

Vertretung für die Schweiz:
Représentation pour la Suisse:

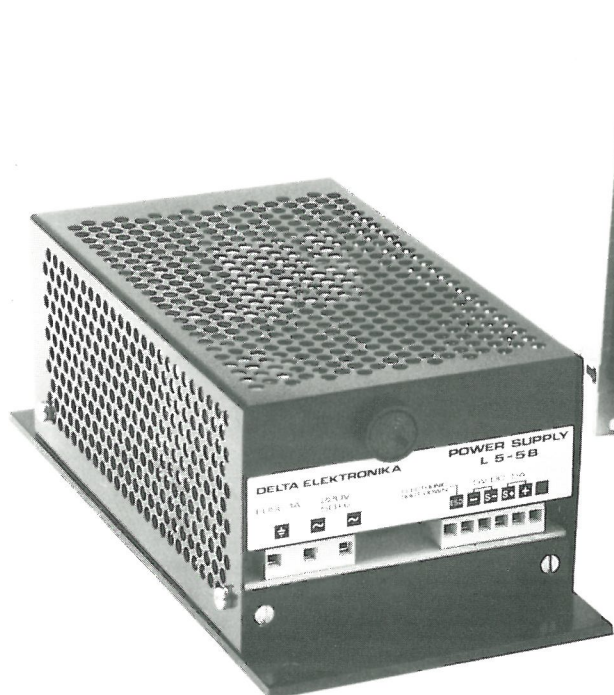
 **A&D Products AG**

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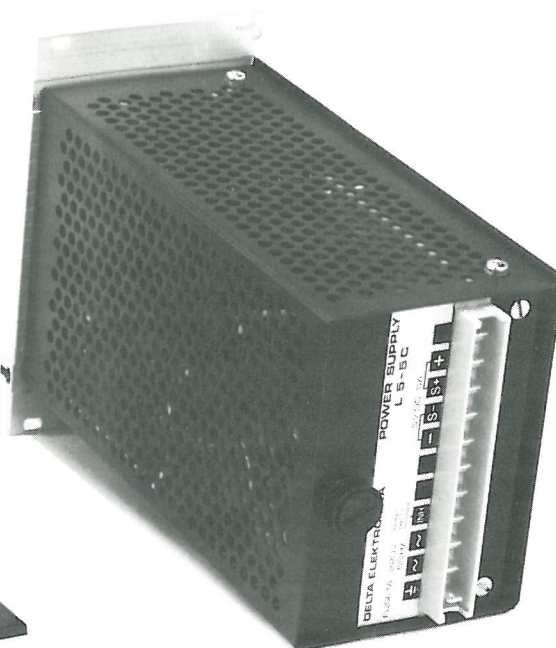
REGULATED POWER SUPPLY

LT 30

Q131



L 5-5B



L 5-5C

REGULATED POWER SUPPLIES L-SERIES

Single output:

L 5-5	5 V	5 A	4-6 V, but derate current to 80 % at 4 and 6 V
L 24-1.5	24 V	1.5 A	22-26 V, but derate current to 80 % at 22 and 26 V
LV 15-2	5-15 V	2 A	5-9 V, 9-12 V, 12-15 V (3 transformer taps)
LV 30-1	15-30 V	1 A	15-20 V, 20-25 V, 25-30 V (3 transformer taps)

Dual output:

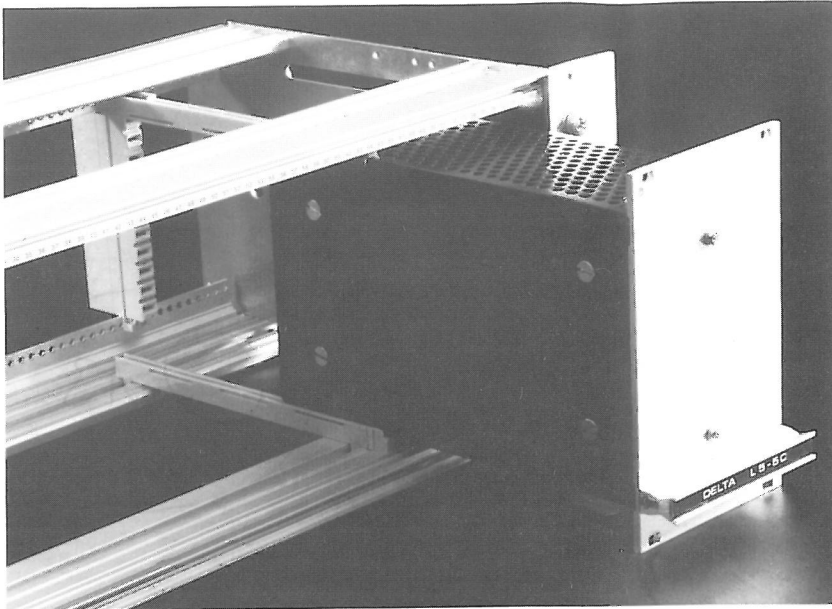
LD 15-1	± 15 V	1 A	12-15 V, but derate current to 80 % at 12 V
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Triple output with 3 isolated, independently adjustable outputs:

