



# Regulated Dual Low Voltage Power Supplies LS33, LS38, LS39

OLTRONIX-ELECTRONICS: Regulated Power Supplies · Converters · Amplifiers · Oscillators · Specially Designed Electronic Equipment

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KOMPONENTFÖRTECKNING  
FÖR LIKSPÄNNINGSAGGREGAT  
LS 38, 32B, 33, 37, 39



## REGULATED DUAL LOW VOLTAGE POWER SUPPLIES LS 33, LS 38, LS 39

### GENERAL

OLTRONIX LS 33, LS 38 and LS 39 are precision regulated low voltage DC power supplies containing two identical units completely separated from each other and the cabinet. They are suitable for the following and similar applications:

- Solid state circuits
- Relays
- Heater circuits
- Transducers
- Converters
- Etc.

Four panel meters offer simultaneous reading of current and voltage for both outputs.

Coarse and fine controls facilitate accurate adjustment of the output voltage.

### FUNCTION

A transistorized DC amplifier compares the output voltage with the voltage from a current regulated reference tube, type 85 A2. The amplified difference voltage controls a power transistor, which is used as a series regulator.

LS 33, LS 38 and LS 39 will regulate within a line voltage range of 200 V - 240 V.

### ADJUSTABLE CURRENT LIMITS

The maximum output current can be limited to a preset value by a control on the front panel and thus effectively protects connected apparatus from overload. The power supply is then functioning as a current stabilizer with a good stability, being inherently protected from shorts.

### SERIES & PARALLEL CONNECTION

The two outputs can either be series or parallel connected thus ensuring an output voltage current twice the rated value for each unit.



### SPECIFICATIONS:

LS 33                    2 x 0 - 25 V, 1 A

LS 38                    2 x 0 - 40 V, 0,5 A

LS 39                    2 x 0 - 40 V, 1 A

REGULATION:         $\pm 10$  mV for a  $\pm 10$  % line voltage variation.  
15 mV for a no load to full load change.  
2 % for load and line variations at current limiting.

RIPPLE:                0,1 mV r. m. s.

OUTPUT IMPEDANCE: 0,015 ohms up to 2 kHz, at 50 kHz 0,2 ohms.

TRANSIENTS:        0,1 - 0,5 V during 3  $\mu$ s, within 30 mV after 50  $\mu$ s for a 100 % step change at rated load.

TEMPERATURE STABILITY: 0,01 %/ $^{\circ}$ C

AMBIENT TEMPERATURE: + 40  $^{\circ}$ C max.

POWER REQUIREMENTS: 220 V, 50 Hz

SIZE:                    Height    218 mm  
                             Width    234 mm  
                             Depth    280 mm

WEIGHT:                8,5 kgs.

Special precautions when connecting LS 32, LS 33,  
LS 33-1, LS 37, LS 38, LS 39 and LS 40 in parallel  
or in series.

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These power supplies are equipped with a special current limiting circuit which is adjustable from about 110 % down to 10% of max. rated output current. The instruments are designed so as to permit the dissipation of the heat generated inside when the output is shorted at max. current.

The circuit makes it possible to parallel several units without internal changes. It is, however, necessary to understand the functioning to obtain the best possible results. In the current limiting state the apparatus is essentially a current regulating device. When two units are paralleled one is maintaining a constant current and the other is maintaining a constant voltage. Therefore, initially, the current controlling unit should be set to a slightly higher voltage than the voltage controlling unit.

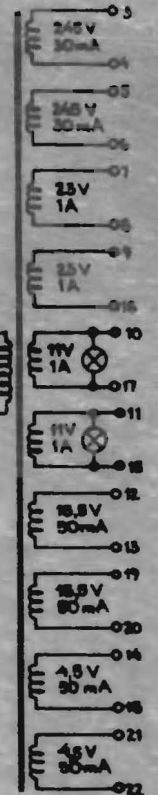
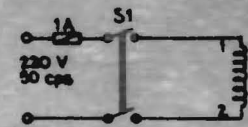
It is also desirable that the current is about equally divided between the two units so that at least enough current is supplied by the voltage controlling unit to take care of the current swing imposed by the load. If the current swing is too large then the negative peaks will cut off the "voltage" unit so that the voltage will jump up to the slightly higher preset voltage of the "current" unit. The positive peak may drive the voltage unit into its limit so that it also becomes a current device, which leads to a drop in voltage. Therefore consideration should be given also to the setting of the current limiting control of the voltage unit.

When series connecting two units the current limiting controls should also be checked. In this case the current through the two units will be identical. When increasing the load over the current limit setting the unit with the lowest setting will first drop in voltage. After it has reached zero output voltage a shunting diode in its output circuit takes over the current which can now increase until reaching the current limit of the other unit.

