

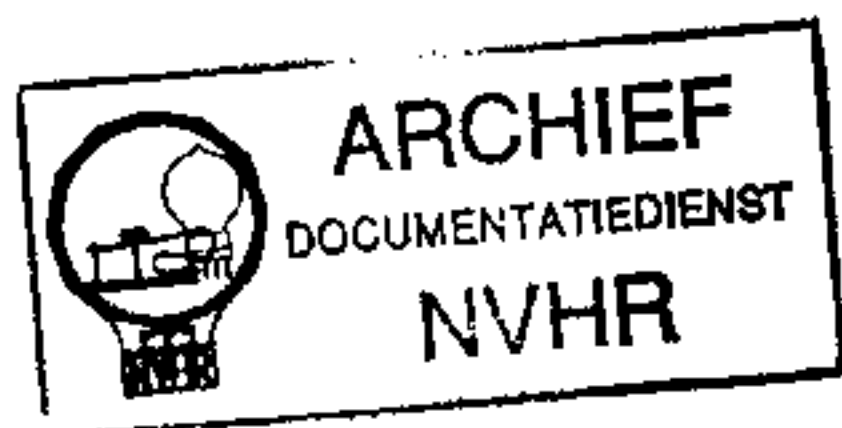
Met dank aan A.R.A van Rossum

DELTA ELEKTRONIKA BV

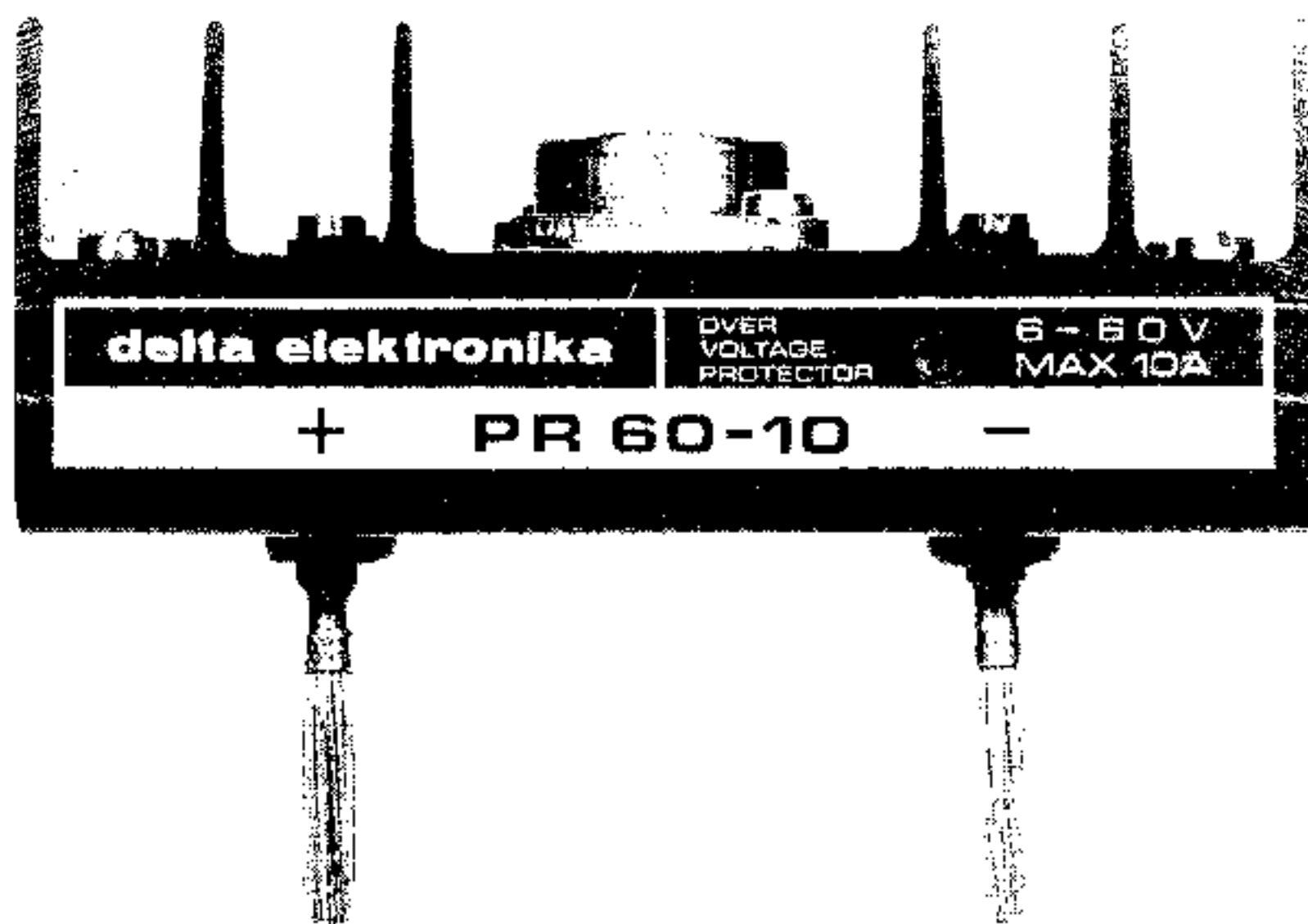
Ned. Ver. v. Historie v/d Radio



P.O. BOX 27
ZIERIKZEE
NETHERLANDS
TELEPHONE (01110) 3656



PR 60-3 Adjustable 6-60 V Max. 3 A continuously or 10 A if mounted on a heat sink



PR 60-10 Adjustable 6-60 V Max. 10 A continuously



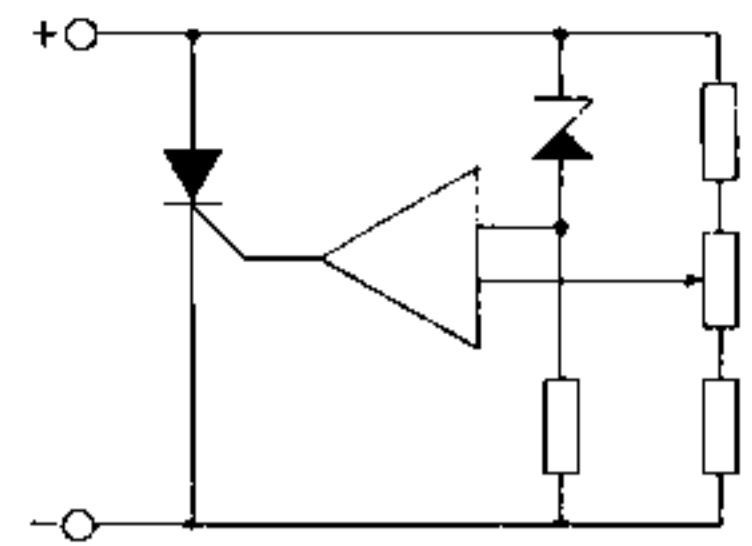
OVER VOLTAGE PROTECTORS

(actual size)

