



Standard Linear Power Supplies

Description

The International Power "open frame series" are a high reliability line of regulated open frame linear AC to DC power supplies designed to operate over the wide range of AC power sources found worldwide. This feature simplifies your inventory and service consideration by allowing the use of one standard power supply regardless of the destination. These models are designed to meet many domestic and international regulatory agency requirements. If you plan to distribute your products worldwide, obtaining necessary agency approvals can be greatly simplified by specifying our International Power "open frame series".

Features

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| <ul style="list-style-type: none">• VDE Transformer Construction• 100/120 /220/230-240 VAC Input• OVP on 5 Volt Outputs• $\pm 0.05\%$ Regulation• Remote Sense on most Outputs• Industry Standard Case | <ul style="list-style-type: none">• Two Hour Burn-in• Two Year Warranty• UL Recognized for US & Canada File #E1333338• CE Marked• Chassis notched for AC Input• AC Input |
|--|---|

Size <ul style="list-style-type: none"> • Full Rated to 50 Degrees C • Foldback/Current Limit • Very Low Output Ripple • Inherently Low Conducted & Radiated noise levels 	accepts .110 x .032 Fast-on or Solder Connection.(Not available on F Case Models.) <ul style="list-style-type: none"> • DC Output 6-32 Screw Terminals Optional
Linear Power Supply General Specifications	
<ul style="list-style-type: none"> • AC Input: 100/120 /220/240 VAC +10%, -13%. 47-63 Hz. Tolerance for 230 VAC operation is +15%, -10%.Derate output current 10% for 50 Hz operation. See chassis AC connection table for jumper and line fusing requirements. • DC Output: See Voltage/Current Rating Charts.Adjustment range $\pm 5\%$ minimum.Voltage nonadjustable on "3 terminal regulator" outputs of models IHAD12 and IHAD15. • Line Regulation: $\pm .05\%$ for a 10% line change. Exceptions:$\pm .01\%$ for F case models$\pm 1\%$ for IHAD12 and IHAD15$\pm 0.5\%$ for all other outputs using 3 terminal regulators. • Load Regulation: $\pm .05\%$ for a 50% load change. Exceptions:$\pm .02\%$ for F case models$\pm 1\%$ for IHAD12 and IHAD15$\pm 0.5\%$ for all other outputs using "3 terminal regulators. 	<ul style="list-style-type: none"> • Stability: $\pm 0.3\%$ for 24 hours after 1 hr. warm-up. • Temperature Ratings: Operating:0°C to 50°C full rated, derated linearly to 40% at 70°C.(Recommended forced air at 200W, 50 CFM required at 250W) • Storage: -40°C to 85°C • Temperature Coefficient: $0.01\%/^{\circ}\text{C}$ typical, $.03\%/^{\circ}\text{C}$ maximum. • Efficiency (typical): 5V outputs = 45%, 12V and 15V outputs = 55% and 24V through 250V outputs are 60%. • Master/Slave Operation: Provided on F case models only. For parallel operation of up to 6 units. • Vibration: Random vibration from 10Hz to 2KHz, 6.15grms (3 axis). • Shock: Operating 20G peak acceleration.

- **Output Ripple:** 5 Volt to 28 Volt units: 5mV pk-pk maximum 48 Volt to 155 Volt units: .02% pk-pk maximum 200 Volt & 250 Volt units: .05% pk-pk maximum 3 Terminal Regulator units: 0.2% pk-pk maximum
- **Transient Response:** Less than 50μsec for a 50% load change.
- **Short Circuit and Overload Protection:** Automatic current limit/foldback.
- **Overvoltage Protection:** Provided on 5V outputs where indicated set at 6.3V ±0.4V. Other outputs use optional overvoltage protectors IOVP12 and IOVP24.
- **Remote Sensing:** See Voltage/Current Rating Charts. Provided on outputs where indicated.
- **EMI/RFI:** These linear power supplies have inherently low conducted and radiated noise levels. For most system applications they will meet the requirements of (FCC) 47CFR15J and EN55022.
- **Safety Agency Certifications:** UL: 1950, Third Edition CUL: CAN/CSA C22.2 No. 950-95, IEC950 CE Mark: LVD 73/23/EEC
- **Leakage Current & Dielectric Withstand** Leakage current is less than 50μA. Field terminal to terminal spacing is 5.25 mm with 9.0 mm creepage to other metal. Dielectric withstand voltages are 3750 VAC input to chassis, 3750 VAC input to output and 750 VDC output to chassis. UL tested at 4242 VDC input to output, 2121 VDC input to dead metal.

