

EWS15 SERIES
INSTRUCTION MANUAL

EWS15

S P E C I F I C A T I O N S

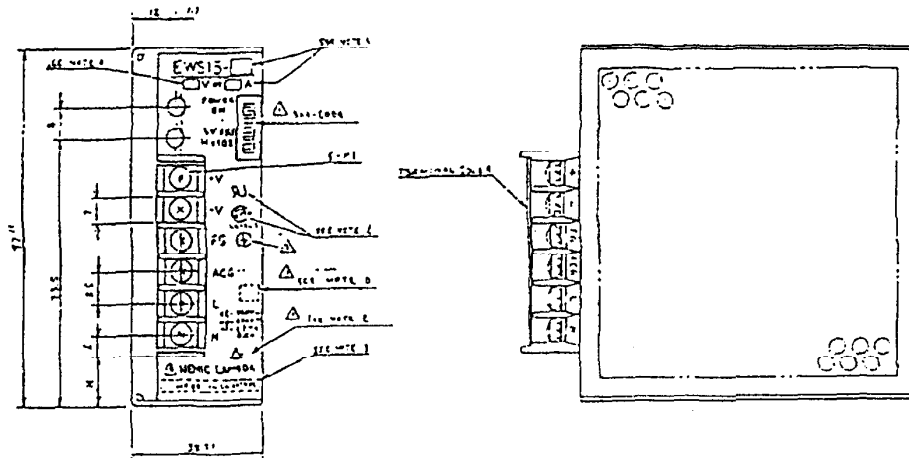
Items		Model	EWS15-5 EWS15-6 EWS15-9 EWS15-12 EWS15-15 EWS15-18 EWS15-24 EWS15-28 EWS15-48								
			EWS15-5	EWS15-6	EWS15-9	EWS15-12	EWS15-15	EWS15-18	EWS15-24	EWS15-28	EWS15-48
1	Nominal Output Voltage	V	5	6	9	12	15	18	24	28	48
2	Maximum Output Current	A	3.0	2.5	1.7	1.4	1.1	0.9	0.7	0.6	0.35
3	Maximum Output Power	W	15	15	15.0	16.0	16.5	16.2	16.0	16.0	16.0
4	Efficiency (Typ) (*1)	%	70	70	72	74	74	75	76	76	78
5	Input Voltage Range (*2)	-	85 ~ 265VAC (47 ~ 440Hz) OR 110 ~ 330VDC AC Input Voltage and Freq. Range shown on Panel Label: 85 ~ 250VAC (47 ~ 63Hz)								
6	Input Current (Typ) (*6)	A	0.4 / 0.2								
7	In-rush Current (Typ) (*8)	A	14A at 100VAC, 28A at 200VAC								
8	Output Voltage Range (Typ)	%	+/- 10								
9	Maximum Ripple & Noise	mV	120	120	150	150	150	150	200	200	250
10	Maximum Line Regulation (*3)	mV	20	24	36	48	60	72	96	112	192
11	Maximum Load Regulation (*4)	mV	40	50	70	100	120	140	150	160	380
12	Over Current Protection (*5)	A	3.15 ~	2.63 ~	1.79 ~	1.47 ~	1.16 ~	0.95 ~	0.74 ~	0.63 ~	0.37 ~
13	Over Voltage Protection (*7)	V	5.75 ~ 6.75	6.90 ~ 8.10	10.4 ~ 12.2	13.8 ~ 16.2	17.3 ~ 20.3	20.7 ~ 24.3	27.6 ~ 32.4	32.2 ~ 37.8	55.2 ~ 64.8
14	Hold-up Time (*6)	ms	More than 16 / 100								
15	Remote Sensing	-	-								
16	Remote ON/OFF Control	-	-								
17	Parallel Operation	-	-								
18	Series Operation	-	NOT POSSIBLE				POSSIBLE				
19	Operating Temperature	-	-10 ~ 60°C -10°C...70%, 0°C ~ 50°C...100%, 60°C...50%								
20	Operating Humidity	-	30 ~ 90% RH								
21	Storage Temperature	-	-30 ~ 85°C								
22	Storage Humidity	-	10 ~ 95% RH								
23	Cooling	-	Convection Cooling								
24	Temperature Coefficient (Typ)	-	0 ~ 60°C...1%, -10 ~ 60°C...1.5%								
25	Withstand Voltage (*9)	kV	Input-Output...3.75, Input-Chassis...2.5 for 1 min. @ 20mA								
26	Isolation Resistance (*10)	MΩ	More than 100 at DC 500V at 25°C and 70% RH for 1 min.								
27	Vibration	-	Less than 19.6m/s ²								
28	Shock	-	Less than 196.1m/s ²								
29	Weight	-	270g								
30	Size (W.H.D)	-	35 X 97 X 90			(Refer to Outline Dwg)					