LT 30	E ₁	5 V	3 A	4-6 V, but derate current to 2 A at 4 and 6 V
	E ₂	15 V	0.5 A	5-15 V, but derate current to 0.15 A at 5 V
	E ₃	15 V	0.5 A	5-15 V, but derate current to 0.15 A at 5 V

Version **B**: Module with screw terminals

Version **C**: Europa cassette according to DIN 41494 with H 11 connector according to DIN 41612



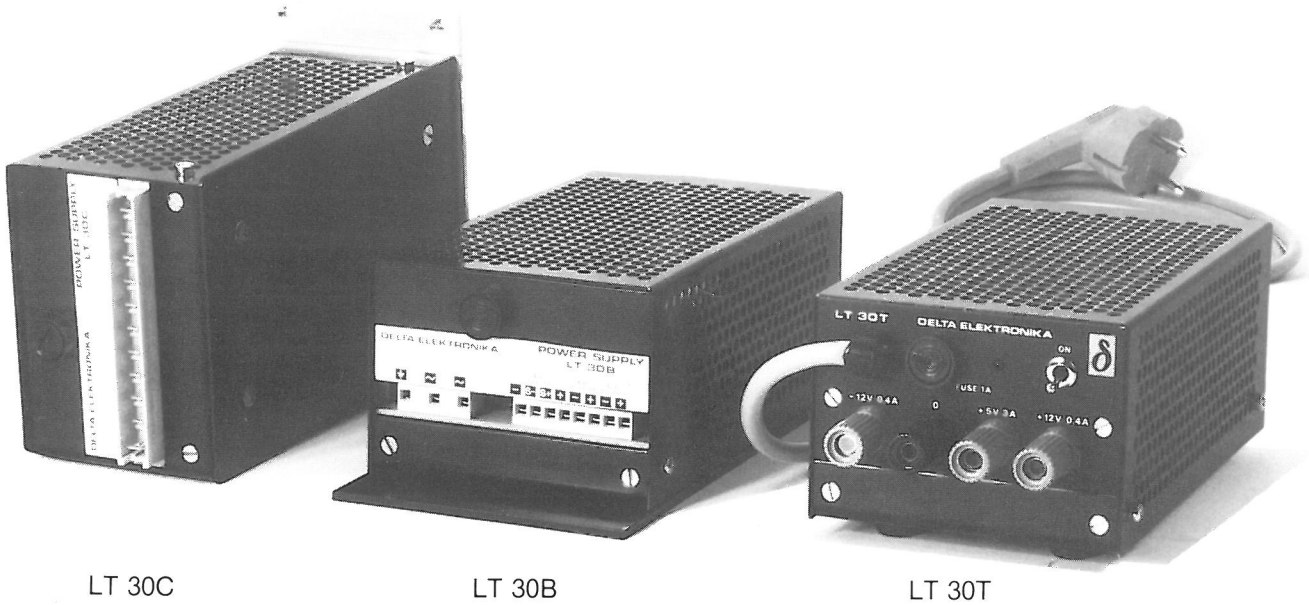
The C-version of the L-series fits a standard 19 inch Europa card rack.

Front panel width is 15 TE (= 75.9 mm).

One H 11 mating connector according to DIN 41612 is delivered with every unit.

Specifications of L 5-5, L 24-1.5 LV 15-2, LV 30-1 and LD 15-1

Input voltage	220 V 50-400 Hz standard 110 - 117 - 234 V available to special order	
Insulation	Input-output 1.5 kV RMS (1 minute), VDE 0550 Input-case 1.5 kV RMS (1 minute), VDE 0550 Output-case 250 V DC	
Current limit	Fold back current limit protects against overheating when overloaded or short circuited. Single output units have adjustable current limit. For parallel connection the current limit has to be adjusted to, or preferably below the nominal current.	
Line regulation	10 mV (5 mV L 5-5) for + or - 10% AC line variation	
Load regulation	10 mV for a 0-100% load variation	
Remote sensing	To compensate for voltage dropped across load leads	
Temperature coefficient	0.01% per °C	
Ripple	0.5 mV r.m.s., 1.5 mV p-p	
Recovery time	15 μS for recovery to within 30 mV of steady state voltage after a step load change from 10% to 100%	
Output impedance	Max 100 mOhm up to 100 kHz	
Ambient temperature	Max 40°C L 5-5, all other models max 50°C at full load and nominal input voltage	
Logic inhibit function	Logic 1 = inhibit (no output) Logic 0 = enable	
Dimensions and weight	B version 210 x 98 x 72 mm C version Cassette, width 15 TE (= 76,2 mm)	1,9 kgs 2,1 kgs



LT 30C

LT 30B

LT 30T

TRIPLE OUTPUT POWER SUPPLY FOR MICROPROCESSORS

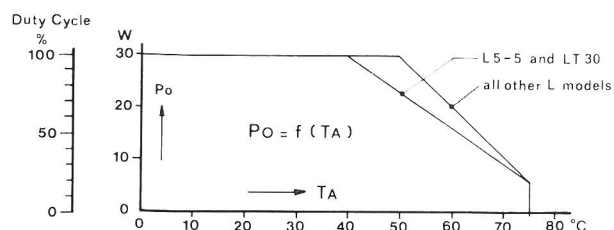
The LT 30 is available in 3 versions: LT 30B, LT 30C and a bench version LT 30T. The outputs of the bench version LT 30T are adjusted to + 5 V, + 12 V and - 12 V and have a common zero. However, with the internal potentiometers the output voltages can be adjusted over the same ranges as the other versions.