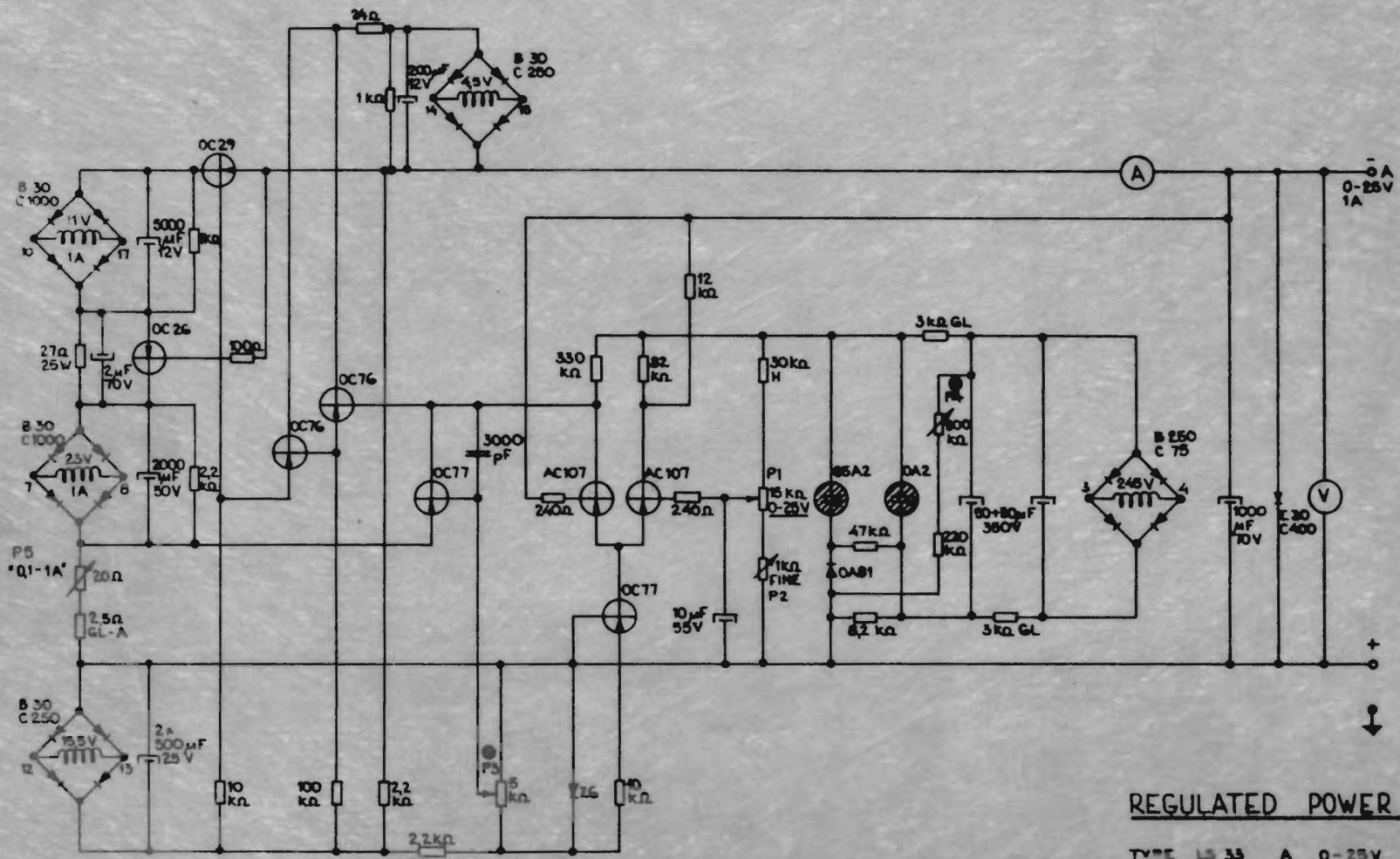
If you believe that a unit is not regulating, please also check the current limiting control. It may be set too low so that current limiting is taking place.

PLEASE DO NOT OBSTRUCT VENTILATION.

