For external test remove JP4 & JP5

LED's glued to display side standard DP in CPU scan matrix unusable

ref = $\pm 0.235V$ 8k2

modified $\pm +10$ in indicated as 30.00
x ± 3

PC713 or PC714 on beep/timer board
25% scale limit alert (= 2.5V of 10V max.)

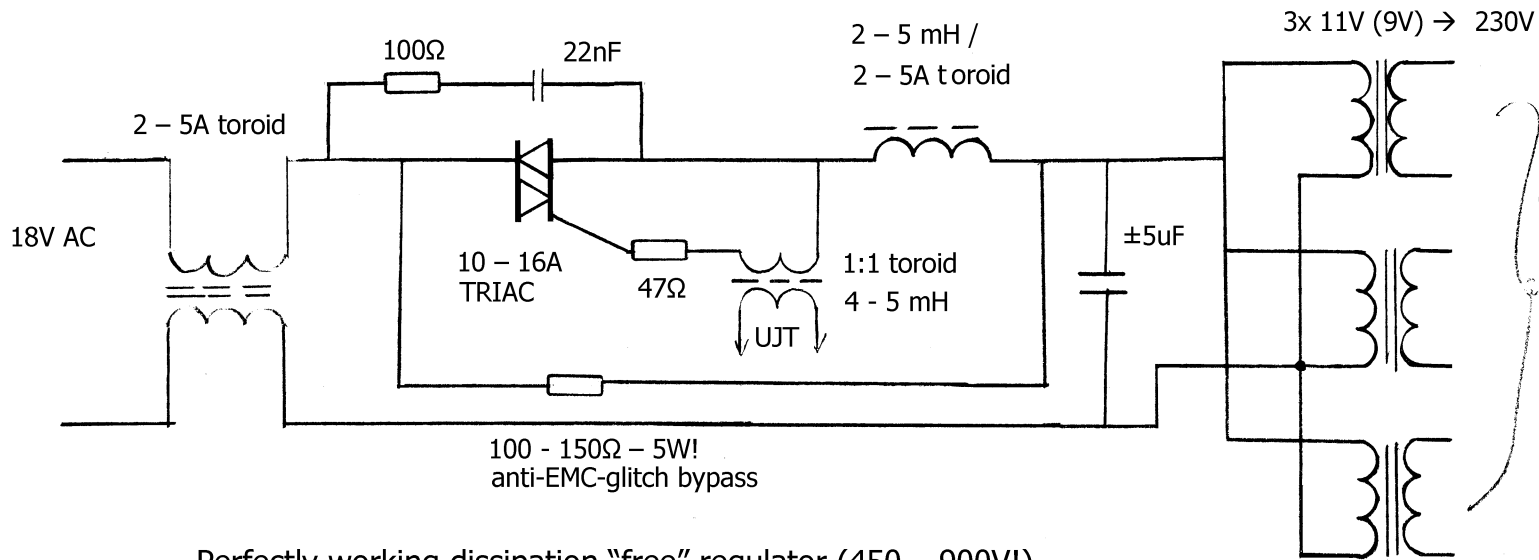
thresh. = 2.5V

telecom relay Axicom MT2 24V DC, 3872 ohm, 2x NO/NC, 150 mW

- Alternative shunt R's
- $90k\Omega \leq 0.1\%$ $\rightarrow 2x 180k\Omega// \leq 0.1\%$ $\rightarrow 3x 270k\Omega// \leq 0.1\%$
 - $9k\Omega \leq 0.1\%$ $\rightarrow 2x 18k\Omega// \leq 0.1\%$ $\rightarrow 3x 27k\Omega// \leq 0.1\%$
 - $900\Omega \leq 0.1\%$ $\rightarrow 2x 1k8// \leq 0.1\%$ $\rightarrow 3x 2k7// \leq 0.1\%$