PR 60-20 Adjustable 6-60 V Max. 20 A continuously

DESCRIPTION

An over voltage protector as here described is a two terminal device, basically consisting of a voltage reference, a comparator amplifier and a silicon controlled rectifier. If the voltage across the over voltage protector exceeds a certain predetermined level the S.C.R. is triggered and short circuits that voltage. An S.C.R. is used for this purpose because it can handle very large peak currents and reacts in microseconds.



APPLICATION

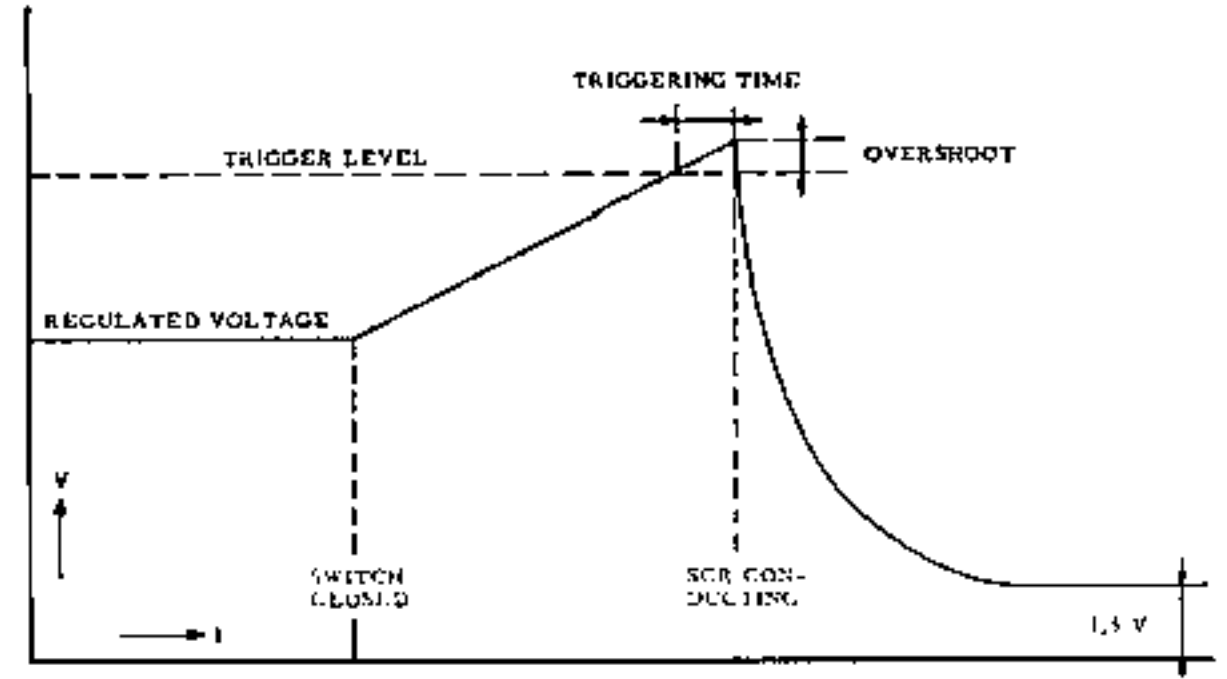
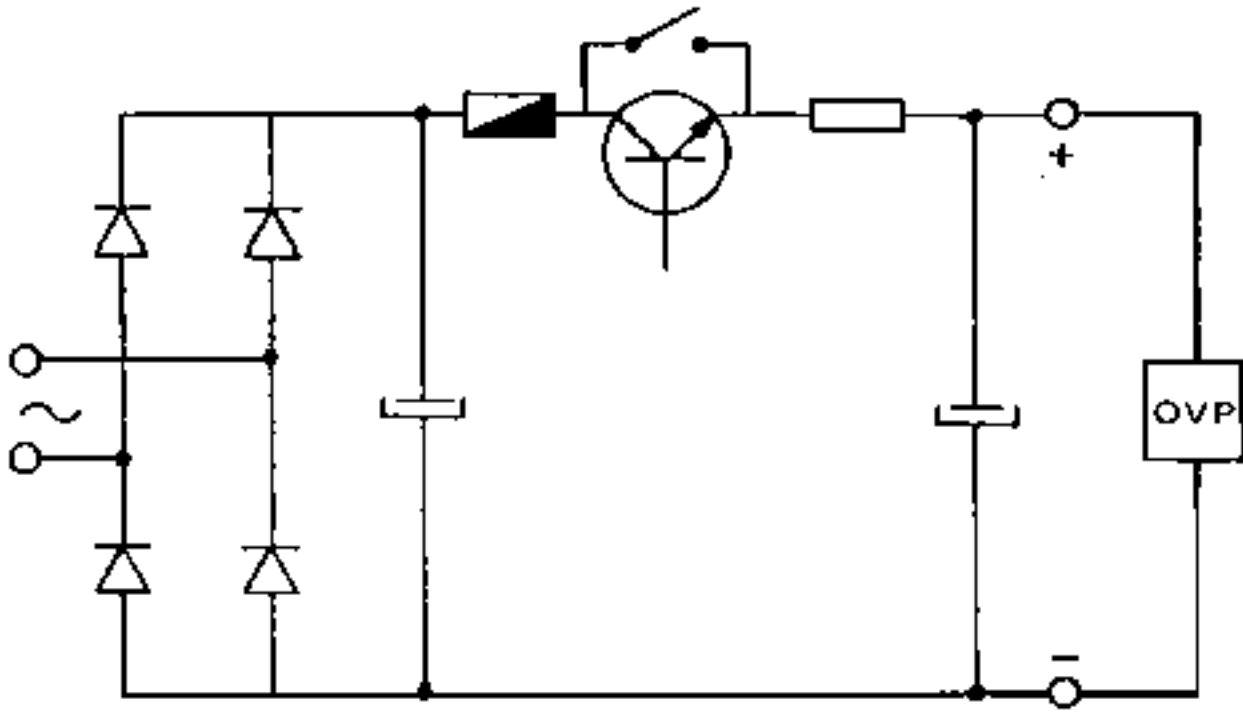
The use of an over voltage protector is especially recommended if a large quantity of integrated circuits is powered by one power supply. In a regulated power supply the rectified voltage is generally much higher than the regulated voltage. This means that a fault in the power supply can damage the load in a few milliseconds.