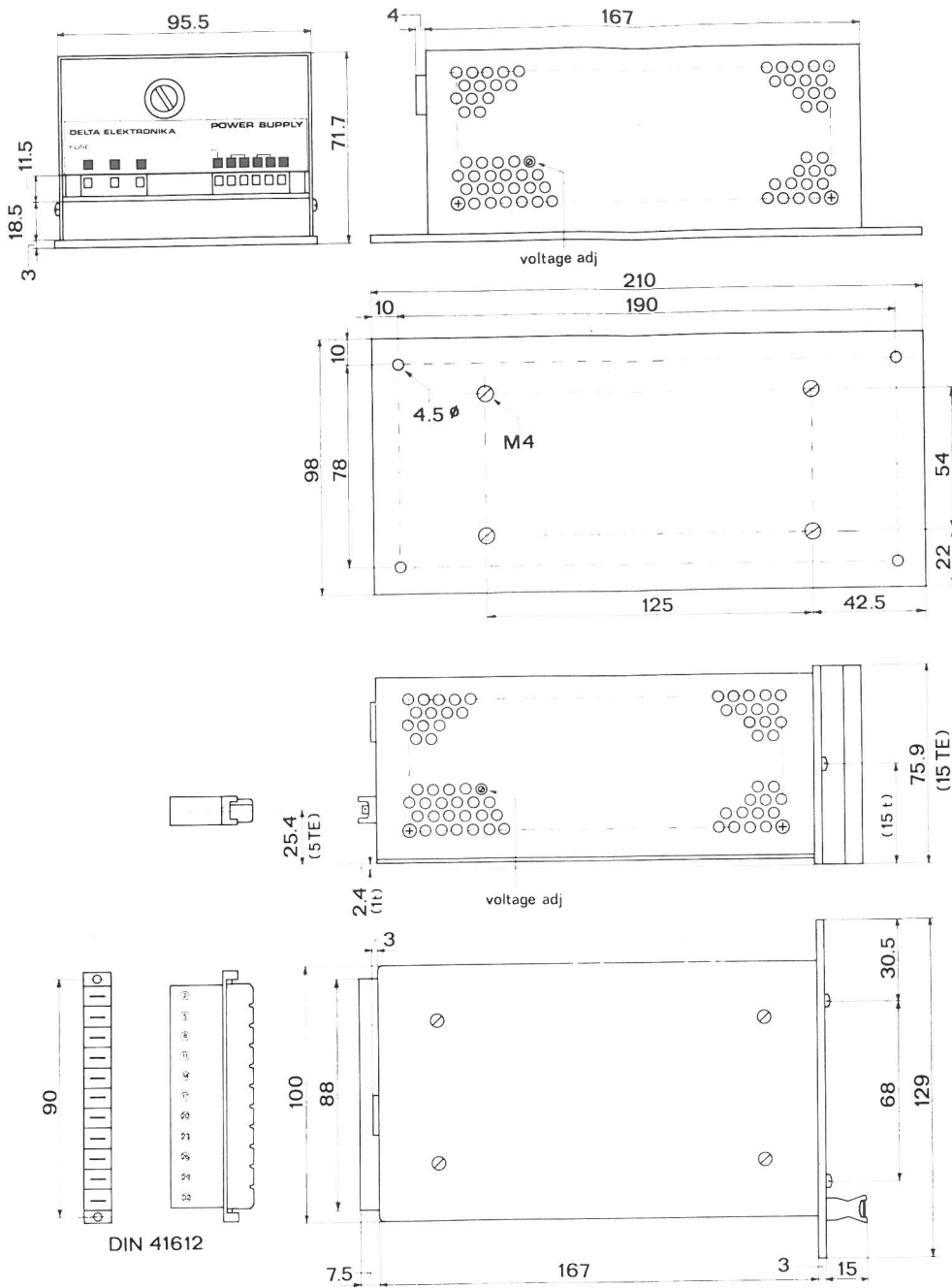
Specifications of the LT 30

Input voltage	220 V 50-400 Hz standard, other voltages on request	
Insulation	Input-output 1.5 kV RMS (1 minute), VDE 0550 Input-case 1.5 kV RMS (1 minute), VDE 0550 Output-case 250 V DC Output-output 50 V DC	
Protection	All 3 outputs are fully protected against all overload and short circuit conditions. Each output is protected against over voltage by an adjustable SCR-crowbar over voltage protector.	
Ambient temp.	Maximum 40°C at full output power. For derating see curve below.	
	E₁	E₂ and E₃
Current limit	Fold back	Constant current + thermal shutdown
Line regulation (± 10%)	5 mV	30 mV
Load regulation (0-100%)	5 mV	30 mV
Temperature coefficient	2.10 ⁻⁴ per °C	2.10 ⁻⁴ per °C
Ripple RMS / p-p	0.5 / 1.5 mV	5 / 20 mV
Recovery time	15 μS	15 μS (after 10-100% load step)
Output impedance	0.1 Ohm	0.5 Ohm (up to 100 kHz)
Weight	Version B 2.0 kgs, C and T 2.2 kgs	

Maximum allowed output power as function of the ambient temperature.