S1 : ON  
 P1 : 0 - 25V  
 P2 : FINE  
 P5 : 0,1 - 1A



ELAB 10199



**REGULATED POWER SUPPLY**

TYPE LS 33 A 0-25V 1A  
 B 0-25V 1A

STYCKELISTA NYA KOPPLINGEN

38	32 B	33	37	39	Antal	Komponent	Värde	Typ	Fabrikat	Anm.
2	1		1	2		Motstånd	2 W	4,7 Kohm		Vitrohm
			2			do.	25 W	27 ohm	B 83003	> Philips ✓
2	1	2	1	2		do.	G1	3 Kohm		> Vitrohm ✓
2	1	2	1	2		do.	G1a	5 ohm		> do. ✓
2	1		2	4		do.	DJ	75 ohm		> do. ✓
2	1	2	1	2		Elektrolytkond.	2 uF	70 V	> PEG11070/2	> Rifa ✓
2	1	2	1	2		do.	50+50 uF	350 V	> PEH1452E/175	do. ✓
			2			do.	1000 uF	50 V	* PEH1321E/28	do. ✓
4	2		1	2		do.	1000 uF	70 V	> PEH1321E/241	do. ✓ 35 x 62
2	1	2	1	2		do.	2000 uF	25 V	> PEH 1321E/28	do. ✓
		2	1	2		do.	2500 uF	70 V	PEH1381E/240	do. M2427-842278 50 x 102 ?
2	1					Likriktare	B60/C500			Siemens
2	1	2	1	2		do.	B250/C75			> do. ✓
2	1					do.	200 mA 200 PIV		SD92	> AC ✓
		10	5	10		do.	6A, 200 PIV		> BYZ13	Mullaed Med mutter, isolation & kabelsko ✓
			2			Potentiometer	<del>GLR-1106/29</del> 15000 ohm		> CL 43	Golvem CLACOSTAT ✓
			2			do.	<del>do-1106/29</del> 1000 ohm		- " - M2403-843755	do. COLVERA DO ✓
2	1		1	2		do.	<del>do-1106/29</del> 2500 ohm		X - " -	do. ✓
2	1		1	2		do.	<del>do-1106/29</del> 25000 ohm		> CL 43	do. CLACOSTAT ✓
		2	1	2		do.	do. 3001/11	20 ohm	>	do. ✓

St	32B	33	37	39	Antal	Kompo	Värde	T	Fabrikat	Anm.
2	1					Potentiometer	CLR 3001/11 40 ohm		Colvern	
2	1					Visarinstr.	500 mA		Taylor KEW	
		2	x	2		do.	1 A		x do.	✓
			1	2		- - -	- - -		x Turner	✓
		2				do.	25 V	T 523	x do.	KEW ✓
2	1		x	2		do.	50 V		do.	
			1	2		- - -	- - -	T 323	x Turner	✓
2	1					Transformator		14968 AB	Elab	
			1	2		do.		15037 A	x do.	✓
		1				do.		15199 A	x do.	✓ 14957
	1					Säkring	500 mA		Sv. Fin-	
				1		- - -	1,25 A		säkring	
1		1	1			do.	1 A		do.	
1	1	1	1	1		Säkringshållare			<del>Perceval</del>	
2	1	2				Innerchassi	2 mm	Aluminium	do.	
			1	2		do.	3 mm	do.	do.	
	1		1			Låda	2 mm	do.	do.	
1		1		1		do.	do.	do.	do.	
	1					Panel	2 mm	do.	do.	
1						do.	do.	do.	do.	
		1				do.	do.	do.	do.	
		3	6			KYLPLÅTAR	50x50x1	do.	do.	

38	B	33	37	39	Komponent	Värde	Typ	Fabrikat	Anm.
			1		Panel	2 mm	Aluminium	Persson & Noro	
				1	do.	do.	do.	do.	
	1				Bakpanel	do.	do.	do.	
1					do.	do.	do.	do.	
		1			do.	do.	do.	do.	
			1		do.	do.	do.	do.	
				1	do.	do.	do.	do.	
1	1	1	1	1	Handtag		Läder	Lundell & Zetterberg	
4	4	4	4	4	Gummibuffert	13 mm	do.	Sthlms Gummiind.	
		1			GUMMIGENOM- FÖRING	7 mm			
2	1	2	2	2	Gummigenom- föring	9 mm		do.	
1		1		2	- " -	13 mm			
24	22	2	22	24	Pertinaxbricka	36 x 8 mm		Persson & Noro	
		1			GUMMIGENOM- FÖRING	17 mm			
2	1	2	1	2	do.	40 x 19 mm		do.	
2	1	2	1	2	do.	50 x 8		do.	
6	3	6	3	6	Rattar	1/4" x 22 /små/	9118	<del>Philips Tage Schaub</del>	
2	1	2	1	2	Polskruvar	Blå isolerade		Hirschman	
2	1	2	1	2	do.	Röda do.		do.	
2	1	2	1	2	do.	Svarta do.		do.	
2	1	2	1	2	Polbleck	Små		Persson & Noro	