Sometimes it is also useful to protect the output of a variable laboratory power supply. Especially when there is a chance that somebody turns the output voltage to an unwanted value.

SPECIFICATIONS

Type	PR 60-3	PR 60-10	PR 60-20
Trip point adjustment	6-60 V	6-60 V	6-60 V
Resolution	0.2 V	0.2 V	0.2 V
Temp. coeff. of trip point	$5 \cdot 10^{-4}$ per °C	$5 \cdot 10^{-4}$ per °C	$5 \cdot 10^{-4}$ per °C
Max. continuous forward current	3 A without heat sink 10 A on a heat sink of 2 °C/W	10 A	20 A
Forward voltage drop at max. current (typical)	1.5 V	1.5 V	1.5 V
I ² t value for a period of 5 ms	200 A ² sec.	200 A ² sec.	400 A ² sec.
Recommended fuse	10 A fast blowing	10 A fast blowing	20 A fast blowing
Holding current	50 mA	50 mA	50 mA
Drain at 60 V	7 mA	7 mA	7 mA
Reverse connection	Reverse connection does not damage the O.V.P., but in that case it also does not protect.		

O.V.P. CONNECTED TO A POWER SUPPLY

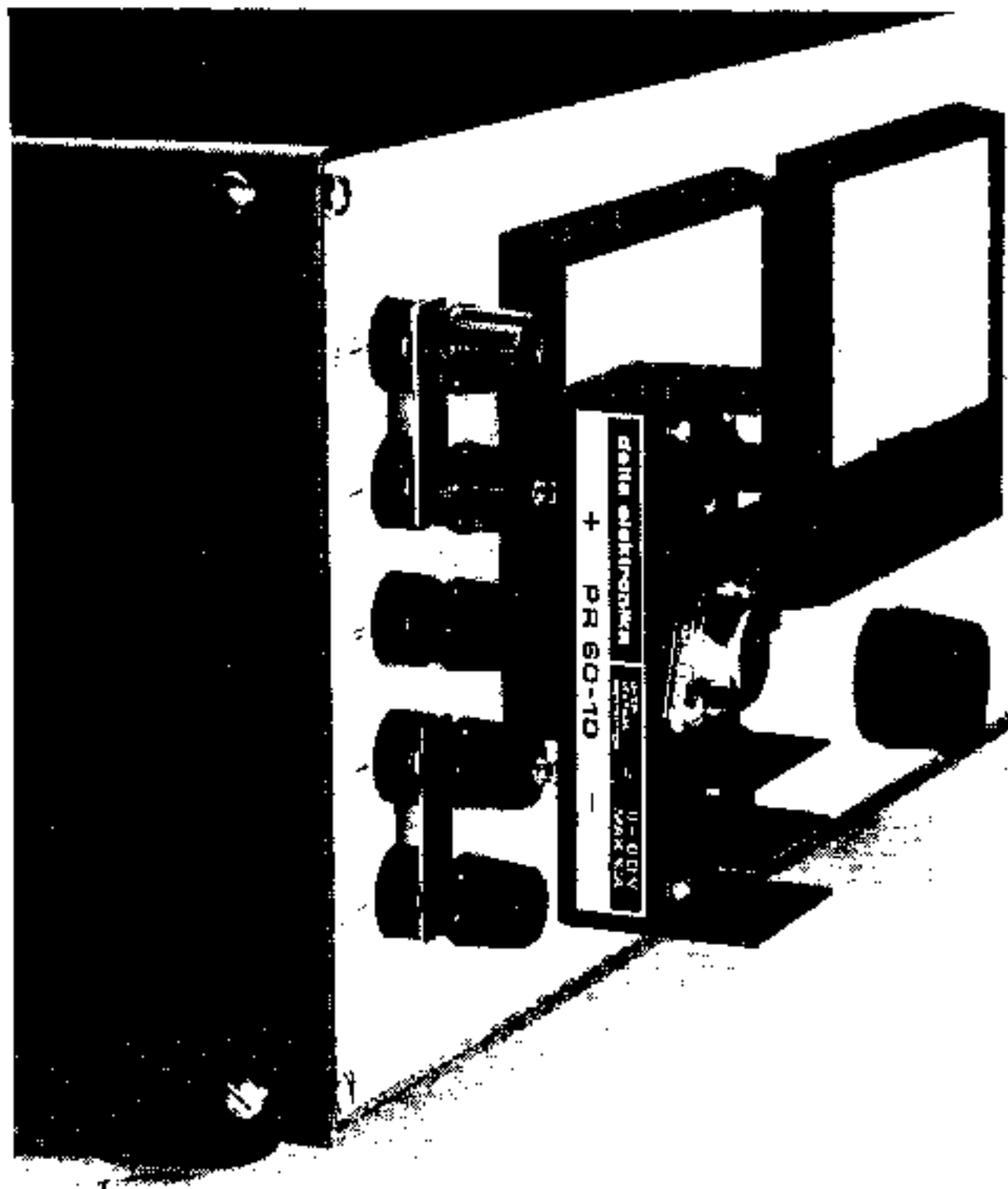


In the simplified diagram of a power supply an O.V.P. is connected to the output terminals. The switch across the series transistor imitates a defective regulator. When the switch is closed the output voltage increases rapidly and as soon as the trigger level is reached the O.V.P. short circuits the output. The triggering time of the O.V.P. depends on the slope of the increasing voltage and this again depends on the voltage difference between the rectified and the regulated voltage, the circuit resistance and the capacitance across the output. On various power supplies the triggering time can vary between 5 and 100 microseconds. The overshoot above the set trigger level can reach about 0,4 volt + 5% of that level.