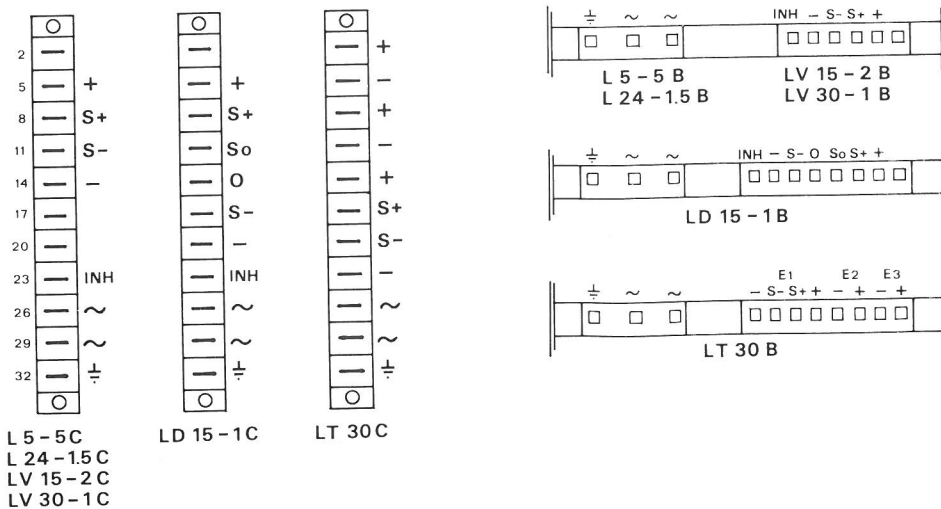
Same characteristic shows the duty cycle at which full power can still be derived at high temperature and max. on time of 15 minutes.