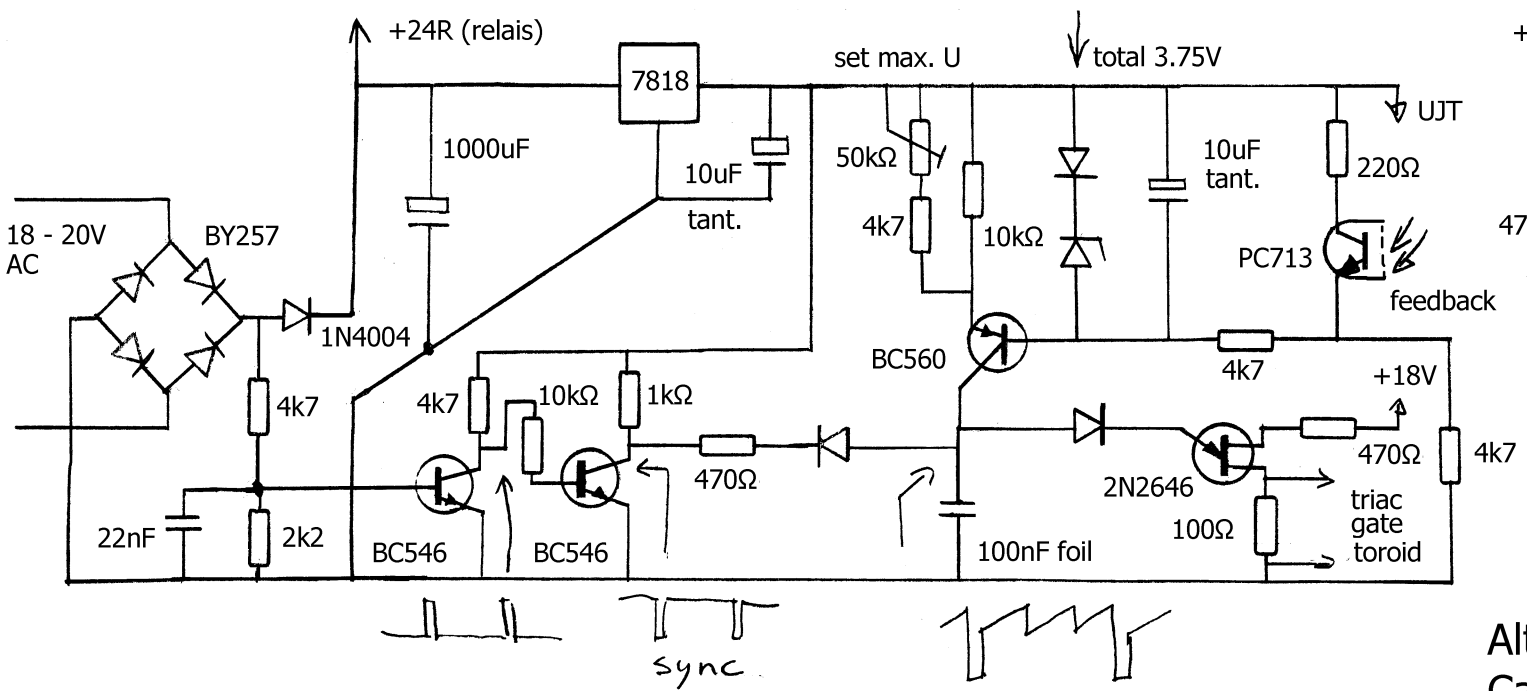
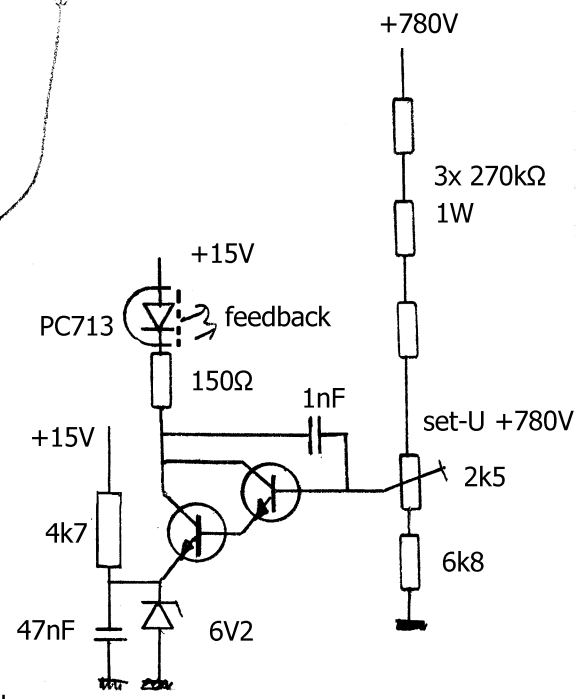
Voltage drop on traces (a.o. 10 mA DP LED's) has influence on buffer output. Gain feedback GND and input divider-R GND must have a common star point GND

Currentmeter subsystem Capacitor Leakage tester 12



Circuit identical to analog regulator

Perfectly working dissipation "free" regulator (450 - 900V!)
 NOT implemented due to possible EMC risk uA meters



Alternative switch PSU for HSP Capacitor Leakage tester 13