Single Output Power Supplies

POWER SUPPLY MODEL (Click for Spec Sheet)	OUTPUT		CASE SIZE	NOTES
	Volts	Amps	Click on code for Case details	
IHA5-1.2/OVP	5	1.2	A	Not International Series

IHA5-1.5/OVP	5	1.5	B	Remote Sense Provided
IHB5-3/OVP	5	3	B	Remote Sense Provided
IHC5-6/OVP	5	6	C	Remote Sense Provided
IHN5-9/OVP	5	9	N	Remote Sense Provided
IHD5-12/OVP	5	12	D	Remote Sense Provided
IHE5-18/OVP	5	18	E	Remote Sense Provided
IF5-25/OVP	5	25	F	Remote Sense Provided
IG5-35/OVP	5	35	F	Remote Sense Provided
ICP197	5	50	F	Remote Sense Provided
IHA15-0.5	12	0.5	A	Not International

				Series
IHA15-0.9	12	0.9	B	Remote Sense Provided
IHB12-1.7	12	1.7	B	Remote Sense Provided
IHC12-3.4	12	3.4	C	Remote Sense Provided
IHN12-5.1	12	5.1	N	Remote Sense Provided
IHD12-6.8	12	6.8	D	Remote Sense Provided
IHE12-10.2	12	10.2	E	Remote Sense Provided
IF15-15	12	16	F	Remote Sense Provided
IHA15-0.5	15	0.5	A	Not International Series
IHA15-0.9	15	0.9	B	

IHB15-1.5	15	1.5	B	Remote Sense Provided
IHC15-3	15	3	C	Remote Sense Provided
IHN15-4.5	15	4.5	N	Remote Sense Provided
IHD15-6	15	6	D	Remote Sense Provided
IHE15-9	15	9	E	Remote Sense Provided
IF15-15	15	15	F	Remote Sense Provided
IHA24-0.5	24	0.5	B	Remote Sense Provided
IHB24-1.2	24	1.2	B	Remote Sense Provided
IHC24-2.4	24	2.4	C	Remote Sense Provided
IHN24-3.6	24	3.6	N	Remote Sense

				Provided
IHD24-4.8	24	4.8	D	Remote Sense Provided
IHE24-7.2	24	7.2	E	Remote Sense Provided
IF24-12	24	12	F	Remote Sense Provided
IHA24-0.5	28	0.5	B	Remote Sense Provided
IHB28-1	28	1	B	Remote Sense Provided
IHC28-2	28	2	C	Remote Sense Provided
IHN28-3	28	3	N	Remote Sense Provided
IHD28-4	28	4	D	Remote Sense Provided
IHE28-6	28	6	E	Remote Sense Provided

IF24-12	28	10	F	Remote Sense Provided
IHB48-0.5	48	0.5	B	
IHB48-0.5-105	48	0.75	B	
IHC48-1	48	1	C	
IHC48-1-105	48	1.5	C	
IHD48-3	48	3	D	Remote Sense Provided
IHE48-4	48	4	E	Remote Sense Provided
IF48-8	48	8	F	Not International Series
IHB120-0.2	100 – 135	0.2	B	Adjustable Range 100-135
IHB155-0.12	135 – 170	0.12	B	Adjustable Range 135-170
IHB200-0.12	175 – 210	0.12	B	Adjustable Range 175-210