38	32B	33	37	39	Komponent	Värde	Typ	Fabrikat	Anm.
2	1	2	1	2	Rör		<del>85A2</del> SR 5	Mullard	
2	1	2	1	2	do.		OA2	do.	
		2			Transistor	OC26	25-35	> do.	✓
		<i>x4</i>			do.	OC29	50-75	> do.	✓
2	1		1	2	do.	OC29	25-35	> do.	✓
2	1		<i>x2</i>	<i>x4</i>	do.	OC36	50-75	> do.	✓
<del>2</del>	<del>1</del>	<del>2</del>	<del>1</del>	<del>2</del>	<del>Diad</del>	<del>OA81</del>		do.	
1	1	1	1	1	Strömbrytare		132		
2	1	2	<i>x</i>	<i>x</i>	Lampa		8034D	Philips	
2	1	2	<i>x</i>	<i>x</i>	Lamphållare		1645A	G. Bäckström	
			<i> </i>	<i> </i>	- " -		G493	Elfa	
2	1	2	1	2	Plåtvinkel för lamphållare			Persson & Noro	
8	4	8	4	8	Distansrör	5, 6 cm		Egen tillv.	
6	3	6	3	6	Nylonmutter		PYB 7003	Rifa	
1	1	1	1	1	Strykjärnsbrunn		132		
2	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>PERTINAX PLINT</i>	<i>30 x 30 x 1</i>			
2	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>- " -</i>	<i>30 x 30 x 2</i>			
4	2	4	2	4	MOTSTÅND	0,4 Ω		OLTRONIX	CI A 80 mm AV 0,3 mm FRÅN SOM HAR 0,98 METER



STYCKLISTA TRYCKT PLIN

32B	38	33	37	39	Antal	Komponent	Värde	Typ	Fabrikat	Anm.
1	2	2	1	2		Motstånd	50 ohm	1/2 W	SBT	Vitrohrm
2	4	4	2	4		do.	270 ohm	do.	do.	do.
1	2	2	1	2		do.	1 Kohm	do.	do.	do.
1	2	2	1	2		do.	2, 2 Kohm	do.	do.	do.
3	6	6	3	6		do.	10 Kohm	do.	do.	do.
1	2	2	1	2		do.	50 Kohm	do.	do.	do.
1	2	2	1	2		do.	68 Kohm	do.	do.	do.
1	2	2	1	2		do.	100 Kohm	do.	do.	do.
3	6	6	3	6		do.	220 Kohm	do.	do.	do.
1	2	2	1	2		do.	24 ohm	1 W	ABT	do.
1	2	2	1	2		do.	8, 2 Kohm	do.	ABT	do.
1	2	2	1	2		do.	2, 5 Kohm	6 W	GLCZ	× do. 0,0035 ✓
1	2	2	1	2		do.	3 Kohm	do.	do.	× do. 0.0030 ✓
1	2	2	1	2		do.	25 <del>30</del> Kohm	12 W	H.CZ	× do. 02050 ✓
1	2	2	1	2		Kond. rullblock	5000 <del>3000</del> pF			× Ruwel ✓
1	2	2	1	2		Kond. elektrolyt	10 uF	55 V	× PEG1081E/32	Rifa ✓
1	2	2	1	2		do. do.	200 uF	12 V	PEG1081E/15	do. M2427-843850
<del>2</del>	<del>4</del>	<del>4</del>	<del>2</del>	<del>4</del>		<del>do. do.</del>	<del>500 uF</del>	<del>25 V</del>	<del>PEG1081E/26</del>	<del>do.</del>

32B	38	33	37	39	Antal	Komponent	Värde	Typ	Fabrikat	Anm.
2	4	4	2	4		Likriktare	B30/C250		× Siemens	✓
1	2	2	1	2		Trimpot	5 Kohm	P4	× Vitrohm	✓
1	2	2	1	2		do.	500 Kohm	P4	> do.	✓
1	2	2	1	2		Transistorer	AC107	35-50	> Mullard	✓
1	2	2	1	2		do.	AC107	25-35	×	✓
2	4	4	2	4		do.	OC76	25-35	> do.	✓
1	2	2	1	2		do.	OC77	25-35	> do.	✓
1	2	2	1	2		do.	OC77	25-50	× do.	✓
1	2	2	1	2		Diod	<del>SD92</del>	600mA	× LRC	✓ Dåliga
1	2	2	1	2		Zenerdiod	<del>26</del> ORZ 210		> Mullard	✓
2	4	4	2	4		Rörhållare	7-polig	Tryckt krets	Intronic	