NOTES

- * 1 : At 100VAC and Maximum Output Power.
- * 2 : For cases where conformance to various safety specs (UL, CSA, VDE, etc.) are required, input voltage and frequency range will be 85 ~ 250VAC, 47 ~ 63Hz.
- * 3 : From 85 ~ 265VAC or 110 ~ 330VDC.
- * 4 : From No load to Maximum load, constant input voltage.
- * 5 : Foldback current limiting with automatic recovery.
- * 6 : At 100VAC/200VAC, 15W Output Power.
- * 7 : Inverter shut-down method, manual reset.
- * 8 : Typical value at cold start Ta = 25°C.
- * 9 : 3.75kVAC --- Input - Output with FG - ACG connected.
2.5 kVAC --- Input - Chassis with FG - ACG connected.
- * 10 : Output - Chassis.

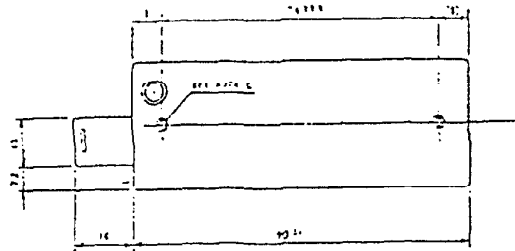
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OUTLINE DRAWING (Dimensions in mm)



NOTE :

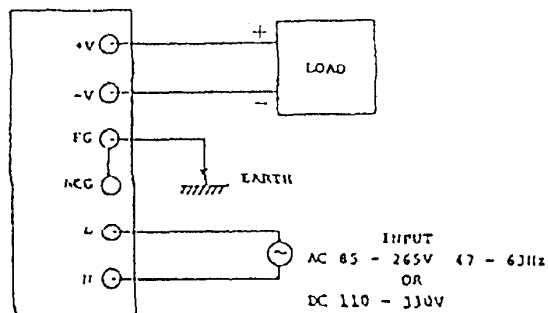
- A Model name, nominal output voltage and maximum output current are shown here in accordance with the specifications.
- B Country of manufacture will be shown here.
- C Mounting holes (2) for M3 screws, which should not enter the supply surface by more than 6mm. Recommended screw torque is 5kg.cm.
- D Seal mark's identification mark.
- E Product Safety logo (UL, CSA, TÜV) shall be applied where applicable. Refer to manufacturer for more detail.



ACCESSORIES :

- Barrier terminal cover.
- ACG - FG shorting bar. (1)

CONNECTION



NOTE :

- A To meet safety requirements, the power supply terminals must not be used directly as the external terminations of any equipment.
- B For safety as well as improved noise, ensure secure connection of the FG terminal to the ground terminal of the equipment.
- C To avoid excessive voltage drop and for improved noise, short and thick wires should be used to connect the load. This supply can only be used in stationary equipment.

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OUTPUT VOLTAGE RANGE

By means of V. ADJ. on the front panel, output voltage can be adjusted within the range of nominal voltage $\pm 10\%$. Turning clockwise increases the voltage. Caution: Increase the voltage excessively, i.e. more than nominal $+ 10\%$, may cause the over-voltage protection (OVP) device to operate.

OVER-CURRENT PROTECTION (OCP)

There is an over-current protection (OCP) function built-in. When any excessive current or an output short-circuit occurs, OCP operates to shut-down the power supply intermittently. On removing the over-current condition, the supply automatically recovers. The OCP setting is fixed and cannot be adjusted.

OVER-VOLTAGE PROTECTION (OVP)

There is an over-voltage protection (OVP) function built-in. After OVP activates, a minimum time lapse of 1 min. from the moment of switching off the input is required before any input can turn on the supply again. OVP setting is fixed at 115-135% of the nominal value.