IHB250-0.1	215 – 265	0.1	B	Adjustable Range 215-265
Dual Output Power Supplies				
POWER SUPPLY MODEL (Click for Spec Sheet)	OUTPUT 1	OUTPUT 2	CASE SIZE	
			Click on code for Case details	
IHAA5-1.5/OVP	5V @ 1.5A	-5V @ 1.5A	AA	
	Overvoltage Protection Provided (both outputs)			
IHBB5-3/OVP	5V @ 3A	-5V @ 3A	BB	
	Overvoltage Protection Provided (both outputs)			
IHCC5-6/OVP	5V @ 6A	-5V @ 6A	CC	
	Overvoltage Protection Provided (both outputs), Remote Sense Provided			
IHAD12-0.4	12V @ 0.4A	-12V @ 0.4A	B	
	Non-adjustable 3 Terminal Regulator			
IHAD15-0.4	15V @ 0.4A	-15V @ 0.4A	B	
	Non-adjustable 3 Terminal Regulator			
IHAA15-0.8	12V @ 1A or 15V @ 0.8A	-12V @ 1A or -15V @ 0.8A	AA	
	Remote Sense Provided			

IHBB15-1.5	12V @ 1.7A or 15V @ 1.5A	-12V @1.7A or -15V @ 1.5A	BB
	Remote Sense Provided		
IHCC15-3	12V @ 3.4A or 15V @ 3.0A	-12V @ 3.4A or -15V @ 3.0A	CC
	Remote Sense Provided		
IHDD15-5	12-15V @ 5A	-12-15V @ 5A	E
	Remote Sense Provided		
IHAA24-0.6	18-20V @ 0.4A or 24V @ 0.6A	-18-20V @ 0.4A or -24V @ 0.6A	AA
IHBB24-1.2	18-20V @ 0.9A or 24V @ 1.2A	-18-20V @ 0.9A or -24V @ 1.2A	BB
IHCC24-2.4	18-20V @ 1.8A or 24V @ 2.4A	-18-20V @ 1.8A or -24V @ 2.4A	CC
	Remote Sense Provided		
IHAA512	5V @ 2A	12-15V @ 0.5A	AA
	Overvoltage Protection Provided (5V output only)		
IHD12-6.8-504	5V @ 3A	12V @ 6A	D
	Overvoltage Protection Provided (5V output only)		
IHBB512	5V @ 3A	12-15V @ 1.5A	BB

	Overvoltage Protection Provided (5V output only), Remote Sense Provided		
IHCC512	5V @ 6A	12-15V @ 2.5A	CC
	Overvoltage Protection Provided (5V output only), Remote Sense Provided		
ICP323	5V @ 2A	12V @ 4A	N
	Overvoltage Protection Provided (5V output only)		
ICP510	5V @ 6A	12V @ 2.5A / 7.5APK	CP510
	Overvoltage Protection Provided (5V output only)		

Triple Output Power Supplies

POWER SUPPLY MODEL (Click for Spec Sheet)	OUTPUT 1	OUTPUT 2	OUTPUT 3	CASE SIZE
				Click on code for Case details
IHTAA-16W	5V @ 2A	12-15V @ 0.4A	-12-15V @ 0.4A or -5 @ 0.4A	AA
	Overvoltage Protection Provided (output 1)			
IHBAA-40W	5V @ 3A	12V @ 1A or 15V @ 0.8A	-12V @ 1A or -15V @ 0.8A or -5V @ 0.4A	BAA
	Overvoltage Protection Provided (output 1), Remote Sense Provided (all outputs)			

IHCAA-60W	5V @ 6A	12V @ 1A or 15V @ 0.8A	-12-15V @ 1A or -5V @ 0.4A	D
	Overvoltage Protection Provided (output 1), Remote Sense Provided (output 1)			
IHCBB-75W	5V @ 6A	12V @ 1.7A or 15V @ 1.5A	-12V @ 1.7A or -15V @ 1.5A or -5 @ 0.7A	CBB
	Overvoltage Protection Provided (output 1), Remote Sense Provided (all outputs)			
IHBCC512	5V @ 3A	12V @ 3.4A or 15V @ 3A	-12V @ 3.4A or -15V @ 3A	CC
	Overvoltage Protection Provided (output 1), Remote Sense Provided (all outputs)			
IHBCC524	5V @ 3A	18-20V @ 1.8 or 24V @ 2.4A	-18-20V @ 1.8 or -24V @ 2.4A	CC
	Overvoltage Protection Provided (output 1), Remote Sense Provided (all outputs)			
ICP131	5V @ 8A	12V @ 1.7A or 15V @ 1.5A	-12V @ 3.4A or -15V @ 3A or -5 @ 0.7A	131
	Overvoltage Protection Provided (output 1), Remote Sense Provided (all outputs)			
IHDDB-105W	5V @ 12A	12V @ 1.7A or 15V @ 1.5A	-12V @ 1.7A or -15V @ 1.5A or -5 @ 0.7A	DBB
	Overvoltage Protection Provided (output 1), Remote Sense Provided (all outputs)			
IHDCC-150W	5V @ 12A	12V @ 3.4A or 15V @ 3A	-12V @ 3.4A or -15V @ 3A	DCC