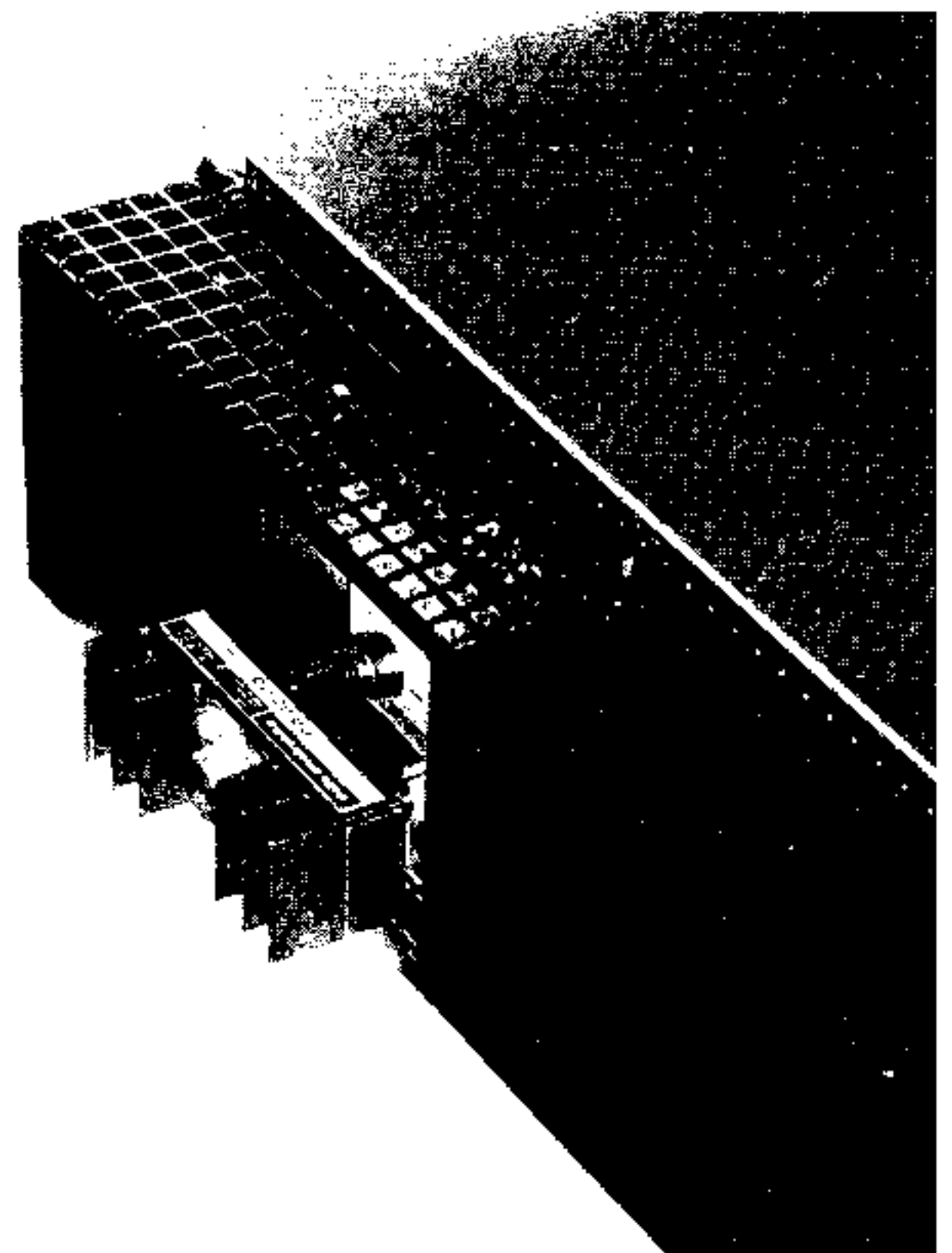
TECHNICAL FEATURES

The over voltage protectors PR 60-3, PR 60-10 and PR 60-20 have a 20 turn screw driver adjustment 6-60 V with a resolution better than 0.2 V. The PR 60-3 can easily be built-in.