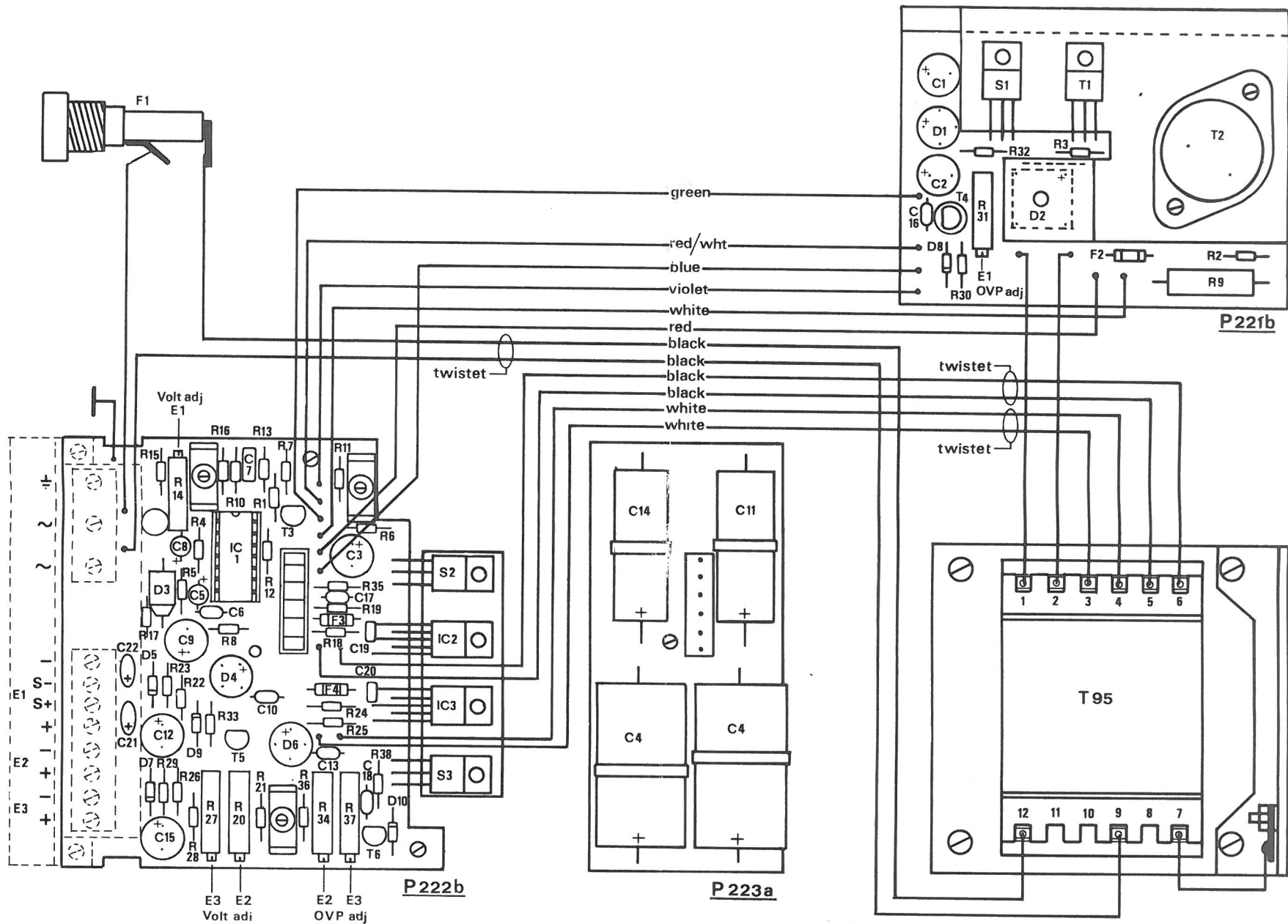


Version B
Module with screw terminals

Version C
Cassette according to DIN 41494 with connector H 11 according to DIN 41612
A mating connector is always delivered with each unit

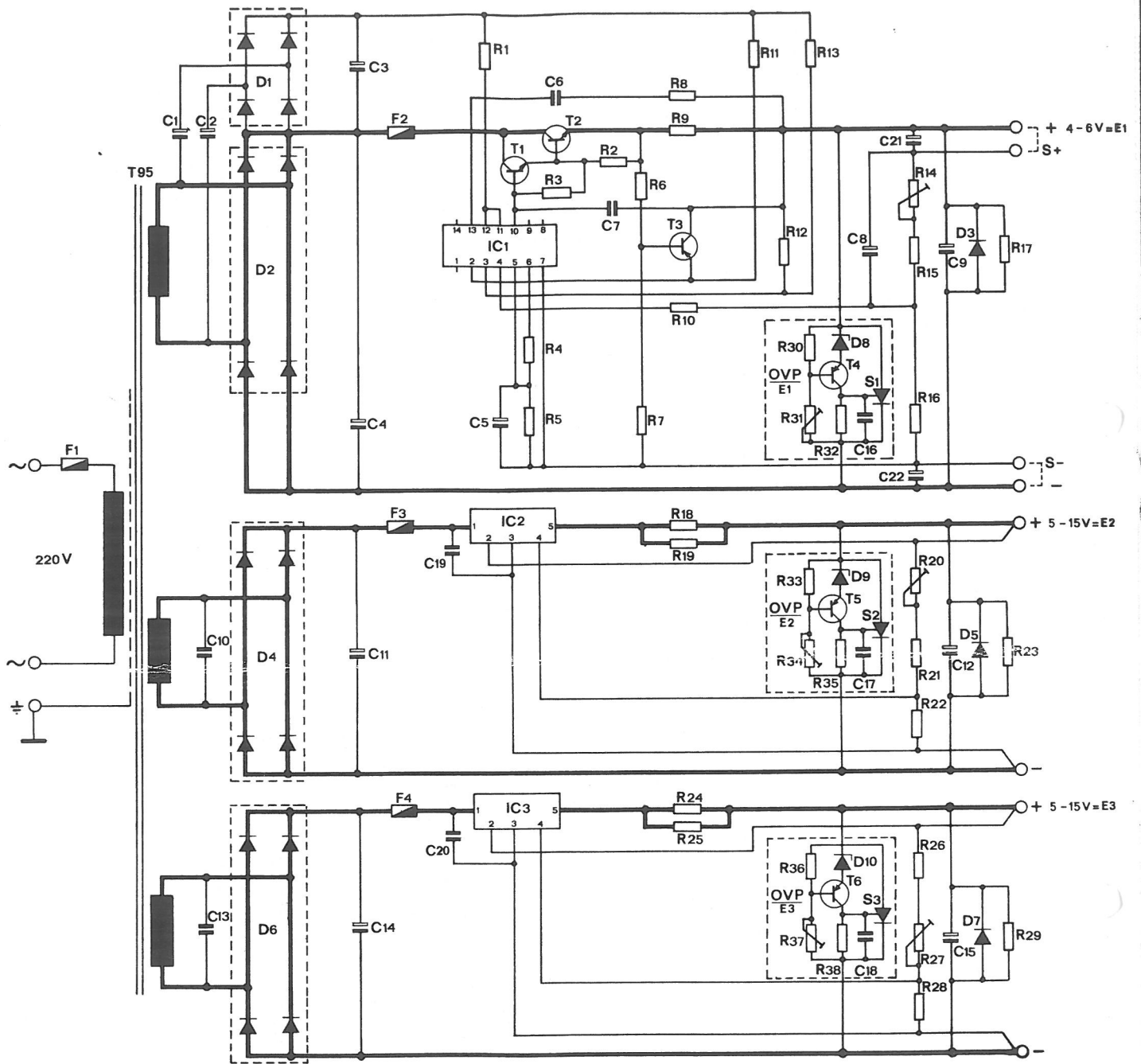


Always connect the sense points S+ to +, S- to - and So to O



C21, C22	11-'82	Vr	Title: LT 30 Wiring diagram
C19, C20	8-'80	Vr	
P221b / P222b (R1)	5-'79	Vr	Date: 8-'78
Modifications	Date	App	delta elektronika bv