	Overvoltage Protection Provided (output 1), Remote Sense Provided (all outputs)
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High Power AC to DC Power Supplies Voltage/Current Rating Chart

MODEL	OUTPUT #1	OUTPUT #2	OUTPUT #3	OUTPUT #4	CASE SIZE
ICP323	5V@2A*	12V@4A			N
ICP162	5V@3A* ‡	-5V@0.6A*	24V@5A / 6A PK ‡		131
ICP510	5V@6A*	12V@2.5A / 7.5A PK ‡			CP510
ICP379	5V@6A* ‡	-5V@1.2A or -12V@1.2A	24V@3.5A / 8A PK ‡		131
ICP384	5V@9A* ‡	-5V@1.2A or -12V@1.2A	24V@2A / 8A PK ‡		131
ICP503	5V@6A*	12V@1.2A	-12V@0.8A	24V@2.5A / 4A PK	131

* Overvoltage Protection Provided ‡
Remote Sense Provided

Unregulated Power Supply Line IP500U SERIES

The IP500U series unregulated power supply

line is designed for high current applications at low cost when full regulation is not required. This rugged, highly reliable power supply line is ideal for applications such as powering solenoids, relays, DC motors, lamps and DC-DC converters. Standard DC outputs are listed below, other outputs from 9 to 175 volts are available on special order.

Standard Features

- Bobbin Wound Transformer
- Computer Grade Capacitors
- Floating Output
- Full Rated to 55 degrees Celsius
- Open Frame Construction
- Secondary Fuse Protection
- 50 amp, 200 volt full bridge rectifier
- Full two year warranty
- [MECHANICAL DRAWING](#)

Specifications

- AC Input 47-63 Hz
- 108/120/132/216/240/264 VAC Selection
- Output Ripple: 3% RMS at full rated load, 4% on 12 volt model IP500U12
- Efficiency @ Full Load 80% typical
- UL Recognized for USA and Canada File Number E133338
- Complies with the requirements of standard EN 60590 and low voltage directive 72/23/EEC

TYPICAL DC OUTPUT @ NOMINAL INPUT

MODEL NUMBER	NO LOAD	HALF LOAD	FULL LOAD	AMPS FULL LOAD
IP500U12	14.7	13.0	12.0	30
IP500U24	29.2	26.8	24.6	20
IP500U36	42.8	38.2	36.1	13.3
IP500U48	56.6	52.8	48.8	10
IP500U65	75.2	68.8	65.2	7.7

IP500U75	85.5	78.2	74.8	6.6
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Overvoltage Protectors

OVP Selection Guide (DATA SHEET)

MODEL	CASE SIZE	OVP MODULES REQUIRED
SINGLE OUTPUT	B, C, N, D, E, F NOTE: IOVP-12 & IOVP-24: Adj Range: 6.5 to 35 V	IOVP-12 IOVP-24
DUAL OUTPUT	AA, B, BB, CC, E, DD	IOVP-12 protects both outputs.OVP built-in on 5V outputs.IOVP-24 protects both outputs.
TRIPLE OUTPUT	AA, BAA, D, CBB, 131, DBB	IOVP-12 protects both 9V thru 15V outputs.OVP built-in on main 5V outputs.
HIGH POWER MODELS	N, BAA, CBB, 131, 510	IOVP-12 protects any output.Not provided with built-in OVP.
	IAR5-0.6/OVP , -5 V Sub-Regulator ModuleThe IAR5-0.6/OVP will provide a -5 VDC regulated output @0.6 amps when connected to any filtered -7 to -30 DC source.	



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