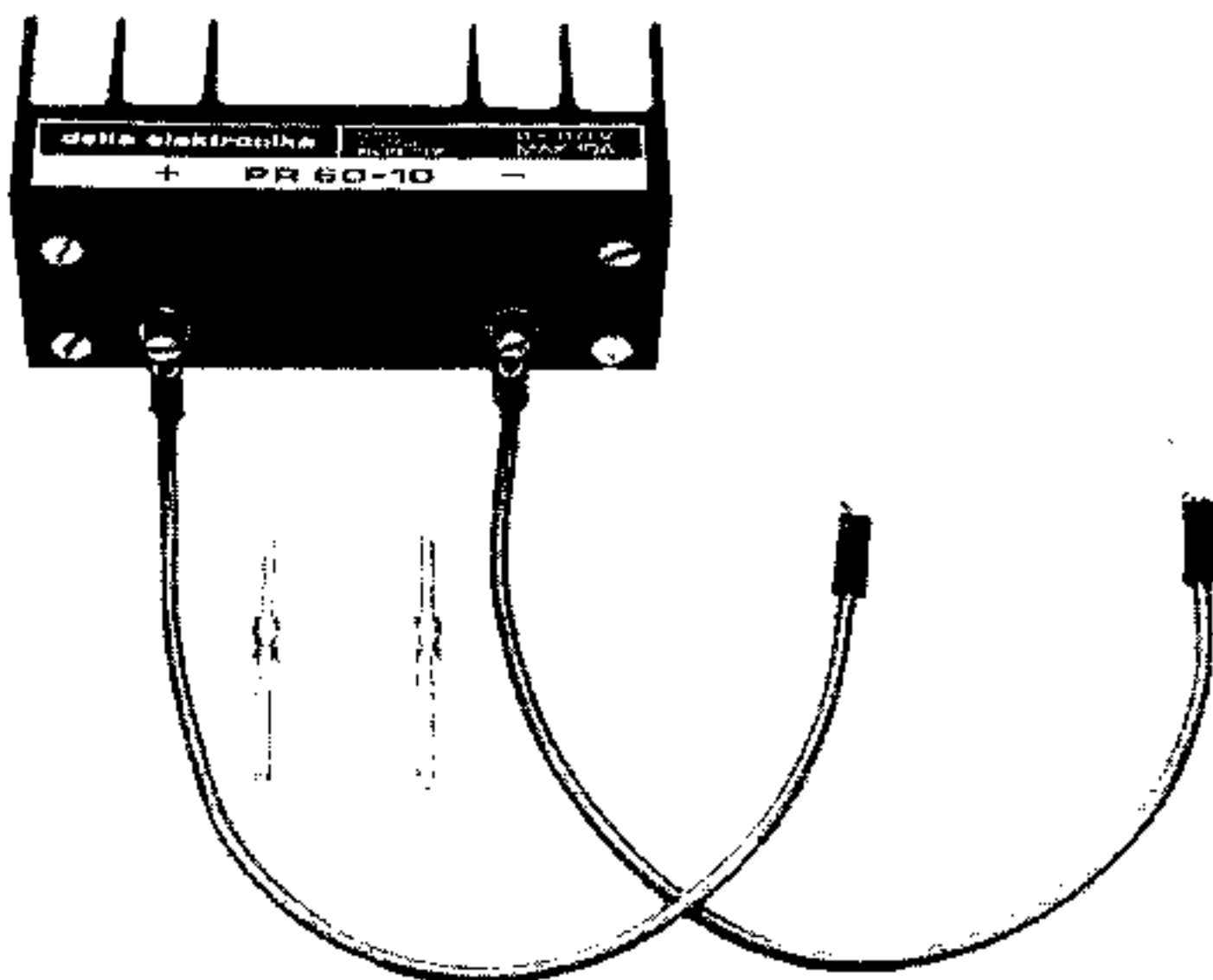
The PR 60-10 can be used on power supplies with currents up to 10 A like D 050-10, E 030-10, E 060-6. The PR 60-20 is intended for the E 015-20.