C21, C22	11-82	Vr	Title: LT 30 circuit diagram
C19, C20	8-80	Vr	
R1, C7	5-79	Vr	Date: 8-78
Modifications	Date	App.	delta elektronika bv

δ

LT 30

General

The LT 30 has 3 isolated outputs:

5 V	3 A	adjustable from 4 to 6 V
15 V	0.5 A	adjustable from 5 to 15 V
15 V	0.5 A	adjustable from 5 to 15 V

At 4 V the 5 V output may only be loaded with 2.4 A because the heat dissipation in the series pass transistor is higher at 4 V than at 5 V. At 6 V it can only supply 2.4 A because at 3 A it would drop out of regulation at an AC input voltage drop of 10% below nominal. Below 15 V the output current of the 15 V outputs has also to be reduced because of increasing dissipation. At 5 V this is only 0.15 A.

Because all outputs are isolated with respect to each other, they may be connected in every possible way. For example the two 15 V outputs may be connected in parallel to supply 15 V 1 A or 12 V 0.8 A.

Output voltage and OVP adjustment

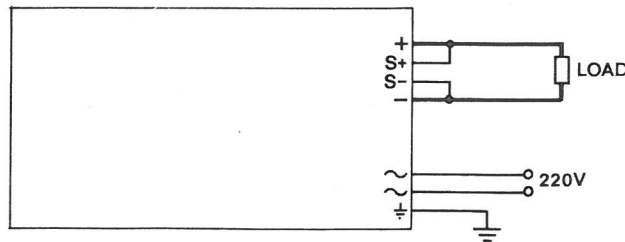
The 3 output voltages can be adjusted independently by the 20 turn potentiometers R14, R20 and R27. Each output has its own adjustable overvoltage protector (OVP). This is an SCR which short circuits the output if the adjusted overvoltage is exceeded. At 5 V output it is recommended to set the OVP at 6.5 V. At 12 V output a 14 V OVP threshold is a good value. When the OVP setting is too close to the output voltage the OVP might be triggered by a small peak caused by the inductance of the wiring or because of temperature drift of the threshold. To set the OVP threshold an external variable power supply can be connected to the output with a resistor of 50 to 100 ohm in series. This external voltage is turned up till the OVP triggers.

Sense connections S+ and S-

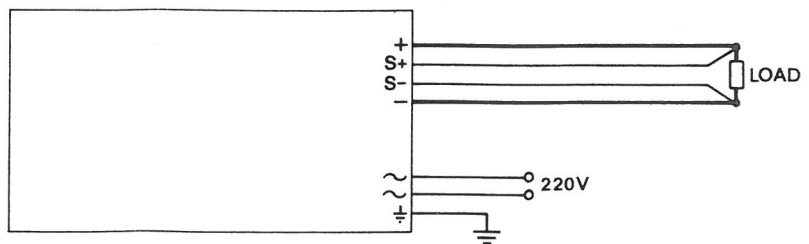
Only the 5 V output has external sense connections.

S+ has always to be connected to + and S- to -. The sense connections are the input of the voltage regulation. If they are not connected the output voltage will be unregulated (too high).

The safest way is to connect S+ to + and S- to - directly at the output terminal block.



In special cases, when the leads from the output to the load are long, "remote sensing" can be used. In that case the point of regulation is displaced from the output terminals to the load terminals, by connecting S+ and S- by (thin) measuring leads to the load terminals. This will compensate for the voltage drop over the leads to the load. A disadvantage of remote sensing is that the sense leads are sensitive to interference and that oscillations can occur caused by the phase shift of the inductance of the leads.



LT 30

Algemeen

De LT 30 heeft 3 van elkaar geïsoleerde uitgangen:

5 V	3 A	instelbaar van 4 tot 6 V
15 V	0,5 A	instelbaar van 5 tot 15 V
15 V	0,5 A	instelbaar van 5 tot 15 V

De 5 V uitgang mag bij 4 V maar met 2,4 A belast worden daar de dissipatie dan groter is dan bij 5 V en kan bij 6 V maar 2,4 A leveren omdat hij anders bij 10% netspanningsverlaging uit de stabilisatie zou lopen.

De 15 V uitgangen mogen bij lage spanning ook maar een kleine stroom leveren. Bij 5 V is dit nog maar 0,15 A

Daar alle uitgangen van elkaar geïsoleerd zijn uitgevoerd kunnen ze op elke gewenste manier met elkaar verbonden worden. De twee 15 V uitgangen kunnen bijvoorbeeld gebruikt worden als + en - 12 V of als +24 V. Ook mogen de twee 15 V uitgangen parallel geschakeld worden om bijvoorbeeld 12 V 0,8 A te leveren.

Spanningsinstelling en OVP instelling

De 3 uitgangsspanningen kunnen afzonderlijk ingesteld worden met de 20-slagen trimpotentiometers R14, R20 en R27.