OUTPUT RIPPLE/NOISE

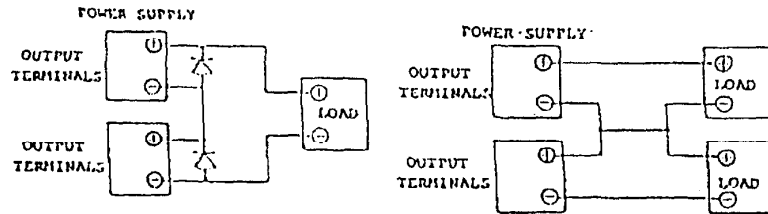
Output ripple/noise is measured at the output terminal of the power supply. Accurate measurements cannot be made if the ground wire of the oscilloscope probe is (too) long.

For better noise characteristics,

- (a) input and output wiring should be separated.
- (b) input wires and output wires should be twisted together.
- (c) a small capacitor may be added to the load end, if long load wire is used.

SERIES OPERATION (for 12V - 48V model only)

This supply can be operated in series in either of the following ways.



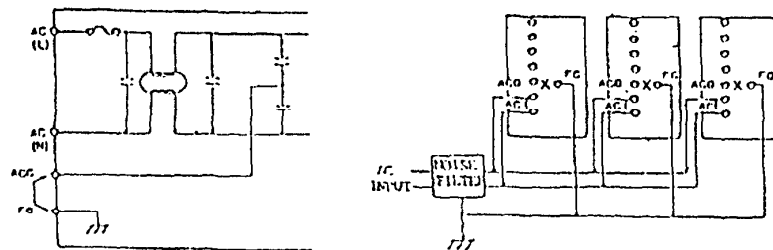
INPUT SURGE CURRENT SUPPRESSION

Suppression of input surge current is built-in. However, if a few units are used together, care must be taken in the selection of the input switch and external fuse.

WITHSTAND VOLTAGE / ISOLATION RESISTANCE TEST

Caution: Before testing, ensure that both input terminals and output terminals are shorted together. ACG and FG terminals must be shorted also. The high voltage applied should be gradually increased from or reduced to zero, to avoid excessive transient pulses.

ACG TERMINAL

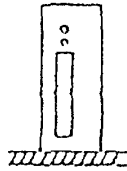


The neutral point of the line filter is output to the ACG terminal. Short this terminal with FG when the power supply is employed as a single units. When multiple power supplies are used together, connect the ACG terminals together to avoid any flow of earth line current.

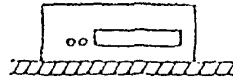
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MOUNTING POSITIONS AND OUTPUT DERATING

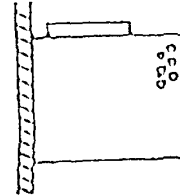
MOUNTING A
(STANDARD)



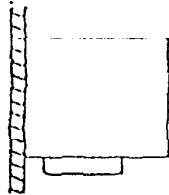
MOUNTING B



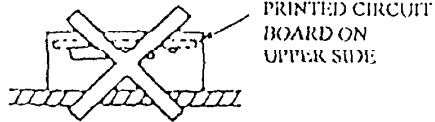
MOUNTING C



MOUNTING D



MOUNTING E



PRINTED CIRCUIT BOARD ON UPPER SIDE

NOT PERMISSIBLE

OUTPUT DERATING

T _a (°C)	LOAD (%)			
	MOUNTING:A	MOUNTING:B	MOUNTING:C	MOUNTING:D
30°C	100	100	100	100
40°C	100	100	100	100
50°C	100	50	50	50
60°C	50	-	-	-
70°C	-	-	-	-

FUSE:

RATING : 250V 2.5A

TYPE : TIME-LAG

UL/CSA or IEC approved type should be used to meet safety requirements. When changing fuse, ensure that the same type and rating is used. Avoid using fast-blow fuse.

CAUTION: Change of fuse is to be done by authorized service personnel only.

VORSICHT : ÜBERLASSEN SIE WARTUNGSARBEITEN STETS DEM VON ZUGELASSENEN FACHMANN.

CE MARKING:

CE MARKING WHEN APPLIED TO THE UNIT, INDICATES COMPLIANCE WITH THE LOW VOLTAGE DIRECTIVES (73/23/EEC) AS MODIFIED BY THE CE MARKING DIRECTIVES (93/68/EEC) IN THAT IT COMPLIES WITH EN60950.