PR 60-10 plugged into the front terminals of D 050-10

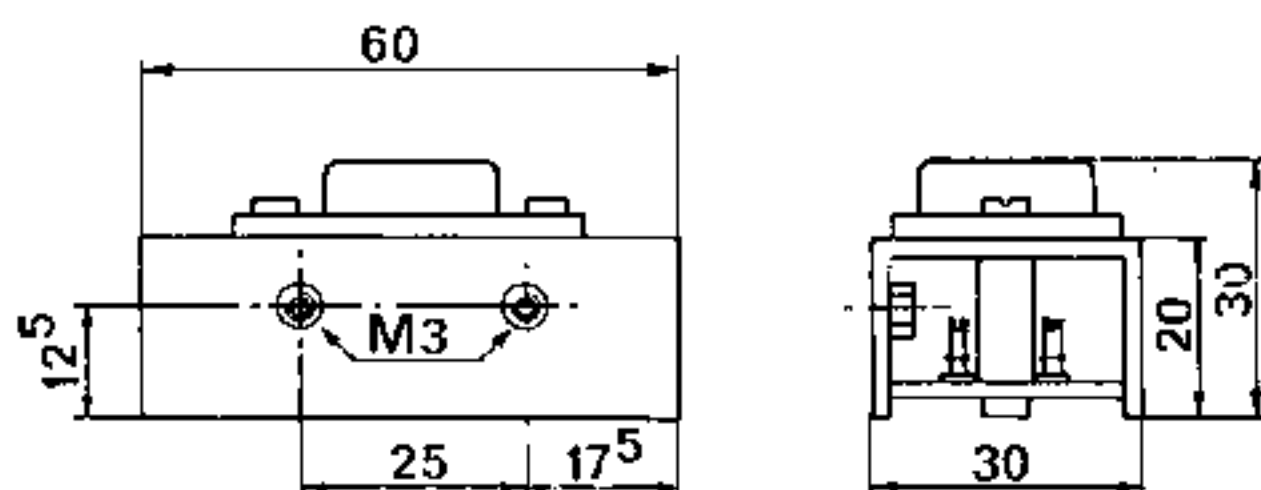


PR 60-10 plugged into the rear terminals of E 030-10

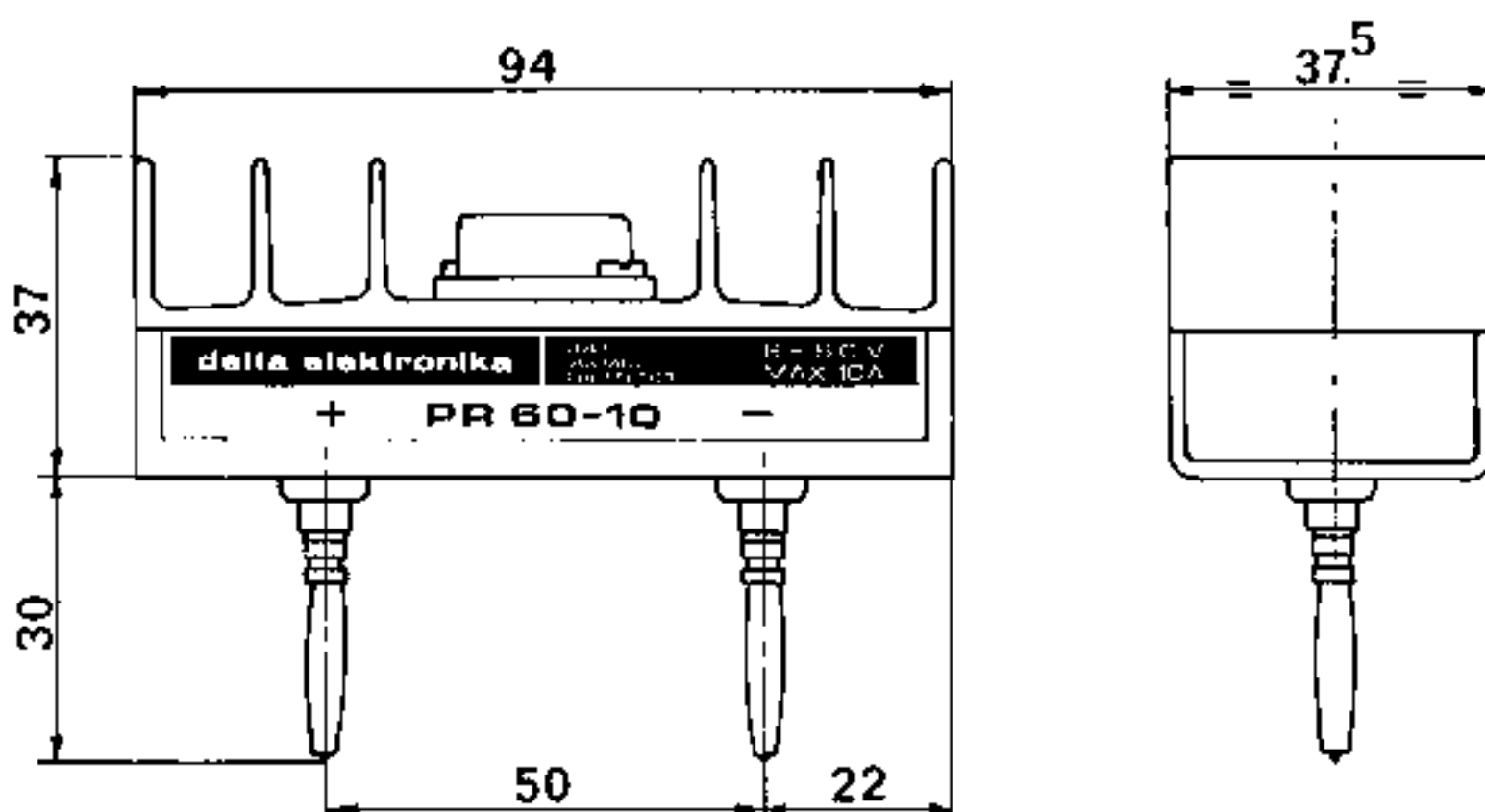


PR 60-10 and PR 60-20 are delivered complete with plug pins and flexible leads.

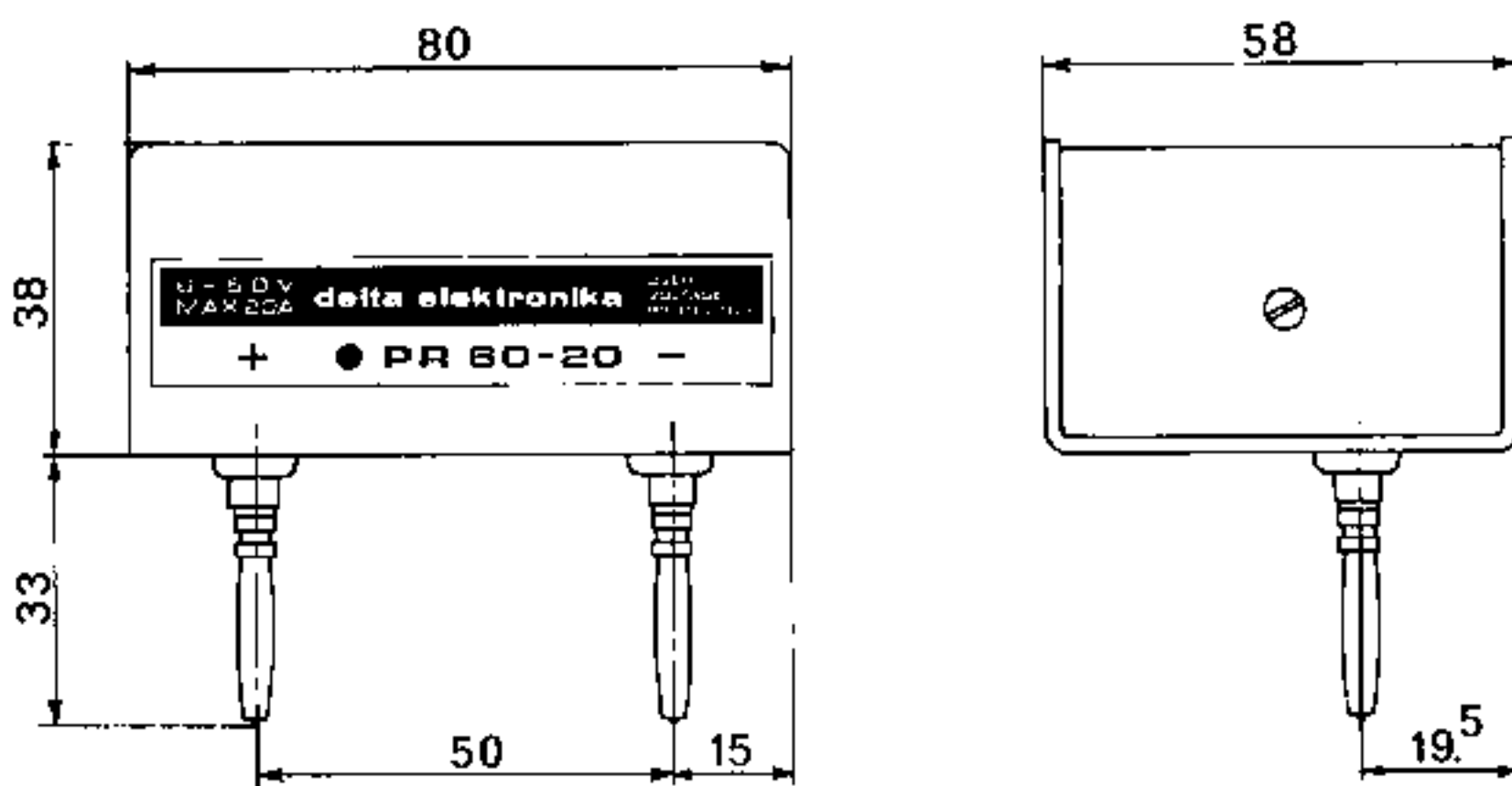
PR 60-3 is for build-in purposes and has solder connections. Fixing is by means of tapped inserts.