Elke uitgang heeft een afzonderlijke, instelbare overspanningsbeveiliging (OVP), bestaande uit een thyristor die de uitgang kortsluit als de ingestelde overspanningsgrens overschreden wordt. Bij 5 V uitgangsspanning kan men de OVP het beste op 6,5 V instellen. Bij 12 V is een 14 V OVP drempel een goede waarde. Indien de OVP drempel te krap ingesteld wordt bestaat het gevaar dat deze een keer aanspreekt op een spanningspiekje veroorzaakt door de zelfinductie van de belastingdraden of ten gevolge van temperatuurverloop van de drempel.

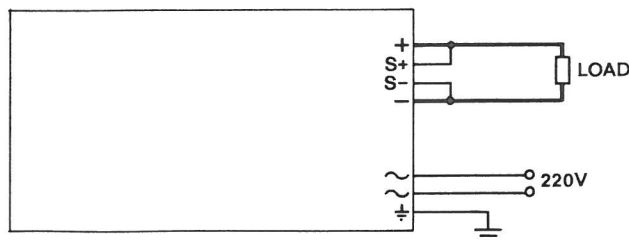
Het instellen kan bijvoorbeeld geschieden met behulp van een uitwendige variabele voeding die via 50 a 100 ohm op de betreffende uitgang aangesloten wordt. Men draait de spanning dan op tot de OVP aanspreekt.

Sense-punten S+ en S-

Alleen de 5 V uitgang heeft sensepunten

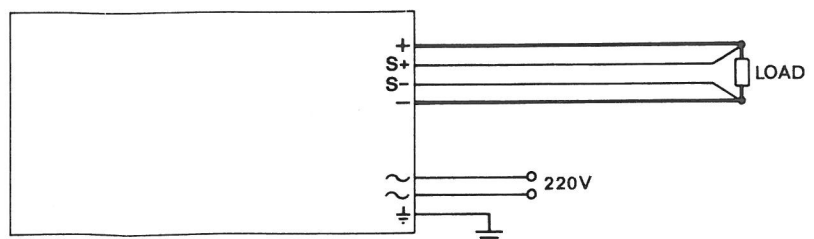
Bij het installeren moet men er op letten dat S+ met + en S- met - verbonden moet worden.

De sense-aansluitingen vormen de ingang van de regeling. Indien men vergeet ze aan te sluiten komt er een ongestabiliseerde (te hoge) spanning uit het voedingsapparaat. Het beste is om direct op de uitgangsklemmen de S+ met de + en de S- met de - door te verbinden.



In speciale gevallen als de draden van de uitgang naar de belasting lang zijn kan men zogenaamde "remote sensing" toepassen. In dat geval wordt het punt van stabilisatie verlegd naar de uiteinden van de belasting door S+ en S- via (dunne) meetdraden ter plaatse van de belasting met + resp. - te verbinden. In dat geval wordt de spanningsval over de draden naar de belasting automatisch weggeregeld.

Een nadeel van dit sensen op afstand is dat de sense-leidingen gevoelig zijn voor storingen en dat er gemakkelijk oscillaties op kunnen treden.



R = Ohm

1 = 330
 2 = 100
 3 = 560
 4 = 3,9 k
 5 = 1,8 k
 6 = 560
 7 = 3,9 k
 8 = 1 k
 9 = 0,18 7W
 10 = 1 k
 11 = 22 k
 12 = 100
 13 = 68 k
 14 = 1 k var.
 15 = 680
 16 = 820
 17 = 100
 18 = 1
 19 = 2,7
 20 = 5 k var.
 21 = 100
 22 = 1 k
 23 = 1,2 k
 24 = 1
 25 = 2,7
 26 = 100
 27 = 5 k var.
 28 = 1 k
 29 = 1,2 k

C = microfarad

1 = 100 16 V
 2 = 100 16 V
 3 = 100 16 V
 4 = 2x4700 16 V
 5 = 2,2 35 V tt
 6 = 0,0022 63 V
 7 = 0,047 250 V
 8 = 10 35 V tt
 9 = 100 6 V
 10 = 0,0022 63 V
 11 = 1000 40 V
 12 = 22 40 V
 13 = 0,0022 63 V
 14 = 1000 40 V
 15 = 22 40 V
 19 = 0,1 50 V
 20 = 0,1 50 V
 21 = 2,2 25 V
 22 = 2,2 25 V

T

1 = BD 239 A RCA
 2 = 2N3055 RCA
 3 = BC 556 A Siemens

IC

1 = 2N72723 TI
 2 = L 200 SGS ATES
 3 = L 200 SGS ATES

T95 = Delta

F₁ = 1 A
 F₂ = picofuse 275004-4 A Wickman
 F₃ = " " 275750- $\frac{3}{4}$ A "
 F₄ = " " 275750- $\frac{3}{4}$ A "

tt = tantalum

All resistors 0,4 W 2% metalfilm.
 C21, 22 only in B, C version.

D

1 = KB10B80C1000 Hermann
 2 = VJ 148 VARO
 3 = 60 S 1 DI
 4 = KB10B80C1000 Hermann
 5 = 1N4003 ITT
 6 = KB10B80C1000 Hermann
 7 = 1N4003 ITT

C21, C22	11-82	Vr	Title: LT 30 part list
C19, C20	8-80	Vr	
R3, 22k = 560Ω	5-79	Vr	Date: 8-'78
Modifications	Date	App.	delta elektronika bv



OVP
E 1

OVP
E 2

OVP
E 3

R = Ohm

30 = 4,7 k
31 = 1 k var.
32 = 100

R33 = 2,7 k
R34 = 5 k var.
R35 = 100

R36 = 2,7 k
R37 = 5 k var.
R38 = 100

C = microafarad

16 = 0,0022 63 V

C17 = 0,0022 63 V

C18 = 0,0022 63 V

D8 = ZP 5,1

D9 = ZP 5,6

D10 = ZP 5,6

T4 = BC 556 A


T5 = BC 556 A

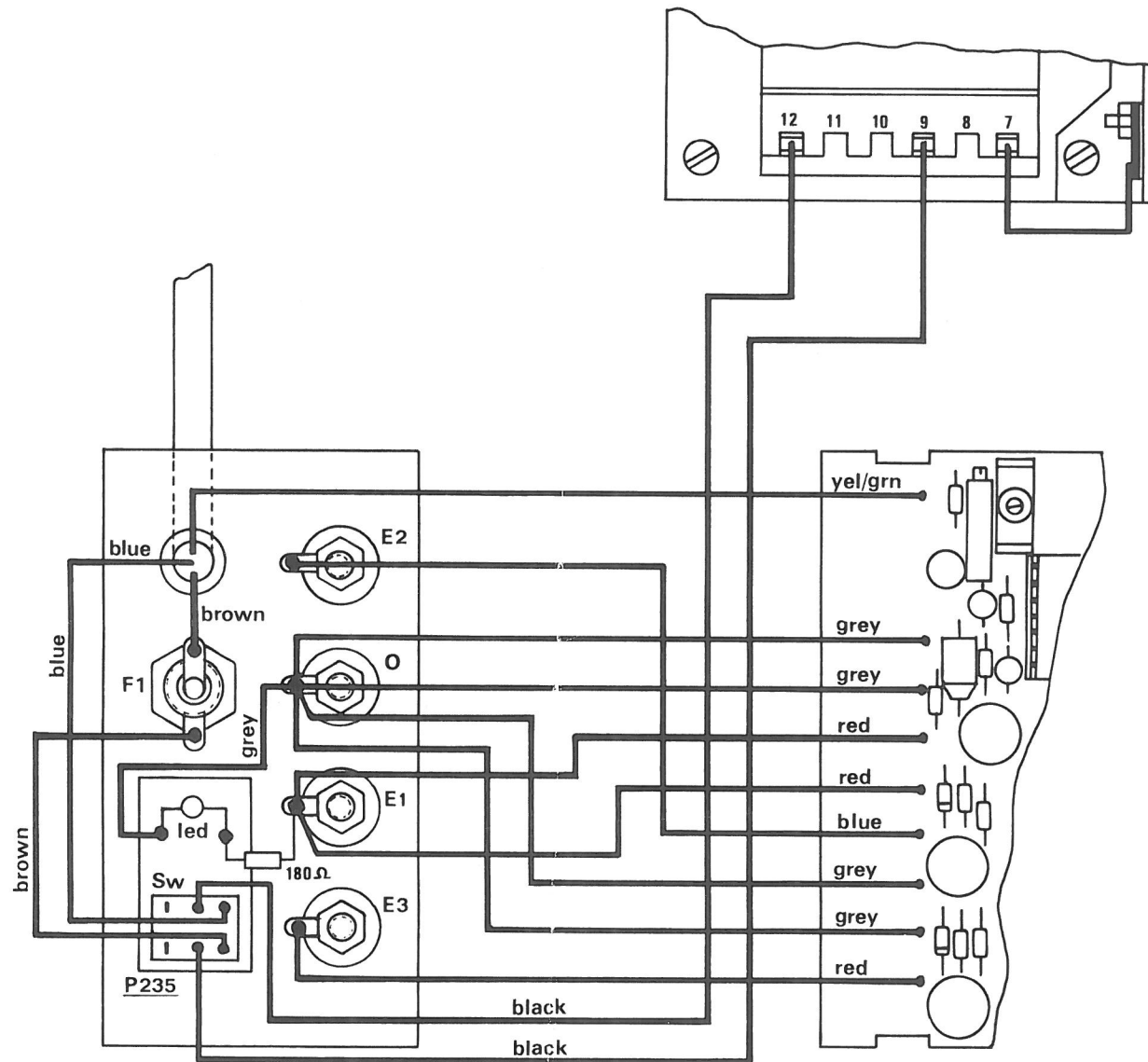
T6 = BC 556 A Siemens

S1 = S 2800 D

S2 = S 2800 D

S3 = S 2800 D RCA

			Title: LT 30 part list	
			Date: 8-'78	
Modifications	Date	App.	delta elektronika bv	



			Title: Wiring diagram LT 30 T
			Date: 8 - '80
Modifications	Date	App	delta elektronika bv