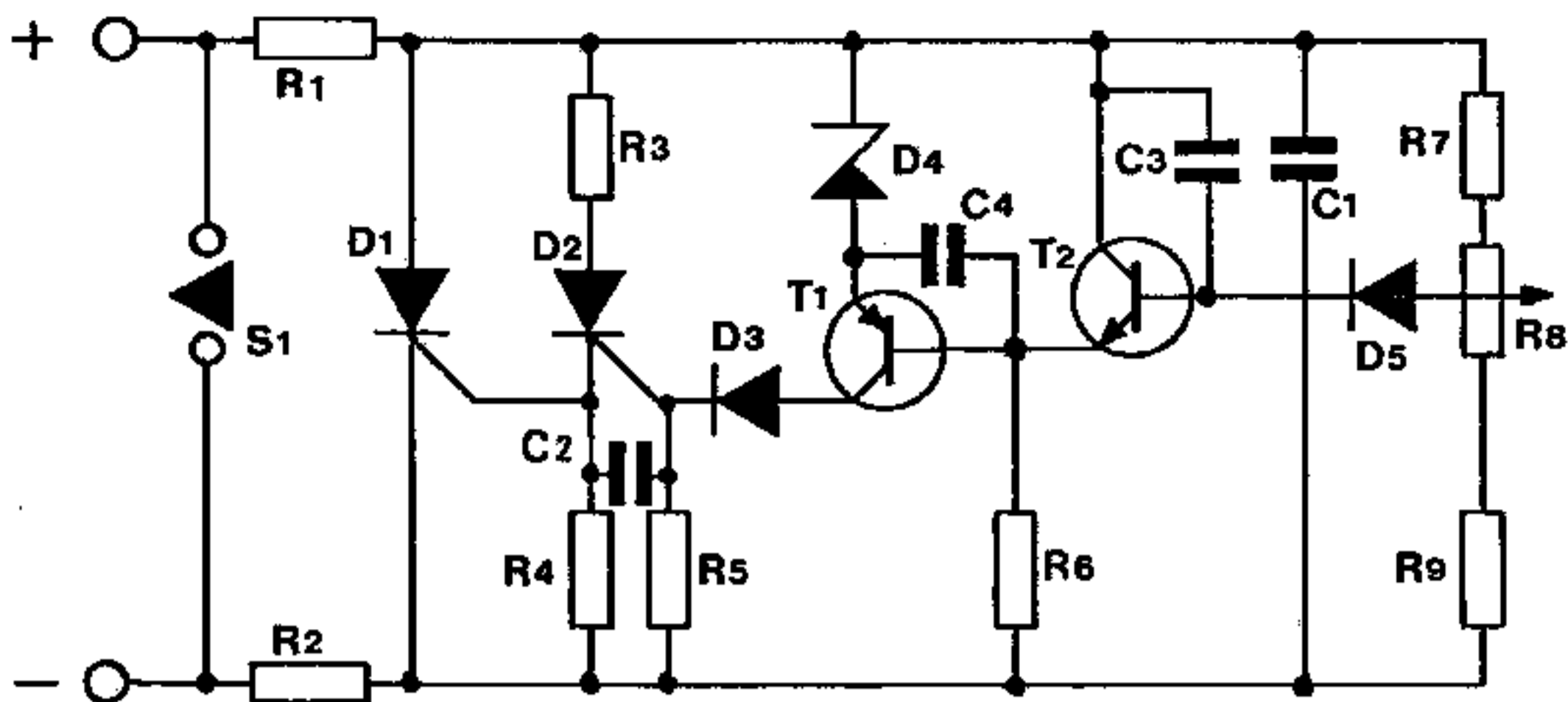
PR 60-3



PR 60-10



PR 60-20



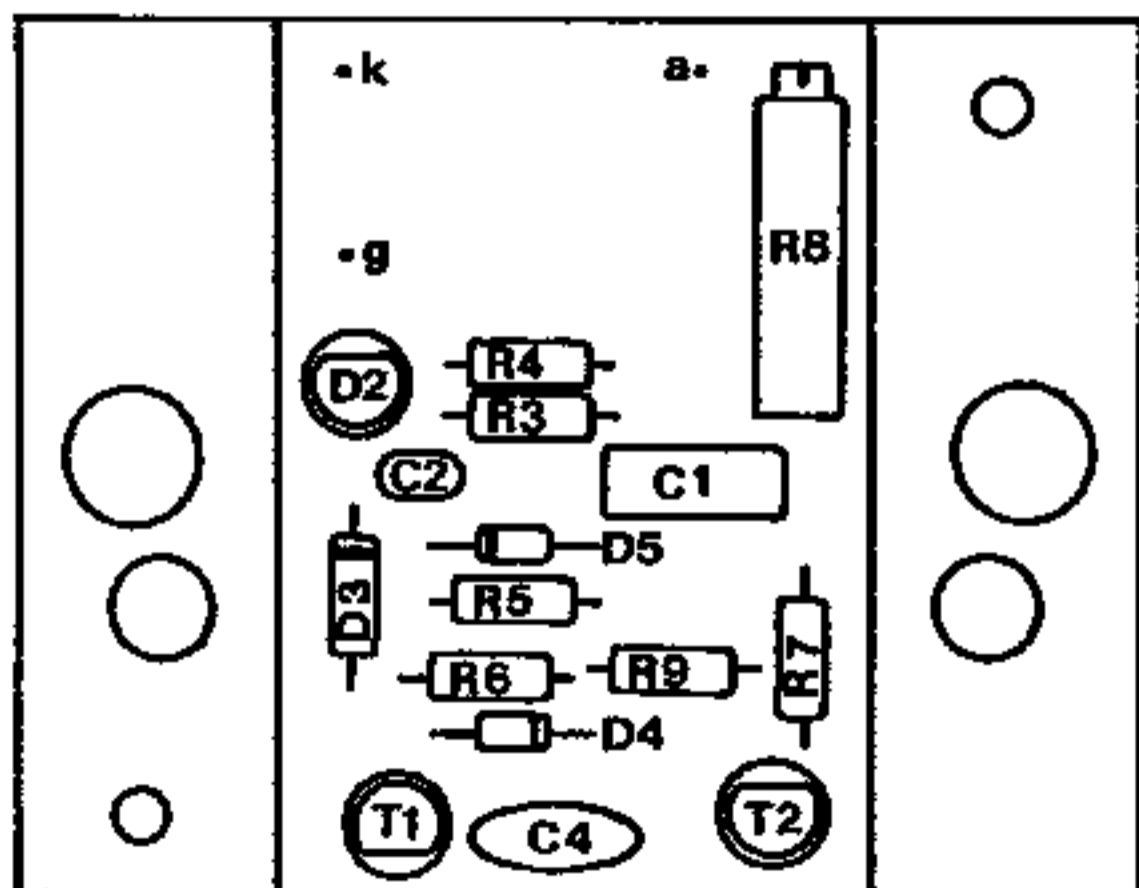
R = Ohm	PR 60-3	PR 60-10	PR 60-20
1 =	-	0,02	0,02
2 =	-	0,02	-
3 =	68	68	68
4 =	100	100	100
5 =	1 k	1 k	1 k
6 =	12 k	12 k	12 k
7 =	680	680	680
8 =	10 k trim.	10 k trim.	10 k trim.
9 =	CR	CR	CR

C = microfarad	PR 60-3	PR 60-10	PR 60-20
1 =	0,22 63 V	0,47 63 V	0,47 63 V
2 =	0,047 63 V	0,047 63 V	0,047 63 V
3 =	-	CC	-
4 =	0,01 250 V	0,01 250 V	0,01 250 V

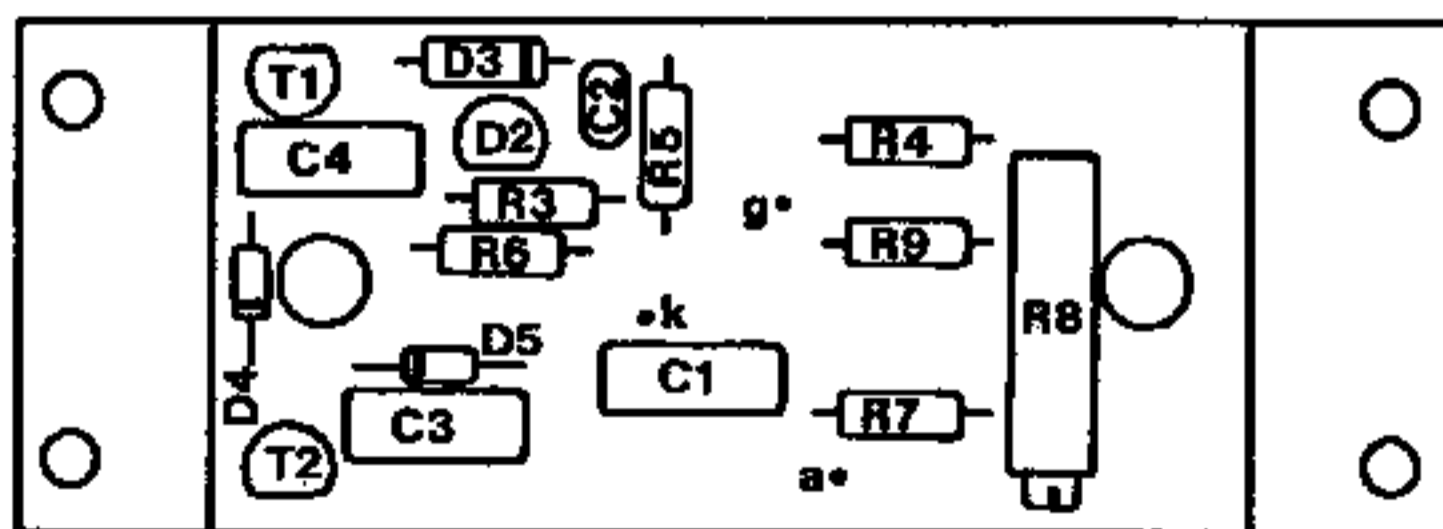
D	PR 60-3	PR 60-10	PR 60-20
1 =	2N3668	2N3668	2N3896 RCA
2 =	TIC 46	TIC 46	TIC 46 TI
3 =	1N4003	1N4003	1N4003 TI
4 =	ZP 3,3	ZP 3,3	ZP 3,3 ITT
5 =	1N4148	1N4148	1N4148 ITT

T	PR 60-3	PR 60-10	PR 60-20
1 =	BC 212	BC 212	BC 212 TI
2 =	BC 182	BC 182	BC 182 TI

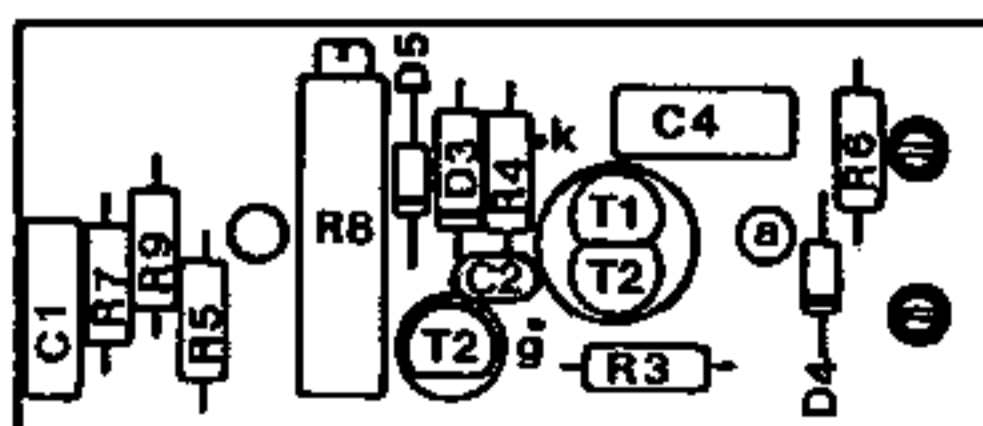
S 1 =	PR 60-3	PR 60-10	PR 60-20
	-	-	T-20602F21-9F140-2 TI



P 95b (PR60-20)



P 89b (PR60-10)



P 90b (PR60-3)

CR = calibration resistor
 CC = calibration capacitor
 resistors 0,4W 2% metalfilm

			Title: PR 60-3.
			PR 60-10 PR 60-20
C2	8.81	Ur	Date: 7 Mrt '77
Modifications	Date	App.	delta elektronika bv

